

**WOOD BUFFALO ENVIRONMENTAL ASSOCIATION  
MONTHLY AMBIENT AIR QUALITY MONITORING REPORT  
FEBRUARY 2023  
REPORT HISTORY**

Original report release date: March 31, 2023

Revised report release date: April 28, 2023

Revised report release date: June 2, 2023

Revised report release date: August 30, 2023

**Revision 1 – Resubmission of Air Monitoring Station Monthly Summary Report.**

The monthly Air Monitoring Stations (AMS) summary reports for February were inaccurately created for Bertha Ganter AMS, Lower Camp AMS, and Patricia McInnes AMS.

The Air Monitoring Station summary reports have been updated from the original version, and they were re-submitted to the Electronic Transfer System (ETS) on April 28, 2023.

**Revision 2 – Resubmission of Air Monitoring Station Monthly Summary Report.**

During the daily system check of the wind speed and wind direction (WS/WD) data, it was found that the sensor at Firebag Air Monitoring Station (AMS) data did not follow the same pattern with near by stations. A site inspection of the WS/WD tower showed that one set of bolts which secure the tower to the station were missing, resulting in the misalignment of the tower orientation.

As a result, the WS/WD data from Firebag AMS was revised and flagged properly, and the sensor operated less than 90% for the month of February through May (reference number 412838). The Air Monitoring Station summary reports have been updated from the original version, and they were re-submitted to the Electronic Transfer System (ETS) on June 2, 2023.

**Revision 3 – Submission of H<sub>2</sub>S data and Revision of TRS data at Patricia McInnes.**

The Patricia McInnes air monitoring station (AMS06) collected H<sub>2</sub>S data from January 3, 2023, to June 12, 2023, but it was reported as TRS. On August 30, 2023, the data was resubmitted as H<sub>2</sub>S to the Electronic Transfer System (ETS) and the TRS data was revised. The monthly report cover letter, station summary, network summary, and calibration report contained within have been revised to reflect the change.



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Wood Buffalo Environmental Association

# FEBRUARY 2023 MONTHLY REPORT

CONTINUOUS MONITORING

August 30, 2023

Revision 03

Operations, Data Collection,  
QA/QC, Data Validation and Reporting by:  
Wood Buffalo Environmental Association





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August 30, 2023

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**RE: Monthly Ambient Air Quality Monitoring Report February 2023 – Revision 02  
Wood Buffalo Environmental Association**

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Enclosed is the February 2023 Ambient Air Quality Monitoring Report for the continuous ambient air quality monitoring stations of the Wood Buffalo Environmental Association (WBEA) regional air quality monitoring network.

The continuous ambient air quality monitoring network stations are:

|                                    |                                 |
|------------------------------------|---------------------------------|
| AMS01 - Bertha Ganter - Fort McKay | AMS18 - Stony Mountain          |
| AMS02 - Mildred Lake               | AMS19 - Firebag                 |
| AMS03 - Lower Camp (Meteorology)   | AMS20 - MacKay River            |
| AMS04 - Buffalo Viewpoint          | AMS21 - Conklin                 |
| AMS05 - Mannix                     | AMS22 - Janvier                 |
| AMS06 - Patricia McInnes           | AMS23 - Fort Hills              |
| AMS07 - Athabasca Valley           | AMS25 - Waskōw ohci Pimâtisiwin |
| AMS08 - Fort Chipewyan             | AMS26 - Christina Lake          |
| AMS09 - Barge Landing              | AMS27 - Jackfish 2/3            |
| AMS11 - Lower Camp (Air Quality)   | AMS29 - Surmont 2               |
| AMS13 - Fort McKay South           | AMS30 - Ells River              |
| AMS14 - Anzac                      | AMS506 – Jackfish 1             |
| AMS17 - Wapasu                     | AMS508 - Kirby North            |

The WBEA submits this report on behalf of its members and for some members to satisfy the requirements contained in their EPEA Approvals (as amended):



**Industry Operators**

|                                    |   |
|------------------------------------|---|
| Athabasca Oil Corporation          | 289664-00-00; 241311-00-00  |
| Canadian Natural                   | 149968-01-00; 153125-01-00;<br>20809-02-00; 224816-01-00; 228044-00-00;<br>237382-00-00 |
| Cenovus Energy Inc.                | 48522-01-00   |
| ChemTrade Logistics                | 404827-00-00  |
| CNOOC International                | 137467-01-00; 236394-00-00  |
| Connacher Oil and Gas Ltd.         | 240008-00-00  |
| ConocoPhillips                     | 48263-01-00   |
| Fort Hills Energy Corporation      | 151469-01-00  |
| Hammerstone Corporation            | 189942-00-00  |
| Harvest Operations Corp.           | 246984-01-00  |
| H.J. Baker Sulphur Canada ULC      | 426549-00-00  |
| Husky Oil Operations Ltd.          | 206355-01-00  |
| Imperial Oil Ltd.                  | 00046586-00-00  |
| Inter Pipeline Ltd.                | 73203-02-00   |
| Keyera Energy Ltd.                 | 187-03-00   |
| MEG Energy Corp.                   | 00216466-01-00  |
| Parsons Creek Aggregates           | 231302-00   |
| PetroChina Canada Ltd.             | 254465-00-00  |
| Suncor Energy Inc.                 | 094-02-00; 80105-01-00  |
| Sunshine Oilsands Ltd.             | 305529-00-00  |
| Surmont Energy                     | 318401-00-00  |
| Syncrude Canada Ltd.               | 026-02-00   |
| Teck Resources Ltd.                | 00247548-00-00  |
| Titan Tire Reclamation Corporation | 364232-00-00  |

**Government and Non-Government Organizations**

|   |                                       |
|---|---------------------------------------|
| Alberta Energy Regulator                | Health Canada                         |
| Alberta Environment and Protected Areas | Keyano College                        |
| Alberta Health                          | Parks Canada                          |
| Alberta Health Services                 | Pembina Institute                     |
| Environment and Climate Change Canada   | Regional Municipality of Wood Buffalo |

**Indigenous Communities**

|   |                                |
|---|--------------------------------|
| Athabasca Chipewyan First Nation              | Fort McKay First Nation        |
| Chard Métis Nation                            | Fort McMurray 468 First Nation |
| Chipewyan Prairie Dene First Nation           | Fort McKay Métis               |
| Christina River Dene Nation Council           | Lakeland Métis Local 1909      |
| Conklin Resource Development Advisory Council | McMurray Métis                 |
|   | Mikisew Cree First Nation      |



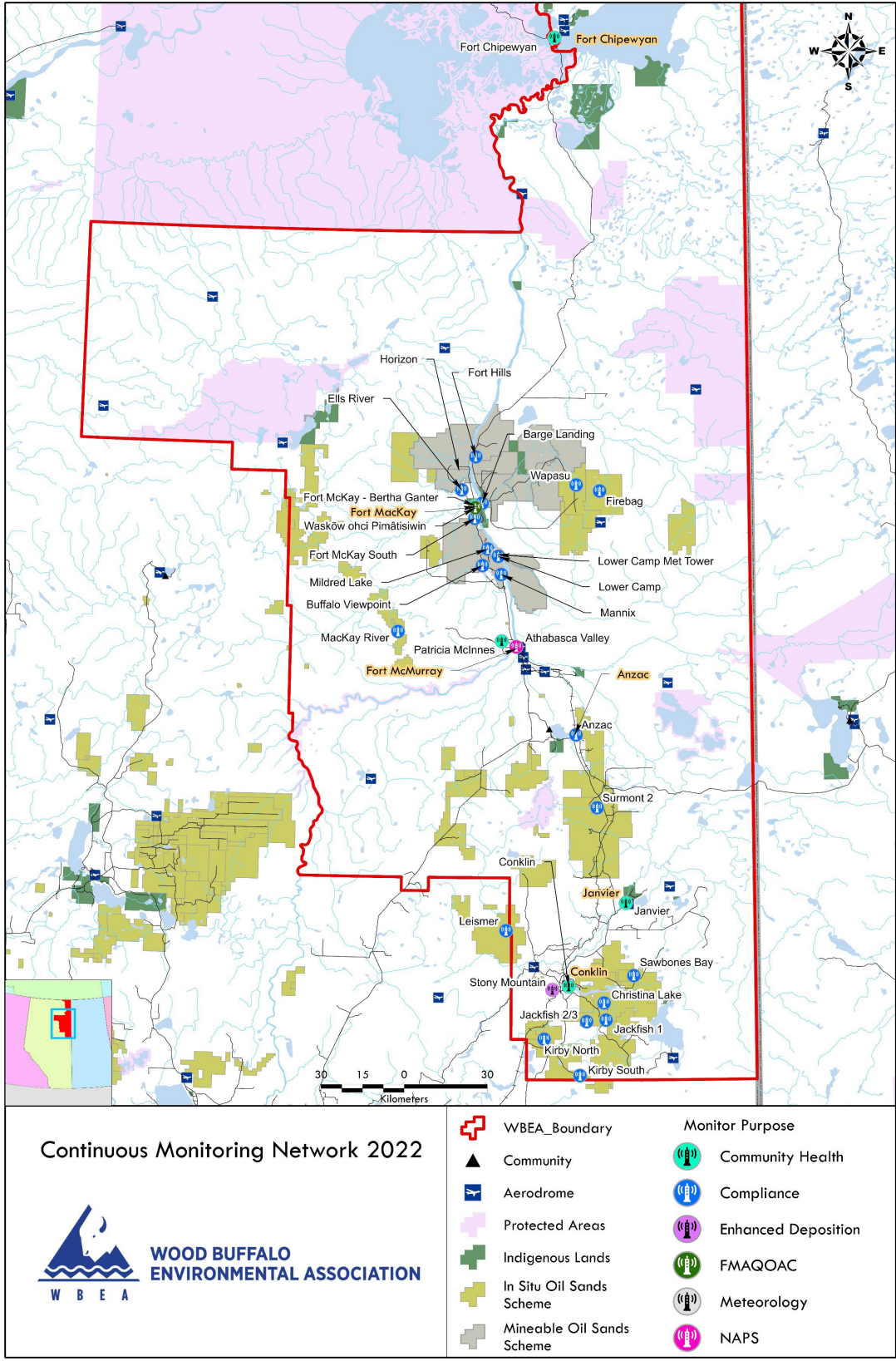


Figure 1: Map of WBEA Continuous Monitoring Network

The following operational notes are provided as per the Air Monitoring Directive requirements.

## 1.0 Concentrations in Excess of Alberta Ambient Air Quality Guidelines and Objectives

There were no ambient concentrations in excess of the Alberta Ambient Air Quality Objectives or Guidelines (AAAQO/AAAQG) as indicated in the Air Monitoring Directive Section RC 5-F for CO, H<sub>2</sub>S, NH<sub>3</sub>, NO<sub>2</sub>, O<sub>3</sub>, SO<sub>2</sub>, and TRS.

There was one ground-level concentration in excess of the 1-hour H<sub>2</sub>S objective reported to AEPA; following data validation and processing this exceedance was not confirmed.

There were two ambient ground level concentrations in excess of the 1-hour PM<sub>2.5</sub> guideline reported to AEPA; following data validation and processing these exceedances were confirmed.

| Site       | Parameter         | Date / Time    | Reference | Period | Reported | Final | Status* |
|------------|-------------------|----------------|-----------|--------|----------|-------|---------|
| Anzac      | PM <sub>2.5</sub> | 19Feb23, 01:00 | 409784    | 1-hr   | 214      | 214.3 | exc     |
| Anzac      | PM <sub>2.5</sub> | 19Feb23, 02:00 | 409784    | 1-hr   | 207      | 207.4 | exc     |
| Lower Camp | H <sub>2</sub> S  | 25Feb23, 20:00 | 409943    | 1-hr   | 10       | 9.4   | nae     |

\*status legend:

- late    exceedance, raw values were not found to be in exceedance in real time, and/or were not reported, but final values were found to be an exceedance after data processing.
- exc    exceedance, raw values reported in real time were confirmed to be in exceedance after data processing.
- nae    not an exceedance, raw values reported in real time were found not in exceedance after data processing.
- ret    retracted, reported exceedance was found to be not an exceedance after investigation of measurement system status and/or validation of raw data in conjunction with all associated measurement parameters.

## 2.0 Data Processing and Validation

Concentrations reported in near real-time were raw values. The final values were determined after processing data for reporting. For all parameters, except PM<sub>2.5</sub>, the final 5-minute data values were determined by subtracting the daily zero responses, interpolated to the time of each raw 5-minute value, from the raw 5-minute data values. The PM<sub>2.5</sub> analyzers do not have the capability of performing zero's, therefore, the raw 5-minute values are validated through a comparison with associated parameters at the same, or a nearby, AMS. The final 5-minute data values were then rounded to one decimal place greater than the reporting precision indicated in the Air Monitoring Directive (AMD). The final 1-hour data values were calculated from final 5-minute data values and then rounded to reporting precision. The final 24-hour data values were calculated from final 1-hour values.

After data processing and validation, NO<sub>2</sub> concentrations were re-calculated from baseline-corrected NO<sub>x</sub> and NO concentrations. Specifically, the NO concentration was subtracted from the NO<sub>x</sub> concentration to determine the NO<sub>2</sub> concentration.

## 2.1 Revisions to ETS Electronic Transfer System – Data and Monthly Reports

There were no revisions to historical data stored at the Electronic Transfer System with this monthly report.

## 3.0 Operational Status

### 3.1 Continuous Monitoring

In January 2023, there were three instances that resulted in monitoring instruments operating less than 90% of the time.

1. The THC, NMHC, and CH<sub>4</sub> analyzer at the Ells River AMS operated for less than 90% of February 2023, which is a contravention of the Air Monitoring Directive (AMD) (2016, as amended), Chapter 6, Clause DQ 4-C. This incident was reported to Alberta Environment and Protected Areas (AEPA) on February 27, 2023 (reference number 409974).

This instrument is a semi-continuous gas chromatograph that requires the CH<sub>4</sub> and NMHC peaks to remain within the data capture windows. In early February, these peaks shifted outside of the optimal data capture windows, and as a result, the baseline shifted outside of the normal range. The WBEA performed maintenance to rectify the issue, including a column bakeout to remove impurities, however, the analyzer did not return to normal operation. The analyzer was replaced, and normal operation resumed on February 12, 2023. Data for the incident period was invalidated for a total of 90 hours of downtime.

2. The precipitation collector at the Bertha Ganter – Fort McKay air monitoring station (AMS) operated for less than 90% of February 2023, which is a contravention of the Air Monitoring Directive (AMD) (2016, as amended), Chapter 6, Clause DQ 4-C. This incident was reported to Alberta Environment and Protected Areas (AEPA) on March 27, 2023 (reference number 411026).

On February 23, a WBEA Field Technician identified that the data transfer program had stopped writing files to the data logger on February 20. The data logger was reset, and data transfer resumed on February 23 at 10:00 MST. Data for the incident period of February 20 through 23 was invalidated, resulting in a total of 82 hours of downtime.

### 3.2 Intermittent Monitoring

The results for time-integrated sampling of precipitation, PAH, VOC, ECOC, PM<sub>2.5</sub>, and PM<sub>10</sub> will be submitted in the 2023 Annual Report.

### 3.3 General Network Notes

The Ammonia (NH<sub>3</sub>) analyzer currently operates on a 0 to 2500 ppb operating range with a detection level of 5 ppb in the WBEA network. In data processing, values less than five ppb have been considered below detection levels and are reported as zero.

Total hydrocarbon (THC), non-methane hydrocarbon (NMHC), and methane (CH<sub>4</sub>) measurements are collected at some air monitoring stations in the WBEA network using the Thermo Environmental model 55i direct CH<sub>4</sub>/NMHC analyzer. This analyzer uses a Gas Chromatography (GC) based system, which resets

the baseline value at the start of every run. This may cause the ambient background to indicate a response below the expected 1.8 ppm background level. When all measurable criteria indicate valid data during the QAQC and validation process, the data is reported without any additional flags. However, a response below the expected 1.8 ppm triggers an investigation of the analyzer to determine if there is an issue.

Monitoring notes, including changes to monitoring locations, methods, or equipment, and any reporting or monitoring irregularities, for the continuous monitoring stations, are provided on a station-by-station basis. Notes of each interrupted event are provided in chronological order, and meteorological parameters are mentioned last.

### ***Station 1, Bertha Ganter – Fort McKay***

The NH<sub>3</sub> analyzer required additional time to stabilize to levels below ambient concentrations following the automated daily spans and routine monthly multipoint calibrations. Additional time is required for stabilization after exposure to high concentrations of NH<sub>3</sub> gas, this is an inherent behavior in the NH<sub>3</sub> analyzer operations due to the properties of the NH<sub>3</sub> gas. Data for 1 hour following the daily spans have been reported as invalid for a total of 28 hours this month.

Station power failure on February 10 affected the normal operations of all analyzers for 2 hours.

Stabilization of the CO analyzer post power failure on February 10 and 11 resulted in 7 hours of invalid data.

Cleaning of the sample manifold on February 16 interrupted the normal operations of all gaseous analyzers, except for the NH<sub>3</sub> analyzer, for 1 hour.

Unstable operations due to excessive baseline noise in the output signal of the NH<sub>3</sub> analyzer on February 15 and 24 resulted in 2 hours of invalid data.

Stabilization post replacement of the NH<sub>3</sub> analyzer on February 16 and 17 resulted in 14 hours of invalid data.

Unstable operations due to flatline in the output signal of the SO<sub>2</sub> analyzer on February 22 and 23 resulted in 21 hours of invalid data. Subsequent maintenance to reset the SO<sub>2</sub> analyzer on February 23 resulted in an additional 1 hour of downtime.

Maintenance to verify the daily QA check on February 23 interrupted the normal operations of the O<sub>3</sub> analyzer for 1 hour.

Maintenance to empty the precipitation collector bucket on February 8 resulted in 1 hour of invalid data.

Failure to record data of the precipitation collector on February 10 and 20 to 23 resulted in 83 hours of invalid data.

The surface leaf wetness sensor operated out-of-range on February 11 resulting in 2 hours of invalid data.

A flatline in the output signal of the temperature sensor at the 10-meter elevation on February 13 resulted in 1 hour of invalid data.

A flatline in the output signal of the wind sensor on February 15 resulted in 2 hours of invalid data.

The daily span check of all gaseous analyzers was outside the 10% AMD criteria on February 23 due to an interruption in the station calibrator configuration.

### ***Station 2, Mildred Lake***

Maintenance to bring the tower down on February 8 interrupted the normal operations of the wind sensor for 2 hours.

Intermittent flatlines in the output signal of the wind sensor throughout the month resulted in 4 hours of invalid data.

### ***Station 3, Lower Camp – Meteorology***

Failure to record data of all parameters throughout the month resulted in 45 hours of invalid data.

A flatline in the output signal of the wind sensor at 45-meter elevation on February 13 resulted in 2 hours of invalid data.

A flatline in the output signal of the wind sensor at 100-meter elevation on February 13 resulted in 3 hours of invalid data.

Intermittent flatlines in the output signal of the wind sensor at 163-meter throughout the month resulted in 16 hours of invalid data.

A flatline in the output signal of the temperature sensor at 20-meter elevation on February 21 and 25 resulted in 7 hours of invalid data.

A flatline in the output signal of the relative humidity and temperature sensor at 20-meter elevation on February 27 resulted in 5 hours of invalid data.

### ***Station 4, Buffalo Viewpoint***

Analyzer failure due to non-responsive output signal of the SO<sub>2</sub> analyzer from February 15 to 16 resulted in 22 hours of invalid data.

Maintenance to reboot the SO<sub>2</sub> analyzer on February 16 resulted in one hour of down time.

Maintenance to replace the support gas cylinder of the THC/NMHC/CH<sub>4</sub> analyzer on February 16 resulted in 2 hours of downtime.

Maintenance to clean the reaction cell on February 13, and the stabilization period before routine calibration on February 14 affected the normal operation of the NO<sub>2</sub> analyzer for 17 hours.

A flatline in the output signal of the wind sensor on February 13 and 14 resulted in 17 hours of down time.

### ***Station 5, Mannix***

A flatline in the output signal of the wind sensor at 45-meter throughout the month resulted in 4 hours of invalid data.

A flatline in the output signal of the wind sensor at 75-meter throughout the month resulted in 6 hours of invalid data.

A flatline in the output signal of the wind sensor at 90-meter throughout the month resulted in 3 hours of invalid data.

Relative humidity and temperatures can affect the performance of the SO<sub>x</sub> scrubbers in the H<sub>2</sub>S analyzer. During these events, the sulfur concentrations take a longer period to stabilize during the daily span checks. Therefore, the H<sub>2</sub>S span was outside of the 10% AMD criteria on February 2 and 22.

### ***Station 6, Patricia McInnes***

The NH<sub>3</sub> analyzer required additional time to stabilize to levels below ambient concentrations following the automated daily spans and routine monthly multipoint calibrations. NH<sub>3</sub> analyzers require additional time for stabilization after being exposed to high concentrations, this is due to the physical properties of the NH<sub>3</sub> gas. Data for 1 to 2 hours following each daily span has been reported as invalid for a total of 41 hours this month.

Cleaning of the sample manifold on February 2 interrupted the normal operations of the H<sub>2</sub>S, O<sub>3</sub>, SO<sub>2</sub>, and THC/NMHC/CH<sub>4</sub> analyzers for 2 hours.

Unstable operations due to excessive baseline drift in the output signal of the analyzer THC/NMHC/CH<sub>4</sub> on February 23 to 25 resulted in 61 hours of invalid data.

Maintenance to replace the sample pump on February 25 interrupted the normal operations of the THC/NMHC/CH<sub>4</sub> analyzer for 6 hours.

The TRS analyzer was not in service for 672 hours in February.

A flatline in the output signal of the wind sensor on February 13 to 15 resulted in 52 hours of invalid data.

### ***Station 7, Athabasca Valley***

Cleaning of the sample manifold on February 8 interrupted the normal operations of the NO<sub>2</sub>, SO<sub>2</sub>, THC/NMHC/CH<sub>4</sub>, and TRS analyzers for 1 hour.

### ***Station 8, Fort Chipewyan***

Maintenance to verify the daily QA check on February 3 interrupted the normal operations of the CO and CO<sub>2</sub> analyzers for 3 hours.

Analyzer failure due to a non-responsive SO<sub>2</sub> instrument on February 8 resulted in 9 hours of invalid data.

An internal audit on February 28 interrupted the normal operations of NO<sub>2</sub>, SO<sub>2</sub>, and TRS analyzers for 2 to 3 hours.

#### ***Station 9, Barge Landing***

Station power failure on February 10 affected the normal operations of all analyzers for 4 to 5 hours.

A flatline in the output signal of the wind sensor on February 22 resulted in 1 hour of invalid data.

#### ***Station 11, Lower Camp***

Cleaning of the sample manifold on February 8 interrupted the normal operations of the SO<sub>2</sub> and THC/NMHC/CH<sub>4</sub> analyzers for 2 hours.

A flatline in the output signal of the wind sensor on February 23 and 28 resulted in 3 hours of invalid data.

#### ***Station 13, Fort McKay South***

Station power failure on February 10 affected the normal operations of all analyzers for 1 to 2 hours.

Maintenance to replace the support gas cylinder of the THC/NMHC/CH<sub>4</sub> analyzer on February 16 resulted in 2 hours of downtime.

Intermittent flatlines in the output signal of the wind sensor throughout the month resulted in 4 hours of invalid data.

Automated daily zero-response checks of the O<sub>3</sub> analyzer did not meet WBEA's QC acceptance criteria for the month of February. Therefore, the calibrator zeros from the February, and March multi-point calibrations were used to validate the analyzer baseline response.

#### ***Station 14, Anzac***

Unstable operations due to excessive baseline drift in the output signal of the O<sub>3</sub> analyzer on February 10 and 20 resulted in 3 hours of invalid data.

A flatline in the output signal of the wind sensor on February 3, 4, and 11 resulted in 8 hours of invalid data.

The surface leaf wetness sensor operated out-of-range on February 13 resulting in 1 hour of invalid data.

#### ***Station 17, Wapasu***

Cleaning of the sample manifold on February 23 interrupted the normal operations of the H<sub>2</sub>S, O<sub>3</sub>, SO<sub>2</sub>, and THC analyzers for 1 hour.

A flatline in the output signal of the wind on February 1 and 28 resulted in 2 hours of invalid data.

#### ***Station 18, Stony Mountain***

Station operator activities on February 3 affected the normal operations of the SO<sub>2</sub> analyzer for 2 hours.

Maintenance to replace the support gas cylinder of the THC/NMHC/CH<sub>4</sub> analyzer on February 3 resulted in 2 hours of downtime.

Station operator activities on February 8 affected the normal operations of the TRS analyzer for 1 hour.

Cleaning of the sample manifold on February 22 interrupted the normal operations of the CO, CO<sub>2</sub>, O<sub>3</sub>, SO<sub>2</sub>, THC/NMHC/CH<sub>4</sub>, and TRS analyzers for 1 hour.

A flatline in the output signal of the wind on February 14 resulted in 1 hour of invalid data.

### ***Station 19, Firebag***

Unstable Operations of the SO<sub>2</sub> and THC analyzer on Feb 7 and 8 due to the sample line being disconnected to the manifold resulting on a total of 19 hours of downtime.

Station operator activities on February 8 affected the normal operations of the wind sensor for 2 hours.

Intermittent flatlines in the output signal of the wind sensor throughout the month resulted in 6 hours of invalid data.

Unstable operations due to the misaligned tower that affected the wind sensor readings throughout the month for 79 hours.

### ***Station 20, MacKay River***

Cleaning of the sample manifold on February 2 interrupted the normal operations of the H<sub>2</sub>S, SO<sub>2</sub>, THC and analyzers for 1 hour.

Maintenance to reset the logger and the modem on February 2 interrupted the normal operation of the H<sub>2</sub>S, SO<sub>2</sub>, THC and analyzers for 2 hours.

Maintenance to reset the logger and the modem on February 2 interrupted the normal operation of all meteorological sensors for 2 hours.

Maintenance to bring the tower down on February 14 interrupted the normal operations of the wind sensor for 1 hour.

Intermittent flatlines in the output signal of the wind sensor throughout the month resulted in 30 hours of invalid data.

Relative humidity and temperatures can affect the performance of the SO<sub>x</sub> scrubbers in the analyzer. During these events, the sulfur concentrations take a longer period to stabilize during the daily span checks. Therefore, the H<sub>2</sub>S span was outside of the 10% AMD criteria on February 2, 22, and 23.

### ***Station 21, Conklin***



Cleaning of the sample manifold on February 3 interrupted the normal operations of the NO<sub>2</sub>, SO<sub>2</sub>, THC/NMHC/CH<sub>4</sub>, and TRS analyzers for 2 hours.

Station operator activities on February 8 affected the normal operations of the wind sensor for 1 hour.

A flatline in the output signal of the wind sensor on February 14 resulted in 1 hour of invalid data.

Relative humidity and temperatures can affect the performance of the SO<sub>x</sub> scrubbers in the TRS analyzer. During these events, the sulfur concentrations take a longer period to stabilize during the daily span checks. Therefore, the TRS span was outside of the 10% AMD criteria for multiple days throughout the month of February.

Automated daily zero-response checks of the O<sub>3</sub> analyzer did not meet WBEA's QC acceptance criteria for the month of February. Therefore, the calibrator zeros from the January, February, and March multi-point calibrations were used to validate the analyzer baseline response.

#### ***Station 22, Janvier***

Cleaning of the sample manifold on February 24 interrupted the normal operations of the NO<sub>2</sub>, O<sub>3</sub>, SO<sub>2</sub>, and THC/NMHC/CH<sub>4</sub> analyzers for 1 hour.

A flatline in the output signal of the wind sensor on February 11 and 23 resulted in 2 hours of invalid data.

#### ***Station 23, Fort Hills***

Maintenance to replace the sample pump on February 14 interrupted the normal operations of the TRS analyzer for 6 hours.

Maintenance to reinitiate the daily QA check on February 24 interrupted the normal operations of the SO<sub>2</sub>, THC/NMHC/CH<sub>4</sub>, and TRS analyzer for 1 to 2 hours.

Unstable operations due to daily spans outside criteria on February 22 and 23 affected the normal operation of the NO<sub>2</sub> analyzer for 30 hours.

Maintenance to replace the NO<sub>2</sub> analyzer, and verification of the daily QA check on February 24 affected the normal operation of the instrument for 21 hours.

Intermittent flatlines in the output signal of the wind sensor throughout the month resulted in 6 hours of invalid data.

#### ***Station 25, Waskōw ohci Pimâtisiwin***

Station power cut-off since January 27 affected the normal operations of all analyzers and sensors on February for 672 hours.

#### ***Station 26, Christina Lake***

Cleaning of the sample manifold on February 15 interrupted the normal operations of the NO<sub>2</sub> and SO<sub>2</sub> analyzers for 2 hours.

Maintenance to reinitiate the daily QA check on February 16 interrupted the normal operations of the H<sub>2</sub>S analyzer for 2 hours.

Failure to record data of the NO<sub>2</sub> analyzer on February 27 resulted in 1 hour of invalid data.  
Station operator activities on February 15 affected the normal operations of the wind sensor for 2 hours.

The daily span check for the H<sub>2</sub>S analyzer was outside the 10% AMD criteria on February 16 due to an interruption in the station calibrator configuration.

### ***Station 27, Jackfish 2/3***

Failure to record data of all parameters on February 5 and 13 resulted in 2 hours of invalid data.

Cleaning of the sample manifold on February 14 interrupted the normal operations of the H<sub>2</sub>S and NO<sub>2</sub> analyzers for 1 hour.

Station operator activities on February 14 affected the normal operations of the wind sensor for 1 hour.

### ***Station 29, Surmont 2***

Maintenance to replace the station calibrator and verify the QA check interrupted the normal operations of the NO<sub>2</sub> analyzer for 3 hours.

Station operator activities on February 17 affected the normal operations of the wind sensor for 2 hours.

A flatline in the output signal of the wind sensor on February 23 and 28 resulted in 6 hours of invalid data.

The daily span check for the NO<sub>2</sub> analyzer was outside the 10% AMD criteria on February 18 due to an interruption in the station calibrator configuration.

### ***Station 30, Ells River***

Station power failure on February 10 affected the normal operations of all analyzers, and PM<sub>2.5</sub>, for 1 to 2 hours.

Unstable operations due to excessive baseline drift in the output signal of the THC/NMHC/CH<sub>4</sub> analyzer on February 8 through 11 resulted in 64 hours of invalid data.

Maintenance to condition the column and replace the analyzer on February 12 interrupted the normal operations of the THC/NMHC/CH<sub>4</sub> analyzer for 26 hours.

An internal audit on February 14 interrupted the normal operations of all air quality analyzers for 1 to 4 hours.

Cleaning of the sample manifold on February 15 interrupted the normal operations of the NO<sub>2</sub>, THC/NMHC/CH<sub>4</sub>, and TRS analyzers for 2 hours.

Maintenance to bring the tower down on February 15 interrupted the normal operations of the wind sensor for 2 hours.

Intermittent flatlines in the output signal of the wind sensor throughout the month resulted in 8 hours of invalid data.

### ***Station 506, Jackfish 1***

An internal audit on February 8 interrupted the normal operations of all air quality analyzers for 3 to 4 hours.

Maintenance to re-fill the SO<sub>2</sub> scrubber hydrator, and a subsequent multi-point verification check on February 13 interrupted the normal operations of the H<sub>2</sub>S analyzer for 5 hours.

Maintenance to verify the daily QA check on February 21 interrupted the normal operations of the H<sub>2</sub>S analyzer for 2 hours.

Maintenance to re-fill the SO<sub>2</sub> scrubber hydrator on February 22 interrupted the normal operations of the H<sub>2</sub>S analyzer for 3 hours.

Analyzer failure due to a non-responsive H<sub>2</sub>S analyzer from February 22 to 24 resulted in 45 hours of invalid data.

Maintenance to replace the H<sub>2</sub>S analyzer on February 24 resulted in 1 hour of invalid data.

A flatline in the output signal of the wind sensor on February 6 resulted in 10 hours of invalid data.

Relative humidity and temperatures can affect the performance of the SO<sub>x</sub> scrubbers in the analyzer. During these events, the sulfur concentrations take a longer period to stabilize during the daily span checks. Therefore, the H<sub>2</sub>S span was outside of the 10% AMD criteria for multiple days throughout February.

### ***Station 508, Kirby North***

Maintenance to complete a multi-point verification check of the THC analyzer on February 2 resulted in 7 hours of invalid data.

Unstable operations due to the inconsistent response of the H<sub>2</sub>S analyzer on February 13 and 14 resulted in 32 hours of invalid data.

Maintenance to re-fill the SO<sub>2</sub> scrubber hydrator, and a subsequent multi-point verification check on February 14 and 15 interrupted the normal operations of the H<sub>2</sub>S analyzer for 23 hours.

Station operator activities on February 2 affected the normal operations of the wind sensor for 6 hours.

A flatline in the output signal of the wind sensor on February 14 resulted in 3 hours of invalid data.



If additional information is required, please contact either Sanjay Prasad at (780) 799-8216 or the Wood Buffalo Environmental Association at (780) 799-4420.

Sincerely,

**Wood Buffalo Environmental Association**

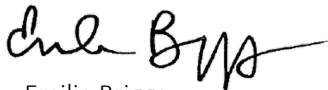
The representative of the Person Responsible for this monitoring program is Emilie Briggs, Operations Manager, WBEA.

Level one (L1) data review was completed by the Field Technicians responsible for each respective air monitoring station. Level two (L2) data validation, report preparation, and submission were completed by Asad Hidayat and Karina Fenwick of WBEA. The WBEA has retained the services of Whiteley Enterprises to conduct Level three (L3) review on its behalf. Contact information for WBEA staff is included below.

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I certify that I have reviewed and verified this report and that the information is complete, accurate and representative of the monitoring results, reporting timeframe, and the specified analysis, summarization, and reporting requirements.



Emilie Briggs  
Operations Manager

Wood Buffalo Environmental Association  
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Fort McMurray AB T9K 0K4  
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WOOD BUFFALO ENVIRONMENTAL ASSOCIATION  
MONTHLY AIR MONITORING SUMMARY

February 2023

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| APPROVAL NUMBERS | REPORT DATE                   |          |                    |                       |                           |                       |                           |
|------------------|-------------------------------|----------|--------------------|-----------------------|---------------------------|-----------------------|---------------------------|
|                  | MONTH                         | YEAR     |                    |                       |                           |                       |                           |
| 289664-00-00     | 02                            | 2023     |                    |                       |                           |                       |                           |
| 241311-00-00     | CONTINUOUS AMBIENT MONITORING |          |                    |                       |                           |                       |                           |
| 20809-02-00      |                               |          |                    |                       |                           |                       |                           |
| 149968-01-00     |                               |          |                    |                       |                           |                       |                           |
| 237382-00-00     |                               |          |                    | ONE-HOUR AVERAGE      |                           | 24-HOUR AVERAGE       |                           |
| 48522-01-00      | PARAMETER                     | STN. NO. | % TIME OPERATIONAL | MAXIMUM CONCENTRATION | NO. READINGS > REGULATION | MAXIMUM CONCENTRATION | NO. READINGS > REGULATION |
| 240008-00-00     | SO2(ppb)                      | 1        | 96                 | 78                    | 0                         | 6.8                   | 0                         |
| 48263-01-00      | SO2(ppb)                      | 2        | 100                | 53.8                  | 0                         | 9.5                   | 0                         |
| 224816-00-00     | SO2(ppb)                      | 4        | 97                 | 59.7                  | 0                         | 12.9                  | 0                         |
| 151469-01-00     | SO2(ppb)                      | 5        | 100                | 62.5                  | 0                         | 13.3                  | 0                         |
| 189942-00-00     | SO2(ppb)                      | 6        | 100                | 28.1                  | 0                         | 6.5                   | 0                         |
| 206355-00-00     | SO2(ppb)                      | 7        | 100                | 24.4                  | 0                         | 6.7                   | 0                         |
| 46586-00-00      | SO2(ppb)                      | 8        | 98                 | 4.0                   | 0                         | 1.9                   | 0                         |
| 73203-02-00      | SO2(ppb)                      | 9        | 99                 | 19.7                  | 0                         | 5.8                   | 0                         |
| 216466-01-00     | SO2(ppb)                      | 11       | 100                | 77.5                  | 0                         | 8.8                   | 0                         |
| 137467-01-00     | SO2(ppb)                      | 13       | 100                | 30.0                  | 0                         | 4.4                   | 0                         |
| 236394-00-00     | SO2(ppb)                      | 14       | 100                | 31.4                  | 0                         | 8.0                   | 0                         |
| 254465-00-00     | SO2(ppb)                      | 17       | 100                | 28.0                  | 0                         | 6.9                   | 0                         |
| 094-03-00        | SO2(ppb)                      | 18       | 100                | 9.9                   | 0                         | 3.3                   | 0                         |
| 80105-01-00      | SO2(ppb)                      | 19       | 97                 | 23.8                  | 0                         | 4.6                   | 0                         |
| 305529-00-00     | SO2(ppb)                      | 20       | 100                | 18.3                  | 0                         | 4.9                   | 0                         |
| 318401-00-00     | SO2(ppb)                      | 21       | 100                | 8.0                   | 0                         | 2.4                   | 0                         |
| 026-03-00        | SO2(ppb)                      | 22       | 100                | 7.9                   | 0                         | 3.1                   | 0                         |
| 364232-00-00     | SO2(ppb)                      | 23       | 100                | 33.7                  | 0                         | 4.7                   | 0                         |
| 228044-00-00     | SO2(ppb)                      | 25       | 0                  | --                    | 0                         | --                    | 0                         |
| 247548-00-00     | SO2(ppb)                      | 26       | 100                | 26.4                  | 0                         | 4.6                   | 0                         |
| 231302-00-00     | SO2(ppb)                      | 27       | 100                | 8.5                   | 0                         | 2.2                   | 0                         |
| 153125-01-00     | SO2(ppb)                      | 29       | 100                | 21.5                  | 0                         | 7.1                   | 0                         |
|                  | SO2(ppb)                      | 30       | 100                | 14.8                  | 0                         | 2.9                   | 0                         |
|                  | SO2(ppb)                      | 506      | 100                | 34.7                  | 0                         | 6.4                   | 0                         |
|                  | SO2(ppb)                      | 508      | 100                | 12.8                  | 0                         | 3.1                   | 0                         |
|                  | H2S(ppb)                      | 1        | 100                | 3.1                   | 0                         | 1.2                   | 0                         |
|                  | H2S(ppb)                      | 2        | 100                | 9.4                   | 0                         | 2.8                   | 0                         |
|                  | H2S(ppb)                      | 4        | 100                | 7.4                   | 0                         | 1.7                   | 0                         |
|                  | H2S(ppb)                      | 5        | 100                | 5.0                   | 0                         | 1.9                   | 0                         |
|                  | H2S(ppb)                      | 6        | 100                | 1.8                   | 0                         | 0.7                   | 0                         |
|                  | H2S(ppb)                      | 11       | 100                | 9.4                   | 0                         | 1.8                   | 0                         |
|                  | H2S(ppb)                      | 17       | 100                | 1.9                   | 0                         | 0.5                   | 0                         |
|                  | H2S(ppb)                      | 19       | 100                | 3.4                   | 0                         | 0.7                   | 0                         |
|                  | H2S(ppb)                      | 20       | 100                | 2.2                   | 0                         | 0.9                   | 0                         |
|                  | H2S(ppb)                      | 25       | 0                  | --                    | 0                         | --                    | 0                         |
|                  | H2S(ppb)                      | 26       | 100                | 1.0                   | 0                         | 0.3                   | 0                         |
|                  | H2S(ppb)                      | 27       | 100                | 1.5                   | 0                         | 0.3                   | 0                         |
|                  | H2S(ppb)                      | 29       | 100                | 1.1                   | 0                         | 0.5                   | 0                         |
|                  | H2S(ppb)                      | 506      | 91                 | 0.7                   | 0                         | 0.2                   | 0                         |
|                  | H2S(ppb)                      | 508      | 92                 | 0.8                   | 0                         | 0.3                   | 0                         |
|                  | TRS(ppb)                      | 1        | 100                | 3.6                   | 0                         | 1.7                   | 0                         |
|                  | TRS(ppb)                      | 6        | NaN                | --                    | 0                         | --                    | 0                         |
|                  | TRS(ppb)                      | 7        | 100                | 2.4                   | 0                         | 1.0                   | 0                         |
|                  | TRS(ppb)                      | 8        | 100                | 0.6                   | 0                         | 0.3                   | 0                         |
|                  | TRS(ppb)                      | 9        | 99                 | 3.7                   | 0                         | 1.5                   | 0                         |
|                  | TRS(ppb)                      | 13       | 100                | 2.6                   | 0                         | 1.4                   | 0                         |
|                  | TRS(ppb)                      | 14       | 100                | 1.5                   | 0                         | 0.6                   | 0                         |
|                  | TRS(ppb)                      | 18       | 100                | 0.6                   | 0                         | 0.3                   | 0                         |
|                  | TRS(ppb)                      | 21       | 100                | 0.6                   | 0                         | 0.5                   | 0                         |
|                  | TRS(ppb)                      | 22       | 100                | 0.5                   | 0                         | 0.2                   | 0                         |
|                  | TRS(ppb)                      | 23       | 99                 | 2.6                   | 0                         | 1.0                   | 0                         |
|                  | TRS(ppb)                      | 30       | 99                 | 2.2                   | 0                         | 1.0                   | 0                         |
|                  | THC(ppm)                      | 1        | 100                | 4.1                   | -                         | 3.2                   | -                         |
|                  | THC(ppm)                      | 2        | 100                | 4.3                   | -                         | 3.1                   | -                         |
|                  | THC(ppm)                      | 4        | 100                | 3.9                   | -                         | 2.7                   | -                         |
|                  | THC(ppm)                      | 5        | 100                | 5.1                   | -                         | 3.1                   | -                         |
|                  | THC(ppm)                      | 6        | 91                 | 2.6                   | -                         | 2.4                   | -                         |
|                  | THC(ppm)                      | 7        | 100                | 2.8                   | -                         | 2.5                   | -                         |
|                  | THC(ppm)                      | 9        | 99                 | 4.3                   | -                         | 3.0                   | -                         |
|                  | THC(ppm)                      | 11       | 100                | 3.8                   | -                         | 3.0                   | -                         |
|                  | THC(ppm)                      | 13       | 99                 | 4.5                   | -                         | 3.0                   | -                         |
|                  | THC(ppm)                      | 14       | 100                | 2.9                   | -                         | 2.2                   | -                         |

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION  
MONTHLY AIR MONITORING SUMMARY

February 2023

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| REPORT DATE      |              |                               |                    |                       |                           |                       |                           |  |
|------------------|--------------|-------------------------------|--------------------|-----------------------|---------------------------|-----------------------|---------------------------|--|
| MONTH            | YEAR         |                               |                    |                       |                           |                       |                           |  |
| 02               | 2023         | CONTINUOUS AMBIENT MONITORING |                    |                       |                           |                       |                           |  |
| APPROVAL NUMBERS | PARAMETER    | STN. NO.                      | % TIME OPERATIONAL | ONE-HOUR AVERAGE      |                           | 24-HOUR AVERAGE       |                           |  |
|                  |              |                               |                    | MAXIMUM CONCENTRATION | NO. READINGS > REGULATION | MAXIMUM CONCENTRATION | NO. READINGS > REGULATION |  |
| 289664-00-00     | THC(ppm)     | 17                            | 100                | 2.9                   | -                         | 2.4                   | -                         |  |
| 241311-00-00     | THC(ppm)     | 18                            | 100                | 2.2                   | -                         | 2.2                   | -                         |  |
| 20809-02-00      | THC(ppm)     | 19                            | 97                 | 2.7                   | -                         | 2.4                   | -                         |  |
| 149968-01-00     | THC(ppm)     | 20                            | 100                | 3.8                   | -                         | 2.7                   | -                         |  |
| 237382-00-00     | THC(ppm)     | 21                            | 100                | 2.3                   | -                         | 2.2                   | -                         |  |
| 48522-01-00      | THC(ppm)     | 22                            | 100                | 2.2                   | -                         | 2.1                   | -                         |  |
| 240008-00-00     | THC(ppm)     | 23                            | 100                | 6.0                   | -                         | 3.1                   | -                         |  |
| 48263-01-00      | THC(ppm)     | 29                            | 100                | 3.4                   | -                         | 2.4                   | -                         |  |
| 224816-00-00     | THC(ppm)     | 30                            | 86                 | 5.7                   | -                         | 3.2                   | -                         |  |
| 151469-01-00     | THC(ppm)     | 508                           | 99                 | 3.2                   | -                         | 2.6                   | -                         |  |
| 189942-00-00     | O3(ppb)      | 1                             | 99                 | 38.8                  | 0                         | 28.7                  | -                         |  |
| 206355-00-00     | O3(ppb)      | 4                             | 100                | 36.9                  | 0                         | 31.4                  | -                         |  |
| 46586-00-00      | O3(ppb)      | 6                             | 100                | 44.9                  | 0                         | 39.8                  | -                         |  |
| 73203-02-00      | O3(ppb)      | 7                             | 100                | 45.5                  | 0                         | 34.6                  | -                         |  |
| 216466-01-00     | O3(ppb)      | 8                             | 100                | 44.7                  | 0                         | 40.9                  | -                         |  |
| 137467-01-00     | O3(ppb)      | 13                            | 100                | 40.5                  | 0                         | 30.2                  | -                         |  |
| 236394-00-00     | O3(ppb)      | 14                            | 100                | 45.5                  | 0                         | 39.5                  | -                         |  |
| 254465-00-00     | O3(ppb)      | 17                            | 100                | 47.7                  | 0                         | 42.6                  | -                         |  |
| 094-03-00        | O3(ppb)      | 18                            | 100                | 43.7                  | 0                         | 41.2                  | -                         |  |
| 80105-01-00      | O3(ppb)      | 21                            | 100                | 45.3                  | 0                         | 41.0                  | -                         |  |
| 305529-00-00     | O3(ppb)      | 22                            | 100                | 46.5                  | 0                         | 43.9                  | -                         |  |
| 318401-00-00     | NO2(ppb)     | 1                             | 100                | 37.8                  | 0                         | 28.8                  | -                         |  |
| 026-03-00        | NO2(ppb)     | 4                             | 97                 | 45.6                  | 0                         | 27.6                  | -                         |  |
| 364232-00-00     | NO2(ppb)     | 6                             | 100                | 46.4                  | 0                         | 25.7                  | -                         |  |
| 228044-00-00     | NO2(ppb)     | 7                             | 100                | 40.5                  | 0                         | 24.7                  | -                         |  |
| 247548-00-00     | NO2(ppb)     | 8                             | 100                | 33.6                  | 0                         | 7.8                   | -                         |  |
| 231302-00-00     | NO2(ppb)     | 9                             | 99                 | 52.9                  | 0                         | 37.8                  | -                         |  |
| 153125-01-00     | NO2(ppb)     | 13                            | 100                | 37.6                  | 0                         | 27.2                  | -                         |  |
|                  | NO2(ppb)     | 14                            | 100                | 36.5                  | 0                         | 11.8                  | -                         |  |
|                  | NO2(ppb)     | 17                            | 100                | 30.0                  | 0                         | 11.3                  | -                         |  |
|                  | NO2(ppb)     | 18                            | 100                | 13.5                  | 0                         | 4.7                   | -                         |  |
|                  | NO2(ppb)     | 19                            | 100                | 63.3                  | 0                         | 18.0                  | -                         |  |
|                  | NO2(ppb)     | 20                            | 100                | 34.3                  | 0                         | 22.9                  | -                         |  |
|                  | NO2(ppb)     | 21                            | 100                | 21.0                  | 0                         | 5.1                   | -                         |  |
|                  | NO2(ppb)     | 22                            | 100                | 13.0                  | 0                         | 5.3                   | -                         |  |
|                  | NO2(ppb)     | 23                            | 92                 | 55.5                  | 0                         | 31.0                  | -                         |  |
|                  | NO2(ppb)     | 26                            | 100                | 28.1                  | 0                         | 10.9                  | -                         |  |
|                  | NO2(ppb)     | 27                            | 100                | 12.6                  | 0                         | 5.2                   | -                         |  |
|                  | NO2(ppb)     | 29                            | 100                | 28.4                  | 0                         | 11.1                  | -                         |  |
|                  | NO2(ppb)     | 30                            | 99                 | 41.0                  | 0                         | 23.6                  | -                         |  |
|                  | NO2(ppb)     | 506                           | 99                 | 15.0                  | 0                         | 5.8                   | -                         |  |
|                  | NO2(ppb)     | 508                           | 100                | 18.4                  | 0                         | 6.2                   | -                         |  |
|                  | CO(ppm)      | 1                             | 99                 | 0.4                   | 0                         | 0.3                   | -                         |  |
|                  | CO(ppm)      | 7                             | 100                | 1.0                   | 0                         | 0.3                   | -                         |  |
|                  | CO(ppm)      | 8                             | 100                | 0.1                   | 0                         | 0.1                   | -                         |  |
|                  | CO(ppm)      | 18                            | 100                | 0.2                   | 0                         | 0.2                   | -                         |  |
|                  | CO2(ppm)     | 1                             | 100                | 465.4                 | -                         | 448.1                 | -                         |  |
|                  | CO2(ppm)     | 8                             | 100                | 450.5                 | -                         | 445.0                 | -                         |  |
|                  | CO2(ppm)     | 18                            | 100                | 452.4                 | -                         | 449.9                 | -                         |  |
|                  | NH3(ppb)     | 1                             | 93                 | 0.0                   | 0                         | 0.0                   | -                         |  |
|                  | NH3(ppb)     | 6                             | 94                 | 0.0                   | 0                         | 0.0                   | -                         |  |
|                  | PM2.5(ug/m3) | 1                             | 100                | 52.0                  | 0                         | 12.8                  | 0                         |  |
|                  | PM2.5(ug/m3) | 4                             | 100                | 49.9                  | 0                         | 15.0                  | 0                         |  |
|                  | PM2.5(ug/m3) | 6                             | 100                | 23.0                  | 0                         | 12.0                  | 0                         |  |
|                  | PM2.5(ug/m3) | 7                             | 100                | 64.5                  | 0                         | 12.1                  | 0                         |  |
|                  | PM2.5(ug/m3) | 8                             | 100                | 18.5                  | 0                         | 5.4                   | 0                         |  |
|                  | PM2.5(ug/m3) | 9                             | 99                 | 41.6                  | 0                         | 17.3                  | 0                         |  |
|                  | PM2.5(ug/m3) | 13                            | 100                | 23.8                  | 0                         | 11.8                  | 0                         |  |
|                  | PM2.5(ug/m3) | 14                            | 100                | 214.3                 | 2                         | 23.9                  | 0                         |  |
|                  | PM2.5(ug/m3) | 17                            | 100                | 10.5                  | 0                         | 6.3                   | 0                         |  |
|                  | PM2.5(ug/m3) | 18                            | 100                | 24.2                  | 0                         | 6.8                   | 0                         |  |
|                  | PM2.5(ug/m3) | 21                            | 100                | 21.6                  | 0                         | 8.1                   | 0                         |  |
|                  | PM2.5(ug/m3) | 22                            | 100                | 32.9                  | 0                         | 8.0                   | 0                         |  |
|                  | PM2.5(ug/m3) | 23                            | 100                | 46.7                  | 0                         | 16.2                  | 0                         |  |

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION  
MONTHLY AIR MONITORING SUMMARY

February 2023

Page 3 of 3

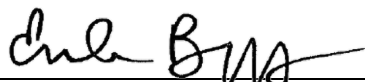
Created: Aug 02 2023 09:30

REPORT DATE

| MONTH | YEAR |
|-------|------|
| 02    | 2023 |

CONTINUOUS AMBIENT MONITORING

| APPROVAL NUMBERS | PARAMETER    | STN. NO. | % TIME OPERATIONAL | ONE-HOUR AVERAGE      |                           | 24-HOUR AVERAGE       |                           |
|------------------|--------------|----------|--------------------|-----------------------|---------------------------|-----------------------|---------------------------|
|                  |              |          |                    | MAXIMUM CONCENTRATION | NO. READINGS > REGULATION | MAXIMUM CONCENTRATION | NO. READINGS > REGULATION |
| 289664-00-00     | PM2.5(ug/m3) | 29       | 100                | 13.9                  | 0                         | 8.8                   | 0                         |
| 241311-00-00     | PM2.5(ug/m3) | 30       | 100                | 14.5                  | 0                         | 9.5                   | 0                         |
| 20809-02-00      | WS(km/h)     | 1        | 100                | -                     | -                         | -                     | -                         |
| 149968-01-00     | WS(km/h)     | 2        | 99                 | -                     | -                         | -                     | -                         |
| 237382-00-00     | WS(km/h)     | 4        | 97                 | -                     | -                         | -                     | -                         |
| 48522-01-00      | WS(km/h)     | 5        | 100                | -                     | -                         | -                     | -                         |
| 240008-00-00     | WS(km/h)     | 6        | 92                 | -                     | -                         | -                     | -                         |
| 48263-01-00      | WS(km/h)     | 7        | 100                | -                     | -                         | -                     | -                         |
| 224816-00-00     | WS(km/h)     | 8        | 100                | -                     | -                         | -                     | -                         |
| 151469-01-00     | WS(km/h)     | 9        | 100                | -                     | -                         | -                     | -                         |
| 189942-00-00     | WS(km/h)     | 11       | 100                | -                     | -                         | -                     | -                         |
| 206355-00-00     | WS(km/h)     | 13       | 99                 | -                     | -                         | -                     | -                         |
| 46586-00-00      | WS(km/h)     | 14       | 99                 | -                     | -                         | -                     | -                         |
| 73203-02-00      | WS(km/h)     | 17       | 100                | -                     | -                         | -                     | -                         |
| 216466-01-00     | WS(km/h)     | 18       | 100                | -                     | -                         | -                     | -                         |
| 137467-01-00     | WS(km/h)     | 19       | 87                 | -                     | -                         | -                     | -                         |
| 236394-00-00     | WS(km/h)     | 20       | 95                 | -                     | -                         | -                     | -                         |
| 254465-00-00     | WS(km/h)     | 21       | 100                | -                     | -                         | -                     | -                         |
| 094-03-00        | WS(km/h)     | 22       | 100                | -                     | -                         | -                     | -                         |
| 80105-01-00      | WS(km/h)     | 23       | 99                 | -                     | -                         | -                     | -                         |
| 318401-00-00     | WS(km/h)     | 25       | 0                  | -                     | -                         | -                     | -                         |
| 026-03-00        | WS(km/h)     | 26       | 100                | -                     | -                         | -                     | -                         |
| 364232-00-00     | WS(km/h)     | 27       | 100                | -                     | -                         | -                     | -                         |
| 228044-00-00     | WS(km/h)     | 29       | 99                 | -                     | -                         | -                     | -                         |
| 247548-00-00     | WS(km/h)     | 30       | 99                 | -                     | -                         | -                     | -                         |
| 231302-00-00     | WS(km/h)     | 506      | 99                 | -                     | -                         | -                     | -                         |
| 153125-01-00     | WS(km/h)     | 508      | 99                 | -                     | -                         | -                     | -                         |



SIGNATURE OF ASSOCIATION REPRESENTATIVE

FOR ALBERTA ENVIRONMENT USE ONLY





## **WOOD BUFFALO ENVIRONMENTAL ASSOCIATION**

CONTINUOUS AMBIENT AIR QUALITY  
MONITORING PROGRAM  
MONTHLY REPORT

### **AMS01 BERTHA GANTER - FORT MCKAY FEBRUARY 2023**

Operations, Data Collection,  
QA/QC, Data Validation and Reporting by:  
Wood Buffalo Environmental Association  
Fort McMurray, Alberta

March 31, 2023

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - FORT MCKAY - BERTHA GANTER (AMS01)  
FEBRUARY 2023

MONTHLY SUMMARY

| Parameter                             | Hours of Data | Hours of Calibration | Hours without Data | Operational Time | Maximum 1-Hour Value | 1-Hour Exceedances | Maximum 24-Hour Value | 24-Hour Exceedances |
|---------------------------------------|---------------|----------------------|--------------------|------------------|----------------------|--------------------|-----------------------|---------------------|
| SO2(ppb) Average                      | 616           | 31                   | 56                 | 96.28            | 77.5                 | 0                  | 6.8                   | 0                   |
| H2S(ppb) Average                      | 634           | 35                   | 38                 | 99.55            | 3.1                  | 0                  | 1.2                   | 0                   |
| TRS(ppb) Average                      | 635           | 34                   | 37                 | 99.55            | 3.6                  | 0                  | 1.7                   | 0                   |
| THC(ppm) Average                      | 634           | 35                   | 38                 | 99.55            | 4.1                  | -                  | 3.2                   | -                   |
| NMHC(ppm) Average                     | 634           | 35                   | 38                 | 99.55            | 0.375                | -                  | 0.192                 | -                   |
| CH4(ppm) Average                      | 634           | 35                   | 38                 | 99.55            | 3.8                  | -                  | 3                     | -                   |
| O3 (ppb) Average                      | 637           | 31                   | 35                 | 99.4             | 38.8                 | 0                  | 28.7                  | -                   |
| NO2 (ppb) Average                     | 636           | 33                   | 36                 | 99.55            | 37.8                 | 0                  | 28.8                  | -                   |
| NO (ppb) Average                      | 636           | 33                   | 36                 | 99.55            | 101.4                | -                  | 44.8                  | -                   |
| NOX (ppb) Average                     | 636           | 33                   | 36                 | 99.55            | 139.2                | -                  | 73.7                  | -                   |
| NH3 (ppb) Average                     | 580           | 46                   | 92                 | 93.15            | 0                    | 0                  | 0                     | -                   |
| PM2.5 (ug/m3) Average                 | 669           | 1                    | 3                  | 99.7             | 52                   | 0                  | 12.8                  | 0                   |
| CO(ppm) Average                       | 629           | 33                   | 43                 | 98.51            | 0.4                  | 0                  | 0.3                   | 0                   |
| CO2(ppm) Average                      | 637           | 32                   | 35                 | 99.55            | 465.4                | 0                  | 448.1                 | 0                   |
| Temperature 2 m (C) Average           | 672           | 0                    | 0                  | 100              | 3.5                  | -                  | -1.8                  | -                   |
| Temperature 10 m (C) Average          | 671           | 0                    | 1                  | 99.85            | 3.6                  | -                  | -1.6                  | -                   |
| Relative Humidity (%) Average         | 672           | 0                    | 0                  | 100              | 95.1                 | -                  | 89.1                  | -                   |
| Wind Speed 10 m (km/h) Average        | 670           | 0                    | 2                  | 99.7             | 30                   | -                  | 14                    | -                   |
| Wind Direction 10 m (deg) Average     | 670           | 0                    | 2                  | 99.7             | -                    | -                  | -                     | -                   |
| Precipitation (mm) Total              | 588           | 0                    | 84                 | 87.5             | 1.3                  | -                  | 7.9                   | -                   |
| Leaf Wetness (% of range) Average     | 670           | 0                    | 2                  | 99.7             | 88.6                 | -                  | 14.1                  | -                   |
| Global Solar Radiation (W/m2) Average | 672           | 0                    | 0                  | 100              | 461.2                | -                  | 118.3                 | -                   |

Note : Operational time includes periods of data collection and instrument calibration

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - BERTHA GANTER FORT MCKAY (AMS01)  
 FEBRUARY 2023

MONTHLY SUMMARY FOR AIR QUALITY/ METEOROLOGICAL MONITORING MEASUREMENTS

| Parameter                             | Number | Mean   | StnDev | Total | Percentile |       |       |        |       |       |       |
|---------------------------------------|--------|--------|--------|-------|------------|-------|-------|--------|-------|-------|-------|
|                                       |        |        |        |       | Min        | P10   | Q1    | Median | Q3    | P90   | Max   |
| SO2 (ppb) Average                     | 616    | 1.25   | 4.3    | -     | 0          | 0     | 0.1   | 0.2    | 0.8   | 2.8   | 77.5  |
| H2S (ppb) Average                     | 634    | 0.39   | 0.4    | -     | 0          | 0.1   | 0.1   | 0.2    | 0.5   | 1     | 3.1   |
| TRS (ppb) Average                     | 635    | 0.7    | 0.4    | -     | 0.3        | 0.4   | 0.5   | 0.5    | 0.7   | 1.3   | 3.6   |
| THC (ppm) Average                     | 634    | 2.3    | 0.3    | -     | 2          | 2     | 2.1   | 2.2    | 2.4   | 2.7   | 4.1   |
| NMHC(ppm) Average                     | 634    | 0.057  | 0.067  | -     | 0          | 0     | 0     | 0      | 0.1   | 0.2   | 0.375 |
| CH4(ppm) Average                      | 634    | 2.25   | 0.3    | -     | 2          | 2     | 2.1   | 2.2    | 2.3   | 2.5   | 3.8   |
| O3 (ppb) Average                      | 637    | 15.62  | 10.9   | -     | 0.3        | 0.9   | 4.7   | 15.9   | 24.6  | 29.4  | 38.8  |
| NO2 (ppb) Average                     | 636    | 16.2   | 9.6    | -     | 0          | 3.7   | 8.3   | 15.5   | 24.2  | 30.1  | 37.8  |
| NO (ppb) Average                      | 636    | 8.71   | 15.7   | -     | 0          | 0     | 0     | 2.1    | 10.8  | 25.1  | 101.4 |
| NOX (ppb) Average                     | 636    | 24.9   | 22.5   | -     | 0          | 4.1   | 10.2  | 18.1   | 32.9  | 54.2  | 139.2 |
| NH3 (ppb) Average                     | 580    | 0      | 0      | -     | 0          | 0     | 0     | 0      | 0     | 0     | 0     |
| PM2.5 (ug/m3) Average                 | 669    | 6.67   | 4.9    | -     | 0.5        | 2.3   | 3.6   | 5.5    | 8.1   | 11.8  | 52    |
| CO(ppm) Average                       | 629    | 0.2    | 0      | -     | 0.1        | 0.2   | 0.2   | 0.2    | 0.2   | 0.3   | 0.4   |
| CO2(ppm) Average                      | 637    | 435.68 | 8.8    | -     | 414.8      | 425.3 | 430.2 | 434.2  | 440.2 | 448.6 | 465.4 |
| Temperature 2 m (C) Average           | 672    | -16.44 | 9.2    | -     | -38.2      | -30.3 | -23.2 | -16.1  | -9.4  | -5.8  | 3.5   |
| Temperature 10 m (C) Average          | 671    | -16.14 | 8.9    | -     | -36.6      | -29.1 | -22.3 | -15.7  | -9.5  | -5.6  | 3.6   |
| Relative Humidity (%) Average         | 672    | 72.98  | 10.3   | -     | 43.5       | 59.3  | 67    | 73.2   | 80.7  | 85.6  | 95.1  |
| Wind Speed 10 m (km/h) Average        | 670    | 5.9    | 4      | -     | 0          | 2     | 3     | 5      | 8     | 12    | 30    |
| Wind Direction 10 m (deg) Average     | 670    | -      | -      | -     | -          | -     | -     | -      | -     | -     | -     |
| Precipitation (mm) Total              | 588    | -      | -      | 20.29 | -          | -     | -     | -      | -     | -     | -     |
| Leaf Wetness (% of range) Average     | 670    | 2.97   | 6.2    | -     | 0          | 0     | 0     | 1      | 4.8   | 6.6   | 88.6  |
| Global Solar Radiation (W/m2) Average | 672    | 63.22  | 109.9  | -     | 0          | 0     | 0     | 0      | 85.4  | 251.6 | 461.2 |

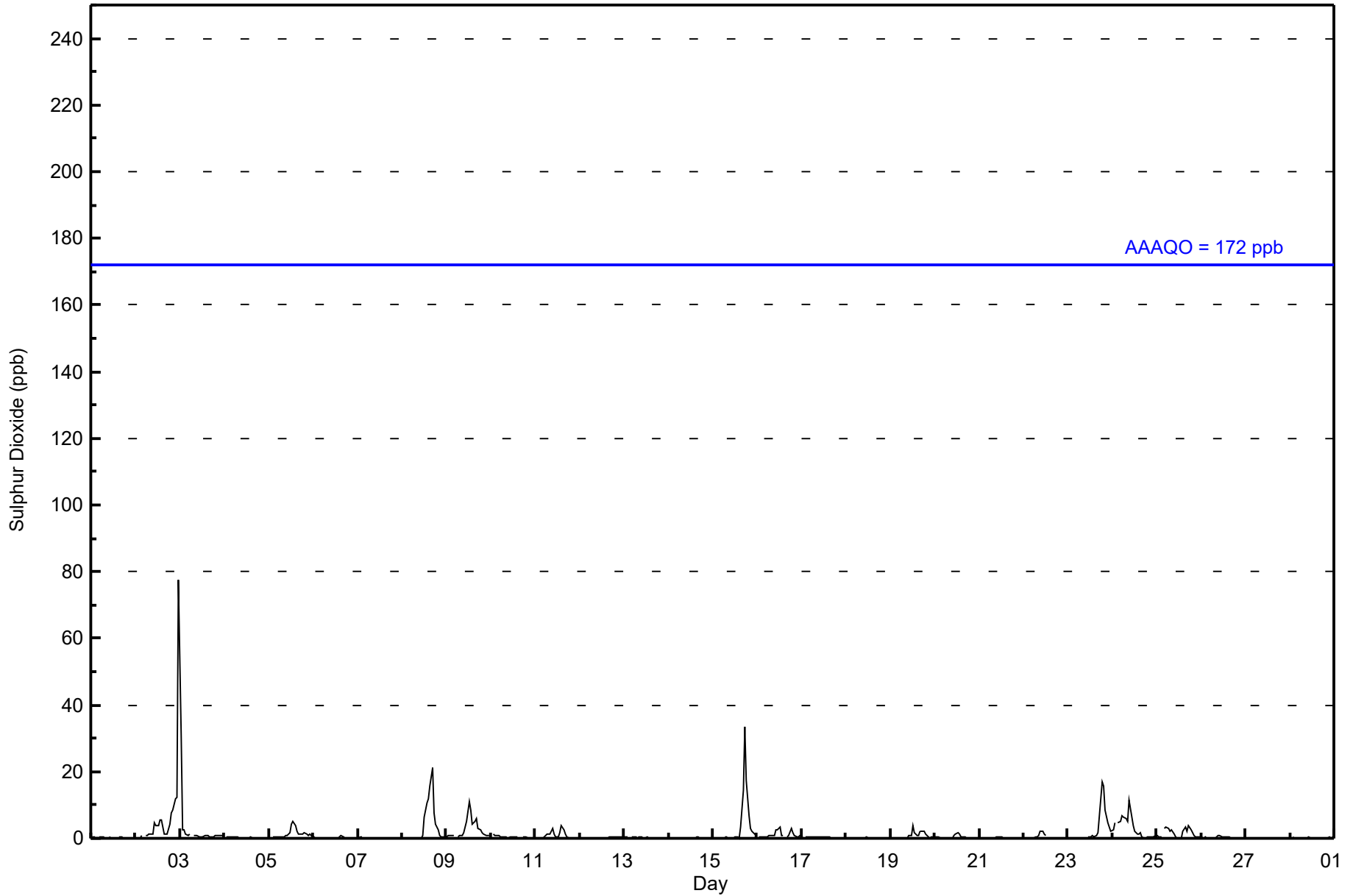
WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - BERTHA GANTER FORT MCKAY (AMS01)  
FEBRUARY 2023

OPERATIONAL NOTES

| Parameter                          | Period<br>Start   | Period<br>End     | Duration<br>(Hours) | Notes   |
|------------------------------------|-------------------|-------------------|---------------------|---|
| AIR QUALITY ANALYZERS              | 10 Feb 2023 16:00 | 10 Feb 2023 17:00 | 2                   | Station power failure                                   |
| ALL GASEOUS ANALYZERS (except NH3) | 16 Feb 2023 16:00 | 16 Feb 2023 16:00 | 1                   | Maintenance - sample manifold cleaned                   |
| SO2                                | 22 Feb 2023 14:00 | 23 Feb 2023 10:00 | 21                  | Unstable Operation - flatline in analyzer output signal |
| SO2                                | 23 Feb 2023 11:00 | 23 Feb 2023 11:00 | 1                   | Maintenance - analyzer rebooted                         |
| O3                                 | 23 Feb 2023 11:00 | 23 Feb 2023 11:00 | 1                   | Maintenance - reinitiated daily QA check                |
| NH3                                | 01 Feb 2023 02:00 | 28 Feb 2023 05:00 | 28                  | Stabilization after daily QA check                      |
| NH3                                | 15 Feb 2023 13:00 | 15 Feb 2023 13:00 | 1                   | Unstable Operation - excessive baseline noise           |
| NH3                                | 16 Feb 2023 23:00 | 17 Feb 2023 12:00 | 14                  | Maintenance - stabilization post analyzer replacement   |
| NH3                                | 24 Feb 2023 05:00 | 24 Feb 2023 05:00 | 1                   | Unstable Operation - excessive baseline noise           |
| CO                                 | 10 Feb 2023 18:00 | 11 Feb 2023 00:00 | 7                   | Stabilization after station power outage                |
| Temperature 10 m                   | 13 Feb 2023 06:00 | 13 Feb 2023 06:00 | 1                   | Flat line in sensor output signal                       |
| Wind Speed, Wind Direction         | 15 Feb 2023 20:00 | 15 Feb 2023 21:00 | 2                   | Flat line in sensor output signal - Sensor frozen       |
| Precipitation Collector            | 08 Feb 2023 15:00 | 08 Feb 2023 15:00 | 1                   | Maintenance - bucket emptied                            |
| Precipitation Collector            | 10 Feb 2023 16:00 | 10 Feb 2023 16:00 | 1                   | DAS Failure - data not recorded                         |
| Precipitation Collector            | 20 Feb 2023 01:00 | 23 Feb 2023 10:00 | 82                  | DAS Failure - data not recorded                         |
| Surface Leaf Wetness               | 11 Feb 2023 13:00 | 11 Feb 2023 14:00 | 2                   | Sensor operated out of range                            |



| Number of Exceedences (AAAQO):                  |                               | 1-hr: 0   | 24-hr: 0 | Hours in Service: 672 |     |                 |     |     |     |                         |      |     |      |                    |      |      |      |      |                                |      | 672  |      |      |      |               |                 |     |
|---|-------------------------------|---|----------|-----------------------|-----|-----------------|-----|-----|-----|-------------------------|------|-----|------|--------------------|------|------|------|------|--------------------------------|------|------|------|------|------|---------------|-----------------|-----|
| Maximum Value: 77.5 ppb on Feb 3 00:00          |                               | Maximum Daily Average: 6.8 ppb on Feb 2   |          |                       |     |                 |     |     |     |                         |      |     |      |                    |      |      |      |      | Hours of Data: 616             |      |      |      |      |      |               |                 |     |
| Minimum Value: 0.0 ppb on Feb 1 20:00           |                               | Minimum Daily Average: 0.0 ppb on Feb 18  |          |                       |     |                 |     |     |     |                         |      |     |      |                    |      |      |      |      | Hours of Missing Data: 56      |      |      |      |      |      |               |                 |     |
| Maximum Diurnal Average: 3.2 ppb at hour 24     |                               | Minimum Diurnal Average: 0.4 ppb at hour 3  |          |                       |     |                 |     |     |     |                         |      |     |      |                    |      |      |      |      | Hours of Calibration: 31       |      |      |      |      |      |               |                 |     |
| Monthly Average: 1.25 ppb                       |                               | Percentiles: P <sub>1</sub> = 0.0 P <sub>10</sub> = 0.0 Q <sub>1</sub> = 0.1 Median = 0.2 Q <sub>3</sub> = 0.8 P <sub>90</sub> = 2.8 P <sub>99</sub> = 15.8 |          |                       |     |                 |     |     |     |                         |      |     |      |                    |      |      |      |      | Percent Operational Time: 96.3 |      |      |      |      |      |               |                 |     |
| Day   | Hourly Period Ending At (MST) |   |          |                       |     |                 |     |     |     |                         |      |     |      |                    |      |      |      |      |                                |      |      |      |      |      | Daily Average | Daily Maximum   |     |
|   | 1                             | 2   | 3        | 4                     | 5   | 6               | 7   | 8   | 9   | 10                      | 11   | 12  | 13   | 14                 | 15   | 16   | 17   | 18   | 19                             | 20   | 21   | 22   | 23   | 24   |               |                 |     |
| 1-Feb   | 0.3                           | 0.4   | 0.3      | Z                     | 0.3 | 0.2             | 0.3 | 0.2 | 0.1 | 0.1                     | 0.2  | C   | C    | C                  | C    | 0.5  | 0.2  | 0.0  | 0.0                            | 0.0  | 0.0  | 0.0  | 0.0  | 0.2  | 0.5           |                 |     |
| 2-Feb   | 0.0                           | 0.0   | 0.0      | 0.6                   | Z   | 0.8             | 1.0 | 1.5 | 1.4 | 1.1                     | 4.6  | 3.8 | 3.6  | 5.4                | 5.7  | 1.4  | 1.3  | 1.4  | 4.3                            | 7.7  | 8.5  | 11.7 | 12.3 | 77.5 | 6.8           | 77.5            |     |
| 3-Feb   | 30.8                          | 2.6   | 2.7      | 1.4                   | 1.0 | 1.2             | Z   | 0.9 | 1.0 | 0.9                     | 0.6  | 0.5 | 0.6  | 0.9                | 0.9  | 0.8  | 0.5  | 0.6  | 0.6                            | 0.8  | 0.9  | 0.8  | 0.7  | 0.7  | 2.3           | 30.8            |     |
| 4-Feb   | Z                             | 0.5   | 0.6      | 0.5                   | 0.3 | 0.3             | 0.4 | 0.3 | 0.2 | 0.2                     | 0.2  | 0.2 | 0.2  | 0.2                | 0.2  | 0.1  | 0.0  | 0.0  | 0.0                            | 0.0  | 0.0  | 0.1  | 0.1  | 0.1  | 0.2           | 0.6             |     |
| 5-Feb   | 0.4                           | Z   | 0.3      | 0.5                   | 0.4 | 0.3             | 0.4 | 0.5 | 0.6 | 0.8                     | 0.7  | 1.7 | 4.2  | 5.0                | 3.8  | 2.1  | 1.4  | 1.4  | 1.3                            | 1.7  | 1.3  | 0.8  | 1.5  | 1.0  | 1.4           | 5.0             |     |
| 6-Feb   | 0.3                           | 0.2   | Z        | 0.1                   | 0.0 | 0.1             | 0.0 | 0.0 | 0.0 | 0.1                     | 0.0  | 0.0 | 0.0  | 0.0                | 0.5  | 0.7  | 0.2  | 0.2  | 0.1                            | 0.1  | 0.1  | 0.1  | 0.1  | 0.1  | 0.1           | 0.7             |     |
| 7-Feb   | 0.2                           | 0.3   | 0.4      | Z                     | 0.1 | 0.1             | 0.0 | 0.0 | 0.0 | 0.1                     | 0.1  | 0.0 | 0.0  | 0.0                | 0.0  | 0.0  | 0.0  | 0.0  | 0.0                            | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.1           | 0.4             |     |
| 8-Feb   | 0.0                           | 0.0   | 0.0      | 0.0                   | Z   | 0.1             | 0.0 | 0.0 | 0.0 | 0.0                     | 0.1  | 0.7 | 6.5  | 10.6               | 11.9 | 15.7 | 21.1 | 7.8  | 4.2                            | 2.6  | 0.9  | 0.5  | 0.5  | 0.4  | 3.6           | 21.1            |     |
| 9-Feb   | 0.6                           | 0.9   | 0.8      | 0.7                   | 0.8 | Z               | 0.6 | 0.8 | 1.0 | 1.9                     | 3.5  | 5.1 | 11.1 | 8.3                | 4.3  | 5.0  | 5.8  | 3.0  | 2.4                            | 1.6  | 1.2  | 1.0  | 1.0  | 1.0  | 2.7           | 11.1            |     |
| 10-Feb  | Z                             | 1.2   | 0.9      | 0.8                   | 0.7 | 0.5             | 0.3 | 0.2 | 0.3 | 0.2                     | 0.3  | 0.3 | 0.2  | 0.3                | 0.3  | PF   | PF   | 0.3  | 0.3                            | 0.2  | 0.2  | 0.2  | 0.2  | 0.2  | 0.4           | 1.2             |     |
| 11-Feb  | 0.2                           | Z   | 0.2      | 0.2                   | 0.2 | 0.3             | 1.1 | 1.2 | 1.4 | 3.0                     | 1.2  | 0.6 | 0.6  | 1.7                | 3.6  | 2.5  | 1.1  | 0.2  | 0.1                            | 0.2  | 0.1  | 0.1  | 0.1  | 0.0  | 0.9           | 3.6             |     |
| 12-Feb  | 0.0                           | 0.0   | Z        | 0.0                   | 0.0 | 0.0             | 0.1 | 0.0 | 0.1 | 0.2                     | 0.1  | 0.1 | 0.2  | 0.1                | 0.1  | 0.2  | 0.2  | 0.4  | 0.3                            | 0.4  | 0.5  | 0.5  | 0.4  | 0.3  | 0.2           | 0.5             |     |
| 13-Feb  | 0.3                           | 0.5   | 0.4      | Z                     | 0.4 | 0.3             | 0.2 | 0.2 | 0.3 | 0.2                     | 0.2  | 0.2 | 0.2  | 0.1                | 0.2  | 0.2  | 0.2  | 0.2  | 0.1                            | 0.1  | 0.1  | 0.1  | 0.1  | 0.1  | 0.2           | 0.5             |     |
| 14-Feb  | 0.1                           | 0.1   | 0.1      | 0.1                   | Z   | 0.1             | 0.1 | 0.0 | 0.1 | 0.1                     | 0.1  | 0.0 | 0.1  | 0.1                | 0.1  | 0.2  | 0.2  | 0.1  | 0.1                            | 0.0  | 0.0  | 0.1  | 0.0  | 0.0  | 0.1           | 0.2             |     |
| 15-Feb  | 0.0                           | 0.0   | 0.0      | 0.0                   | 0.1 | Z               | 0.4 | 0.2 | 0.1 | 0.0                     | 0.0  | 0.1 | 0.4  | 0.3                | 0.2  | 3.3  | 14.2 | 33.6 | 17.6                           | 6.9  | 2.8  | 2.1  | 1.6  | 0.7  | 3.7           | 33.6            |     |
| 16-Feb  | Z                             | 0.6   | 0.5      | 0.5                   | 0.6 | 0.6             | 0.7 | 0.7 | 0.7 | 0.7                     | 2.7  | 2.4 | 3.3  | 1.0                | 0.8  | M    | 0.5  | 0.8  | 2.9                            | 1.8  | 0.7  | 0.5  | 0.6  | 0.7  | 1.1           | 3.3             |     |
| 17-Feb  | 0.6                           | Z   | 0.5      | 0.5                   | 0.5 | 0.5             | 0.3 | 0.3 | 0.4 | 0.5                     | 0.4  | 0.4 | 0.4  | 0.3                | 0.4  | 0.3  | 0.1  | 0.1  | 0.1                            | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.3           | 0.6             |     |
| 18-Feb  | 0.0                           | 0.0   | Z        | 0.0                   | 0.0 | 0.0             | 0.0 | 0.0 | 0.0 | 0.0                     | 0.1  | 0.3 | 0.1  | 0.1                | 0.1  | 0.0  | 0.0  | 0.0  | 0.0                            | 0.2  | 0.1  | 0.0  | 0.0  | 0.0  | 0.0           | 0.3             |     |
| 19-Feb  | 0.0                           | 0.0   | 0.0      | Z                     | 0.0 | 0.0             | 0.0 | 0.0 | 0.0 | 0.1                     | 1.1  | 1.0 | 3.7  | 1.6                | 0.9  | 1.0  | 2.1  | 2.1  | 2.2                            | 1.5  | 0.4  | 0.2  | 0.5  | 0.5  | 0.8           | 3.7             |     |
| 20-Feb  | 0.3                           | 0.2   | 0.3      | 0.0                   | Z   | 0.0             | 0.0 | 0.0 | 0.0 | 0.2                     | 0.7  | 1.4 | 1.8  | 1.1                | 0.4  | 0.3  | 0.3  | 0.2  | 0.0                            | 0.1  | 0.0  | 0.0  | 0.1  | 0.1  | 0.3           | 1.8             |     |
| 21-Feb  | 0.1                           | 0.2   | 0.1      | 0.2                   | 0.1 | Z               | 0.2 | 0.2 | 0.1 | 0.3                     | 0.3  | 0.3 | 0.5  | 0.2                | 0.1  | 0.2  | 0.1  | 0.1  | 0.0                            | 0.1  | 0.1  | 0.1  | 0.0  | 0.0  | 0.1           | 0.5             |     |
| 22-Feb  | Z                             | 0.1   | 0.1      | 0.1                   | 0.2 | 0.1             | 0.3 | 0.5 | 1.0 | 2.3                     | 1.9  | 1.1 | 0.7  | UO                 | UO   | UO   | UO   | UO   | UO                             | UO   | UO   | UO   | UO   | UO   | --            | 2.3             |     |
| 23-Feb  | UO                            | UO  | UO       | UO                    | UO  | UO              | UO  | UO  | UO  | UO                      | M    | 0.3 | 0.3  | 0.8                | 0.6  | 0.9  | 1.8  | 6.8  | 17.0                           | 15.8 | 8.3  | 4.7  | 3.5  | 2.0  | --            | 17.0            |     |
| 24-Feb  | 2.6                           | 4.6   | Z        | 4.8                   | 5.1 | 6.6             | 6.5 | 5.8 | 5.0 | 11.4                    | 6.4  | 3.9 | 2.1  | 1.2                | 1.2  | 1.8  | 0.2  | 0.2  | 0.2                            | 0.3  | 0.4  | 0.4  | 0.5  | 0.7  | 3.1           | 11.4            |     |
| 25-Feb  | 0.7                           | 0.6   | 0.5      | Z                     | 2.8 | 3.3             | 3.0 | 2.0 | 2.4 | 1.3                     | 0.3  | 0.2 | 0.2  | 0.2                | 2.0  | 3.2  | 2.0  | 3.9  | 2.7                            | 1.6  | 0.9  | 0.6  | 0.6  | 0.4  | 1.5           | 3.9             |     |
| 26-Feb  | 0.5                           | 0.2   | 0.2      | 0.2                   | Z   | 0.1             | 0.1 | 0.2 | 0.5 | 0.8                     | 0.6  | 0.5 | 0.4  | 0.3                | 0.4  | 0.2  | 0.2  | 0.1  | 0.2                            | 0.2  | 0.0  | 0.0  | 0.0  | 0.0  | 0.3           | 0.8             |     |
| 27-Feb  | 0.0                           | 0.0   | 0.0      | 0.0                   | 0.0 | Z               | 0.0 | 0.0 | 0.0 | 0.0                     | 0.0  | 0.0 | 0.1  | 0.0                | 0.1  | 0.1  | 0.1  | 0.1  | 0.1                            | 0.2  | 0.1  | 0.1  | 0.2  | 0.1  | 0.2           | 0.1             | 0.2 |
| 28-Feb  | Z                             | 0.3   | 0.2      | 0.1                   | 0.1 | 0.1             | 0.1 | 0.1 | 0.1 | 0.1                     | 0.2  | 0.2 | 0.1  | 0.1                | 0.1  | 0.0  | 0.1  | 0.1  | 0.1                            | 0.1  | 0.0  | 0.1  | 0.5  | 0.2  | 0.3           | 0.1             | 0.5 |
|   |                               | 1.7   | 0.6      | 0.4                   | 0.5 | 0.6             | 0.7 | 0.6 | 0.6 | 0.6                     | 1.0  | 1.0 | 0.9  | 1.5                | 1.5  | 1.5  | 1.6  | 2.1  | 2.4                            | 2.1  | 1.6  | 1.0  | 0.9  | 0.9  | 3.2           | Diurnal Average |     |
|   |                               | 30.8  | 4.6      | 2.7                   | 4.8 | 5.1             | 6.6 | 6.5 | 5.8 | 5.0                     | 11.4 | 6.4 | 5.1  | 11.1               | 10.6 | 11.9 | 15.7 | 21.1 | 33.6                           | 17.6 | 15.8 | 8.5  | 11.7 | 12.3 | 77.5          | Diurnal Maximum |     |
| Z - zerospan                                    |                               | C - Calibration   |          |                       |     | M - Maintenance |     |     |     | UO - Unstable Operation |      |     |      | PF - Power Failure |      |      |      |      |                                |      |      |      |      |      |               |                 |     |
| Alberta Ambient Air Quality Objectives (AAAQO): |                               | 1-hr 172 ppb  |          |                       |     | 24-hr 48 ppb    |     |     |     |                         |      |     |      |                    |      |      |      |      |                                |      |      |      |      |      |               |                 |     |





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Sulphur Dioxide (SO<sub>2</sub>) - ppb**  
**Fort McKay - Bertha Ganter - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 10                            | 601                    | 97.56    | 97.56               |
| 11 - 20                           | 11                     | 1.79     | 99.35               |
| 21 - 60                           | 3                      | 0.49     | 99.84               |
| 61 - 110                          | 1                      | 0.16     | 100.00              |
| 111 - 172                         | 0                      | 0.00     | 100.00              |
| > 172                             | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 616

Total Number of Hours: 672



**Wood Buffalo Environmental Association**  
**Frequency Distribution**

**Sulphur Dioxide (SO<sub>2</sub>) - ppb**  
**Fort McKay - Bertha Ganter - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Wind Direction</b> |            |           |            |          |            |           |            |          |            |           |            |          |            |           |            | <b>Totals</b> |
|-----------------------------------|-----------------------|------------|-----------|------------|----------|------------|-----------|------------|----------|------------|-----------|------------|----------|------------|-----------|------------|---------------|
|                                   | <b>N</b>              | <b>NNE</b> | <b>NE</b> | <b>ENE</b> | <b>E</b> | <b>ESE</b> | <b>SE</b> | <b>SSE</b> | <b>S</b> | <b>SSW</b> | <b>SW</b> | <b>WSW</b> | <b>W</b> | <b>WNW</b> | <b>NW</b> | <b>NNW</b> |               |
| 0 - 10                            | 124                   | 66         | 32        | 29         | 11       | 6          | 11        | 44         | 81       | 36         | 11        | 21         | 30       | 25         | 36        | 36         | 599           |
| 11 - 20                           | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 5          | 4        | 1          | 0         | 0          | 0        | 0          | 1         | 0          | 11            |
| 21 - 60                           | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 1          | 2        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 3             |
| 61 - 110                          | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 1          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 1             |
| 111 - 172                         | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0             |
| > 172                             | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0             |
| <b>Totals</b>                     | 124                   | 66         | 32        | 29         | 11       | 6          | 11        | 51         | 87       | 37         | 11        | 21         | 30       | 25         | 37        | 36         | 614           |

Total Number of Valid Hours: 614

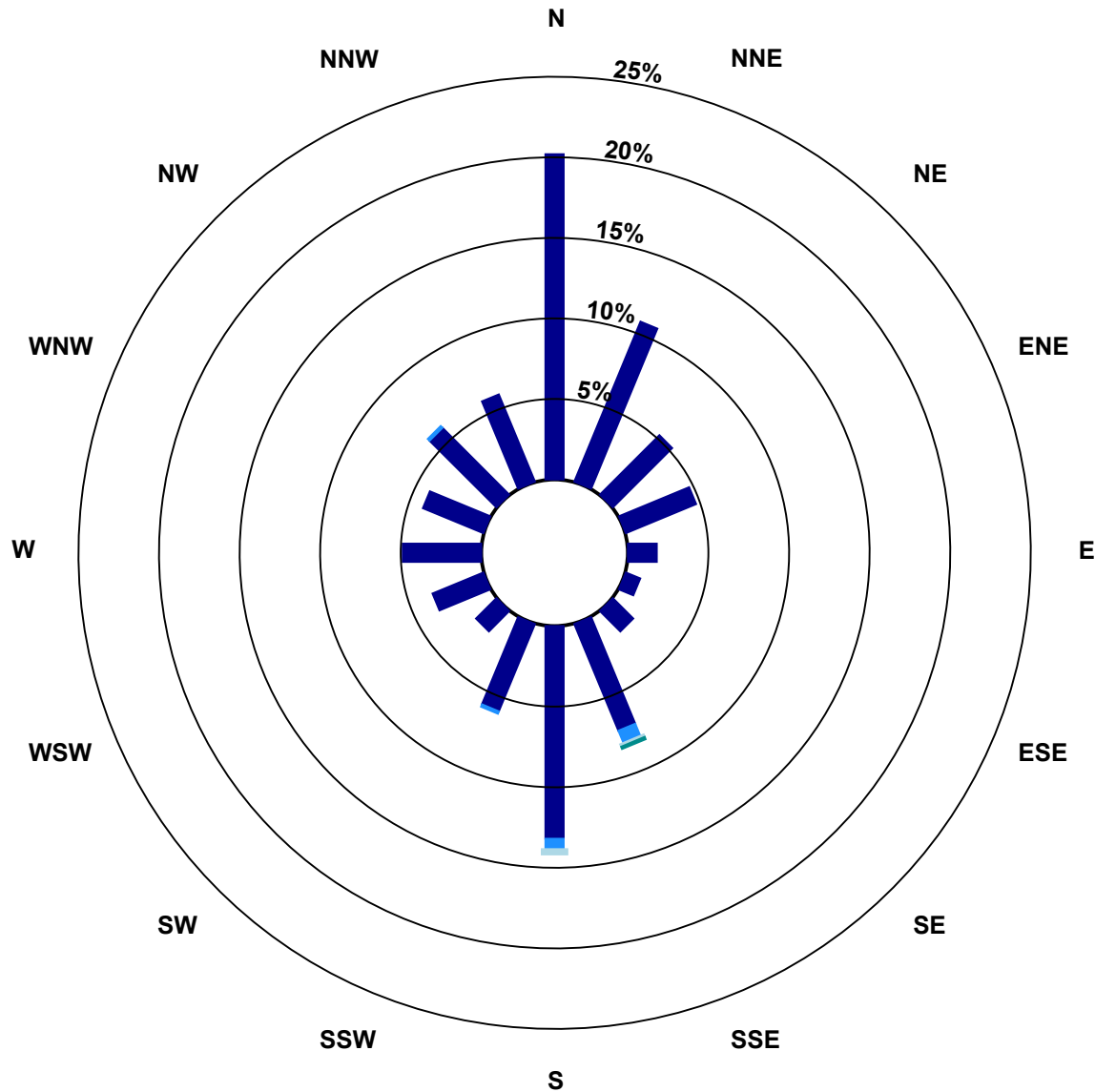
Total Number of Hours: 672



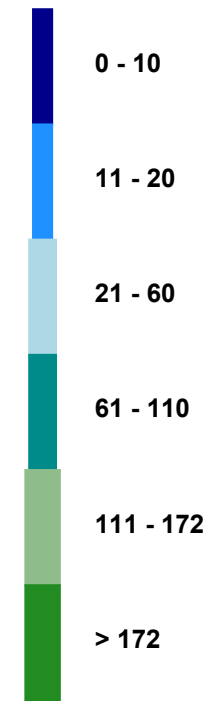


Wood Buffalo Environmental Association  
Wind Rose Feb 2023

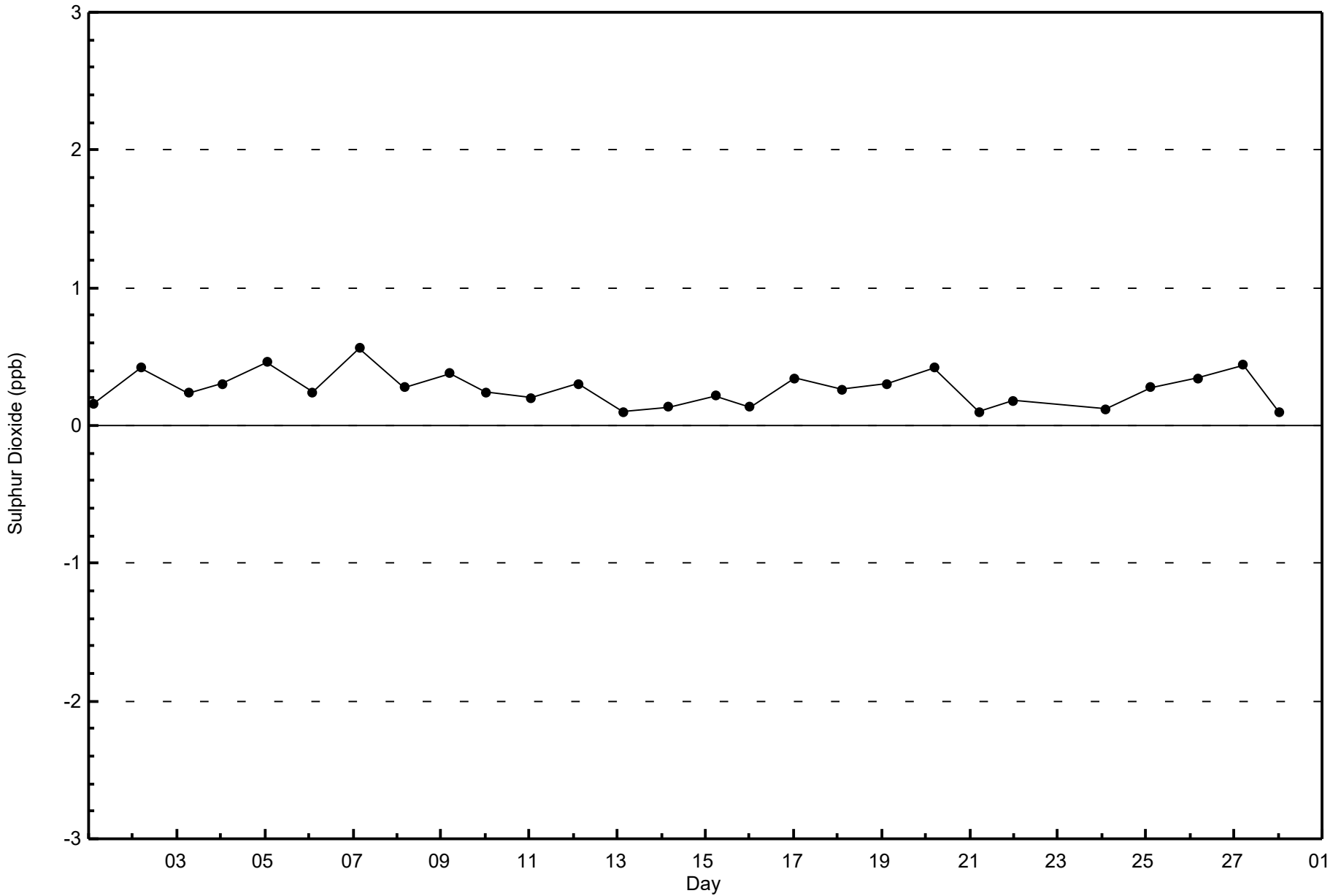
Sulphur Dioxide (SO<sub>2</sub>) - ppb  
Fort McKay - Bertha Ganter

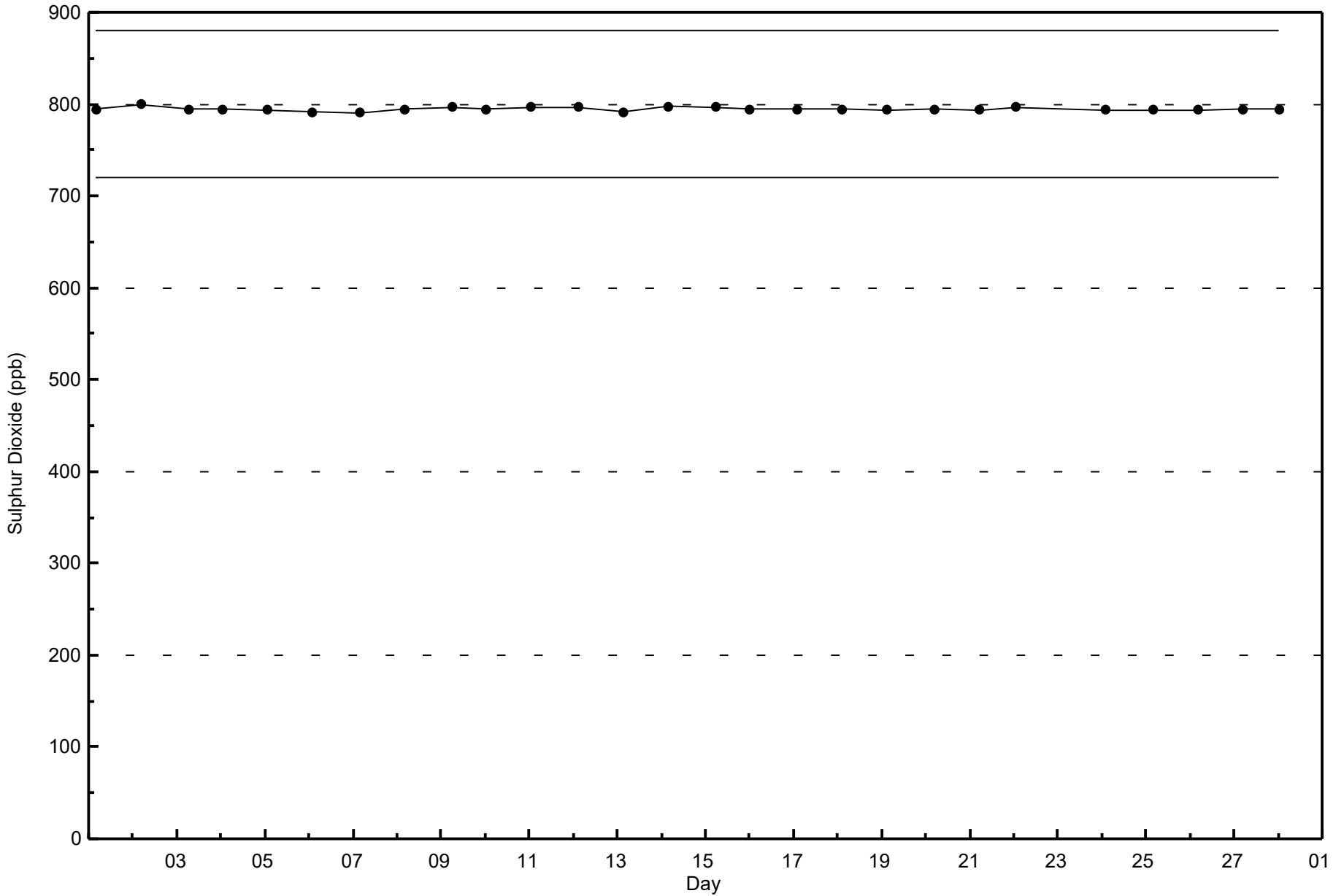


Classes (ppb)



Total Number of Valid Hours: 614





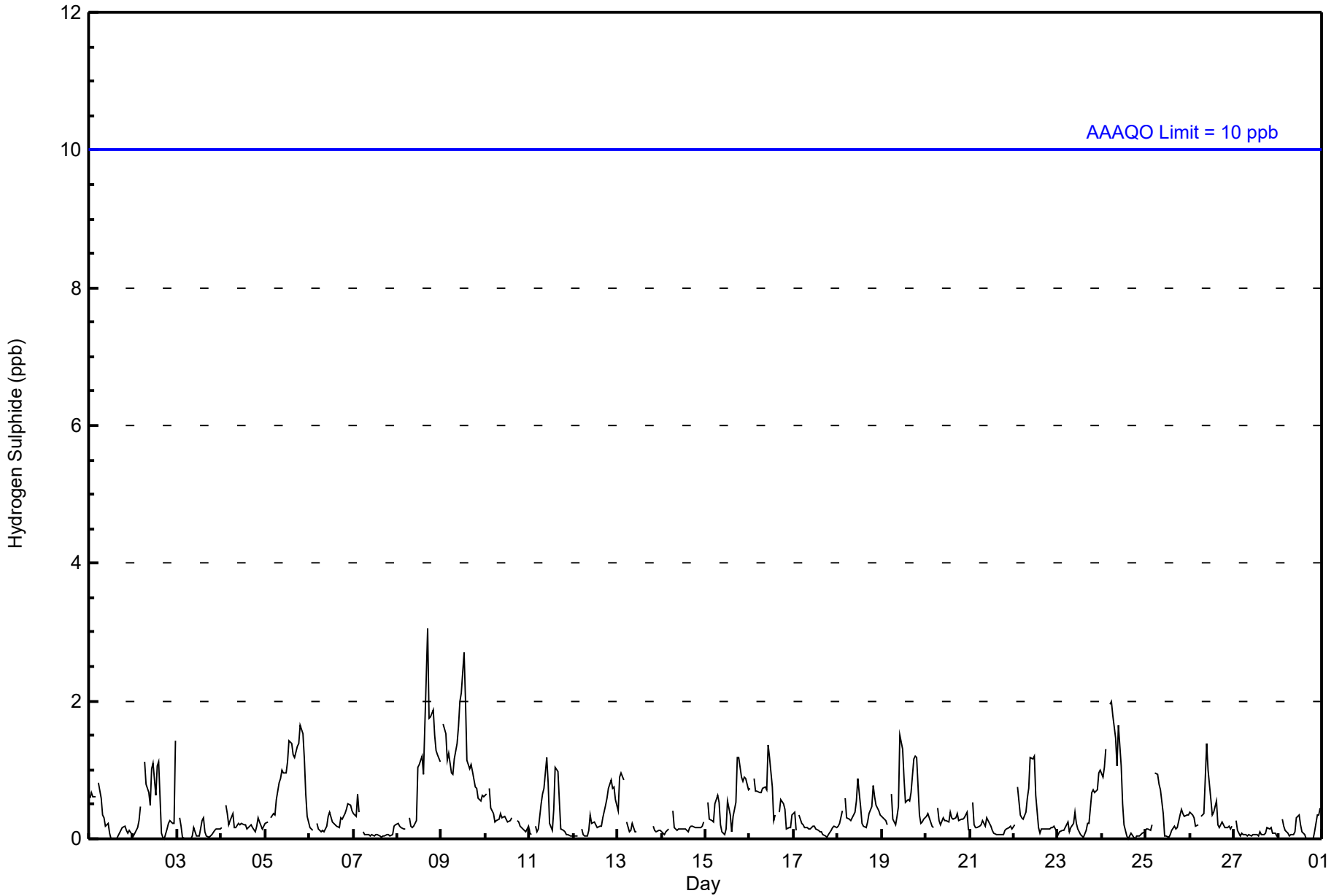


| Number of Exceedences (AAAQO):                  |                               | 1-hr: 0  |     | 24-hr: 0                              |     | Hours in Service:                        |     | 672                            |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |               |               |     |                 |     |     |     |                    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
|---|-------------------------------|--|-----|---------------------------------------|-----|--|-----|--------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----------------|---------------|---------------|-----|-----------------|-----|-----|-----|--------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----------------|
| Maximum Value: 3.1 ppb on Feb 8 17:00           |                               | Maximum Daily Average: 1.2 ppb on Feb 9  |     | Minimum Value: 0.0 ppb on Feb 1 13:00 |     | Minimum Daily Average: 0.1 ppb on Feb 27 |     | Hours of Data: 634             |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |               |               |     |                 |     |     |     |                    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| Maximum Diurnal Average: 0.5 ppb at hour 11     |                               | Minimum Diurnal Average: 0.3 ppb at hour 1   |     | Hours of Missing Data: 38             |     | Hours of Calibration: 35                 |     | Percent Operational Time: 99.6 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |               |               |     |                 |     |     |     |                    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| Monthly Average: 0.39 ppb                       |                               | Percentiles: P <sub>1</sub> = 0.0 P <sub>10</sub> = 0.1 Q <sub>1</sub> = 0.1 Median = 0.2 Q <sub>3</sub> = 0.5 P <sub>90</sub> = 1.0 P <sub>99</sub> = 1.9 |     |                                       |     |  |     |                                |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |               |               |     |                 |     |     |     |                    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| Day   | Hourly Period Ending At (MST) |  |     |                                       |     |  |     |                                |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 | Daily Average | Daily Maximum |     |                 |     |     |     |                    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
|   | 1                             | 2  | 3   | 4                                     | 5   | 6  | 7   | 8                              | 9   | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19  | 20  | 21  | 22  | 23  | 24              |               |               |     |                 |     |     |     |                    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 1-Feb   | 0.6                           | 0.7  | 0.6 | 0.6                                   | Z   | 0.8                                      | 0.6 | 0.3                            | 0.3 | 0.2 | 0.2 | 0.1 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.2 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.3             | 0.8           |               |     |                 |     |     |     |                    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 2-Feb   | 0.0                           | 0.1  | 0.2 | 0.3                                   | 0.5 | Z  | 1.1 | 0.8                            | 0.7 | 0.5 | 1.0 | 1.1 | 0.6 | 1.1 | 1.1 | 0.1 | 0.0 | 0.1 | 0.2 | 0.3 | 0.2 | 0.2 | 1.4 | 0.5             | 1.4           |               |     |                 |     |     |     |                    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 3-Feb   | Z                             | 0.3  | 0.2 | 0.0                                   | 0.0 | 0.0                                      | 0.0 | 0.0                            | 0.0 | 0.2 | 0.0 | 0.0 | 0.0 | 0.3 | 0.3 | 0.1 | 0.0 | 0.0 | 0.1 | 0.1 | 0.2 | 0.1 | 0.2 | 0.1             | 0.3           |               |     |                 |     |     |     |                    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 4-Feb   | 0.2                           | Z  | 0.5 | 0.4                                   | 0.2 | 0.3                                      | 0.4 | 0.2                            | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.1 | 0.2 | 0.2 | 0.2 | 0.1 | 0.2 | 0.3 | 0.2 | 0.1 | 0.2 | 0.2             | 0.5           |               |     |                 |     |     |     |                    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 5-Feb   | 0.2                           | 0.2  | Z   | 0.3                                   | 0.4 | 0.3                                      | 0.6 | 0.8                            | 0.9 | 1.0 | 1.0 | 1.1 | 1.4 | 1.4 | 1.2 | 1.2 | 1.3 | 1.4 | 1.6 | 1.5 | 1.2 | 0.6 | 0.3 | 0.9             | 1.6           |               |     |                 |     |     |     |                    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 6-Feb   | 0.2                           | 0.1  | 0.1 | Z                                     | 0.2 | 0.1                                      | 0.1 | 0.1                            | 0.1 | 0.2 | 0.3 | 0.4 | 0.2 | 0.2 | 0.2 | 0.2 | 0.3 | 0.3 | 0.4 | 0.4 | 0.5 | 0.5 | 0.4 | 0.3             | 0.5           |               |     |                 |     |     |     |                    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 7-Feb   | 0.4                           | 0.3  | 0.7 | 0.4                                   | Z   | 0.1                                      | 0.1 | 0.1                            | 0.1 | 0.1 | 0.1 | 0.0 | 0.1 | 0.1 | 0.0 | 0.1 | 0.0 | 0.1 | 0.1 | 0.0 | 0.1 | 0.2 | 0.2 | 0.1             | 0.7           |               |     |                 |     |     |     |                    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 8-Feb   | 0.2                           | 0.2  | 0.2 | 0.1                                   | 0.1 | Z  | 0.3 | 0.2                            | 0.2 | 0.2 | 0.3 | 1.0 | 1.1 | 1.2 | 0.9 | 1.6 | 3.1 | 1.7 | 1.8 | 1.9 | 1.5 | 1.3 | 1.2 | 1.1             | 0.9           | 3.1           |     |                 |     |     |     |                    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 9-Feb   | Z                             | 1.7  | 1.5 | 1.1                                   | 1.2 | 1.0                                      | 0.9 | 1.2                            | 1.4 | 1.6 | 2.0 | 2.1 | 2.7 | 2.0 | 1.1 | 1.0 | 1.1 | 1.0 | 0.8 | 0.7 | 0.6 | 0.5 | 0.6 | 0.6             | 1.2           | 2.7           |     |                 |     |     |     |                    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 10-Feb  | 0.7                           | Z  | 0.7 | 0.4                                   | 0.4 | 0.2                                      | 0.3 | 0.3                            | 0.4 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | PF  | PF  | 0.3 | 0.2 | 0.2 | 0.1 | 0.1 | 0.1 | 0.2             | 0.3           | 0.7           |     |                 |     |     |     |                    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 11-Feb  | 0.1                           | 0.1  | Z   | 0.2                                   | 0.1 | 0.1                                      | 0.5 | 0.7                            | 0.7 | 1.2 | 0.8 | 0.2 | 0.1 | 0.4 | 1.0 | 1.0 | 0.5 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.0             | 0.4           | 1.2           |     |                 |     |     |     |                    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 12-Feb  | 0.0                           | 0.0  | 0.0 | Z                                     | 0.1 | 0.1                                      | 0.0 | 0.0                            | 0.1 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.3 | 0.5 | 0.6 | 0.7 | 0.9 | 0.7 | 0.7 | 0.6             | 0.3           | 0.9           |     |                 |     |     |     |                    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 13-Feb  | 0.4                           | 0.9  | 1.0 | 0.9                                   | Z   | 0.2                                      | 0.1 | 0.1                            | 0.2 | 0.1 | 0.1 | C   | C   | C   | C   | C   | C   | C   | C   | 0.2 | 0.1 | 0.1 | 0.1 | 0.1             | --            | 1.0           |     |                 |     |     |     |                    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 14-Feb  | 0.1                           | 0.1  | 0.1 | 0.1                                   | 0.1 | Z  | 0.4 | 0.2                            | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2             | 0.2           | 0.4           | 0.4 |                 |     |     |     |                    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 15-Feb  | Z                             | 0.5  | 0.3 | 0.3                                   | 0.2 | 0.5                                      | 0.6 | 0.5                            | 0.2 | 0.1 | 0.1 | 0.1 | 0.6 | 0.3 | 0.1 | 0.3 | 0.5 | 1.2 | 1.2 | 0.9 | 0.8 | 0.9 | 0.9 | 0.7             | 0.5           | 1.2           |     |                 |     |     |     |                    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 16-Feb  | 0.7                           | Z  | 0.9 | 0.7                                   | 0.7 | 0.7                                      | 0.7 | 0.7                            | 0.7 | 0.7 | 1.4 | 1.2 | 0.7 | 0.3 | 0.3 | M   | 0.4 | 0.6 | 0.5 | 0.4 | 0.1 | 0.2 | 0.2 | 0.3             | 0.6           | 1.4           |     |                 |     |     |     |                    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 17-Feb  | 0.4                           | 0.1  | Z   | 0.3                                   | 0.2 | 0.2                                      | 0.2 | 0.2                            | 0.1 | 0.1 | 0.2 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 | 0.1 | 0.1 | 0.2 | 0.2 | 0.2             | 0.2           | 0.4           | 0.4 |                 |     |     |     |                    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 18-Feb  | 0.2                           | 0.2  | 0.4 | Z                                     | 0.6 | 0.3                                      | 0.3 | 0.3                            | 0.3 | 0.4 | 0.5 | 0.9 | 0.5 | 0.2 | 0.2 | 0.2 | 0.2 | 0.4 | 0.5 | 0.8 | 0.6 | 0.5 | 0.4 | 0.4             | 0.4           | 0.9           | 0.9 |                 |     |     |     |                    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 19-Feb  | 0.3                           | 0.3  | 0.3 | 0.2                                   | Z   | 0.6                                      | 0.3 | 0.2                            | 0.3 | 0.5 | 1.5 | 1.3 | 0.9 | 0.5 | 0.6 | 0.5 | 0.7 | 1.2 | 1.2 | 1.2 | 0.3 | 0.2 | 0.3 | 0.3             | 0.6           | 1.5           |     |                 |     |     |     |                    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 20-Feb  | 0.3                           | 0.4  | 0.3 | 0.2                                   | 0.2 | Z  | 0.5 | 0.3                            | 0.2 | 0.3 | 0.3 | 0.3 | 0.2 | 0.4 | 0.3 | 0.3 | 0.3 | 0.4 | 0.3 | 0.3 | 0.3 | 0.3 | 0.4 | 0.1             | 0.3           | 0.5           |     |                 |     |     |     |                    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 21-Feb  | Z                             | 0.5  | 0.2 | 0.2                                   | 0.2 | 0.2                                      | 0.2 | 0.3                            | 0.2 | 0.3 | 0.3 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.1             | 0.2           | 0.5           |     |                 |     |     |     |                    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 22-Feb  | 0.2                           | Z  | 0.7 | 0.3                                   | 0.3 | 0.3                                      | 0.4 | 0.6                            | 0.7 | 1.2 | 1.2 | 1.2 | 0.6 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.1             | 0.4           | 1.2           |     |                 |     |     |     |                    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 23-Feb  | 0.1                           | 0.1  | 0.1 | 0.1                                   | 0.2 | 0.2                                      | 0.1 | 0.2                            | 0.2 | 0.4 | 0.2 | 0.1 | 0.1 | 0.0 | 0.1 | 0.2 | 0.2 | 0.7 | 0.7 | 0.7 | 0.7 | 0.9 | 1.0 | 0.3             | 1.0           | 1.0           |     |                 |     |     |     |                    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 24-Feb  | 0.9                           | 1.0  | 1.3 | Z                                     | 1.9 | 2.0                                      | 1.8 | 1.5                            | 1.1 | 1.6 | 1.1 | 0.5 | 0.2 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.1 | 0.1             | 0.7           | 2.0           |     |                 |     |     |     |                    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 25-Feb  | 0.1                           | 0.1  | 0.1 | 0.2                                   | Z   | 1.0                                      | 0.9 | 0.8                            | 0.7 | 0.4 | 0.1 | 0.1 | 0.0 | 0.1 | 0.1 | 0.2 | 0.1 | 0.2 | 0.4 | 0.4 | 0.4 | 0.3 | 0.3 | 0.4             | 0.3           | 1.0           |     |                 |     |     |     |                    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 26-Feb  | 0.4                           | 0.4  | 0.3 | 0.2                                   | 0.2 | Z  | 0.3 | 0.4                            | 0.9 | 1.4 | 1.0 | 0.6 | 0.3 | 0.4 | 0.6 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.1 | 0.2             | 0.4           | 1.4           |     |                 |     |     |     |                    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 27-Feb  | Z                             | 0.3  | 0.1 | 0.1                                   | 0.1 | 0.1                                      | 0.1 | 0.0                            | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.1 | 0.2 | 0.1 | 0.1 | 0.0             | 0.1           | 0.3           |     |                 |     |     |     |                    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 28-Feb  | 0.0                           | Z  | 0.3 | 0.2                                   | 0.1 | 0.1                                      | 0.0 | 0.1                            | 0.1 | 0.1 | 0.3 | 0.3 | 0.2 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.3 | 0.4 | 0.4             | 0.1           | 0.4           |     |                 |     |     |     |                    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
|   |                               |  |     |                                       |     |  |     |                                |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | 0.3             | 0.4           | 0.4           | 0.3 | 0.4             | 0.4 | 0.4 | 0.4 | 0.4                | 0.5 | 0.5 | 0.5 | 0.4 | 0.4 | 0.4 | 0.3 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.3 | 0.3 | 0.4 | Diurnal Average |
|   |                               |  |     |                                       |     |  |     |                                |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | 0.9             | 1.7           | 1.5           | 1.1 | 1.9             | 2.0 | 1.8 | 1.5 | 1.4                | 1.6 | 2.0 | 2.1 | 2.7 | 2.0 | 1.4 | 1.6 | 3.1 | 1.7 | 1.8 | 1.9 | 1.5 | 1.3 | 1.2 | 1.4 | Diurnal Maximum |
| Z - zerospan                                    |                               |  |     |                                       |     |  |     |                                |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | C - Calibration |               |               |     | M - Maintenance |     |     |     | PF - Power Failure |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| Alberta Ambient Air Quality Objectives (AAAQO): |                               |  |     |                                       |     |  |     |                                |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | 1-hr 10 ppb     |               |               |     | 24-hr 3 ppb     |     |     |     |                    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Hydrogen Sulphide (H<sub>2</sub>S) - ppb**  
**Fort McKay - Bertha Ganter - February 2023**





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Hydrogen Sulphide (H<sub>2</sub>S) - ppb  
Fort McKay - Bertha Ganter - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 2                             | 632                    | 99.68    | 99.68               |
| 3 - 4                             | 2                      | 0.32     | 100.00              |
| 5 - 7                             | 0                      | 0.00     | 100.00              |
| 8 - 11                            | 0                      | 0.00     | 100.00              |
| > 11                              | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 634

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Hydrogen Sulphide (H<sub>2</sub>S) - ppb  
Fort McKay - Bertha Ganter - February 2023**

| <b>Concentration<br/>Ranges (ppb)</b> | <b>Wind Direction</b> |            |           |            |          |            |           |            |          |            |           |            |          |            |           |            | <b>Totals</b> |
|---------------------------------------|-----------------------|------------|-----------|------------|----------|------------|-----------|------------|----------|------------|-----------|------------|----------|------------|-----------|------------|---------------|
|                                       | <b>N</b>              | <b>NNE</b> | <b>NE</b> | <b>ENE</b> | <b>E</b> | <b>ESE</b> | <b>SE</b> | <b>SSE</b> | <b>S</b> | <b>SSW</b> | <b>SW</b> | <b>WSW</b> | <b>W</b> | <b>WNW</b> | <b>NW</b> | <b>NNW</b> |               |
| 0 - 2                                 | 116                   | 67         | 37        | 30         | 12       | 5          | 13        | 51         | 83       | 39         | 14        | 23         | 34       | 30         | 37        | 39         | 630           |
| 3 - 4                                 | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 2        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 2             |
| 5 - 7                                 | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0             |
| 8 - 11                                | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0             |
| > 11                                  | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0             |
| <b>Totals</b>                         | 116                   | 67         | 37        | 30         | 12       | 5          | 13        | 51         | 85       | 39         | 14        | 23         | 34       | 30         | 37        | 39         | 632           |

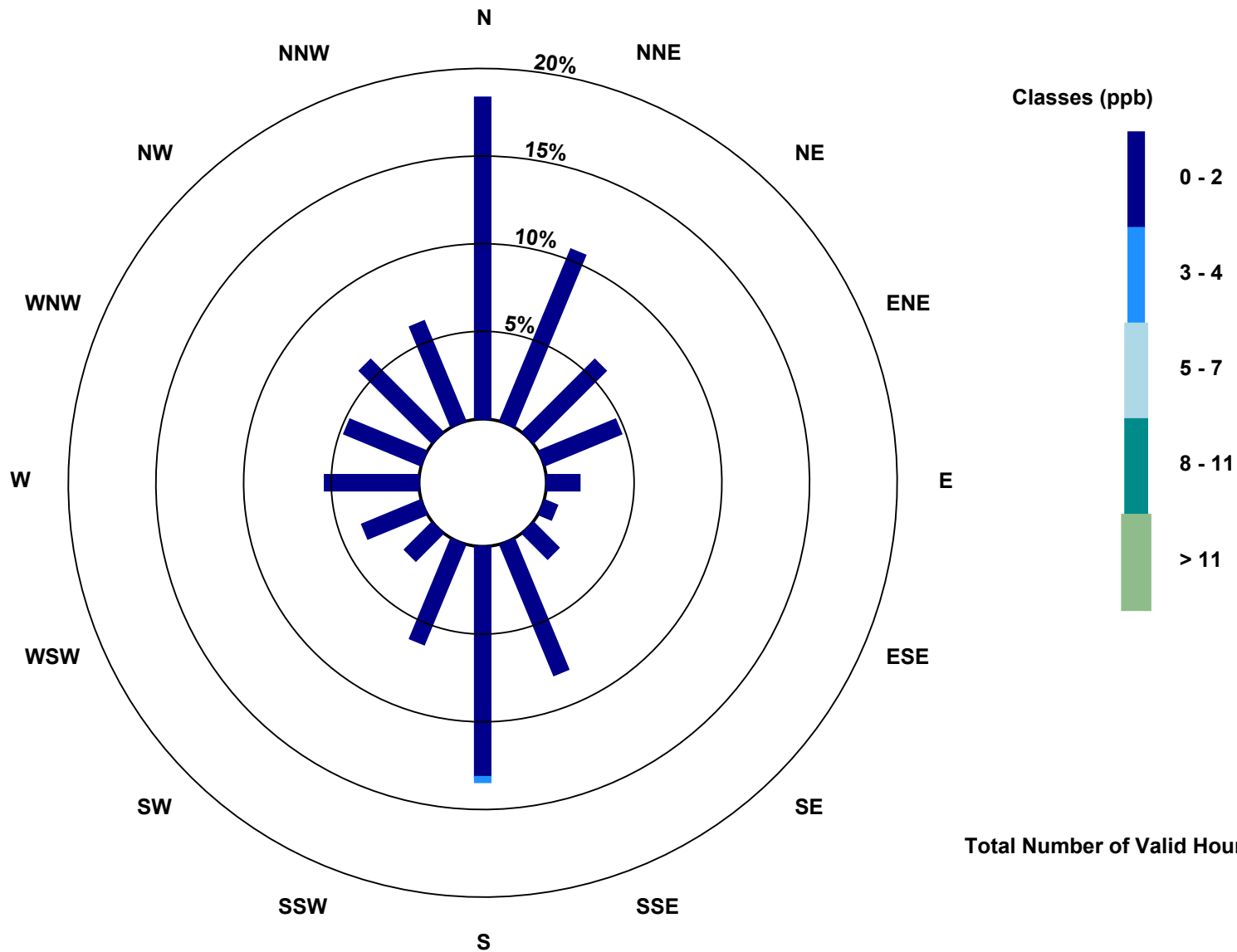
Total Number of Valid Hours: 632

Total Number of Hours: 672



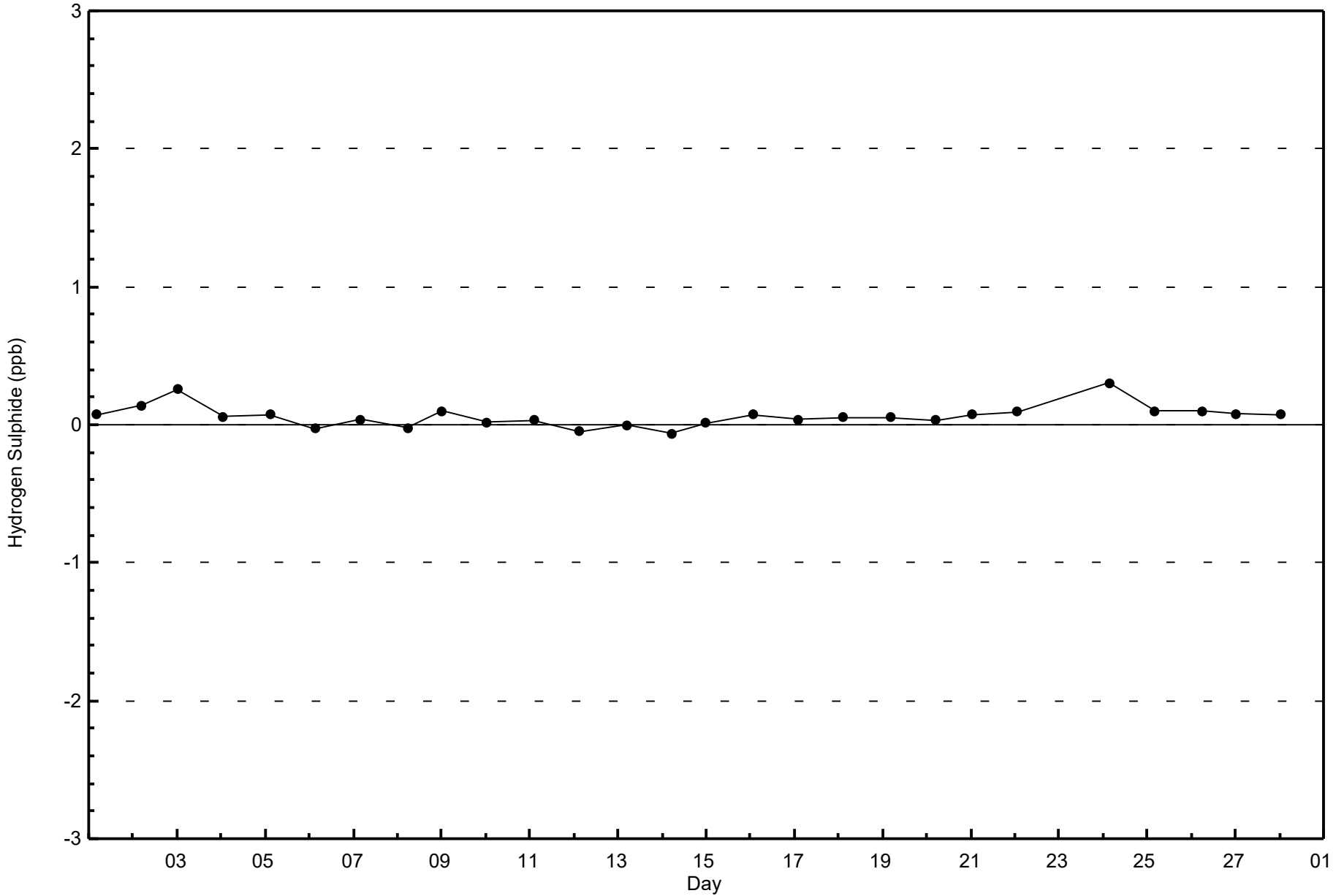
**Wood Buffalo Environmental Association**  
**Wind Rose Feb 2023**

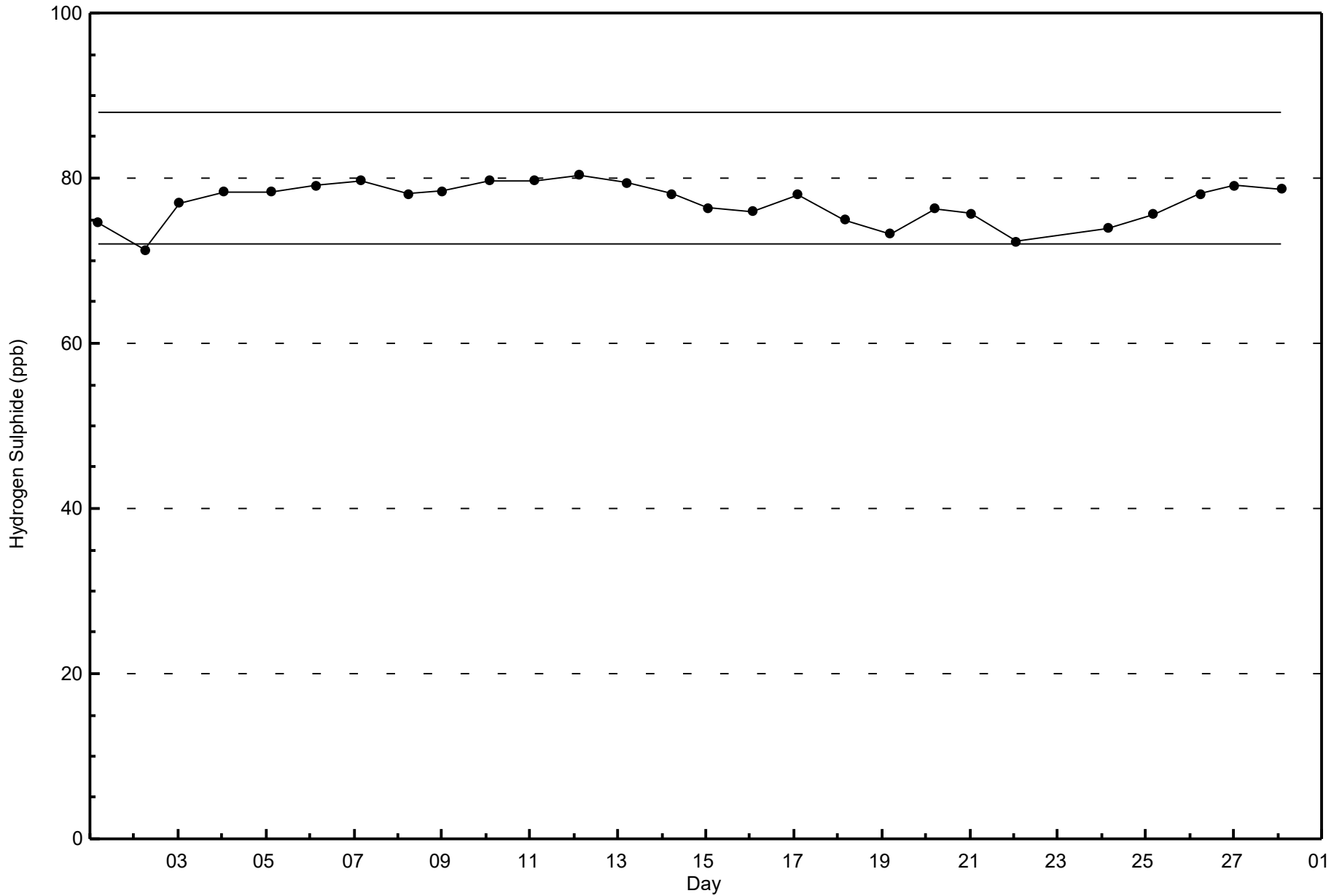
**Hydrogen Sulphide (H<sub>2</sub>S) - ppb**  
**Fort McKay - Bertha Ganter**



**Total Number of Valid Hours: 632**









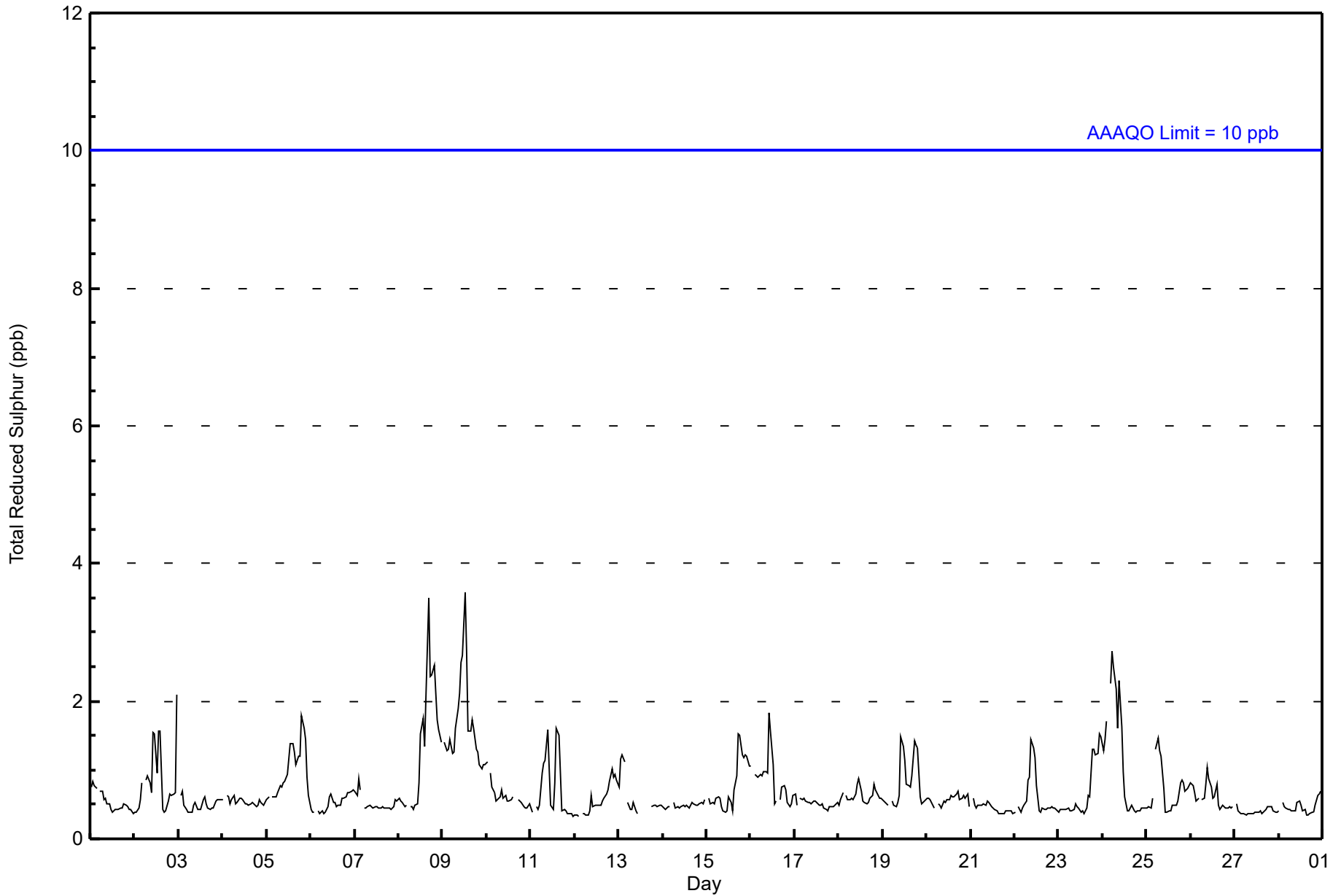
# Wood Buffalo Environmental Association

## Summary of Hour Averages

# Total Reduced Sulphur (TRS) - ppb

## Fort McKay - Bertha Ganter - February 2023

| Number of Exceedences (AAAQO):                  |                               | 1-hr: 0  |     | 24-hr: 0                                   |     | Hours in Service:         |     | 672  |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |   |               |                 |     |                    |  |
|---|-------------------------------|--|-----|--|-----|---------------------------|-----|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---|---------------|-----------------|-----|--------------------|--|
| Maximum Value: 3.6 ppb on Feb 9 13:00           |                               | Maximum Daily Average: 1.7 ppb on Feb 9  |     | Minimum Daily Average: 0.4 ppb on Feb 27   |     | Hours of Data:            |     | 635  |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |   |               |                 |     |                    |  |
| Minimum Value: 0.3 ppb on Feb 12 03:00          |                               | Minimum Diurnal Average: 0.8 ppb at hour 11  |     | Minimum Diurnal Average: 0.6 ppb at hour 4 |     | Hours of Missing Data:    |     | 37   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |   |               |                 |     |                    |  |
| Monthly Average: 0.70 ppb                       |                               | Percentiles: P <sub>1</sub> = 0.4 P <sub>10</sub> = 0.4 Q <sub>1</sub> = 0.5 Median = 0.5 Q <sub>3</sub> = 0.7 P <sub>90</sub> = 1.3 P <sub>99</sub> = 2.5 |     |  |     | Hours of Calibration:     |     | 34   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |   |               |                 |     |                    |  |
|   |                               |  |     |  |     | Percent Operational Time: |     | 99.6 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |   |               |                 |     |                    |  |
| Day   | Hourly Period Ending At (MST) |  |     |  |     |                           |     |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |   | Daily Average | Daily Maximum   |     |                    |  |
|   | 1                             | 2  | 3   | 4  | 5   | 6                         | 7   | 8    | 9   | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19  | 20  | 21  | 22  | 23  | 24  |               |                 |     |                    |  |
| 1-Feb   | 0.7                           | 0.8  | 0.8 | 0.7  | Z   | 0.7                       | 0.7 | 0.6  | 0.6 | 0.5 | 0.5 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.4 | 0.4 | 0.4   | 0.5           | 0.8             | 0.8 |                    |  |
| 2-Feb   | 0.4                           | 0.4  | 0.4 | 0.6  | 0.8 | Z                         | 0.9 | 0.9  | 0.8 | 0.7 | 1.5 | 1.5 | 1.0 | 1.6 | 1.6 | 0.4 | 0.4 | 0.4 | 0.5 | 0.6 | 0.6 | 0.7 | 0.7 | 2.1   | 0.8           | 2.1             |     |                    |  |
| 3-Feb   | Z                             | 0.6  | 0.7 | 0.5  | 0.4 | 0.4                       | 0.4 | 0.4  | 0.5 | 0.5 | 0.4 | 0.4 | 0.4 | 0.6 | 0.6 | 0.5 | 0.4 | 0.4 | 0.4 | 0.4 | 0.5 | 0.6 | 0.6 | 0.6   | 0.5           | 0.7             |     |                    |  |
| 4-Feb   | 0.6                           | Z  | 0.6 | 0.6  | 0.5 | 0.6                       | 0.6 | 0.5  | 0.6 | 0.6 | 0.6 | 0.6 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.6 | 0.5 | 0.5 | 0.5   | 0.5           | 0.6             |     |                    |  |
| 5-Feb   | 0.6                           | 0.6  | Z   | 0.6  | 0.6 | 0.6                       | 0.7 | 0.8  | 0.8 | 0.8 | 0.8 | 0.9 | 1.2 | 1.4 | 1.4 | 1.3 | 1.1 | 1.2 | 1.2 | 1.8 | 1.6 | 1.4 | 0.9 | 0.6   | 1.0           | 1.8             |     |                    |  |
| 6-Feb   | 0.4                           | 0.4  | 0.4 | Z  | 0.4 | 0.4                       | 0.4 | 0.4  | 0.4 | 0.5 | 0.6 | 0.6 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.6 | 0.6 | 0.6 | 0.7 | 0.7 | 0.7 | 0.7   | 0.5           | 0.7             |     |                    |  |
| 7-Feb   | 0.7                           | 0.6  | 0.9 | 0.7  | Z   | 0.4                       | 0.4 | 0.5  | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.4 | 0.4 | 0.5 | 0.5 | 0.5 | 0.4 | 0.4 | 0.4 | 0.5 | 0.6 | 0.6   | 0.5           | 0.9             |     |                    |  |
| 8-Feb   | 0.6                           | 0.5  | 0.5 | 0.5  | 0.5 | Z                         | 0.5 | 0.5  | 0.4 | 0.5 | 0.5 | 0.8 | 1.5 | 1.8 | 1.3 | 2.1 | 3.5 | 2.4 | 2.4 | 2.5 | 2.1 | 1.7 | 1.6 | 1.4   | 1.3           | 3.5             |     |                    |  |
| 9-Feb   | Z                             | 1.4  | 1.3 | 1.3  | 1.4 | 1.2                       | 1.3 | 1.6  | 1.9 | 2.1 | 2.6 | 2.7 | 3.6 | 2.7 | 1.6 | 1.6 | 1.7 | 1.6 | 1.3 | 1.3 | 1.1 | 1.0 | 1.1 | 1.1   | 1.7           | 3.6             |     |                    |  |
| 10-Feb  | 1.1                           | Z  | 0.9 | 0.8  | 0.7 | 0.6                       | 0.6 | 0.6  | 0.7 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | PF  | PF  | 0.6 | 0.6 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5   | 0.6           | 1.1             |     |                    |  |
| 11-Feb  | 0.4                           | 0.4  | Z   | 0.5  | 0.4 | 0.5                       | 1.0 | 1.1  | 1.1 | 1.6 | 1.0 | 0.5 | 0.4 | 0.8 | 1.6 | 1.5 | 1.0 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.3   | 0.7           | 1.6             |     |                    |  |
| 12-Feb  | 0.4                           | 0.3  | 0.3 | Z  | 0.4 | 0.4                       | 0.3 | 0.4  | 0.4 | 0.6 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.6 | 0.7 | 0.7 | 0.8 | 1.0 | 0.9 | 0.9 | 0.8   | 0.6           | 1.0             |     |                    |  |
| 13-Feb  | 0.8                           | 1.2  | 1.2 | 1.1  | Z   | 0.5                       | 0.4 | 0.4  | 0.5 | 0.4 | 0.4 | C   | C   | C   | C   | C   | C   | C   | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5   | --            | 1.2             |     |                    |  |
| 14-Feb  | 0.5                           | 0.4  | 0.4 | 0.5  | 0.5 | Z                         | 0.5 | 0.5  | 0.5 | 0.4 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.6   | 0.5           | 0.6             |     |                    |  |
| 15-Feb  | Z                             | 0.6  | 0.5 | 0.5  | 0.5 | 0.6                       | 0.6 | 0.6  | 0.5 | 0.4 | 0.4 | 0.4 | 0.6 | 0.5 | 0.4 | 0.7 | 0.9 | 1.5 | 1.5 | 1.2 | 1.2 | 1.2 | 1.2 | 1.0   | 0.8           | 1.5             |     |                    |  |
| 16-Feb  | 1.1                           | Z  | 0.9 | 0.9  | 0.9 | 0.9                       | 0.9 | 1.0  | 1.0 | 0.9 | 1.8 | 1.6 | 1.1 | 0.5 | 0.5 | M   | 0.6 | 0.7 | 0.8 | 0.7 | 0.5 | 0.5 | 0.5 | 0.6   | 0.9           | 1.8             |     |                    |  |
| 17-Feb  | 0.6                           | 0.5  | Z   | 0.6  | 0.6 | 0.6                       | 0.6 | 0.5  | 0.5 | 0.5 | 0.6 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.4 | 0.4 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5   | 0.5           | 0.6             |     |                    |  |
| 18-Feb  | 0.5                           | 0.6  | 0.7 | Z  | 0.6 | 0.6                       | 0.6 | 0.6  | 0.6 | 0.7 | 0.8 | 0.9 | 0.7 | 0.6 | 0.5 | 0.5 | 0.5 | 0.6 | 0.6 | 0.8 | 0.7 | 0.7 | 0.6 | 0.6   | 0.6           | 0.9             |     |                    |  |
| 19-Feb  | 0.6                           | 0.5  | 0.5 | 0.5  | Z   | 0.6                       | 0.5 | 0.5  | 0.5 | 0.6 | 1.5 | 1.3 | 1.1 | 0.8 | 0.8 | 0.8 | 0.9 | 1.4 | 1.4 | 1.3 | 0.6 | 0.5 | 0.5 | 0.5   | 0.8           | 1.5             |     |                    |  |
| 20-Feb  | 0.6                           | 0.6  | 0.6 | 0.5  | 0.4 | Z                         | 0.5 | 0.5  | 0.5 | 0.6 | 0.5 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.7 | 0.7 | 0.6 | 0.6 | 0.6 | 0.6 | 0.7 | 0.5   | 0.6           | 0.7             |     |                    |  |
| 21-Feb  | Z                             | 0.6  | 0.5 | 0.5  | 0.5 | 0.5                       | 0.5 | 0.5  | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4   | 0.4           | 0.6             |     |                    |  |
| 22-Feb  | 0.4                           | Z  | 0.5 | 0.4  | 0.4 | 0.5                       | 0.5 | 0.8  | 0.9 | 1.4 | 1.3 | 1.2 | 0.8 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.5 | 0.4 | 0.5 | 0.5 | 0.5 | 0.4   | 0.6           | 1.4             |     |                    |  |
| 23-Feb  | 0.4                           | 0.4  | 0.4 | 0.4  | 0.4 | 0.5                       | 0.4 | 0.4  | 0.4 | 0.5 | 0.5 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.6 | 0.6 | 1.3 | 1.3 | 1.2 | 1.2 | 1.5 | 1.5   | 0.7           | 1.5             |     |                    |  |
| 24-Feb  | 1.3                           | 1.4  | 1.7 | Z  | 2.3 | 2.7                       | 2.5 | 2.2  | 1.6 | 2.3 | 1.6 | 1.0 | 0.6 | 0.4 | 0.4 | 0.5 | 0.5 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4   | 1.1           | 2.7             |     |                    |  |
| 25-Feb  | 0.5                           | 0.5  | 0.4 | 0.6  | Z   | 1.3                       | 1.5 | 1.3  | 1.2 | 0.7 | 0.4 | 0.4 | 0.4 | 0.4 | 0.5 | 0.5 | 0.5 | 0.5 | 0.8 | 0.9 | 0.8 | 0.7 | 0.7 | 0.8   | 0.7           | 1.5             |     |                    |  |
| 26-Feb  | 0.8                           | 0.8  | 0.7 | 0.5  | 0.6 | Z                         | 0.6 | 0.6  | 0.8 | 1.0 | 0.9 | 0.7 | 0.6 | 0.6 | 0.8 | 0.5 | 0.4 | 0.5 | 0.5 | 0.4 | 0.5 | 0.5 | 0.4 | 0.5   | 0.6           | 1.0             |     |                    |  |
| 27-Feb  | Z                             | 0.5  | 0.4 | 0.4  | 0.4 | 0.4                       | 0.4 | 0.4  | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.5 | 0.5 | 0.5 | 0.4 | 0.4 | 0.4   | 0.4           | 0.5             |     |                    |  |
| 28-Feb  | 0.4                           | Z  | 0.5 | 0.5  | 0.5 | 0.4                       | 0.4 | 0.4  | 0.4 | 0.4 | 0.5 | 0.6 | 0.5 | 0.4 | 0.4 | 0.3 | 0.3 | 0.4 | 0.4 | 0.4 | 0.5 | 0.6 | 0.6 | 0.7   | 0.5           | 0.7             |     |                    |  |
|   |                               |  |     |  |     |                           |     |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Diurnal Average   |               |                 |     |                    |  |
|   |                               |  |     |  |     |                           |     |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Diurnal Maximum   |               |                 |     |                    |  |
|   |                               |  |     |  |     |                           |     |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | 0.6 0.6 0.7 0.6 0.6 0.7 0.7 0.7 0.7 0.8 0.8 0.8 0.7 0.7 0.7 0.7 0.7 0.7 0.7 0.7 0.8 0.7 0.7 0.7 0.7 0.7 |               |                 |     |                    |  |
|   |                               |  |     |  |     |                           |     |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | 1.3 1.4 1.7 1.3 2.3 2.7 2.5 2.2 1.9 2.3 2.6 2.7 3.6 2.7 1.6 2.1 3.5 2.4 2.4 2.5 2.1 1.7 1.6 2.1         |               |                 |     |                    |  |
| Z - zerospan                                    |                               |  |     |  |     |                           |     |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | C - Calibration   |               | M - Maintenance |     | PF - Power Failure |  |
| Alberta Ambient Air Quality Objectives (AAAQO): |                               |  |     |  |     |                           |     |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | 1-hr 10 ppb   |               | 24-hr 3 ppb     |     |                    |  |





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Total Reduced Sulphur (TRS) - ppb**  
**Fort McKay - Bertha Ganter - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 2                             | 627                    | 98.74    | 98.74               |
| 3 - 4                             | 8                      | 1.26     | 100.00              |
| 5 - 7                             | 0                      | 0.00     | 100.00              |
| 8 - 11                            | 0                      | 0.00     | 100.00              |
| > 11                              | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 635

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Total Reduced Sulphur (TRS) - ppb  
Fort McKay - Bertha Ganter - February 2023**

| <b>Concentration<br/>Ranges (ppb)</b> | <b>Wind Direction</b> |            |           |            |          |            |           |            |          |            |           |            |          |            |           |            | <b>Totals</b> |
|---------------------------------------|-----------------------|------------|-----------|------------|----------|------------|-----------|------------|----------|------------|-----------|------------|----------|------------|-----------|------------|---------------|
|                                       | <b>N</b>              | <b>NNE</b> | <b>NE</b> | <b>ENE</b> | <b>E</b> | <b>ESE</b> | <b>SE</b> | <b>SSE</b> | <b>S</b> | <b>SSW</b> | <b>SW</b> | <b>WSW</b> | <b>W</b> | <b>WNW</b> | <b>NW</b> | <b>NNW</b> |               |
| 0 - 2                                 | 117                   | 67         | 37        | 30         | 12       | 5          | 13        | 51         | 78       | 39         | 14        | 23         | 33       | 30         | 37        | 39         | 625           |
| 3 - 4                                 | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 7        | 0          | 0         | 0          | 1        | 0          | 0         | 0          | 8             |
| 5 - 7                                 | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0             |
| 8 - 11                                | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0             |
| > 11                                  | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0             |
| <b>Totals</b>                         | 117                   | 67         | 37        | 30         | 12       | 5          | 13        | 51         | 85       | 39         | 14        | 23         | 34       | 30         | 37        | 39         | 633           |

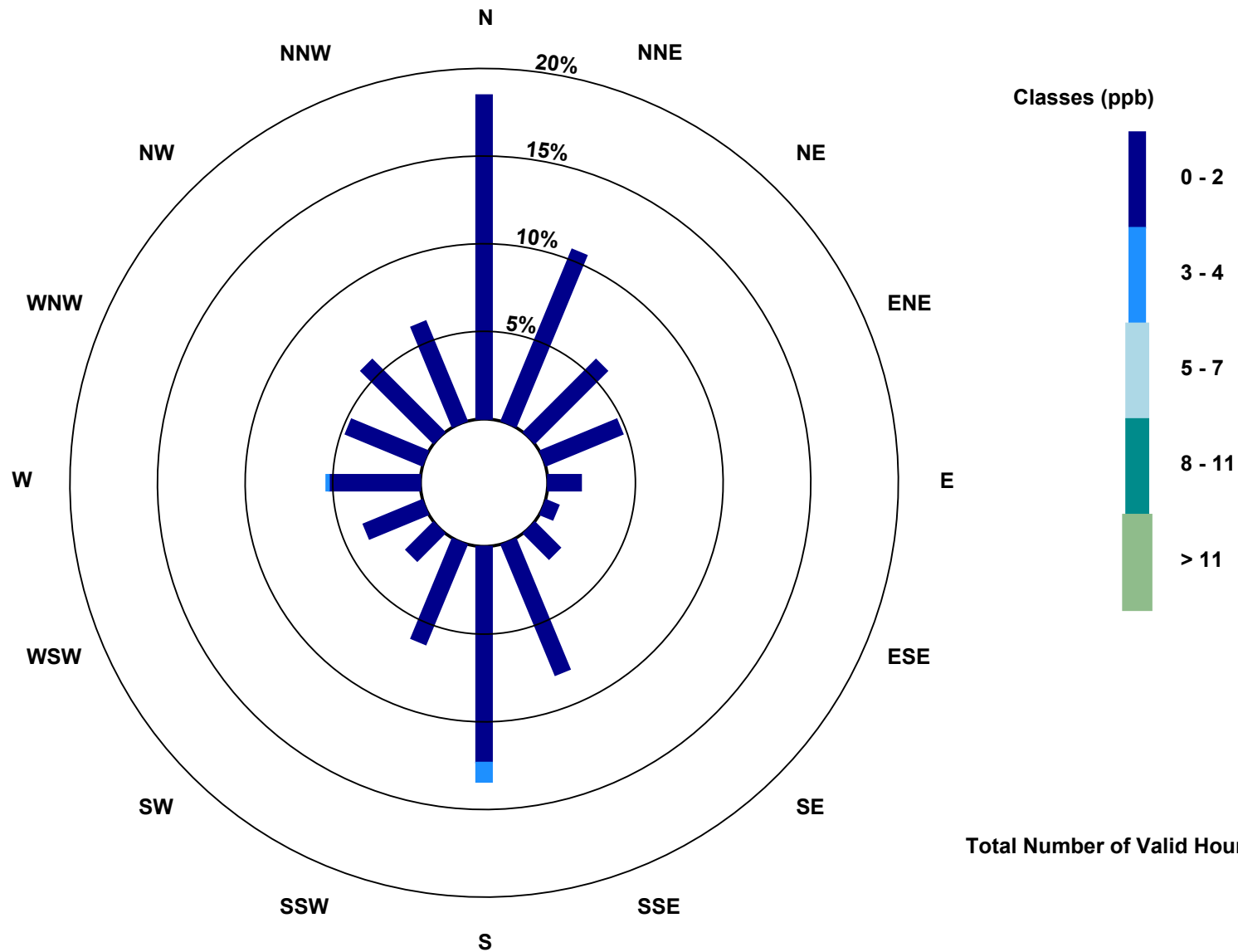
Total Number of Valid Hours: 633

Total Number of Hours: 672

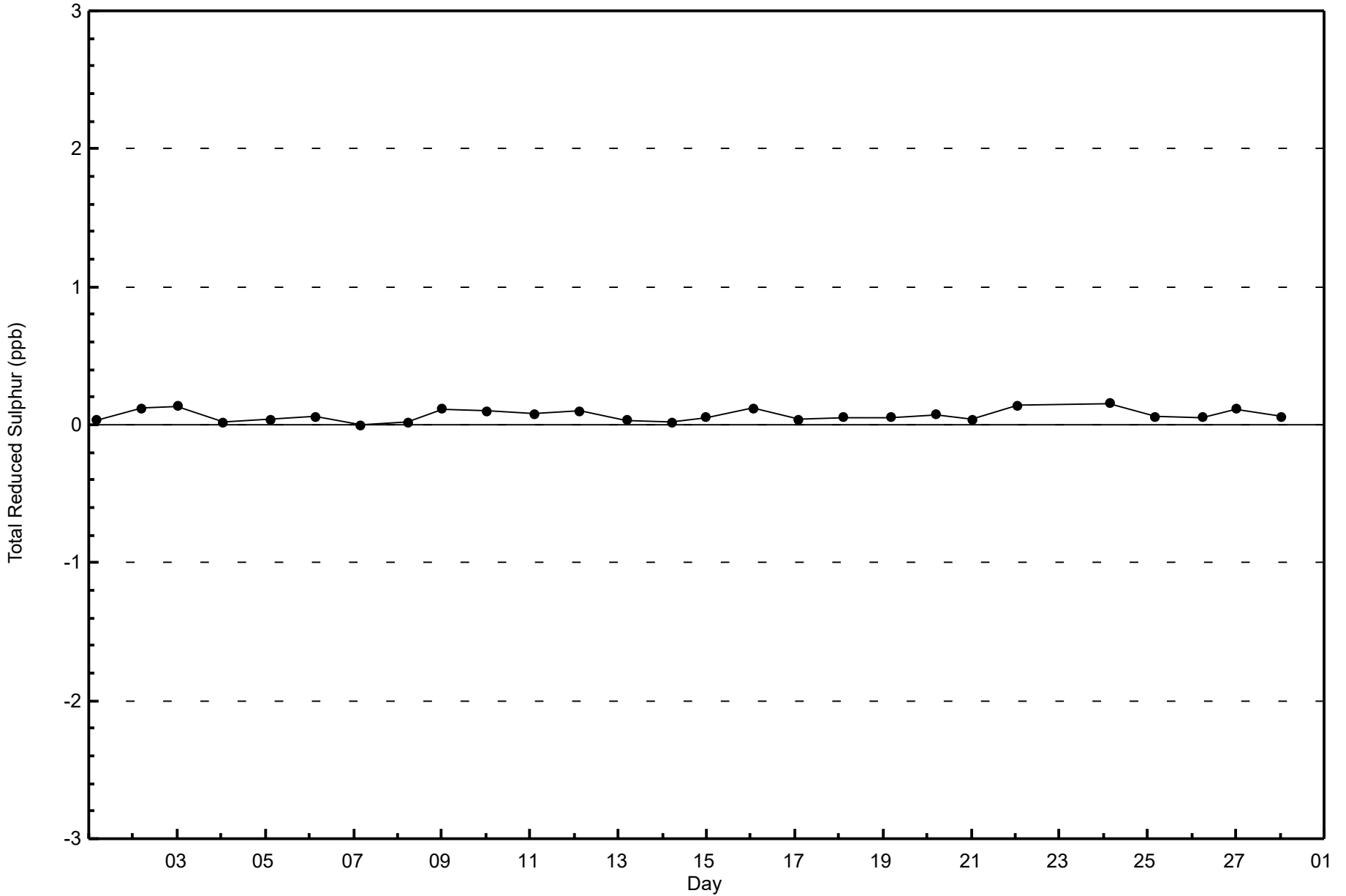


Wood Buffalo Environmental Association  
Wind Rose Feb 2023

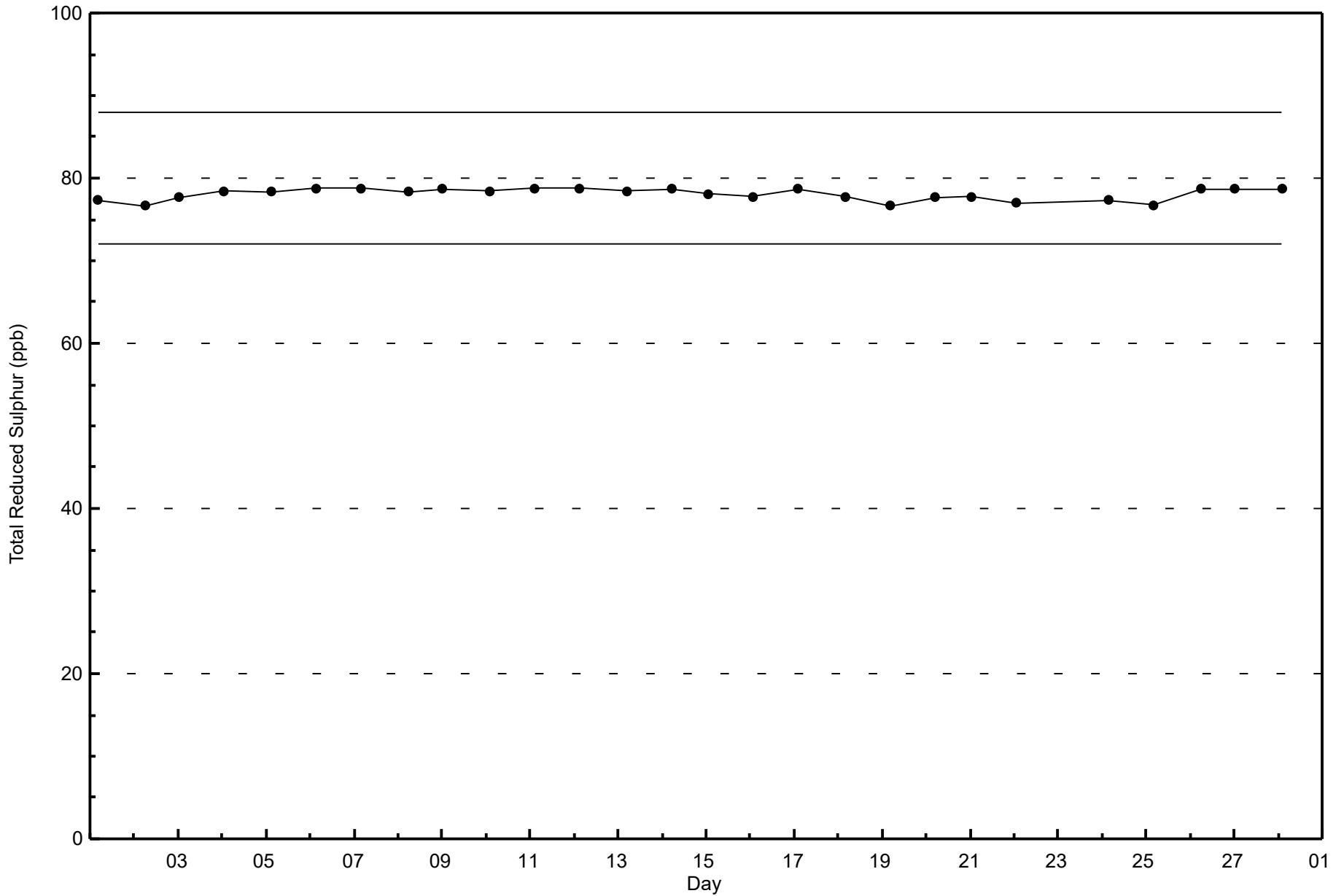
Total Reduced Sulphur (TRS) - ppb  
Fort McKay - Bertha Ganter



Total Number of Valid Hours: 633







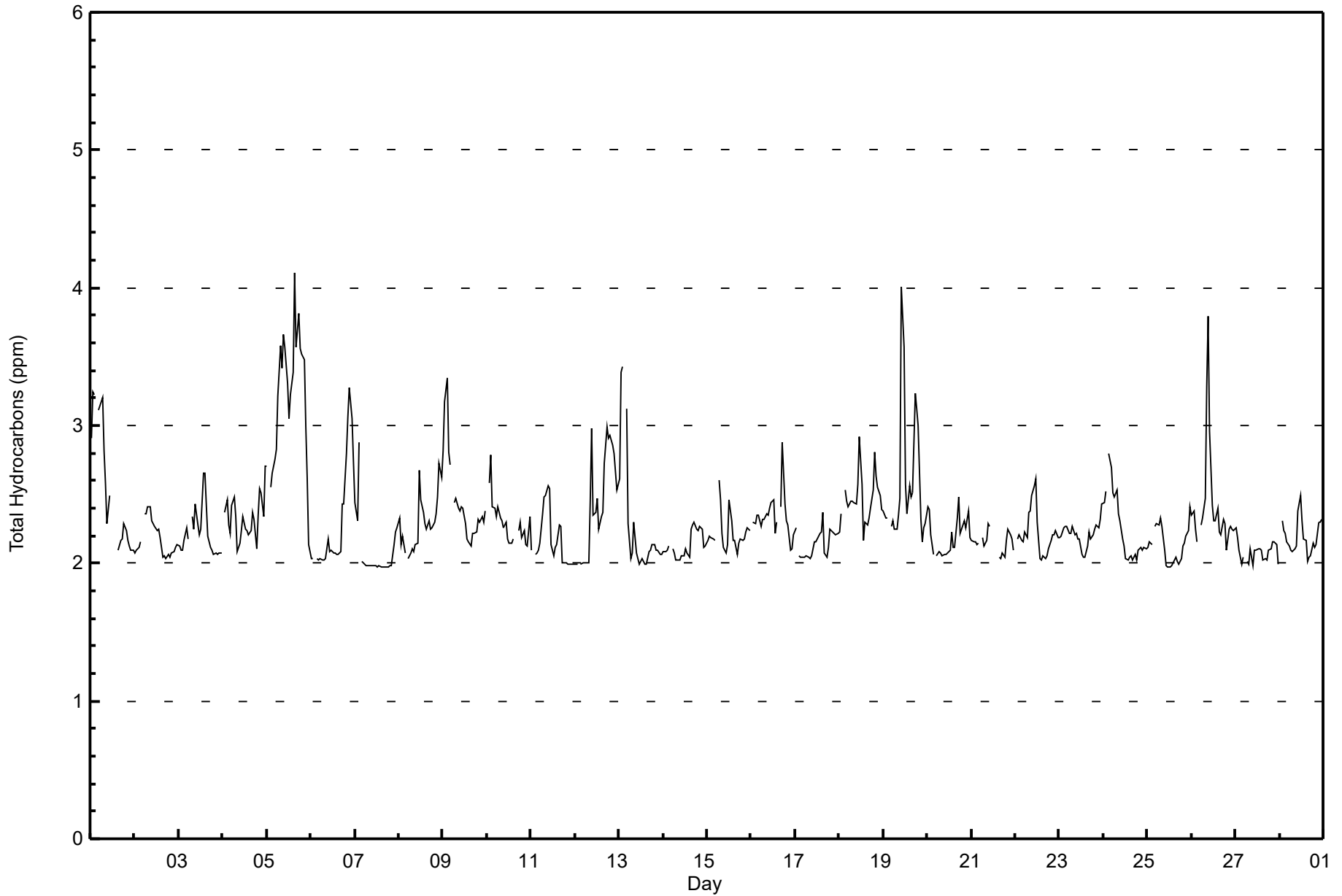


| Maximum Value: 4.1 ppm on Feb 5 16:00      |                               |     |                 |     |     |                 |     |     |                    |     |     |     |     |     |     |     |     |     |     | Maximum Daily Average: 3.2 ppm on Feb 5  |     |     |     |                 | Hours in Service: 672          |               |  |  |  |
|--|-------------------------------|-----|-----------------|-----|-----|-----------------|-----|-----|--------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|-----|-----|-----|-----------------|--------------------------------|---------------|--|--|--|
| Minimum Value: 2.0 ppm on Feb 25 13:00     |                               |     |                 |     |     |                 |     |     |                    |     |     |     |     |     |     |     |     |     |     | Minimum Daily Average: 2.1 ppm on Feb 27   |     |     |     |                 | Hours of Data: 634             |               |  |  |  |
| Maximum Diurnal Average: 2.4 ppm at hour 3 |                               |     |                 |     |     |                 |     |     |                    |     |     |     |     |     |     |     |     |     |     | Minimum Diurnal Average: 2.2 ppm at hour 14  |     |     |     |                 | Hours of Missing Data: 38      |               |  |  |  |
| Monthly Average: 2.30 ppm                  |                               |     |                 |     |     |                 |     |     |                    |     |     |     |     |     |     |     |     |     |     | Percentiles: P <sub>1</sub> = 2.0 P <sub>10</sub> = 2.0 Q <sub>1</sub> = 2.1 Median = 2.2 Q <sub>3</sub> = 2.4 P <sub>90</sub> = 2.7 P <sub>99</sub> = 3.6 |     |     |     |                 | Hours of Calibration: 35       |               |  |  |  |
|  |                               |     |                 |     |     |                 |     |     |                    |     |     |     |     |     |     |     |     |     |     |  |     |     |     |                 | Percent Operational Time: 99.6 |               |  |  |  |
| Day  | Hourly Period Ending At (MST) |     |                 |     |     |                 |     |     |                    |     |     |     |     |     |     |     |     |     |     |  |     |     |     |                 | Daily Average                  | Daily Maximum |  |  |  |
|  | 1                             | 2   | 3               | 4   | 5   | 6               | 7   | 8   | 9                  | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19  | 20   | 21  | 22  | 23  | 24              |                                |               |  |  |  |
| 1-Feb                                      | 2.9                           | 3.2 | 3.2             | Z   | 3.1 | 3.1             | 3.2 | 2.8 | 2.6                | 2.3 | 2.5 | C   | C   | C   | C   | 2.1 | 2.2 | 2.2 | 2.3 | 2.2  | 2.2 | 2.1 | 2.1 | 2.1             | 2.5                            | 3.2           |  |  |  |
| 2-Feb                                      | 2.1                           | 2.1 | 2.1             | 2.2 | Z   | 2.4             | 2.4 | 2.4 | 2.4                | 2.3 | 2.3 | 2.3 | 2.2 | 2.2 | 2.2 | 2.0 | 2.1 | 2.0 | 2.1 | 2.0  | 2.1 | 2.1 | 2.1 | 2.1             | 2.2                            | 2.4           |  |  |  |
| 3-Feb                                      | 2.1                           | 2.1 | 2.1             | 2.2 | 2.3 | 2.2             | Z   | 2.3 | 2.3                | 2.4 | 2.3 | 2.2 | 2.2 | 2.7 | 2.7 | 2.4 | 2.2 | 2.1 | 2.1 | 2.1  | 2.1 | 2.1 | 2.1 | 2.1             | 2.2                            | 2.7           |  |  |  |
| 4-Feb                                      | Z                             | 2.4 | 2.5             | 2.3 | 2.2 | 2.4             | 2.5 | 2.3 | 2.1                | 2.1 | 2.2 | 2.3 | 2.3 | 2.2 | 2.2 | 2.2 | 2.2 | 2.3 | 2.1 | 2.4  | 2.5 | 2.5 | 2.3 | 2.7             | 2.3                            |               |  |  |  |
| 5-Feb                                      | 2.7                           | Z   | 2.6             | 2.7 | 2.8 | 2.8             | 3.2 | 3.6 | 3.4                | 3.7 | 3.6 | 3.3 | 3.1 | 3.2 | 3.4 | 4.1 | 3.6 | 3.8 | 3.6 | 3.5  | 3.5 | 3.0 | 2.6 | 2.1             | 3.2                            | 4.1           |  |  |  |
| 6-Feb                                      | 2.0                           | 2.0 | Z               | 2.0 | 2.0 | 2.0             | 2.0 | 2.0 | 2.0                | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.4 | 2.4 | 2.8  | 3.1 | 3.3 | 3.0 | 2.7             | 2.3                            | 3.3           |  |  |  |
| 7-Feb                                      | 2.4                           | 2.3 | 2.9             | Z   | 2.0 | 2.0             | 2.0 | 2.0 | 2.0                | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0  | 2.0 | 2.1 | 2.2 | 2.3             | 2.1                            | 2.9           |  |  |  |
| 8-Feb                                      | 2.3                           | 2.1 | 2.2             | 2.1 | Z   | 2.0             | 2.1 | 2.1 | 2.1                | 2.1 | 2.1 | 2.7 | 2.5 | 2.4 | 2.3 | 2.2 | 2.3 | 2.2 | 2.3 | 2.3  | 2.4 | 2.5 | 2.7 | 2.6             | 2.3                            | 2.7           |  |  |  |
| 9-Feb                                      | 2.8                           | 3.2 | 3.4             | 2.8 | 2.7 | Z               | 2.4 | 2.5 | 2.4                | 2.4 | 2.4 | 2.4 | 2.3 | 2.2 | 2.2 | 2.1 | 2.2 | 2.2 | 2.2 | 2.3  | 2.3 | 2.3 | 2.3 | 2.4             | 2.5                            | 3.4           |  |  |  |
| 10-Feb                                     | Z                             | 2.6 | 2.8             | 2.4 | 2.4 | 2.3             | 2.4 | 2.3 | 2.3                | 2.3 | 2.3 | 2.2 | 2.1 | 2.1 | 2.2 | PF  | PF  | 2.2 | 2.3 | 2.2  | 2.2 | 2.1 | 2.1 | 2.3             | 2.3                            | 2.8           |  |  |  |
| 11-Feb                                     | 2.1                           | Z   | 2.1             | 2.1 | 2.1 | 2.2             | 2.4 | 2.5 | 2.5                | 2.6 | 2.5 | 2.1 | 2.1 | 2.1 | 2.1 | 2.3 | 2.3 | 2.0 | 2.0 | 2.0  | 2.0 | 2.0 | 2.0 | 2.0             | 2.2                            | 2.6           |  |  |  |
| 12-Feb                                     | 2.0                           | 2.0 | Z               | 2.0 | 2.0 | 2.0             | 2.0 | 2.0 | 2.5                | 3.0 | 2.3 | 2.4 | 2.5 | 2.2 | 2.3 | 2.4 | 2.7 | 3.0 | 2.9 | 2.9  | 2.9 | 2.8 | 2.7 | 2.5             | 2.4                            | 3.0           |  |  |  |
| 13-Feb                                     | 2.6                           | 3.4 | 3.4             | Z   | 3.1 | 2.3             | 2.0 | 2.1 | 2.3                | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1 | 2.1 | 2.1 | 2.1  | 2.1 | 2.1 | 2.1 | 2.1             | 2.3                            | 3.4           |  |  |  |
| 14-Feb                                     | 2.1                           | 2.1 | 2.1             | 2.1 | Z   | 2.1             | 2.1 | 2.0 | 2.0                | 2.0 | 2.1 | 2.1 | 2.1 | 2.1 | 2.0 | 2.2 | 2.3 | 2.3 | 2.2 | 2.2  | 2.3 | 2.2 | 2.1 | 2.1             | 2.1                            | 2.3           |  |  |  |
| 15-Feb                                     | 2.2                           | 2.2 | 2.2             | 2.2 | 2.2 | Z               | 2.6 | 2.5 | 2.2                | 2.1 | 2.1 | 2.1 | 2.5 | 2.3 | 2.2 | 2.2 | 2.1 | 2.1 | 2.2 | 2.2  | 2.2 | 2.2 | 2.3 | 2.2             | 2.2                            | 2.6           |  |  |  |
| 16-Feb                                     | Z                             | 2.3 | 2.3             | 2.3 | 2.3 | 2.3             | 2.3 | 2.4 | 2.3                | 2.4 | 2.4 | 2.4 | 2.5 | 2.2 | 2.3 | M   | 2.4 | 2.9 | 2.4 | 2.3  | 2.3 | 2.1 | 2.1 | 2.2             | 2.3                            | 2.9           |  |  |  |
| 17-Feb                                     | 2.3                           | Z   | 2.1             | 2.0 | 2.0 | 2.0             | 2.1 | 2.0 | 2.0                | 2.1 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.4 | 2.1 | 2.0 | 2.1 | 2.3  | 2.2 | 2.2 | 2.2 | 2.2             | 2.1                            | 2.4           |  |  |  |
| 18-Feb                                     | 2.2                           | 2.4 | Z               | 2.5 | 2.5 | 2.4             | 2.4 | 2.4 | 2.4                | 2.4 | 2.6 | 2.9 | 2.6 | 2.2 | 2.3 | 2.3 | 2.3 | 2.4 | 2.5 | 2.8  | 2.6 | 2.6 | 2.5 | 2.4             | 2.5                            | 2.9           |  |  |  |
| 19-Feb                                     | 2.4                           | 2.3 | 2.3             | Z   | 2.3 | 2.3             | 2.2 | 2.2 | 2.3                | 2.5 | 4.0 | 3.6 | 2.6 | 2.4 | 2.6 | 2.5 | 2.5 | 3.2 | 3.1 | 3.0  | 2.3 | 2.2 | 2.3 | 2.3             | 2.6                            | 4.0           |  |  |  |
| 20-Feb                                     | 2.4                           | 2.4 | 2.2             | 2.1 | Z   | 2.1             | 2.1 | 2.1 | 2.1                | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.1 | 2.1 | 2.3 | 2.5 | 2.2 | 2.3  | 2.3 | 2.3 | 2.4 | 2.2             | 2.2                            | 2.5           |  |  |  |
| 21-Feb                                     | 2.2                           | 2.2 | 2.2             | 2.1 | 2.1 | Z               | 2.2 | 2.1 | 2.2                | 2.3 | 2.3 | C   | C   | C   | C   | 2.0 | 2.0 | 2.1 | 2.0 | 2.2  | 2.2 | 2.2 | 2.2 | 2.1             | 2.2                            | 2.3           |  |  |  |
| 22-Feb                                     | Z                             | 2.2 | 2.2             | 2.2 | 2.2 | 2.2             | 2.2 | 2.4 | 2.4                | 2.5 | 2.6 | 2.6 | 2.3 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1 | 2.2  | 2.2 | 2.2 | 2.2 | 2.2             | 2.2                            | 2.6           |  |  |  |
| 23-Feb                                     | 2.2                           | 2.2 | 2.3             | 2.3 | 2.3 | 2.2             | 2.2 | 2.3 | 2.2                | 2.2 | 2.2 | 2.2 | 2.1 | 2.0 | 2.0 | 2.1 | 2.2 | 2.2 | 2.2 | 2.2  | 2.3 | 2.3 | 2.3 | 2.4             | 2.2                            | 2.4           |  |  |  |
| 24-Feb                                     | 2.4                           | 2.5 | Z               | 2.8 | 2.7 | 2.5             | 2.5 | 2.5 | 2.4                | 2.3 | 2.2 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1 | 2.0 | 2.1 | 2.0  | 2.1 | 2.1 | 2.1 | 2.1             | 2.2                            | 2.8           |  |  |  |
| 25-Feb                                     | 2.1                           | 2.2 | 2.1             | Z   | 2.3 | 2.3             | 2.3 | 2.3 | 2.3                | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1  | 2.1 | 2.2 | 2.2 | 2.4             | 2.1                            | 2.4           |  |  |  |
| 26-Feb                                     | 2.3                           | 2.4 | 2.3             | 2.2 | Z   | 2.3             | 2.3 | 2.5 | 3.3                | 3.8 | 3.0 | 2.4 | 2.3 | 2.3 | 2.4 | 2.2 | 2.2 | 2.3 | 2.3 | 2.1  | 2.2 | 2.3 | 2.3 | 2.2             | 2.4                            | 3.8           |  |  |  |
| 27-Feb                                     | 2.3                           | 2.2 | 2.1             | 2.0 | 2.0 | Z               | 2.0 | 2.0 | 2.1                | 2.0 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.0 | 2.0 | 2.0 | 2.1 | 2.1  | 2.2 | 2.2 | 2.1 | 2.0             | 2.1                            | 2.3           |  |  |  |
| 28-Feb                                     | Z                             | 2.3 | 2.2             | 2.2 | 2.2 | 2.1             | 2.1 | 2.1 | 2.1                | 2.1 | 2.4 | 2.5 | 2.3 | 2.2 | 2.2 | 2.0 | 2.0 | 2.1 | 2.1 | 2.1  | 2.1 | 2.3 | 2.3 | 2.3             | 2.2                            | 2.5           |  |  |  |
|  |                               |     |                 |     |     |                 |     |     |                    |     |     |     |     |     |     |     |     |     |     |  |     |     |     | Diurnal Average |                                |               |  |  |  |
|  |                               |     |                 |     |     |                 |     |     |                    |     |     |     |     |     |     |     |     |     |     |  |     |     |     | Diurnal Maximum |                                |               |  |  |  |
|  |                               |     |                 |     |     |                 |     |     |                    |     |     |     |     |     |     |     |     |     |     |  |     |     |     |                 |                                |               |  |  |  |
| Z - zerospan                               |                               |     | C - Calibration |     |     | M - Maintenance |     |     | PF - Power Failure |     |     |     |     |     |     |     |     |     |     |  |     |     |     |                 |                                |               |  |  |  |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Total Hydrocarbons (THC) - ppm**  
**Fort McKay - Bertha Ganter - February 2023**





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Total Hydrocarbons (THC) - ppm**  
**Fort McKay - Bertha Ganter - February 2023**

| <b>Concentration Ranges (ppm)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 2.0                           | 96                     | 15.14    | 15.14               |
| 2.1 - 3.0                         | 505                    | 79.65    | 94.80               |
| 3.1 - 10.0                        | 33                     | 5.21     | 100.00              |
| > 10.0                            | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 634

Total Number of Hours: 672



**Wood Buffalo Environmental Association**  
**Frequency Distribution**

**Total Hydrocarbons (THC) - ppm**  
**Fort McKay - Bertha Ganter - February 2023**

| <b>Concentration</b><br><b>Ranges (ppm)</b> | <b>Wind Direction</b> |     |    |     |    |     |    |     |    |     |    |     |    |     |    |     | <b>Totals</b> |
|---|-----------------------|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|---------------|
|   | N                     | NNE | NE | ENE | E  | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |               |
| 0 - 2.0                                     | 15                    | 6   | 5  | 7   | 3  | 0   | 0  | 9   | 7  | 1   | 4  | 11  | 17 | 7   | 2  | 2   | 96            |
| 2.1 - 3.0                                   | 107                   | 56  | 29 | 19  | 8  | 6   | 12 | 38  | 74 | 33  | 9  | 11  | 16 | 23  | 31 | 31  | 503           |
| 3.1 - 10.0                                  | 2                     | 3   | 0  | 2   | 0  | 0   | 1  | 4   | 6  | 4   | 1  | 1   | 0  | 0   | 4  | 5   | 33            |
| > 10.0                                      | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| <b>Totals</b>                               | 124                   | 65  | 34 | 28  | 11 | 6   | 13 | 51  | 87 | 38  | 14 | 23  | 33 | 30  | 37 | 38  | 632           |

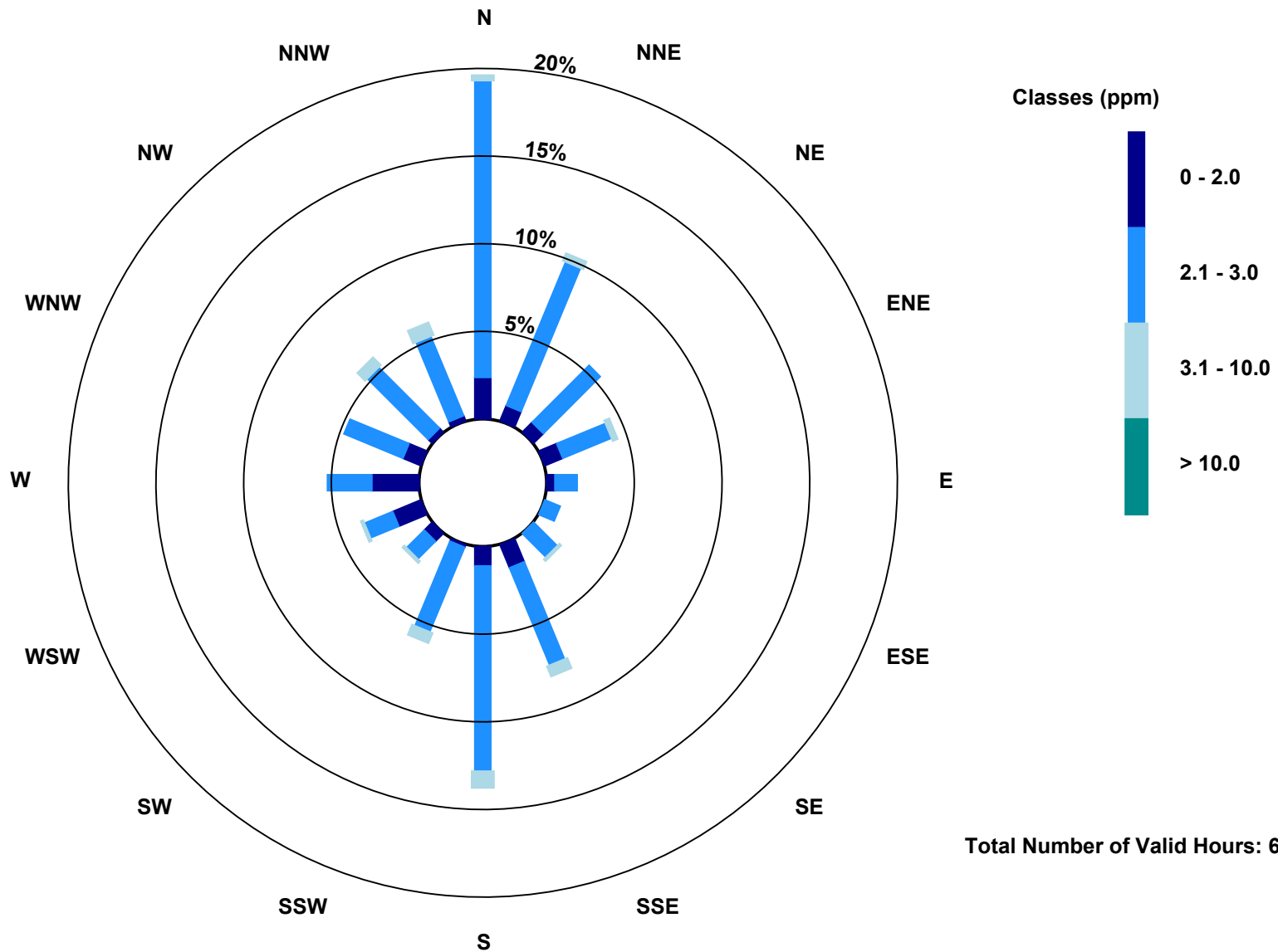
Total Number of Valid Hours: 632

Total Number of Hours: 672



Wood Buffalo Environmental Association  
Wind Rose Feb 2023

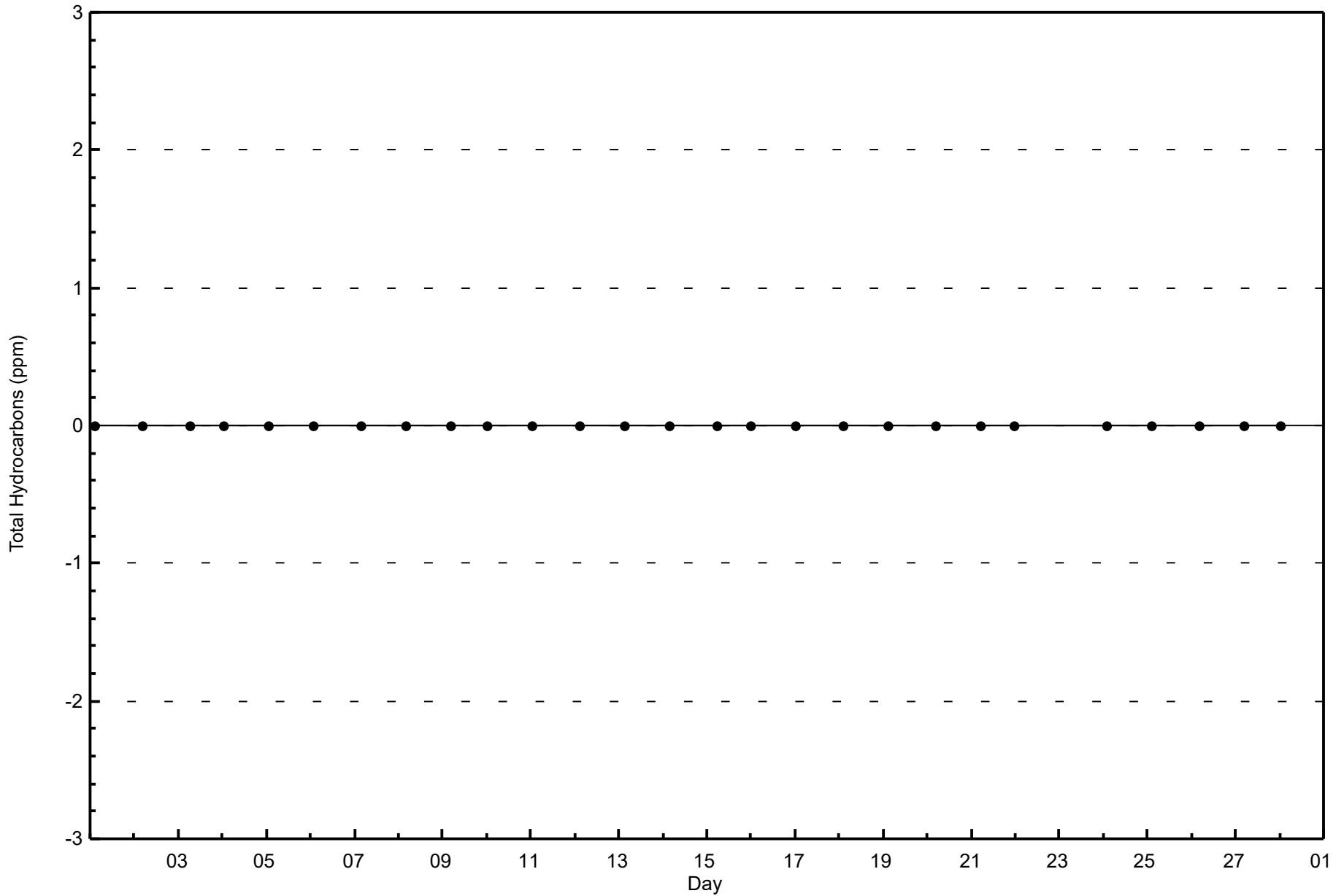
Total Hydrocarbons (THC) - ppm  
Fort McKay - Bertha Garter

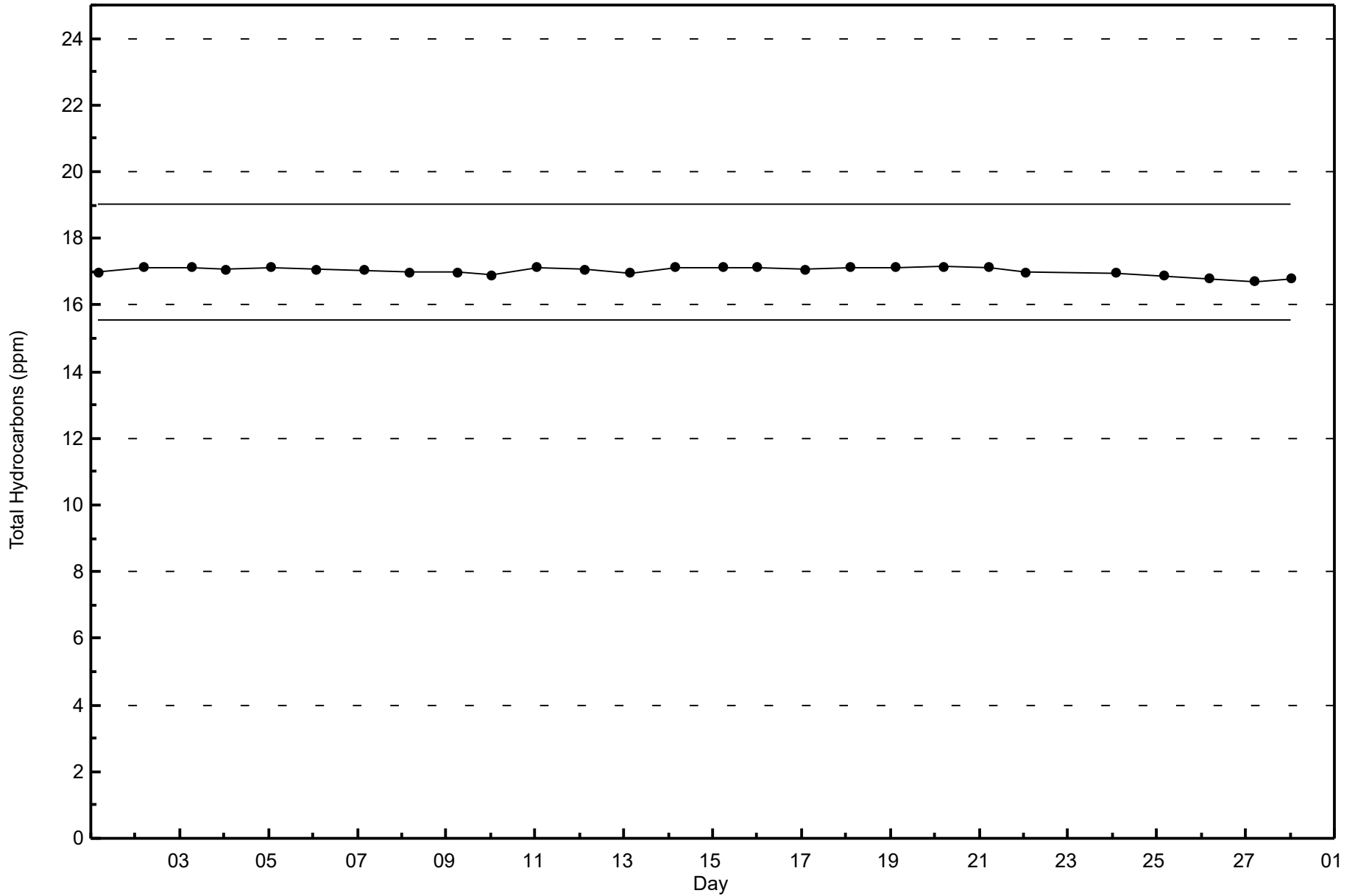




Wood Buffalo Environmental Association  
Zero Responses

Total Hydrocarbons (THC) - ppm  
Fort McKay - Bertha Ganter - February 2023









# Wood Buffalo Environmental Association Summary of Hour Averages

# Non Methane Hydrocarbons (NMHC) - ppm Fort McKay - Bertha Ganter - February 2023

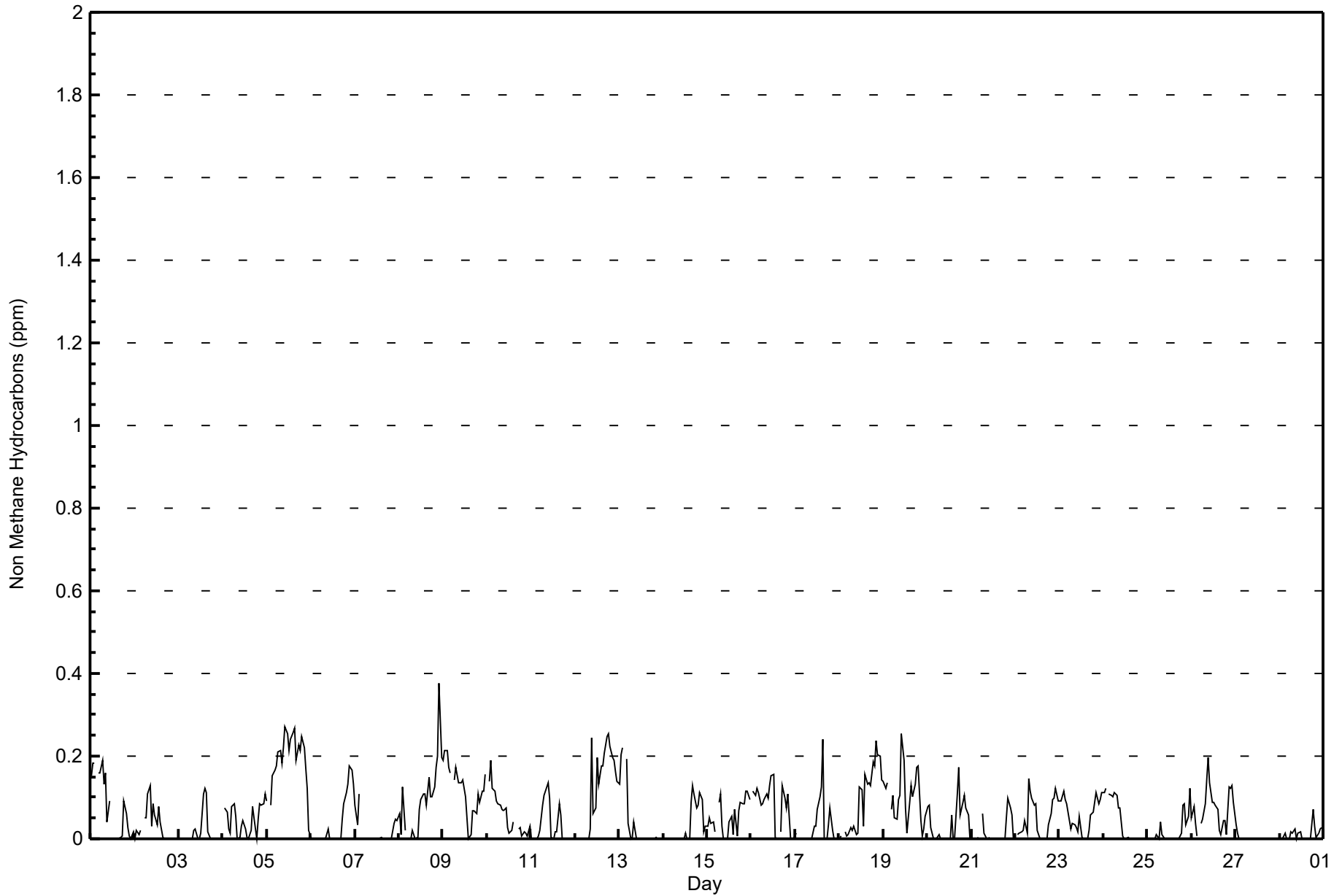
| Maximum Value: 0.375 ppm on Feb 8 23:00      Maximum Daily Average: 0.192 ppm on Feb 5<br>Minimum Value: 0.000 ppm on Feb 1 16:00      Minimum Daily Average: 0.002 ppm on Feb 27<br>Maximum Diurnal Average: 0.078 ppm at hour 21      Minimum Diurnal Average: 0.040 ppm at hour 4<br>Monthly Average: 0.057 ppm      Percentiles: $P_1 = 0.0$ $P_{10} = 0.0$ $Q_1 = 0.0$ Median = 0.0 $Q_3 = 0.1$ $P_{90} = 0.2$ $P_{99} = 0.3$ |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Hours in Service: 672<br>Hours of Data: 634<br>Hours of Missing Data: 38<br>Hours of Calibration: 35<br>Percent Operational Time: 99.6 |       |               |               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |                 |  |
|--|-------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--|-------|---------------|---------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-----------------|-----------------|--|
| Day  | Hourly Period Ending At (MST) |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |  |       | Daily Average | Daily Maximum |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |                 |  |
|  | 1                             | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     | 10    | 11    | 12    | 13    | 14    | 15    | 16    | 17    | 18    | 19    | 20    | 21    | 22    | 23   | 24    |               |               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |                 |  |
| 1-Feb  | 0.152                         | 0.182 | 0.181 | Z     | 0.159 | 0.160 | 0.188 | 0.133 | 0.160 | 0.041 | 0.093 | C     | C     | C     | C     | 0.000 | 0.004 | 0.006 | 0.091 | 0.060 | 0.026 | 0.008 | 0.002  | 0.018 | 0.088         | 0.188         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |                 |  |
| 2-Feb  | 0.001                         | 0.019 | 0.009 | 0.019 | Z     | 0.051 | 0.049 | 0.107 | 0.130 | 0.030 | 0.083 | 0.058 | 0.034 | 0.077 | 0.039 | 0.003 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000  | 0.000 | 0.000         | 0.031         | 0.130 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |                 |  |
| 3-Feb  | 0.000                         | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | Z     | 0.000 | 0.022 | 0.022 | 0.000 | 0.000 | 0.012 | 0.109 | 0.121 | 0.111 | 0.016 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000  | 0.000 | 0.018         | 0.121         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |                 |  |
| 4-Feb  | Z                             | 0.075 | 0.065 | 0.022 | 0.014 | 0.077 | 0.084 | 0.054 | 0.000 | 0.003 | 0.031 | 0.043 | 0.023 | 0.004 | 0.001 | 0.022 | 0.078 | 0.052 | 0.000 | 0.048 | 0.085 | 0.082 | 0.086  | 0.109 | 0.046         | 0.109         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |                 |  |
| 5-Feb  | 0.092                         | Z     | 0.083 | 0.154 | 0.167 | 0.176 | 0.212 | 0.213 | 0.184 | 0.219 | 0.270 | 0.256 | 0.214 | 0.240 | 0.259 | 0.266 | 0.189 | 0.228 | 0.214 | 0.248 | 0.222 | 0.170 | 0.122  | 0.020 | 0.192         | 0.270         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |                 |  |
| 6-Feb  | 0.000                         | 0.000 | Z     | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.023 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.049 | 0.084 | 0.112 | 0.133 | 0.176 | 0.167 | 0.134  | 0.038 | 0.176         |               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |                 |  |
| 7-Feb  | 0.082                         | 0.033 | 0.108 | Z     | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.003 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.039 | 0.048 | 0.043  | 0.015 | 0.108         |               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |                 |  |
| 8-Feb  | 0.062                         | 0.009 | 0.125 | 0.019 | Z     | 0.000 | 0.000 | 0.020 | 0.009 | 0.000 | 0.002 | 0.073 | 0.096 | 0.110 | 0.109 | 0.082 | 0.149 | 0.102 | 0.103 | 0.125 | 0.172 | 0.199 | 0.375  | 0.198 | 0.093         | 0.375         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |                 |  |
| 9-Feb  | 0.190                         | 0.214 | 0.212 | 0.173 | 0.159 | Z     | 0.141 | 0.173 | 0.136 | 0.134 | 0.135 | 0.141 | 0.103 | 0.051 | 0.000 | 0.009 | 0.069 | 0.067 | 0.060 | 0.108 | 0.089 | 0.115 | 0.114  | 0.156 | 0.120         | 0.214         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |                 |  |
| 10-Feb   | Z                             | 0.139 | 0.190 | 0.122 | 0.115 | 0.090 | 0.085 | 0.081 | 0.072 | 0.066 | 0.074 | 0.027 | 0.015 | 0.021 | 0.042 | PF    | PF    | 0.024 | 0.027 | 0.007 | 0.018 | 0.014 | 0.008  | 0.032 | 0.060         | 0.190         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |                 |  |
| 11-Feb   | 0.000                         | Z     | 0.000 | 0.000 | 0.006 | 0.021 | 0.081 | 0.107 | 0.115 | 0.135 | 0.097 | 0.002 | 0.000 | 0.018 | 0.018 | 0.085 | 0.059 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000  | 0.000 | 0.032         | 0.135         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |                 |  |
| 12-Feb   | 0.000                         | 0.000 | Z     | 0.000 | 0.001 | 0.000 | 0.000 | 0.000 | 0.023 | 0.245 | 0.062 | 0.073 | 0.197 | 0.131 | 0.178 | 0.178 | 0.208 | 0.247 | 0.256 | 0.225 | 0.198 | 0.190 | 0.164  | 0.140 | 0.118         | 0.256         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |                 |  |
| 13-Feb   | 0.132                         | 0.204 | 0.221 | Z     | 0.195 | 0.037 | 0.000 | 0.002 | 0.041 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.001 | 0.000 | 0.000 | 0.000 | 0.002 | 0.000 | 0.000 | 0.000  | 0.000 | 0.036         | 0.221         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |                 |  |
| 14-Feb   | 0.000                         | 0.000 | 0.000 | 0.000 | Z     | 0.000 | 0.000 | 0.000 | 0.000 | 0.001 | 0.000 | 0.013 | 0.000 | 0.000 | 0.089 | 0.129 | 0.109 | 0.076 | 0.080 | 0.111 | 0.093 | 0.018 | 0.030  | 0.033 | 0.129         | 0.033         | 0.129 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |                 |  |
| 15-Feb   | 0.030                         | 0.051 | 0.036 | 0.041 | 0.015 | Z     | 0.087 | 0.110 | 0.029 | 0.000 | 0.000 | 0.040 | 0.056 | 0.010 | 0.072 | 0.006 | 0.069 | 0.089 | 0.086 | 0.083 | 0.117 | 0.117 | 0.094  | 0.054 | 0.117         | 0.054         | 0.117 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |                 |  |
| 16-Feb   | Z                             | 0.115 | 0.105 | 0.121 | 0.111 | 0.082 | 0.085 | 0.096 | 0.108 | 0.099 | 0.129 | 0.152 | 0.156 | 0.002 | 0.000 | M     | 0.018 | 0.127 | 0.099 | 0.076 | 0.107 | 0.001 | 0.000  | 0.001 | 0.081         | 0.156         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |                 |  |
| 17-Feb   | 0.013                         | Z     | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.032 | 0.030 | 0.070 | 0.103 | 0.126 | 0.239 | 0.000 | 0.000 | 0.035 | 0.074 | 0.019 | 0.000 | 0.000  | 0.000 | 0.032         | 0.239         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |                 |  |
| 18-Feb   | 0.000                         | 0.008 | Z     | 0.016 | 0.006 | 0.011 | 0.026 | 0.021 | 0.030 | 0.012 | 0.015 | 0.126 | 0.117 | 0.029 | 0.156 | 0.131 | 0.135 | 0.127 | 0.185 | 0.178 | 0.239 | 0.202 | 0.199  | 0.143 | 0.092         | 0.239         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |                 |  |
| 19-Feb   | 0.141                         | 0.122 | 0.135 | Z     | 0.072 | 0.105 | 0.051 | 0.048 | 0.094 | 0.107 | 0.254 | 0.190 | 0.074 | 0.013 | 0.089 | 0.130 | 0.101 | 0.132 | 0.172 | 0.175 | 0.045 | 0.005 | 0.024  | 0.054 | 0.101         | 0.254         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |                 |  |
| 20-Feb   | 0.078                         | 0.081 | 0.027 | 0.000 | Z     | 0.000 | 0.010 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.002 | 0.058 | 0.000 | 0.000 | 0.108 | 0.173 | 0.057 | 0.087 | 0.105 | 0.073 | 0.058  | 0.000 | 0.040         | 0.173         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |                 |  |
| 21-Feb   | 0.000                         | 0.000 | 0.000 | 0.000 | 0.005 | Z     | 0.059 | 0.012 | 0.000 | 0.000 | 0.003 | C     | C     | C     | C     | 0.000 | 0.000 | 0.000 | 0.000 | 0.051 | 0.098 | 0.075 | 0.056  | 0.000 | 0.019         | 0.098         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |                 |  |
| 22-Feb   | Z                             | 0.010 | 0.013 | 0.016 | 0.019 | 0.045 | 0.014 | 0.145 | 0.117 | 0.099 | 0.083 | 0.084 | 0.021 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.035 | 0.063 | 0.096 | 0.099 | 0.122  | 0.091 | 0.051         | 0.145         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |                 |  |
| 23-Feb   | 0.093                         | 0.092 | 0.115 | 0.093 | 0.084 | 0.045 | 0.022 | 0.038 | 0.032 | 0.027 | 0.015 | 0.053 | 0.002 | 0.000 | 0.000 | 0.000 | 0.021 | 0.056 | 0.064 | 0.089 | 0.111 | 0.086 | 0.094  | 0.113 | 0.056         | 0.115         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |                 |  |
| 24-Feb   | 0.111                         | 0.124 | Z     | 0.107 | 0.104 | 0.101 | 0.111 | 0.104 | 0.075 | 0.073 | 0.007 | 0.000 | 0.000 | 0.003 | 0.000 | 0.002 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000  | 0.000 | 0.040         | 0.124         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |                 |  |
| 25-Feb   | 0.000                         | 0.000 | 0.000 | Z     | 0.001 | 0.010 | 0.001 | 0.041 | 0.012 | 0.001 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.014 | 0.080 | 0.084 | 0.033 | 0.053 | 0.120  | 0.020 | 0.020         | 0.120         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |                 |  |
| 26-Feb   | 0.050                         | 0.077 | 0.036 | 0.006 | Z     | 0.039 | 0.049 | 0.083 | 0.143 | 0.197 | 0.135 | 0.089 | 0.088 | 0.081 | 0.072 | 0.021 | 0.010 | 0.045 | 0.045 | 0.010 | 0.125 | 0.124 | 0.127  | 0.088 | 0.076         | 0.197         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |                 |  |
| 27-Feb   | 0.034                         | 0.013 | 0.000 | 0.000 | 0.000 | Z     | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000  | 0.000 | 0.002         | 0.034         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |                 |  |
| 28-Feb   | Z                             | 0.000 | 0.005 | 0.014 | 0.000 | 0.000 | 0.017 | 0.012 | 0.023 | 0.001 | 0.013 | 0.016 | 0.001 | 0.001 | 0.001 | 0.000 | 0.000 | 0.000 | 0.073 | 0.031 | 0.003 | 0.013 | 0.024  | 0.028 | 0.012         | 0.073         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |                 |  |
|  |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | 0.055  | 0.063 | 0.069         | 0.040         | 0.054 | 0.044 | 0.051 | 0.057 | 0.056 | 0.055 | 0.054 | 0.049 | 0.043 | 0.047 | 0.055 | 0.048 | 0.058 | 0.064 | 0.072 | 0.078 | 0.068 | 0.071 | 0.058 | Diurnal Average |                 |  |
|  |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | 0.190  | 0.214 | 0.221         | 0.173         | 0.195 | 0.176 | 0.212 | 0.213 | 0.184 | 0.245 | 0.270 | 0.256 | 0.214 | 0.240 | 0.259 | 0.266 | 0.208 | 0.247 | 0.256 | 0.248 | 0.239 | 0.202 | 0.375 | 0.198           | Diurnal Maximum |  |

Z - zerospan      C - Calibration      M - Maintenance      PF - Power Failure



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Non Methane Hydrocarbons (NMHC) - ppm**  
**Fort McKay - Bertha Ganter - February 2023**





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Non Methane Hydrocarbons (NMHC) - ppm  
Fort McKay - Bertha Ganter - February 2023**

| <b>Concentration Ranges (ppm)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 0.005                         | 236                    | 37.22    | 37.22               |
| 0.006 - 0.05                      | 140                    | 22.08    | 59.31               |
| 0.06 - 0.1                        | 189                    | 29.81    | 89.12               |
| > 0.1                             | 69                     | 10.88    | 100.00              |

Total Number of Valid Hours: 634

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Non Methane Hydrocarbons (NMHC) - ppm  
Fort McKay - Bertha Ganter - February 2023**

| <b>Concentration<br/>Ranges (ppm)</b> | <b>Wind Direction</b> |     |    |     |    |     |    |     |    |     |    |     |    |     |    |     | <b>Totals</b> |
|---------------------------------------|-----------------------|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|---------------|
|                                       | N                     | NNE | NE | ENE | E  | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |               |
| 0 - 0.005                             | 38                    | 33  | 20 | 16  | 8  | 3   | 3  | 23  | 30 | 5   | 5  | 11  | 17 | 9   | 10 | 5   | 236           |
| 0.006 - 0.05                          | 39                    | 8   | 7  | 4   | 0  | 3   | 5  | 8   | 17 | 15  | 2  | 5   | 5  | 7   | 8  | 7   | 140           |
| 0.06 - 0.1                            | 36                    | 19  | 7  | 5   | 1  | 0   | 3  | 16  | 29 | 12  | 5  | 5   | 10 | 11  | 14 | 14  | 187           |
| > 0.1                                 | 11                    | 5   | 0  | 3   | 2  | 0   | 2  | 4   | 11 | 6   | 2  | 2   | 1  | 3   | 5  | 12  | 69            |
| <b>Totals</b>                         | 124                   | 65  | 34 | 28  | 11 | 6   | 13 | 51  | 87 | 38  | 14 | 23  | 33 | 30  | 37 | 38  | 632           |

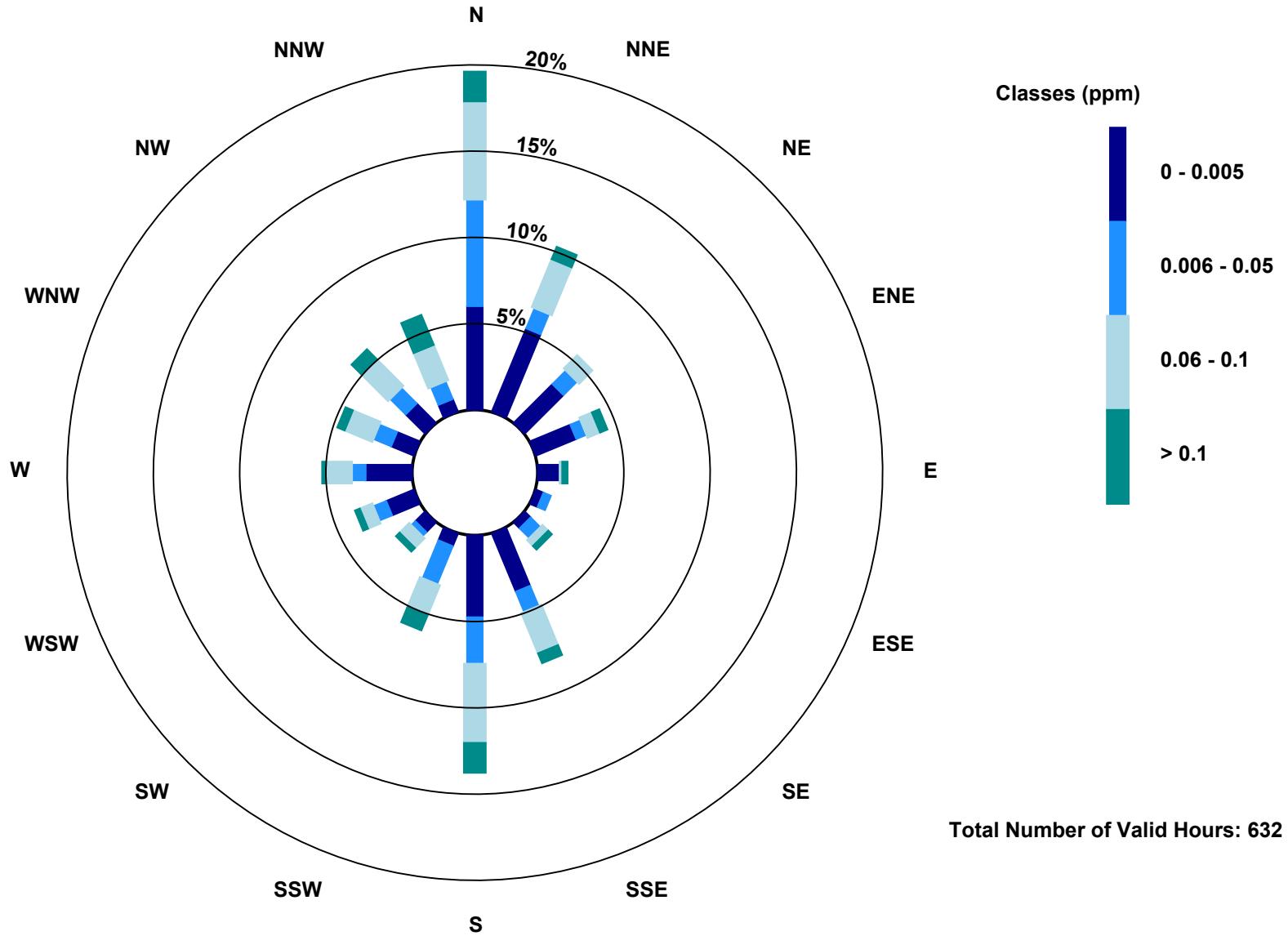
Total Number of Valid Hours: 632

Total Number of Hours: 672



**Wood Buffalo Environmental Association**  
**Wind Rose Feb 2023**

**Non Methane Hydrocarbons (NMHC) - ppm**  
**Fort McKay - Bertha Ganter**



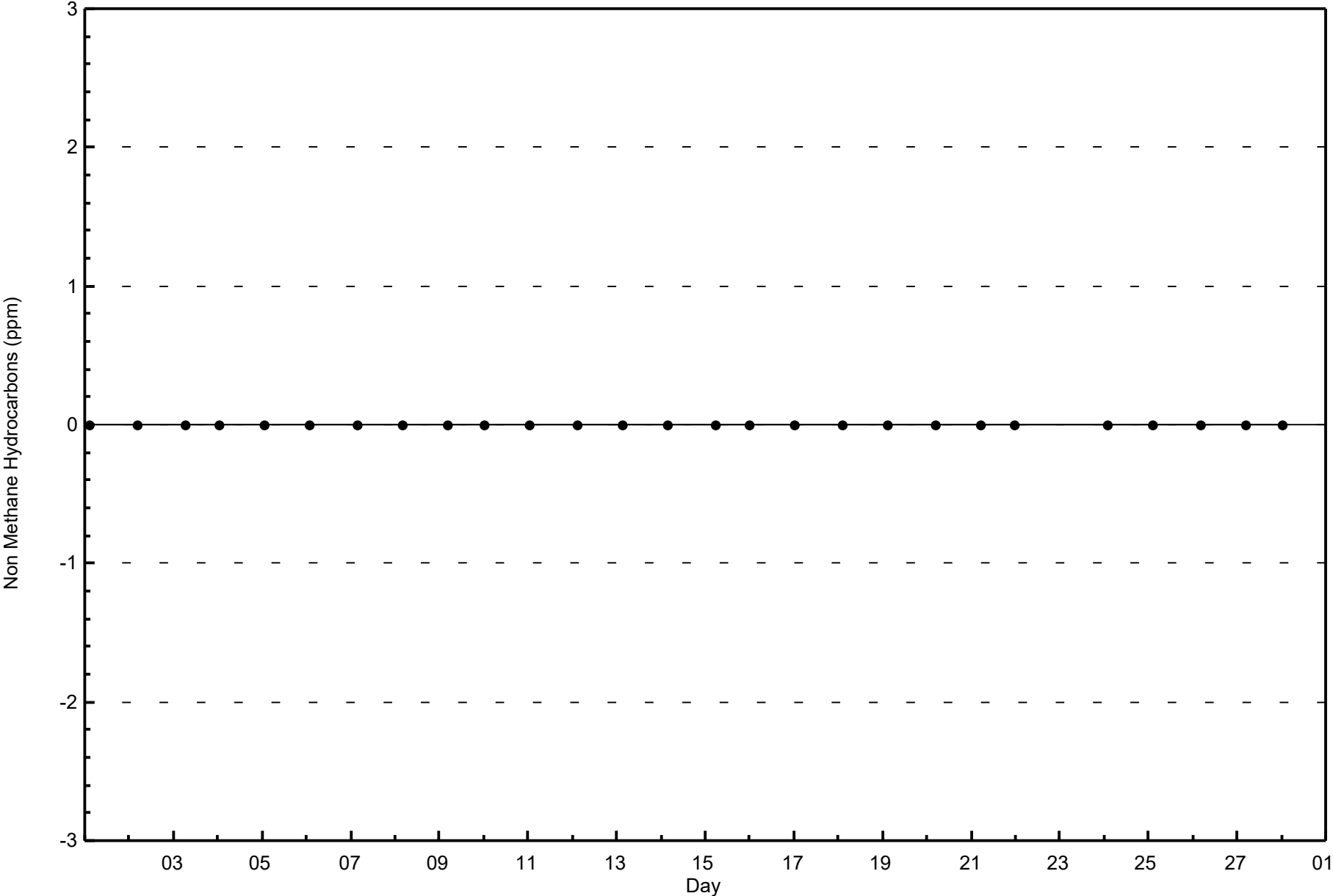


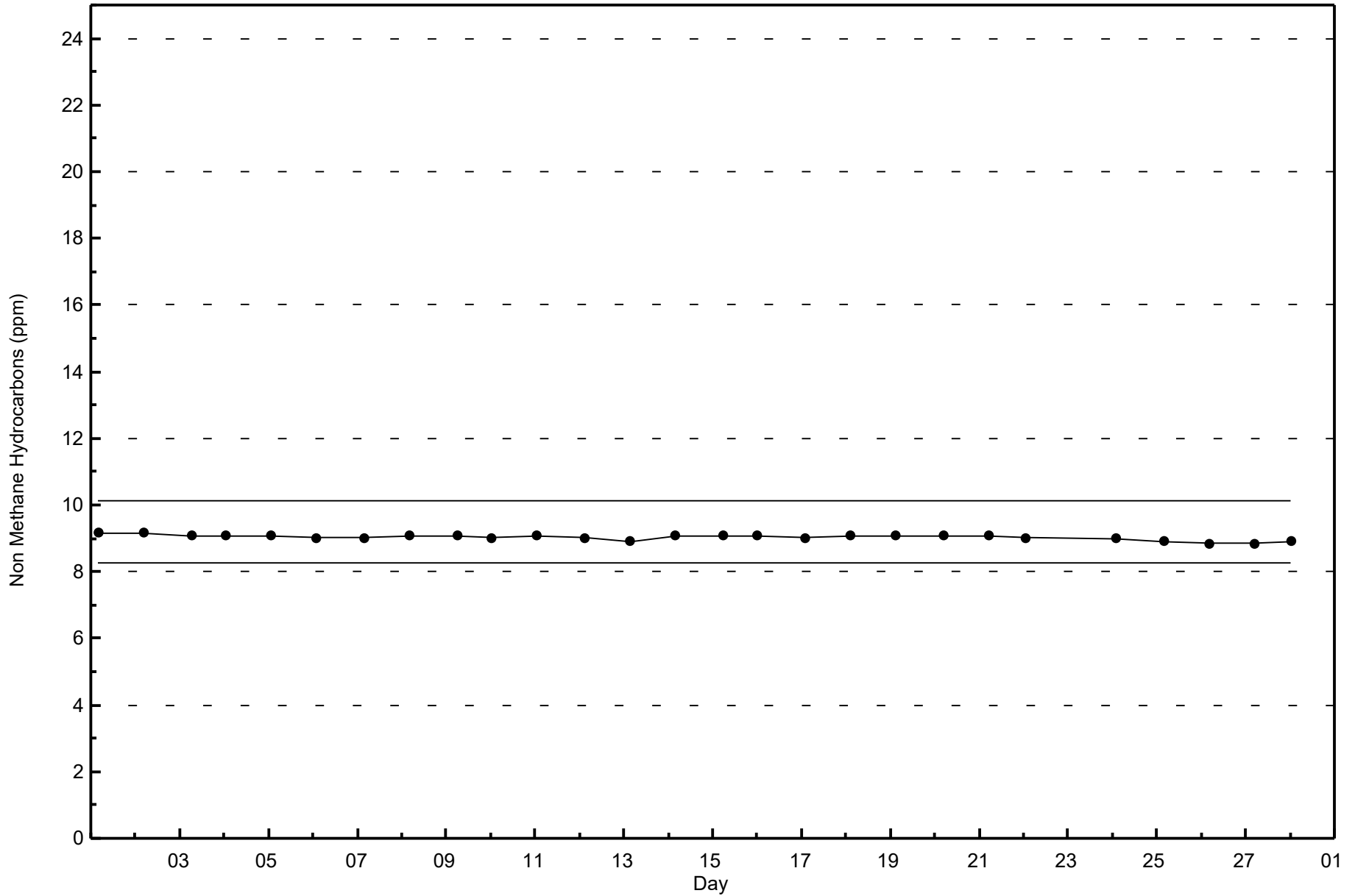
Wood Buffalo Environmental Association

Zero Responses

Non Methane Hydrocarbons (NMHC) - ppm

Fort McKay - Bertha Ganter - February 2023







|  |  |          |                           |      |
|--|--|----------|---------------------------|------|
| Number of Exceedences (AAAQO):             | 1-hr: 0  | 24-hr: 0 | Hours in Service:         | 672  |
| Maximum Value: 3.8 ppm on Feb 5 16:00      | Maximum Daily Average: 3.0 ppm on Feb 5  |          | Hours of Data:            | 634  |
| Minimum Value: 2.0 ppm on Feb 25 13:00     | Minimum Daily Average: 2.1 ppm on Feb 7  |          | Hours of Missing Data:    | 38   |
| Maximum Diurnal Average: 2.3 ppm at hour 3 | Minimum Diurnal Average: 2.2 ppm at hour 14  |          | Hours of Calibration:     | 35   |
| Monthly Average: 2.25 ppm                  | Percentiles: P <sub>1</sub> = 2.0 P <sub>10</sub> = 2.0 Q <sub>1</sub> = 2.1 Median = 2.2 Q <sub>3</sub> = 2.3 P <sub>90</sub> = 2.5 P <sub>99</sub> = 3.4 |          | Percent Operational Time: | 99.6 |

| Day    | Hourly Period Ending At (MST) |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Daily Average | Daily Maximum |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
|--------|-------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---------------|---------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----------------|--|
|        | 1                             | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19  | 20  | 21  | 22  | 23  | 24  |               |               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 1-Feb  | 2.8                           | 3.1 | 3.0 | Z   | 3.0 | 3.0 | 3.0 | 2.7 | 2.4 | 2.2 | 2.4 | C   | C   | C   | C   | 2.1 | 2.2 | 2.2 | 2.2 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.5           | 3.1           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 2-Feb  | 2.1                           | 2.1 | 2.1 | 2.1 | Z   | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.2 | 2.2 | 2.2 | 2.2 | 2.1 | 2.0 | 2.1 | 2.0 | 2.1 | 2.0 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1           | 2.3           | 2.3 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 3-Feb  | 2.1                           | 2.1 | 2.1 | 2.2 | 2.3 | 2.2 | Z   | 2.3 | 2.2 | 2.4 | 2.3 | 2.2 | 2.2 | 2.5 | 2.5 | 2.3 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2           | 2.5           | 2.5 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 4-Feb  | Z                             | 2.3 | 2.4 | 2.3 | 2.2 | 2.3 | 2.4 | 2.3 | 2.1 | 2.1 | 2.2 | 2.3 | 2.2 | 2.2 | 2.2 | 2.2 | 2.3 | 2.3 | 2.1 | 2.3 | 2.5 | 2.4 | 2.3 | 2.6 | 2.3           | 2.6           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 5-Feb  | 2.6                           | Z   | 2.5 | 2.5 | 2.6 | 2.7 | 3.0 | 3.4 | 3.2 | 3.4 | 3.3 | 3.0 | 2.8 | 3.0 | 3.1 | 3.8 | 3.4 | 3.6 | 3.3 | 3.3 | 3.3 | 2.8 | 2.5 | 2.1 | 3.0           | 3.8           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 6-Feb  | 2.0                           | 2.0 | Z   | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.4 | 2.3 | 2.7 | 2.9 | 3.1 | 2.9 | 2.6 | 2.3           | 3.1           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 7-Feb  | 2.4                           | 2.3 | 2.8 | Z   | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1 | 2.2 | 2.2 | 2.1 | 2.8           | 2.8           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 8-Feb  | 2.3                           | 2.1 | 2.1 | 2.1 | Z   | 2.0 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.6 | 2.4 | 2.3 | 2.2 | 2.2 | 2.2 | 2.1 | 2.2 | 2.2 | 2.2 | 2.2 | 2.3 | 2.4 | 2.4           | 2.6           | 2.6 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 9-Feb  | 2.6                           | 3.0 | 3.1 | 2.6 | 2.6 | Z   | 2.3 | 2.3 | 2.3 | 2.2 | 2.3 | 2.3 | 2.2 | 2.1 | 2.2 | 2.1 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.3           | 3.1           | 3.1 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 10-Feb | Z                             | 2.4 | 2.6 | 2.3 | 2.3 | 2.2 | 2.3 | 2.2 | 2.2 | 2.2 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | PF  | PF  | 2.2 | 2.3 | 2.2 | 2.2 | 2.1 | 2.1 | 2.3 | 2.2           | 2.6           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 11-Feb | 2.1                           | Z   | 2.1 | 2.1 | 2.1 | 2.1 | 2.3 | 2.4 | 2.4 | 2.4 | 2.4 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1           | 2.4           | 2.4 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 12-Feb | 2.0                           | 2.0 | Z   | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.4 | 2.7 | 2.3 | 2.3 | 2.3 | 2.1 | 2.2 | 2.2 | 2.5 | 2.7 | 2.7 | 2.7 | 2.7 | 2.6 | 2.5 | 2.4 | 2.3           | 2.7           | 2.7 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 13-Feb | 2.5                           | 3.2 | 3.2 | Z   | 2.9 | 2.3 | 2.0 | 2.1 | 2.3 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2           | 3.2           | 3.2 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 14-Feb | 2.1                           | 2.1 | 2.1 | 2.1 | Z   | 2.1 | 2.1 | 2.0 | 2.0 | 2.0 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.1 | 2.1 | 2.1           | 2.2           | 2.2 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 15-Feb | 2.1                           | 2.1 | 2.1 | 2.1 | 2.1 | Z   | 2.5 | 2.3 | 2.2 | 2.1 | 2.1 | 2.1 | 2.4 | 2.2 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1           | 2.2           | 2.5 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 16-Feb | Z                             | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.3 | 2.3 | 2.3 | 2.2 | 2.3 | M   | 2.4 | 2.7 | 2.3 | 2.2 | 2.2 | 2.1 | 2.1 | 2.2 | 2.3           | 2.7           | 2.7 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 17-Feb | 2.2                           | Z   | 2.1 | 2.0 | 2.0 | 2.0 | 2.1 | 2.0 | 2.0 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.0 | 2.1 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.1           | 2.2           | 2.2 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 18-Feb | 2.2                           | 2.3 | Z   | 2.5 | 2.5 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.6 | 2.8 | 2.5 | 2.1 | 2.1 | 2.1 | 2.2 | 2.3 | 2.3 | 2.6 | 2.4 | 2.4 | 2.3 | 2.2 | 2.4           | 2.8           | 2.8 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 19-Feb | 2.2                           | 2.2 | 2.2 | Z   | 2.2 | 2.2 | 2.2 | 2.2 | 2.3 | 2.4 | 3.8 | 3.4 | 2.5 | 2.3 | 2.5 | 2.4 | 2.4 | 3.1 | 2.9 | 2.8 | 2.3 | 2.1 | 2.2 | 2.2 | 2.5           | 3.8           | 3.8 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 20-Feb | 2.3                           | 2.3 | 2.2 | 2.1 | Z   | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.1 | 2.1 | 2.2 | 2.3 | 2.2 | 2.2 | 2.2 | 2.2 | 2.3 | 2.2 | 2.2           | 2.3           | 2.3 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 21-Feb | 2.2                           | 2.2 | 2.2 | 2.1 | 2.1 | Z   | 2.1 | 2.1 | 2.2 | 2.3 | 2.3 | C   | C   | C   | C   | 2.0 | 2.0 | 2.1 | 2.0 | 2.1 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1           | 2.3           | 2.3 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 22-Feb | Z                             | 2.2 | 2.2 | 2.1 | 2.1 | 2.2 | 2.2 | 2.2 | 2.3 | 2.4 | 2.5 | 2.5 | 2.3 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2           | 2.5           | 2.5 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 23-Feb | 2.1                           | 2.1 | 2.1 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.1 | 2.1 | 2.0 | 2.0 | 2.1 | 2.2 | 2.1 | 2.1 | 2.2 | 2.2 | 2.2 | 2.2 | 2.3 | 2.2           | 2.3           | 2.3 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 24-Feb | 2.3                           | 2.4 | Z   | 2.7 | 2.6 | 2.4 | 2.4 | 2.4 | 2.3 | 2.2 | 2.2 | 2.1 | 2.0 | 2.0 | 2.0 | 2.1 | 2.0 | 2.1 | 2.0 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2           | 2.7           | 2.7 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 25-Feb | 2.1                           | 2.2 | 2.1 | Z   | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1 | 2.2 | 2.2 | 2.3 | 2.1           | 2.3           | 2.3 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 26-Feb | 2.3                           | 2.3 | 2.2 | 2.2 | Z   | 2.2 | 2.3 | 2.4 | 3.1 | 3.6 | 2.8 | 2.3 | 2.2 | 2.2 | 2.3 | 2.2 | 2.2 | 2.3 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.4           | 3.6           | 3.6 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 27-Feb | 2.2                           | 2.2 | 2.1 | 2.0 | 2.0 | Z   | 2.0 | 2.0 | 2.1 | 2.0 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.0 | 2.0 | 2.0 | 2.1 | 2.1 | 2.2 | 2.2 | 2.1 | 2.0 | 2.1           | 2.2           | 2.2 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 28-Feb | Z                             | 2.3 | 2.2 | 2.2 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.4 | 2.5 | 2.3 | 2.2 | 2.2 | 2.0 | 2.0 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.3 | 2.3 | 2.3           | 2.2           | 2.5 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 2.3    |                               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | 2.3 | 2.3           | 2.2           | 2.3 | 2.2 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.3 | 2.2 | 2.3 | 2.2 | 2.2 | 2.2 | 2.2 | Diurnal Average |  |
| 2.8    |                               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | 3.2 | 3.2           | 2.7           | 3.0 | 3.0 | 3.0 | 3.4 | 3.2 | 3.6 | 3.8 | 3.4 | 2.8 | 3.0 | 3.1 | 3.8 | 3.4 | 3.6 | 3.3 | 3.3 | 3.3 | 3.1 | 2.9 | 2.6 | Diurnal Maximum |  |

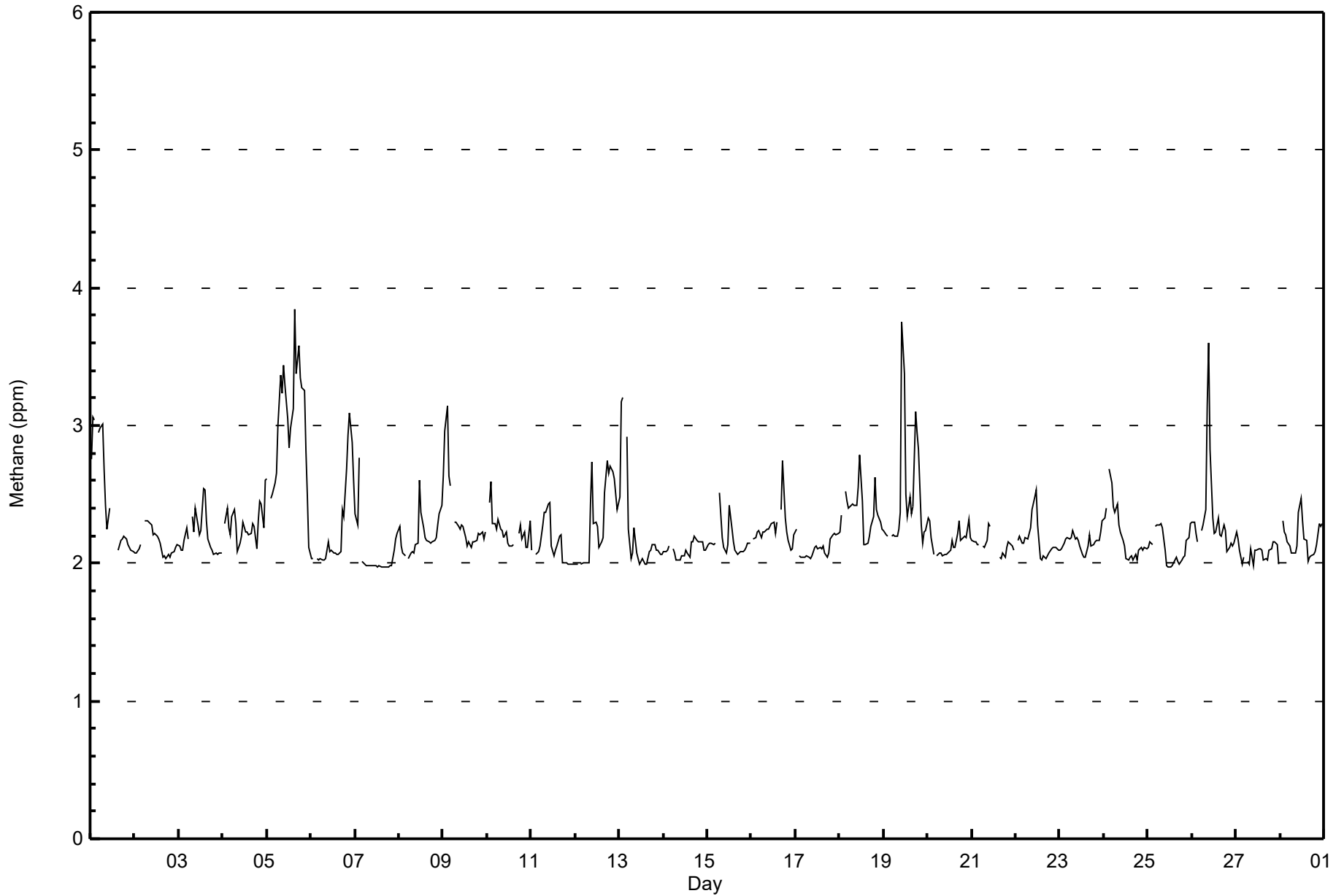
Z - zerospan      C - Calibration      M - Maintenance      PF - Power Failure





**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Methane (CH<sub>4</sub>) - ppm**  
**Fort McKay - Bertha Ganter - February 2023**





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Methane (CH<sub>4</sub>) - ppm**  
**Fort McKay - Bertha Ganter - February 2023**

| <b>Concentration Ranges (ppm)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 2.0                           | 97                     | 15.30    | 15.30               |
| 2.1 - 3.0                         | 516                    | 81.39    | 96.69               |
| 3.1 - 10.0                        | 21                     | 3.31     | 100.00              |
| > 10.0                            | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 634

Total Number of Hours: 672



**Wood Buffalo Environmental Association**  
**Frequency Distribution**

**Methane (CH<sub>4</sub>) - ppm**  
**Fort McKay - Bertha Ganter - February 2023**

| Concentration<br>Ranges (ppm) | Wind Direction |     |    |     |    |     |    |     |    |     |    |     |    |     |    |     | Totals |
|-------------------------------|----------------|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|--------|
|                               | N              | NNE | NE | ENE | E  | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |        |
| 0 - 2.0                       | 15             | 6   | 5  | 7   | 3  | 0   | 0  | 9   | 8  | 1   | 4  | 11  | 17 | 7   | 2  | 2   | 97     |
| 2.1 - 3.0                     | 109            | 56  | 29 | 19  | 8  | 6   | 13 | 39  | 74 | 34  | 10 | 11  | 16 | 23  | 33 | 34  | 514    |
| 3.1 - 10.0                    | 0              | 3   | 0  | 2   | 0  | 0   | 0  | 3   | 5  | 3   | 0  | 1   | 0  | 0   | 2  | 2   | 21     |
| > 10.0                        | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| <b>Totals</b>                 | 124            | 65  | 34 | 28  | 11 | 6   | 13 | 51  | 87 | 38  | 14 | 23  | 33 | 30  | 37 | 38  | 632    |

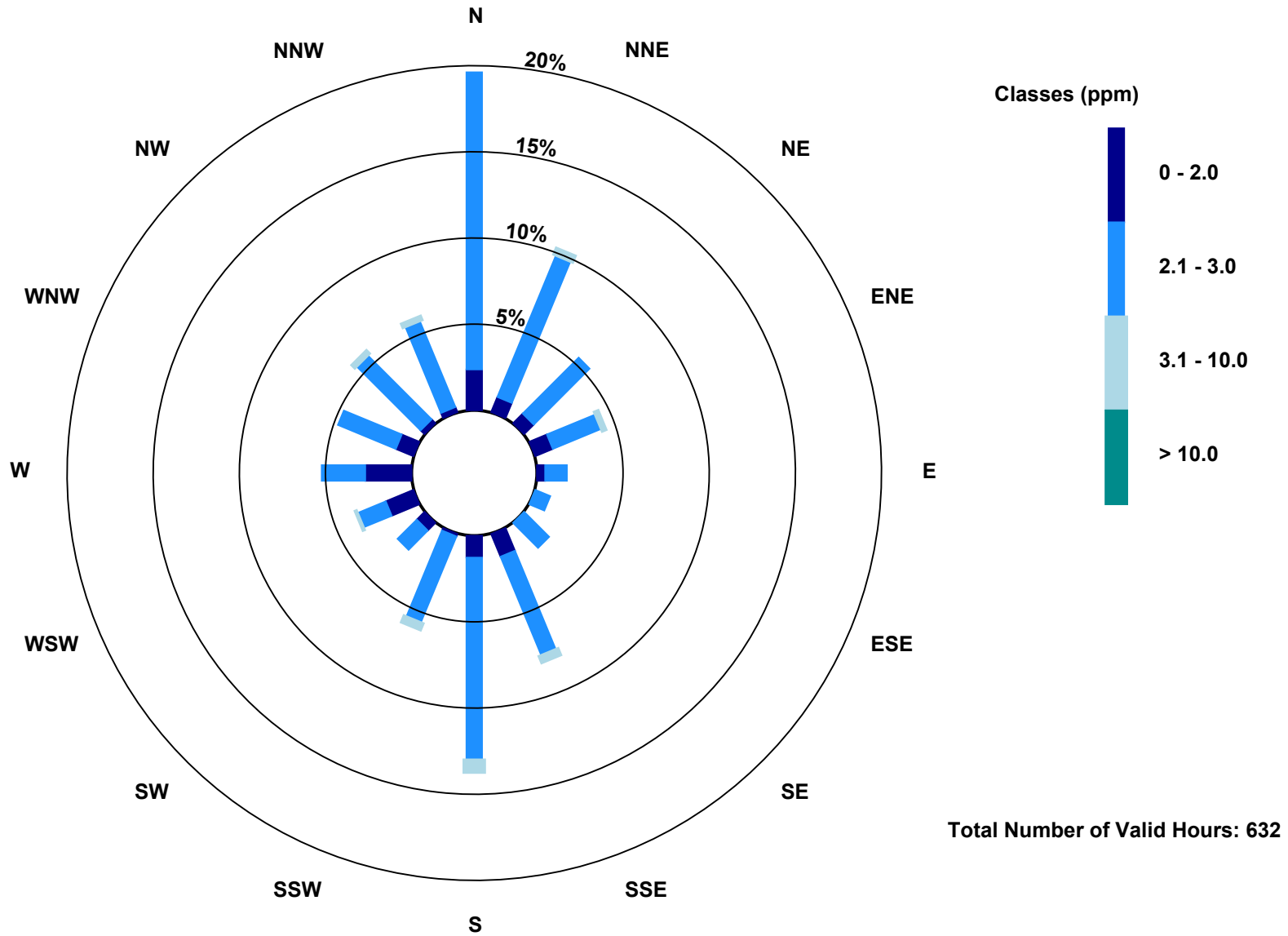
Total Number of Valid Hours: 632

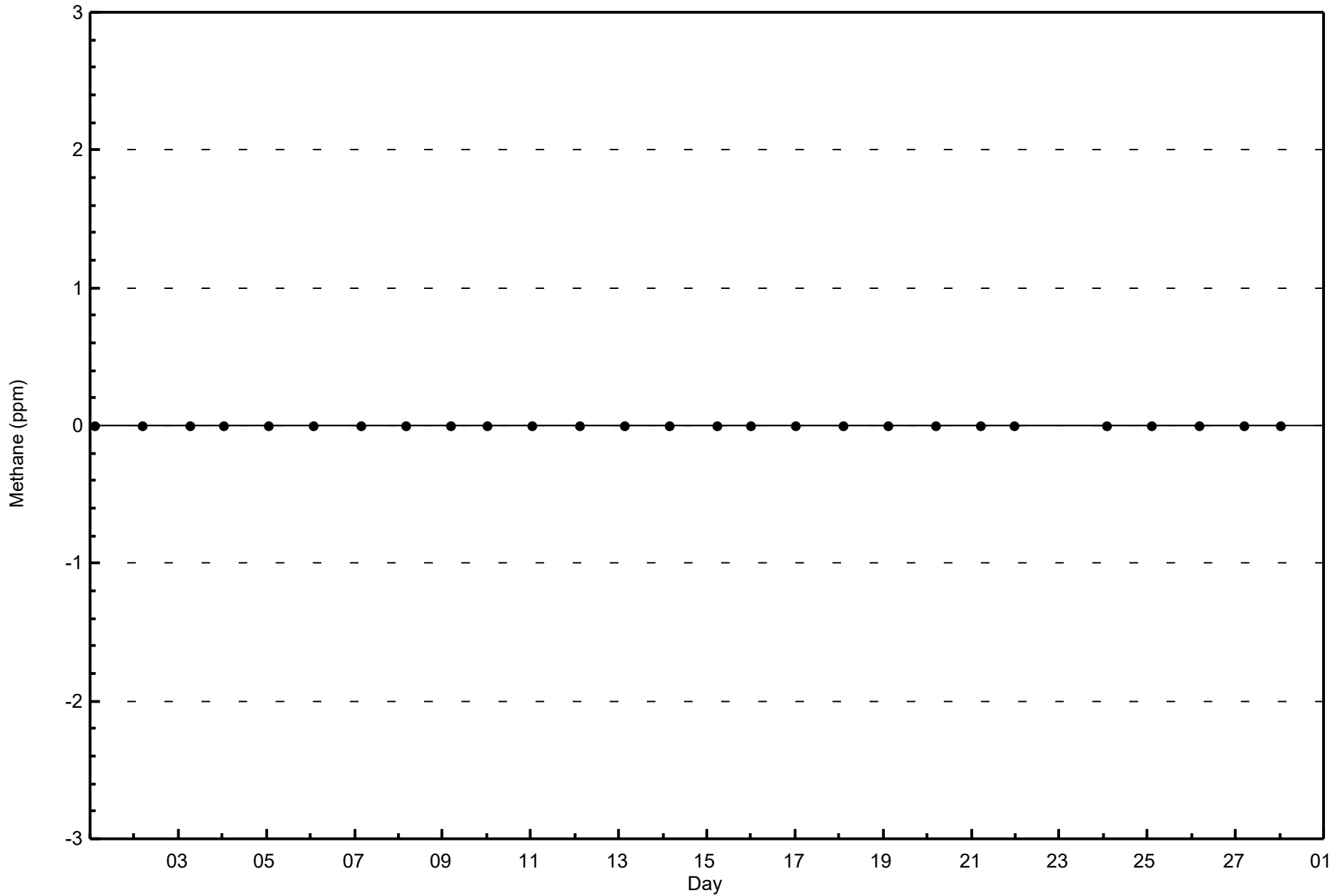
Total Number of Hours: 672

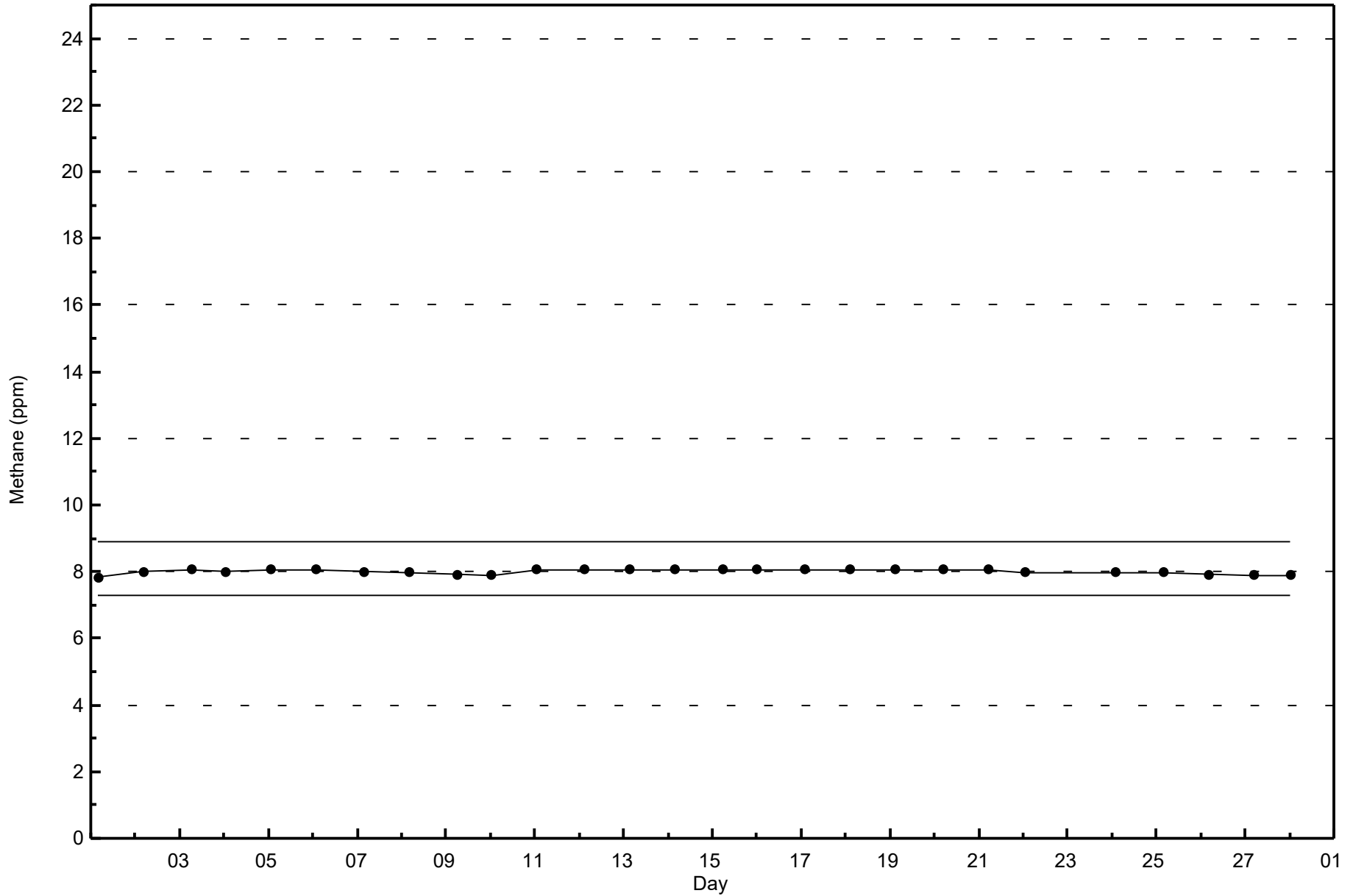


Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Methane (CH<sub>4</sub>) - ppm  
Fort McKay - Bertha Ganter

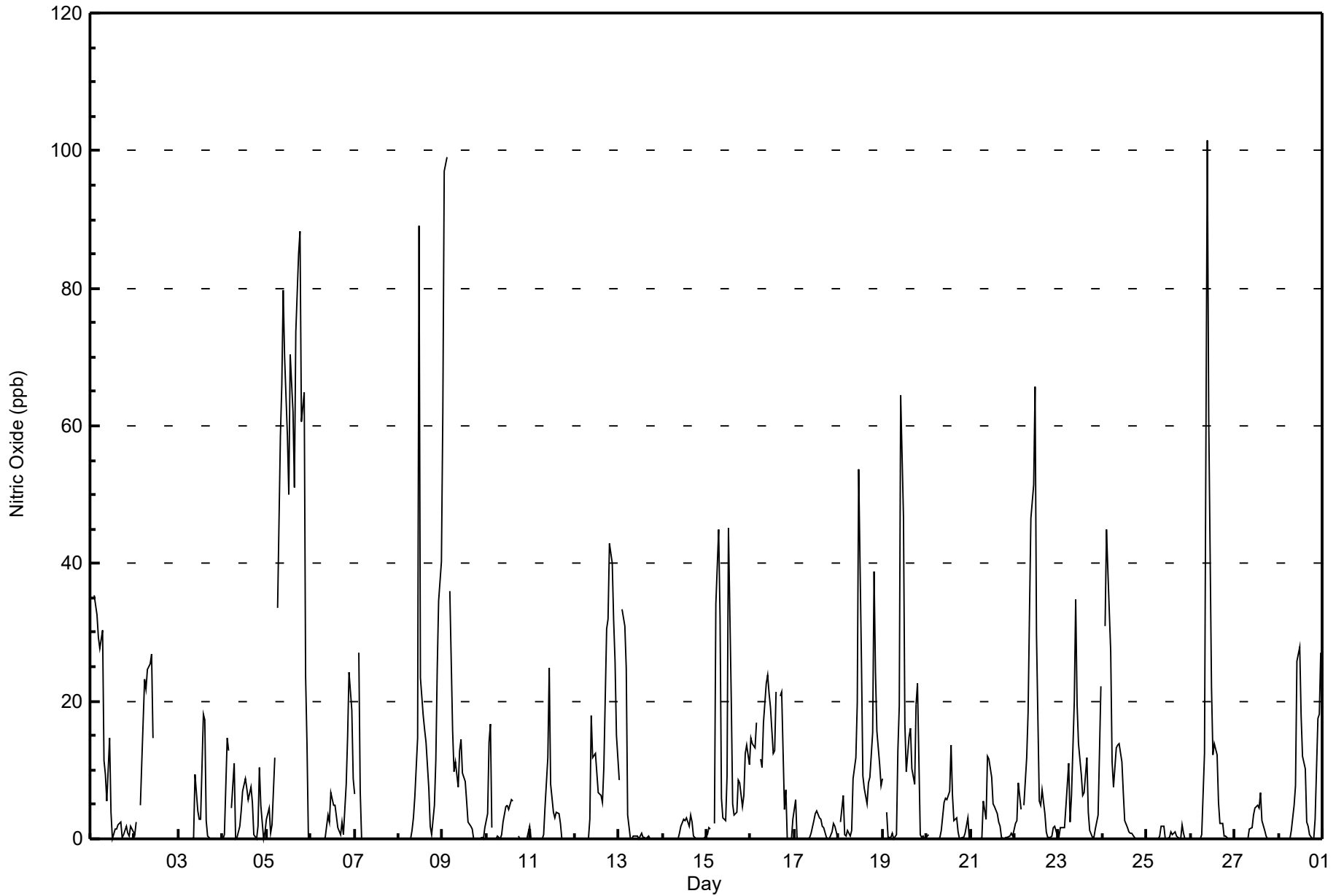








| Maximum Value: 101.4 ppb on Feb 26 10:00     |                               |      |                 |      |      |      |                 |      |      |       |                    |      |      |      |      |      |      |      |      | Maximum Daily Average: 44.8 ppb on Feb 5  |      |      |      |      | Hours in Service:         | 672           |
|--|-------------------------------|------|-----------------|------|------|------|-----------------|------|------|-------|--------------------|------|------|------|------|------|------|------|------|---|------|------|------|------|---------------------------|---------------|
| Minimum Value: 0.0 ppb on Feb 1 13:00        |                               |      |                 |      |      |      |                 |      |      |       |                    |      |      |      |      |      |      |      |      | Minimum Daily Average: 0.5 ppb on Feb 25  |      |      |      |      | Hours of Data:            | 636           |
| Maximum Diurnal Average: 18.3 ppb at hour 12 |                               |      |                 |      |      |      |                 |      |      |       |                    |      |      |      |      |      |      |      |      | Minimum Diurnal Average: 5.1 ppb at hour 24   |      |      |      |      | Hours of Missing Data:    | 36            |
| Monthly Average: 8.71 ppb                    |                               |      |                 |      |      |      |                 |      |      |       |                    |      |      |      |      |      |      |      |      | Percentiles: P <sub>1</sub> = 0.0 P <sub>10</sub> = 0.0 Q <sub>1</sub> = 0.0 Median = 2.1 Q <sub>3</sub> = 10.8 P <sub>90</sub> = 25.1 P <sub>99</sub> = 77.6 |      |      |      |      | Hours of Calibration:     | 33            |
|  |                               |      |                 |      |      |      |                 |      |      |       |                    |      |      |      |      |      |      |      |      |   |      |      |      |      | Percent Operational Time: | 99.6          |
| Day  | Hourly Period Ending At (MST) |      |                 |      |      |      |                 |      |      |       |                    |      |      |      |      |      |      |      |      |   |      |      |      |      | Daily Average             | Daily Maximum |
|  | 1                             | 2    | 3               | 4    | 5    | 6    | 7               | 8    | 9    | 10    | 11                 | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20  | 21   | 22   | 23   | 24   |                           |               |
| 1-Feb  | 28.5                          | Z    | 35.3            | 32.6 | 29.3 | 27.6 | 30.3            | 11.4 | 9.4  | 5.4   | 14.6               | 4.0  | 0.0  | 1.5  | 1.4  | 2.0  | 2.5  | 0.1  | 0.6  | 1.9   | 0.7  | 0.5  | 1.9  | 1.0  | 10.5                      | 35.3          |
| 2-Feb  | 0.6                           | 2.4  | Z               | 4.8  | 11.2 | 23.1 | 21.7            | 24.6 | 25.4 | 26.8  | 14.6               | C    | C    | C    | C    | C    | C    | 0.0  | 0.0  | 0.0   | 0.0  | 0.0  | 0.0  | 0.1  | --                        | 26.8          |
| 3-Feb  | 0.0                           | 0.0  | 0.0             | 0.0  | Z    | 0.0  | 0.0             | 0.0  | 0.2  | 9.3   | 4.1                | 2.8  | 2.9  | 18.2 | 17.4 | 2.6  | 0.5  | 0.0  | 0.0  | 0.0   | 0.0  | 0.0  | 0.0  | 0.0  | 2.5                       | 18.2          |
| 4-Feb  | 0.0                           | 0.6  | 14.7            | 12.9 | Z    | 4.4  | 11.0            | 0.1  | 0.1  | 1.9   | 4.1                | 6.9  | 8.7  | 7.2  | 5.7  | 5.3  | 0.5  | 0.0  | 1.9  | 10.3  | 4.9  | 0.0  | 1.1  | 4.8  | 14.7                      |               |
| 5-Feb  | 2.8                           | 4.5  | 0.8             | 2.1  | 11.8 | Z    | 33.7            | 58.7 | 65.8 | 79.8  | 69.9               | 58.5 | 50.0 | 70.3 | 62.1 | 51.1 | 73.6 | 85.0 | 88.2 | 60.7  | 64.8 | 23.7 | 13.6 | 0.1  | 44.8                      | 88.2          |
| 6-Feb  | Z                             | 0.0  | 0.0             | 0.0  | 0.0  | 0.0  | 0.0             | 0.0  | 0.2  | 3.4   | 2.4                | 6.7  | 5.0  | 4.8  | 3.4  | 1.7  | 0.6  | 2.5  | 0.5  | 7.9   | 14.9 | 24.2 | 18.7 | 8.8  | 4.6                       | 24.2          |
| 7-Feb  | 6.6                           | Z    | 27.0            | 6.9  | 0.0  | 0.0  | 0.0             | 0.0  | 0.0  | 0.0   | 0.0                | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0   | 0.0  | 0.1  | 0.0  | 1.8  | 27.0                      |               |
| 8-Feb  | 0.0                           | 0.0  | Z               | 0.0  | 0.0  | 0.0  | 0.0             | 1.1  | 3.1  | 6.1   | 14.7               | 89.0 | 23.3 | 17.8 | 15.9 | 14.1 | 7.4  | 1.8  | 0.7  | 4.9   | 11.5 | 24.7 | 34.5 | 40.4 | 13.5                      | 89.0          |
| 9-Feb  | 61.8                          | 96.9 | 99.0            | Z    | 36.1 | 15.7 | 9.8             | 11.2 | 7.6  | 12.7  | 14.4               | 9.6  | 8.3  | 5.5  | 2.4  | 1.9  | 1.5  | 0.0  | 0.0  | 0.0   | 0.0  | 0.3  | 0.0  | 1.6  | 17.2                      | 99.0          |
| 10-Feb                                       | 3.7                           | 14.1 | 16.6            | 1.7  | Z    | 0.0  | 0.3             | 0.0  | 0.6  | 2.4   | 4.6                | 4.9  | 4.2  | 5.6  | 5.4  | PF   | PF   | 0.3  | 0.0  | 0.0   | 0.0  | 0.0  | 0.0  | 1.7  | 3.2                       | 16.6          |
| 11-Feb                                       | 0.0                           | 0.0  | 0.0             | 0.0  | 0.0  | Z    | 0.1             | 0.6  | 4.8  | 11.9  | 24.7               | 7.9  | 3.9  | 3.1  | 3.8  | 3.6  | 2.2  | 0.1  | 0.1  | 0.0   | 0.0  | 0.0  | 0.0  | 0.0  | 2.9                       | 24.7          |
| 12-Feb                                       | Z                             | 0.0  | 0.0             | 0.0  | 0.0  | 0.0  | 0.0             | 0.0  | 2.9  | 17.8  | 11.7               | 12.5 | 9.6  | 6.6  | 6.4  | 5.2  | 10.4 | 30.4 | 32.0 | 42.9  | 40.0 | 31.7 | 25.8 | 15.0 | 13.1                      | 42.9          |
| 13-Feb                                       | 8.4                           | Z    | 33.4            | 30.9 | 24.8 | 3.5  | 0.0             | 0.0  | 0.5  | 0.4   | 0.4                | 0.0  | 0.8  | 0.2  | 0.2  | 0.0  | 0.5  | 0.0  | 0.1  | 0.0   | 0.0  | 0.0  | 0.0  | 0.0  | 4.5                       | 33.4          |
| 14-Feb                                       | 0.0                           | 0.0  | Z               | 0.0  | 0.0  | 0.0  | 0.0             | 0.1  | 0.9  | 1.9   | 2.8                | 2.6  | 3.0  | 1.9  | 3.4  | 2.4  | 0.4  | 0.0  | 0.0  | 0.0   | 0.0  | 0.0  | 0.2  | 0.9  | 3.4                       |               |
| 15-Feb                                       | 0.7                           | 1.6  | 1.4             | Z    | 2.3  | 34.1 | 44.9            | 32.2 | 6.0  | 3.0   | 2.7                | 9.2  | 45.1 | 20.4 | 5.0  | 3.5  | 4.0  | 8.5  | 8.1  | 4.8   | 6.2  | 12.3 | 13.6 | 10.8 | 12.2                      | 45.1          |
| 16-Feb                                       | 14.6                          | 13.8 | 13.2            | 16.9 | Z    | 11.6 | 10.4            | 16.9 | 22.6 | 23.8  | 21.1               | 19.2 | 12.4 | 12.7 | 21.3 | M    | 20.7 | 21.3 | 4.2  | 7.1   | 0.0  | 0.0  | 0.1  | 2.9  | 13.0                      | 23.8          |
| 17-Feb                                       | 5.8                           | 0.0  | 0.0             | 0.0  | 0.0  | Z    | 0.0             | 0.0  | 0.2  | 0.8   | 2.6                | 3.6  | 4.1  | 3.0  | 2.8  | 1.8  | 1.7  | 0.3  | 0.0  | 0.0   | 1.0  | 2.3  | 1.9  | 0.1  | 1.4                       | 5.8           |
| 18-Feb                                       | Z                             | 2.5  | 6.3             | 0.5  | 0.4  | 1.2  | 0.3             | 1.2  | 8.7  | 11.8  | 19.8               | 53.7 | 25.6 | 9.3  | 7.3  | 5.2  | 8.1  | 8.8  | 15.4 | 38.8  | 24.2 | 15.6 | 10.8 | 7.8  | 12.3                      | 53.7          |
| 19-Feb                                       | 8.7                           | Z    | 3.9             | 0.2  | 0.1  | 0.9  | 0.0             | 0.6  | 12.8 | 19.3  | 64.4               | 46.8 | 16.6 | 9.7  | 14.8 | 16.1 | 10.1 | 7.9  | 19.6 | 22.6  | 0.6  | 0.2  | 0.3  | 0.0  | 12.0                      | 64.4          |
| 20-Feb                                       | 0.5                           | 0.6  | Z               | 0.0  | 0.0  | 0.0  | 0.0             | 0.1  | 1.2  | 5.2   | 5.9                | 5.7  | 6.8  | 13.7 | 6.2  | 2.6  | 3.0  | 1.0  | 0.0  | 0.2   | 0.1  | 0.8  | 3.0  | 0.0  | 2.5                       | 13.7          |
| 21-Feb                                       | 0.0                           | 0.0  | 0.0             | Z    | 0.0  | 0.0  | 0.2             | 5.4  | 2.9  | 12.0  | 11.5               | 8.9  | 5.0  | 4.6  | 3.6  | 2.4  | 1.8  | 0.3  | 0.0  | 0.1   | 0.2  | 0.3  | 0.9  | 0.5  | 2.6                       | 12.0          |
| 22-Feb                                       | 2.3                           | 2.6  | 8.0             | 4.3  | Z    | 4.8  | 11.8            | 18.3 | 32.8 | 46.5  | 51.4               | 65.7 | 29.6 | 5.5  | 4.9  | 7.1  | 3.7  | 1.1  | 0.1  | 0.2   | 0.3  | 1.6  | 1.9  | 0.4  | 13.3                      | 65.7          |
| 23-Feb                                       | 0.1                           | 1.7  | 1.7             | 1.6  | 4.8  | 11.0 | 2.4             | 6.2  | 19.9 | 34.9  | 19.6               | 13.8 | 9.3  | 6.3  | 6.7  | 11.8 | 3.9  | 1.2  | 0.3  | 0.1   | 1.3  | 3.5  | 12.7 | 22.2 | 8.2                       | 34.9          |
| 24-Feb                                       | Z                             | 30.8 | 45.0            | 38.8 | 27.3 | 11.2 | 7.5             | 13.2 | 13.7 | 13.8  | 11.3               | 6.7  | 2.5  | 1.6  | 0.9  | 0.7  | 0.9  | 0.3  | 0.0  | 0.0   | 0.0  | 0.0  | 0.0  | 0.0  | 9.8                       | 45.0          |
| 25-Feb                                       | 0.0                           | Z    | 0.0             | 0.0  | 0.0  | 0.0  | 0.0             | 0.3  | 1.7  | 1.8   | 0.1                | 0.1  | 0.1  | 0.9  | 0.7  | 1.1  | 0.5  | 0.1  | 0.0  | 2.0   | 0.9  | 0.1  | 0.0  | 0.1  | 0.5                       | 2.0           |
| 26-Feb                                       | 0.2                           | 0.1  | Z               | 0.0  | 0.0  | 0.1  | 0.6             | 12.5 | 57.2 | 101.4 | 61.5               | 22.0 | 12.1 | 13.8 | 12.1 | 5.3  | 2.2  | 2.3  | 0.5  | 0.4   | 0.0  | 0.0  | 0.0  | 0.0  | 13.2                      | 101.4         |
| 27-Feb                                       | 0.0                           | 0.0  | 0.0             | Z    | 0.0  | 0.0  | 0.0             | 0.0  | 1.5  | 1.6   | 3.4                | 4.5  | 5.0  | 4.4  | 6.7  | 2.7  | 1.2  | 0.4  | 0.0  | 0.0   | 0.0  | 0.0  | 0.0  | 0.0  | 1.4                       | 6.7           |
| 28-Feb                                       | 0.0                           | 0.0  | 0.0             | 0.0  | Z    | 0.0  | 0.0             | 1.1  | 4.9  | 7.8   | 25.8               | 27.9 | 17.9 | 11.9 | 10.1 | 2.4  | 1.9  | 0.6  | 0.0  | 0.0   | 2.8  | 17.5 | 18.1 | 27.0 | 7.7                       | 27.9          |
|  |                               |      |                 |      |      |      |                 |      |      |       |                    |      |      |      |      |      |      |      |      | 6.0 7.5 13.3 6.4 6.7 6.0 6.6 7.7 11.0 16.5 17.3 18.3 11.5 9.7 8.5 6.2 6.5 6.3 6.1 7.0 6.4 5.9 5.6 5.1   |      |      |      |      | Diurnal Average           |               |
|  |                               |      |                 |      |      |      |                 |      |      |       |                    |      |      |      |      |      |      |      |      | 61.8 96.9 99.0 38.8 36.1 34.1 44.9 58.7 65.8 101.4 69.9 89.0 50.0 70.3 62.1 51.1 73.6 85.0 88.2 60.7 64.8 31.7 34.5 40.4                                      |      |      |      |      | Diurnal Maximum           |               |
| Z - zerospan                                 |                               |      | C - Calibration |      |      |      | M - Maintenance |      |      |       | PF - Power Failure |      |      |      |      |      |      |      |      |   |      |      |      |      |                           |               |







**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Nitric Oxide (NO) - ppb  
Fort McKay - Bertha Ganter - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 20                            | 553                    | 86.95    | 86.95               |
| 21 - 40                           | 52                     | 8.18     | 95.13               |
| 41 - 80                           | 25                     | 3.93     | 99.06               |
| 81 - 159                          | 6                      | 0.94     | 100.00              |
| > 159                             | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 636

Total Number of Hours: 672



**Wood Buffalo Environmental Association**  
**Frequency Distribution**

**Nitric Oxide (NO) - ppb**  
**Fort McKay - Bertha Ganter - February 2023**

| Concentration<br>Ranges (ppb) | Wind Direction |     |    |     |    |     |    |     |    |     |    |     |    |     |    |     | Totals |
|-------------------------------|----------------|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|--------|
|                               | N              | NNE | NE | ENE | E  | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |        |
| 0 - 20                        | 114            | 63  | 34 | 26  | 10 | 6   | 7  | 36  | 69 | 26  | 11 | 24  | 30 | 29  | 36 | 30  | 551    |
| 21 - 40                       | 6              | 1   | 3  | 0   | 2  | 0   | 2  | 7   | 7  | 10  | 0  | 0   | 2  | 2   | 4  | 6   | 52     |
| 11 - 80                       | 2              | 2   | 0  | 3   | 0  | 0   | 3  | 4   | 5  | 2   | 2  | 0   | 0  | 0   | 1  | 1   | 25     |
| 81 - 159                      | 0              | 1   | 0  | 0   | 0  | 0   | 0  | 1   | 2  | 1   | 1  | 0   | 0  | 0   | 0  | 0   | 6      |
| > 159                         | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| <b>Totals</b>                 | 122            | 67  | 37 | 29  | 12 | 6   | 12 | 48  | 83 | 39  | 14 | 24  | 32 | 31  | 41 | 37  | 634    |

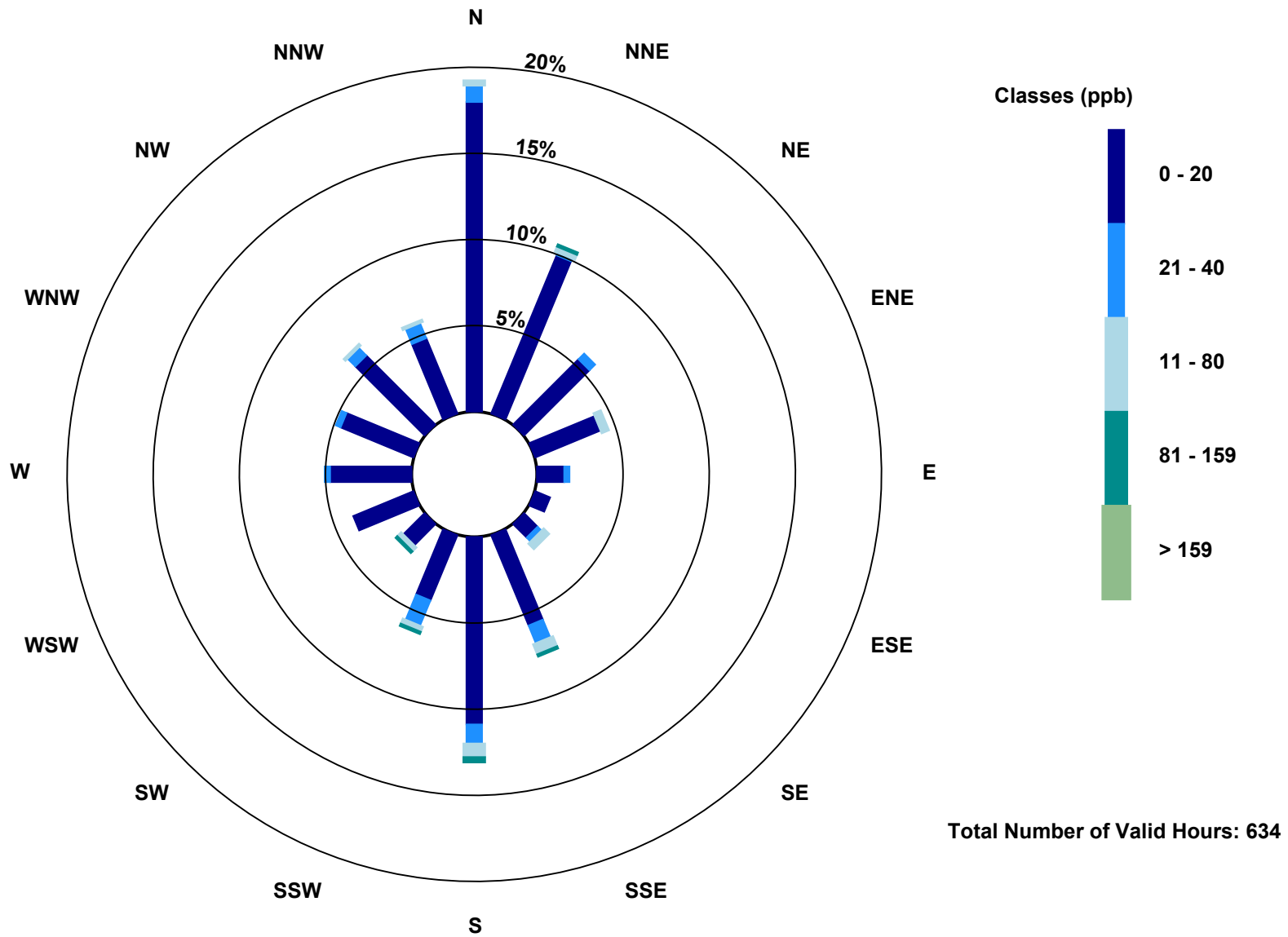
Total Number of Valid Hours: 634

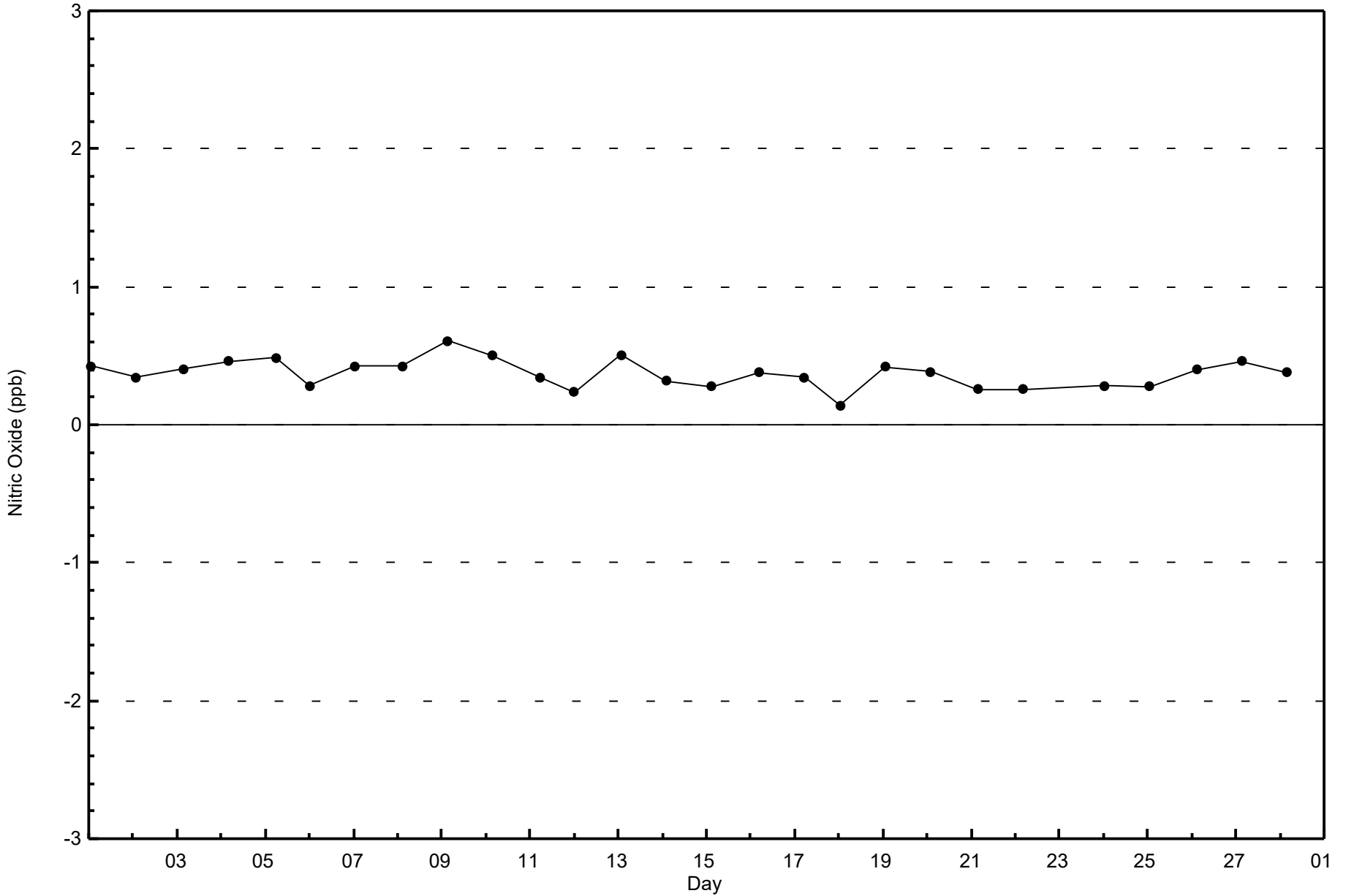
Total Number of Hours: 672

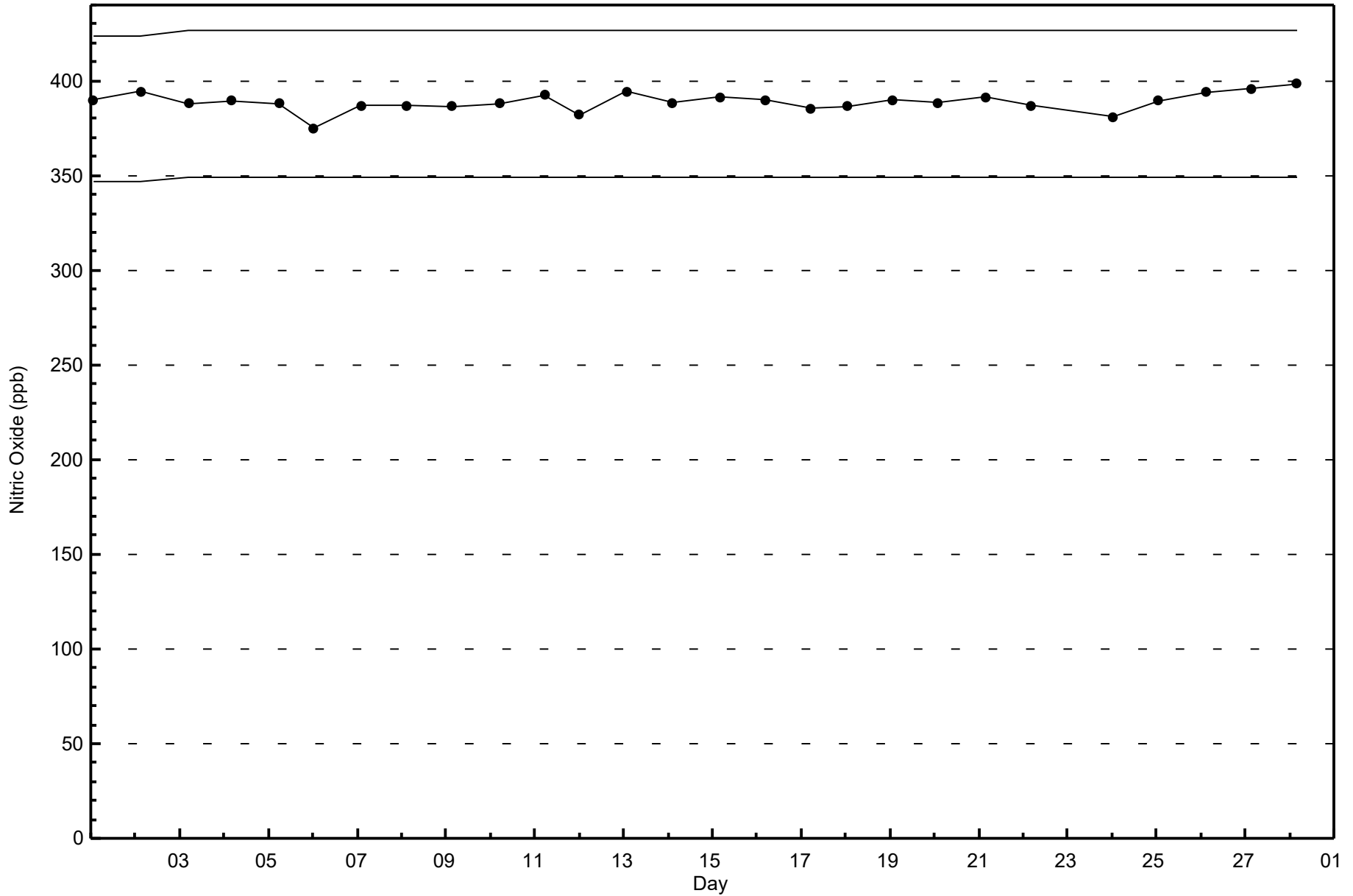


Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Nitric Oxide (NO) - ppb  
Fort McKay - Bertha Ganter









**Wood Buffalo Environmental Association**

**Summary of Hour Averages**

**Nitrogen Dioxide (NO<sub>2</sub>) - ppb**

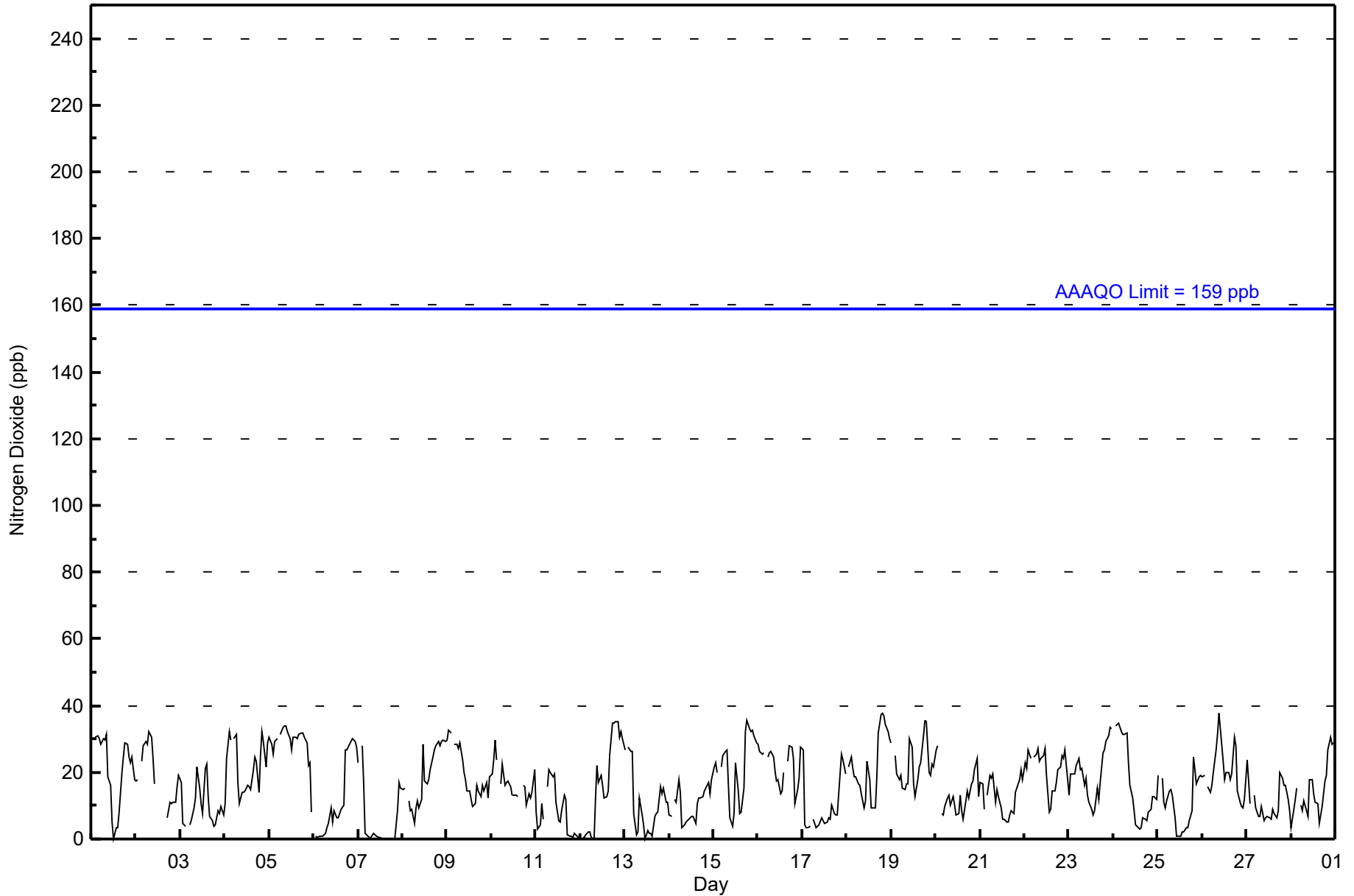
**Fort McKay - Bertha Ganter - February 2023**

|   |                               |  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |               |  |
|---|-------------------------------|--|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----------------|---------------|--|
| Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0                 |                               | Hours in Service: 672  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |               |  |
| Maximum Value: 37.8 ppb on Feb 26 10:00                         |                               | Maximum Daily Average: 28.8 ppb on Feb 5   |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |               |  |
| Minimum Value: 0.0 ppb on Feb 1 13:00                           |                               | Minimum Daily Average: 5.1 ppb on Feb 7  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |               |  |
| Maximum Diurnal Average: 20.4 ppb at hour 1                     |                               | Minimum Diurnal Average: 10.3 ppb at hour 14   |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |               |  |
| Monthly Average: 16.20 ppb                                      |                               | Percentiles: P <sub>1</sub> = 0.1 P <sub>10</sub> = 3.7 Q <sub>1</sub> = 8.3 Median = 15.5 Q <sub>3</sub> = 24.2 P <sub>90</sub> = 30.1 P <sub>99</sub> = 35.2 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |               |  |
| Day   | Hourly Period Ending At (MST) |  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Daily Average   | Daily Maximum |  |
|   | 1                             | 2  | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20   | 21   | 22   | 23   | 24   |                 |               |  |
| 1-Feb   | 34.8                          | Z  | 30.6 | 31.0 | 29.9 | 28.6 | 30.0 | 29.8 | 31.2 | 18.8 | 15.9 | 5.2  | 0.0  | 3.3  | 3.5  | 7.9  | 19.9 | 24.7 | 28.9 | 28.5 | 24.7 | 22.9 | 24.5 | 17.6 | 21.4            | 34.8          |  |
| 2-Feb   | 17.3                          | 17.9   | Z    | 23.3 | 28.0 | 29.3 | 28.4 | 32.0 | 30.7 | 24.0 | 16.6 | C    | C    | C    | C    | C    | C    | 6.2  | 11.0 | 10.7 | 10.9 | 11.0 | 15.6 | 18.9 | --              | 32.0          |  |
| 3-Feb   | 16.9                          | 4.5  | 4.4  | 3.7  | Z    | 4.3  | 5.5  | 9.4  | 12.1 | 21.6 | 15.2 | 10.8 | 7.6  | 21.2 | 22.5 | 12.9 | 6.9  | 5.6  | 3.8  | 4.1  | 8.6  | 7.5  | 9.9  | 7.1  | 9.8             | 22.5          |  |
| 4-Feb   | 10.4                          | 24.0   | 32.2 | 29.6 | Z    | 30.1 | 31.5 | 17.0 | 10.6 | 14.1 | 14.1 | 14.3 | 16.0 | 15.5 | 15.0 | 20.7 | 24.6 | 23.5 | 14.1 | 24.9 | 32.1 | 29.1 | 21.7 | 29.0 | 21.5            | 32.2          |  |
| 5-Feb   | 30.4                          | 28.2   | 25.4 | 29.1 | 30.1 | Z    | 31.3 | 33.6 | 33.8 | 34.1 | 32.1 | 29.9 | 26.6 | 30.6 | 30.5 | 29.9 | 31.3 | 31.9 | 31.6 | 30.5 | 29.0 | 22.2 | 22.7 | 8.0  | 28.8            | 34.1          |  |
| 6-Feb   | Z                             | 0.7  | 0.6  | 0.8  | 0.7  | 1.0  | 1.7  | 3.6  | 4.6  | 9.2  | 5.0  | 8.6  | 6.5  | 6.5  | 7.5  | 8.8  | 10.1 | 26.9 | 26.6 | 28.5 | 29.2 | 30.1 | 29.2 | 27.6 | 11.9            | 30.1          |  |
| 7-Feb   | 22.7                          | Z  | 27.9 | 16.5 | 1.8  | 0.7  | 0.5  | 0.6  | 1.8  | 1.1  | 0.7  | 0.4  | 0.3  | 0.2  | 0.1  | 0.0  | 0.0  | 0.1  | 0.2  | 0.1  | 0.0  | 8.9  | 16.9 | 15.1 | 5.1             | 27.9          |  |
| 8-Feb   | 15.0                          | 15.3   | Z    | 11.3 | 8.6  | 9.0  | 4.8  | 9.5  | 11.5 | 9.3  | 11.7 | 28.3 | 17.2 | 16.5 | 17.6 | 20.8 | 24.5 | 26.6 | 27.9 | 29.3 | 27.9 | 29.4 | 29.7 | 29.2 | 18.7            | 29.7          |  |
| 9-Feb   | 29.5                          | 32.8   | 31.8 | Z    | 28.4 | 28.2 | 27.3 | 28.7 | 23.7 | 19.8 | 18.0 | 14.5 | 14.2 | 11.8 | 9.6  | 10.5 | 16.1 | 14.2 | 12.8 | 16.2 | 14.4 | 16.9 | 12.4 | 18.7 | 19.6            | 32.8          |  |
| 10-Feb  | 19.6                          | 23.9   | 29.6 | 23.6 | Z    | 16.5 | 22.5 | 16.1 | 17.1 | 17.2 | 15.6 | 13.2 | 13.1 | 13.0 | 12.6 | PF   | PF   | 16.2 | 15.7 | 10.3 | 13.4 | 12.2 | 13.9 | 20.9 | 17.0            | 29.6          |  |
| 11-Feb  | 7.9                           | 2.9  | 4.3  | 10.4 | 5.9  | Z    | 15.8 | 20.7 | 19.9 | 18.7 | 19.6 | 11.2 | 5.6  | 5.1  | 8.3  | 13.1 | 11.7 | 1.2  | 0.9  | 0.8  | 0.5  | 1.8  | 1.0  | 0.6  | 8.2             | 20.7          |  |
| 12-Feb  | Z                             | 0.5  | 0.5  | 1.3  | 2.3  | 2.2  | 0.6  | 0.2  | 12.3 | 22.2 | 17.0 | 18.9 | 16.0 | 12.2 | 12.9 | 14.2 | 24.9 | 34.8 | 34.6 | 35.3 | 35.0 | 30.7 | 32.4 | 30.0 | 17.0            | 35.3          |  |
| 13-Feb  | 26.8                          | Z  | 27.4 | 26.2 | 26.3 | 7.8  | 1.3  | 2.1  | 12.3 | 7.3  | 4.1  | 0.2  | 2.7  | 1.7  | 1.5  | 0.9  | 6.6  | 7.8  | 8.1  | 15.5 | 13.7 | 15.1 | 11.1 | 11.0 | 10.3            | 27.4          |  |
| 14-Feb  | 7.4                           | 6.9  | Z    | 12.0 | 11.2 | 17.7 | 14.0 | 3.3  | 4.1  | 5.0  | 5.5  | 6.3  | 6.9  | 6.8  | 4.8  | 10.7 | 12.4 | 12.3 | 12.7 | 14.3 | 15.4 | 17.0 | 13.4 | 17.9 | 10.3            | 17.9          |  |
| 15-Feb  | 21.6                          | 22.7   | 19.9 | Z    | 21.4 | 24.9 | 26.1 | 26.6 | 16.3 | 6.5  | 3.7  | 7.7  | 22.8 | 14.4 | 7.6  | 7.9  | 15.3 | 32.1 | 35.4 | 33.2 | 32.4 | 32.8 | 30.9 | 28.7 | 21.3            | 35.4          |  |
| 16-Feb  | 28.5                          | 26.3   | 25.4 | 25.8 | Z    | 24.6 | 25.7 | 26.3 | 24.5 | 20.4 | 17.5 | 17.7 | 13.5 | 14.2 | 19.8 | M    | 23.5 | 27.9 | 27.4 | 24.2 | 10.6 | 15.0 | 18.3 | 27.6 | 22.0            | 28.5          |  |
| 17-Feb  | 26.6                          | 4.4  | 3.4  | 3.4  | 4.0  | Z    | 5.8  | 3.6  | 3.9  | 4.1  | 6.2  | 5.6  | 4.5  | 5.0  | 6.2  | 6.1  | 10.0 | 7.7  | 7.0  | 7.4  | 19.7 | 25.3 | 23.7 | 19.5 | 9.3             | 26.6          |  |
| 18-Feb  | Z                             | 21.8   | 24.4 | 21.0 | 18.6 | 18.8 | 16.6 | 16.2 | 13.4 | 9.5  | 11.5 | 23.2 | 17.7 | 9.4  | 9.2  | 9.3  | 18.8 | 31.8 | 37.4 | 37.7 | 36.8 | 34.3 | 32.1 | 30.1 | 21.7            | 37.7          |  |
| 19-Feb  | 29.0                          | Z  | 24.8 | 19.4 | 17.7 | 19.2 | 15.2 | 14.7 | 16.7 | 16.5 | 30.1 | 27.7 | 16.4 | 12.9 | 17.9 | 21.4 | 22.8 | 30.9 | 35.5 | 35.1 | 19.8 | 19.0 | 22.4 | 21.4 | 22.0            | 35.5          |  |
| 20-Feb  | 26.6                          | 28.0   | Z    | 7.5  | 7.2  | 9.7  | 12.4 | 13.0 | 10.1 | 12.5 | 10.3 | 7.0  | 7.5  | 13.3 | 8.4  | 5.8  | 11.4 | 14.6 | 12.3 | 16.4 | 17.2 | 20.8 | 24.3 | 12.9 | 13.4            | 28.0          |  |
| 21-Feb  | 16.8                          | 16.7   | 9.1  | Z    | 13.1 | 19.0 | 18.1 | 19.4 | 10.9 | 14.8 | 12.7 | 9.4  | 5.9  | 5.8  | 5.2  | 5.2  | 7.2  | 8.4  | 7.8  | 13.9 | 15.1 | 17.7 | 20.7 | 17.7 | 12.6            | 20.7          |  |
| 22-Feb  | 22.7                          | 21.2   | 26.6 | 24.0 | Z    | 24.6 | 25.5 | 27.1 | 23.5 | 24.3 | 24.8 | 27.1 | 19.1 | 8.1  | 8.8  | 14.4 | 14.3 | 17.1 | 20.9 | 21.7 | 25.1 | 24.3 | 26.7 | 17.6 | 21.3            | 27.1          |  |
| 23-Feb  | 13.1                          | 19.5   | 19.6 | 19.5 | 22.2 | 24.0 | 20.8 | 21.2 | 16.2 | 18.2 | 13.3 | 10.9 | 8.8  | 7.4  | 8.4  | 15.4 | 11.9 | 16.8 | 25.9 | 26.5 | 29.4 | 31.1 | 33.3 | 33.1 | 19.4            | 33.3          |  |
| 24-Feb  | Z                             | 33.8   | 34.2 | 34.9 | 32.2 | 31.4 | 31.2 | 31.6 | 22.7 | 16.0 | 12.1 | 8.3  | 4.1  | 3.4  | 2.9  | 3.6  | 6.5  | 6.0  | 5.7  | 8.1  | 9.1  | 12.9 | 12.6 | 11.8 | 16.3            | 34.9          |  |
| 25-Feb  | 19.1                          | Z  | 18.3 | 11.2 | 9.3  | 11.3 | 14.4 | 14.7 | 13.1 | 6.3  | 0.9  | 0.7  | 0.9  | 2.2  | 2.0  | 3.4  | 3.2  | 5.4  | 8.5  | 24.7 | 20.9 | 16.5 | 18.8 | 19.1 | 10.6            | 24.7          |  |
| 26-Feb  | 18.8                          | 19.0   | Z    | 15.5 | 14.1 | 16.0 | 19.9 | 26.6 | 31.4 | 37.8 | 33.1 | 23.5 | 18.0 | 19.8 | 19.8 | 17.9 | 19.4 | 30.6 | 28.1 | 14.5 | 11.0 | 9.7  | 9.4  | 11.9 | 20.3            | 37.8          |  |
| 27-Feb  | 23.6                          | 17.4   | 10.7 | Z    | 13.1 | 9.4  | 6.7  | 6.9  | 9.7  | 5.6  | 6.2  | 6.7  | 6.5  | 5.8  | 8.9  | 7.5  | 6.4  | 8.3  | 19.9 | 18.2 | 16.2 | 16.1 | 11.8 | 8.5  | 10.9            | 23.6          |  |
| 28-Feb  | 3.5                           | 8.8  | 11.9 | 15.3 | Z    | 10.3 | 8.6  | 11.6 | 8.6  | 6.9  | 17.6 | 17.8 | 13.5 | 10.9 | 10.6 | 4.6  | 7.1  | 9.6  | 17.5 | 19.1 | 26.6 | 30.4 | 28.3 | 28.7 | 14.3            | 30.4          |  |
|   | 20.4                          | 17.3   | 19.3 | 17.3 | 15.7 | 16.7 | 16.5 | 16.6 | 16.0 | 15.1 | 14.0 | 13.2 | 10.8 | 10.3 | 10.4 | 10.9 | 14.1 | 17.1 | 18.5 | 19.6 | 19.5 | 20.0 | 20.3 | 19.3 | Diurnal Average |               |  |
|   | 34.8                          | 33.8   | 34.2 | 34.9 | 32.2 | 31.4 | 31.5 | 33.6 | 33.8 | 37.8 | 33.1 | 29.9 | 26.6 | 30.6 | 30.5 | 29.9 | 31.3 | 34.8 | 37.4 | 37.7 | 36.8 | 34.3 | 33.3 | 33.1 | Diurnal Maximum |               |  |
| Z - zerospan C - Calibration M - Maintenance PF - Power Failure |                               |  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |               |  |
| Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 159 ppb    |                               |  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |               |  |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Nitrogen Dioxide (NO<sub>2</sub>) - ppb**  
**Fort McKay - Bertha Ganter - February 2023**





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Nitrogen Dioxide (NO<sub>2</sub>) - ppb  
Fort McKay - Bertha Ganter - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 20                            | 426                    | 66.98    | 66.98               |
| 21 - 40                           | 210                    | 33.02    | 100.00              |
| 41 - 80                           | 0                      | 0.00     | 100.00              |
| 81 - 159                          | 0                      | 0.00     | 100.00              |
| > 159                             | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 636

Total Number of Hours: 672





**Wood Buffalo Environmental Association  
Frequency Distribution**

**Nitrogen Dioxide (NO<sub>2</sub>) - ppb  
Fort McKay - Bertha Ganter - February 2023**

| <b>Concentration<br/>Ranges (ppb)</b> | <b>Wind Direction</b> |     |    |     |    |     |    |     |    |     |    |     |    |     |    |     | <b>Totals</b> |
|---------------------------------------|-----------------------|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|---------------|
|                                       | N                     | NNE | NE | ENE | E  | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |               |
| 0 - 20                                | 81                    | 57  | 35 | 24  | 11 | 6   | 8  | 34  | 56 | 8   | 8  | 17  | 24 | 18  | 23 | 16  | 426           |
| 21 - 40                               | 41                    | 10  | 2  | 5   | 1  | 0   | 4  | 14  | 27 | 31  | 6  | 7   | 8  | 13  | 18 | 21  | 208           |
| 11 - 80                               | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| 81 - 159                              | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| > 159                                 | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| <b>Totals</b>                         | 122                   | 67  | 37 | 29  | 12 | 6   | 12 | 48  | 83 | 39  | 14 | 24  | 32 | 31  | 41 | 37  | 634           |

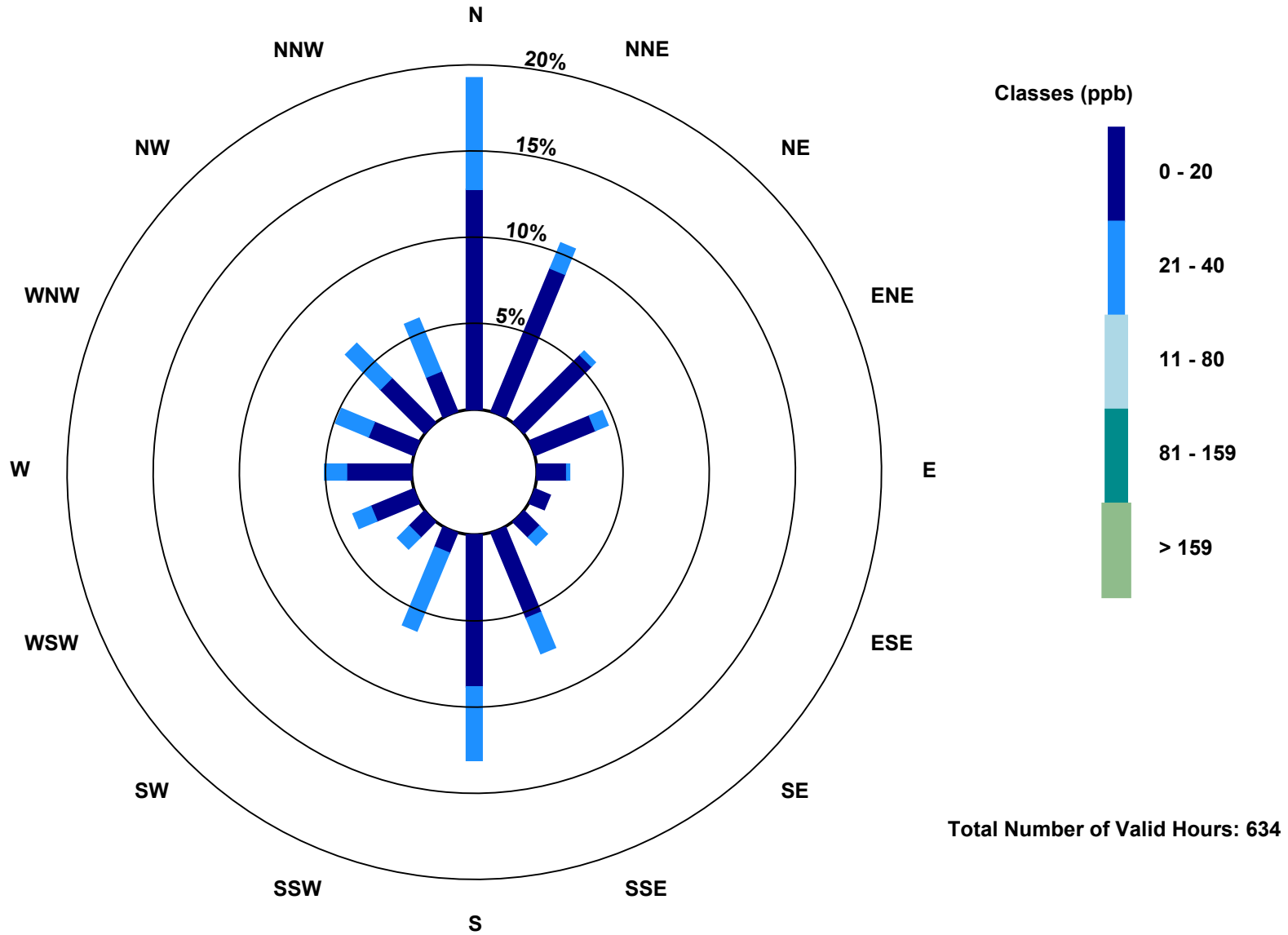
Total Number of Valid Hours: 634

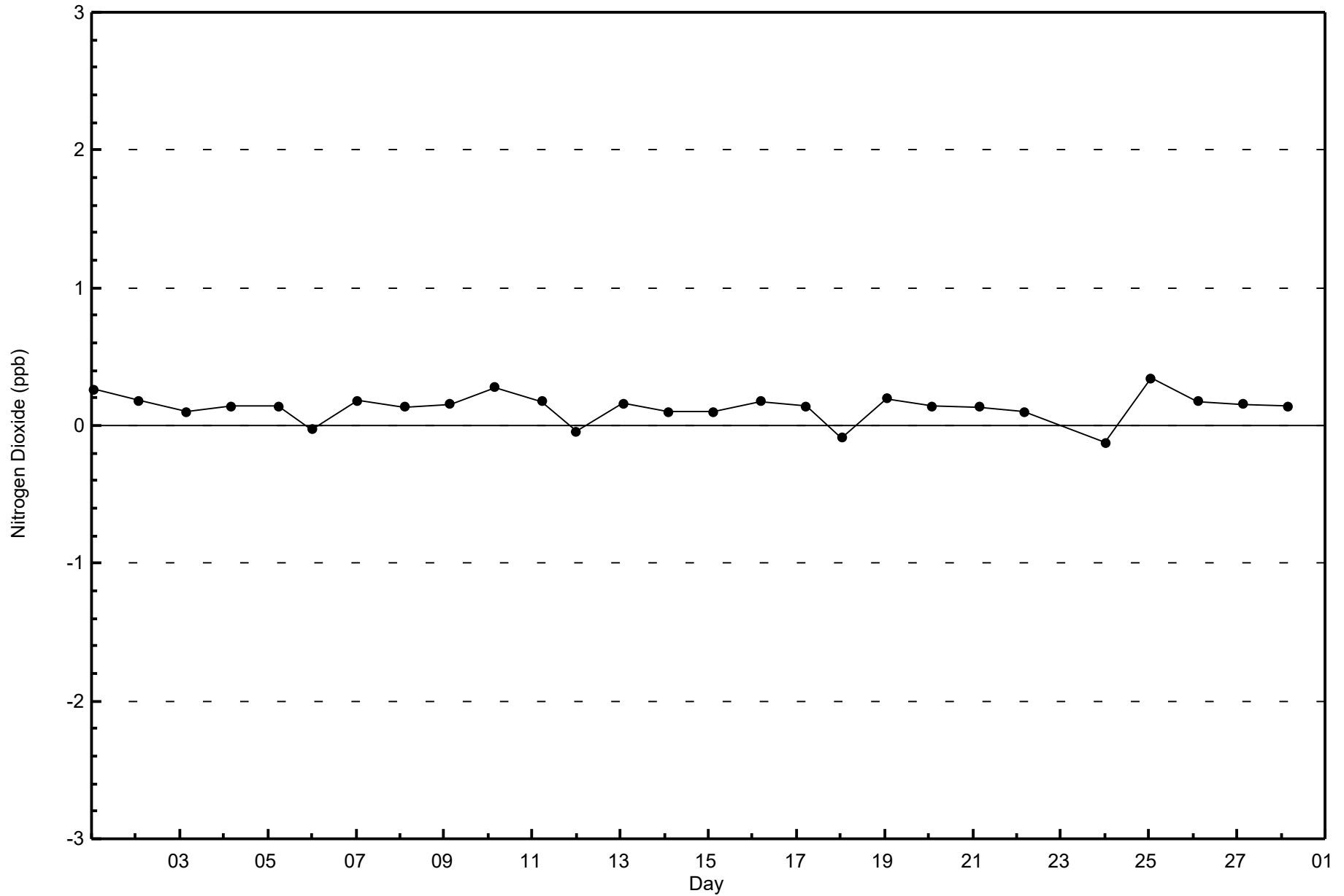
Total Number of Hours: 672

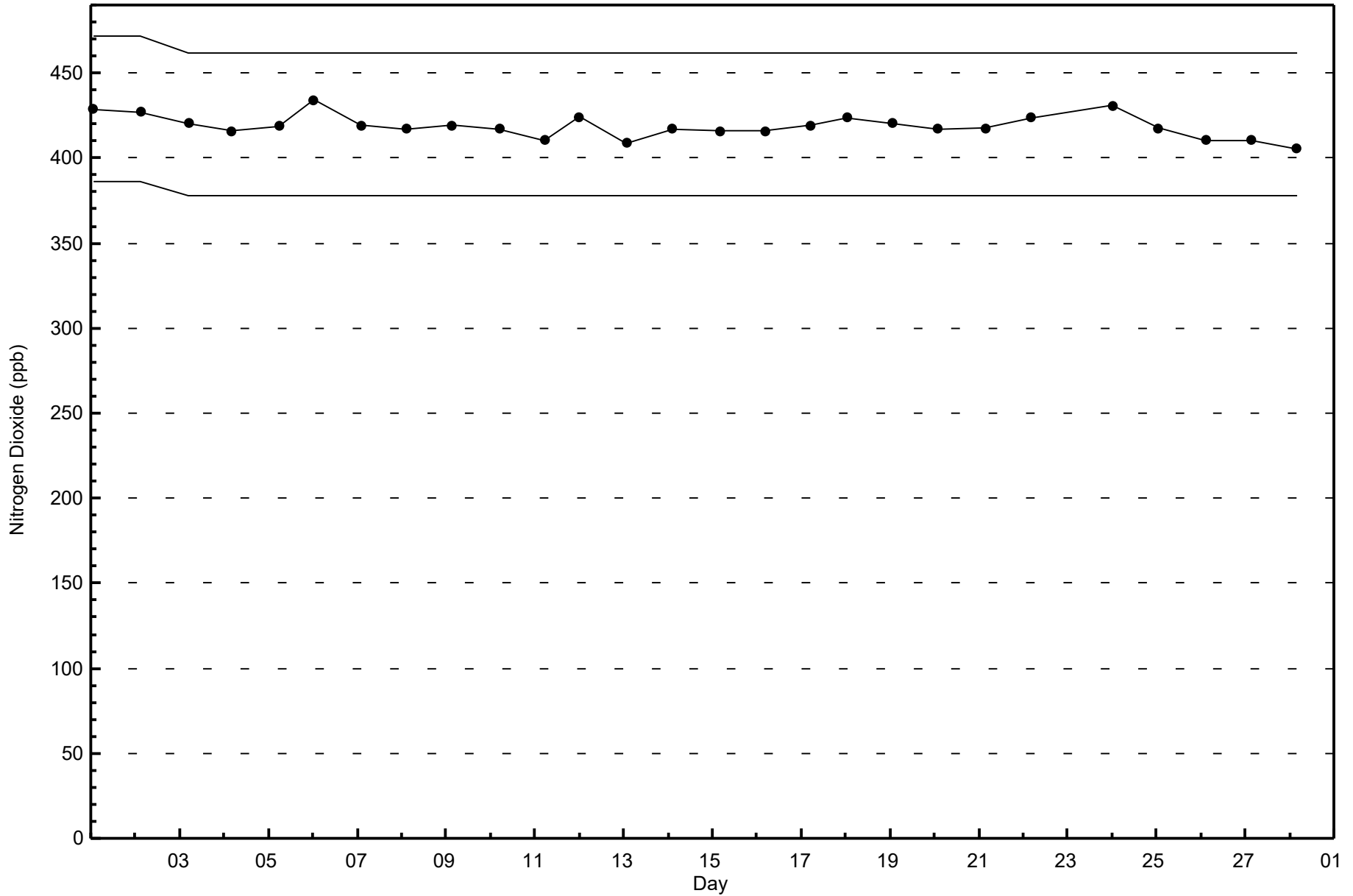


**Wood Buffalo Environmental Association**  
**Wind Rose Feb 2023**

**Nitrogen Dioxide (NO<sub>2</sub>) - ppb**  
**Fort McKay - Bertha Ganter**





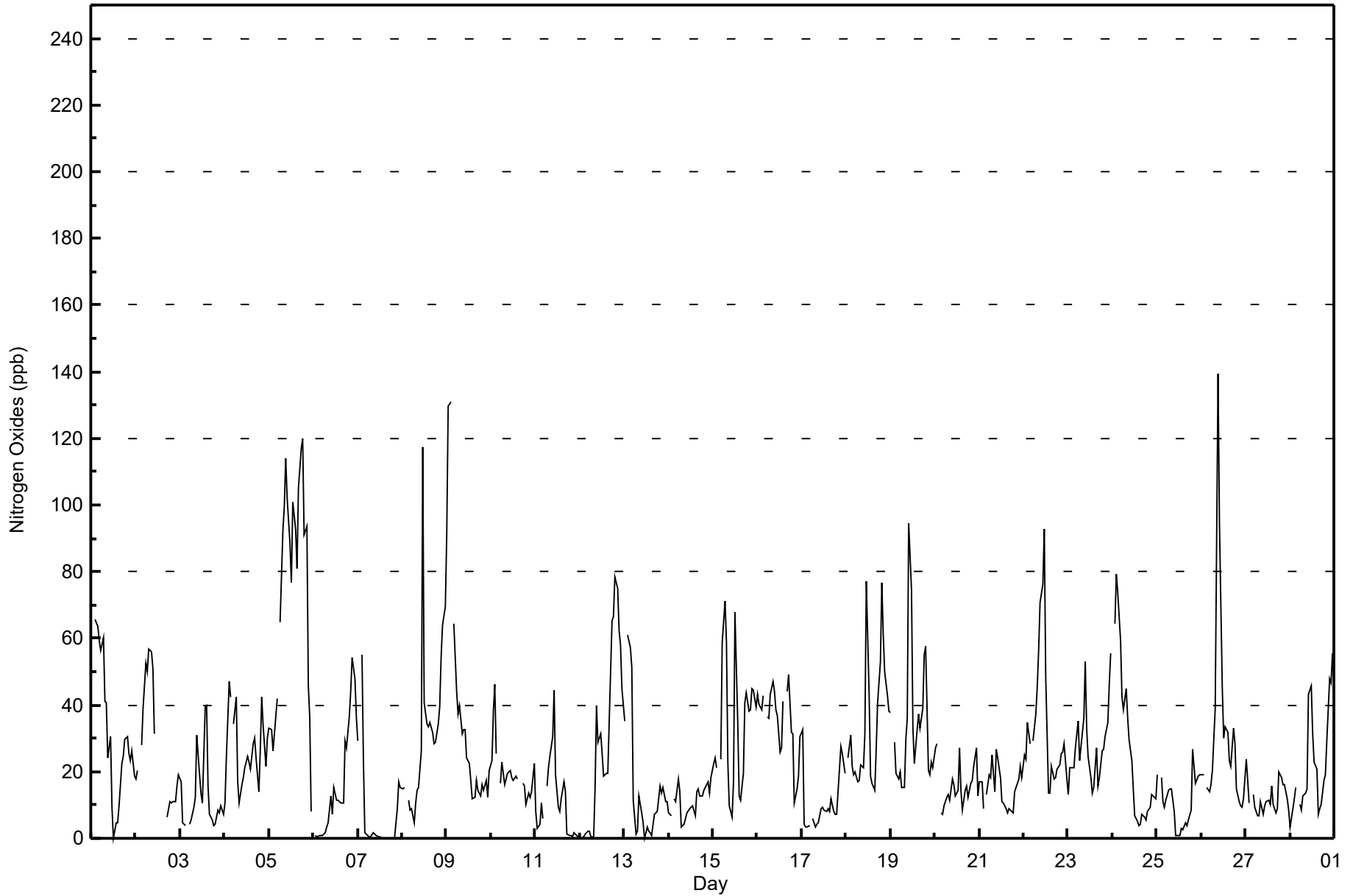




**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

**Nitrogen Oxides (NO<sub>x</sub>) - ppb**  
**Fort McKay - Bertha Ganter - February 2023**

| Maximum Value: 139.2 ppb on Feb 26 10:00    |                               | Maximum Daily Average: 73.7 ppb on Feb 5   |       | Hours in Service: 672          |      |                 |      |      |      |                    |       |       |       |       |       |      |       |       |       |       |      |      |      |      |               |                 |  |
|---|-------------------------------|--|-------|--------------------------------|------|-----------------|------|------|------|--------------------|-------|-------|-------|-------|-------|------|-------|-------|-------|-------|------|------|------|------|---------------|-----------------|--|
| Minimum Value: 0.0 ppb on Feb 1 13:00       |                               | Minimum Daily Average: 6.8 ppb on Feb 7  |       | Hours of Data: 636             |      |                 |      |      |      |                    |       |       |       |       |       |      |       |       |       |       |      |      |      |      |               |                 |  |
| Maximum Diurnal Average: 32.6 ppb at hour 3 |                               | Minimum Diurnal Average: 17.1 ppb at hour 16   |       | Hours of Missing Data: 36      |      |                 |      |      |      |                    |       |       |       |       |       |      |       |       |       |       |      |      |      |      |               |                 |  |
| Monthly Average: 24.90 ppb                  |                               | Percentiles: P <sub>1</sub> = 0.1 P <sub>10</sub> = 4.1 Q <sub>1</sub> = 10.2 Median = 18.1 Q <sub>3</sub> = 32.9 P <sub>90</sub> = 54.2 P <sub>99</sub> = 110.8 |       | Hours of Calibration: 33       |      |                 |      |      |      |                    |       |       |       |       |       |      |       |       |       |       |      |      |      |      |               |                 |  |
|   |                               |  |       | Percent Operational Time: 99.6 |      |                 |      |      |      |                    |       |       |       |       |       |      |       |       |       |       |      |      |      |      |               |                 |  |
| Day   | Hourly Period Ending At (MST) |  |       |                                |      |                 |      |      |      |                    |       |       |       |       |       |      |       |       |       |       |      |      |      |      | Daily Average | Daily Maximum   |  |
|   | 1                             | 2  | 3     | 4                              | 5    | 6               | 7    | 8    | 9    | 10                 | 11    | 12    | 13    | 14    | 15    | 16   | 17    | 18    | 19    | 20    | 21   | 22   | 23   | 24   |               |                 |  |
| 1-Feb                                       | 63.3                          | Z  | 65.9  | 63.6                           | 59.2 | 56.2            | 60.3 | 41.2 | 40.6 | 24.2               | 30.5  | 9.2   | 0.0   | 4.8   | 4.9   | 9.9  | 22.4  | 24.8  | 29.5  | 30.4  | 25.4 | 23.4 | 26.4 | 18.6 | 31.9          | 65.9            |  |
| 2-Feb                                       | 17.9                          | 20.3   | Z     | 28.1                           | 39.2 | 52.4            | 50.1 | 56.6 | 56.1 | 50.8               | 31.2  | C     | C     | C     | C     | C    | C     | 6.2   | 11.0  | 10.7  | 10.9 | 11.0 | 15.6 | 19.0 | --            | 56.6            |  |
| 3-Feb                                       | 16.9                          | 4.5  | 4.4   | 3.7                            | Z    | 4.3             | 5.5  | 9.4  | 12.3 | 30.9               | 19.3  | 13.6  | 10.5  | 39.4  | 39.9  | 15.5 | 7.4   | 5.6   | 3.8   | 4.1   | 8.6  | 7.5  | 9.9  | 7.1  | 12.4          | 39.9            |  |
| 4-Feb                                       | 10.4                          | 24.6   | 46.9  | 42.5                           | Z    | 34.5            | 42.5 | 17.1 | 10.7 | 16.0               | 18.2  | 21.2  | 24.7  | 22.7  | 20.7  | 28.2 | 29.9  | 24.0  | 14.1  | 26.8  | 42.4 | 34.0 | 21.7 | 30.1 | 26.3          | 46.9            |  |
| 5-Feb                                       | 33.2                          | 32.7   | 26.2  | 31.2                           | 41.9 | Z               | 65.0 | 92.3 | 99.6 | 113.9              | 102.0 | 88.4  | 76.6  | 100.9 | 92.6  | 81.0 | 104.9 | 116.9 | 119.8 | 91.2  | 93.8 | 45.9 | 36.3 | 8.1  | 73.7          | 119.8           |  |
| 6-Feb                                       | Z                             | 0.7  | 0.6   | 0.8                            | 0.7  | 1.0             | 1.7  | 3.6  | 4.8  | 12.6               | 7.4   | 15.3  | 11.5  | 11.3  | 10.9  | 10.5 | 10.7  | 29.4  | 27.1  | 36.4  | 44.1 | 54.3 | 47.9 | 36.4 | 16.5          | 54.3            |  |
| 7-Feb                                       | 29.3                          | Z  | 54.9  | 23.4                           | 1.8  | 0.7             | 0.5  | 0.6  | 1.8  | 1.1                | 0.7   | 0.4   | 0.3   | 0.2   | 0.1   | 0.0  | 0.0   | 0.1   | 0.2   | 0.1   | 0.0  | 8.9  | 17.0 | 15.1 | 6.8           | 54.9            |  |
| 8-Feb                                       | 15.0                          | 15.3   | Z     | 11.3                           | 8.6  | 9.0             | 4.8  | 10.6 | 14.6 | 15.4               | 26.4  | 117.3 | 40.5  | 34.3  | 33.5  | 34.9 | 31.9  | 28.4  | 28.6  | 34.2  | 39.4 | 54.1 | 64.2 | 69.6 | 32.3          | 117.3           |  |
| 9-Feb                                       | 91.3                          | 129.7  | 130.8 | Z                              | 64.5 | 43.9            | 37.1 | 39.9 | 31.3 | 32.5               | 32.4  | 24.1  | 22.5  | 17.3  | 12.0  | 12.4 | 17.6  | 14.2  | 12.8  | 16.2  | 14.4 | 17.2 | 12.4 | 20.3 | 36.8          | 130.8           |  |
| 10-Feb                                      | 23.3                          | 38.0   | 46.2  | 25.3                           | Z    | 16.5            | 22.8 | 16.1 | 17.7 | 19.6               | 20.2  | 18.1  | 17.3  | 18.6  | 18.0  | PF   | PF    | 16.5  | 15.7  | 10.3  | 13.4 | 12.2 | 13.9 | 22.6 | 20.1          | 46.2            |  |
| 11-Feb                                      | 7.9                           | 2.9  | 4.3   | 10.4                           | 5.9  | Z               | 15.9 | 21.3 | 24.7 | 30.6               | 44.3  | 19.1  | 9.5   | 8.2   | 12.1  | 16.7 | 13.9  | 1.3   | 1.0   | 0.8   | 0.5  | 1.8  | 1.0  | 0.6  | 11.1          | 44.3            |  |
| 12-Feb                                      | Z                             | 0.5  | 0.5   | 1.3                            | 2.3  | 2.2             | 0.6  | 0.2  | 15.2 | 40.0               | 28.7  | 31.4  | 25.6  | 18.8  | 19.3  | 19.4 | 35.3  | 65.2  | 66.6  | 78.2  | 75.0 | 62.4 | 58.2 | 45.0 | 30.1          | 78.2            |  |
| 13-Feb                                      | 35.2                          | Z  | 60.8  | 57.1                           | 51.1 | 11.3            | 1.3  | 2.1  | 12.8 | 7.7                | 4.5   | 0.2   | 3.5   | 1.9   | 1.7   | 0.9  | 7.1   | 7.8   | 8.2   | 15.5  | 13.7 | 15.1 | 11.1 | 11.0 | 14.9          | 60.8            |  |
| 14-Feb                                      | 7.4                           | 6.9  | Z     | 12.0                           | 11.2 | 17.7            | 14.0 | 3.3  | 4.2  | 5.9                | 7.4   | 9.1   | 9.5   | 9.8   | 6.7   | 14.1 | 14.8  | 12.7  | 12.7  | 14.3  | 15.4 | 17.0 | 13.4 | 18.1 | 11.2          | 18.1            |  |
| 15-Feb                                      | 22.3                          | 24.3   | 21.3  | Z                              | 23.7 | 59.0            | 71.0 | 58.8 | 22.3 | 9.5                | 6.4   | 16.9  | 67.9  | 34.8  | 12.6  | 11.4 | 19.3  | 40.6  | 43.5  | 38.0  | 38.6 | 45.1 | 44.5 | 39.5 | 33.5          | 71.0            |  |
| 16-Feb                                      | 43.1                          | 40.1   | 38.6  | 42.7                           | Z    | 36.2            | 36.1 | 43.2 | 47.1 | 44.2               | 38.6  | 36.9  | 25.9  | 26.9  | 41.1  | M    | 44.2  | 49.2  | 31.6  | 31.3  | 10.6 | 15.0 | 18.4 | 30.5 | 35.1          | 49.2            |  |
| 17-Feb                                      | 32.4                          | 4.4  | 3.4   | 3.4                            | 4.0  | Z               | 5.8  | 3.6  | 4.1  | 4.9                | 8.8   | 9.2   | 8.6   | 8.0   | 9.0   | 7.9  | 11.7  | 8.0   | 7.0   | 7.4   | 20.7 | 27.6 | 25.6 | 19.6 | 10.7          | 32.4            |  |
| 18-Feb                                      | Z                             | 24.3   | 30.7  | 21.5                           | 19.0 | 20.0            | 16.9 | 17.4 | 22.1 | 21.3               | 31.3  | 76.9  | 43.3  | 18.7  | 16.5  | 14.5 | 26.9  | 40.6  | 52.8  | 76.5  | 61.0 | 49.9 | 42.9 | 37.9 | 34.0          | 76.9            |  |
| 19-Feb                                      | 37.7                          | Z  | 28.7  | 19.6                           | 17.8 | 20.1            | 15.2 | 15.3 | 29.5 | 35.8               | 94.5  | 74.5  | 33.0  | 22.6  | 32.7  | 37.5 | 32.9  | 38.8  | 55.1  | 57.7  | 20.4 | 19.2 | 22.7 | 21.4 | 34.0          | 94.5            |  |
| 20-Feb                                      | 27.1                          | 28.6   | Z     | 7.5                            | 7.2  | 9.7             | 12.4 | 13.1 | 11.3 | 17.7               | 16.2  | 12.7  | 14.3  | 27.0  | 14.6  | 8.4  | 14.4  | 15.6  | 12.3  | 16.6  | 17.3 | 21.6 | 27.3 | 12.9 | 15.9          | 28.6            |  |
| 21-Feb                                      | 16.8                          | 16.7   | 9.1   | Z                              | 13.1 | 19.0            | 18.3 | 24.8 | 13.8 | 26.8               | 24.2  | 18.3  | 10.9  | 10.4  | 8.8   | 7.6  | 9.0   | 8.7   | 7.8   | 14.0  | 15.3 | 18.0 | 21.6 | 18.2 | 15.3          | 26.8            |  |
| 22-Feb                                      | 25.0                          | 23.8   | 34.6  | 28.3                           | Z    | 29.4            | 37.3 | 45.4 | 56.3 | 70.8               | 76.2  | 92.8  | 48.7  | 13.6  | 13.7  | 21.5 | 18.0  | 18.2  | 21.0  | 21.9  | 25.4 | 25.9 | 28.6 | 18.0 | 34.5          | 92.8            |  |
| 23-Feb                                      | 13.2                          | 21.2   | 21.3  | 21.1                           | 27.0 | 35.0            | 23.2 | 27.4 | 36.1 | 53.1               | 32.9  | 24.7  | 18.1  | 13.7  | 15.1  | 27.2 | 15.8  | 18.0  | 26.2  | 26.6  | 30.7 | 34.6 | 46.0 | 55.3 | 27.6          | 55.3            |  |
| 24-Feb                                      | Z                             | 64.6   | 79.2  | 73.7                           | 59.5 | 42.6            | 38.7 | 44.8 | 36.4 | 29.8               | 23.4  | 15.0  | 6.6   | 5.0   | 3.8   | 4.3  | 7.4   | 6.3   | 5.7   | 8.1   | 9.1  | 12.9 | 12.6 | 11.8 | 26.1          | 79.2            |  |
| 25-Feb                                      | 19.1                          | Z  | 18.3  | 11.2                           | 9.3  | 11.3            | 14.4 | 15.0 | 14.8 | 8.1                | 1.0   | 0.8   | 1.0   | 3.1   | 2.7   | 4.5  | 3.7   | 5.5   | 8.5   | 26.7  | 21.8 | 16.6 | 18.8 | 19.2 | 11.1          | 26.7            |  |
| 26-Feb                                      | 19.0                          | 19.1   | Z     | 15.5                           | 14.1 | 16.1            | 20.5 | 39.1 | 88.6 | 139.2              | 94.6  | 45.5  | 30.1  | 33.6  | 31.9  | 23.2 | 21.6  | 32.9  | 28.6  | 14.9  | 11.0 | 9.7  | 9.4  | 11.9 | 33.5          | 139.2           |  |
| 27-Feb                                      | 23.6                          | 17.4   | 10.7  | Z                              | 13.1 | 9.4             | 6.7  | 6.9  | 11.2 | 7.2                | 9.6   | 11.2  | 11.5  | 10.2  | 15.6  | 10.2 | 7.6   | 8.7   | 19.9  | 18.2  | 16.2 | 16.1 | 11.8 | 8.5  | 12.2          | 23.6            |  |
| 28-Feb                                      | 3.5                           | 8.8  | 11.9  | 15.3                           | Z    | 10.3            | 8.6  | 12.7 | 13.5 | 14.7               | 43.4  | 45.7  | 31.4  | 22.8  | 20.7  | 7.0  | 9.0   | 10.2  | 17.5  | 19.1  | 29.4 | 47.9 | 46.4 | 55.7 | 22.0          | 55.7            |  |
|   |                               | 26.4   | 24.8  | 32.6                           | 23.8 | 22.5            | 22.7 | 23.1 | 24.3 | 26.9               | 31.6  | 31.2  | 31.4  | 22.4  | 20.0  | 18.9 | 17.1  | 20.7  | 23.4  | 24.6  | 26.6 | 25.9 | 25.9 | 25.9 | 24.4          | Diurnal Average |  |
|   |                               | 91.3   | 129.7 | 130.8                          | 73.7 | 64.5            | 59.0 | 71.0 | 92.3 | 99.6               | 139.2 | 102.0 | 117.3 | 76.6  | 100.9 | 92.6 | 81.0  | 104.9 | 116.9 | 119.8 | 91.2 | 93.8 | 62.4 | 64.2 | 69.6          | Diurnal Maximum |  |
| Z - zerspan                                 |                               | C - Calibration  |       |                                |      | M - Maintenance |      |      |      | PF - Power Failure |       |       |       |       |       |      |       |       |       |       |      |      |      |      |               |                 |  |





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Nitrogen Oxides (NO<sub>x</sub>) - ppb**  
**Fort McKay - Bertha Ganter - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 20                            | 356                    | 55.97    | 55.97               |
| 21 - 40                           | 169                    | 26.57    | 82.55               |
| 41 - 80                           | 89                     | 13.99    | 96.54               |
| 81 - 159                          | 21                     | 3.30     | 99.84               |
| > 159                             | 0                      | 0.00     | 99.84               |

Total Number of Valid Hours: 636

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Nitrogen Oxides (NO<sub>x</sub>) - ppb  
Fort McKay - Bertha Ganter - February 2023**

| <b>Concentration<br/>Ranges (ppb)</b> | <b>Wind Direction</b> |     |    |     |    |     |    |     |    |     |    |     |    |     |    |     | <b>Totals</b> |
|---------------------------------------|-----------------------|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|---------------|
|                                       | N                     | NNE | NE | ENE | E  | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |               |
| 0 - 20                                | 71                    | 50  | 30 | 18  | 8  | 4   | 2  | 25  | 43 | 8   | 6  | 16  | 20 | 18  | 22 | 15  | 356           |
| 21 - 40                               | 34                    | 13  | 4  | 8   | 2  | 2   | 4  | 12  | 23 | 12  | 5  | 7   | 9  | 9   | 12 | 11  | 167           |
| 41 - 80                               | 16                    | 1   | 3  | 2   | 2  | 0   | 4  | 8   | 11 | 17  | 1  | 1   | 3  | 4   | 6  | 10  | 89            |
| 81 - 159                              | 1                     | 3   | 0  | 1   | 0  | 0   | 2  | 3   | 6  | 1   | 2  | 0   | 0  | 0   | 1  | 1   | 21            |
| > 159                                 | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| <b>Totals</b>                         | 122                   | 67  | 37 | 29  | 12 | 6   | 12 | 48  | 83 | 38  | 14 | 24  | 32 | 31  | 41 | 37  | 633           |

Total Number of Valid Hours: 634

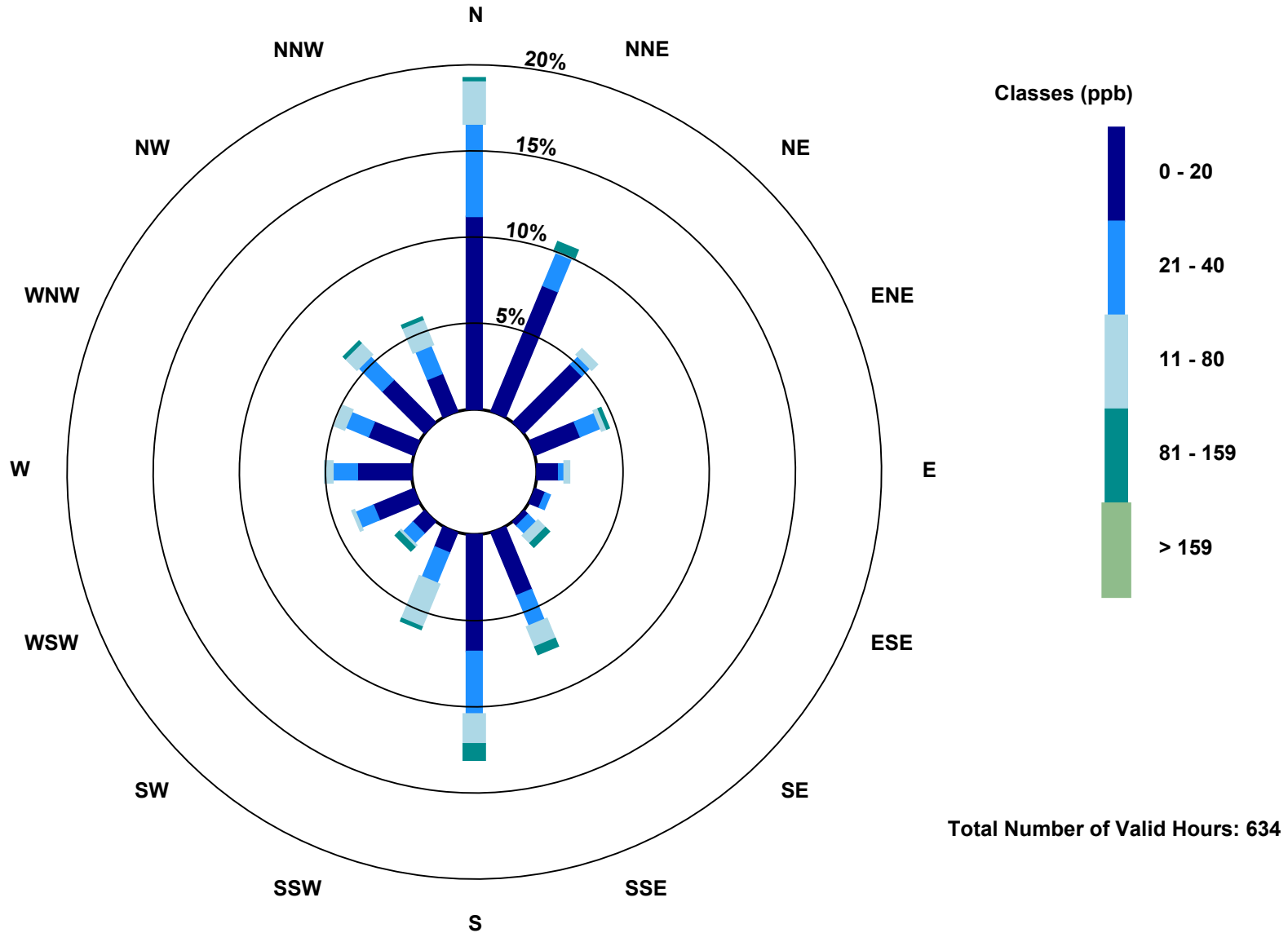
Total Number of Hours: 672

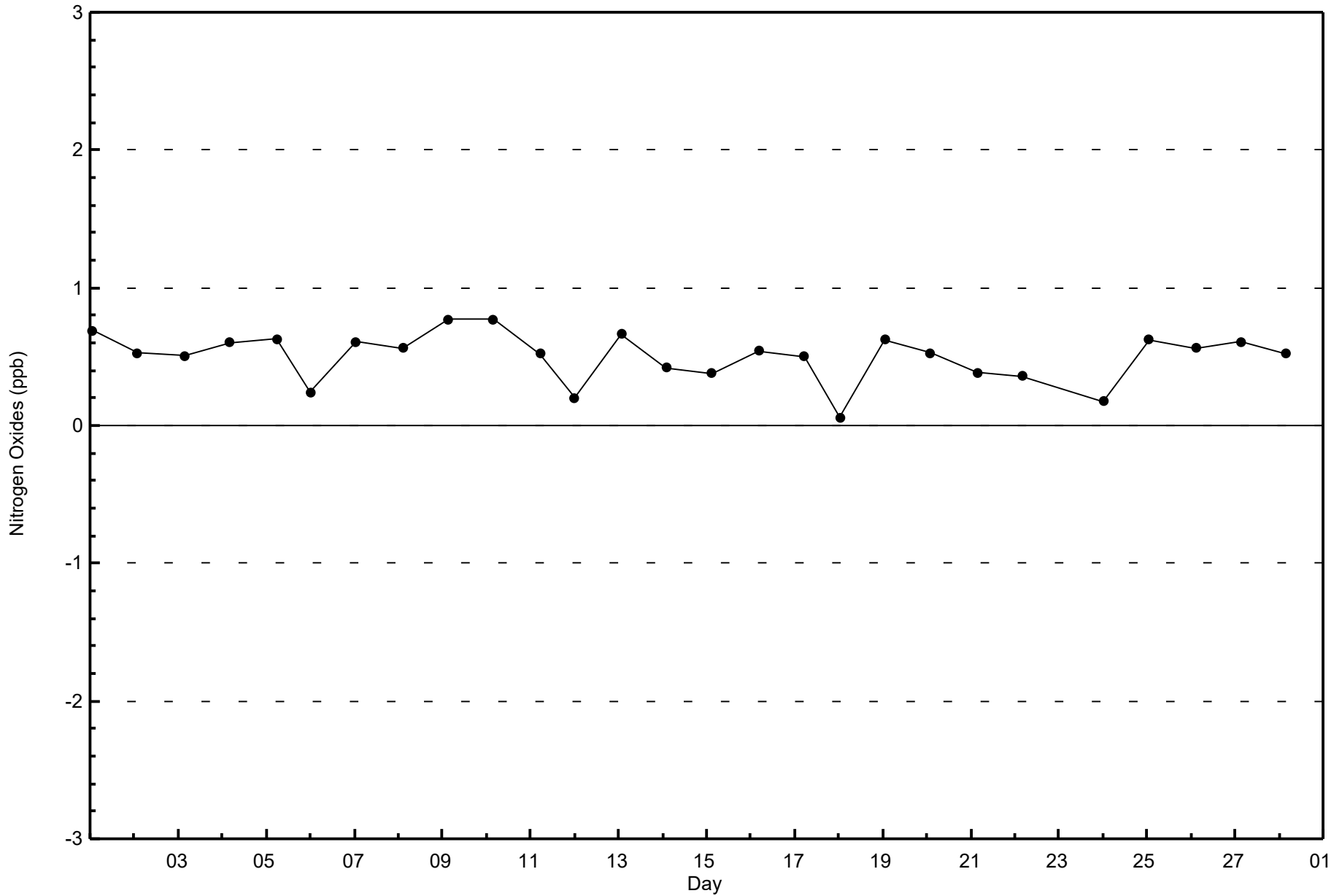


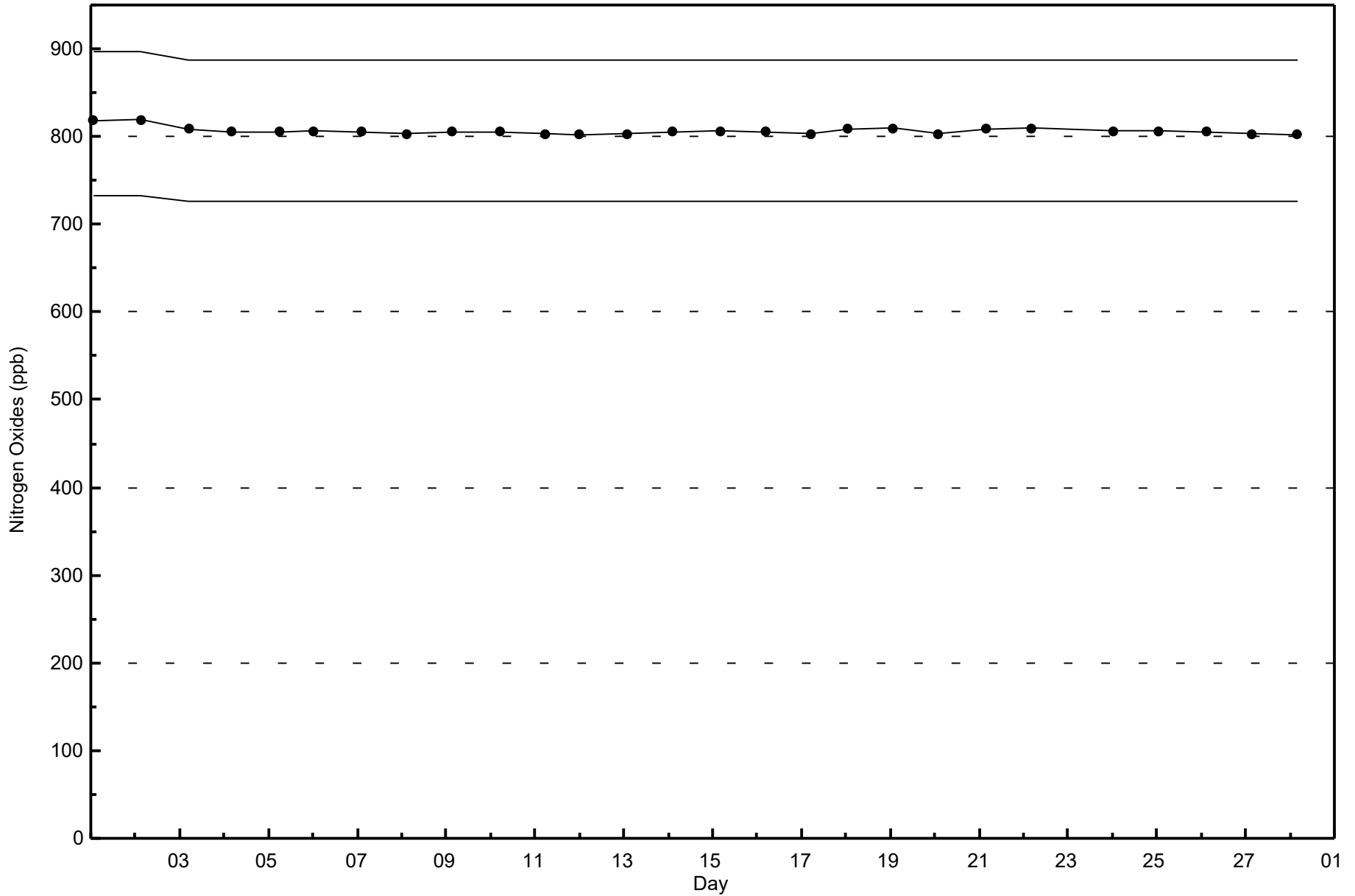


Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Nitrogen Oxides (NO<sub>x</sub>) - ppb  
Fort McKay - Bertha Ganter









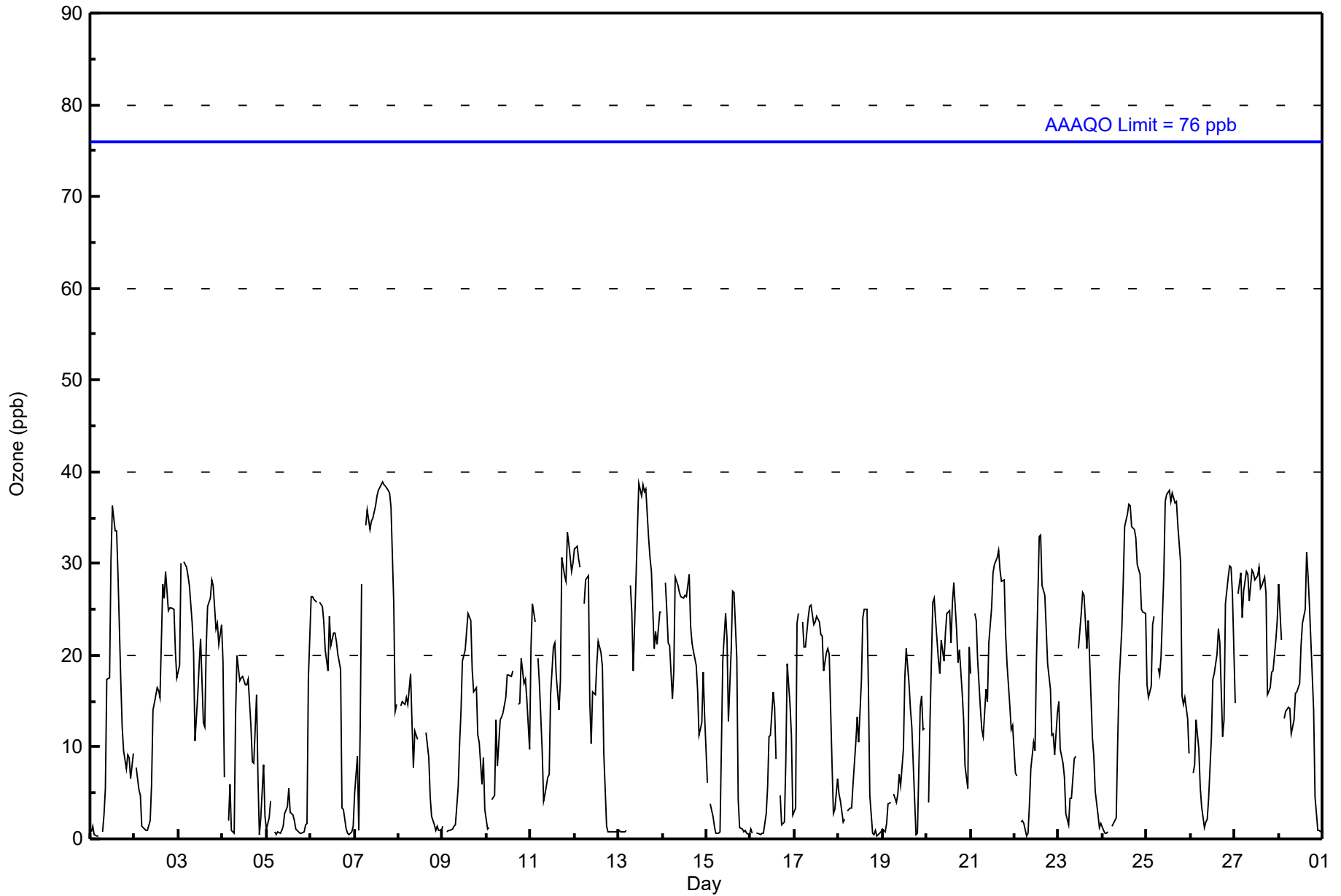
# Wood Buffalo Environmental Association

## Summary of Hour Averages

# Ozone (O<sub>3</sub>) - ppb

## Fort McKay - Bertha Ganter - February 2023

| Number of Exceedences (AAAQO):                              |                               | 1-hr: 0  |      | 24-hr: 0 |      | Hours in Service: |                 |      |      |      |      |                    |      |      |      |      |      |                           |      |      |      | 672  |      |      |               |               |      |      |      |      |      |      |      |      |                 |  |
|---|-------------------------------|--|------|----------|------|-------------------|-----------------|------|------|------|------|--------------------|------|------|------|------|------|---------------------------|------|------|------|------|------|------|---------------|---------------|------|------|------|------|------|------|------|------|-----------------|--|
| Maximum Value: 38.8 ppb on Feb 7 16:00                      |                               | Maximum Daily Average: 28.7 ppb on Feb 7   |      |          |      |                   |                 |      |      |      |      |                    |      |      |      |      |      | Hours of Data:            |      | 637  |      |      |      |      |               |               |      |      |      |      |      |      |      |      |                 |  |
| Minimum Value: 0.3 ppb on Feb 1 04:00                       |                               | Minimum Daily Average: 2.4 ppb on Feb 5  |      |          |      |                   |                 |      |      |      |      |                    |      |      |      |      |      | Hours of Missing Data:    |      | 35   |      |      |      |      |               |               |      |      |      |      |      |      |      |      |                 |  |
| Maximum Diurnal Average: 24.3 ppb at hour 16                |                               | Minimum Diurnal Average: 10.6 ppb at hour 1  |      |          |      |                   |                 |      |      |      |      |                    |      |      |      |      |      | Hours of Calibration:     |      | 31   |      |      |      |      |               |               |      |      |      |      |      |      |      |      |                 |  |
| Monthly Average: 15.62 ppb                                  |                               | Percentiles: P <sub>1</sub> = 0.4 P <sub>10</sub> = 0.9 Q <sub>1</sub> = 4.7 Median = 15.9 Q <sub>3</sub> = 24.6 P <sub>90</sub> = 29.4 P <sub>99</sub> = 38.1 |      |          |      |                   |                 |      |      |      |      |                    |      |      |      |      |      | Percent Operational Time: |      | 99.4 |      |      |      |      |               |               |      |      |      |      |      |      |      |      |                 |  |
| Day   | Hourly Period Ending At (MST) |  |      |          |      |                   |                 |      |      |      |      |                    |      |      |      |      |      |                           |      |      |      |      |      |      | Daily Average | Daily Maximum |      |      |      |      |      |      |      |      |                 |  |
|   | 1                             | 2  | 3    | 4        | 5    | 6                 | 7               | 8    | 9    | 10   | 11   | 12                 | 13   | 14   | 15   | 16   | 17   | 18                        | 19   | 20   | 21   | 22   | 23   | 24   |               |               |      |      |      |      |      |      |      |      |                 |  |
| 1-Feb   | 0.8                           | 1.4  | 0.5  | 0.3      | 0.4  | Z                 | 0.7             | 2.6  | 5.5  | 17.4 | 17.5 | 30.3               | 36.4 | 33.5 | 33.5 | 28.9 | 17.3 | 12.3                      | 9.6  | 7.6  | 9.2  | 8.9  | 6.6  | 9.3  | 12.6          | 36.4          |      |      |      |      |      |      |      |      |                 |  |
| 2-Feb   | Z                             | 7.8  | 5.4  | 4.7      | 1.3  | 1.1               | 0.9             | 0.9  | 2.0  | 6.0  | 14.0 | 14.8               | 16.5 | 16.1 | 15.5 | 27.8 | 26.3 | 29.2                      | 24.9 | 25.2 | 25.1 | 25.0 | 20.5 | 17.6 | 14.3          | 29.2          |      |      |      |      |      |      |      |      |                 |  |
| 3-Feb   | 18.9                          | 30.1   | Z    | 30.1     | 29.6 | 28.6              | 27.6            | 23.5 | 20.4 | 10.7 | 15.7 | 19.0               | 21.8 | 12.7 | 12.2 | 20.7 | 25.4 | 26.3                      | 28.3 | 27.7 | 22.8 | 23.5 | 21.2 | 23.3 | 22.6          | 30.1          |      |      |      |      |      |      |      |      |                 |  |
| 4-Feb   | 19.4                          | 6.8  | Z    | 2.0      | 6.0  | 0.9               | 0.5             | 13.6 | 20.0 | 17.2 | 17.5 | 17.7               | 16.7 | 16.8 | 17.4 | 12.2 | 8.3  | 8.2                       | 15.8 | 6.5  | 0.4  | 2.2  | 8.1  | 2.5  | 10.3          | 20.0          |      |      |      |      |      |      |      |      |                 |  |
| 5-Feb   | 1.1                           | 2.3  | 4.1  | Z        | 0.7  | 0.5               | 0.7             | 0.7  | 0.9  | 1.4  | 2.7  | 3.6                | 5.5  | 3.0  | 2.5  | 1.9  | 1.0  | 0.7                       | 0.6  | 0.7  | 0.7  | 1.5  | 1.8  | 17.6 | 2.4           | 17.6          |      |      |      |      |      |      |      |      |                 |  |
| 6-Feb   | 26.3                          | 26.4   | 26.1 | 25.9     | Z    | 25.8              | 25.4            | 23.7 | 20.6 | 18.4 | 24.2 | 21.1               | 22.5 | 22.4 | 21.6 | 20.1 | 18.4 | 3.4                       | 3.2  | 1.1  | 0.5  | 0.5  | 0.8  | 1.4  | 16.5          | 26.4          |      |      |      |      |      |      |      |      |                 |  |
| 7-Feb   | 4.9                           | 9.0  | 0.9  | 12.2     | 27.8 | Z                 | 34.2            | 35.9 | 33.7 | 34.6 | 35.0 | 36.3               | 37.3 | 38.0 | 38.6 | 38.8 | 38.7 | 38.4                      | 38.0 | 37.7 | 36.1 | 25.4 | 13.9 | 14.6 | 28.7          | 38.8          |      |      |      |      |      |      |      |      |                 |  |
| 8-Feb   | Z                             | 14.5   | 14.9 | 14.7     | 15.4 | 14.7              | 18.0            | 12.7 | 7.9  | 11.7 | 10.9 | C                  | C    | C    | C    | 11.6 | 8.9  | 4.6                       | 2.4  | 1.5  | 0.9  | 1.3  | 0.9  | 0.9  | 8.9           | 18.0          |      |      |      |      |      |      |      |      |                 |  |
| 9-Feb   | 1.3                           | Z  | 0.8  | 0.9      | 0.9  | 1.1               | 1.4             | 1.5  | 5.6  | 10.3 | 13.8 | 19.4               | 20.6 | 22.5 | 24.5 | 23.8 | 18.4 | 16.0                      | 16.4 | 11.3 | 10.5 | 6.0  | 8.9  | 3.2  | 10.4          | 24.5          |      |      |      |      |      |      |      |      |                 |  |
| 10-Feb  | 1.1                           | 1.3  | Z    | 4.3      | 4.7  | 13.0              | 7.9             | 13.0 | 13.2 | 13.7 | 15.4 | 17.8               | 17.8 | 17.7 | 18.3 | PF   | PF   | 14.6                      | 14.8 | 19.7 | 16.9 | 17.4 | 15.3 | 9.8  | 12.7          | 19.7          |      |      |      |      |      |      |      |      |                 |  |
| 11-Feb  | 20.9                          | 25.6   | 23.7 | Z        | 19.6 | 16.9              | 9.6             | 4.2  | 4.8  | 6.7  | 7.0  | 15.7               | 20.9 | 21.4 | 17.8 | 14.0 | 17.2 | 30.7                      | 28.6 | 28.1 | 33.5 | 32.2 | 29.2 | 30.0 | 19.9          | 33.5          |      |      |      |      |      |      |      |      |                 |  |
| 12-Feb  | 31.7                          | 31.8   | 30.5 | 29.6     | Z    | 25.6              | 28.2            | 28.7 | 14.9 | 10.4 | 16.1 | 15.7               | 19.1 | 21.6 | 20.2 | 18.8 | 9.3  | 1.4                       | 0.7  | 0.7  | 0.7  | 0.7  | 0.7  | 0.8  | 15.6          | 31.8          |      |      |      |      |      |      |      |      |                 |  |
| 13-Feb  | 0.9                           | 0.8  | 0.8  | 0.8      | 1.0  | Z                 | 27.6            | 24.7 | 18.3 | 28.4 | 33.7 | 38.7               | 37.3 | 38.6 | 37.9 | 38.2 | 32.8 | 30.7                      | 29.1 | 20.7 | 22.7 | 21.2 | 24.7 | 24.8 | 23.2          | 38.7          |      |      |      |      |      |      |      |      |                 |  |
| 14-Feb  | Z                             | 27.9   | 24.9 | 21.4     | 21.1 | 15.3              | 18.4            | 28.6 | 27.6 | 26.9 | 26.3 | 26.5               | 26.4 | 28.8 | 23.2 | 21.3 | 20.4 | 18.9                      | 16.2 | 11.3 | 12.7 | 18.1 | 13.4 | 13.4 | 21.8          | 28.8          |      |      |      |      |      |      |      |      |                 |  |
| 15-Feb  | 6.1                           | Z  | 3.8  | 2.4      | 1.4  | 0.6               | 0.6             | 0.8  | 10.1 | 19.5 | 24.6 | 21.9               | 12.9 | 20.6 | 27.1 | 26.9 | 19.8 | 4.2                       | 1.2  | 1.1  | 0.8  | 1.0  | 0.6  | 0.4  | 9.1           | 27.1          |      |      |      |      |      |      |      |      |                 |  |
| 16-Feb  | 1.1                           | 0.5  | Z    | 0.6      | 0.6  | 0.4               | 0.5             | 0.6  | 2.7  | 5.6  | 11.1 | 11.3               | 16.0 | 14.3 | 8.7  | M    | 4.7  | 1.6                       | 1.8  | 8.4  | 19.0 | 14.7 | 11.3 | 2.7  | 6.3           | 19.0          |      |      |      |      |      |      |      |      |                 |  |
| 17-Feb  | 3.3                           | 23.5   | 24.6 | Z        | 23.7 | 20.9              | 21.0            | 24.1 | 25.3 | 25.4 | 23.4 | 23.7               | 24.2 | 23.6 | 22.3 | 22.1 | 18.4 | 20.2                      | 20.8 | 20.2 | 8.2  | 2.8  | 3.1  | 6.6  | 18.8          | 25.4          |      |      |      |      |      |      |      |      |                 |  |
| 18-Feb  | 4.8                           | 4.1  | 1.9  | 2.1      | Z    | 3.0               | 3.3             | 3.3  | 6.0  | 10.5 | 13.3 | 10.5               | 17.2 | 24.2 | 25.1 | 25.1 | 16.5 | 4.7                       | 0.6  | 0.5  | 0.9  | 0.4  | 0.6  | 0.8  | 7.8           | 25.1          |      |      |      |      |      |      |      |      |                 |  |
| 19-Feb  | 1.0                           | 0.8  | 1.7  | 3.8      | 3.9  | Z                 | 4.8             | 4.0  | 4.9  | 7.0  | 5.7  | 9.8                | 17.6 | 20.8 | 16.9 | 14.2 | 12.2 | 4.3                       | 0.4  | 0.6  | 14.3 | 15.6 | 12.0 | 12.0 | 8.2           | 20.8          |      |      |      |      |      |      |      |      |                 |  |
| 20-Feb  | Z                             | 4.0  | 13.0 | 25.8     | 26.3 | 23.7              | 19.5            | 17.9 | 21.7 | 19.4 | 22.4 | 24.6               | 24.9 | 21.3 | 25.8 | 27.9 | 22.8 | 19.2                      | 20.6 | 15.8 | 12.9 | 7.9  | 5.4  | 20.9 | 19.3          | 27.9          |      |      |      |      |      |      |      |      |                 |  |
| 21-Feb  | 18.1                          | Z  | 24.6 | 23.8     | 19.5 | 14.2              | 12.0            | 11.2 | 16.3 | 14.9 | 21.4 | 25.1               | 28.9 | 29.8 | 30.7 | 31.4 | 29.3 | 28.1                      | 28.2 | 22.3 | 19.0 | 14.5 | 11.9 | 12.3 | 21.2          | 31.4          |      |      |      |      |      |      |      |      |                 |  |
| 22-Feb  | 7.2                           | 6.9  | Z    | 1.8      | 1.9  | 1.7               | 0.4             | 0.6  | 3.7  | 7.7  | 10.5 | 9.6                | 19.4 | 33.0 | 33.1 | 27.5 | 26.6 | 23.0                      | 19.1 | 16.3 | 11.3 | 11.5 | 9.1  | 13.7 | 12.8          | 33.1          |      |      |      |      |      |      |      |      |                 |  |
| 23-Feb  | 14.9                          | 9.8  | 8.2  | 6.7      | 2.7  | 1.5               | 4.4             | 4.4  | 8.7  | 9.1  | M    | 20.7               | 24.6 | 26.9 | 26.6 | 20.8 | 23.8 | 19.7                      | 11.0 | 9.0  | 5.2  | 2.6  | 1.3  | 1.6  | 11.5          | 26.9          |      |      |      |      |      |      |      |      |                 |  |
| 24-Feb  | 0.9                           | 0.6  | 0.7  | 0.7      | Z    | 1.3               | 1.7             | 2.3  | 10.2 | 16.9 | 22.9 | 27.9               | 34.0 | 35.3 | 36.4 | 36.3 | 34.0 | 33.7                      | 32.8 | 29.8 | 28.8 | 25.0 | 24.7 | 24.6 | 20.1          | 36.4          |      |      |      |      |      |      |      |      |                 |  |
| 25-Feb  | 16.8                          | 15.4   | 16.6 | 23.3     | 24.3 | Z                 | 18.6            | 17.9 | 19.9 | 28.8 | 36.7 | 37.5               | 38.0 | 36.8 | 37.6 | 36.6 | 36.8 | 34.1                      | 30.0 | 15.6 | 14.6 | 15.4 | 13.1 | 9.4  | 24.9          | 38.0          |      |      |      |      |      |      |      |      |                 |  |
| 26-Feb  | Z                             | 7.1  | 8.1  | 13.0     | 9.8  | 5.6               | 3.5             | 1.2  | 1.9  | 2.1  | 4.4  | 11.2               | 17.4 | 18.0 | 20.1 | 22.9 | 21.3 | 11.1                      | 13.0 | 25.7 | 28.6 | 29.7 | 29.6 | 26.6 | 14.4          | 29.7          |      |      |      |      |      |      |      |      |                 |  |
| 27-Feb  | 14.7                          | Z  | 26.8 | 29.0     | 24.1 | 27.0              | 29.2            | 28.8 | 26.0 | 29.2 | 29.1 | 28.3               | 28.6 | 29.5 | 27.3 | 27.7 | 28.5 | 26.7                      | 15.8 | 16.4 | 18.1 | 18.3 | 21.7 | 23.9 | 25.0          | 29.5          |      |      |      |      |      |      |      |      |                 |  |
| 28-Feb  | 27.7                          | 21.6   | Z    | 13.2     | 13.8 | 14.3              | 14.1            | 11.5 | 13.0 | 15.9 | 15.9 | 17.0               | 21.0 | 23.5 | 25.0 | 31.2 | 28.7 | 25.4                      | 17.9 | 14.0 | 4.6  | 0.9  | 0.8  | 0.8  | 16.2          | 31.2          |      |      |      |      |      |      |      |      |                 |  |
|   |                               |  |      |          |      |                   |                 |      |      |      | 10.6 | 11.7               | 11.9 | 11.7 | 11.7 | 11.2 | 11.9 | 12.2                      | 13.1 | 15.2 | 18.2 | 20.6 | 23.1 | 24.0 | 24.1          | 24.3          | 21.0 | 17.6 | 15.9 | 14.3 | 13.5 | 12.1 | 11.3 | 11.6 | Diurnal Average |  |
|   |                               |  |      |          |      |                   |                 |      |      |      | 31.7 | 31.8               | 30.5 | 30.1 | 29.6 | 28.6 | 34.2 | 35.9                      | 33.7 | 34.6 | 36.7 | 38.7 | 38.0 | 38.6 | 38.6          | 38.8          | 38.7 | 38.4 | 38.0 | 37.7 | 36.1 | 32.2 | 29.6 | 30.0 | Diurnal Maximum |  |
| Z - zerospan  |                               | C - Calibration  |      |          |      |                   | M - Maintenance |      |      |      |      | PF - Power Failure |      |      |      |      |      |                           |      |      |      |      |      |      |               |               |      |      |      |      |      |      |      |      |                 |  |
| Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 76 ppb |                               |  |      |          |      |                   |                 |      |      |      |      |                    |      |      |      |      |      |                           |      |      |      |      |      |      |               |               |      |      |      |      |      |      |      |      |                 |  |





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Ozone (O<sub>3</sub>) - ppb**  
**Fort McKay - Bertha Ganter - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 20                            | 405                    | 63.58    | 63.58               |
| 21 - 50                           | 232                    | 36.42    | 100.00              |
| 51 - 82                           | 0                      | 0.00     | 100.00              |
| > 83                              | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 637

Total Number of Hours: 672



**Wood Buffalo Environmental Association**  
**Frequency Distribution**

**Ozone (O<sub>3</sub>) - ppb**  
**Fort McKay - Bertha Ganter - February 2023**

| <b>Concentration</b><br><b>Ranges (ppb)</b> | <b>Wind Direction</b> |     |    |     |    |     |    |     |    |     |    |     |    |     |    |     | <b>Totals</b> |
|---|-----------------------|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|---------------|
|   | N                     | NNE | NE | ENE | E  | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |               |
| 0 - 20                                      | 86                    | 32  | 11 | 12  | 2  | 3   | 9  | 26  | 57 | 38  | 10 | 13  | 14 | 25  | 33 | 32  | 403           |
| 21 - 50                                     | 36                    | 34  | 26 | 19  | 9  | 3   | 3  | 22  | 28 | 2   | 4  | 11  | 17 | 7   | 6  | 5   | 232           |
| 51 - 82                                     | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| > 83  | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| <b>Totals</b>                               | 122                   | 66  | 37 | 31  | 11 | 6   | 12 | 48  | 85 | 40  | 14 | 24  | 31 | 32  | 39 | 37  | 635           |

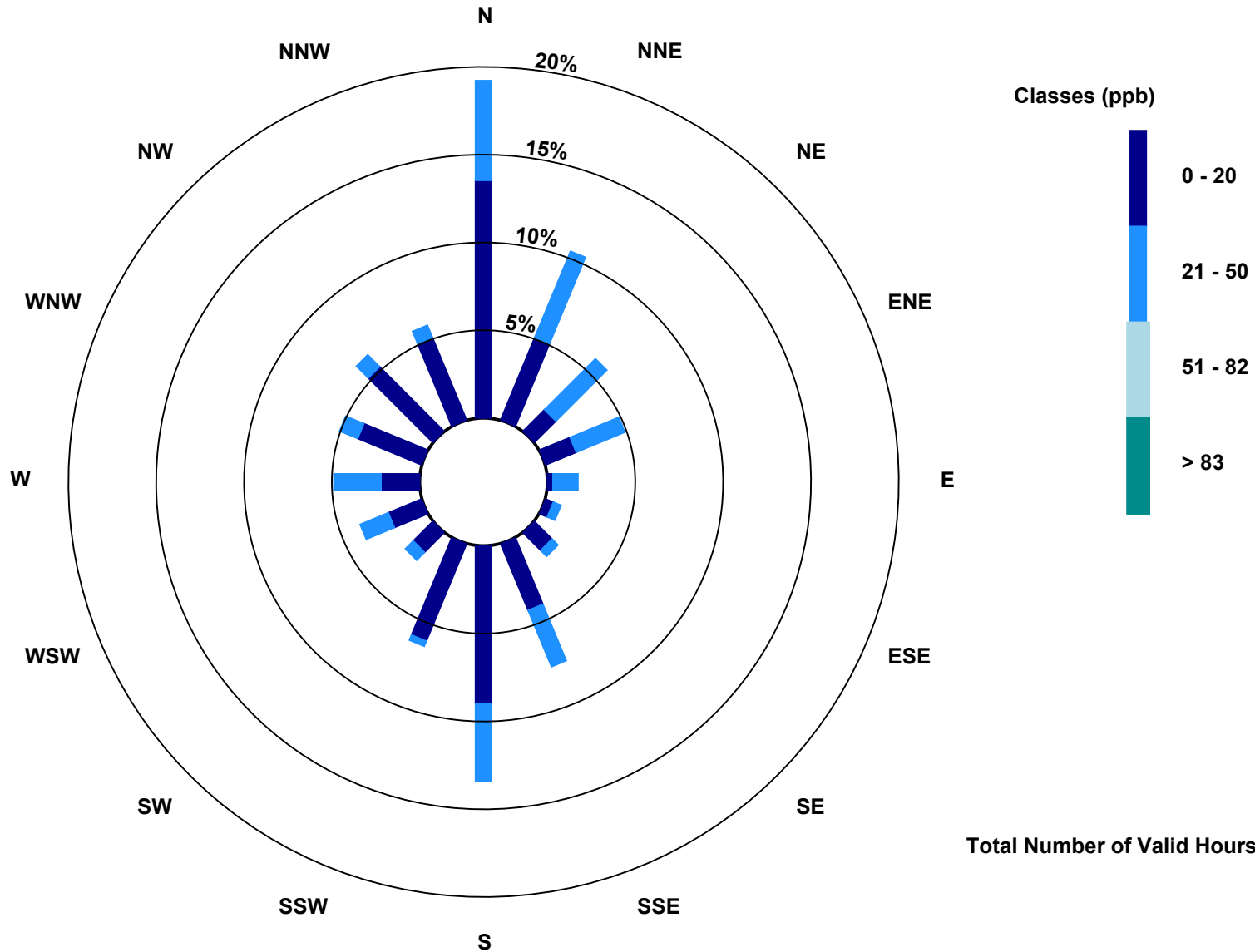
Total Number of Valid Hours: 635

Total Number of Hours: 672

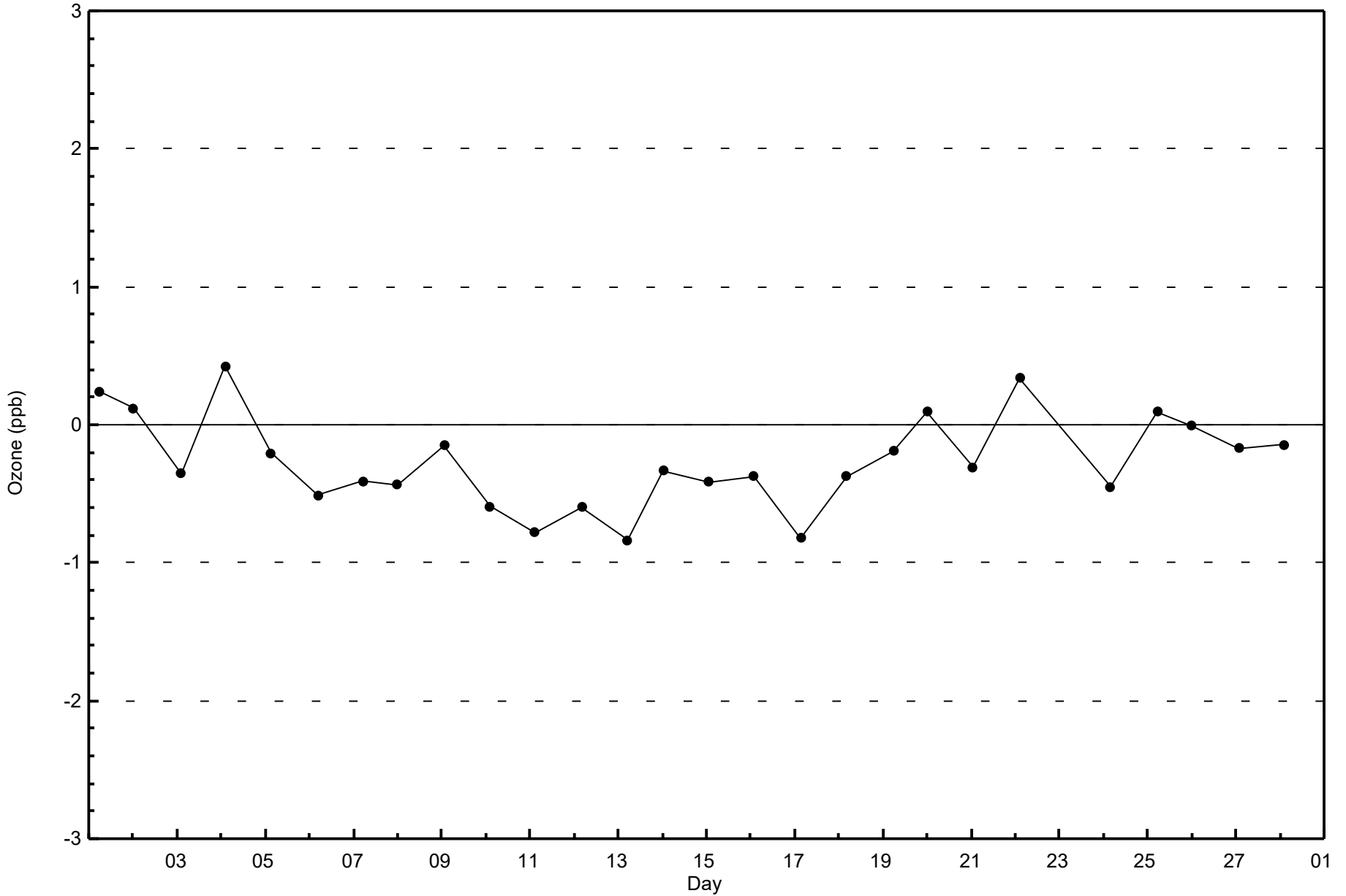


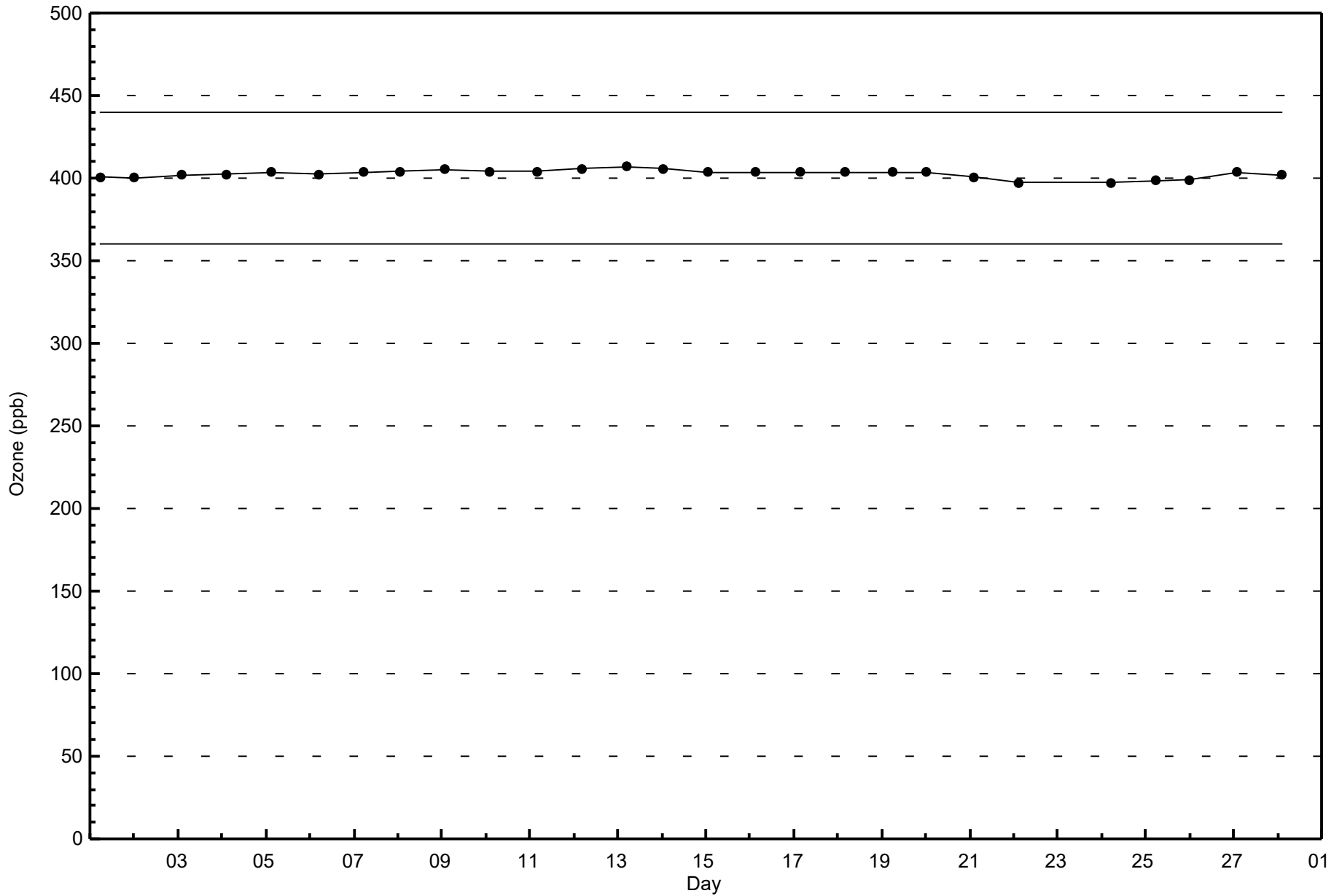
Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Ozone (O<sub>3</sub>) - ppb  
Fort McKay - Bertha Ganter











Wood Buffalo Environmental Association

Summary of Hour Averages

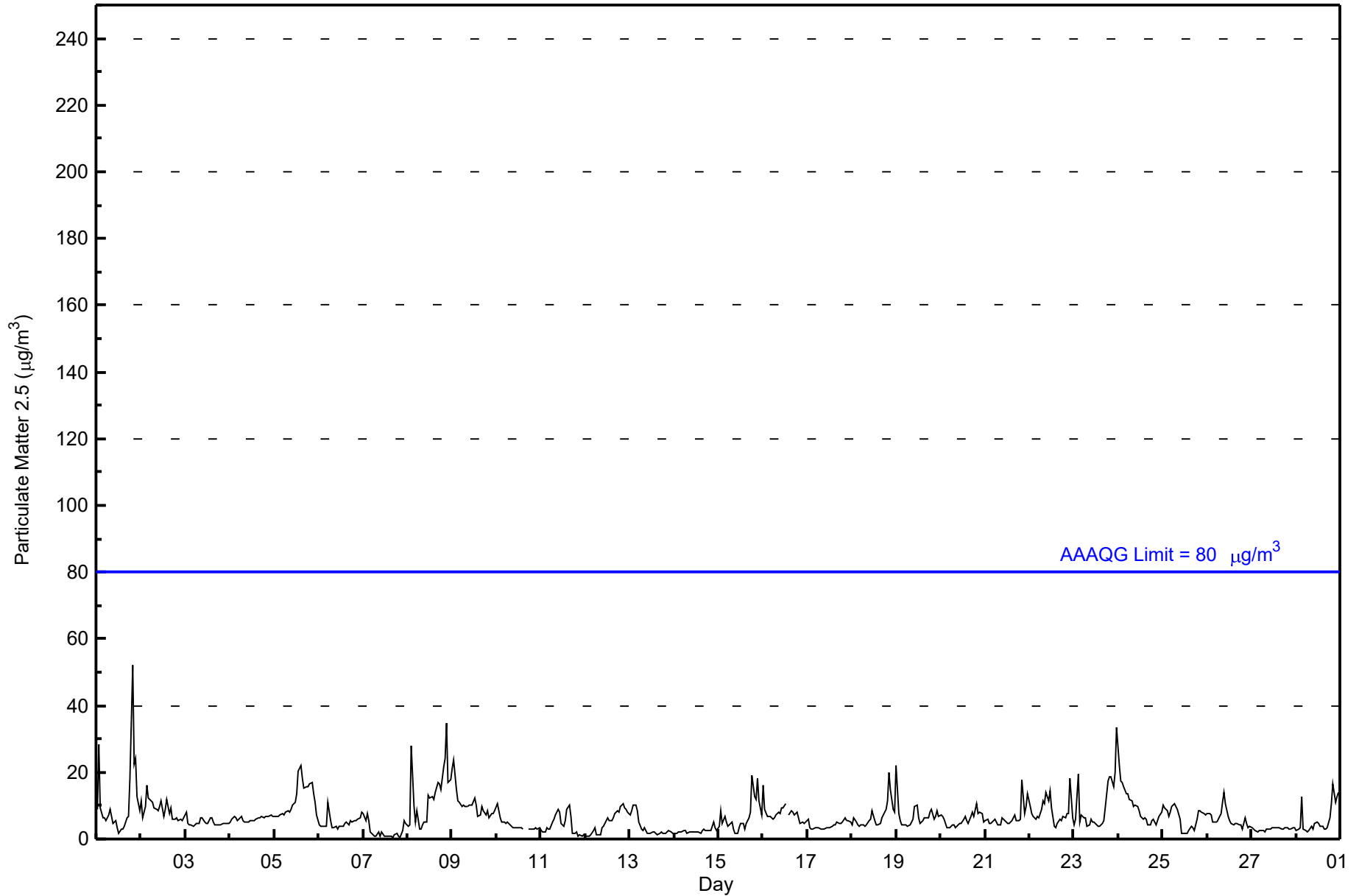
Particulate Matter 2.5 (PM<sub>2.5</sub>) - µg/m<sup>3</sup>

Fort McKay - Bertha Ganter - February 2023

|   |  |          |                           |      |
|---|--|----------|---------------------------|------|
| Number of Exceedences (AAAQO):                            | 1-hr: 0  | 24-hr: 0 | Hours in Service:         | 672  |
| Maximum Value: 52.0 µg/m <sup>3</sup> on Feb 1 20:00      | Maximum Daily Average: 12.8 µg/m <sup>3</sup> on Feb 8   |          | Hours of Data:            | 669  |
| Minimum Value: 0.5 µg/m <sup>3</sup> on Feb 7 21:00       | Minimum Daily Average: 2.4 µg/m <sup>3</sup> on Feb 14   |          | Hours of Missing Data:    | 3    |
| Maximum Diurnal Average: 9.2 µg/m <sup>3</sup> at hour 20 | Minimum Diurnal Average: 5.4 µg/m <sup>3</sup> at hour 8   |          | Hours of Calibration:     | 1    |
| Monthly Average: 6.67 µg/m <sup>3</sup>                   | Percentiles: P <sub>1</sub> = 0.9 P <sub>10</sub> = 2.3 Q <sub>1</sub> = 3.6 Median = 5.5 Q <sub>3</sub> = 8.1 P <sub>90</sub> = 11.8 P <sub>99</sub> = 23.9 |          | Percent Operational Time: | 99.7 |

| Day    | Hourly Period Ending At (MST) |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Daily Average | Daily Maximum |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
|--------|-------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|---------------|---------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----------------|
|        | 1                             | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20   | 21   | 22   | 23   | 24   |               |               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 1-Feb  | 8.7                           | 28.6 | 9.5  | 6.5  | 6.3  | 5.3  | 7.3  | 9.1  | 6.7  | 4.7  | 5.6  | 3.6  | 1.6  | 2.8  | 3.0  | 3.6  | 6.5  | 6.6  | 18.2 | 52.0 | 22.7 | 24.3 | 12.7 | 8.3  | 11.0          | 52.0          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 2-Feb  | 11.3                          | 6.5  | 9.9  | 16.3 | 12.3 | 11.5 | 11.0 | 9.1  | 8.8  | 8.4  | 9.9  | 11.4 | 6.9  | 8.9  | 11.7 | 7.4  | 9.5  | 6.1  | 6.0  | 6.4  | 5.6  | 5.8  | 5.6  | 6.3  | 8.9           | 16.3          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 3-Feb  | 7.9                           | 4.9  | 4.3  | 4.1  | 3.7  | 4.2  | 4.5  | 4.7  | 6.1  | 6.4  | 5.1  | 4.9  | 4.5  | 6.4  | 6.5  | 5.0  | 4.4  | 4.2  | 4.2  | 4.3  | 4.7  | 4.7  | 4.8  | 4.5  | 5.0           | 7.9           |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 4-Feb  | 4.9                           | 5.7  | 6.7  | 6.5  | 5.7  | 6.0  | 6.7  | 5.5  | 5.1  | 5.1  | 5.1  | 5.5  | 5.4  | 5.6  | 5.7  | 6.4  | 6.5  | 6.7  | 6.2  | 6.6  | 7.0  | 6.8  | 7.2  | 6.8  | 6.1           | 7.2           |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 5-Feb  | 6.8                           | 6.7  | 7.0  | 7.2  | 7.6  | 7.2  | 7.9  | 8.4  | 8.2  | 8.9  | 10.0 | 10.9 | 13.6 | 20.3 | 21.8 | 18.1 | 15.4 | 15.8 | 15.7 | 16.4 | 17.0 | 13.8 | 10.9 | 7.1  | 11.8          | 21.8          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 6-Feb  | 4.2                           | 3.9  | 3.9  | 3.7  | 3.9  | 10.9 | 5.4  | 3.2  | 3.3  | 3.6  | 3.1  | 3.8  | 3.7  | 3.7  | 4.5  | 5.1  | 4.1  | 5.4  | 5.1  | 5.4  | 5.3  | 6.0  | 6.2  | 7.9  | 4.8           | 10.9          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 7-Feb  | 7.8                           | 5.4  | 7.4  | 5.6  | 2.1  | 1.4  | 0.9  | 0.9  | 2.3  | 1.0  | 2.2  | 1.0  | 0.9  | 0.7  | 0.8  | 0.7  | 0.6  | 1.5  | 1.5  | 0.8  | 0.5  | 2.5  | 5.5  | 4.5  | 2.4           | 7.8           |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 8-Feb  | 4.0                           | 4.4  | 28.1 | 9.7  | 4.9  | 8.5  | 2.9  | 3.1  | 4.3  | 5.1  | 5.2  | 12.9 | 12.2 | 12.9 | 11.7 | 14.0 | 17.2 | 16.5 | 14.9 | 21.7 | 24.3 | 34.7 | 17.0 | 17.8 | 12.8          | 34.7          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 9-Feb  | 21.2                          | 23.6 | 14.9 | 11.6 | 10.8 | 9.7  | 10.1 | 9.9  | 10.0 | 10.0 | 10.3 | 10.4 | 12.3 | 10.0 | 6.9  | 7.1  | 9.7  | 8.5  | 7.1  | 8.6  | 6.4  | 7.5  | 7.8  | 8.3  | 10.5          | 23.6          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 10-Feb | 10.5                          | 8.3  | 6.4  | 5.0  | 5.0  | 4.6  | 5.0  | 4.3  | 3.6  | 3.3  | 3.3  | 3.2  | 3.3  | 3.2  | PF   | PF   | 2.9  | 3.1  | 2.8  | 3.0  | 3.2  | 3.1  | 3.2  | 4.3  | 10.5          | 10.5          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 11-Feb | 2.6                           | 2.1  | 2.3  | 3.3  | 2.8  | 3.0  | 5.0  | 5.9  | 7.1  | 8.9  | 8.2  | 4.5  | 4.0  | 5.5  | 8.7  | 10.0 | 6.8  | 1.8  | 1.5  | 2.1  | 0.9  | 1.3  | 0.9  | 1.4  | 4.2           | 10.0          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 12-Feb | 1.0                           | 1.0  | 1.0  | 1.2  | 2.4  | 3.3  | 1.2  | 1.1  | 1.3  | 3.4  | 3.9  | 5.5  | 6.2  | 5.5  | 5.7  | 6.4  | 7.7  | 8.5  | 8.0  | 9.8  | 10.5 | 9.4  | 9.1  | 8.0  | 5.1           | 10.5          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 13-Feb | 7.2                           | 8.6  | 10.2 | 10.0 | 8.6  | 5.0  | 3.2  | 2.7  | 3.3  | 1.6  | 1.8  | 1.5  | 2.1  | 2.0  | 1.7  | 1.4  | 1.7  | 2.2  | 1.5  | 1.8  | 1.9  | 2.5  | 2.1  | 1.9  | 3.6           | 10.2          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 14-Feb | 1.6                           | 1.8  | 2.0  | 2.2  | 2.3  | 2.7  | 2.6  | 1.9  | 2.1  | 2.0  | 2.2  | 2.2  | 2.3  | 2.1  | 1.6  | 2.5  | 3.0  | 2.6  | 2.4  | 2.7  | 2.4  | 4.9  | 3.3  | 2.6  | 2.4           | 4.9           |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 15-Feb | 3.7                           | 8.4  | 4.8  | 6.6  | 4.9  | 3.9  | 4.5  | 5.0  | 2.9  | 1.6  | 1.7  | 3.6  | 4.5  | 4.9  | 3.1  | 4.8  | 6.3  | 7.9  | 19.0 | 12.7 | 11.8 | 18.3 | 11.3 | 7.2  | 6.8           | 19.0          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 16-Feb | 16.0                          | 8.9  | 6.9  | 6.6  | 6.6  | 6.1  | 6.3  | 7.3  | 8.0  | 7.7  | 9.2  | 9.2  | 10.7 | C    | 7.4  | 8.4  | 8.0  | 7.2  | 8.1  | 6.3  | 4.6  | 5.2  | 4.8  | 5.0  | 7.6           | 16.0          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 17-Feb | 5.8                           | 3.4  | 2.9  | 2.8  | 3.2  | 3.3  | 3.4  | 3.1  | 3.1  | 3.2  | 3.5  | 3.4  | 3.3  | 3.8  | 4.1  | 4.4  | 4.9  | 4.7  | 4.6  | 5.3  | 6.2  | 5.6  | 5.4  | 5.1  | 4.1           | 6.2           |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 18-Feb | 4.3                           | 6.4  | 5.1  | 4.3  | 3.9  | 4.2  | 4.1  | 3.9  | 4.1  | 5.6  | 6.1  | 8.5  | 5.5  | 4.1  | 4.4  | 4.5  | 6.2  | 7.3  | 8.7  | 11.5 | 19.8 | 15.0 | 8.9  | 8.1  | 6.9           | 19.8          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 19-Feb | 22.1                          | 7.8  | 5.6  | 4.4  | 4.2  | 4.4  | 4.0  | 4.2  | 5.1  | 6.0  | 9.9  | 10.0 | 6.3  | 4.6  | 5.6  | 6.6  | 6.2  | 6.2  | 8.1  | 8.9  | 6.1  | 6.9  | 8.3  | 6.8  | 7.0           | 22.1          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 20-Feb | 7.4                           | 6.8  | 5.8  | 3.5  | 3.5  | 3.6  | 4.4  | 4.3  | 3.5  | 4.1  | 4.5  | 4.7  | 5.8  | 6.9  | 5.7  | 4.8  | 6.7  | 8.1  | 6.8  | 10.5 | 7.7  | 8.1  | 7.6  | 5.1  | 5.8           | 10.5          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 21-Feb | 5.6                           | 5.8  | 4.8  | 4.7  | 5.0  | 5.8  | 5.0  | 4.2  | 4.3  | 6.4  | 5.8  | 5.1  | 4.5  | 4.7  | 5.5  | 6.5  | 7.0  | 5.4  | 5.4  | 6.0  | 17.6 | 7.8  | 9.9  | 13.5 | 6.5           | 17.6          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 22-Feb | 9.8                           | 7.6  | 6.9  | 5.8  | 6.7  | 6.4  | 8.8  | 11.3 | 10.5 | 14.2 | 11.2 | 14.6 | 9.5  | 3.7  | 3.5  | 4.6  | 6.0  | 5.6  | 6.8  | 6.5  | 7.8  | 7.5  | 18.0 | 6.4  | 8.3           | 18.0          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 23-Feb | 4.4                           | 6.0  | 19.5 | 5.3  | 7.2  | 6.3  | 6.5  | 4.0  | 4.4  | 5.9  | 5.1  | 5.3  | 4.2  | 3.7  | 3.9  | 4.5  | 5.5  | 9.5  | 17.2 | 18.5 | 18.4 | 15.7 | 19.9 | 33.6 | 9.8           | 33.6          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 24-Feb | 21.9                          | 17.4 | 16.9 | 15.6 | 13.6 | 13.4 | 11.8 | 11.4 | 10.0 | 10.3 | 9.8  | 8.3  | 6.6  | 5.9  | 6.2  | 5.7  | 4.1  | 4.2  | 5.5  | 5.7  | 4.2  | 5.3  | 6.6  | 7.9  | 9.5           | 21.9          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 25-Feb | 10.3                          | 9.2  | 8.5  | 6.6  | 8.0  | 9.6  | 10.6 | 9.6  | 9.1  | 5.8  | 1.8  | 1.8  | 1.7  | 1.7  | 2.7  | 3.8  | 3.3  | 2.7  | 5.8  | 8.4  | 8.7  | 8.0  | 7.7  | 7.1  | 6.4           | 10.6          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 26-Feb | 7.6                           | 7.5  | 7.2  | 5.3  | 5.1  | 5.0  | 6.1  | 7.7  | 10.9 | 13.9 | 10.7 | 6.7  | 5.4  | 4.7  | 4.4  | 4.6  | 4.5  | 4.3  | 4.1  | 2.8  | 6.4  | 4.6  | 3.4  | 3.9  | 6.1           | 13.9          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 27-Feb | 3.4                           | 2.9  | 2.7  | 2.0  | 2.7  | 2.5  | 2.4  | 2.3  | 2.8  | 2.9  | 3.0  | 3.3  | 3.3  | 3.3  | 3.4  | 3.3  | 3.1  | 3.0  | 3.4  | 3.2  | 3.1  | 2.9  | 3.3  | 3.4  | 3.0           | 3.4           |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 28-Feb | 2.8                           | 3.1  | 3.3  | 12.6 | 3.0  | 2.5  | 2.1  | 2.6  | 3.7  | 3.0  | 4.6  | 5.0  | 4.6  | 3.9  | 3.8  | 2.8  | 3.1  | 3.4  | 6.4  | 10.6 | 16.4 | 11.2 | 12.6 | 14.2 | 5.9           | 16.4          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
|        |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 8.0  | 7.6           | 7.7           | 6.4  | 5.6  | 5.7  | 5.5  | 5.4  | 5.5  | 5.8  | 5.8  | 6.1  | 5.5  | 5.4  | 5.6  | 5.8  | 6.2  | 6.0  | 7.3  | 9.2  | 9.0  | 8.9  | 8.0  | 7.7  | Diurnal Average |
|        |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 22.1 | 28.6          | 28.1          | 16.3 | 13.6 | 13.4 | 11.8 | 11.4 | 10.9 | 14.2 | 11.2 | 14.6 | 13.6 | 20.3 | 21.8 | 18.1 | 17.2 | 16.5 | 19.0 | 52.0 | 24.3 | 34.7 | 19.9 | 33.6 | Diurnal Maximum |

C - Calibration      PF - Power Failure  
 Alberta Ambient Air Quality Guideline/Objectives: 1-hr 80 µg/m<sup>3</sup>    24-hr 29 µg/m<sup>3</sup>





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Particulate Matter 2.5 (PM<sub>2.5</sub>) -  $\mu\text{g}/\text{m}^3$   
Fort McKay - Bertha Ganter - February 2023**

| <b>Concentration Ranges (<math>\mu\text{g}/\text{m}^3</math>)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---|------------------------|----------|---------------------|
| 0 - 5   | 334                    | 49.93    | 49.93               |
| 6 - 15  | 293                    | 43.80    | 93.72               |
| 16 - 25   | 37                     | 5.53     | 99.25               |
| 26 - 80   | 5                      | 0.75     | 100.00              |
| > 81.0  | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 669

Total Number of Hours: 672



**Wood Buffalo Environmental Association**  
**Frequency Distribution**

**Particulate Matter 2.5 (PM<sub>2.5</sub>) -  $\mu\text{g}/\text{m}^3$**   
**Fort McKay - Bertha Ganter - February 2023**

| Concentration<br>Ranges ( $\mu\text{g}/\text{m}^3$ ) | Wind Direction |     |    |     |    |     |    |     |    |     |    |     |    |     |    |     | Totals |
|--|----------------|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|--------|
|  | N              | NNE | NE | ENE | E  | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |        |
| 0 - 5  | 77             | 48  | 30 | 20  | 10 | 4   | 6  | 18  | 23 | 2   | 6  | 17  | 23 | 14  | 21 | 15  | 334    |
| 6 - 15   | 52             | 20  | 7  | 11  | 2  | 2   | 7  | 33  | 57 | 29  | 6  | 4   | 6  | 15  | 17 | 23  | 291    |
| 16 - 25  | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 3   | 8  | 10  | 3  | 3   | 5  | 1   | 3  | 1   | 37     |
| 26 - 80  | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 1   | 0  | 1   | 1  | 2   | 0  | 0   | 5      |
| > 81.0   | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| <b>Totals</b>  | 129            | 68  | 37 | 31  | 12 | 6   | 13 | 54  | 88 | 42  | 15 | 25  | 35 | 32  | 41 | 39  | 667    |

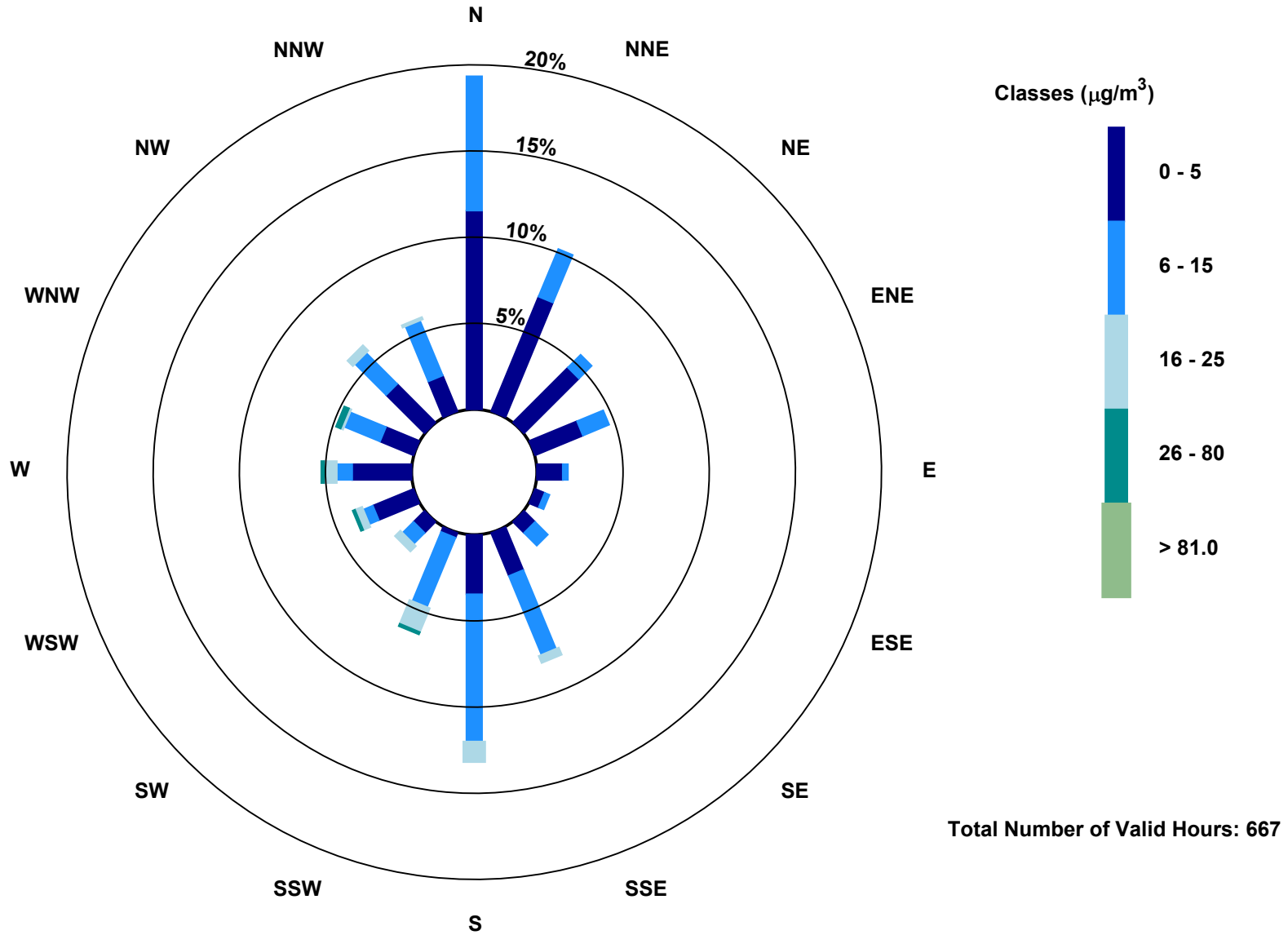
Total Number of Valid Hours: 667

Total Number of Hours: 672



Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Particulate Matter 2.5 (PM<sub>2.5</sub>) -  $\mu\text{g}/\text{m}^3$   
Fort McKay - Bertha Ganter





**Wood Buffalo Environmental Association**

**Summary of Hour Averages**

**Carbon Monoxide (CO) - ppm**

**Fort McKay - Bertha Ganter - February 2023**

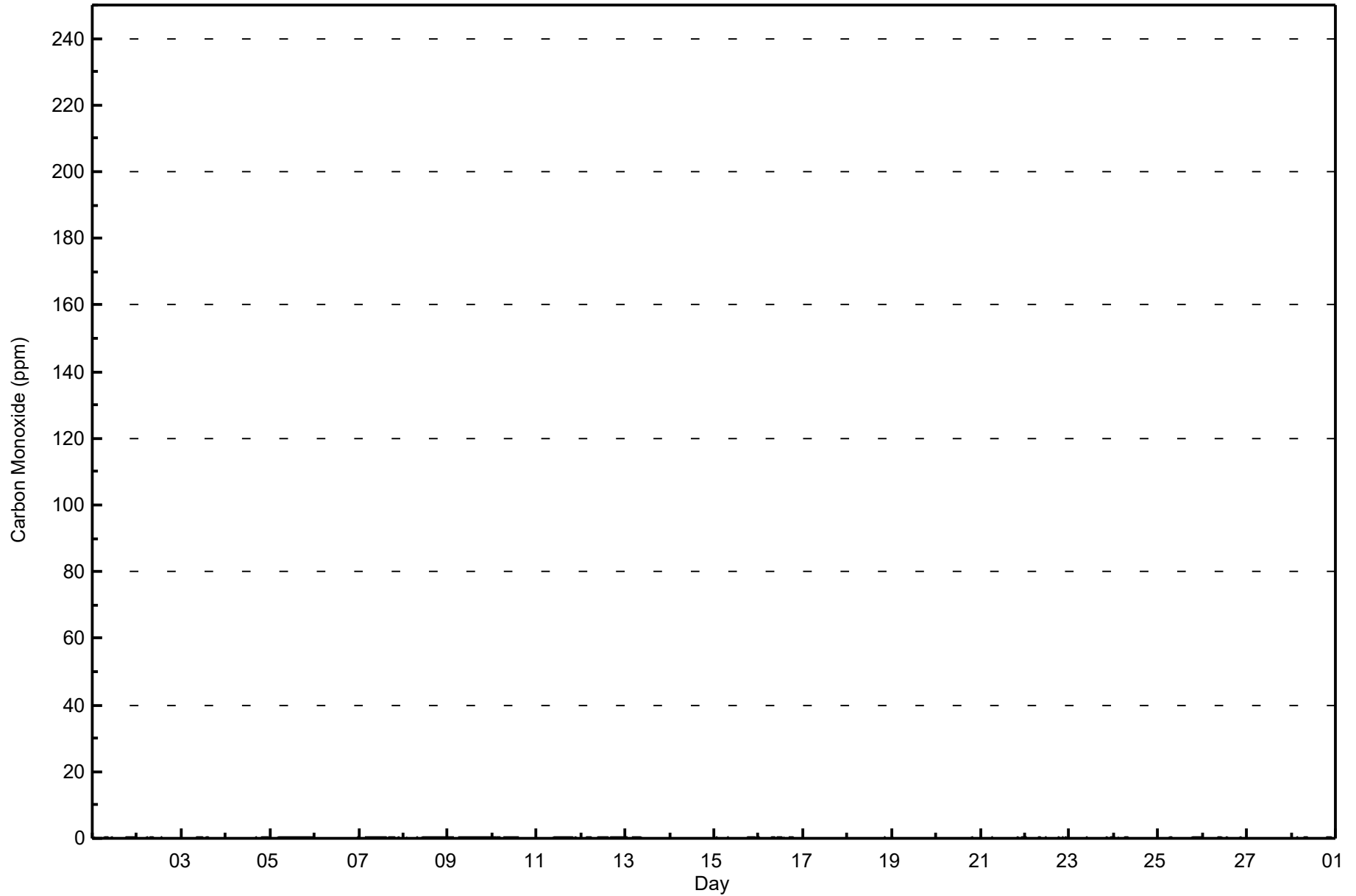
| Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0             |                               |     |     |     |     |     |     |     |     |     |     |     | Hours in Service: 672  |     |     |     |                 |     |     |     |                    |     |     |                 |               |               |     |     |
|---|-------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|-----|-----|-----|-----------------|-----|-----|-----|--------------------|-----|-----|-----------------|---------------|---------------|-----|-----|
| Maximum Value: 0.4 ppm on Feb 2 09:00                       |                               |     |     |     |     |     |     |     |     |     |     |     | Maximum Daily Average: 0.3 ppm on Feb 9  |     |     |     |                 |     |     |     |                    |     |     |                 |               |               |     |     |
| Minimum Value: 0.1 ppm on Feb 15 11:00                      |                               |     |     |     |     |     |     |     |     |     |     |     | Minimum Daily Average: 0.1 ppm on Feb 14   |     |     |     |                 |     |     |     |                    |     |     |                 |               |               |     |     |
| Maximum Diurnal Average: 0.2 ppm at hour 21                 |                               |     |     |     |     |     |     |     |     |     |     |     | Minimum Diurnal Average: 0.2 ppm at hour 5   |     |     |     |                 |     |     |     |                    |     |     |                 |               |               |     |     |
| Monthly Average: 0.20 ppm                                   |                               |     |     |     |     |     |     |     |     |     |     |     | Percentiles: P <sub>1</sub> = 0.1 P <sub>10</sub> = 0.2 Q <sub>1</sub> = 0.2 Median = 0.2 Q <sub>3</sub> = 0.2 P <sub>90</sub> = 0.3 P <sub>99</sub> = 0.3 |     |     |     |                 |     |     |     |                    |     |     |                 |               |               |     |     |
| Day   | Hourly Period Ending At (MST) |     |     |     |     |     |     |     |     |     |     |     |  |     |     |     |                 |     |     |     |                    |     |     |                 | Daily Average | Daily Maximum |     |     |
|   | 1                             | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  | 11  | 12  | 13   | 14  | 15  | 16  | 17              | 18  | 19  | 20  | 21                 | 22  | 23  | 24              |               |               |     |     |
| 1-Feb   | 0.2                           | 0.3 | Z   | 0.2 | 0.2 | 0.2 | 0.3 | 0.2 | 0.3 | 0.2 | 0.2 | 0.2 | 0.1  | 0.1 | 0.1 | 0.1 | 0.2             | 0.2 | 0.3 | 0.3 | 0.3                | 0.3 | 0.3 | 0.3             | 0.2           | 0.3           | 0.2 | 0.2 |
| 2-Feb   | 0.2                           | 0.2 | 0.2 | Z   | 0.2 | 0.2 | 0.2 | 0.3 | 0.4 | 0.2 | 0.2 | 0.2 | 0.2  | 0.2 | 0.2 | 0.2 | 0.2             | 0.2 | 0.2 | 0.2 | 0.2                | 0.2 | 0.2 | 0.2             | 0.2           | 0.2           | 0.2 | 0.2 |
| 3-Feb   | 0.2                           | 0.2 | 0.2 | 0.2 | 0.2 | Z   | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2  | 0.2 | 0.2 | 0.2 | 0.2             | 0.2 | 0.2 | 0.2 | 0.2                | 0.2 | 0.2 | 0.2             | 0.2           | 0.2           | 0.2 | 0.2 |
| 4-Feb   | 0.2                           | 0.2 | 0.2 | 0.2 | 0.2 | Z   | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2  | 0.2 | 0.2 | 0.2 | 0.2             | 0.2 | 0.2 | 0.2 | 0.2                | 0.2 | 0.2 | 0.2             | 0.2           | 0.2           | 0.3 | 0.2 |
| 5-Feb   | Z                             | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2  | 0.3 | 0.3 | 0.3 | 0.3             | 0.3 | 0.3 | 0.3 | 0.3                | 0.3 | 0.3 | 0.2             | 0.2           | 0.2           | 0.2 | 0.2 |
| 6-Feb   | 0.2                           | Z   | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2  | 0.2 | 0.2 | 0.2 | 0.2             | 0.2 | 0.2 | 0.2 | 0.2                | 0.2 | 0.2 | 0.2             | 0.2           | 0.2           | 0.2 | 0.2 |
| 7-Feb   | 0.2                           | 0.2 | Z   | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2  | 0.2 | 0.2 | 0.2 | 0.2             | 0.2 | 0.2 | 0.2 | 0.2                | 0.2 | 0.2 | 0.2             | 0.2           | 0.2           | 0.2 | 0.2 |
| 8-Feb   | 0.2                           | 0.2 | 0.3 | Z   | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2  | 0.2 | 0.2 | 0.2 | 0.3             | 0.3 | 0.3 | 0.3 | 0.3                | 0.3 | 0.4 | 0.3             | 0.3           | 0.2           | 0.2 | 0.4 |
| 9-Feb   | 0.3                           | 0.3 | 0.2 | 0.2 | Z   | 0.2 | 0.2 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3  | 0.3 | 0.3 | 0.3 | 0.3             | 0.3 | 0.3 | 0.3 | 0.3                | 0.3 | 0.3 | 0.3             | 0.3           | 0.3           | 0.3 | 0.3 |
| 10-Feb  | 0.3                           | 0.3 | 0.3 | 0.2 | 0.2 | Z   | 0.2 | 0.2 | 0.2 | 0.3 | 0.3 | 0.3 | 0.3  | 0.3 | 0.3 | PF  | PF              | RE  | RE  | RE  | RE                 | RE  | RE  | RE              | RE            | RE            | RE  | --  |
| 11-Feb  | Z                             | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2  | 0.2 | 0.3 | 0.3 | 0.3             | 0.2 | 0.2 | 0.2 | 0.2                | 0.2 | 0.2 | 0.2             | 0.2           | 0.2           | 0.2 | 0.2 |
| 12-Feb  | 0.2                           | Z   | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2  | 0.2 | 0.2 | 0.2 | 0.2             | 0.2 | 0.2 | 0.2 | 0.2                | 0.2 | 0.2 | 0.3             | 0.2           | 0.2           | 0.2 | 0.2 |
| 13-Feb  | 0.2                           | 0.3 | Z   | 0.3 | 0.3 | 0.3 | 0.2 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2  | 0.2 | 0.2 | 0.2 | 0.2             | 0.2 | 0.2 | 0.2 | 0.2                | 0.2 | 0.2 | 0.1             | 0.1           | 0.1           | 0.2 | 0.3 |
| 14-Feb  | 0.1                           | 0.1 | 0.1 | Z   | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1  | 0.1 | 0.1 | 0.2 | 0.2             | 0.2 | 0.2 | 0.2 | 0.2                | 0.2 | 0.2 | 0.2             | 0.2           | 0.2           | 0.2 | 0.2 |
| 15-Feb  | 0.2                           | 0.2 | 0.2 | 0.2 | Z   | 0.2 | 0.2 | 0.3 | 0.2 | 0.1 | 0.1 | C   | C  | C   | C   | C   | 0.2             | 0.2 | 0.2 | 0.2 | 0.3                | 0.3 | 0.4 | 0.3             | 0.2           | 0.2           | 0.2 | 0.2 |
| 16-Feb  | 0.2                           | 0.2 | 0.1 | 0.2 | 0.2 | Z   | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2  | 0.2 | 0.2 | M   | 0.2             | 0.2 | 0.2 | 0.2 | 0.2                | 0.2 | 0.2 | 0.2             | 0.2           | 0.2           | 0.2 | 0.2 |
| 17-Feb  | Z                             | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2  | 0.2 | 0.2 | 0.2 | 0.2             | 0.2 | 0.2 | 0.2 | 0.2                | 0.2 | 0.2 | 0.2             | 0.2           | 0.2           | 0.2 | 0.2 |
| 18-Feb  | 0.2                           | Z   | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2  | 0.2 | 0.2 | 0.2 | 0.2             | 0.2 | 0.2 | 0.2 | 0.2                | 0.2 | 0.3 | 0.2             | 0.2           | 0.2           | 0.2 | 0.2 |
| 19-Feb  | 0.2                           | 0.2 | Z   | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2  | 0.2 | 0.2 | 0.2 | 0.2             | 0.2 | 0.2 | 0.2 | 0.2                | 0.2 | 0.2 | 0.2             | 0.2           | 0.2           | 0.2 | 0.2 |
| 20-Feb  | 0.2                           | 0.2 | 0.2 | Z   | 0.1 | 0.1 | 0.2 | 0.2 | 0.1 | 0.1 | 0.2 | 0.2 | 0.1  | 0.2 | 0.2 | 0.2 | 0.2             | 0.2 | 0.2 | 0.2 | 0.2                | 0.2 | 0.2 | 0.2             | 0.2           | 0.2           | 0.2 | 0.2 |
| 21-Feb  | 0.2                           | 0.2 | 0.1 | 0.2 | Z   | 0.2 | 0.2 | 0.2 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2  | 0.2 | 0.2 | 0.2 | 0.2             | 0.2 | 0.2 | 0.2 | 0.2                | 0.3 | 0.2 | 0.3             | 0.2           | 0.2           | 0.2 | 0.2 |
| 22-Feb  | 0.2                           | 0.2 | 0.2 | 0.2 | 0.2 | Z   | 0.2 | 0.4 | 0.4 | 0.2 | 0.2 | 0.2 | 0.2  | 0.2 | 0.2 | 0.2 | 0.2             | 0.2 | 0.2 | 0.2 | 0.2                | 0.2 | 0.2 | 0.3             | 0.2           | 0.2           | 0.2 | 0.2 |
| 23-Feb  | Z                             | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.1  | 0.1 | 0.1 | 0.1 | 0.2             | 0.2 | 0.2 | 0.2 | 0.2                | 0.2 | 0.2 | 0.2             | 0.2           | 0.2           | 0.2 | 0.2 |
| 24-Feb  | 0.2                           | Z   | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2  | 0.2 | 0.2 | 0.2 | 0.2             | 0.2 | 0.2 | 0.2 | 0.2                | 0.2 | 0.2 | 0.2             | 0.2           | 0.2           | 0.2 | 0.2 |
| 25-Feb  | 0.2                           | 0.2 | Z   | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2  | 0.2 | 0.2 | 0.2 | 0.2             | 0.2 | 0.2 | 0.2 | 0.3                | 0.3 | 0.2 | 0.2             | 0.2           | 0.2           | 0.2 | 0.2 |
| 26-Feb  | 0.2                           | 0.2 | 0.2 | Z   | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2  | 0.2 | 0.2 | 0.2 | 0.2             | 0.2 | 0.2 | 0.2 | 0.2                | 0.2 | 0.2 | 0.2             | 0.2           | 0.2           | 0.2 | 0.2 |
| 27-Feb  | 0.2                           | 0.2 | 0.2 | 0.2 | Z   | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.1 | 0.2 | 0.2  | 0.2 | 0.2 | 0.2 | 0.2             | 0.2 | 0.2 | 0.2 | 0.2                | 0.1 | 0.2 | 0.2             | 0.2           | 0.2           | 0.2 | 0.2 |
| 28-Feb  | 0.1                           | 0.1 | 0.2 | 0.3 | 0.2 | Z   | 0.2 | 0.2 | 0.3 | 0.2 | 0.1 | 0.1 | 0.1  | 0.1 | 0.2 | 0.1 | 0.1             | 0.1 | 0.1 | 0.2 | 0.3                | 0.2 | 0.2 | 0.2             | 0.2           | 0.2           | 0.2 | 0.2 |
| 0.2   |                               |     |     |     |     |     |     |     |     |     |     |     |  |     |     |     |                 |     |     |     |                    |     |     | Diurnal Average |               |               |     |     |
| 0.3   |                               |     |     |     |     |     |     |     |     |     |     |     |  |     |     |     |                 |     |     |     |                    |     |     | Diurnal Maximum |               |               |     |     |
| Z - zerospan  |                               |     |     |     |     |     |     |     |     |     |     |     | C - Calibration  |     |     |     | M - Maintenance |     |     |     | PF - Power Failure |     |     |                 | RE - Recovery |               |     |     |
| Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 13 ppm |                               |     |     |     |     |     |     |     |     |     |     |     |  |     |     |     |                 |     |     |     |                    |     |     |                 |               |               |     |     |





**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Carbon Monoxide (CO) - ppm**  
**Fort McKay - Bertha Ganter - February 2023**





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Carbon Monoxide (CO) - ppm  
Fort McKay - Bertha Ganter - February 2023**

| <b>Concentration Ranges (ppm)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 0.3                           | 624                    | 99.21    | 99.21               |
| 0.4 - 0.5                         | 5                      | 0.79     | 100.00              |
| 0.6 - 0.7                         | 0                      | 0.00     | 100.00              |
| 0.8 - 1.4                         | 0                      | 0.00     | 100.00              |
| 1.5 - 10                          | 0                      | 0.00     | 100.00              |
| > 10                              | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 629

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Carbon Monoxide (CO) - ppm  
Fort McKay - Bertha Ganter - February 2023**

| Concentration<br>Ranges (ppm) | Wind Direction |     |    |     |    |     |    |     |    |     |    |     |    |     |    |     | Totals |
|-------------------------------|----------------|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|--------|
|                               | N              | NNE | NE | ENE | E  | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |        |
| 0 - 0.3                       | 120            | 65  | 35 | 30  | 12 | 4   | 12 | 50  | 84 | 35  | 14 | 24  | 32 | 31  | 38 | 36  | 622    |
| 0.4 - 0.5                     | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 1  | 3   | 0  | 0   | 0  | 1   | 0  | 0   | 5      |
| 0.6 - 0.7                     | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| 0.8 - 1.4                     | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| 1.5 - 10                      | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| > 10                          | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| <b>Totals</b>                 | 120            | 65  | 35 | 30  | 12 | 4   | 12 | 50  | 85 | 38  | 14 | 24  | 32 | 32  | 38 | 36  | 627    |

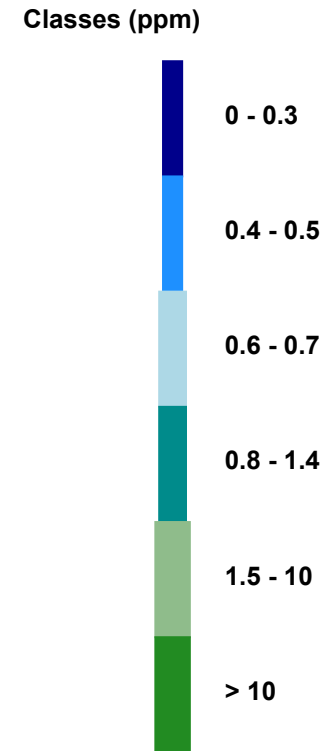
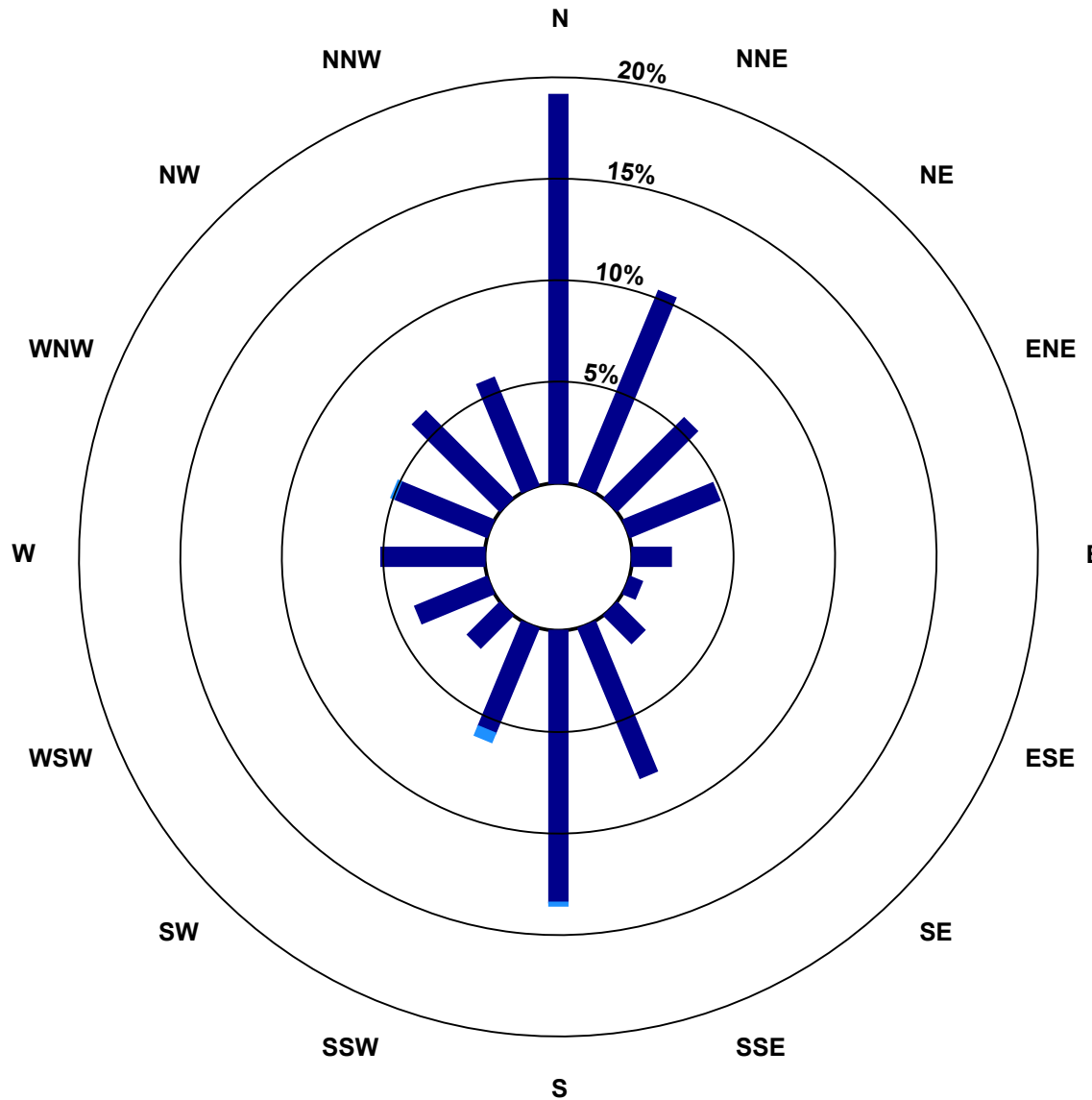
Total Number of Valid Hours: 627

Total Number of Hours: 672



Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Carbon Monoxide (CO) - ppm  
Fort McKay - Bertha Ganter



Total Number of Valid Hours: 627

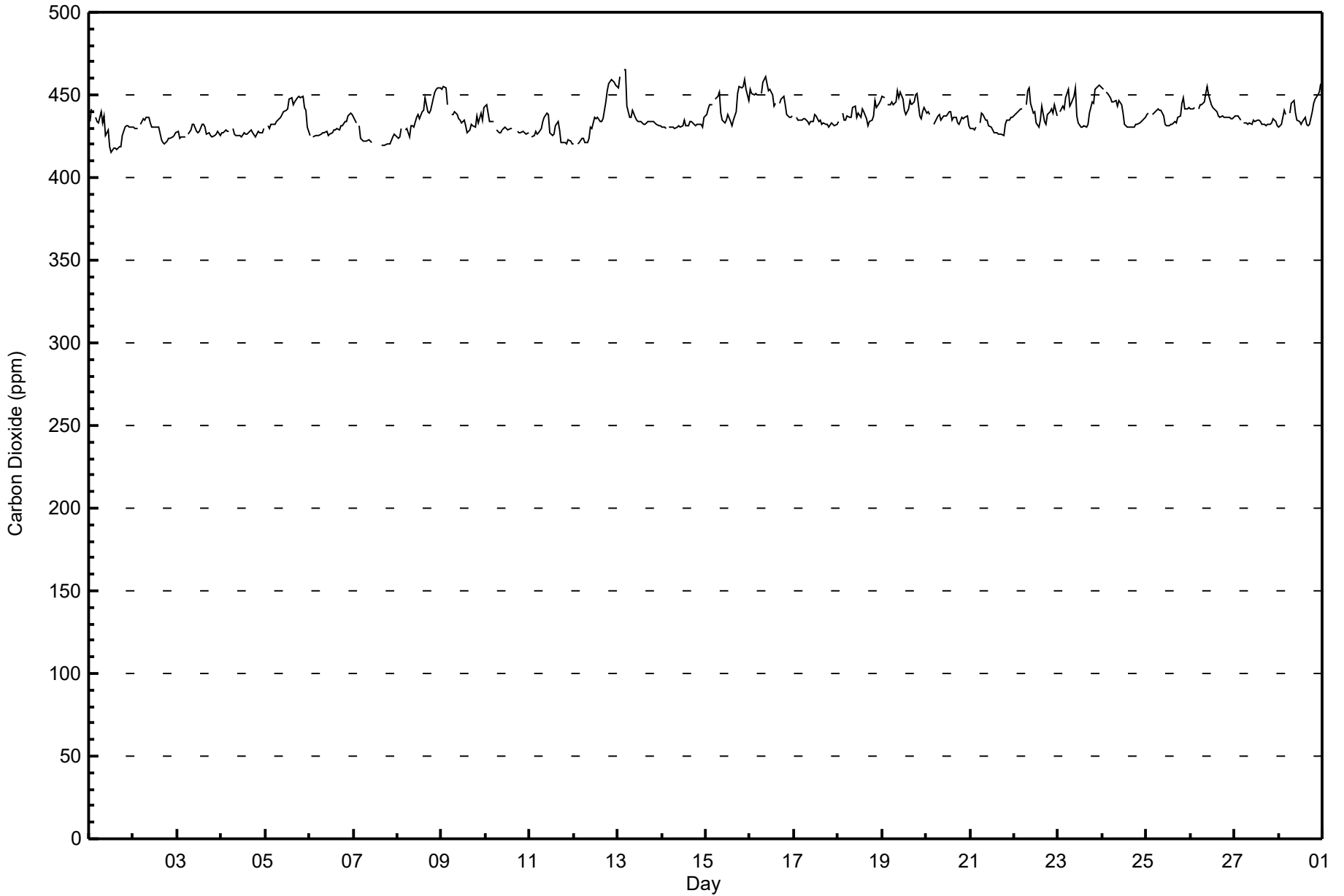


| Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0<br>Maximum Value: 465.4 ppm on Feb 13 04:00 Maximum Daily Average: 448.1 ppm on Feb 16  |                               |       |                 |       |       |       |                 |       |       |       |                    |       |       |       |       |       |       |       |       |       |       |       |       | Hours in Service: 672<br>Hours of Data: 637   |               |               |  |  |  |
|---|-------------------------------|-------|-----------------|-------|-------|-------|-----------------|-------|-------|-------|--------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---|---------------|---------------|--|--|--|
| Minimum Value: 414.8 ppm on Feb 1 13:00 Minimum Daily Average: 423.8 ppm on Feb 7<br>Maximum Diurnal Average: 437.8 ppm at hour 9 Minimum Diurnal Average: 432.6 ppm at hour 17<br>Monthly Average: 435.68 ppm Percentiles: P <sub>1</sub> = 419.1 P <sub>10</sub> = 425.3 Q <sub>1</sub> = 430.2 Median = 434.2 Q <sub>3</sub> = 440.2 P <sub>90</sub> = 448.6 P <sub>99</sub> = 458.3 |                               |       |                 |       |       |       |                 |       |       |       |                    |       |       |       |       |       |       |       |       |       |       |       |       | Hours of Missing Data: 35<br>Hours of Calibration: 32<br>Percent Operational Time: 99.6 |               |               |  |  |  |
| Day   | Hourly Period Ending At (MST) |       |                 |       |       |       |                 |       |       |       |                    |       |       |       |       |       |       |       |       |       |       |       |       |   | Daily Average | Daily Maximum |  |  |  |
|   | 1                             | 2     | 3               | 4     | 5     | 6     | 7               | 8     | 9     | 10    | 11                 | 12    | 13    | 14    | 15    | 16    | 17    | 18    | 19    | 20    | 21    | 22    | 23    | 24  |               |               |  |  |  |
| 1-Feb   | 433.7                         | 441.6 | Z               | 436.2 | 433.6 | 433.5 | 440.2           | 433.4 | 437.1 | 425.1 | 429.1              | 418.5 | 414.8 | 417.6 | 417.5 | 416.8 | 418.5 | 418.7 | 425.8 | 430.6 | 431.2 | 431.1 | 430.8 | 430.4   | 428.1         | 441.6         |  |  |  |
| 2-Feb   | 430.6                         | 429.7 | 430.0           | Z     | 432.3 | 435.5 | 434.8           | 436.8 | 436.2 | 432.7 | 430.3              | 430.4 | 430.2 | 430.5 | 430.6 | 422.8 | 421.6 | 420.4 | 422.0 | 423.7 | 423.4 | 424.2 | 425.5 | 427.1   | 428.7         | 436.8         |  |  |  |
| 3-Feb   | 428.1                         | 424.1 | 424.8           | 424.3 | 424.8 | Z     | 426.4           | 428.8 | 432.4 | 431.9 | 428.0              | 427.4 | 428.2 | 432.4 | 432.0 | 430.2 | 426.6 | 426.7 | 425.0 | 424.7 | 425.5 | 426.5 | 427.6 | 425.6   | 427.5         | 432.4         |  |  |  |
| 4-Feb   | 427.2                         | 427.0 | 428.9           | 428.4 | 427.9 | Z     | 429.8           | 426.4 | 425.2 | 425.8 | 425.7              | 424.8 | 427.2 | 426.0 | 426.4 | 428.1 | 428.6 | 426.8 | 424.9 | 426.3 | 427.5 | 427.3 | 427.1 | 429.3   | 427.1         | 429.8         |  |  |  |
| 5-Feb   | Z                             | 431.1 | 429.4           | 432.4 | 432.2 | 432.1 | 433.9           | 435.9 | 436.3 | 438.2 | 440.1              | 440.5 | 441.2 | 447.1 | 448.1 | 443.7 | 445.4 | 447.9 | 449.5 | 448.3 | 449.5 | 442.7 | 440.3 | 430.2   | 439.8         | 449.5         |  |  |  |
| 6-Feb   | 425.3                         | Z     | 424.9           | 425.3 | 425.2 | 425.3 | 426.1           | 427.2 | 426.9 | 427.9 | 425.8              | 426.7 | 427.4 | 428.5 | 428.7 | 429.3 | 429.2 | 431.3 | 431.7 | 433.7 | 433.9 | 436.9 | 439.1 | 438.4   | 429.3         | 439.1         |  |  |  |
| 7-Feb   | 436.5                         | 433.3 | Z               | 431.6 | 423.9 | 422.4 | 421.9           | 421.7 | 423.2 | 421.7 | 421.0              | C     | C     | C     | C     | 419.6 | 419.8 | 419.9 | 420.0 | 420.2 | 420.2 | 424.4 | 426.0 | 425.1   | 423.8         | 436.5         |  |  |  |
| 8-Feb   | 423.8                         | 424.5 | 429.3           | Z     | 428.9 | 429.6 | 424.9           | 431.1 | 431.3 | 430.9 | 436.1              | 437.8 | 435.5 | 439.6 | 440.7 | 448.4 | 439.7 | 438.6 | 441.1 | 447.9 | 452.0 | 453.7 | 454.3 | 454.3   | 438.0         | 454.3         |  |  |  |
| 9-Feb   | 453.3                         | 455.2 | 454.2           | 444.4 | Z     | 438.1 | 437.8           | 439.7 | 438.0 | 435.5 | 434.8              | 432.8 | 435.1 | 431.6 | 427.5 | 429.1 | 432.2 | 431.3 | 430.7 | 437.5 | 433.3 | 438.8 | 435.0 | 442.3   | 437.7         | 455.2         |  |  |  |
| 10-Feb  | 444.4                         | 439.3 | 434.3           | 434.2 | 433.5 | Z     | 429.2           | 427.0 | 427.0 | 429.2 | 430.8              | 429.3 | 428.7 | 429.5 | 429.8 | PF    | PF    | 427.8 | 426.9 | 426.9 | 427.7 | 426.8 | 426.3 | 427.2   | 430.3         | 444.4         |  |  |  |
| 11-Feb  | Z                             | 424.6 | 425.2           | 427.9 | 426.4 | 427.4 | 429.7           | 433.5 | 436.1 | 438.8 | 438.1              | 426.9 | 425.4 | 426.5 | 431.6 | 434.2 | 428.9 | 421.0 | 421.3 | 421.4 | 420.5 | 422.5 | 421.8 | 420.5   | 427.4         | 438.8         |  |  |  |
| 12-Feb  | 420.5                         | Z     | 420.5           | 421.5 | 423.6 | 423.4 | 421.4           | 421.1 | 423.8 | 430.3 | 429.7              | 436.3 | 435.9 | 436.5 | 434.1 | 433.9 | 435.3 | 445.8 | 452.9 | 456.8 | 459.6 | 458.7 | 457.7 | 455.7   | 436.3         | 459.6         |  |  |  |
| 13-Feb  | 454.2                         | 461.0 | Z               | 465.4 | 465.0 | 443.1 | 436.5           | 436.3 | 440.7 | 436.7 | 434.9              | 434.0 | 433.5 | 432.9 | 432.4 | 431.8 | 433.6 | 433.9 | 433.5 | 433.6 | 432.9 | 432.1 | 431.6 | 431.1   | 439.2         | 465.4         |  |  |  |
| 14-Feb  | 430.7                         | 430.1 | 430.0           | Z     | 430.7 | 430.3 | 430.4           | 429.9 | 430.8 | 431.4 | 430.9              | 431.3 | 434.8 | 431.1 | 431.3 | 434.1 | 433.7 | 432.9 | 431.1 | 432.2 | 432.6 | 432.4 | 430.5 | 436.3   | 431.7         | 436.3         |  |  |  |
| 15-Feb  | 438.5                         | 441.3 | 443.8           | 444.4 | Z     | 447.5 | 449.1           | 451.6 | 439.1 | 435.0 | 433.3              | 434.9 | 438.0 | 434.2 | 431.2 | 434.7 | 439.8 | 450.5 | 455.2 | 454.2 | 455.2 | 459.1 | 453.6 | 446.9   | 444.0         | 459.1         |  |  |  |
| 16-Feb  | 453.5                         | 451.0 | 449.6           | 450.8 | 450.1 | Z     | 450.7           | 457.6 | 460.9 | 457.2 | 452.4              | 453.5 | 450.1 | 443.3 | 444.6 | M     | 445.1 | 447.4 | 449.1 | 443.7 | 438.1 | 436.5 | 436.4 | 437.6   | 448.1         | 460.9         |  |  |  |
| 17-Feb  | Z                             | 436.2 | 434.9           | 434.6 | 434.7 | 435.4 | 435.3           | 434.2 | 432.5 | 433.8 | 433.9              | 438.0 | 437.1 | 434.1 | 434.5 | 432.6 | 433.2 | 431.9 | 432.1 | 430.1 | 433.1 | 432.0 | 431.7 | 432.0   | 433.8         | 438.0         |  |  |  |
| 18-Feb  | 433.9                         | Z     | 439.2           | 434.4 | 435.1 | 437.3 | 436.6           | 436.4 | 442.4 | 443.4 | 436.0              | 439.3 | 436.7 | 441.8 | 440.1 | 435.7 | 431.6 | 433.6 | 434.6 | 436.9 | 446.9 | 442.3 | 444.9 | 447.0   | 438.5         | 447.0         |  |  |  |
| 19-Feb  | 449.4                         | 448.1 | Z               | 444.0 | 443.9 | 446.1 | 444.4           | 445.6 | 452.2 | 448.6 | 451.8              | 447.2 | 441.0 | 438.2 | 441.5 | 446.3 | 444.5 | 445.7 | 450.1 | 451.0 | 437.5 | 435.4 | 440.2 | 442.4   | 445.0         | 452.2         |  |  |  |
| 20-Feb  | 439.1                         | 440.2 | 438.1           | Z     | 432.5 | 434.0 | 437.7           | 438.5 | 435.0 | 437.0 | 437.3              | 437.0 | 439.5 | 440.1 | 434.5 | 436.6 | 436.6 | 433.0 | 431.8 | 436.7 | 435.4 | 436.8 | 436.9 | 431.6   | 436.3         | 440.2         |  |  |  |
| 21-Feb  | 430.1                         | 429.6 | 429.2           | 430.2 | Z     | 433.4 | 439.1           | 438.2 | 434.4 | 435.0 | 431.8              | 430.6 | 428.5 | 427.0 | 427.0 | 426.2 | 426.6 | 426.2 | 425.8 | 432.2 | 434.4 | 434.4 | 436.0 | 436.3   | 431.4         | 439.1         |  |  |  |
| 22-Feb  | 438.0                         | 438.9 | 439.8           | 441.6 | 441.2 | Z     | 443.8           | 452.7 | 454.6 | 444.7 | 438.9              | 440.1 | 432.7 | 430.2 | 434.4 | 443.2 | 434.2 | 432.4 | 438.5 | 440.2 | 441.7 | 438.9 | 443.8 | 437.2   | 440.1         | 454.6         |  |  |  |
| 23-Feb  | Z                             | 440.0 | 442.8           | 441.9 | 448.5 | 453.7 | 443.0           | 444.7 | 449.3 | 454.5 | 437.2              | 432.6 | 430.8 | 430.9 | 431.0 | 430.5 | 431.9 | 438.6 | 445.8 | 444.9 | 453.1 | 454.8 | 455.5 | 455.5   | 443.1         | 455.5         |  |  |  |
| 24-Feb  | 453.1                         | Z     | 451.9           | 450.4 | 448.6 | 445.8 | 445.8           | 446.7 | 443.4 | 446.5 | 444.4              | 438.9 | 432.1 | 430.3 | 430.7 | 430.7 | 430.3 | 430.8 | 431.8 | 432.5 | 432.7 | 433.8 | 435.0 | 436.6   | 439.2         | 453.1         |  |  |  |
| 25-Feb  | 438.4                         | 438.9 | Z               | 438.3 | 439.0 | 439.8 | 441.3           | 441.1 | 441.1 | 437.5 | 432.1              | 431.5 | 431.3 | 432.3 | 432.6 | 433.5 | 433.4 | 436.5 | 437.3 | 445.0 | 448.7 | 441.3 | 441.6 | 442.0   | 438.0         | 448.7         |  |  |  |
| 26-Feb  | 441.3                         | 441.5 | 442.7           | Z     | 441.3 | 444.2 | 443.9           | 445.5 | 450.5 | 455.2 | 449.8              | 444.5 | 442.0 | 441.4 | 439.8 | 437.5 | 436.6 | 437.3 | 436.8 | 436.3 | 436.2 | 436.1 | 435.3 | 435.9   | 441.4         | 455.2         |  |  |  |
| 27-Feb  | 437.2                         | 437.1 | 437.0           | 434.7 | Z     | 433.4 | 433.0           | 432.5 | 432.8 | 432.3 | 435.2              | 434.1 | 434.4 | 434.4 | 434.2 | 432.0 | 431.9 | 431.5 | 432.2 | 432.2 | 433.3 | 435.5 | 434.2 | 431.5   | 433.8         | 437.2         |  |  |  |
| 28-Feb  | 430.8                         | 432.0 | 436.4           | 441.0 | 438.2 | Z     | 439.4           | 445.1 | 446.7 | 438.8 | 434.6              | 433.7 | 431.8 | 434.3 | 436.8 | 431.9 | 431.4 | 432.4 | 439.6 | 444.8 | 447.4 | 450.0 | 451.8 | 456.5   | 439.4         | 456.5         |  |  |  |
| 437.1 437.3 435.5 437.3 435.9 436.0 435.9 437.1 437.8 437.0 435.1 434.5 433.5 433.4 433.5 432.8 432.6 433.2 434.9 436.6 437.3 437.3 437.5 437.2   |                               |       |                 |       |       |       |                 |       |       |       |                    |       |       |       |       |       |       |       |       |       |       |       |       | Diurnal Average   |               |               |  |  |  |
| 454.2 461.0 454.2 465.4 465.0 453.7 450.7 457.6 460.9 457.2 452.4 453.5 450.1 447.1 448.1 448.4 445.4 450.5 455.2 456.8 459.6 459.1 457.7 456.5   |                               |       |                 |       |       |       |                 |       |       |       |                    |       |       |       |       |       |       |       |       |       |       |       |       | Diurnal Maximum   |               |               |  |  |  |
| Z - zerspan   |                               |       | C - Calibration |       |       |       | M - Maintenance |       |       |       | PF - Power Failure |       |       |       |       |       |       |       |       |       |       |       |       |   |               |               |  |  |  |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Carbon Dioxide (CO<sub>2</sub>) - ppm**  
**Fort McKay - Bertha Ganter - February 2023**





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Carbon Dioxide (CO<sub>2</sub>) - ppm**  
**Fort McKay - Bertha Ganter - February 2023**

| <b>Concentration Ranges (ppm)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 400 - 420                         | 16                     | 2.51     | 2.51                |
| 420 - 440                         | 463                    | 72.68    | 75.20               |
| 440 - 460                         | 154                    | 24.18    | 99.37               |
| 460 - 480                         | 4                      | 0.63     | 100.00              |
| 480 - 500                         | 0                      | 0.00     | 100.00              |
| > 500                             | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 637

Total Number of Hours: 672



**Wood Buffalo Environmental Association**  
**Frequency Distribution**

**Carbon Dioxide (CO<sub>2</sub>) - ppm**  
**Fort McKay - Bertha Ganter - February 2023**

| Concentration<br>Ranges (ppm) | Wind Direction |     |    |     |    |     |    |     |    |     |    |     |    |     |    |     | Totals |
|-------------------------------|----------------|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|--------|
|                               | N              | NNE | NE | ENE | E  | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |        |
| 400 - 420                     | 2              | 0   | 1  | 1   | 1  | 0   | 0  | 1   | 0  | 0   | 0  | 2   | 4  | 1   | 3  | 0   | 16     |
| 420 - 440                     | 106            | 56  | 31 | 25  | 10 | 3   | 7  | 41  | 60 | 17  | 7  | 15  | 14 | 24  | 22 | 25  | 463    |
| 440 - 460                     | 18             | 9   | 2  | 5   | 1  | 2   | 6  | 9   | 26 | 20  | 6  | 6   | 12 | 7   | 13 | 10  | 152    |
| 460 - 480                     | 0              | 0   | 1  | 0   | 0  | 0   | 0  | 1   | 0  | 1   | 0  | 0   | 0  | 0   | 0  | 1   | 4      |
| 480 - 500                     | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| > 500                         | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| <b>Totals</b>                 | 126            | 65  | 35 | 31  | 12 | 5   | 13 | 52  | 86 | 38  | 13 | 23  | 30 | 32  | 38 | 36  | 635    |

Total Number of Valid Hours: 635

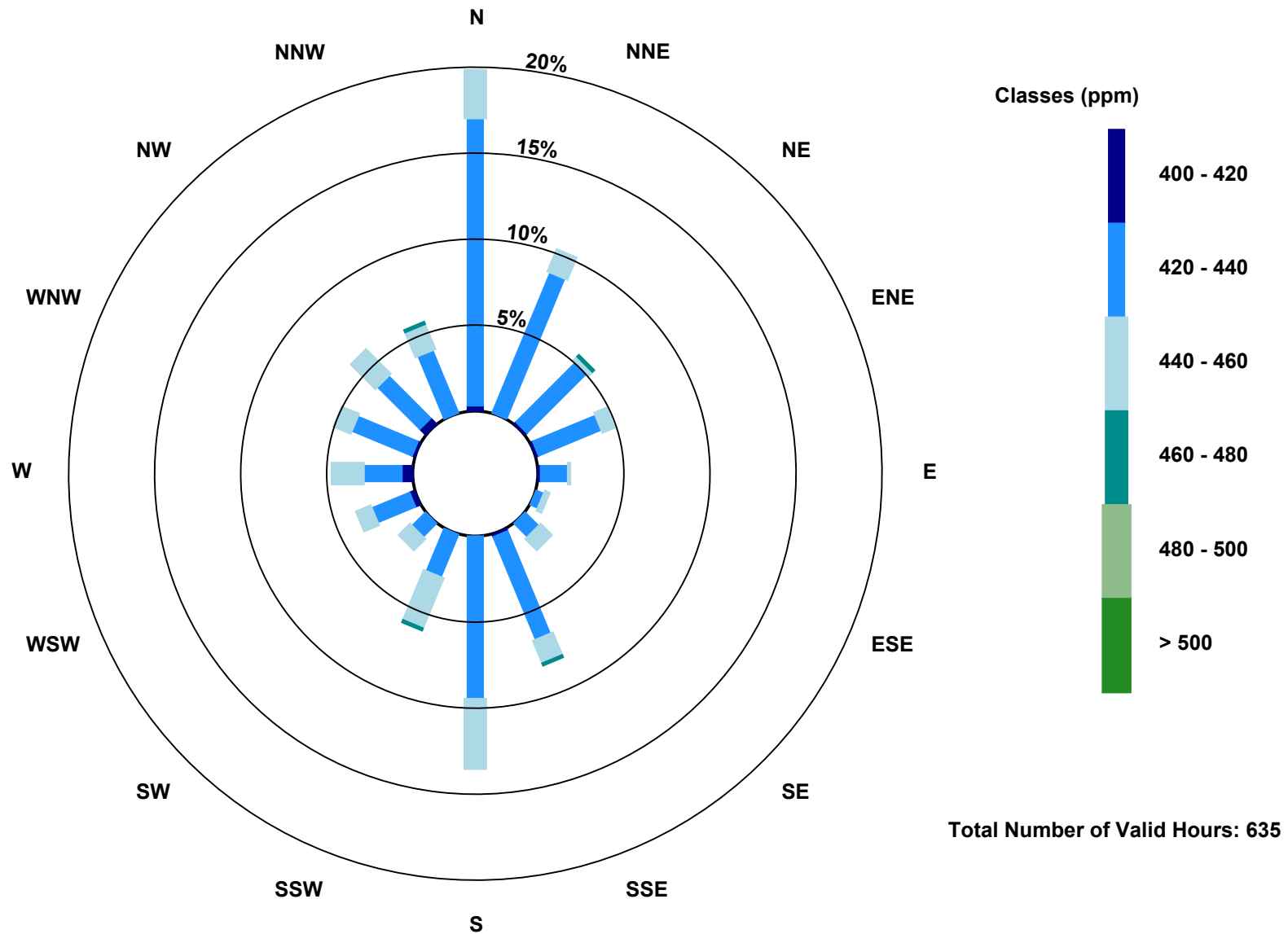
Total Number of Hours: 672





Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Carbon Dioxide (CO<sub>2</sub>) - ppm  
Fort McKay - Bertha Ganter





|  |  |  |  |
|--|--|--|--|
| Number of Exceedences (AAAQO): 1-hr: 0     |  | Hours in Service: 672  |  |
| Maximum Value: 0.0 ppb on Feb 1 03:00      |  | Maximum Daily Average: 0.0 ppb on Feb 1  |  |
| Minimum Value: 0.0 ppb on Feb 1 03:00      |  | Hours of Data: 580   |  |
| Maximum Diurnal Average: 0.0 ppb at hour 1 |  | Hours of Missing Data: 92  |  |
| Monthly Average: 0.00 ppb                  |  | Hours of Calibration: 46   |  |
| Minimum Daily Average: 0.0 ppb on Feb 1    |  | Percent Operational Time: 93.2   |  |
| Minimum Diurnal Average: 0.0 ppb at hour 1 |  | Percentiles: P <sub>1</sub> = 0.0 P <sub>10</sub> = 0.0 Q <sub>1</sub> = 0.0 Median = 0.0 Q <sub>3</sub> = 0.0 P <sub>90</sub> = 0.0 P <sub>99</sub> = 0.0 |  |

| Day    | Hourly Period Ending At (MST) |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 | Daily Average | Daily Maximum |     |     |     |
|--------|-------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----------------|---------------|---------------|-----|-----|-----|
|        | 1                             | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19  | 20  | 21  | 22  | 23  | 24              |               |               |     |     |     |
| 1-Feb  | Z                             | RE  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.0           | 0.0           | 0.0 | 0.0 |     |
| 2-Feb  | 0.0                           | Z   | RE  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.0           | 0.0           | 0.0 | 0.0 |     |
| 3-Feb  | 0.0                           | 0.0 | 0.0 | Z   | RE  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.0           | 0.0           | 0.0 | 0.0 |     |
| 4-Feb  | 0.0                           | 0.0 | 0.0 | Z   | RE  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.0           | 0.0           | 0.0 | 0.0 |     |
| 5-Feb  | 0.0                           | 0.0 | 0.0 | 0.0 | Z   | RE  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.0           | 0.0           | 0.0 | 0.0 |     |
| 6-Feb  | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | Z   | RE  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.0           | 0.0           | 0.0 | 0.0 |     |
| 7-Feb  | Z                             | RE  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.0           | 0.0           | 0.0 | 0.0 |     |
| 8-Feb  | 0.0                           | Z   | RE  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.0           | 0.0           | 0.0 | 0.0 |     |
| 9-Feb  | 0.0                           | 0.0 | Z   | RE  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.0           | 0.0           | 0.0 | 0.0 |     |
| 10-Feb | 0.0                           | 0.0 | 0.0 | Z   | RE  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | PF  | PF  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.0           | 0.0           | 0.0 | 0.0 |     |
| 11-Feb | 0.0                           | 0.0 | 0.0 | 0.0 | Z   | RE  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.0           | 0.0           | 0.0 | 0.0 |     |
| 12-Feb | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | Z   | RE  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.0           | 0.0           | 0.0 | 0.0 |     |
| 13-Feb | Z                             | RE  | RE  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.0           | 0.0           | 0.0 | 0.0 |     |
| 14-Feb | 0.0                           | Z   | RE  | RE  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.0           | 0.0           | 0.0 | 0.0 |     |
| 15-Feb | 0.0                           | 0.0 | Z   | RE  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | UO  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.0           | 0.0           | 0.0 | 0.0 |     |
| 16-Feb | 0.0                           | 0.0 | 0.0 | Z   | RE  | RE  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | C   | C   | C   | C   | C   | C   | C   | C   | C   | C   | C   | C   | C               | C             | M             | M   | --  | 0.0 |
| 17-Feb | M                             | M   | M   | M   | M   | M   | M   | M   | M   | M   | M   | M   | C   | C   | C   | C   | C   | C   | C   | C   | C   | C   | C   | C               | 0.0           | 0.0           | 0.0 | --  | 0.0 |
| 18-Feb | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | Z   | RE  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.0           | 0.0           | 0.0 | 0.0 | 0.0 |
| 19-Feb | Z                             | RE  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.0           | 0.0           | 0.0 | 0.0 | 0.0 |
| 20-Feb | 0.0                           | Z   | RE  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.0           | 0.0           | 0.0 | 0.0 | 0.0 |
| 21-Feb | 0.0                           | 0.0 | Z   | RE  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.0           | 0.0           | 0.0 | 0.0 | 0.0 |
| 22-Feb | 0.0                           | 0.0 | 0.0 | Z   | RE  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.0           | 0.0           | 0.0 | 0.0 | 0.0 |
| 23-Feb | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.0           | 0.0           | 0.0 | 0.0 | 0.0 |
| 24-Feb | 0.0                           | 0.0 | 0.0 | 0.0 | UO  | Z   | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.0           | 0.0           | 0.0 | 0.0 | 0.0 |
| 25-Feb | Z                             | RE  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.0           | 0.0           | 0.0 | 0.0 | 0.0 |
| 26-Feb | 0.0                           | Z   | RE  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.0           | 0.0           | 0.0 | 0.0 | 0.0 |
| 27-Feb | 0.0                           | 0.0 | Z   | RE  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.0           | 0.0           | 0.0 | 0.0 | 0.0 |
| 28-Feb | 0.0                           | 0.0 | 0.0 | Z   | RE  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.0           | 0.0           | 0.0 | 0.0 | 0.0 |
|        |                               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Diurnal Average |               |               |     |     |     |
|        |                               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Diurnal Maximum |               |               |     |     |     |

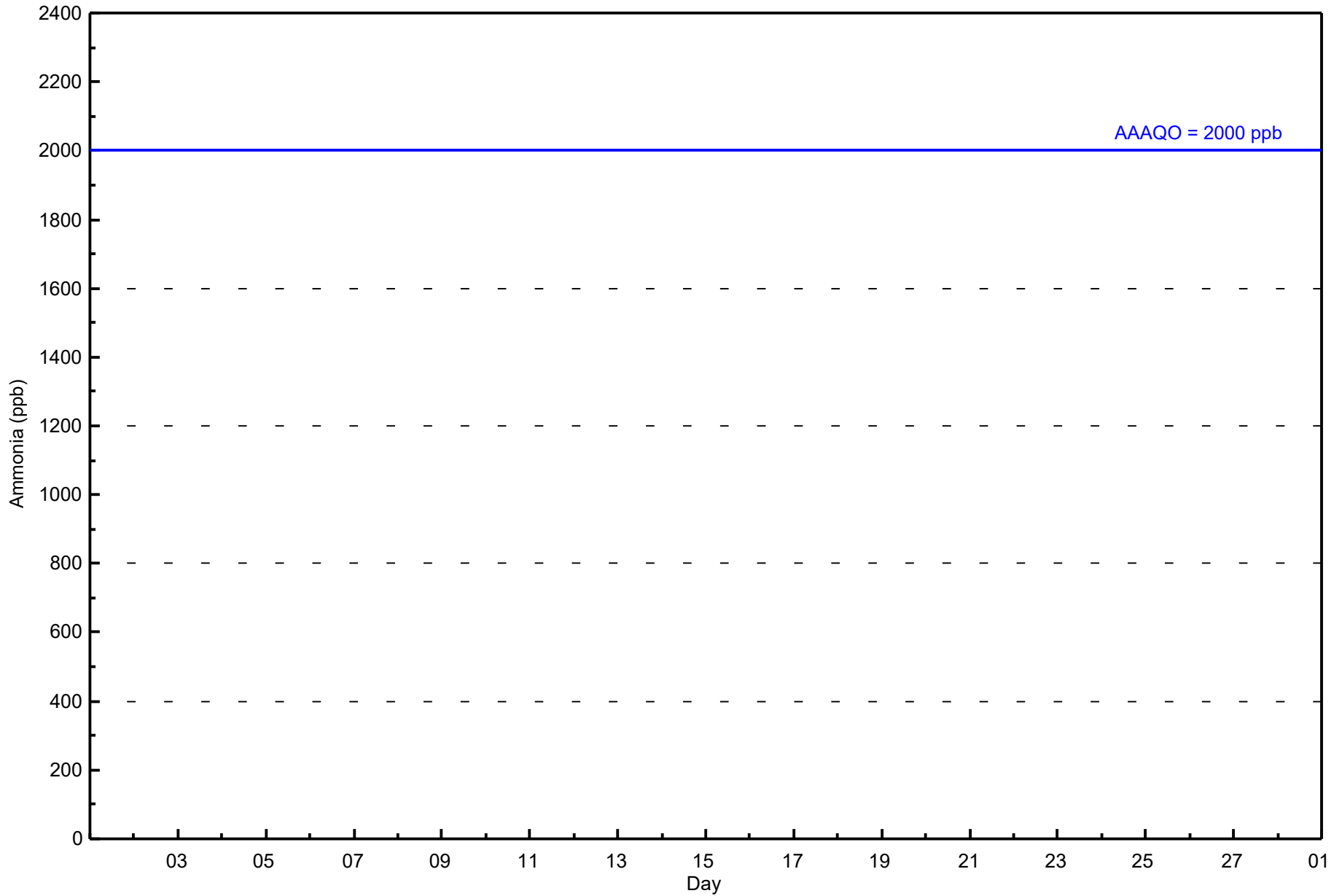
|              |                 |                 |                         |                    |               |
|--------------|-----------------|-----------------|-------------------------|--------------------|---------------|
| Z - zerospan | C - Calibration | M - Maintenance | UO - Unstable Operation | PF - Power Failure | RE - Recovery |
|--------------|-----------------|-----------------|-------------------------|--------------------|---------------|

Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 2000 ppb



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Ammonia (NH<sub>3</sub>) - ppb**  
**Fort McKay - Bertha Ganter - February 2023**





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Ammonia (NH<sub>3</sub>) - ppb**  
**Fort McKay - Bertha Ganter - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 5                             | 580                    | 100.00   | 100.00              |
| 6 - 10                            | 0                      | 0.00     | 100.00              |
| 11 - 15                           | 0                      | 0.00     | 100.00              |
| 16 - 20                           | 0                      | 0.00     | 100.00              |
| 21 - 25                           | 0                      | 0.00     | 100.00              |
| > 26                              | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 580

Total Number of Hours: 672



**Wood Buffalo Environmental Association**  
**Frequency Distribution**

**Ammonia (NH<sub>3</sub>) - ppb**  
**Fort McKay - Bertha Ganter - February 2023**

| Concentration<br>Ranges (ppb) | Wind Direction |     |    |     |   |     |    |     |    |     |    |     |    |     |    |     | Totals |
|-------------------------------|----------------|-----|----|-----|---|-----|----|-----|----|-----|----|-----|----|-----|----|-----|--------|
|                               | N              | NNE | NE | ENE | E | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |        |
| 0 - 5                         | 114            | 52  | 30 | 26  | 9 | 6   | 10 | 52  | 74 | 36  | 14 | 23  | 31 | 30  | 38 | 33  | 578    |
| 6 - 10                        | 0              | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| 11 - 15                       | 0              | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| 16 - 20                       | 0              | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| 21 - 25                       | 0              | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| > 26                          | 0              | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| <b>Totals</b>                 | 114            | 52  | 30 | 26  | 9 | 6   | 10 | 52  | 74 | 36  | 14 | 23  | 31 | 30  | 38 | 33  | 578    |

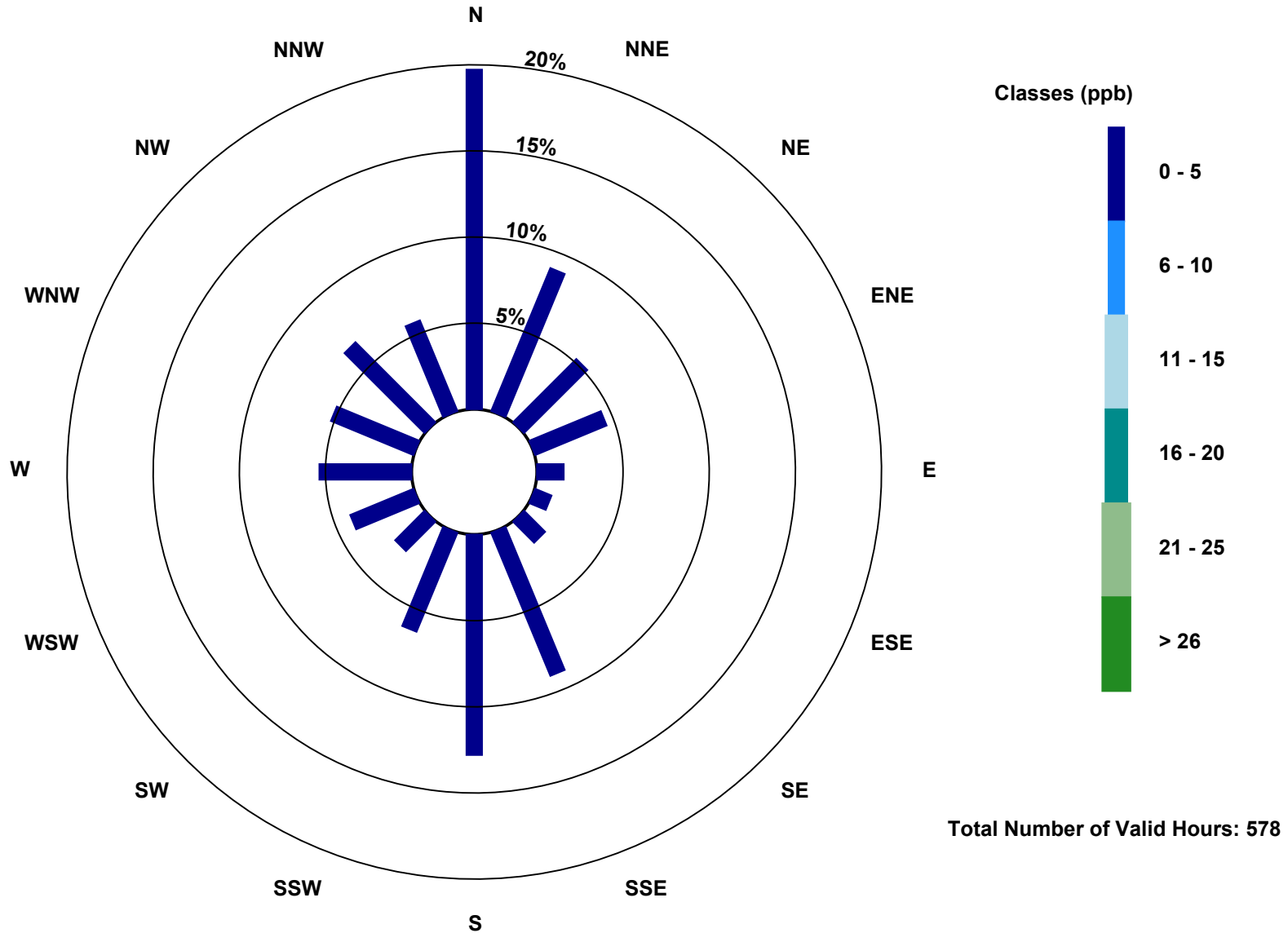
Total Number of Valid Hours: 578

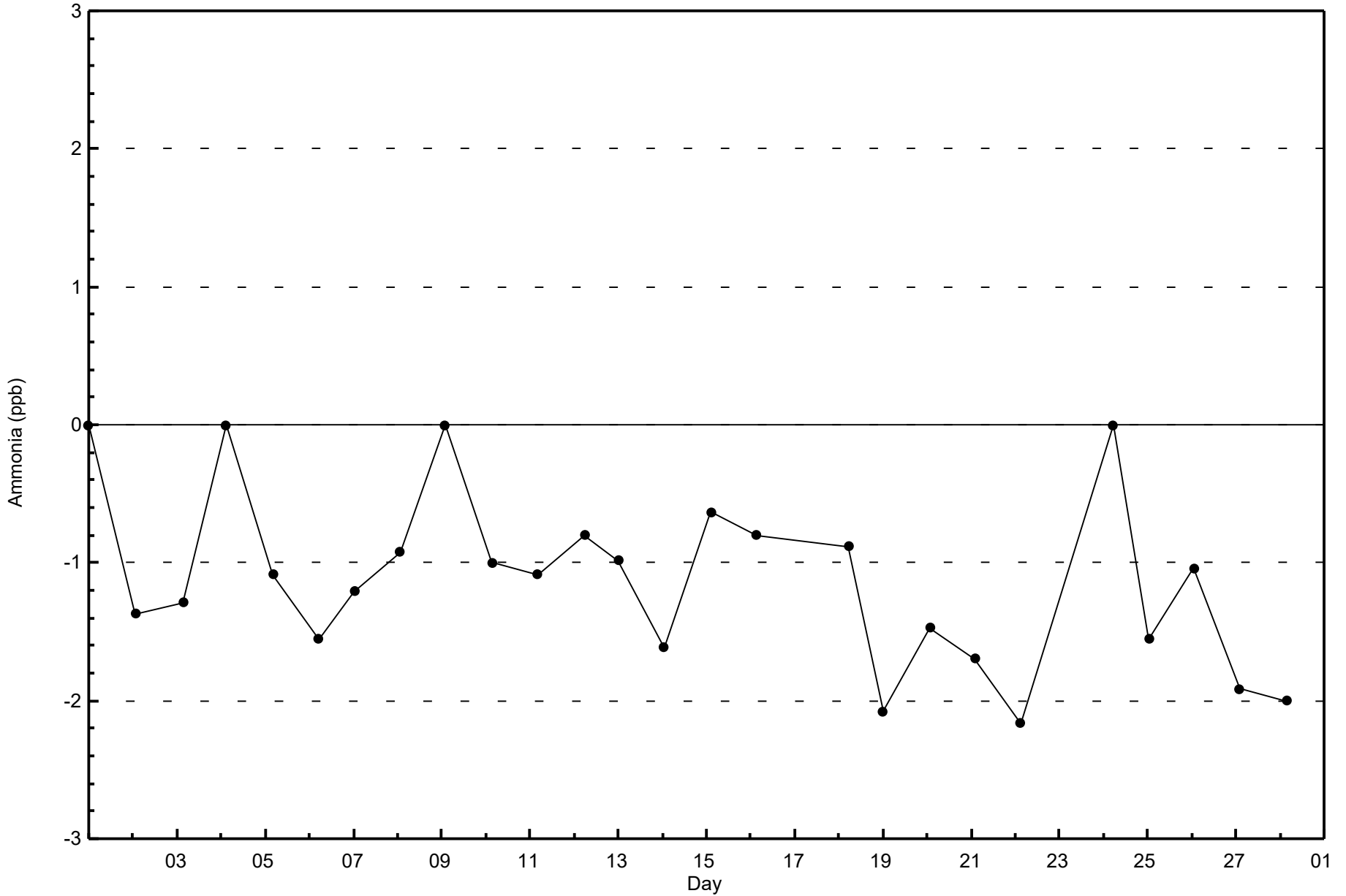
Total Number of Hours: 672

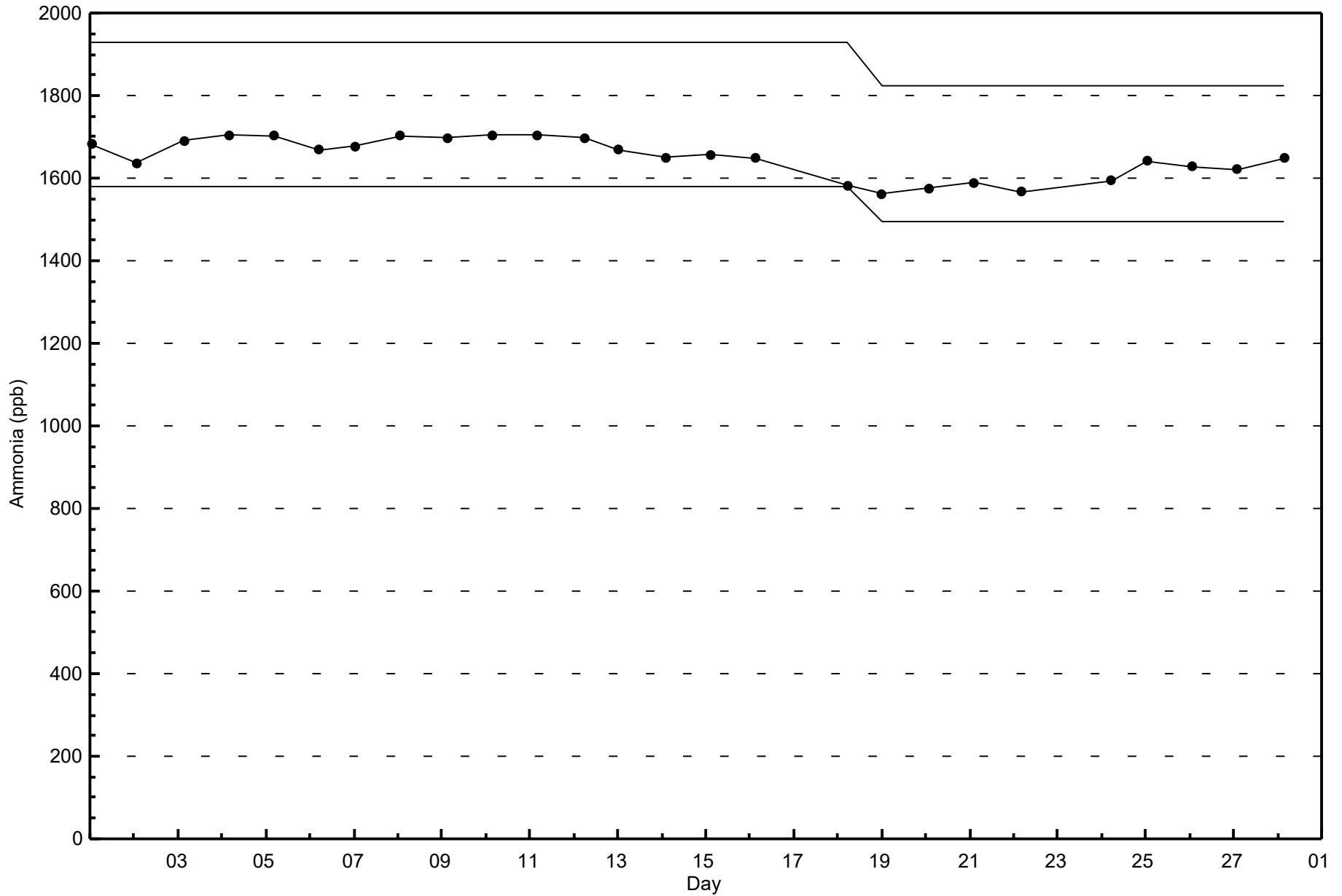


Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Ammonia (NH<sub>3</sub>) - ppb  
Fort McKay - Bertha Ganter











**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

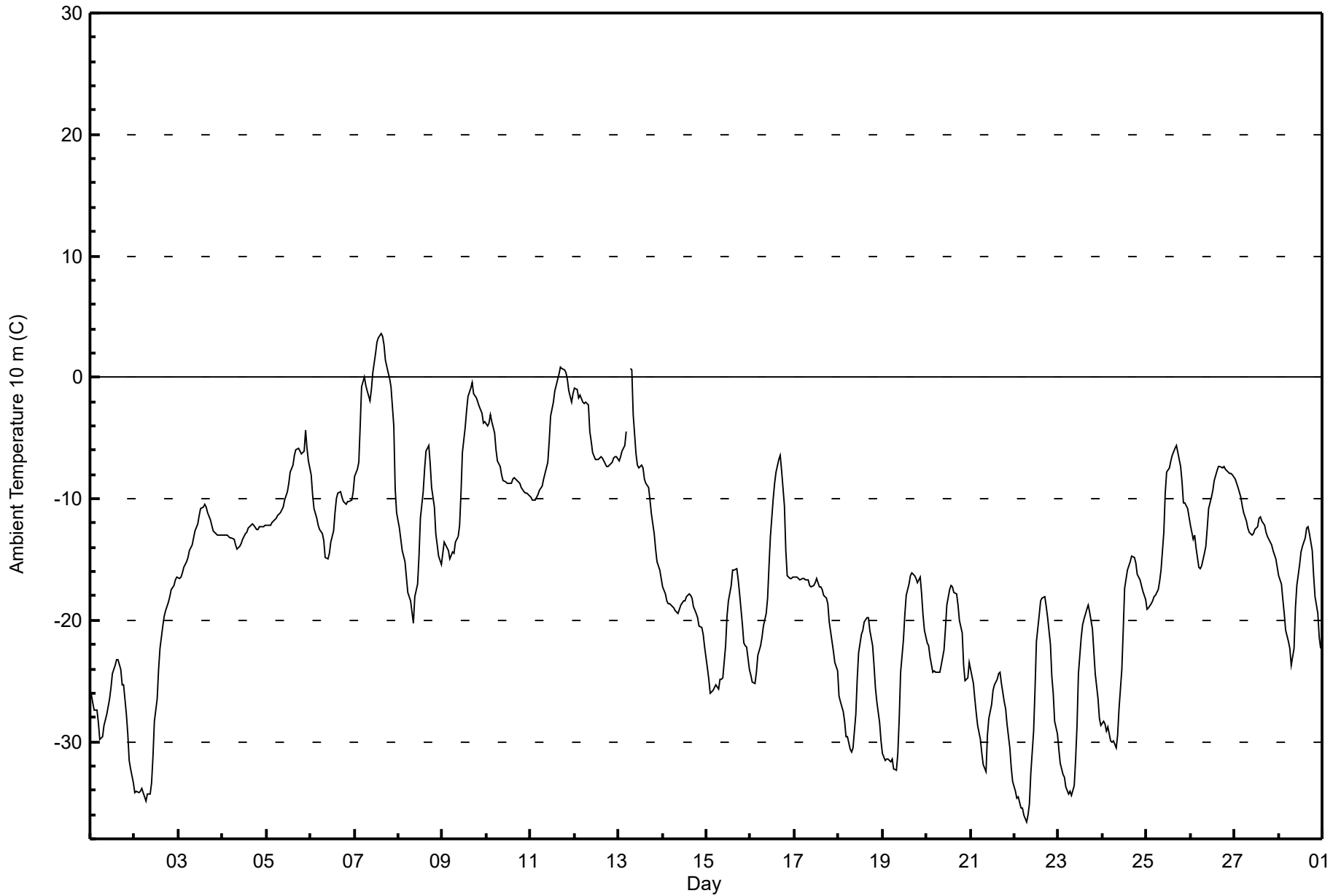
**Ambient Temperature 10 m (AT 10m) - C**  
**Fort McKay - Bertha Ganter - February 2023**

| Maximum Value: 3.6 C on Feb 7 15:00<br>Minimum Value: -36.6 C on Feb 22 07:00<br>Maximum Diurnal Average: -12.0 C at hour 17<br>Monthly Average: -16.14 C |                               | Maximum Daily Average: -1.6 C on Feb 7<br>Minimum Daily Average: -27.9 C on Feb 22<br>Minimum Diurnal Average: -19.7 C at hour 6<br>Percentiles: P <sub>1</sub> = -34.7 P <sub>10</sub> = -29.1 Q <sub>1</sub> = -22.3 Median = -15.7 Q <sub>3</sub> = -9.5 P <sub>90</sub> = -5.6 P <sub>99</sub> = 1.0 |       | Hours in Service: 672<br>Hours of Data: 671<br>Hours of Missing Data: 1<br>Hours of Calibration: 0<br>Percent Operational Time: 99.9 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |               |               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
|---|-------------------------------|--|-------|--|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------------|---------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-----------------|
| Day   | Hourly Period Ending At (MST) |  |       |  |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Daily Average | Daily Maximum |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
|   | 1                             | 2  | 3     | 4  | 5     | 6     | 7     | 8     | 9     | 10    | 11    | 12    | 13    | 14    | 15    | 16    | 17    | 18    | 19    | 20    | 21    | 22    | 23    | 24    |               |               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 1-Feb   | -26.2                         | -26.8  | -27.4 | -27.4  | -28.5 | -29.8 | -29.6 | -28.7 | -28.2 | -27.7 | -26.5 | -25.5 | -24.4 | -23.7 | -23.2 | -23.3 | -24.1 | -25.3 | -25.3 | -27.7 | -29.4 | -31.5 | -32.3 | -33.4 | -27.3         | -23.2         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 2-Feb   | -34.2                         | -34.1  | -34.2 | -34.1  | -33.9 | -34.6 | -34.8 | -34.3 | -34.3 | -33.4 | -31.2 | -28.3 | -26.5 | -24.1 | -22.4 | -20.5 | -19.6 | -19.2 | -18.6 | -18.0 | -17.5 | -17.2 | -16.7 | -16.5 | -26.6         | -16.5         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 3-Feb   | -16.6                         | -16.4  | -16.1 | -15.7  | -15.2 | -14.8 | -14.3 | -13.8 | -13.2 | -12.6 | -12.0 | -11.4 | -10.8 | -10.7 | -10.5 | -10.7 | -11.2 | -11.7 | -12.2 | -12.6 | -12.9 | -13.0 | -13.0 | -13.0 | -13.1         | -10.5         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 4-Feb   | -13.0                         | -13.0  | -13.0 | -13.1  | -13.2 | -13.2 | -13.3 | -13.8 | -14.1 | -14.0 | -13.6 | -13.3 | -12.8 | -12.8 | -12.4 | -12.2 | -12.1 | -12.2 | -12.5 | -12.5 | -12.3 | -12.3 | -12.3 | -12.2 | -12.9         | -12.1         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 5-Feb   | -12.2                         | -12.2  | -12.2 | -12.0  | -11.7 | -11.6 | -11.4 | -11.1 | -11.0 | -10.7 | -10.1 | -9.4  | -8.8  | -7.9  | -7.3  | -6.4  | -6.0  | -5.9  | -6.1  | -6.4  | -6.0  | -4.3  | -5.8  | -6.8  | -8.9          | -4.3          |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 6-Feb   | -8.0                          | -9.7   | -10.8 | -11.6  | -12.2 | -12.6 | -12.9 | -13.5 | -14.8 | -15.0 | -14.5 | -13.5 | -12.6 | -11.1 | -10.0 | -9.5  | -9.5  | -9.9  | -10.2 | -10.5 | -10.2 | -10.2 | -10.1 | -9.4  | -11.3         | -8.0          |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 7-Feb   | -8.1                          | -7.5   | -7.0  | -4.0   | -0.8  | 0.0   | -0.7  | -1.1  | -1.9  | -1.0  | 0.4   | 2.0   | 2.9   | 3.3   | 3.6   | 3.4   | 2.7   | 1.4   | 0.4   | -0.1  | -0.8  | -4.0  | -9.2  | -11.1 | -1.6          | 3.6           |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 8-Feb   | -12.4                         | -13.3  | -14.2 | -15.2  | -16.5 | -17.7 | -18.4 | -19.4 | -20.2 | -18.1 | -17.0 | -14.7 | -11.6 | -9.5  | -7.6  | -6.0  | -5.6  | -7.1  | -9.1  | -10.7 | -12.9 | -13.8 | -14.8 | -15.4 | -13.4         | -5.6          |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 9-Feb   | -14.4                         | -13.6  | -14.0 | -14.2  | -14.9 | -14.4 | -14.5 | -13.6 | -13.2 | -12.2 | -9.6  | -6.2  | -4.1  | -2.8  | -1.6  | -0.9  | -0.4  | -1.4  | -1.7  | -2.0  | -2.4  | -3.0  | -3.7  | -3.6  | -7.6          | -0.4          |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 10-Feb  | -4.0                          | -3.7   | -3.0  | -3.6   | -4.6  | -5.9  | -6.9  | -7.4  | -8.0  | -8.4  | -8.6  | -8.7  | -8.8  | -8.8  | -8.4  | -8.3  | -8.4  | -8.6  | -8.8  | -9.1  | -9.4  | -9.6  | -9.6  | -9.7  | -7.5          | -3.0          |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 11-Feb  | -9.9                          | -10.1  | -10.1 | -9.9   | -9.7  | -9.4  | -8.9  | -8.4  | -8.0  | -7.0  | -5.3  | -3.2  | -2.0  | -1.1  | -0.7  | 0.3   | 0.8   | 0.7   | 0.6   | 0.3   | -0.2  | -1.1  | -2.0  | -1.4  | -4.4          | 0.8           |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 12-Feb  | -0.9                          | -1.0   | -1.7  | -1.5   | -2.0  | -2.2  | -2.1  | -2.3  | -4.4  | -5.3  | -6.1  | -6.8  | -6.8  | -6.8  | -6.5  | -6.7  | -6.9  | -7.4  | -7.4  | -7.2  | -7.0  | -6.7  | -6.5  | -6.5  | -4.9          | -0.9          |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 13-Feb  | -6.8                          | -6.5   | -6.1  | -5.6   | -4.5  | UO    | 0.8   | 0.6   | -3.0  | -6.3  | -7.2  | -7.5  | -7.2  | -7.4  | -8.3  | -8.7  | -9.0  | -10.1 | -11.3 | -12.9 | -14.1 | -15.2 | -15.9 | -16.5 | -8.2          | 0.8           |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 14-Feb  | -17.3                         | -17.8  | -18.4 | -18.6  | -18.7 | -18.8 | -18.9 | -19.2 | -19.4 | -19.1 | -18.8 | -18.4 | -18.4 | -18.1 | -17.8 | -17.9 | -18.2 | -18.9 | -19.5 | -19.8 | -20.5 | -20.6 | -21.1 | -22.2 | -19.0         | -17.3         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 15-Feb  | -23.9                         | -24.9  | -26.1 | -25.8  | -25.5 | -25.3 | -25.7 | -24.9 | -24.9 | -24.7 | -22.1 | -19.7 | -18.4 | -17.1 | -15.9 | -15.8 | -15.7 | -16.7 | -17.8 | -20.4 | -21.8 | -22.0 | -22.2 | -24.1 | -21.7         | -15.7         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 16-Feb  | -24.5                         | -25.1  | -25.2 | -24.3  | -22.9 | -22.1 | -21.4 | -20.5 | -19.5 | -18.1 | -15.5 | -13.1 | -10.0 | -8.7  | -7.8  | -6.8  | -6.4  | -7.7  | -10.5 | -14.2 | -16.4 | -16.6 | -16.5 | -16.5 | -16.3         | -6.4          |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 17-Feb  | -16.4                         | -16.5  | -16.6 | -16.6  | -16.6 | -16.6 | -16.7 | -16.7 | -17.1 | -17.3 | -17.2 | -17.0 | -16.6 | -17.2 | -17.3 | -17.5 | -18.0 | -18.2 | -18.6 | -20.2 | -21.7 | -22.6 | -23.5 | -24.2 | -18.2         | -16.4         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 18-Feb  | -26.2                         | -26.7  | -27.5 | -28.3  | -29.6 | -29.6 | -30.7 | -30.8 | -30.5 | -27.7 | -24.9 | -22.7 | -21.2 | -20.8 | -20.2 | -19.8 | -19.8 | -20.8 | -22.1 | -23.7 | -25.5 | -26.7 | -28.4 | -29.9 | -25.6         | -19.8         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 19-Feb  | -31.0                         | -31.5  | -31.5 | -31.4  | -31.7 | -31.5 | -32.2 | -32.3 | -31.0 | -28.0 | -24.3 | -21.6 | -19.5 | -18.0 | -17.0 | -16.4 | -16.1 | -16.3 | -16.6 | -16.9 | -16.5 | -17.8 | -19.6 | -20.9 | -23.7         | -16.1         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 20-Feb  | -21.8                         | -22.2  | -23.1 | -24.2  | -24.2 | -24.2 | -24.3 | -24.2 | -23.7 | -22.5 | -20.7 | -18.7 | -17.5 | -17.1 | -17.2 | -17.7 | -17.8 | -18.8 | -20.0 | -21.0 | -23.8 | -25.0 | -24.8 | -23.4 | -21.6         | -17.1         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 21-Feb  | -24.0                         | -25.2  | -26.5 | -27.6  | -28.7 | -29.8 | -30.9 | -31.9 | -32.5 | -29.5 | -28.1 | -27.0 | -25.8 | -25.3 | -24.9 | -24.4 | -24.3 | -25.2 | -26.7 | -27.3 | -28.5 | -30.5 | -32.2 | -33.3 | -27.9         | -24.0         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 22-Feb  | -34.0                         | -34.7  | -34.6 | -35.4  | -35.5 | -36.0 | -36.6 | -36.1 | -35.1 | -32.6 | -29.1 | -25.7 | -21.8 | -19.5 | -18.4 | -18.2 | -18.1 | -18.9 | -19.8 | -22.0 | -24.6 | -26.0 | -28.3 | -29.3 | -27.9         | -18.1         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 23-Feb  | -30.6                         | -31.8  | -32.7 | -32.9  | -33.7 | -34.3 | -34.1 | -34.4 | -33.6 | -31.4 | -28.7 | -24.4 | -21.3 | -20.4 | -19.9 | -19.2 | -18.8 | -19.3 | -20.7 | -22.6 | -24.4 | -26.4 | -28.0 | -28.7 | -27.2         | -18.8         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 24-Feb  | -28.3                         | -28.5  | -29.1 | -28.8  | -29.9 | -30.1 | -29.9 | -30.5 | -29.4 | -27.2 | -24.0 | -20.9 | -17.4 | -15.9 | -15.5 | -15.1 | -14.7 | -14.9 | -15.3 | -16.2 | -16.7 | -17.1 | -17.6 | -18.3 | -22.1         | -14.7         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 25-Feb  | -19.1                         | -19.0  | -18.7 | -18.4  | -18.1 | -17.9 | -17.5 | -16.8 | -15.9 | -12.7 | -9.5  | -7.8  | -7.4  | -6.9  | -6.4  | -5.9  | -5.6  | -6.1  | -7.4  | -8.6  | -10.3 | -10.3 | -10.8 | -11.5 | -12.0         | -5.6          |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 26-Feb  | -12.2                         | -13.3  | -13.0 | -14.0  | -15.7 | -15.8 | -15.5 | -14.5 | -13.9 | -12.4 | -10.8 | -9.9  | -9.3  | -8.5  | -7.7  | -7.3  | -7.4  | -7.4  | -7.4  | -7.6  | -7.8  | -7.9  | -7.9  | -8.1  | -10.6         | -7.3          |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 27-Feb  | -8.4                          | -8.7   | -9.1  | -9.9   | -10.5 | -11.2 | -11.9 | -12.4 | -12.7 | -12.9 | -12.8 | -12.5 | -12.3 | -11.6 | -11.5 | -11.8 | -12.2 | -12.8 | -13.1 | -13.5 | -13.8 | -14.3 | -15.0 | -15.6 | -12.1         | -8.4          |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 28-Feb  | -16.3                         | -17.0  | -18.3 | -19.4  | -20.8 | -21.7 | -22.3 | -23.7 | -22.3 | -18.9 | -17.2 | -15.4 | -14.4 | -13.9 | -13.2 | -12.4 | -12.3 | -12.9 | -14.3 | -16.4 | -18.0 | -19.5 | -21.4 | -22.3 | -17.7         | -12.3         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
|   |                               |  |       |  |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | -17.9 | -18.2         | -18.6         | -18.7 | -18.9 | -19.7 | -19.1 | -19.1 | -19.1 | -18.1 | -16.6 | -15.0 | -13.7 | -12.9 | -12.4 | -12.0 | -12.0 | -12.6 | -13.3 | -14.3 | -15.2 | -15.9 | -16.8 | -17.3 | Diurnal Average |
|   |                               |  |       |  |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | -0.9  | -1.0          | -1.7          | -1.5  | -0.8  | 0.0   | 0.8   | 0.6   | -1.9  | -1.0  | 0.4   | 2.0   | 2.9   | 3.3   | 3.6   | 3.4   | 2.7   | 1.4   | 0.6   | 0.3   | -0.2  | -1.1  | -2.0  | -1.4  | Diurnal Maximum |
| UO - Unstable Operation   |                               |  |       |  |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |               |               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Ambient Temperature 10 m (AT 10m) - C**  
**Fort McKay - Bertha Ganter - February 2023**





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Ambient Temperature 10 m (AT 10m) - C  
Fort McKay - Bertha Ganter - February 2023**

| <b>Concentration Ranges (C)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---------------------------------|------------------------|----------|---------------------|
| -50 - -20                       | 207                    | 30.85    | 30.85               |
| -20 - 0                         | 447                    | 66.62    | 97.47               |
| 0 - 10                          | 17                     | 2.53     | 100.00              |
| 10 - 20                         | 0                      | 0.00     | 100.00              |
| > 20                            | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 671

Total Number of Hours: 672



**Wood Buffalo Environmental Association**

**Summary of Hour Averages**

**Ambient Temperature 2m (AT 2m) - C**

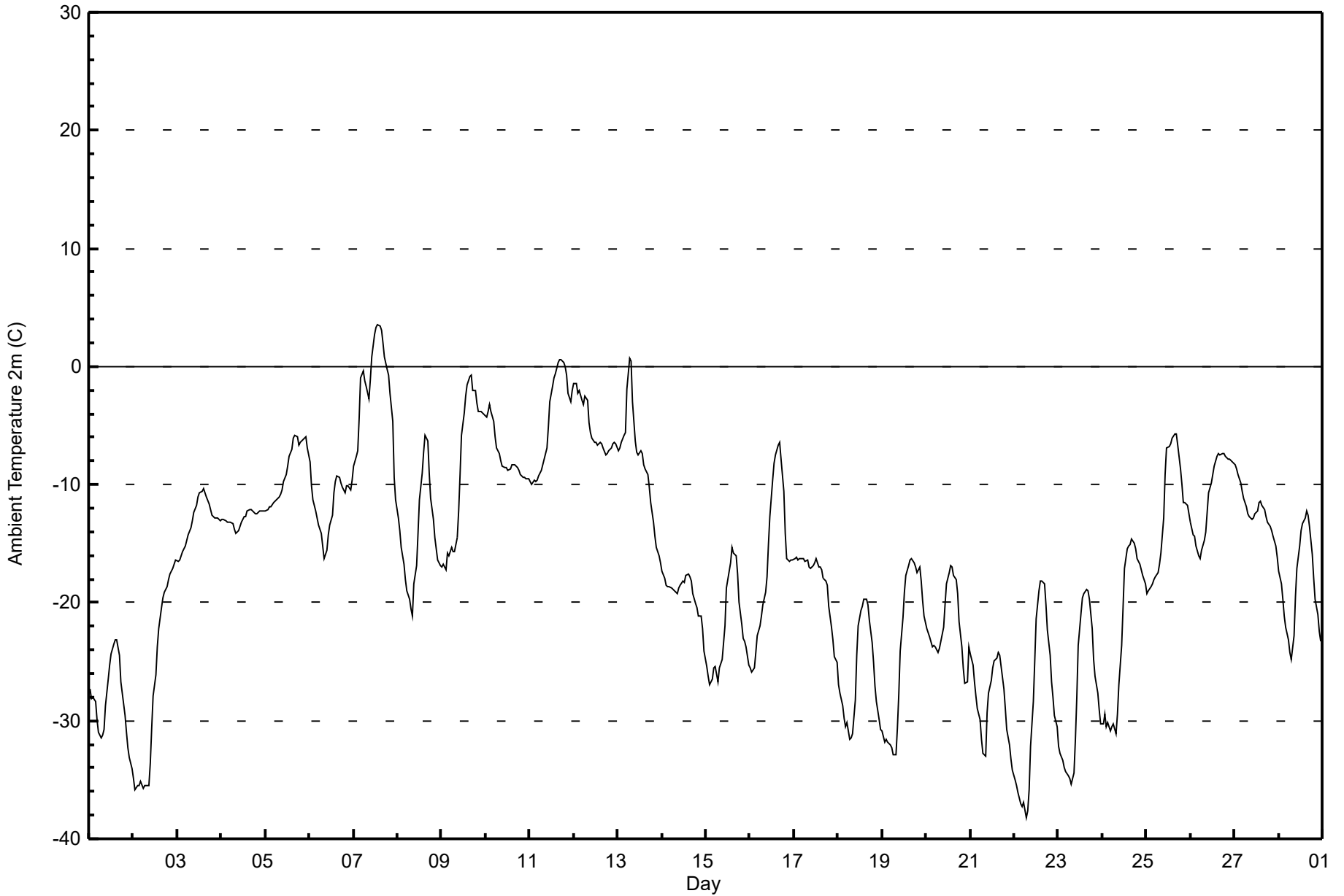
**Fort McKay - Bertha Ganter - February 2023**

| Maximum Value: 3.5 C on Feb 7 14:00         |                               | Maximum Daily Average: -1.8 C on Feb 7   |       | Hours in Service: 672           |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |               |                 |  |
|---|-------------------------------|--|-------|---------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------------|-----------------|--|
| Minimum Value: -38.2 C on Feb 22 07:00      |                               | Minimum Daily Average: -28.8 C on Feb 22   |       | Hours of Data: 672              |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |               |                 |  |
| Maximum Diurnal Average: -11.9 C at hour 16 |                               | Minimum Diurnal Average: -19.7 C at hour 8   |       | Hours of Missing Data: 0        |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |               |                 |  |
| Monthly Average: -16.44 C                   |                               | Percentiles: P <sub>1</sub> = -35.8 P <sub>10</sub> = -30.3 Q <sub>1</sub> = -23.2 Median = -16.1 Q <sub>3</sub> = -9.4 P <sub>90</sub> = -5.8 P <sub>99</sub> = 0.8 |       | Hours of Calibration: 0         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |               |                 |  |
|   |                               |  |       | Percent Operational Time: 100.0 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |               |                 |  |
| Day   | Hourly Period Ending At (MST) |  |       |                                 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Daily Average | Daily Maximum   |  |
|   | 1                             | 2  | 3     | 4                               | 5     | 6     | 7     | 8     | 9     | 10    | 11    | 12    | 13    | 14    | 15    | 16    | 17    | 18    | 19    | 20    | 21    | 22    | 23    | 24    |               |                 |  |
| 1-Feb                                       | -27.3                         | -28.1  | -28.1 | -28.4                           | -29.9 | -31.0 | -31.4 | -31.2 | -30.7 | -28.8 | -26.4 | -25.3 | -24.3 | -23.6 | -23.1 | -23.2 | -24.4 | -26.7 | -27.7 | -29.5 | -31.0 | -32.3 | -33.1 | -34.1 | -28.3         | -23.1           |  |
| 2-Feb                                       | -34.9                         | -35.8  | -35.4 | -35.6                           | -35.1 | -35.7 | -35.5 | -35.5 | -35.5 | -33.6 | -30.6 | -27.9 | -26.2 | -23.7 | -22.2 | -20.4 | -19.6 | -19.2 | -18.6 | -18.0 | -17.5 | -17.1 | -16.7 | -16.4 | -27.0         | -16.4           |  |
| 3-Feb                                       | -16.5                         | -16.4  | -16.0 | -15.6                           | -15.1 | -14.8 | -14.2 | -13.7 | -13.0 | -12.4 | -11.8 | -11.1 | -10.7 | -10.6 | -10.4 | -10.6 | -11.1 | -11.7 | -12.1 | -12.6 | -12.8 | -12.9 | -12.9 | -13.0 | -13.0         | -10.4           |  |
| 4-Feb                                       | -13.0                         | -13.0  | -13.0 | -13.1                           | -13.2 | -13.2 | -13.4 | -13.8 | -14.1 | -13.9 | -13.6 | -13.2 | -12.7 | -12.7 | -12.2 | -12.1 | -12.1 | -12.2 | -12.5 | -12.5 | -12.3 | -12.3 | -12.2 | -12.2 | -12.9         | -12.1           |  |
| 5-Feb                                       | -12.2                         | -12.2  | -11.9 | -11.9                           | -11.6 | -11.4 | -11.3 | -11.1 | -10.8 | -10.4 | -9.8  | -9.1  | -8.4  | -7.6  | -7.0  | -6.1  | -5.9  | -6.0  | -6.6  | -6.4  | -6.2  | -6.0  | -5.9  | -6.9  | -8.9          | -5.9            |  |
| 6-Feb                                       | -8.1                          | -10.1  | -11.3 | -12.2                           | -12.9 | -13.5 | -14.2 | -15.2 | -16.2 | -15.5 | -14.3 | -13.4 | -12.6 | -10.6 | -9.7  | -9.3  | -9.4  | -9.9  | -10.2 | -10.7 | -10.1 | -10.1 | -10.4 | -9.6  | -11.6         | -8.1            |  |
| 7-Feb                                       | -8.4                          | -7.6   | -7.1  | -4.4                            | -0.9  | -0.3  | -1.2  | -1.6  | -2.8  | -1.0  | 0.9   | 2.7   | 3.3   | 3.5   | 3.4   | 3.0   | 2.0   | 0.8   | -0.2  | -0.7  | -2.3  | -4.7  | -9.3  | -11.3 | -1.8          | 3.5             |  |
| 8-Feb                                       | -12.8                         | -13.9  | -15.3 | -16.8                           | -18.0 | -18.9 | -19.7 | -20.5 | -21.1 | -18.5 | -16.9 | -14.2 | -11.3 | -9.0  | -7.3  | -5.9  | -6.3  | -9.1  | -11.2 | -13.0 | -14.5 | -15.4 | -16.4 | -16.9 | -14.3         | -5.9            |  |
| 9-Feb                                       | -16.9                         | -16.8  | -17.2 | -15.8                           | -16.0 | -15.4 | -15.6 | -15.6 | -14.5 | -12.2 | -9.2  | -5.9  | -3.9  | -2.6  | -1.6  | -0.9  | -0.7  | -2.0  | -2.0  | -3.1  | -3.9  | -3.8  | -4.0  | -4.1  | -8.5          | -0.7            |  |
| 10-Feb                                      | -4.3                          | -3.8   | -3.2  | -3.8                            | -4.6  | -5.9  | -6.9  | -7.3  | -8.0  | -8.4  | -8.6  | -8.6  | -8.7  | -8.7  | -8.4  | -8.3  | -8.4  | -8.6  | -8.8  | -9.1  | -9.4  | -9.4  | -9.5  | -9.6  | -7.5          | -3.2            |  |
| 11-Feb                                      | -9.8                          | -9.9   | -9.6  | -9.8                            | -9.6  | -9.2  | -8.8  | -8.3  | -7.8  | -6.8  | -5.1  | -3.0  | -1.7  | -0.9  | -0.6  | 0.3   | 0.6   | 0.6   | 0.3   | 0.0   | -0.7  | -2.3  | -2.9  | -2.0  | -4.5          | 0.6             |  |
| 12-Feb                                      | -1.5                          | -1.5   | -2.2  | -2.0                            | -2.9  | -3.2  | -2.5  | -2.9  | -4.7  | -5.6  | -6.1  | -6.5  | -6.4  | -6.6  | -6.4  | -6.6  | -6.9  | -7.4  | -7.3  | -7.1  | -6.9  | -6.5  | -6.4  | -6.6  | -5.1          | -1.5            |  |
| 13-Feb                                      | -7.1                          | -6.9   | -6.4  | -5.8                            | -5.6  | -1.9  | 0.7   | 0.5   | -3.0  | -6.3  | -7.2  | -7.5  | -7.2  | -7.4  | -8.3  | -8.7  | -9.1  | -10.2 | -11.5 | -13.2 | -14.4 | -15.3 | -16.0 | -16.6 | -8.1          | 0.7             |  |
| 14-Feb                                      | -17.3                         | -17.9  | -18.5 | -18.7                           | -18.7 | -18.8 | -18.8 | -19.0 | -19.2 | -18.8 | -18.5 | -18.1 | -18.2 | -17.7 | -17.6 | -17.8 | -18.1 | -19.2 | -20.0 | -20.5 | -21.1 | -21.1 | -22.2 | -24.1 | -19.2         | -17.3           |  |
| 15-Feb                                      | -25.4                         | -26.3  | -26.9 | -26.4                           | -25.5 | -25.5 | -26.8 | -25.6 | -25.2 | -24.8 | -22.0 | -18.8 | -18.0 | -16.6 | -15.3 | -15.7 | -16.0 | -17.5 | -19.9 | -21.8 | -23.0 | -23.2 | -23.8 | -25.3 | -22.3         | -15.3           |  |
| 16-Feb                                      | -25.5                         | -25.8  | -25.5 | -24.2                           | -22.8 | -22.0 | -21.2 | -20.1 | -19.1 | -17.9 | -15.0 | -12.7 | -9.6  | -8.3  | -7.5  | -6.6  | -6.4  | -7.8  | -10.6 | -14.1 | -16.3 | -16.5 | -16.4 | -16.3 | -16.2         | -6.4            |  |
| 17-Feb                                      | -16.3                         | -16.1  | -16.3 | -16.3                           | -16.3 | -16.3 | -16.5 | -16.4 | -17.0 | -17.1 | -16.9 | -16.6 | -16.3 | -17.0 | -17.0 | -17.2 | -17.9 | -18.2 | -18.5 | -20.3 | -22.1 | -23.1 | -24.6 | -25.1 | -18.1         | -16.1           |  |
| 18-Feb                                      | -26.9                         | -27.7  | -28.7 | -29.7                           | -30.5 | -30.2 | -31.6 | -31.5 | -31.2 | -28.2 | -24.5 | -22.0 | -20.7 | -20.3 | -19.8 | -19.7 | -20.2 | -21.5 | -23.4 | -25.0 | -27.1 | -28.4 | -30.0 | -30.7 | -26.2         | -19.7           |  |
| 19-Feb                                      | -30.8                         | -31.9  | -31.6 | -31.8                           | -32.0 | -32.2 | -32.9 | -32.8 | -30.6 | -27.8 | -24.1 | -21.2 | -19.1 | -17.7 | -16.9 | -16.4 | -16.2 | -16.7 | -17.0 | -17.4 | -16.9 | -18.1 | -19.8 | -21.1 | -23.9         | -16.2           |  |
| 20-Feb                                      | -22.2                         | -22.6  | -22.9 | -23.7                           | -23.7 | -23.8 | -24.3 | -23.9 | -23.3 | -22.1 | -20.2 | -18.4 | -17.4 | -16.9 | -17.0 | -17.6 | -18.1 | -19.3 | -21.6 | -23.8 | -25.5 | -26.8 | -26.7 | -23.8 | -21.9         | -16.9           |  |
| 21-Feb                                      | -24.3                         | -25.3  | -26.7 | -27.9                           | -28.9 | -30.0 | -31.6 | -32.8 | -33.0 | -29.4 | -27.7 | -26.6 | -25.6 | -25.0 | -24.7 | -24.3 | -24.5 | -25.4 | -27.3 | -28.9 | -30.7 | -32.1 | -33.2 | -34.2 | -28.3         | -24.3           |  |
| 22-Feb                                      | -35.0                         | -35.5  | -36.1 | -37.1                           | -37.3 | -36.9 | -38.2 | -37.6 | -35.9 | -32.2 | -28.3 | -24.9 | -21.4 | -19.0 | -18.2 | -18.1 | -18.4 | -20.2 | -22.3 | -24.4 | -26.7 | -28.0 | -29.6 | -30.5 | -28.8         | -18.1           |  |
| 23-Feb                                      | -32.1                         | -32.7  | -33.4 | -34.0                           | -34.3 | -34.7 | -34.8 | -35.4 | -34.5 | -31.6 | -28.0 | -23.7 | -20.9 | -19.6 | -19.3 | -18.9 | -19.0 | -19.7 | -22.2 | -24.8 | -26.3 | -27.7 | -29.1 | -30.3 | -27.8         | -18.9           |  |
| 24-Feb                                      | -30.3                         | -29.5  | -30.5 | -30.1                           | -30.8 | -30.6 | -30.3 | -31.1 | -29.4 | -27.0 | -23.6 | -20.5 | -17.1 | -15.4 | -15.3 | -15.1 | -14.7 | -14.9 | -15.4 | -16.3 | -16.7 | -17.2 | -17.7 | -18.3 | -22.4         | -14.7           |  |
| 25-Feb                                      | -19.2                         | -19.0  | -18.7 | -18.4                           | -18.1 | -17.8 | -17.5 | -16.8 | -15.8 | -12.8 | -9.1  | -6.9  | -6.7  | -6.5  | -6.1  | -5.8  | -5.8  | -6.7  | -8.7  | -10.0 | -11.5 | -11.5 | -11.8 | -12.5 | -12.2         | -5.8            |  |
| 26-Feb                                      | -13.1                         | -14.2  | -14.4 | -15.1                           | -16.1 | -16.2 | -15.5 | -14.7 | -14.0 | -12.3 | -10.7 | -9.8  | -9.2  | -8.4  | -7.7  | -7.3  | -7.4  | -7.4  | -7.4  | -7.6  | -7.8  | -7.9  | -7.9  | -8.1  | -10.8         | -7.3            |  |
| 27-Feb                                      | -8.4                          | -8.7   | -9.1  | -9.9                            | -10.5 | -11.2 | -11.9 | -12.5 | -12.8 | -12.9 | -12.8 | -12.4 | -12.2 | -11.5 | -11.4 | -11.7 | -12.1 | -12.7 | -13.2 | -13.6 | -13.8 | -14.4 | -15.3 | -16.1 | -12.1         | -8.4            |  |
| 28-Feb                                      | -17.3                         | -18.4  | -19.7 | -21.1                           | -22.1 | -23.1 | -24.2 | -24.8 | -22.8 | -19.4 | -17.1 | -15.2 | -13.9 | -13.3 | -12.8 | -12.2 | -12.6 | -13.6 | -15.9 | -17.9 | -19.7 | -21.0 | -22.4 | -23.3 | -18.5         | -12.2           |  |
|   |                               | -18.5  | -18.8 | -19.1                           | -19.3 | -19.4 | -19.4 | -19.6 | -19.7 | -19.5 | -18.1 | -16.3 | -14.7 | -13.5 | -12.6 | -12.2 | -11.9 | -12.1 | -12.9 | -14.0 | -15.1 | -16.0 | -16.6 | -17.4 | -17.8         | Diurnal Average |  |
|   |                               | -1.5   | -1.5  | -2.2                            | -2.0  | -0.9  | -0.3  | 0.7   | 0.5   | -2.8  | -1.0  | 0.9   | 2.7   | 3.3   | 3.5   | 3.4   | 3.0   | 2.0   | 0.8   | 0.3   | 0.0   | -0.7  | -2.3  | -2.9  | -2.0          | Diurnal Maximum |  |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Ambient Temperature 2m (AT 2m) - C**  
**Fort McKay - Bertha Ganter - February 2023**





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Ambient Temperature 2m (AT 2m) - C  
Fort McKay - Bertha Ganter - February 2023**

| <b>Concentration Ranges (C)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---------------------------------|------------------------|----------|---------------------|
| -50 - -20                       | 213                    | 31.70    | 31.70               |
| -20 - 0                         | 445                    | 66.22    | 97.92               |
| 0 - 10                          | 14                     | 2.08     | 100.00              |
| 10 - 20                         | 0                      | 0.00     | 100.00              |
| > 20                            | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 672

Total Number of Hours: 672



**Wood Buffalo Environmental Association**

**Summary of Hour Averages**

**Relative Humidity (RH) - %**

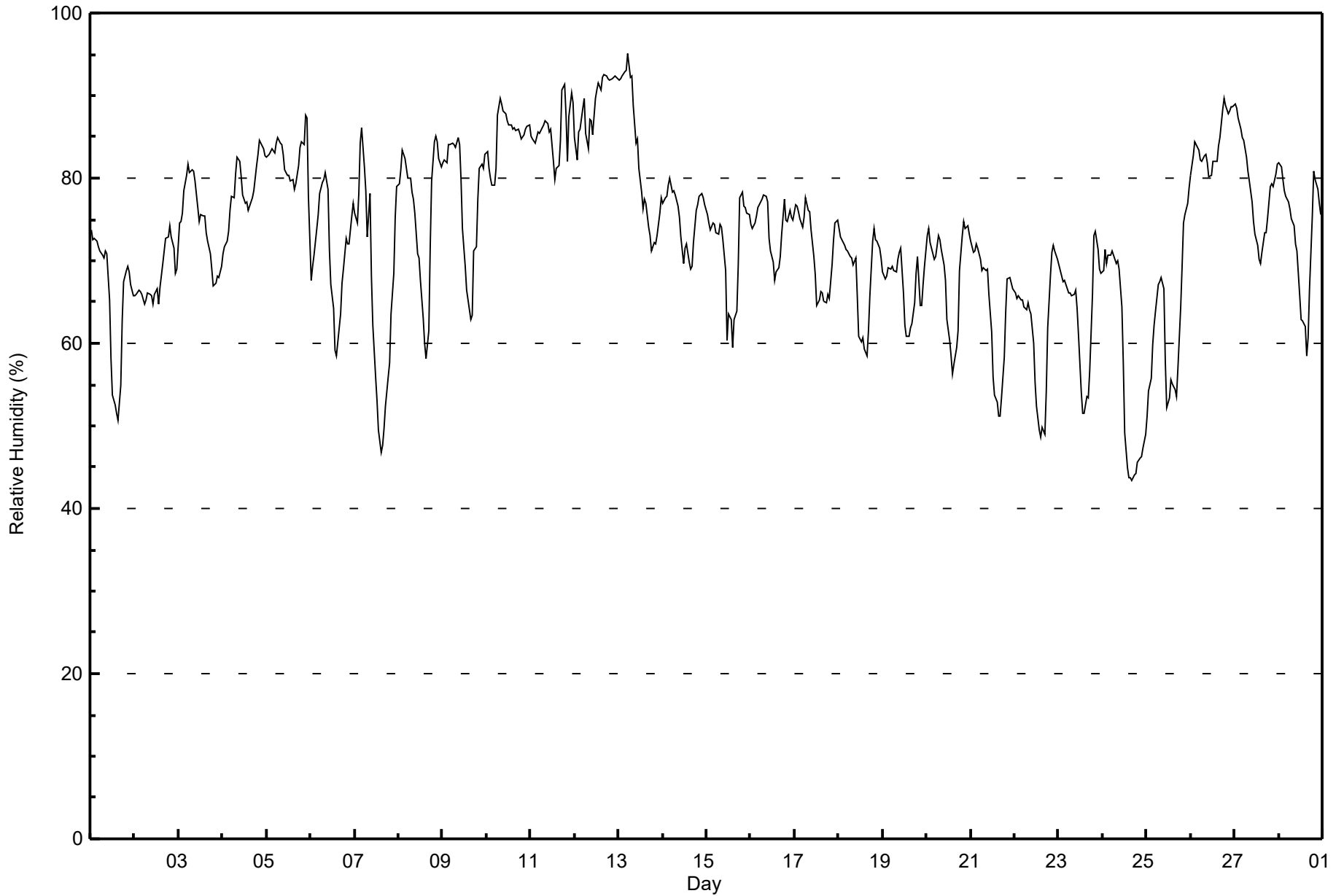
**Fort McKay - Bertha Ganter - February 2023**

| Maximum Value: 95.1 % on Feb 13 06:00      Maximum Daily Average: 89.1 % on Feb 12   |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Hours in Service: 672<br>Hours of Data: 672  |      |                 |               |               |
|--|-------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|--|------|-----------------|---------------|---------------|
| Minimum Value: 43.5 % on Feb 24 17:00      Minimum Daily Average: 57.1 % on Feb 24<br>Maximum Diurnal Average: 76.8 % at hour 7      Minimum Diurnal Average: 65.1 % at hour 15<br>Monthly Average: 72.98 %      Percentiles: P <sub>1</sub> = 45.9 P <sub>10</sub> = 59.3 Q <sub>1</sub> = 67.0 Median = 73.2 Q <sub>3</sub> = 80.7 P <sub>90</sub> = 85.6 P <sub>99</sub> = 92.3 |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Hours of Missing Data: 0<br>Hours of Calibration: 0<br>Percent Operational Time: 100.0 |      |                 |               |               |
| Day  | Hourly Period Ending At (MST) |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |      |                 | Daily Average | Daily Maximum |
|  | 1                             | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20   | 21   | 22   | 23   | 24              |               |               |
| 1-Feb  | 73.7                          | 72.5 | 72.7 | 72.3 | 71.7 | 71.2 | 70.7 | 70.4 | 71.2 | 70.8 | 65.2 | 58.2 | 53.7 | 52.5 | 51.5 | 50.7 | 55.0 | 62.7 | 67.4 | 68.8 | 69.3 | 68.6   | 67.2 | 65.7            | 65.6          | 73.7          |
| 2-Feb  | 65.7                          | 66.0 | 66.5 | 66.3 | 66.0 | 64.7 | 65.3 | 66.1 | 65.9 | 65.8 | 64.7 | 65.9 | 66.6 | 64.8 | 66.8 | 69.7 | 71.2 | 72.7 | 72.9 | 74.3 | 72.9 | 71.5   | 68.5 | 69.1            | 67.9          | 74.3          |
| 3-Feb  | 74.7                          | 74.7 | 75.7 | 78.4 | 80.4 | 81.6 | 80.7 | 81.0 | 80.9 | 79.6 | 76.5 | 74.8 | 75.6 | 75.5 | 75.4 | 73.4 | 72.4 | 70.9 | 69.0 | 67.0 | 67.3 | 68.1   | 67.9 | 69.4            | 74.6          | 81.6          |
| 4-Feb  | 70.9                          | 71.7 | 72.4 | 73.6 | 76.0 | 77.8 | 77.7 | 80.4 | 82.5 | 82.1 | 80.1 | 78.0 | 77.0 | 77.2 | 76.1 | 77.1 | 77.7 | 78.5 | 81.4 | 82.8 | 84.6 | 84.2   | 83.5 | 82.7            | 78.6          | 84.6          |
| 5-Feb  | 82.5                          | 82.9 | 83.2 | 83.6 | 83.1 | 84.3 | 84.9 | 84.3 | 84.1 | 82.9 | 81.1 | 80.3 | 80.3 | 79.7 | 79.8 | 78.7 | 79.4 | 81.5 | 83.8 | 84.4 | 84.1 | 87.6   | 87.3 | 77.8            | 82.6          | 87.6          |
| 6-Feb  | 67.6                          | 69.3 | 70.7 | 73.9 | 75.5 | 78.1 | 79.4 | 79.9 | 80.7 | 78.7 | 71.3 | 67.2 | 64.2 | 59.2 | 58.4 | 60.1 | 63.5 | 67.2 | 69.0 | 72.7 | 72.1 | 72.1   | 75.5 | 76.9            | 71.0          | 80.7          |
| 7-Feb  | 75.7                          | 74.6 | 78.2 | 84.2 | 86.1 | 81.4 | 78.4 | 72.8 | 78.1 | 68.1 | 62.1 | 55.9 | 53.0 | 49.5 | 46.8 | 47.6 | 49.7 | 52.3 | 56.0 | 57.7 | 63.6 | 68.5   | 75.3 | 79.0            | 66.4          | 86.1          |
| 8-Feb  | 79.4                          | 81.0 | 83.4 | 82.3 | 81.1 | 79.9 | 80.0 | 78.4 | 77.5 | 75.8 | 70.8 | 70.3 | 67.6 | 63.1 | 60.1 | 58.1 | 61.5 | 71.7 | 79.6 | 84.4 | 85.0 | 84.5   | 82.4 | 81.4            | 75.8          | 85.0          |
| 9-Feb  | 81.9                          | 82.2 | 81.9 | 84.1 | 84.0 | 84.3 | 84.1 | 83.8 | 84.9 | 84.2 | 79.8 | 74.0 | 69.4 | 66.4 | 65.3 | 62.9 | 63.3 | 71.2 | 71.7 | 77.5 | 81.2 | 81.7   | 81.1 | 82.9            | 77.7          | 84.9          |
| 10-Feb   | 83.3                          | 81.3 | 80.0 | 79.1 | 79.2 | 81.2 | 87.7 | 89.6 | 89.0 | 88.1 | 87.8 | 86.9 | 86.5 | 86.5 | 85.9 | 86.0 | 85.8 | 85.9 | 85.4 | 84.8 | 85.2 | 85.9   | 86.3 | 86.5            | 85.2          | 89.6          |
| 11-Feb   | 85.2                          | 84.8 | 84.2 | 84.9 | 85.5 | 85.5 | 86.0 | 86.5 | 86.9 | 86.6 | 85.6 | 85.9 | 82.1 | 79.8 | 81.1 | 81.5 | 84.5 | 90.6 | 91.3 | 87.6 | 82.1 | 87.4   | 90.4 | 89.1            | 85.6          | 91.3          |
| 12-Feb   | 84.9                          | 82.1 | 85.5 | 86.0 | 88.4 | 89.7 | 85.5 | 83.5 | 87.2 | 87.0 | 85.3 | 89.7 | 90.7 | 91.5 | 90.7 | 92.2 | 92.6 | 92.3 | 92.0 | 91.9 | 92.0 | 92.2   | 92.4 | 92.3            | 89.1          | 92.6          |
| 13-Feb   | 91.9                          | 92.0 | 92.4 | 92.9 | 93.1 | 95.1 | 92.2 | 92.4 | 88.8 | 84.2 | 84.7 | 81.1 | 78.3 | 76.3 | 77.5 | 76.9 | 74.1 | 73.1 | 71.2 | 72.3 | 72.0 | 73.0   | 75.8 | 77.6            | 82.4          | 95.1          |
| 14-Feb   | 77.0                          | 77.6 | 77.8 | 79.2 | 79.9 | 78.2 | 78.5 | 78.0 | 76.6 | 75.2 | 72.8 | 69.7 | 71.5 | 72.0 | 69.8 | 69.0 | 69.4 | 72.3 | 76.1 | 76.8 | 77.8 | 78.2   | 77.7 | 76.8            | 75.3          | 79.9          |
| 15-Feb   | 75.6                          | 74.5 | 73.8 | 74.5 | 74.3 | 73.4 | 73.3 | 74.5 | 74.1 | 72.6 | 68.8 | 60.4 | 63.6 | 62.8 | 59.5 | 62.9 | 64.0 | 69.4 | 77.6 | 78.3 | 76.7 | 76.5   | 75.8 | 75.5            | 71.3          | 78.3          |
| 16-Feb   | 74.5                          | 73.9 | 74.7 | 75.4 | 76.4 | 77.1 | 77.5 | 78.0 | 77.8 | 77.1 | 72.7 | 71.2 | 69.9 | 67.7 | 68.6 | 69.2 | 70.4 | 73.2 | 77.4 | 75.0 | 74.7 | 76.1   | 75.2 | 74.9            | 74.1          | 78.0          |
| 17-Feb   | 76.8                          | 76.6 | 75.9 | 75.0 | 74.0 | 75.3 | 77.6 | 76.1 | 76.0 | 73.7 | 70.5 | 68.3 | 64.6 | 65.3 | 66.2 | 66.2 | 65.1 | 64.9 | 65.9 | 65.5 | 69.5 | 72.4   | 74.5 | 74.9            | 71.3          | 77.6          |
| 18-Feb   | 73.9                          | 72.8 | 72.2 | 71.8 | 71.4 | 71.2 | 70.4 | 70.4 | 69.5 | 70.3 | 65.7 | 60.9 | 60.1 | 60.6 | 59.3 | 58.5 | 61.5 | 65.7 | 72.4 | 74.0 | 72.6 | 72.3   | 71.5 | 70.4            | 68.3          | 74.0          |
| 19-Feb   | 68.7                          | 67.7 | 68.2 | 69.1 | 68.9 | 69.3 | 68.9 | 68.7 | 70.2 | 71.1 | 71.4 | 66.2 | 62.2 | 60.8 | 60.8 | 61.9 | 62.4 | 65.0 | 68.4 | 70.5 | 64.5 | 64.5   | 67.0 | 69.3            | 66.9          | 71.4          |
| 20-Feb   | 73.1                          | 73.8 | 72.2 | 70.8 | 70.1 | 70.5 | 73.1 | 72.5 | 71.3 | 69.5 | 67.6 | 62.8 | 60.3 | 58.4 | 56.3 | 57.5 | 59.5 | 61.6 | 68.8 | 73.1 | 74.8 | 74.0   | 74.2 | 73.2            | 68.3          | 74.8          |
| 21-Feb   | 72.4                          | 70.9 | 71.1 | 72.1 | 71.5 | 70.1 | 68.8 | 69.2 | 68.8 | 69.0 | 65.9 | 61.4 | 55.9 | 53.7 | 52.9 | 51.1 | 51.3 | 53.4 | 58.2 | 63.7 | 67.8 | 68.1   | 67.3 | 66.6            | 64.2          | 72.4          |
| 22-Feb   | 66.1                          | 65.4 | 65.8 | 65.2 | 65.3 | 64.4 | 64.1 | 64.8 | 64.0 | 63.6 | 60.0 | 55.3 | 52.3 | 49.6 | 48.7 | 49.8 | 49.0 | 54.2 | 61.8 | 68.4 | 70.9 | 71.9   | 71.2 | 70.1            | 61.7          | 71.9          |
| 23-Feb   | 69.4                          | 68.9 | 67.4 | 67.6 | 67.0 | 66.2 | 66.1 | 65.8 | 65.9 | 66.4 | 64.3 | 61.1 | 54.0 | 51.5 | 51.6 | 53.6 | 53.3 | 56.7 | 66.0 | 73.1 | 73.5 | 71.3   | 69.1 | 68.4            | 64.1          | 73.5          |
| 24-Feb   | 68.8                          | 71.3 | 69.6 | 70.7 | 70.6 | 71.2 | 70.6 | 69.7 | 70.0 | 68.9 | 64.4 | 57.6 | 49.1 | 44.9 | 43.8 | 43.7 | 43.5 | 44.1 | 44.2 | 45.6 | 46.0 | 46.3   | 47.3 | 49.0            | 57.1          | 71.3          |
| 25-Feb   | 51.2                          | 54.2 | 55.8 | 59.9 | 62.2 | 63.8 | 67.1 | 67.5 | 67.9 | 66.7 | 57.8 | 52.2 | 53.3 | 55.5 | 55.1 | 54.4 | 53.5 | 57.0 | 64.4 | 69.3 | 74.6 | 75.7   | 77.0 | 78.9            | 62.3          | 78.9          |
| 26-Feb   | 80.3                          | 82.7 | 84.3 | 84.0 | 83.4 | 82.1 | 82.1 | 82.7 | 82.9 | 81.9 | 80.1 | 80.3 | 82.0 | 82.1 | 82.0 | 83.9 | 85.0 | 88.3 | 89.7 | 88.8 | 87.9 | 88.2   | 88.6 | 88.6            | 84.2          | 89.7          |
| 27-Feb   | 88.9                          | 88.5 | 87.3 | 85.9 | 84.9 | 84.6 | 82.6 | 80.9 | 79.6 | 77.0 | 74.8 | 73.2 | 71.9 | 70.2 | 69.6 | 71.0 | 73.4 | 73.4 | 75.1 | 79.0 | 79.4 | 79.0   | 80.5 | 81.7            | 78.8          | 88.9          |
| 28-Feb   | 81.9                          | 81.4 | 79.8 | 78.4 | 77.7 | 77.1 | 76.4 | 75.1 | 74.2 | 72.0 | 71.1 | 65.7 | 62.9 | 62.6 | 62.1 | 58.4 | 60.7 | 66.6 | 75.4 | 80.9 | 79.9 | 78.7   | 77.0 | 75.6            | 73.0          | 81.9          |
| 75.6 75.5 75.8 76.5 76.7 76.8 76.8 76.5 76.7 75.3 72.2 69.1 67.1 65.7 65.1 65.2 66.2 69.2 72.6 74.6 75.1 75.7 76.0 75.9  |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |      | Diurnal Average |               |               |
| 91.9 92.0 92.4 92.9 93.1 95.1 92.2 92.4 89.0 88.1 87.8 89.7 90.7 91.5 90.7 92.2 92.6 92.3 92.0 91.9 92.0 92.2 92.4 92.3  |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |      | Diurnal Maximum |               |               |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Relative Humidity (RH) - %**  
**Fort McKay - Bertha Ganter - February 2023**







**Wood Buffalo Environmental Association**

**Summary of Hour Averages**

**Precipitation (PC) - mm**

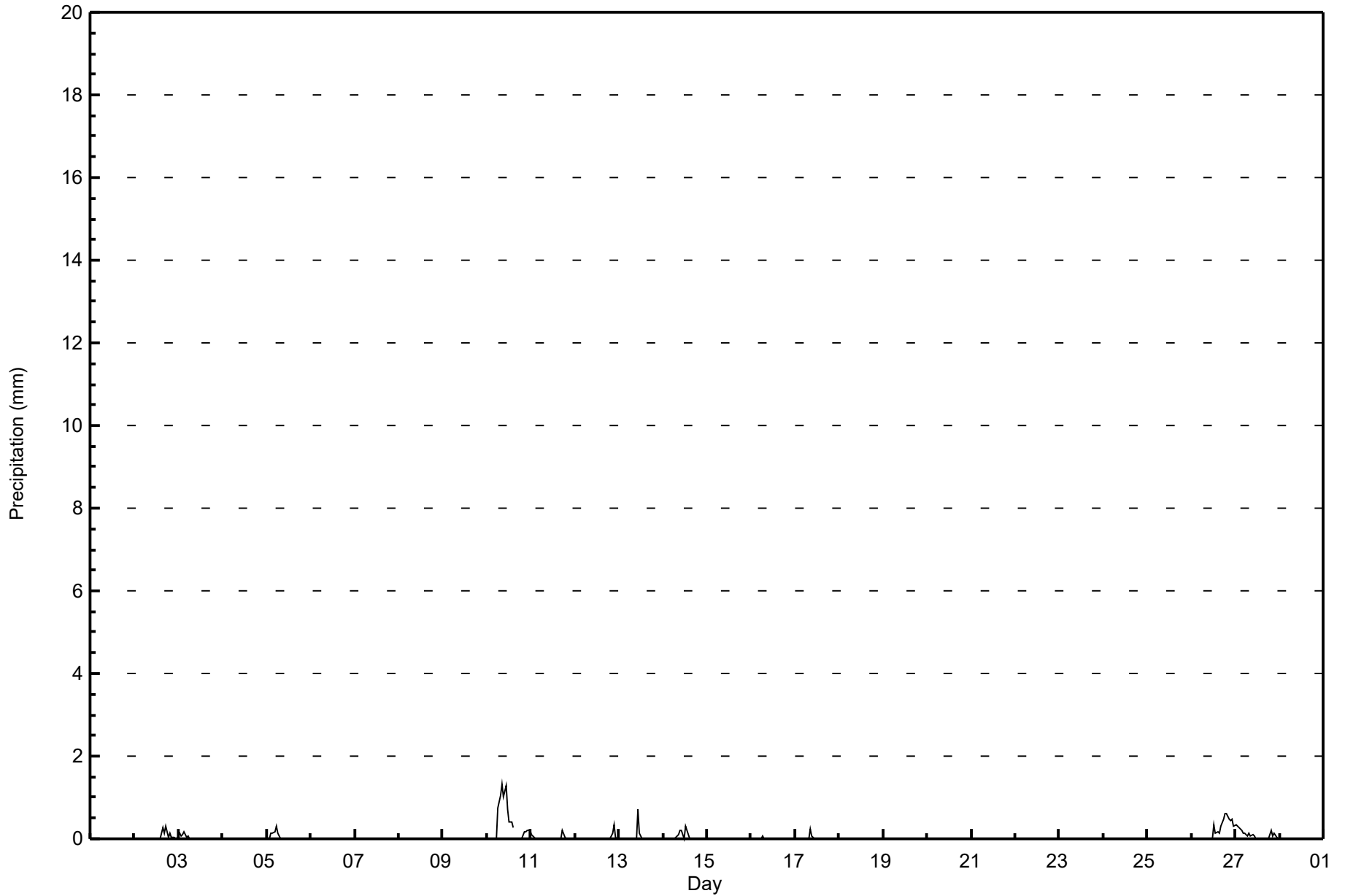
**Fort McKay - Bertha Ganter - February 2023**

| <b>Maximum Value: 1.3 mm on Feb 10 09:00</b>    |                               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | <b>Maximum Daily Total: 7.9 mm on Feb 10</b>   |             |               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 | Hours in Service: 672     |  |
|---|-------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|-------------|---------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----------------|---------------------------|--|
| <b>Minimum Value: 0.0 mm on Feb 1 01:00</b>     |                               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | <b>Minimum Daily Total: 0.0 mm on Feb 1</b>  |             |               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 | Hours of Data: 588        |  |
| <b>Maximum Diurnal Total: 2.3 mm at hour 11</b> |                               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | <b>Minimum Diurnal Total: 0.4 mm at hour 5</b>   |             |               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 | Hours of Missing Data: 84 |  |
| <b>Monthly Total: 20.29 mm</b>                  |                               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Percentiles: P <sub>1</sub> = 0.0 P <sub>10</sub> = 0.0 Q <sub>1</sub> = 0.0 Median = 0.0 Q <sub>3</sub> = 0.0 P <sub>90</sub> = 0.1 P <sub>99</sub> = 0.7 |             |               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 | Hours of Calibration: 0   |  |
|   |                               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Percent Operational Time: 87.5   |             |               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                           |  |
| Day   | Hourly Period Ending At (MST) |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |  | Daily Total | Daily Maximum |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                           |  |
|   | 1                             | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19  | 20  | 21  | 22  | 23  | 24   |             |               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                           |  |
| 1-Feb   | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0         | 0.0           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                           |  |
| 2-Feb   | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.3 | 0.1 | 0.3 | 0.1 | 0.2 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0         | 0.0           | 0.0 | 0.0 | 0.0 | 1.0 | 0.3 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                           |  |
| 3-Feb   | 0.1                           | 0.1 | 0.1 | 0.2 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0         | 0.0           | 0.0 | 0.0 | 0.6 | 0.2 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                           |  |
| 4-Feb   | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0         | 0.0           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                           |  |
| 5-Feb   | 0.0                           | 0.0 | 0.1 | 0.2 | 0.2 | 0.3 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0         | 0.0           | 0.0 | 0.9 | 0.3 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                           |  |
| 6-Feb   | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0         | 0.0           | 0.0 | 0.0 | 0.0 | 0.0 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                           |  |
| 7-Feb   | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0         | 0.0           | 0.0 | 0.0 | 0.0 | 0.0 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                           |  |
| 8-Feb   | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | M   | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0         | 0.0           | 0.0 | 0.0 | 0.0 | 0.0 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                           |  |
| 9-Feb   | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0         | 0.0           | 0.0 | 0.0 | 0.0 | 0.0 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                           |  |
| 10-Feb  | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.7 | 1.0 | 1.3 | 1.0 | 1.3 | 0.7 | 0.4 | 0.4 | 0.3 | DF  | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 | 0.2 | 0.2 | 0.2  | 0.2         | 0.2           | 0.2 | 7.9 | 1.3 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                           |  |
| 11-Feb  | 0.1                           | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0         | 0.0           | 0.4 | 0.2 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                           |  |
| 12-Feb  | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.4 | 0.0 | 0.0 | 0.0  | 0.0         | 0.0           | 0.5 | 0.4 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                           |  |
| 13-Feb  | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.7 | 0.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0         | 0.0           | 0.9 | 0.7 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                           |  |
| 14-Feb  | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.2 | 0.2 | 0.0 | 0.3 | 0.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0         | 0.0           | 1.1 | 0.3 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                           |  |
| 15-Feb  | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0         | 0.0           | 0.0 | 0.0 | 0.0 | 0.0 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                           |  |
| 16-Feb  | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0         | 0.0           | 0.1 | 0.1 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                           |  |
| 17-Feb  | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0         | 0.0           | 0.3 | 0.2 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                           |  |
| 18-Feb  | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0         | 0.0           | 0.0 | 0.0 | 0.0 | 0.0 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                           |  |
| 19-Feb  | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0         | 0.0           | 0.0 | 0.0 | 0.0 | 0.0 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                           |  |
| 20-Feb  | DF                            | DF  | DF  | DF  | DF  | DF  | DF  | DF  | DF  | DF  | DF  | DF  | DF  | DF  | DF  | DF  | DF  | DF  | DF  | DF  | DF  | DF  | DF  | DF   | DF          | DF            | DF  | --  | --  |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                           |  |
| 21-Feb  | DF                            | DF  | DF  | DF  | DF  | DF  | DF  | DF  | DF  | DF  | DF  | DF  | DF  | DF  | DF  | DF  | DF  | DF  | DF  | DF  | DF  | DF  | DF  | DF   | DF          | DF            | DF  | --  | --  |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                           |  |
| 22-Feb  | DF                            | DF  | DF  | DF  | DF  | DF  | DF  | DF  | DF  | DF  | DF  | DF  | DF  | DF  | DF  | DF  | DF  | DF  | DF  | DF  | DF  | DF  | DF  | DF   | DF          | DF            | DF  | --  | --  |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                           |  |
| 23-Feb  | DF                            | DF  | DF  | DF  | DF  | DF  | DF  | DF  | DF  | DF  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0         | 0.0           | --  | 0.0 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                           |  |
| 24-Feb  | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0         | 0.0           | 0.0 | 0.0 | 0.0 | 0.0 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                           |  |
| 25-Feb  | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0         | 0.0           | 0.0 | 0.0 | 0.0 | 0.0 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                           |  |
| 26-Feb  | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.4 | 0.1 | 0.2 | 0.1 | 0.3 | 0.5 | 0.6 | 0.6 | 0.5 | 0.4 | 0.5 | 0.3 | 0.3  | 0.3         | 4.5           | 0.6 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                           |  |
| 27-Feb  | 0.3                           | 0.3 | 0.3 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 | 0.1 | 0.1 | 0.1 | 0.0 | 0.0  | 0.0         | 2.3           | 0.3 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                           |  |
| 28-Feb  | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0         | 0.0           | 0.0 | 0.0 | 0.0 | 0.0 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                           |  |
| 0.6   |                               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | 0.4  | 0.5         | 0.5           | 0.4 | 0.5 | 1.0 | 1.2 | 1.7 | 1.4 | 2.3 | 0.9 | 1.1 | 0.7 | 0.5 | 0.4 | 0.4 | 1.0 | 0.7 | 0.9 | 0.9 | 1.1 | 0.8 | 0.5 | Diurnal Average |                           |  |
| 0.3   |                               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | 0.3  | 0.3         | 0.2           | 0.2 | 0.3 | 0.7 | 1.0 | 1.3 | 1.0 | 1.3 | 0.7 | 0.4 | 0.4 | 0.3 | 0.3 | 0.3 | 0.5 | 0.6 | 0.6 | 0.5 | 0.4 | 0.5 | 0.3 | Diurnal Maximum |                           |  |
| M - Maintenance                                 |                               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | DF - DAS Failure   |             |               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                           |  |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Precipitation (PC) - mm**  
**Fort McKay - Bertha Ganter - February 2023**





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Precipitation (PC) - mm**  
**Fort McKay - Bertha Ganter - February 2023**

| <b>Concentration Ranges (mm)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|----------------------------------|------------------------|----------|---------------------|
| 0 - 0.3                          | 573                    | 97.45    | 97.45               |
| 0.4 - 0.5                        | 6                      | 1.02     | 98.47               |
| 0.6 - 0.7                        | 5                      | 0.85     | 99.32               |
| 0.8 - 1.4                        | 4                      | 0.68     | 100.00              |
| 1.5 - 10                         | 0                      | 0.00     | 100.00              |
| > 10                             | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 588

Total Number of Hours: 672

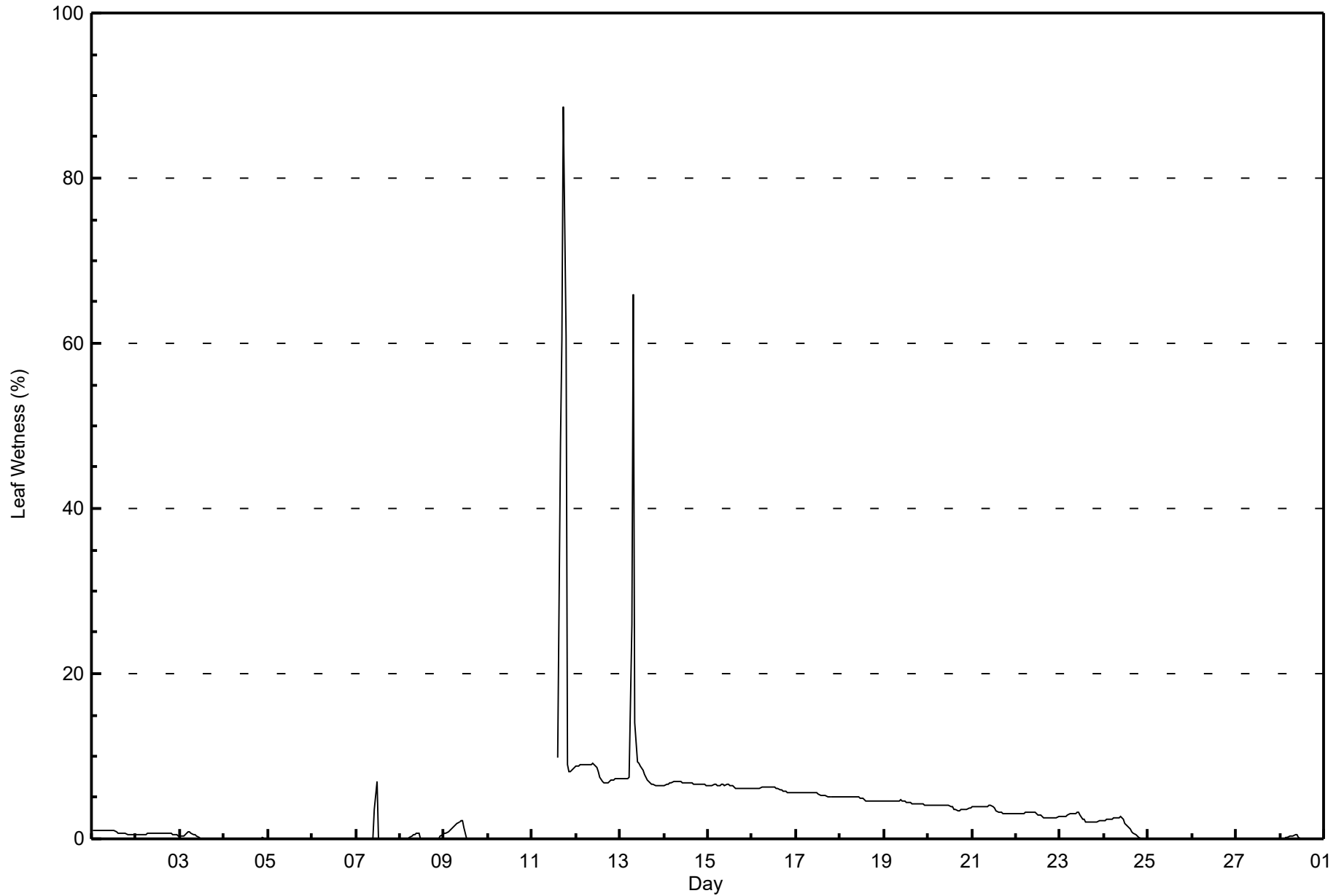


| Maximum Value: 88.6 % on Feb 11 18:00     |                               | Maximum Daily Average: 14.1 % on Feb 11   |     | Hours in Service: 672          |     |     |      |      |      |     |     |     |     |     |     |      |      |      |      |     |     |     |     |                 |               |               |
|---|-------------------------------|---|-----|--------------------------------|-----|-----|------|------|------|-----|-----|-----|-----|-----|-----|------|------|------|------|-----|-----|-----|-----|-----------------|---------------|---------------|
| Minimum Value: 0.0 % on Feb 3 13:00       |                               | Minimum Daily Average: 0.0 % on Feb 6   |     | Hours of Data: 670             |     |     |      |      |      |     |     |     |     |     |     |      |      |      |      |     |     |     |     |                 |               |               |
| Maximum Diurnal Average: 5.3 % at hour 18 |                               | Minimum Diurnal Average: 2.4 % at hour 21   |     | Hours of Missing Data: 2       |     |     |      |      |      |     |     |     |     |     |     |      |      |      |      |     |     |     |     |                 |               |               |
| Monthly Average: 2.97 %                   |                               | Percentiles: P <sub>1</sub> = 0.0 P <sub>10</sub> = 0.0 Q <sub>1</sub> = 0.0 Median = 1.0 Q <sub>3</sub> = 4.8 P <sub>90</sub> = 6.6 P <sub>99</sub> = 11.1 |     | Hours of Calibration: 0        |     |     |      |      |      |     |     |     |     |     |     |      |      |      |      |     |     |     |     |                 |               |               |
|   |                               |   |     | Percent Operational Time: 99.7 |     |     |      |      |      |     |     |     |     |     |     |      |      |      |      |     |     |     |     |                 |               |               |
| Day                                       | Hourly Period Ending At (MST) |   |     |                                |     |     |      |      |      |     |     |     |     |     |     |      |      |      |      |     |     |     |     |                 | Daily Average | Daily Maximum |
|   | 1                             | 2   | 3   | 4                              | 5   | 6   | 7    | 8    | 9    | 10  | 11  | 12  | 13  | 14  | 15  | 16   | 17   | 18   | 19   | 20  | 21  | 22  | 23  | 24              |               |               |
| 1-Feb                                     | 1.0                           | 1.0   | 1.0 | 1.0                            | 1.0 | 1.0 | 1.0  | 1.0  | 1.0  | 1.0 | 1.1 | 1.0 | 1.0 | 0.8 | 0.7 | 0.6  | 0.6  | 0.6  | 0.6  | 0.6 | 0.6 | 0.5 | 0.5 | 0.5             | 0.8           | 1.1           |
| 2-Feb                                     | 0.5                           | 0.5   | 0.5 | 0.5                            | 0.6 | 0.6 | 0.6  | 0.6  | 0.6  | 0.7 | 0.7 | 0.7 | 0.7 | 0.6 | 0.6 | 0.7  | 0.6  | 0.6  | 0.6  | 0.6 | 0.6 | 0.5 | 0.4 | 0.4             | 0.6           | 0.7           |
| 3-Feb                                     | 0.4                           | 0.3   | 0.3 | 0.5                            | 0.8 | 0.8 | 0.7  | 0.6  | 0.5  | 0.4 | 0.2 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.2           | 0.8           |
| 4-Feb                                     | 0.0                           | 0.0   | 0.0 | 0.0                            | 0.0 | 0.0 | 0.0  | 0.0  | 0.0  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0 | 0.0 | 0.1 | 0.0 | 0.0             | 0.0           | 0.1           |
| 5-Feb                                     | 0.0                           | 0.0   | 0.0 | 0.0                            | 0.0 | 0.0 | 0.0  | 0.0  | 0.0  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.0           | 0.0           |
| 6-Feb                                     | 0.0                           | 0.0   | 0.0 | 0.0                            | 0.0 | 0.0 | 0.0  | 0.0  | 0.0  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.0           | 0.0           |
| 7-Feb                                     | 0.0                           | 0.0   | 0.0 | 0.0                            | 0.0 | 0.0 | 0.0  | 0.0  | 0.0  | 0.0 | 3.6 | 7.0 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.4           | 7.0           |
| 8-Feb                                     | 0.0                           | 0.0   | 0.0 | 0.0                            | 0.0 | 0.2 | 0.3  | 0.4  | 0.5  | 0.7 | 0.7 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0 | 0.0 | 0.1 | 0.3 | 0.4             | 0.2           | 0.7           |
| 9-Feb                                     | 0.6                           | 0.7   | 0.9 | 1.1                            | 1.2 | 1.5 | 1.6  | 1.8  | 2.0  | 2.2 | 2.2 | 1.4 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.7           | 2.2           |
| 10-Feb                                    | 0.0                           | 0.0   | 0.0 | 0.0                            | 0.0 | 0.0 | 0.0  | 0.0  | 0.0  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.0           | 0.0           |
| 11-Feb                                    | 0.0                           | 0.0   | 0.0 | 0.0                            | 0.0 | 0.0 | 0.0  | 0.0  | 0.0  | 0.0 | 0.0 | 0.0 | OR  | OR  | 9.8 | 48.0 | 60.6 | 88.6 | 60.9 | 9.1 | 8.1 | 8.2 | 8.4 | 8.7             | 14.1          | 88.6          |
| 12-Feb                                    | 8.9                           | 8.9   | 8.9 | 8.9                            | 8.9 | 9.0 | 9.0  | 8.9  | 9.0  | 9.1 | 8.9 | 8.6 | 8.1 | 7.5 | 7.0 | 6.8  | 6.7  | 6.9  | 7.0  | 7.1 | 7.2 | 7.3 | 7.4 | 7.3             | 8.1           | 9.1           |
| 13-Feb                                    | 7.3                           | 7.3   | 7.3 | 7.3                            | 7.3 | 7.5 | 25.9 | 65.9 | 14.1 | 9.4 | 9.1 | 8.8 | 8.4 | 7.9 | 7.5 | 7.1  | 6.9  | 6.7  | 6.5  | 6.5 | 6.5 | 6.4 | 6.4 | 6.5             | 10.8          | 65.9          |
| 14-Feb                                    | 6.5                           | 6.6   | 6.6 | 6.7                            | 6.8 | 6.9 | 6.9  | 6.9  | 6.9  | 6.9 | 6.8 | 6.8 | 6.8 | 6.8 | 6.7 | 6.7  | 6.7  | 6.6  | 6.6  | 6.6 | 6.6 | 6.6 | 6.6 | 6.5             | 6.7           | 6.9           |
| 15-Feb                                    | 6.5                           | 6.5   | 6.5 | 6.5                            | 6.5 | 6.5 | 6.5  | 6.5  | 6.5  | 6.5 | 6.6 | 6.6 | 6.5 | 6.4 | 6.2 | 6.1  | 6.2  | 6.1  | 6.1  | 6.1 | 6.1 | 6.1 | 6.1 | 6.0             | 6.3           | 6.6           |
| 16-Feb                                    | 6.0                           | 6.1   | 6.1 | 6.1                            | 6.2 | 6.2 | 6.2  | 6.2  | 6.3  | 6.3 | 6.2 | 6.2 | 6.2 | 6.1 | 6.0 | 5.9  | 5.9  | 5.8  | 5.7  | 5.6 | 5.6 | 5.6 | 5.6 | 5.6             | 6.0           | 6.3           |
| 17-Feb                                    | 5.6                           | 5.6   | 5.6 | 5.6                            | 5.6 | 5.6 | 5.6  | 5.6  | 5.6  | 5.6 | 5.5 | 5.5 | 5.4 | 5.3 | 5.2 | 5.2  | 5.2  | 5.2  | 5.1  | 5.1 | 5.0 | 5.0 | 5.0 | 5.1             | 5.4           | 5.6           |
| 18-Feb                                    | 5.1                           | 5.1   | 5.1 | 5.0                            | 5.1 | 5.1 | 5.0  | 5.1  | 5.0  | 5.1 | 5.1 | 4.9 | 4.8 | 4.8 | 4.7 | 4.5  | 4.5  | 4.6  | 4.6  | 4.6 | 4.6 | 4.6 | 4.6 | 4.6             | 4.8           | 5.1           |
| 19-Feb                                    | 4.6                           | 4.6   | 4.6 | 4.6                            | 4.6 | 4.6 | 4.6  | 4.6  | 4.7  | 4.7 | 4.6 | 4.5 | 4.5 | 4.4 | 4.3 | 4.3  | 4.3  | 4.2  | 4.3  | 4.3 | 4.2 | 4.2 | 4.1 | 4.1             | 4.4           | 4.7           |
| 20-Feb                                    | 4.1                           | 4.1   | 4.1 | 4.1                            | 4.1 | 4.1 | 4.1  | 4.1  | 4.1  | 4.1 | 4.1 | 4.1 | 3.9 | 3.8 | 3.6 | 3.5  | 3.5  | 3.5  | 3.5  | 3.5 | 3.5 | 3.5 | 3.6 | 3.7             | 3.9           | 4.1           |
| 21-Feb                                    | 3.8                           | 3.9   | 3.8 | 3.8                            | 3.9 | 3.9 | 3.9  | 3.9  | 4.0  | 4.0 | 4.0 | 3.9 | 3.7 | 3.5 | 3.3 | 3.2  | 3.1  | 3.1  | 3.1  | 3.1 | 3.1 | 3.1 | 3.1 | 3.1             | 3.6           | 4.0           |
| 22-Feb                                    | 3.1                           | 3.1   | 3.1 | 3.1                            | 3.1 | 3.1 | 3.1  | 3.2  | 3.2  | 3.3 | 3.2 | 3.0 | 2.9 | 2.8 | 2.7 | 2.5  | 2.5  | 2.5  | 2.5  | 2.5 | 2.5 | 2.6 | 2.6 | 2.6             | 2.9           | 3.3           |
| 23-Feb                                    | 2.6                           | 2.7   | 2.7 | 2.7                            | 2.9 | 3.0 | 3.0  | 3.1  | 3.1  | 3.1 | 3.2 | 2.9 | 2.4 | 2.3 | 2.1 | 2.0  | 2.0  | 2.0  | 2.0  | 2.1 | 2.1 | 2.1 | 2.2 | 2.2             | 2.5           | 3.2           |
| 24-Feb                                    | 2.2                           | 2.3   | 2.3 | 2.3                            | 2.4 | 2.5 | 2.5  | 2.5  | 2.6  | 2.7 | 2.5 | 1.9 | 1.7 | 1.4 | 1.1 | 0.9  | 0.7  | 0.5  | 0.3  | 0.1 | 0.0 | 0.0 | 0.0 | 0.0             | 1.5           | 2.7           |
| 25-Feb                                    | 0.0                           | 0.0   | 0.0 | 0.0                            | 0.0 | 0.0 | 0.0  | 0.0  | 0.0  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.0           | 0.0           |
| 26-Feb                                    | 0.0                           | 0.0   | 0.0 | 0.0                            | 0.0 | 0.0 | 0.0  | 0.0  | 0.0  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.0           | 0.0           |
| 27-Feb                                    | 0.0                           | 0.0   | 0.0 | 0.0                            | 0.0 | 0.0 | 0.0  | 0.0  | 0.0  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.0           | 0.0           |
| 28-Feb                                    | 0.0                           | 0.0   | 0.0 | 0.1                            | 0.2 | 0.3 | 0.3  | 0.4  | 0.5  | 0.5 | 0.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.1           | 0.5           |
|   |                               |   |     |                                |     |     |      |      |      |     |     |     |     |     |     |      |      |      |      |     |     |     |     | Diurnal Average |               |               |
|   |                               |   |     |                                |     |     |      |      |      |     |     |     |     |     |     |      |      |      |      |     |     |     |     | Diurnal Maximum |               |               |
| OR - Out of Range                         |                               |   |     |                                |     |     |      |      |      |     |     |     |     |     |     |      |      |      |      |     |     |     |     |                 |               |               |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Leaf Wetness (LW) - %**  
**Fort McKay - Bertha Ganter - February 2023**





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Leaf Wetness (LW) - %  
Fort McKay - Bertha Ganter - February 2023**

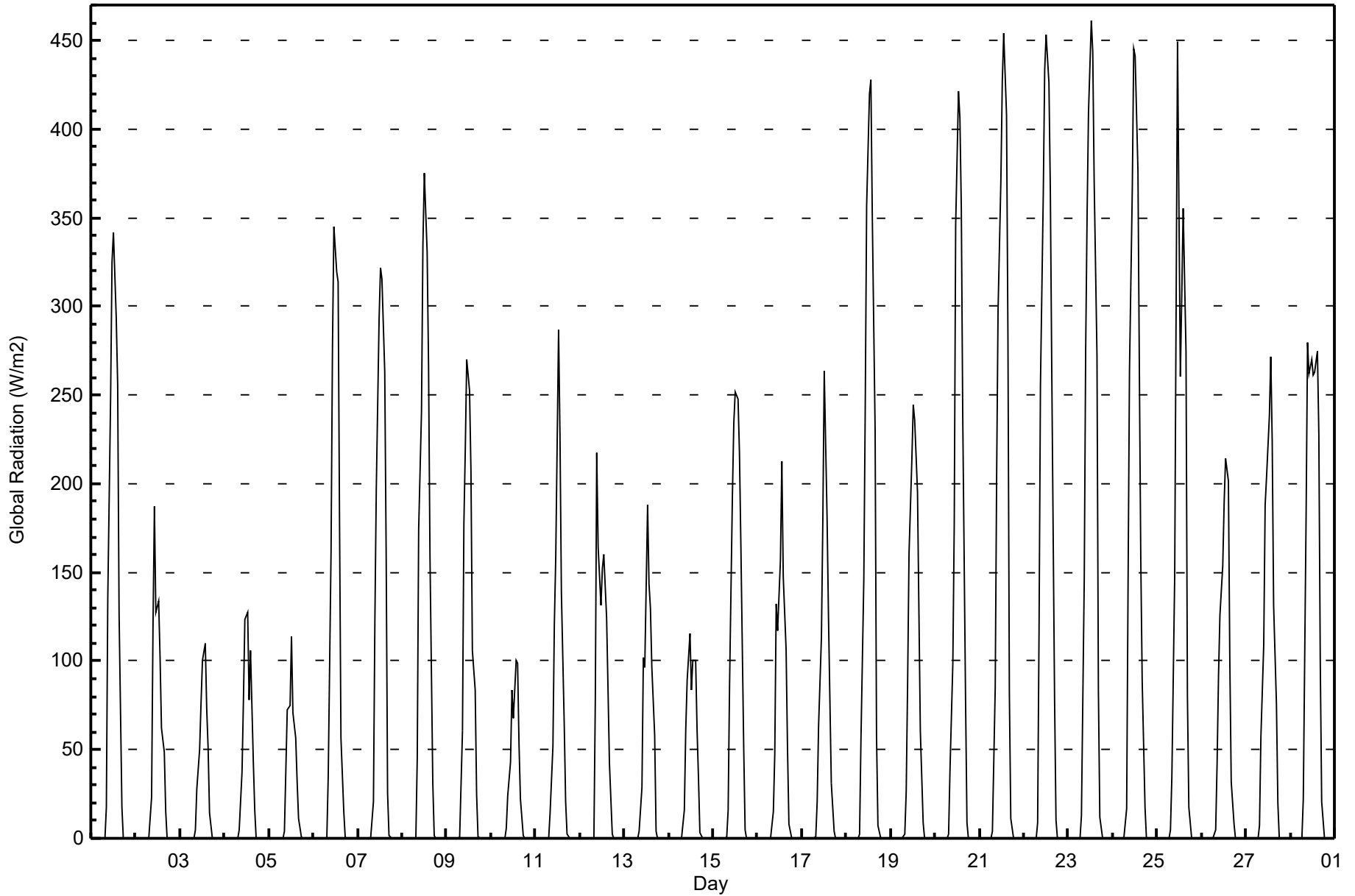
| <b>Concentration Ranges (%)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---------------------------------|------------------------|----------|---------------------|
| 0 - 0.3                         | 276                    | 41.19    | 41.19               |
| 0.4 - 0.5                       | 21                     | 3.13     | 44.33               |
| 0.6 - 0.7                       | 31                     | 4.63     | 48.96               |
| 0.8 - 1.4                       | 23                     | 3.43     | 52.39               |
| 1.5 - 10                        | 311                    | 46.42    | 98.81               |
| > 10                            | 7                      | 1.04     | 99.85               |

Total Number of Valid Hours: 670

Total Number of Hours: 672



| Maximum Value: 461.2 W/m2 on Feb 23 13:00      Maximum Daily Average: 118.3 W/m2 on Feb 23   |                               |     |     |     |     |     |     |      |       |       |       |       |       |       |       |       |       |      |     |     |     |     | Hours in Service:         | 672   |               |               |
|--|-------------------------------|-----|-----|-----|-----|-----|-----|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|-----|-----|-----|-----|---------------------------|-------|---------------|---------------|
| Minimum Value: 0.0 W/m2 on Feb 1 01:00      Minimum Daily Average: 19.8 W/m2 on Feb 5  |                               |     |     |     |     |     |     |      |       |       |       |       |       |       |       |       |       |      |     |     |     |     | Hours of Data:            | 672   |               |               |
| Maximum Diurnal Average: 262.7 W/m2 at hour 13      Minimum Diurnal Average: 0.0 W/m2 at hour 1  |                               |     |     |     |     |     |     |      |       |       |       |       |       |       |       |       |       |      |     |     |     |     | Hours of Missing Data:    | 0     |               |               |
| Monthly Average: 63.22 W/m2      Percentiles: P <sub>1</sub> = 0.0 P <sub>10</sub> = 0.0 Q <sub>1</sub> = 0.0 Median = 0.0 Q <sub>3</sub> = 85.4 P <sub>90</sub> = 251.6 P <sub>99</sub> = 435.7 |                               |     |     |     |     |     |     |      |       |       |       |       |       |       |       |       |       |      |     |     |     |     | Hours of Calibration:     | 0     |               |               |
|  |                               |     |     |     |     |     |     |      |       |       |       |       |       |       |       |       |       |      |     |     |     |     | Percent Operational Time: | 100.0 |               |               |
| Day  | Hourly Period Ending At (MST) |     |     |     |     |     |     |      |       |       |       |       |       |       |       |       |       |      |     |     |     |     |                           |       | Daily Average | Daily Maximum |
|  | 1                             | 2   | 3   | 4   | 5   | 6   | 7   | 8    | 9     | 10    | 11    | 12    | 13    | 14    | 15    | 16    | 17    | 18   | 19  | 20  | 21  | 22  | 23                        | 24    |               |               |
| 1-Feb  | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 17.6  | 135.1 | 248.6 | 325.4 | 341.5 | 293.4 | 256.1 | 126.8 | 17.3  | 0.0  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0                       | 0.0   | 73.4          | 341.5         |
| 2-Feb  | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 23.2  | 119.7 | 186.9 | 127.7 | 134.2 | 101.6 | 62.5  | 48.4  | 15.2  | 0.2  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0                       | 0.0   | 34.2          | 186.9         |
| 3-Feb  | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 5.1   | 27.6  | 49.9  | 76.6  | 100.1 | 109.8 | 73.3  | 51.0  | 14.3  | 0.3  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0                       | 0.0   | 21.2          | 109.8         |
| 4-Feb  | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 4.4   | 37.5  | 77.9  | 123.6 | 127.5 | 78.3  | 105.8 | 43.0  | 16.1  | 0.3  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0                       | 0.0   | 25.6          | 127.5         |
| 5-Feb  | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 4.2   | 38.2  | 72.2  | 75.2  | 113.7 | 71.0  | 56.9  | 32.2  | 11.2  | 0.6  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0                       | 0.0   | 19.8          | 113.7         |
| 6-Feb  | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 34.8  | 161.5 | 276.2 | 344.6 | 319.6 | 314.2 | 178.5 | 56.6  | 15.0  | 0.6  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0                       | 0.0   | 70.9          | 344.6         |
| 7-Feb  | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 20.7  | 121.6 | 196.6 | 292.9 | 322.2 | 315.2 | 263.0 | 160.0 | 25.4  | 1.7  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0                       | 0.0   | 71.6          | 322.2         |
| 8-Feb  | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1  | 45.6  | 174.1 | 240.2 | 334.3 | 375.1 | 330.5 | 266.3 | 159.3 | 30.9  | 1.7  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0                       | 0.0   | 81.6          | 375.1         |
| 9-Feb  | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.4  | 60.7  | 177.3 | 219.7 | 270.3 | 252.3 | 207.2 | 105.6 | 83.9  | 24.8  | 1.1  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0                       | 0.0   | 58.5          | 270.3         |
| 10-Feb   | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 5.2   | 23.8  | 42.9  | 83.5  | 67.5  | 100.6 | 98.6  | 53.7  | 22.4  | 1.9  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0                       | 0.0   | 20.8          | 100.6         |
| 11-Feb   | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1  | 14.4  | 52.0  | 120.5 | 158.6 | 286.6 | 226.8 | 138.4 | 64.4  | 20.9  | 2.7  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0                       | 0.0   | 45.2          | 286.6         |
| 12-Feb   | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.4  | 77.9  | 217.4 | 164.1 | 131.5 | 152.3 | 160.0 | 124.5 | 83.7  | 42.1  | 2.4  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0                       | 0.0   | 48.2          | 217.4         |
| 13-Feb   | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 4.0   | 28.5  | 102.0 | 96.7  | 188.3 | 143.3 | 129.8 | 96.6  | 57.9  | 4.1  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0                       | 0.0   | 35.5          | 188.3         |
| 14-Feb   | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.3  | 15.6  | 61.1  | 89.5  | 115.6 | 83.6  | 100.3 | 100.6 | 61.7  | 33.9  | 3.5  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0                       | 0.0   | 27.7          | 115.6         |
| 15-Feb   | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.5  | 16.3  | 86.8  | 192.8 | 233.9 | 251.9 | 247.4 | 217.8 | 165.9 | 51.8  | 4.4  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0                       | 0.0   | 61.2          | 251.9         |
| 16-Feb   | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.3  | 15.2  | 48.1  | 131.9 | 117.2 | 156.7 | 212.6 | 147.5 | 106.4 | 51.0  | 7.8  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0                       | 0.0   | 41.4          | 212.6         |
| 17-Feb   | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.8  | 21.1  | 63.6  | 112.9 | 179.6 | 264.0 | 180.9 | 125.2 | 78.2  | 31.0  | 4.0  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0                       | 0.0   | 44.2          | 264.0         |
| 18-Feb   | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.2  | 56.3  | 145.5 | 241.9 | 356.5 | 419.4 | 428.0 | 350.9 | 230.3 | 57.7  | 7.1  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0                       | 0.0   | 95.7          | 428.0         |
| 19-Feb   | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.1  | 26.5  | 87.5  | 160.8 | 213.3 | 244.9 | 235.7 | 195.4 | 127.7 | 60.2  | 8.8  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0                       | 0.0   | 56.8          | 244.9         |
| 20-Feb   | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.7  | 38.7  | 98.7  | 177.6 | 345.8 | 421.2 | 406.4 | 355.0 | 239.1 | 78.4  | 9.1  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0                       | 0.0   | 90.5          | 421.2         |
| 21-Feb   | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 4.2  | 85.0  | 204.6 | 298.2 | 371.4 | 426.8 | 453.9 | 408.2 | 281.4 | 82.0  | 10.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0                       | 0.0   | 109.4         | 453.9         |
| 22-Feb   | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 8.7  | 117.0 | 255.5 | 363.4 | 433.4 | 453.0 | 426.6 | 364.8 | 264.6 | 77.7  | 10.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0                       | 0.0   | 115.6         | 453.0         |
| 23-Feb   | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 13.1 | 146.8 | 275.3 | 351.6 | 409.6 | 461.2 | 443.4 | 371.6 | 272.1 | 83.3  | 12.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0                       | 0.0   | 118.3         | 461.2         |
| 24-Feb   | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 16.5 | 143.4 | 263.8 | 366.5 | 445.0 | 441.5 | 376.2 | 263.2 | 157.2 | 88.6  | 17.7 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0                       | 0.0   | 107.5         | 445.0         |
| 25-Feb   | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 4.5  | 35.3  | 147.9 | 299.2 | 449.0 | 260.6 | 307.0 | 355.2 | 274.7 | 80.2  | 17.3 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0                       | 0.0   | 93.0          | 449.0         |
| 26-Feb   | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 4.5  | 42.2  | 91.2  | 126.1 | 154.0 | 189.2 | 214.7 | 201.2 | 100.3 | 31.8  | 8.0  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0                       | 0.0   | 48.5          | 214.7         |
| 27-Feb   | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 7.2  | 57.2  | 109.0 | 187.7 | 204.3 | 238.5 | 271.5 | 223.8 | 131.8 | 75.7  | 19.6 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0                       | 0.0   | 63.6          | 271.5         |
| 28-Feb   | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 22.7 | 183.1 | 279.4 | 262.2 | 270.2 | 261.1 | 263.1 | 275.1 | 228.2 | 100.0 | 21.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0                       | 0.0   | 90.3          | 279.4         |
|  |                               |     |     |     |     |     |     |      |       |       |       |       |       |       |       |       |       |      |     |     |     |     | Diurnal Average           |       |               |               |
|  |                               |     |     |     |     |     |     |      |       |       |       |       |       |       |       |       |       |      |     |     |     |     | Diurnal Maximum           |       |               |               |







**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Global Radiation (GR) - W/m2**  
**Fort McKay - Bertha Ganter - February 2023**

| <b>Concentration Ranges (W/m2)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|------------------------------------|------------------------|----------|---------------------|
| 0 - 20                             | 434                    | 64.58    | 64.58               |
| 21 - 100                           | 83                     | 12.35    | 76.93               |
| 101 - 300                          | 116                    | 17.26    | 94.20               |
| 301 - 600                          | 39                     | 5.80     | 100.00              |
| 601 - 900                          | 0                      | 0.00     | 100.00              |
| > 900                              | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 672

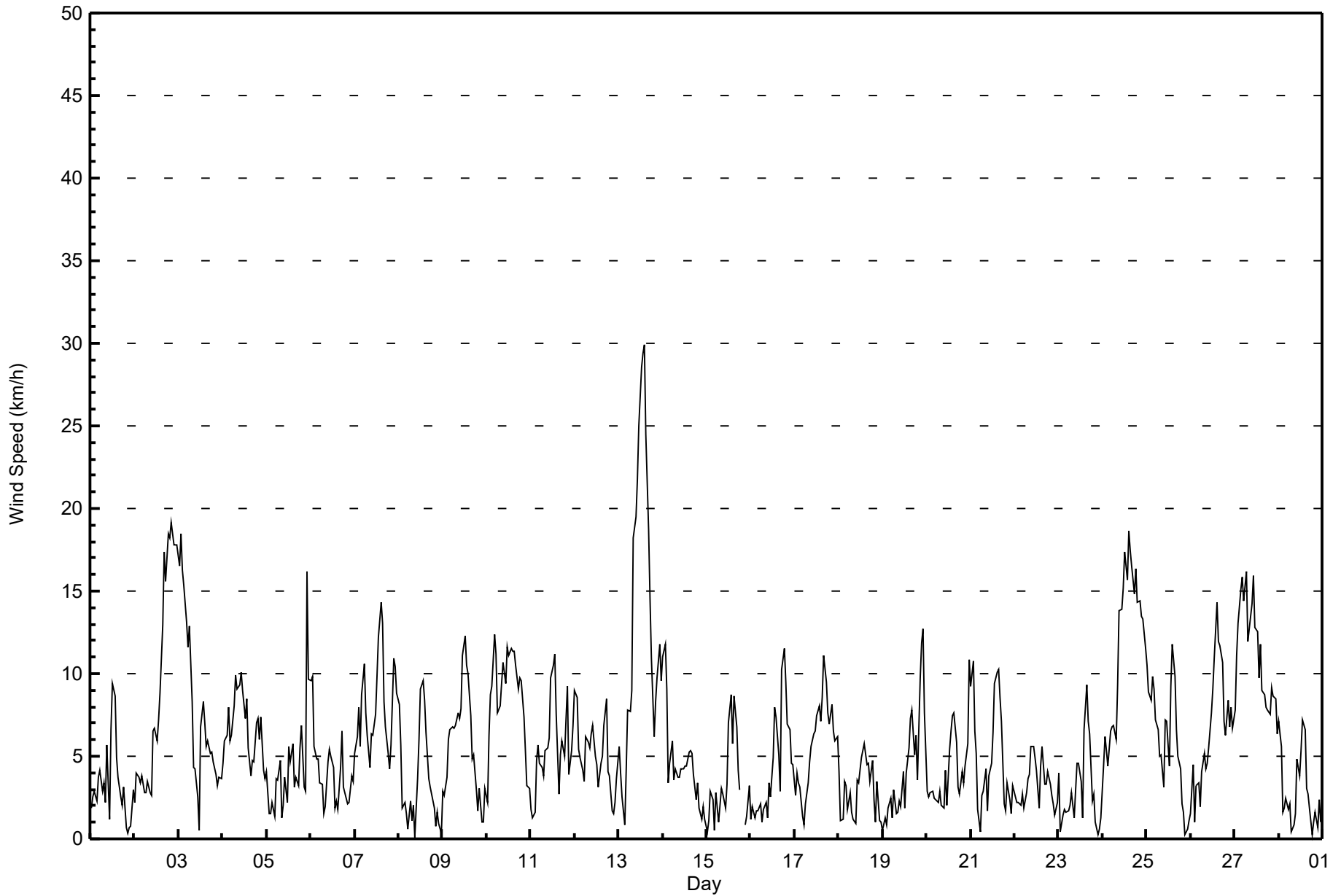
Total Number of Hours: 672



|  |  |                                |
|--|--|--------------------------------|
| Maximum Speed: 30 km/h on Feb 13 15:00             | Maximum Daily Speed Average: 12.2 km/h on Feb 13   | Hours in Service: 672          |
| Minimum Speed Value: 0 km/h on Feb 8 10:00         | Minimum Daily Speed Average: 0.4 km/h on Feb 5   | Hours of Data: 670             |
| Maximum Diurnal Speed Average: 2.4 km/h at hour 18 | Minimum Diurnal Speed Average: 0.4 km/h at hour 3  | Hours of Missing Data: 2       |
| Monthly Average Velocity: 1.0 km/h 3.9 deg         | Percentiles: P <sub>1</sub> = 0 P <sub>10</sub> = 2 Q <sub>1</sub> = 3 Median = 5 Q <sub>3</sub> = 8 P <sub>90</sub> = 12 P <sub>99</sub> = 19 | Percent Operational Time: 99.7 |

| Day   | Hourly Period Ending At (MST) |       |      |       |      |       |      |      |      |      |       |       |       |       |       |       |       |       |       |       |       |       |       |                 | Daily Average | Daily Maximum |
|---|-------------------------------|-------|------|-------|------|-------|------|------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-----------------|---------------|---------------|
|   | 1                             | 2     | 3    | 4     | 5    | 6     | 7    | 8    | 9    | 10   | 11    | 12    | 13    | 14    | 15    | 16    | 17    | 18    | 19    | 20    | 21    | 22    | 23    | 24              |               |               |
| 1-Feb   | NW2                           | WSW3  | NNW3 | WNW2  | NW4  | NNW4  | NW3  | N3   | NNW2 | NNW6 | ENE1  | NW7   | NW9   | N9    | NE5   | E4    | ENE3  | N2    | WSW3  | WNW1  | WNW0  | SSE1  | SW1   | SSW3            | NNW2.1        | NW9           |
| 2-Feb   | SSW2                          | SSW4  | SSW4 | SSW3  | SSW4 | SSW3  | S3   | SSW3 | SSW3 | S3   | S7    | S7    | SSE6  | S7    | SSE9  | SSE13 | SSE17 | SSE16 | SSE18 | SSE18 | SSE19 | SSE18 | SSE18 | SSE18           | S9.0          | SSE19         |
| 3-Feb   | S17                           | S19   | S16  | S15   | S13  | S12   | S13  | S8   | S4   | SSW4 | SSE3  | NNE1  | N7    | N8    | NNE7  | NNE6  | NE6   | NE5   | ENE5  | ENE5  | NE4   | ENE3  | E4    | N4              | SSE3.6        | S19           |
| 4-Feb   | N5                            | N6    | N6   | N8    | N6   | N6    | N8   | N10  | N9   | N9   | N10   | N9    | NNE7  | N8    | N5    | N4    | NNW5  | N5    | N7    | N7    | N6    | NNW7  | NNW4  | NNW4            | N6.7          | N10           |
| 5-Feb   | NW4                           | N2    | SE2  | N2    | NNW1 | N4    | N4   | NNW5 | ENE1 | NW2  | SE4   | SE2   | SSE6  | S5    | SSE6  | SSW3  | S4    | S3    | S5    | S7    | S3    | NNW3  | NNW16 | NW10            | W0.4          | NNW16         |
| 6-Feb   | WNW10                         | W10   | WSW6 | WSW5  | WSW5 | W3    | W3   | W2   | N2   | NE5  | NE5   | NE5   | NE4   | NNE2  | NNE2  | NE2   | NNE4  | N6    | N3    | WNW2  | N2    | SSE2  | S4    | SSE3            | NW1.5         | W10           |
| 7-Feb   | S5                            | S6    | SSE8 | SW6   | W9   | W11   | W8   | WSW6 | WSW4 | SW6  | SW6   | SW8   | WSW10 | W12   | W14   | W13   | W8    | W7    | WSW5  | W4    | NW6   | N11   | N10   | N9              | W5.4          | W14           |
| 8-Feb   | N8                            | NNW6  | W2   | SW2   | WSW2 | WNW1  | NW2  | NW1  | NNW2 | NW0  | SE4   | SSE6  | SSE9  | SSE10 | SSE8  | S6    | S4    | NW3   | NW3   | W2    | WSW1  | WNW2  | SSW1  | NW0             | SSW1.0        | SSE10         |
| 9-Feb   | SW3                           | SW3   | SSW4 | S6    | S7   | S7    | S7   | S7   | S8   | S7   | S8    | S11   | S12   | S11   | S10   | S7    | S5    | N5    | NNW3  | WNW2  | WNW3  | WNW1  | N1    | SSW3            | S4.6          | S12           |
| 10-Feb  | NNE2                          | N6    | N9   | N9    | N12  | NNE11 | N8   | N8   | N9   | N11  | N9    | N12   | N11   | N12   | N11   | N11   | N10   | N9    | N10   | N10   | N7    | N5    | N3    | ENE3            | N8.6          | N12           |
| 11-Feb  | NE2                           | ENE1  | ESE2 | SSE5  | S6   | SSE5  | S4   | S4   | S5   | S5   | SSE6  | S10   | S11   | S11   | S8    | SSW3  | WSW5  | W6    | WNW5  | WNW7  | WNW9  | SW4   | WSW5  | WSW7            | SSW3.7        | S11           |
| 12-Feb  | W9                            | W9    | W5   | SSE5  | S4   | WSW4  | WNW6 | NW6  | NNE6 | N6   | NNE7  | NE5   | ENE4  | N3    | N5    | NNE5  | N7    | NNW8  | N4    | N4    | NNW2  | E2    | N2    | N4              | NNW2.7        | W9            |
| 13-Feb  | NNW6                          | NNW4  | SSW3 | NE1   | SSW4 | W8    | W8   | NNW9 | N18  | N19  | N22   | N25   | N29   | N29   | N30   | N25   | N19   | N15   | N11   | NNE6  | NNE8  | NNE10 | NNE12 | NNE10           | N12.2         | N30           |
| 14-Feb  | NNE11                         | NNE12 | NNE9 | N3    | N5   | N6    | NE4  | ENE4 | ENE4 | ENE4 | ENE4  | ENE4  | ENE4  | NE5   | NE5   | NNE5  | N4    | NW2   | WNW3  | NNW2  | NE1   | NW2   | NW1   | NNE3.9          | NNE12         |               |
| 15-Feb  | WSW0                          | W1    | S3   | SW2   | WSW0 | SSW3  | SW1  | W2   | W3   | WNW3 | NNW2  | ESE3  | SE7   | SSE9  | S6    | SSE9  | S7    | SSE4  | SSW3  | UO    | UO    | SSW1  | NW1   | NNW3            | S2.1          | SSE9          |
| 16-Feb  | W1                            | NW2   | NW1  | NW2   | N2   | NNE2  | ENE1 | SE2  | SSE2 | SE1  | SSE3  | SE3   | S5    | S8    | S7    | SSE5  | NE3   | N10   | NNE11 | NNE10 | NE7   | NNE7  | NNE5  | NNE4            | NE1.5         | NNE11         |
| 17-Feb  | NNE3                          | E4    | ENE3 | E3    | ENE1 | ENE1  | E2   | ENE3 | NE5  | NE6  | NE6   | NE6   | NE7   | NNE8  | NNE7  | NNE9  | NNE11 | NNE10 | NNE8  | NNE7  | N8    | N6    | NW6   | NW6             | NNE5.0        | NNE11         |
| 18-Feb  | N4                            | NW1   | WNW1 | WNW3  | N3   | NW2   | NNW3 | NNW2 | ESE1 | ENE1 | ESE4  | ENE3  | E5    | ENE5  | E6    | ENE5  | NNE5  | N3    | N5    | N2    | W1    | WNW3  | WNW1  | WSW1            | NNE1.6        | E6            |
| 19-Feb  | S1                            | W1    | W1   | NW2   | NW2  | W1    | NW3  | WNW1 | S2   | NNE2 | NNE2  | ENE4  | ENE2  | NE4   | N6    | NNW7  | NW8   | NW5   | NNW6  | NNW4  | N10   | N12   | N13   | N8              | NNW3.6        | N13           |
| 20-Feb  | N3                            | N3    | ENE3 | ESE3  | SSE2 | S2    | SSE2 | SSE3 | SE2  | SSE2 | SSE4  | NE2   | NE5   | NE7   | NE7   | NE8   | NE6   | NNE3  | NNW3  | WNW4  | NW3   | NW4   | NNW6  | N11             | NNE2.2        | N11           |
| 21-Feb  | NNE9                          | NNE11 | N7   | N5    | NE2  | ENE0  | SW3  | W3   | WNW4 | NW2  | NNE4  | ENE5  | NE6   | NNE9  | NNE10 | NNE10 | N9    | NNE7  | N2    | WNW2  | WSW3  | W2    | SSW2  | SSW3            | N3.5          | NNE11         |
| 22-Feb  | SSW3                          | SSW2  | SSW2 | SSW2  | SSW3 | SSW2  | SSW3 | SSW4 | S4   | S6   | SSE6  | SE5   | SSE4  | NNE2  | NE4   | NE6   | NE3   | NNW3  | WNW4  | WNW3  | NW3   | WNW2  | SW1   | WNW2            | SSW0.9        | S6            |
| 23-Feb  | NNW4                          | SW0   | W1   | W2    | SW2  | SSW2  | W2   | WSW3 | WSW1 | SE3  | SE5   | SE5   | SE3   | E1    | SSE7  | SSE9  | SSE7  | S6    | SSE2  | NW3   | NNW1  | W0    | SSW1  | SSW1            | S1.7          | SSE9          |
| 24-Feb  | SSW5                          | SSW6  | SSW5 | S4    | S7   | S7    | S7   | SSW6 | S9   | S14  | SSE14 | SSE15 | S17   | S16   | S19   | S18   | S17   | S15   | SSW16 | S14   | S14   | S13   | S13   | S12             | S11.7         | S19           |
| 25-Feb  | S10                           | S9    | S8   | SSE10 | S9   | S7    | SSE7 | S5   | S5   | SSW3 | W7    | WSW7  | WSW4  | S9    | SSE12 | SSE10 | SSE7  | SSE5  | S4    | S2    | SSE2  | NNE0  | ESE1  | N1              | S5.1          | SSE12         |
| 26-Feb  | N2                            | N5    | SE1  | NNW3  | NNW3 | N2    | N4   | NNE5 | NNE4 | NNE5 | N5    | N8    | N9    | N11   | N14   | N12   | N12   | N11   | N7    | NNE6  | NNE8  | NNE7  | NNE8  | NNE7            | N6.4          | N14           |
| 27-Feb  | N8                            | N11   | N13  | N15   | N16  | N14   | N16  | N12  | N13  | N14  | NNE16 | NNE13 | N13   | NNE10 | NNE12 | NNE9  | NNE9  | NNE8  | NNE8  | NNE9  | N9    | N8    | NNW6  | N11.0           | N16           |               |
| 28-Feb  | NW7                           | NW6   | NW2  | WNW2  | NNW2 | NW2   | NW2  | WNW0 | NW1  | NE2  | NNE5  | NE4   | ENE5  | E7    | E7    | ENE3  | N3    | ENE2  | WSW0  | S1    | SSW2  | WSW1  | SSW2  | SSW1            | NNE1.1        | E7            |
| NW1.4 NW1.2WSW0.4WSW0.5WSW0.7 W1.0WNW1.1 NW1.0 N0.9NNE1.2 NE1.5 NE1.6 NE1.5 NE1.8 NE2.1 NE2.0 NNE1.9 N2.4 N1.6NNW1.2 N1.5 N1.6 N1.8NNW1.4 |                               |       |      |       |      |       |      |      |      |      |       |       |       |       |       |       |       |       |       |       |       |       |       | Diurnal Average |               |               |
| S17 S19 S16 S15 N16 N14 N16 N12 N18 N19 N22 N25 N29 N29 N30 N25 N19 SSE16 SSE18 SSE18 SSE19 SSE18 SSE18 SSE18                             |                               |       |      |       |      |       |      |      |      |      |       |       |       |       |       |       |       |       |       |       |       |       |       | Diurnal Maximum |               |               |

UO - Unstable Operation  
 All monthly, daily, and diurnal averages have been calculated using vector methods





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Wind Speed (WS) - km/h  
Fort McKay - Bertha Ganter - February 2023**

| <b>Wind Speed Ranges (km/h)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---------------------------------|------------------------|----------|---------------------|
| 0 - 5                           | 377                    | 56.27    | 56.27               |
| 6 - 11                          | 224                    | 33.43    | 89.70               |
| 12 - 19                         | 63                     | 9.40     | 99.10               |
| 20 - 28                         | 3                      | 0.45     | 99.55               |
| 29 - 38                         | 3                      | 0.45     | 100.00              |
| > 38                            | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 670

Total Number of Hours: 672



**Wood Buffalo Environmental Association**  
**Frequency Distribution**

**Wind Speed (WS) - km/h**  
**Fort McKay - Bertha Ganter - February 2023**

| <b>Wind Speed</b><br><b>Ranges (km/h)</b> | <b>Wind Direction</b> |     |    |     |    |     |    |     |    |     |    |     |    |     |    |     | <b>Totals</b> |
|---|-----------------------|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|---------------|
|   | N                     | NNE | NE | ENE | E  | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |               |
| 0 - 5                                     | 44                    | 23  | 25 | 31  | 9  | 6   | 12 | 22  | 29 | 39  | 11 | 20  | 21 | 27  | 31 | 27  | 377           |
| 6 - 11                                    | 60                    | 40  | 12 | 0   | 3  | 0   | 1  | 20  | 40 | 2   | 4  | 5   | 12 | 4   | 10 | 11  | 224           |
| 12 - 19                                   | 21                    | 5   | 0  | 0   | 0  | 0   | 0  | 12  | 20 | 1   | 0  | 0   | 2  | 1   | 0  | 1   | 63            |
| 20 - 28                                   | 3                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 3             |
| 29 - 38                                   | 3                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 3             |
| > 38                                      | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| <b>Totals</b>                             | 131                   | 68  | 37 | 31  | 12 | 6   | 13 | 54  | 89 | 42  | 15 | 25  | 35 | 32  | 41 | 39  | 670           |

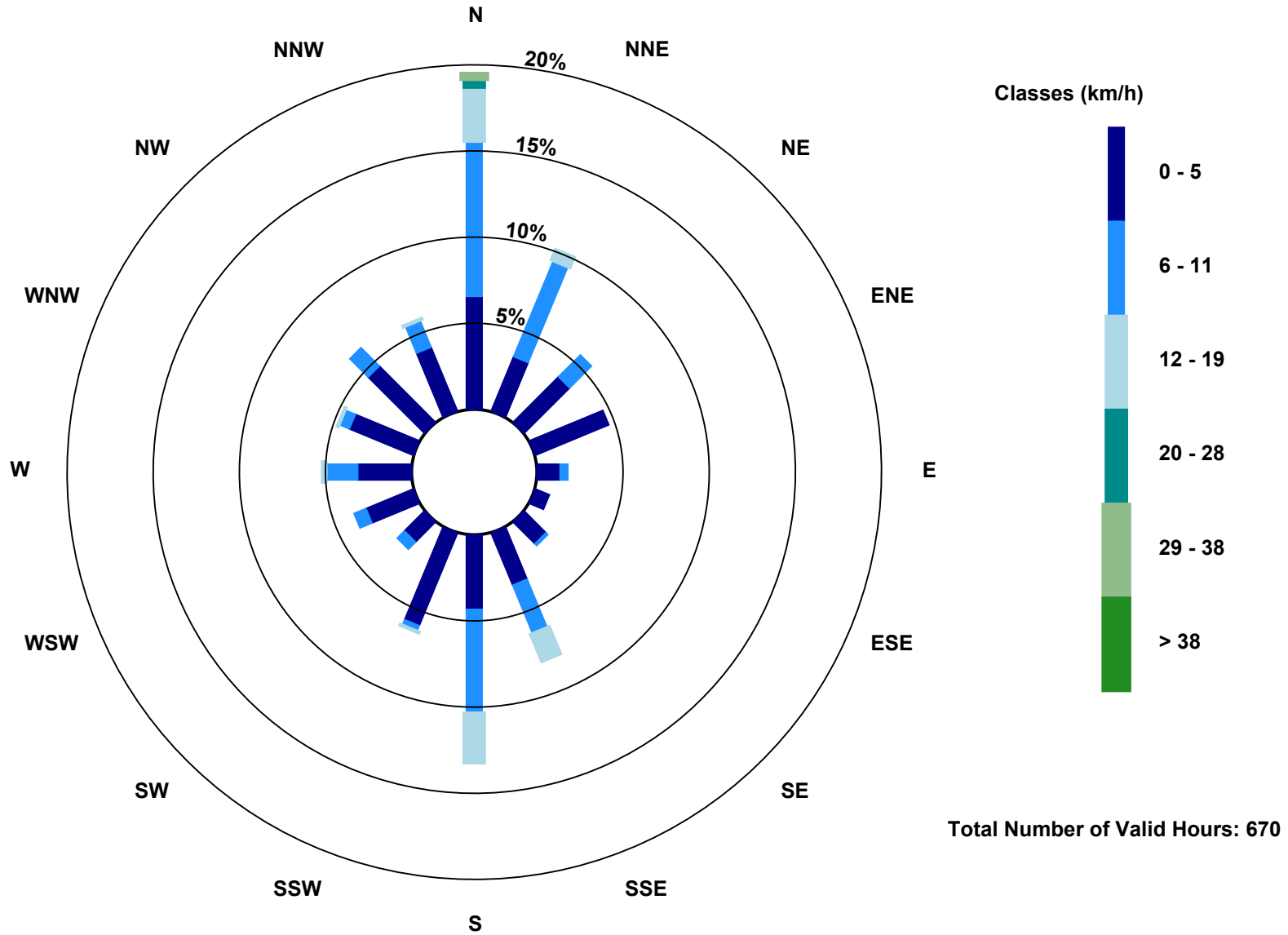
Total Number of Valid Hours: 670

Total Number of Hours: 672



Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Wind Speed (WS) - km/h  
Fort McKay - Bertha Ganter





**Wood Buffalo Environmental Association**  
**Summary of Hour Standard Deviations**

**Wind Speed (WS) - km/h**  
**Fort McKay - Bertha Ganter - February 2023**

| Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0<br>Maximum Value: 8 km/h on Feb 13 14:00<br>Minimum Value: 0 km/h on Feb 8 03:00<br>Percentiles: P <sub>1</sub> = 1 P <sub>10</sub> = 1 Q <sub>1</sub> = 1 Median = 2 Q <sub>3</sub> = 2 P <sub>90</sub> = 3 P <sub>99</sub> = 6 |                               |   |   |   |   |   |   |   |   |    |    |    |    | Hours in Service: 672<br>Hours of Data: 670<br>Hours of Missing Data: 2<br>Hours of Calibration: 0<br>Percent Operational Time: 99.7 |    |    |    |    |    |    |    |    |    |    |               |  |  |
|--|-------------------------------|---|---|---|---|---|---|---|---|----|----|----|----|--|----|----|----|----|----|----|----|----|----|----|---------------|--|--|
| Day  | Hourly Period Ending At (MST) |   |   |   |   |   |   |   |   |    |    |    |    |  |    |    |    |    |    |    |    |    |    |    | Daily Maximum |  |  |
|  | 1                             | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14   | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |               |  |  |
| 1-Feb  | 1                             | 2 | 2 | 2 | 1 | 1 | 2 | 2 | 1 | 2  | 1  | 4  | 3  | 4  | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 4             |  |  |
| 2-Feb  | 1                             | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2  | 2  | 2  | 1  | 2  | 3  | 4  | 4  | 4  | 4  | 4  | 4  | 4  | 4  | 4  | 4             |  |  |
| 3-Feb  | 4                             | 4 | 4 | 3 | 3 | 2 | 3 | 3 | 1 | 2  | 1  | 1  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 1  | 1  | 1  | 1  | 1  | 4             |  |  |
| 4-Feb  | 1                             | 1 | 1 | 2 | 1 | 1 | 2 | 2 | 1 | 2  | 2  | 2  | 2  | 2  | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 2             |  |  |
| 5-Feb  | 1                             | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2  | 2  | 2  | 1  | 2  | 2  | 2  | 1  | 1  | 1  | 1  | 2  | 2  | 5  | 4  | 5             |  |  |
| 6-Feb  | 4                             | 4 | 3 | 2 | 2 | 1 | 1 | 1 | 2 | 2  | 2  | 1  | 1  | 1  | 1  | 1  | 2  | 2  | 1  | 2  | 1  | 1  | 1  | 1  | 4             |  |  |
| 7-Feb  | 1                             | 2 | 2 | 3 | 4 | 5 | 3 | 3 | 1 | 2  | 2  | 3  | 4  | 5  | 6  | 5  | 4  | 3  | 2  | 2  | 1  | 6  | 3  | 2  | 6             |  |  |
| 8-Feb  | 2                             | 2 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1  | 1  | 2  | 2  | 1  | 1  | 1  | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 2             |  |  |
| 9-Feb  | 2                             | 1 | 1 | 1 | 1 | 2 | 2 | 1 | 1 | 1  | 2  | 3  | 3  | 3  | 3  | 1  | 3  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 3             |  |  |
| 10-Feb   | 2                             | 2 | 1 | 2 | 2 | 3 | 2 | 2 | 2 | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 1  | 1  | 1  | 3             |  |  |
| 11-Feb   | 1                             | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2  | 1  | 2  | 3  | 2  | 2  | 2  | 4  | 2  | 2  | 3  | 4  | 1  | 2  | 3  | 4             |  |  |
| 12-Feb   | 4                             | 4 | 2 | 1 | 1 | 2 | 2 | 2 | 2 | 2  | 2  | 2  | 1  | 1  | 1  | 2  | 1  | 2  | 1  | 1  | 2  | 1  | 2  | 2  | 4             |  |  |
| 13-Feb   | 1                             | 2 | 1 | 1 | 1 | 4 | 3 | 5 | 6 | 4  | 6  | 6  | 7  | 8  | 6  | 6  | 5  | 4  | 3  | 4  | 3  | 3  | 4  | 3  | 8             |  |  |
| 14-Feb   | 3                             | 3 | 3 | 1 | 1 | 1 | 1 | 1 | 1 | 1  | 2  | 1  | 1  | 1  | 2  | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 3             |  |  |
| 15-Feb   | 1                             | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1  | 1  | 1  | 1  | 2  | 2  | 1  | 1  | 2  | 1  | UO | UO | 1  | 1  | 1  | 2             |  |  |
| 16-Feb   | 1                             | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1  | 1  | 1  | 2  | 2  | 2  | 1  | 2  | 3  | 3  | 3  | 2  | 2  | 1  | 1  | 3             |  |  |
| 17-Feb   | 1                             | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2  | 2  | 2  | 3  | 2  | 3  | 3  | 3  | 3  | 2  | 2  | 1  | 1  | 1  | 1  | 3             |  |  |
| 18-Feb   | 1                             | 2 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1  | 1  | 1  | 2  | 2  | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 2  | 1  | 2             |  |  |
| 19-Feb   | 1                             | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 2 | 2  | 1  | 1  | 1  | 2  | 2  | 1  | 2  | 1  | 1  | 3  | 2  | 3  | 2  | 3  | 3             |  |  |
| 20-Feb   | 1                             | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1  | 1  | 1  | 2  | 2  | 2  | 2  | 2  | 1  | 1  | 2  | 1  | 2  | 3  | 3  | 3             |  |  |
| 21-Feb   | 2                             | 3 | 2 | 2 | 1 | 1 | 1 | 1 | 2 | 1  | 2  | 2  | 2  | 3  | 3  | 4  | 3  | 3  | 1  | 1  | 1  | 1  | 2  | 1  | 4             |  |  |
| 22-Feb   | 1                             | 1 | 1 | 1 | 2 | 1 | 2 | 1 | 1 | 1  | 1  | 1  | 1  | 1  | 2  | 2  | 1  | 1  | 1  | 1  | 2  | 1  | 1  | 2  | 2             |  |  |
| 23-Feb   | 1                             | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1  | 1  | 1  | 2  | 1  | 1  | 1  | 2  | 1  | 2  | 1  | 1  | 1  | 1  | 1  | 2             |  |  |
| 24-Feb   | 2                             | 2 | 2 | 2 | 2 | 1 | 2 | 2 | 3 | 3  | 3  | 5  | 5  | 5  | 5  | 5  | 4  | 5  | 4  | 3  | 3  | 3  | 3  | 3  | 5             |  |  |
| 25-Feb   | 2                             | 2 | 2 | 2 | 2 | 1 | 3 | 1 | 1 | 2  | 3  | 3  | 2  | 3  | 2  | 2  | 1  | 1  | 1  | 1  | 2  | 1  | 1  | 1  | 3             |  |  |
| 26-Feb   | 1                             | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1  | 2  | 2  | 2  | 2  | 3  | 3  | 2  | 2  | 2  | 2  | 3  | 2  | 2  | 2  | 3             |  |  |
| 27-Feb   | 2                             | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 4  | 4  | 4  | 4  | 3  | 3  | 3  | 3  | 2  | 2  | 2  | 3  | 2  | 2  | 1  | 4             |  |  |
| 28-Feb   | 1                             | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1  | 2  | 2  | 2  | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 2             |  |  |
|  |                               |   |   |   |   |   |   |   |   |    |    |    |    | Diurnal Maximum  |    |    |    |    |    |    |    |    |    |    |               |  |  |
| UO - Unstable Operation  |                               |   |   |   |   |   |   |   |   |    |    |    |    |  |    |    |    |    |    |    |    |    |    |    |               |  |  |



**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

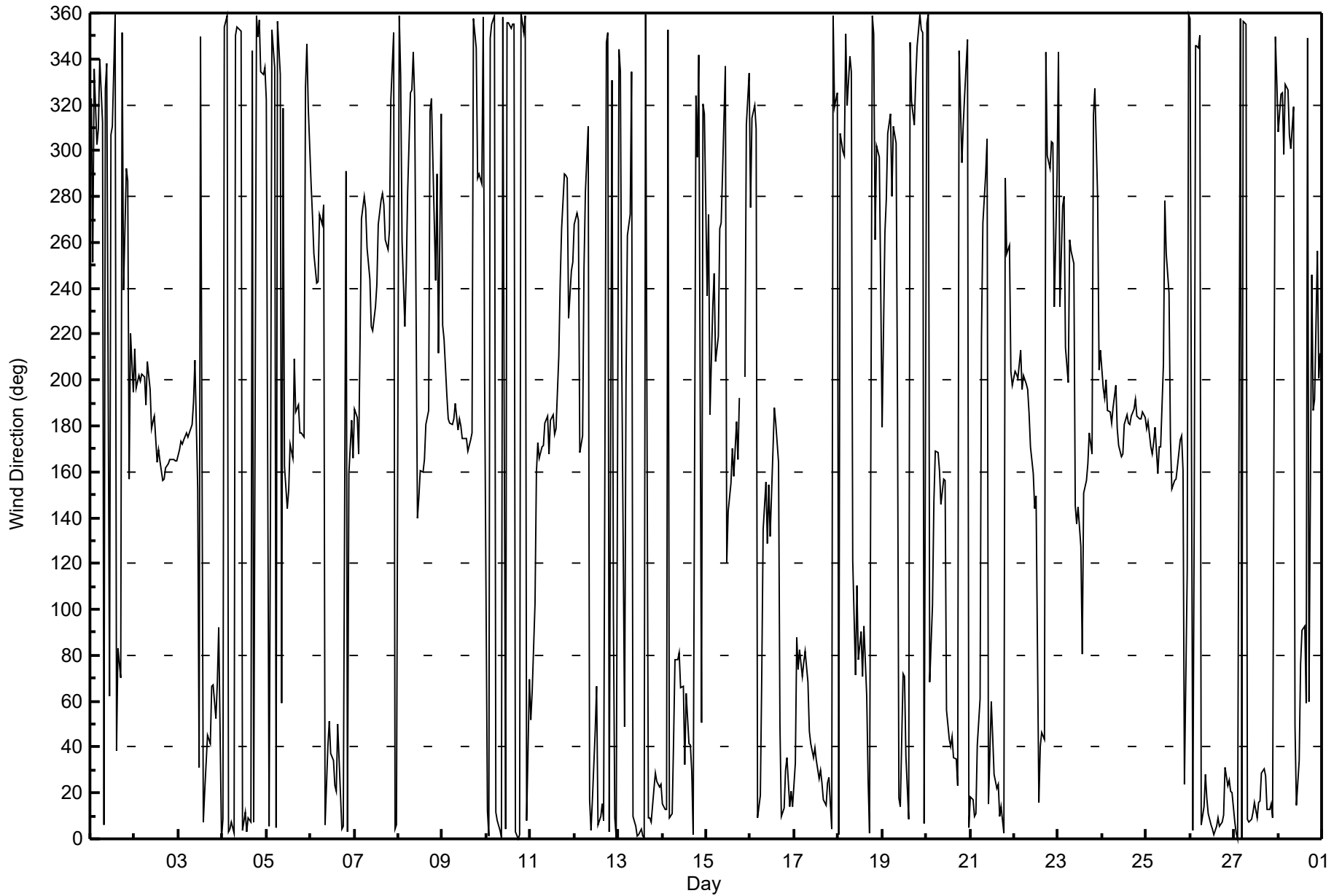
**Wind Direction (WD) - deg**  
**Fort McKay - Bertha Ganter - February 2023**

|   |                                |
|---|--------------------------------|
| Direction of Maximum Speed: 1 deg on Feb 13 15:00           | Hours in Service: 672          |
| Direction of Maximum Daily Speed Average: 1.9 deg on Feb 13 | Hours of Data: 670             |
| Direction of Minimum Speed: 322 deg on Feb 8 10:00          | Hours of Missing Data: 2       |
| Direction of Minimum Daily Speed Average: 0.4 deg on Feb 5  | Percent Operational Time: 99.7 |
| Monthly Average Direction: 3.9 deg                          |                                |

| Day    | Hourly Period Ending At (MST) |       |       |       |       |       |       |       |     |      |      |      |      |      |      |      |      |     |       |       |       |       |       |       | Daily Average |
|--------|-------------------------------|-------|-------|-------|-------|-------|-------|-------|-----|------|------|------|------|------|------|------|------|-----|-------|-------|-------|-------|-------|-------|---------------|
|        | 1                             | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9   | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18  | 19    | 20    | 21    | 22    | 23    | 24    |               |
| 1-Feb  | 323                           | 251   | 336   | 302   | 309   | 340   | 312   | 6     | 327 | 338  | 62   | 307  | 311  | 360  | 38   | 83   | 70   | 351 | 239   | 292   | 287   | 157   | 220   | 194   | 332.2         |
| 2-Feb  | 213                           | 196   | 202   | 199   | 203   | 202   | 189   | 208   | 196 | 179  | 182  | 184  | 164  | 169  | 165  | 156  | 157  | 162 | 163   | 165   | 165   | 166   | 165   | 165   | 169.2         |
| 3-Feb  | 170                           | 173   | 172   | 174   | 177   | 175   | 177   | 180   | 190 | 208  | 153  | 31   | 350  | 7    | 21   | 33   | 45   | 42  | 67    | 67    | 52    | 68    | 92    | 0     | 151.1         |
| 4-Feb  | 8                             | 354   | 359   | 3     | 4     | 7     | 3     | 350   | 354 | 353  | 352  | 4    | 12   | 3    | 9    | 7    | 344  | 7   | 359   | 350   | 357   | 334   | 333   | 336   | 357.0         |
| 5-Feb  | 322                           | 5     | 146   | 353   | 336   | 5     | 356   | 333   | 59  | 318  | 162  | 144  | 152  | 172  | 166  | 209  | 186  | 189 | 177   | 177   | 175   | 328   | 347   | 319   | 272.2         |
| 6-Feb  | 285                           | 272   | 255   | 242   | 243   | 272   | 268   | 276   | 6   | 40   | 52   | 37   | 34   | 23   | 21   | 50   | 19   | 4   | 6     | 291   | 3     | 159   | 182   | 166   | 317.4         |
| 7-Feb  | 187                           | 184   | 168   | 217   | 270   | 280   | 274   | 258   | 244 | 223  | 221  | 232  | 241  | 268  | 278  | 281  | 277  | 261 | 257   | 265   | 322   | 352   | 4     | 6     | 267.4         |
| 8-Feb  | 359                           | 333   | 260   | 223   | 247   | 282   | 325   | 326   | 343 | 322  | 140  | 149  | 161  | 160  | 166  | 180  | 187  | 317 | 323   | 270   | 243   | 290   | 212   | 316   | 193.5         |
| 9-Feb  | 224                           | 218   | 193   | 183   | 181   | 181   | 183   | 190   | 178 | 183  | 180  | 175  | 175  | 174  | 169  | 174  | 177  | 358 | 345   | 288   | 290   | 285   | 358   | 199   | 184.1         |
| 10-Feb | 12                            | 1     | 349   | 355   | 359   | 12    | 8     | 4     | 1   | 358  | 5    | 356  | 356  | 353  | 355  | 355  | 3    | 0   | 2     | 360   | 351   | 359   | 8     | 69    | 0.1           |
| 11-Feb | 52                            | 65    | 103   | 160   | 173   | 166   | 171   | 172   | 181 | 185  | 168  | 182  | 185  | 176  | 179  | 211  | 243  | 266 | 290   | 289   | 288   | 227   | 248   | 251   | 204.4         |
| 12-Feb | 268                           | 272   | 270   | 168   | 176   | 249   | 282   | 311   | 17  | 4    | 17   | 47   | 66   | 6    | 10   | 15   | 8    | 347 | 352   | 3     | 331   | 99    | 9     | 1     | 340.5         |
| 13-Feb | 344                           | 334   | 208   | 49    | 197   | 263   | 272   | 334   | 10  | 6    | 1    | 2    | 4    | 1    | 1    | 360  | 9    | 9   | 7     | 22    | 29    | 25    | 22    | 24    | 1.9           |
| 14-Feb | 15                            | 13    | 13    | 353   | 9     | 11    | 43    | 78    | 78  | 81   | 66   | 67   | 32   | 63   | 41   | 41   | 29   | 2   | 324   | 297   | 341   | 51    | 320   | 316   | 25.9          |
| 15-Feb | 237                           | 272   | 185   | 232   | 246   | 208   | 219   | 266   | 269 | 290  | 337  | 120  | 143  | 155  | 170  | 158  | 182  | 166 | 192   | UO    | UO    | 201   | 311   | 334   | 182.2         |
| 16-Feb | 275                           | 314   | 320   | 309   | 9     | 19    | 71    | 135   | 155 | 129  | 154  | 132  | 169  | 188  | 181  | 164  | 50   | 10  | 13    | 30    | 35    | 14    | 21    | 14    | 43.5          |
| 17-Feb | 33                            | 88    | 74    | 82    | 71    | 77    | 81    | 68    | 47  | 42   | 36   | 40   | 34   | 26   | 30   | 25   | 17   | 15  | 24    | 27    | 4     | 359   | 319   | 325   | 26.6          |
| 18-Feb | 2                             | 307   | 300   | 298   | 351   | 320   | 341   | 334   | 122 | 71   | 111  | 78   | 90   | 71   | 93   | 62   | 26   | 2   | 359   | 351   | 261   | 302   | 297   | 241   | 24.8          |
| 19-Feb | 179                           | 264   | 279   | 307   | 316   | 280   | 310   | 303   | 188 | 18   | 14   | 72   | 71   | 36   | 9    | 347  | 322  | 311 | 331   | 345   | 359   | 353   | 351   | 7     | 348.7         |
| 20-Feb | 356                           | 359   | 68    | 102   | 147   | 169   | 168   | 161   | 146 | 157  | 156  | 56   | 43   | 40   | 44   | 35   | 34   | 23  | 344   | 295   | 312   | 325   | 348   | 5     | 29.7          |
| 21-Feb | 19                            | 17    | 10    | 11    | 41    | 61    | 219   | 269   | 290 | 305  | 15   | 60   | 45   | 28   | 22   | 24   | 10   | 14  | 3     | 288   | 255   | 259   | 204   | 198   | 11.2          |
| 22-Feb | 204                           | 203   | 201   | 213   | 196   | 202   | 198   | 196   | 185 | 171  | 160  | 144  | 149  | 16   | 40   | 46   | 43   | 343 | 298   | 292   | 304   | 303   | 232   | 289   | 193.2         |
| 23-Feb | 343                           | 232   | 276   | 280   | 214   | 199   | 261   | 256   | 251 | 145  | 137  | 145  | 127  | 81   | 150  | 156  | 164  | 177 | 168   | 316   | 327   | 279   | 204   | 213   | 172.3         |
| 24-Feb | 196                           | 192   | 200   | 187   | 186   | 181   | 188   | 198   | 179 | 172  | 166  | 168  | 180  | 185  | 181  | 181  | 185  | 187 | 192   | 184   | 183   | 183   | 186   | 184   | 182.7         |
| 25-Feb | 179                           | 182   | 171   | 168   | 173   | 179   | 159   | 171   | 207 | 278  | 255  | 238  | 174  | 152  | 156  | 157  | 162  | 174 | 175   | 160   | 24    | 117   | 359   |       | 177.3         |
| 26-Feb | 358                           | 4     | 143   | 346   | 345   | 350   | 6     | 14    | 28  | 18   | 11   | 6    | 4    | 2    | 5    | 9    | 5    | 7   | 10    | 31    | 23    | 25    | 21    | 20    | 10.5          |
| 27-Feb | 7                             | 2     | 0     | 358   | 0     | 356   | 355   | 9     | 7   | 9    | 12   | 16   | 9    | 16   | 17   | 29   | 30   | 27  | 13    | 13    | 15    | 9     | 350   | 330   | 7.4           |
| 28-Feb | 308                           | 325   | 325   | 298   | 329   | 326   | 307   | 301   | 319 | 50   | 15   | 34   | 76   | 91   | 93   | 59   | 349  | 60  | 246   | 187   | 192   | 256   | 201   | 212   | 17.4          |
|        | 322.3                         | 310.4 | 244.8 | 244.8 | 255.8 | 280.4 | 283.1 | 309.4 | 8.2 | 13.2 | 46.6 | 53.5 | 55.6 | 42.8 | 51.9 | 49.0 | 27.2 | 3.6 | 351.6 | 341.9 | 351.0 | 354.9 | 350.7 | 340.9 |               |
|        | Diurnal Average               |       |       |       |       |       |       |       |     |      |      |      |      |      |      |      |      |     |       |       |       |       |       |       |               |

UO - Unstable Operation  
 All monthly, daily, and diurnal averages have been calculated using vector methods







**Wood Buffalo Environmental Association**  
**Summary of Hour Standard Deviations**

**Wind Direction (WD) - deg**  
**Fort McKay - Bertha Ganter - February 2023**

| Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0<br>Maximum Value: 99 deg on Feb 3 12:00<br>Minimum Value: 8 deg on Feb 19 19:00<br>Percentiles: P <sub>1</sub> = 11 P <sub>10</sub> = 13 Q <sub>1</sub> = 16 Median = 24 Q <sub>3</sub> = 41 P <sub>90</sub> = 66 P <sub>99</sub> = 89 |                               |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    | Hours in Service: 672<br>Hours of Data: 670<br>Hours of Missing Data: 2<br>Hours of Calibration: 0<br>Percent Operational Time: 99.7 |    |    |    |    |    |               |  |
|--|-------------------------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|--|----|----|----|----|----|---------------|--|
| Day  | Hourly Period Ending At (MST) |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |  |    |    |    |    |    | Daily Maximum |  |
|  | 1                             | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19   | 20 | 21 | 22 | 23 | 24 |               |  |
| 1-Feb  | 53                            | 33 | 52 | 52 | 22 | 22 | 67 | 43 | 25 | 22 | 68 | 69 | 19 | 31 | 44 | 40 | 22 | 35 | 33   | 86 | 87 | 73 | 82 | 20 | 87            |  |
| 2-Feb  | 32                            | 22 | 21 | 18 | 14 | 25 | 22 | 20 | 60 | 40 | 17 | 22 | 18 | 19 | 16 | 15 | 13 | 15 | 13   | 12 | 12 | 13 | 12 | 12 | 60            |  |
| 3-Feb  | 13                            | 14 | 13 | 13 | 14 | 13 | 13 | 18 | 21 | 36 | 58 | 99 | 28 | 18 | 23 | 23 | 28 | 28 | 32   | 36 | 32 | 28 | 30 | 32 | 99            |  |
| 4-Feb  | 13                            | 11 | 13 | 12 | 12 | 11 | 13 | 12 | 13 | 12 | 14 | 17 | 26 | 14 | 30 | 30 | 17 | 18 | 12   | 13 | 19 | 13 | 28 | 19 | 30            |  |
| 5-Feb  | 13                            | 42 | 53 | 34 | 51 | 33 | 20 | 36 | 55 | 68 | 55 | 81 | 22 | 70 | 52 | 66 | 45 | 41 | 15   | 14 | 54 | 65 | 13 | 31 | 81            |  |
| 6-Feb  | 32                            | 28 | 40 | 39 | 38 | 34 | 36 | 80 | 83 | 31 | 31 | 23 | 23 | 74 | 52 | 54 | 24 | 16 | 18   | 38 | 37 | 43 | 16 | 26 | 83            |  |
| 7-Feb  | 24                            | 28 | 16 | 50 | 39 | 27 | 28 | 36 | 40 | 33 | 51 | 47 | 39 | 36 | 31 | 29 | 35 | 48 | 51   | 68 | 32 | 44 | 15 | 12 | 68            |  |
| 8-Feb  | 12                            | 23 | 59 | 49 | 62 | 76 | 25 | 38 | 32 | 94 | 11 | 10 | 15 | 12 | 15 | 16 | 33 | 29 | 33   | 57 | 81 | 40 | 77 | 69 | 94            |  |
| 9-Feb  | 35                            | 38 | 18 | 15 | 11 | 14 | 14 | 16 | 10 | 11 | 13 | 12 | 13 | 14 | 13 | 12 | 67 | 16 | 19   | 78 | 33 | 74 | 69 | 48 | 78            |  |
| 10-Feb   | 70                            | 17 | 13 | 14 | 14 | 15 | 14 | 13 | 14 | 13 | 14 | 12 | 14 | 13 | 14 | 13 | 14 | 15 | 15   | 15 | 14 | 16 | 25 | 30 | 70            |  |
| 11-Feb   | 21                            | 52 | 81 | 12 | 14 | 17 | 16 | 32 | 15 | 41 | 21 | 15 | 16 | 14 | 16 | 62 | 57 | 43 | 25   | 22 | 24 | 22 | 32 | 47 | 81            |  |
| 12-Feb   | 38                            | 41 | 47 | 29 | 48 | 36 | 30 | 28 | 27 | 17 | 17 | 31 | 40 | 41 | 21 | 26 | 16 | 10 | 19   | 16 | 49 | 84 | 40 | 65 | 84            |  |
| 13-Feb   | 21                            | 38 | 36 | 87 | 27 | 46 | 35 | 40 | 18 | 17 | 16 | 18 | 17 | 19 | 18 | 16 | 18 | 17 | 15   | 30 | 21 | 18 | 19 | 20 | 87            |  |
| 14-Feb   | 16                            | 17 | 17 | 28 | 16 | 12 | 33 | 24 | 26 | 27 | 31 | 34 | 26 | 32 | 30 | 27 | 19 | 19 | 36   | 19 | 30 | 36 | 48 | 24 | 48            |  |
| 15-Feb   | 94                            | 79 | 42 | 31 | 85 | 18 | 81 | 31 | 35 | 43 | 81 | 23 | 11 | 18 | 32 | 14 | 15 | 23 | 24   | UO | UO | 70 | 72 | 24 | 94            |  |
| 16-Feb   | 35                            | 39 | 52 | 45 | 43 | 35 | 75 | 63 | 53 | 57 | 31 | 43 | 38 | 24 | 18 | 20 | 64 | 15 | 16   | 22 | 31 | 19 | 21 | 14 | 75            |  |
| 17-Feb   | 47                            | 19 | 24 | 29 | 70 | 59 | 45 | 30 | 30 | 28 | 25 | 24 | 26 | 25 | 23 | 22 | 16 | 15 | 20   | 20 | 12 | 14 | 11 | 13 | 70            |  |
| 18-Feb   | 15                            | 70 | 67 | 15 | 17 | 74 | 30 | 71 | 19 | 47 | 22 | 45 | 36 | 33 | 27 | 34 | 18 | 14 | 15   | 55 | 65 | 22 | 80 | 82 | 82            |  |
| 19-Feb   | 71                            | 39 | 51 | 41 | 28 | 33 | 39 | 80 | 60 | 59 | 58 | 28 | 68 | 35 | 27 | 15 | 13 | 15 | 8  | 20 | 13 | 12 | 12 | 13 | 80            |  |
| 20-Feb   | 26                            | 30 | 40 | 13 | 22 | 41 | 45 | 24 | 55 | 71 | 22 | 66 | 30 | 27 | 30 | 22 | 20 | 20 | 23   | 15 | 25 | 22 | 25 | 13 | 71            |  |
| 21-Feb   | 15                            | 15 | 15 | 23 | 33 | 75 | 41 | 21 | 17 | 57 | 62 | 47 | 35 | 23 | 23 | 22 | 23 | 22 | 31   | 48 | 15 | 54 | 78 | 17 | 78            |  |
| 22-Feb   | 29                            | 30 | 59 | 66 | 56 | 57 | 56 | 29 | 22 | 12 | 17 | 15 | 24 | 70 | 35 | 28 | 28 | 15 | 11   | 24 | 41 | 62 | 69 | 58 | 70            |  |
| 23-Feb   | 30                            | 93 | 50 | 52 | 54 | 63 | 41 | 30 | 80 | 31 | 11 | 12 | 44 | 83 | 17 | 11 | 13 | 12 | 62   | 20 | 52 | 92 | 83 | 81 | 93            |  |
| 24-Feb   | 37                            | 15 | 13 | 28 | 16 | 14 | 17 | 15 | 13 | 11 | 12 | 12 | 19 | 20 | 16 | 16 | 16 | 16 | 19   | 16 | 15 | 15 | 14 | 14 | 37            |  |
| 25-Feb   | 14                            | 18 | 15 | 10 | 12 | 15 | 30 | 34 | 15 | 68 | 43 | 46 | 56 | 29 | 13 | 12 | 11 | 10 | 18   | 50 | 73 | 80 | 62 | 60 | 80            |  |
| 26-Feb   | 21                            | 14 | 61 | 36 | 25 | 70 | 16 | 16 | 41 | 19 | 21 | 15 | 15 | 16 | 15 | 15 | 14 | 13 | 16   | 27 | 18 | 18 | 17 | 14 | 70            |  |
| 27-Feb   | 12                            | 12 | 12 | 14 | 14 | 14 | 13 | 16 | 16 | 16 | 17 | 17 | 17 | 23 | 20 | 22 | 23 | 20 | 17   | 15 | 16 | 14 | 15 | 10 | 23            |  |
| 28-Feb   | 11                            | 21 | 26 | 15 | 31 | 23 | 20 | 91 | 74 | 36 | 28 | 51 | 33 | 19 | 19 | 52 | 23 | 19 | 91   | 75 | 56 | 80 | 43 | 55 | 91            |  |
|  | 94                            | 93 | 81 | 87 | 85 | 76 | 81 | 91 | 83 | 94 | 81 | 99 | 68 | 83 | 52 | 66 | 67 | 48 | 91   | 86 | 87 | 92 | 83 | 82 |               |  |
| Diurnal Maximum  |                               |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |  |    |    |    |    |    |               |  |
| UO - Unstable Operation  |                               |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |  |    |    |    |    |    |               |  |



## WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY  
MONITORING PROGRAM  
MONTHLY REPORT

### **AMS02 MILDRED LAKE FEBRUARY 2023**

Operations, Data Collection,  
QA/QC, Data Validation and Reporting by:  
Wood Buffalo Environmental Association  
Fort McMurray, Alberta

March 31, 2023

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - MILDRED LAKE (AMS02)  
FEBRUARY 2023

MONTHLY SUMMARY

| Parameter                         | Hours of<br>Data | Hours of<br>Calibration | Hours<br>without Data | Operational<br>Time | Maximum<br>1-Hour Value | 1-Hour<br>Exceedances | Maximum<br>24-Hour Value | 24-Hour<br>Exceedances |
|-----------------------------------|------------------|-------------------------|-----------------------|---------------------|-------------------------|-----------------------|--------------------------|------------------------|
| SO2 (ppb) Average                 | 641              | 31                      | 31                    | 100                 | 53.8                    | 0                     | 9.5                      | 0                      |
| H2S (ppb) Average                 | 639              | 33                      | 33                    | 100                 | 9.4                     | 0                     | 2.8                      | 0                      |
| THC (ppm) Average                 | 641              | 31                      | 31                    | 100                 | 4.3                     | -                     | 3.1                      | -                      |
| NMHC(ppm) Average                 | 641              | 31                      | 31                    | 100                 | 0.303                   | -                     | 0.151                    | -                      |
| CH4(ppm) Average                  | 641              | 31                      | 31                    | 100                 | 4                       | -                     | 2.9                      | -                      |
| Temperature (C) Average           | 672              | 0                       | 0                     | 100                 | 3.9                     | -                     | -0.6                     | -                      |
| Relative Humidity (%) Average     | 672              | 0                       | 0                     | 100                 | 94.9                    | -                     | 86.8                     | -                      |
| Wind Speed 10 m (km/h) Average    | 666              | 0                       | 6                     | 99.11               | 24                      | -                     | 16                       | -                      |
| Wind Direction 10 m (deg) Average | 666              | 0                       | 6                     | 99.11               | -                       | -                     | -                        | -                      |

Note : Operational time includes periods of data collection and instrument calibration

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - MILDRED LAKE (AMS02)  
FEBRUARY 2023

MONTHLY SUMMARY FOR AIR QUALITY/ METEOROLOGICAL MONITORING MEASUREMENTS

| Parameter                         | Number | Mean   | StnDev | Total | Percentile |       |       |        |      |      |       |
|-----------------------------------|--------|--------|--------|-------|------------|-------|-------|--------|------|------|-------|
|                                   |        |        |        |       | Min        | P10   | Q1    | Median | Q3   | P90  | Max   |
| SO2 (ppb) Average                 | 641    | 2.56   | 5.8    | -     | 0          | 0.1   | 0.2   | 0.6    | 1.9  | 6.7  | 53.8  |
| H2S (ppb) Average                 | 639    | 0.59   | 0.9    | -     | 0          | 0.1   | 0.2   | 0.3    | 0.6  | 1.5  | 9.4   |
| THC (ppm) Average                 | 641    | 2.26   | 0.3    | -     | 2          | 2     | 2     | 2.1    | 2.4  | 2.6  | 4.3   |
| NMHC(ppm) Average                 | 641    | 0.045  | 0.058  | -     | 0          | 0     | 0     | 0      | 0.1  | 0.1  | 0.303 |
| CH4(ppm) Average                  | 641    | 2.21   | 0.3    | -     | 2          | 2     | 2     | 2.1    | 2.3  | 2.5  | 4     |
| Temperature 2 m (C) Average       | 672    | -15.58 | 9      | -     | -34.9      | -28.2 | -22.3 | -15.7  | -9.1 | -3.3 | 3.9   |
| Relative Humidity (%) Average     | 672    | 76.02  | 9.4    | -     | 46         | 64.2  | 71.6  | 77     | 81.9 | 88.1 | 94.9  |
| Wind Speed 10 m (km/h) Average    | 666    | 7.6    | 5      | -     | 0          | 3     | 4     | 7      | 10   | 14   | 24    |
| Wind Direction 10 m (deg) Average | 666    | -      | -      | -     | -          | -     | -     | -      | -    | -    | -     |

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - MILDRED LAKE (AMS02)  
FEBRUARY 2023

OPERATIONAL NOTES

| Parameter                  | Period<br>Start   | Period<br>End     | Duration<br>(Hours) | Notes                             |
|----------------------------|-------------------|-------------------|---------------------|-----------------------------------|
| Wind Speed, Wind Direction | 01 Feb 2023 03:00 | 01 Feb 2023 03:00 | 1                   | Flat line in sensor output signal |
| Wind Speed, Wind Direction | 08 Feb 2023 13:00 | 08 Feb 2023 13:00 | 1                   | Maintenance - tower brought down  |
| Wind Speed, Wind Direction | 09 Feb 2023 20:00 | 09 Feb 2023 21:00 | 2                   | Flat line in sensor output signal |
| Wind Speed, Wind Direction | 15 Feb 2023 00:00 | 15 Feb 2023 00:00 | 1                   | Flat line in sensor output signal |
| Wind Speed, Wind Direction | 23 Feb 2023 09:00 | 23 Feb 2023 09:00 | 1                   | Flat line in sensor output signal |



**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

**Sulphur Dioxide (SO<sub>2</sub>) - ppb**  
**Mildred Lake - February 2023**

|   |  |
|---|--|
| Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0   | Hours in Service: 672                    |
| Maximum Value: 53.8 ppb on Feb 23 17:00   | Maximum Daily Average: 9.5 ppb on Feb 23 |
| Minimum Value: 0.0 ppb on Feb 1 13:00   | Hours of Data: 641                       |
| Maximum Diurnal Average: 6.9 ppb at hour 17   | Hours of Missing Data: 31                |
| Monthly Average: 2.56 ppb   | Hours of Calibration: 31                 |
| Minimum Daily Average: 0.0 ppb on Feb 14  | Percent Operational Time: 100.0          |
| Minimum Diurnal Average: 1.1 ppb at hour 8  |  |
| Percentiles: P <sub>1</sub> = 0.0 P <sub>10</sub> = 0.1 Q <sub>1</sub> = 0.2 Median = 0.6 Q <sub>3</sub> = 1.9 P <sub>90</sub> = 6.7 P <sub>99</sub> = 25.5 |  |

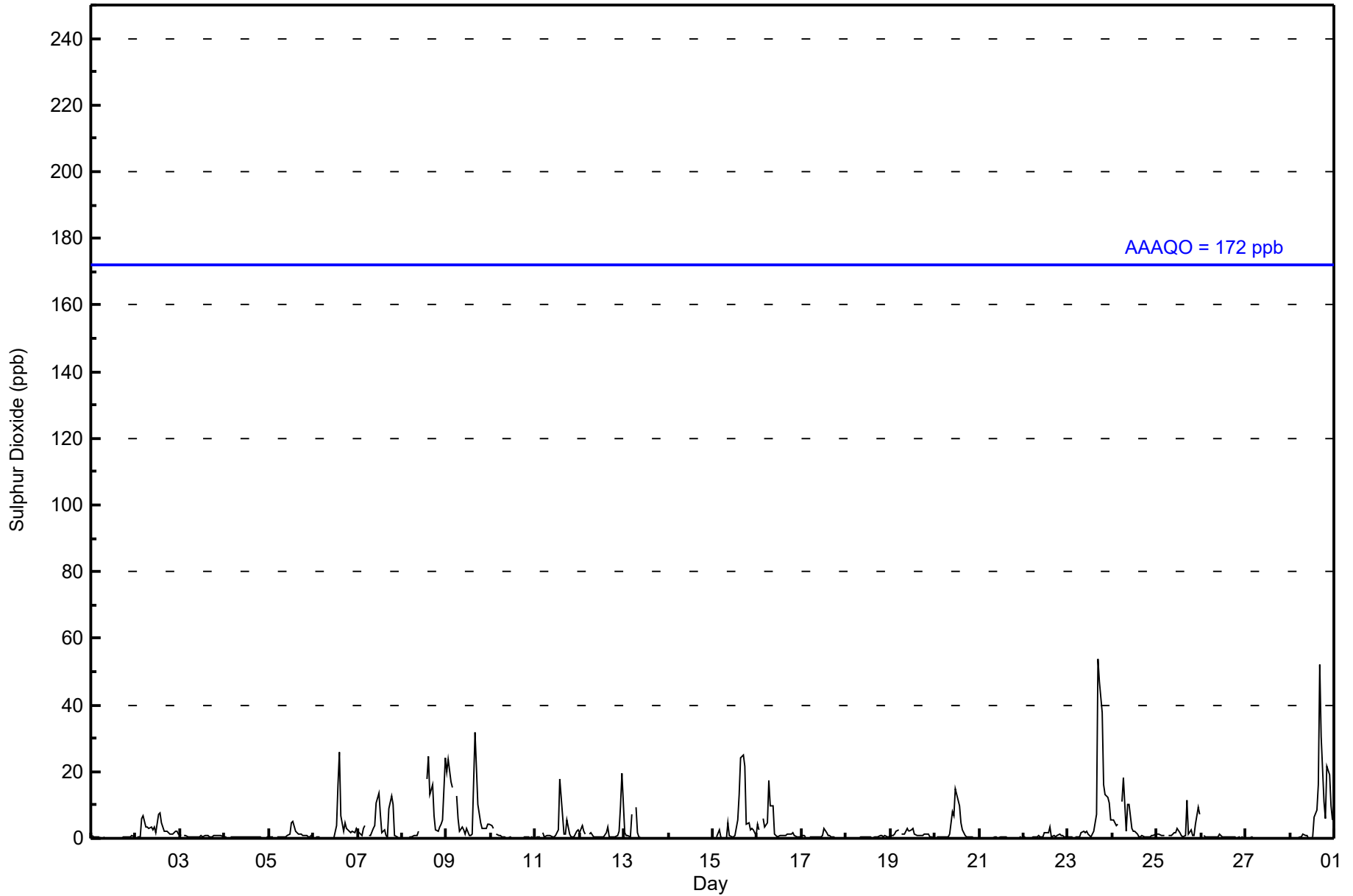
| Day    | Hourly Period Ending At (MST) |      |      |      |     |      |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Daily Average | Daily Maximum |      |     |      |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
|--------|-------------------------------|------|------|------|-----|------|------|-----|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|---------------|---------------|------|-----|------|------|-----|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----------------|
|        | 1                             | 2    | 3    | 4    | 5   | 6    | 7    | 8   | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20   | 21   | 22   | 23   | 24   |               |               |      |     |      |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 1-Feb  | 0.8                           | 0.4  | 0.3  | 0.3  | 0.2 | Z    | 0.3  | 0.1 | 0.1  | 0.1  | 0.1  | 0.2  | 0.0  | 0.0  | 0.1  | 0.2  | 0.5  | 0.6  | 0.3  | 0.4  | 0.4  | 0.7  | 0.3  | 0.3  | 0.8           |               |      |     |      |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 2-Feb  | Z                             | 0.4  | 0.2  | 6.0  | 6.6 | 3.5  | 3.4  | 2.8 | 3.2  | 2.6  | 3.2  | 1.8  | 7.3  | 7.6  | 4.8  | 2.0  | 2.0  | 1.9  | 1.1  | 1.2  | 1.2  | 1.9  | 2.3  | 1.3  | 3.0           | 7.6           |      |     |      |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 3-Feb  | 1.0                           | Z    | 0.7  | 0.6  | 0.6 | 0.5  | 0.4  | 0.4 | 0.4  | 0.5  | 0.5  | 1.0  | 0.6  | 0.8  | 0.9  | 0.7  | 0.6  | 0.4  | 0.7  | 0.7  | 0.7  | 0.7  | 0.6  | 0.6  | 1.0           |               |      |     |      |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 4-Feb  | 0.5                           | 0.5  | Z    | 0.5  | 0.5 | 0.4  | 0.4  | 0.3 | 0.3  | 0.3  | 0.4  | 0.4  | 0.3  | 0.3  | 0.3  | 0.3  | 0.3  | 0.3  | 0.3  | 0.2  | 0.2  | 0.2  | 0.3  | 0.3  | 0.5           |               |      |     |      |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 5-Feb  | 0.3                           | 0.2  | 0.3  | Z    | 0.4 | 0.3  | 0.4  | 0.3 | 0.4  | 0.6  | 0.7  | 1.4  | 4.7  | 5.3  | 2.2  | 1.6  | 1.3  | 1.2  | 0.8  | 0.7  | 0.8  | 0.5  | 0.6  | 0.7  | 1.1           | 5.3           |      |     |      |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 6-Feb  | 0.1                           | 0.0  | 0.3  | 0.4  | Z   | 0.1  | 0.1  | 0.0 | 0.0  | 0.0  | 0.1  | 0.0  | 3.9  | 16.2 | 25.7 | 6.9  | 2.1  | 4.8  | 2.9  | 2.1  | 1.8  | 1.9  | 1.7  | 3.0  | 3.2           | 25.7          |      |     |      |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 7-Feb  | 2.2                           | 1.2  | 0.8  | 2.9  | 3.9 | Z    | 0.7  | 0.9 | 3.0  | 3.9  | 10.5 | 13.4 | 7.3  | 1.7  | 2.4  | 0.8  | 0.5  | 9.0  | 12.6 | 10.1 | 0.7  | 0.3  | 0.1  | 0.0  | 3.9           | 13.4          |      |     |      |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 8-Feb  | Z                             | 0.0  | 0.1  | 0.1  | 0.2 | 0.4  | 0.7  | 0.9 | 0.9  | 2.1  | C    | C    | C    | 17.7 | 24.6 | 13.0 | 16.0 | 6.7  | 2.7  | 2.2  | 3.4  | 4.2  | 5.6  | 24.2 | 6.3           | 24.6          |      |     |      |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 9-Feb  | 19.8                          | 23.8 | 16.9 | 15.1 | Z   | 12.8 | 5.8  | 1.9 | 3.3  | 2.5  | 1.3  | 3.2  | 1.0  | 0.7  | 1.4  | 31.6 | 21.2 | 10.2 | 4.8  | 2.9  | 2.8  | 3.1  | 4.2  | 4.2  | 8.5           | 31.6          |      |     |      |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 10-Feb | 3.7                           | 2.9  | Z    | 1.4  | 0.9 | 0.8  | 0.6  | 0.3 | 0.2  | 0.1  | 0.2  | 0.1  | 0.1  | 0.2  | 0.1  | 0.2  | 0.2  | 0.2  | 0.2  | 0.2  | 0.2  | 0.2  | 0.2  | 0.2  | 0.6           | 3.7           |      |     |      |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 11-Feb | 0.2                           | 0.2  | 0.2  | Z    | 1.7 | 0.5  | 0.8  | 0.8 | 1.0  | 0.6  | 0.5  | 0.7  | 2.4  | 17.8 | 12.2 | 1.4  | 1.1  | 5.3  | 1.1  | 0.5  | 0.3  | 0.3  | 1.9  | 2.7  | 2.4           | 17.8          |      |     |      |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 12-Feb | 1.8                           | 3.9  | 2.2  | 1.1  | Z   | 1.1  | 1.8  | 0.5 | 0.2  | 0.2  | 0.3  | 0.2  | 0.3  | 0.6  | 1.8  | 3.4  | 0.4  | 0.2  | 0.3  | 0.6  | 0.7  | 2.2  | 9.7  | 19.6 | 2.3           | 19.6          |      |     |      |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 13-Feb | 1.7                           | 1.0  | 0.8  | 0.6  | 7.1 | Z    | 9.3  | 1.8 | 0.4  | 0.1  | 0.1  | 0.1  | 0.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 1.0           | 9.3           |      |     |      |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 14-Feb | Z                             | 0.0  | 0.0  | 0.0  | 0.1 | 0.0  | 0.0  | 0.0 | 0.0  | 0.0  | 0.0  | 0.0  | 0.2  | 0.1  | 0.1  | 0.1  | 0.1  | 0.1  | 0.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0           | 0.2           |      |     |      |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 15-Feb | 0.1                           | Z    | 0.3  | 2.4  | 0.3 | 0.2  | 0.2  | 0.2 | 4.5  | 0.9  | 0.5  | 0.5  | 0.7  | 5.7  | 13.2 | 24.3 | 25.2 | 21.5 | 4.2  | 4.6  | 2.3  | 3.0  | 2.5  | 0.9  | 5.1           | 25.2          |      |     |      |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 16-Feb | 4.2                           | 2.5  | Z    | 6.0  | 3.2 | 4.5  | 17.5 | 9.6 | 9.9  | 1.1  | 1.0  | 0.6  | 0.9  | 0.9  | 1.0  | 0.8  | 1.1  | 1.4  | 1.1  | 1.9  | 0.7  | 0.5  | 0.5  | 0.6  | 3.1           | 17.5          |      |     |      |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 17-Feb | 0.7                           | 0.7  | 0.6  | Z    | 0.5 | 0.4  | 0.5  | 0.4 | 0.4  | 0.4  | 0.4  | 1.0  | 3.0  | 1.7  | 0.7  | 0.7  | 0.4  | 0.2  | 0.2  | 0.2  | 0.1  | 0.1  | 0.1  | 0.0  | 0.6           | 3.0           |      |     |      |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 18-Feb | 0.0                           | 0.0  | 0.0  | 0.0  | Z   | 0.1  | 0.0  | 0.1 | 0.3  | 0.4  | 0.3  | 0.3  | 0.3  | 0.2  | 0.2  | 0.6  | 0.6  | 0.4  | 0.9  | 0.9  | 0.6  | 0.8  | 0.6  | 0.4  | 0.4           | 0.9           |      |     |      |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 19-Feb | 0.9                           | 1.0  | 1.3  | 2.3  | 2.6 | Z    | 1.1  | 1.5 | 2.3  | 3.1  | 2.3  | 2.6  | 3.0  | 1.1  | 0.9  | 0.9  | 0.7  | 0.8  | 1.1  | 1.1  | 1.1  | 0.5  | 0.4  | 0.4  | 1.4           | 3.1           |      |     |      |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 20-Feb | Z                             | 0.4  | 0.4  | 0.3  | 0.3 | 0.4  | 0.3  | 0.3 | 1.1  | 8.1  | 6.6  | 14.7 | 11.6 | 9.9  | 4.6  | 2.5  | 0.7  | 0.6  | 0.3  | 0.3  | 0.3  | 0.2  | 0.2  | 0.1  | 2.8           | 14.7          |      |     |      |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 21-Feb | 0.2                           | Z    | 0.2  | 0.2  | 0.2 | 0.2  | 0.2  | 0.1 | 0.3  | 0.3  | 0.2  | 0.3  | 0.5  | 0.4  | 0.2  | 0.1  | 0.1  | 0.2  | 0.1  | 0.1  | 0.0  | 0.1  | 0.3  | 0.2  | 0.2           | 0.5           |      |     |      |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 22-Feb | 0.4                           | 0.2  | Z    | 0.1  | 0.2 | 0.5  | 0.4  | 0.5 | 0.7  | 0.4  | 0.5  | 1.9  | 1.8  | 1.6  | 3.4  | 0.4  | 0.9  | 0.4  | 0.6  | 1.2  | 1.0  | 0.8  | 0.6  | 0.3  | 0.8           | 3.4           |      |     |      |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 23-Feb | 0.3                           | 0.5  | 0.6  | Z    | 0.5 | 0.5  | 0.4  | 1.5 | 2.0  | 1.9  | 2.1  | 1.4  | 0.6  | 1.1  | 2.1  | 7.3  | 53.8 | 47.0 | 37.9 | 16.0 | 12.9 | 12.1 | 10.7 | 5.3  | 9.5           | 53.8          |      |     |      |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 24-Feb | 5.3                           | 4.7  | 3.8  | 4.2  | Z   | 11.0 | 18.0 | 2.1 | 10.3 | 10.3 | 2.8  | 2.0  | 1.9  | 1.1  | 0.6  | 0.5  | 0.8  | 0.6  | 0.5  | 0.5  | 0.6  | 0.9  | 1.0  | 1.2  | 3.7           | 18.0          |      |     |      |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 25-Feb | 1.2                           | 1.1  | 0.9  | 0.8  | 0.7 | Z    | 0.8  | 1.0 | 1.0  | 1.8  | 1.6  | 3.2  | 1.8  | 0.8  | 0.4  | 0.7  | 11.5 | 1.5  | 2.7  | 0.9  | 0.8  | 4.2  | 9.1  | 7.3  | 2.4           | 11.5          |      |     |      |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 26-Feb | Z                             | 0.7  | 0.4  | 0.4  | 0.3 | 0.5  | 0.3  | 0.2 | 0.3  | 0.4  | 1.2  | 0.6  | 0.5  | 0.5  | 0.5  | 0.4  | 0.3  | 0.3  | 0.3  | 0.2  | 0.2  | 0.2  | 0.2  | 0.2  | 0.4           | 1.2           |      |     |      |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 27-Feb | 0.2                           | Z    | 0.2  | 0.2  | 0.1 | 0.1  | 0.1  | 0.1 | 0.1  | 0.2  | 0.2  | 0.1  | 0.2  | 0.1  | 0.1  | 0.1  | 0.1  | 0.0  | 0.0  | 0.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.1           | 0.2           |      |     |      |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 28-Feb | 0.0                           | 0.0  | Z    | 0.1  | 0.2 | 0.2  | 0.6  | 1.1 | 0.7  | 0.7  | 0.2  | 0.2  | 0.4  | 6.2  | 8.5  | 16.3 | 52.1 | 30.5 | 10.9 | 6.1  | 21.5 | 18.9 | 9.8  | 5.5  | 8.3           | 52.1          |      |     |      |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
|        |                               |      |      |      |     |      |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 2.0  | 1.9           | 1.4           | 1.9  | 1.4 | 1.7  | 2.3  | 1.1 | 1.7  | 1.6  | 1.4  | 1.9  | 2.1  | 3.6  | 4.0  | 4.2  | 6.9  | 5.2  | 3.2  | 2.0  | 2.0  | 2.1  | 2.3  | 2.8  | Diurnal Average |
|        |                               |      |      |      |     |      |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 19.8 | 23.8          | 16.9          | 15.1 | 7.1 | 12.8 | 18.0 | 9.6 | 10.3 | 10.3 | 10.5 | 14.7 | 11.6 | 17.8 | 25.7 | 31.6 | 53.8 | 47.0 | 37.9 | 16.0 | 21.5 | 18.9 | 10.7 | 24.2 | Diurnal Maximum |

Z - zerospan      C - Calibration  
 Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 172 ppb    24-hr 48 ppb



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Sulphur Dioxide (SO<sub>2</sub>) - ppb**  
**Mildred Lake - February 2023**







**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Sulphur Dioxide (SO<sub>2</sub>) - ppb  
Mildred Lake - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 10                            | 599                    | 93.45    | 93.45               |
| 11 - 20                           | 27                     | 4.21     | 97.66               |
| 21 - 60                           | 15                     | 2.34     | 100.00              |
| 61 - 110                          | 0                      | 0.00     | 100.00              |
| 111 - 172                         | 0                      | 0.00     | 100.00              |
| > 172                             | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 641

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Sulphur Dioxide (SO<sub>2</sub>) - ppb  
Mildred Lake - February 2023**

| <b>Concentration<br/>Ranges (ppb)</b> | <b>Wind Direction</b> |            |           |            |          |            |           |            |          |            |           |            |          |            |           |            | <b>Totals</b> |
|---------------------------------------|-----------------------|------------|-----------|------------|----------|------------|-----------|------------|----------|------------|-----------|------------|----------|------------|-----------|------------|---------------|
|                                       | <b>N</b>              | <b>NNE</b> | <b>NE</b> | <b>ENE</b> | <b>E</b> | <b>ESE</b> | <b>SE</b> | <b>SSE</b> | <b>S</b> | <b>SSW</b> | <b>SW</b> | <b>WSW</b> | <b>W</b> | <b>WNW</b> | <b>NW</b> | <b>NNW</b> |               |
| 0 - 10                                | 137                   | 61         | 16        | 8          | 6        | 16         | 41        | 57         | 59       | 30         | 7         | 18         | 26       | 19         | 27        | 66         | 594           |
| 11 - 20                               | 0                     | 0          | 0         | 0          | 0        | 2          | 9         | 5          | 3        | 6          | 0         | 1          | 1        | 0          | 0         | 0          | 27            |
| 21 - 60                               | 0                     | 0          | 0         | 0          | 0        | 3          | 9         | 0          | 0        | 1          | 0         | 1          | 0        | 0          | 1         | 0          | 15            |
| 61 - 110                              | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0             |
| 111 - 172                             | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0             |
| > 172                                 | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0             |
| <b>Totals</b>                         | 137                   | 61         | 16        | 8          | 6        | 21         | 59        | 62         | 62       | 37         | 7         | 20         | 27       | 19         | 28        | 66         | 636           |

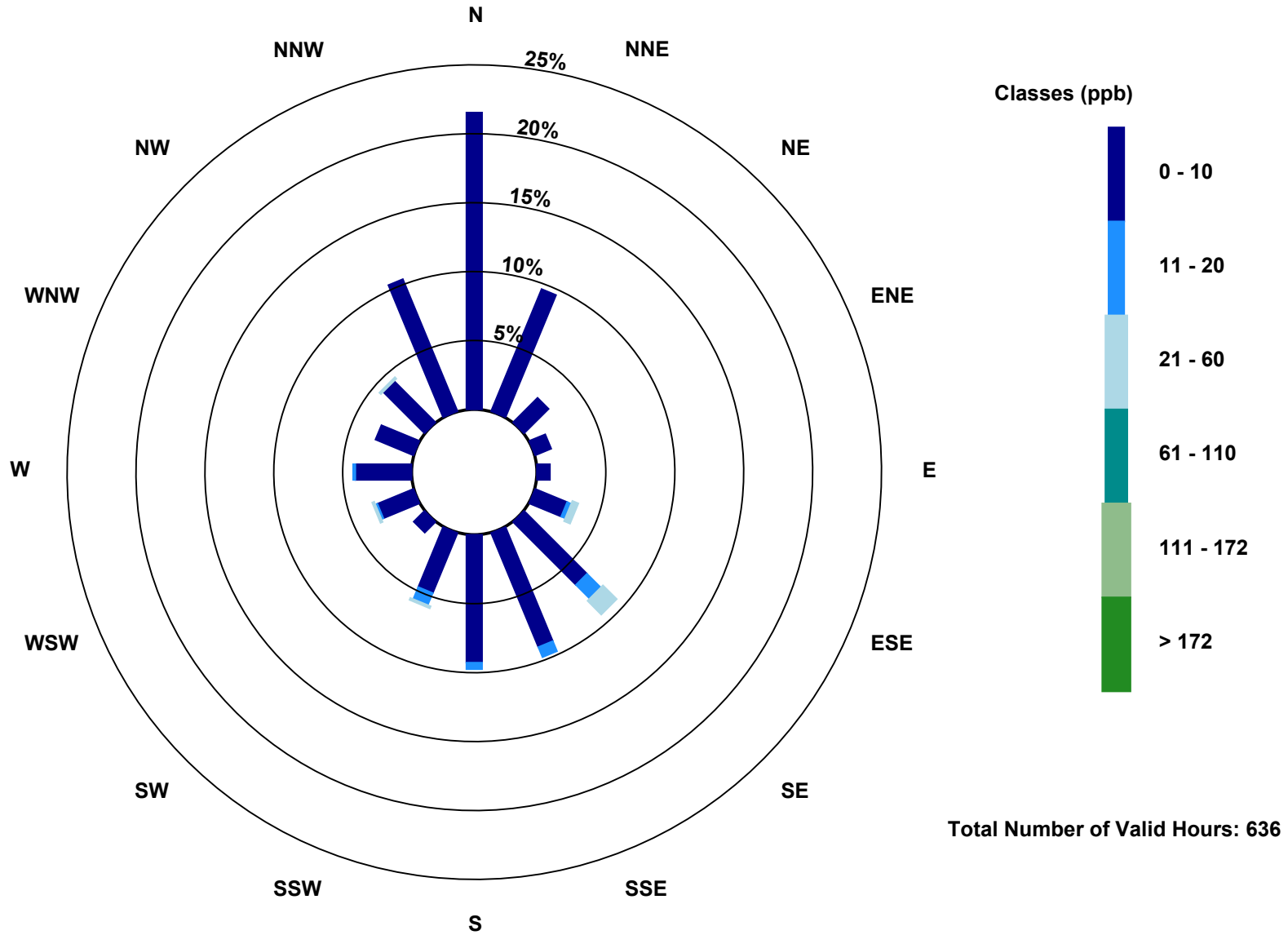
Total Number of Valid Hours: 636

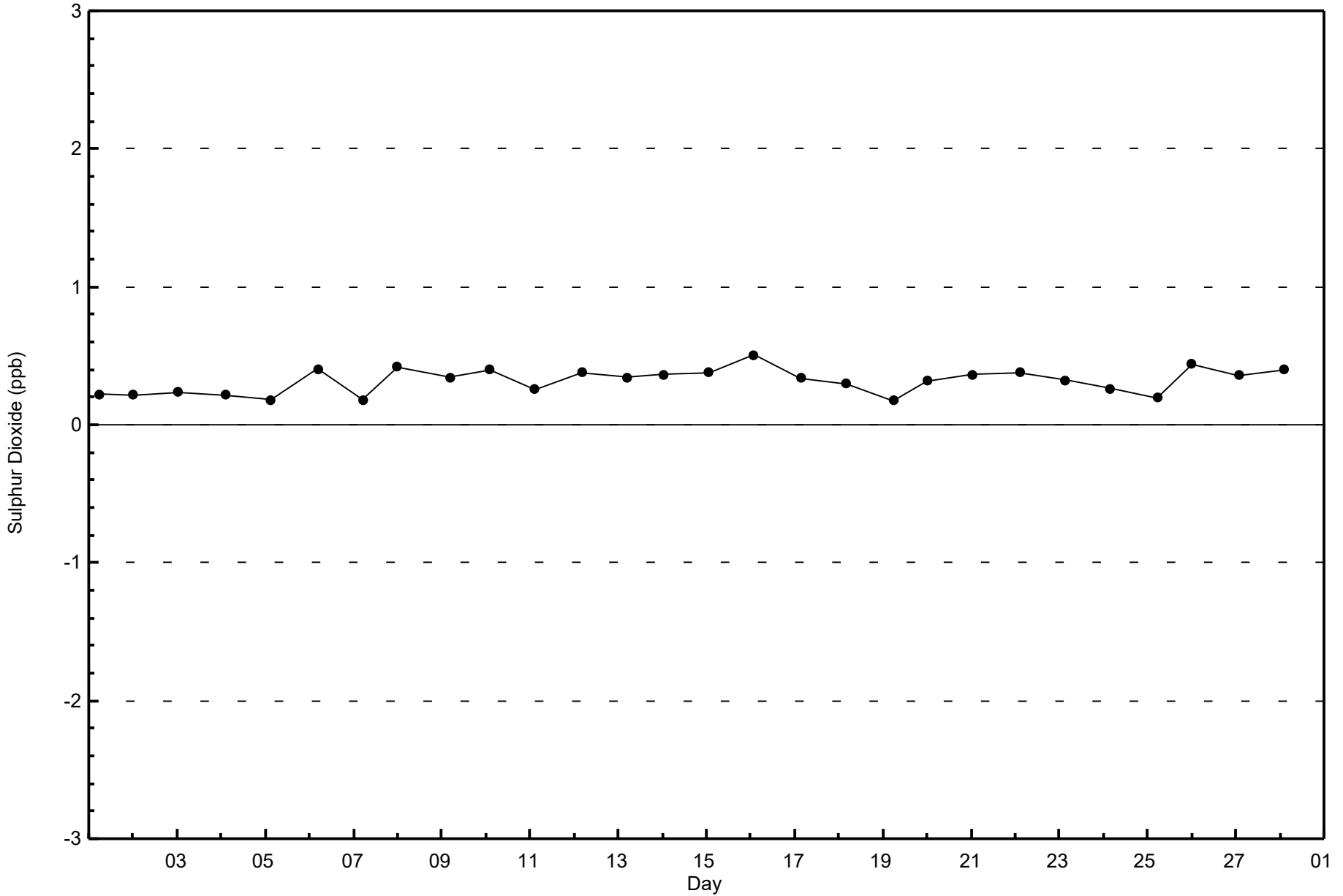
Total Number of Hours: 672



Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Sulphur Dioxide (SO<sub>2</sub>) - ppb  
Mildred Lake

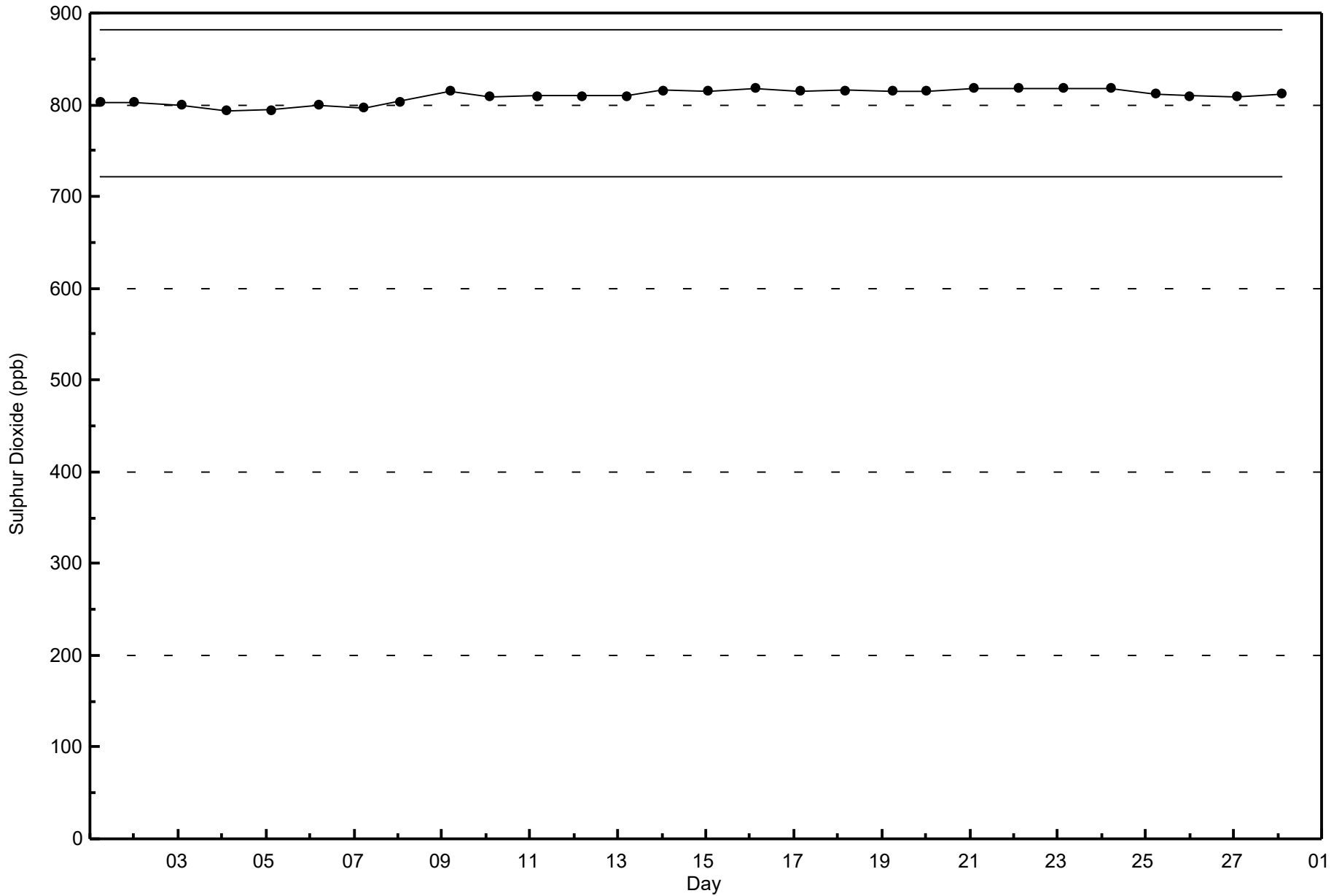






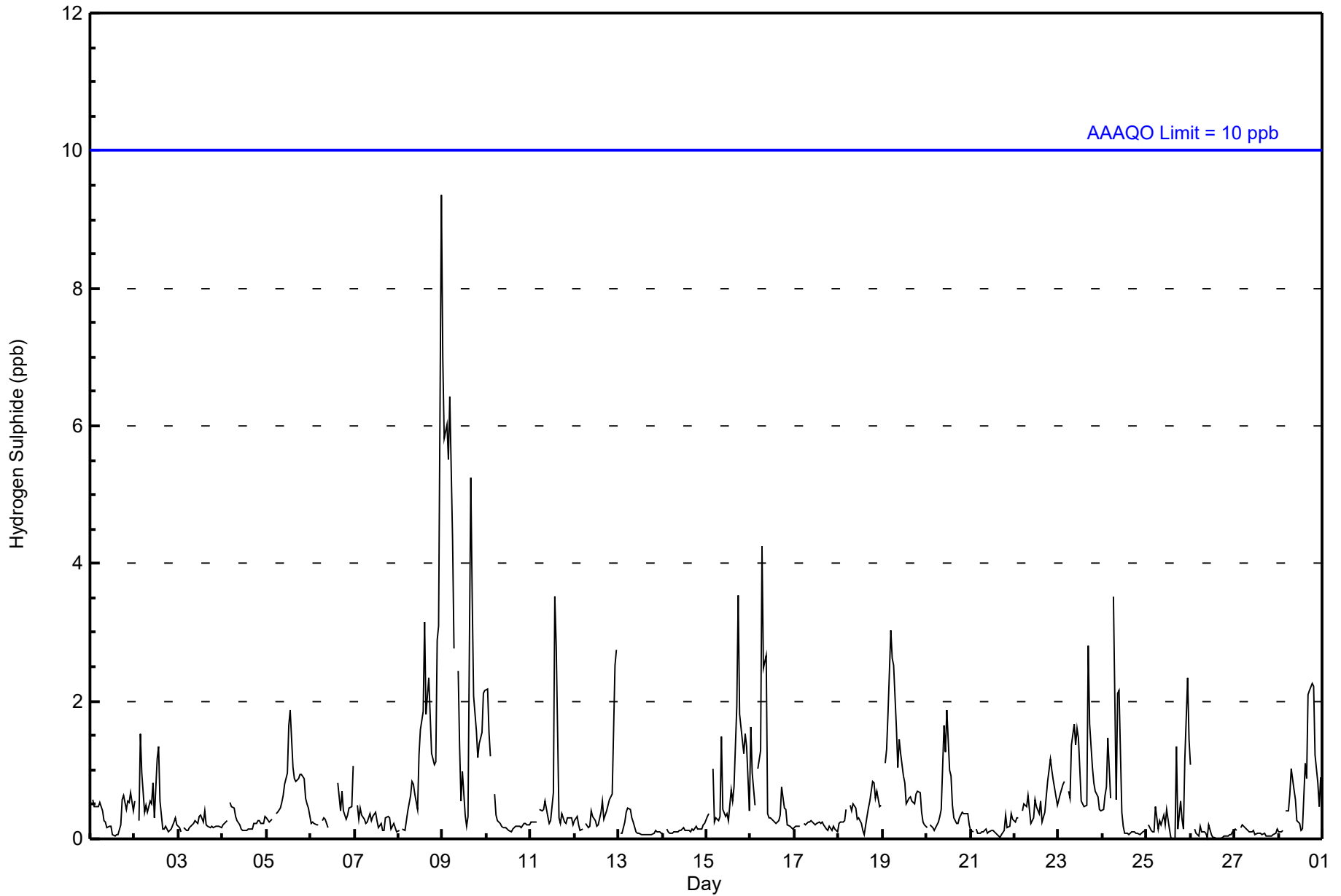
**Wood Buffalo Environmental Association**  
**Span Responses**

**Sulphur Dioxide (SO<sub>2</sub>) - ppb**  
**Mildred Lake - February 2023**





| Number of Exceedences (AAAQO):  |                               | 1-hr: 0  |     | 24-hr: 0                        |     | Hours in Service: 672 |     |     |     |     |     |     |     |     |     |     |     |       |     | 672 |     |     |     |   |               |               |     |
|---|-------------------------------|--|-----|---------------------------------|-----|-----------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-------|-----|-----|-----|-----|-----|---|---------------|---------------|-----|
| Maximum Value: 9.4 ppb on Feb 9 00:00   |                               | Maximum Daily Average: 2.8 ppb on Feb 9  |     | Hours of Data: 639              |     |                       |     |     |     |     |     |     |     |     |     |     |     | 639   |     |     |     |     |     |   |               |               |     |
| Minimum Value: 0.0 ppb on Feb 25 15:00  |                               | Minimum Daily Average: 0.1 ppb on Feb 27   |     | Hours of Missing Data: 33       |     |                       |     |     |     |     |     |     |     |     |     |     |     | 33    |     |     |     |     |     |   |               |               |     |
| Maximum Diurnal Average: 0.8 ppb at hour 24   |                               | Minimum Diurnal Average: 0.4 ppb at hour 13  |     | Hours of Calibration: 33        |     |                       |     |     |     |     |     |     |     |     |     |     |     | 33    |     |     |     |     |     |   |               |               |     |
| Monthly Average: 0.59 ppb   |                               | Percentiles: P <sub>1</sub> = 0.0 P <sub>10</sub> = 0.1 Q <sub>1</sub> = 0.2 Median = 0.3 Q <sub>3</sub> = 0.6 P <sub>90</sub> = 1.5 P <sub>99</sub> = 4.9 |     | Percent Operational Time: 100.0 |     |                       |     |     |     |     |     |     |     |     |     |     |     | 100.0 |     |     |     |     |     |   |               |               |     |
| Day   | Hourly Period Ending At (MST) |  |     |                                 |     |                       |     |     |     |     |     |     |     |     |     |     |     |       |     |     |     |     |     |   | Daily Average | Daily Maximum |     |
|   | 1                             | 2  | 3   | 4                               | 5   | 6                     | 7   | 8   | 9   | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18    | 19  | 20  | 21  | 22  | 23  | 24  |               |               |     |
| 1-Feb   | Z                             | 0.6  | 0.5 | 0.5                             | 0.5 | 0.5                   | 0.4 | 0.3 | 0.3 | 0.2 | 0.2 | 0.2 | 0.1 | 0.0 | 0.1 | 0.1 | 0.2 | 0.6   | 0.6 | 0.4 | 0.6 | 0.5 | 0.7 | 0.4   | 0.4           | 0.7           |     |
| 2-Feb   | 0.5                           | Z  | 0.3 | 1.5                             | 1.0 | 0.4                   | 0.5 | 0.4 | 0.6 | 0.5 | 0.8 | 0.3 | 1.2 | 1.3 | 0.5 | 0.1 | 0.1 | 0.2   | 0.1 | 0.1 | 0.1 | 0.2 | 0.3 | 0.2   | 0.5           | 1.5           |     |
| 3-Feb   | 0.2                           | 0.1  | Z   | 0.2                             | 0.1 | 0.1                   | 0.2 | 0.2 | 0.2 | 0.3 | 0.2 | 0.3 | 0.4 | 0.2 | 0.4 | 0.2 | 0.2 | 0.2   | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2   | 0.2           | 0.4           |     |
| 4-Feb   | 0.2                           | 0.2  | 0.3 | Z                               | 0.5 | 0.5                   | 0.4 | 0.3 | 0.3 | 0.2 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2   | 0.2 | 0.2 | 0.3 | 0.3 | 0.2 | 0.3   | 0.2           | 0.5           |     |
| 5-Feb   | 0.3                           | 0.2  | 0.3 | 0.3                             | Z   | 0.4                   | 0.4 | 0.4 | 0.4 | 0.5 | 0.6 | 0.8 | 0.9 | 1.7 | 1.9 | 1.0 | 0.9 | 0.8   | 0.9 | 0.9 | 0.9 | 0.9 | 0.6 | 0.5   | 0.4           | 0.7           | 1.9 |
| 6-Feb   | 0.2                           | 0.2  | 0.2 | 0.2                             | 0.2 | Z                     | 0.3 | 0.3 | 0.3 | 0.2 | C   | C   | C   | C   | C   | 0.8 | 0.4 | 0.7   | 0.4 | 0.3 | 0.3 | 0.4 | 0.5 | 1.0   | 0.4           | 1.0           |     |
| 7-Feb   | Z                             | 0.5  | 0.3 | 0.4                             | 0.4 | 0.3                   | 0.2 | 0.2 | 0.4 | 0.3 | 0.3 | 0.4 | 0.3 | 0.2 | 0.2 | 0.1 | 0.1 | 0.3   | 0.3 | 0.3 | 0.1 | 0.2 | 0.2 | 0.1   | 0.3           | 0.5           |     |
| 8-Feb   | 0.1                           | Z  | 0.1 | 0.1                             | 0.3 | 0.4                   | 0.6 | 0.8 | 0.8 | 0.6 | 0.4 | 1.2 | 1.6 | 1.8 | 3.2 | 1.8 | 2.3 | 1.8   | 1.2 | 1.1 | 1.1 | 2.9 | 3.1 | 9.4   | 1.6           | 9.4           |     |
| 9-Feb   | 7.0                           | 5.8  | 6.0 | 5.5                             | 6.4 | 4.3                   | 2.8 | Z   | 2.4 | 1.3 | 0.5 | 1.0 | 0.3 | 0.2 | 0.3 | 5.2 | 3.5 | 2.1   | 1.6 | 1.2 | 1.4 | 1.5 | 2.1 | 2.2   | 2.8           | 7.0           |     |
| 10-Feb  | 2.2                           | 1.5  | 1.2 | Z                               | 0.6 | 0.3                   | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.2   | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2   | 0.4           | 2.2           |     |
| 11-Feb  | 0.2                           | 0.2  | 0.2 | 0.2                             | Z   | 0.4                   | 0.4 | 0.4 | 0.6 | 0.3 | 0.2 | 0.3 | 0.7 | 3.5 | 2.8 | 0.3 | 0.2 | 0.4   | 0.2 | 0.2 | 0.3 | 0.3 | 0.3 | 0.2   | 0.6           | 3.5           |     |
| 12-Feb  | 0.3                           | 0.3  | 0.2 | 0.1                             | 0.1 | Z                     | 0.2 | 0.2 | 0.2 | 0.4 | 0.3 | 0.3 | 0.2 | 0.2 | 0.4 | 0.5 | 0.3 | 0.4   | 0.5 | 0.6 | 0.7 | 1.6 | 2.5 | 2.7   | 0.6           | 2.7           |     |
| 13-Feb  | Z                             | 0.1  | 0.1 | 0.2                             | 0.4 | 0.4                   | 0.4 | 0.3 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1   | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1   | 0.1           | 0.4           |     |
| 14-Feb  | 0.1                           | Z  | 0.1 | 0.1                             | 0.1 | 0.1                   | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1   | 0.2 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2   | 0.1           | 0.2           |     |
| 15-Feb  | 0.3                           | 0.4  | Z   | 1.0                             | 0.2 | 0.3                   | 0.3 | 0.3 | 1.5 | 0.4 | 0.3 | 0.4 | 0.3 | 0.7 | 0.5 | 0.7 | 1.9 | 3.5   | 1.8 | 1.4 | 1.2 | 1.5 | 1.3 | 0.4   | 0.9           | 3.5           |     |
| 16-Feb  | 1.6                           | 1.0  | 0.5 | Z                               | 1.0 | 1.3                   | 4.2 | 2.5 | 2.7 | 0.4 | 0.3 | 0.3 | 0.3 | 0.2 | 0.2 | 0.3 | 0.3 | 0.8   | 0.5 | 0.4 | 0.2 | 0.2 | 0.2 | 0.1   | 0.8           | 4.2           |     |
| 17-Feb  | 0.2                           | 0.2  | 0.2 | 0.2                             | Z   | 0.2                   | 0.2 | 0.2 | 0.2 | 0.3 | 0.2 | 0.2 | 0.2 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2   | 0.1 | 0.1 | 0.2 | 0.1 | 0.2 | 0.1   | 0.2           | 0.3           |     |
| 18-Feb  | 0.2                           | 0.2  | 0.3 | 0.3                             | 0.4 | Z                     | 0.5 | 0.4 | 0.5 | 0.5 | 0.3 | 0.3 | 0.2 | 0.1 | 0.1 | 0.3 | 0.5 | 0.5   | 0.8 | 0.8 | 0.6 | 0.7 | 0.5 | 0.5   | 0.4           | 0.8           |     |
| 19-Feb  | Z                             | 1.1  | 1.3 | 1.8                             | 3.0 | 2.6                   | 2.5 | 1.6 | 1.0 | 1.5 | 1.2 | 0.9 | 0.8 | 0.5 | 0.6 | 0.6 | 0.5 | 0.5   | 0.6 | 0.7 | 0.7 | 0.4 | 0.2 | 0.2   | 1.1           | 3.0           |     |
| 20-Feb  | 0.2                           | Z  | 0.2 | 0.2                             | 0.1 | 0.2                   | 0.2 | 0.3 | 0.4 | 1.7 | 1.3 | 1.9 | 1.0 | 0.9 | 0.5 | 0.3 | 0.2 | 0.2   | 0.3 | 0.4 | 0.4 | 0.4 | 0.4 | 0.2   | 0.5           | 1.9           |     |
| 21-Feb  | 0.1                           | 0.1  | Z   | 0.1                             | 0.1 | 0.1                   | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 | 0.1   | 0.1 | 0.4 | 0.2 | 0.2 | 0.4 | 0.3   | 0.1           | 0.4           |     |
| 22-Feb  | 0.2                           | 0.3  | 0.3 | Z                               | 0.4 | 0.5                   | 0.5 | 0.6 | 0.4 | 0.2 | 0.3 | 0.6 | 0.5 | 0.4 | 0.5 | 0.2 | 0.4 | 0.6   | 0.8 | 1.2 | 1.0 | 0.9 | 0.7 | 0.5   | 0.5           | 1.2           |     |
| 23-Feb  | 0.6                           | 0.7  | 0.8 | 0.8                             | Z   | 0.7                   | 0.6 | 1.4 | 1.7 | 1.4 | 1.6 | 1.5 | 0.5 | 0.5 | 0.5 | 2.8 | 1.7 | 1.0   | 0.8 | 0.7 | 0.6 | 0.4 | 0.4 | 1.0   | 2.8           |               |     |
| 24-Feb  | 0.4                           | 0.6  | 0.8 | 1.5                             | 0.6 | Z                     | 3.5 | 0.6 | 2.1 | 2.2 | 0.4 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1   | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1   | 0.6           | 3.5           |     |
| 25-Feb  | Z                             | 0.2  | 0.1 | 0.1                             | 0.1 | 0.5                   | 0.1 | 0.3 | 0.2 | 0.3 | 0.2 | 0.4 | 0.1 | 0.0 | 0.0 | 0.0 | 1.3 | 0.1   | 0.5 | 0.3 | 0.1 | 1.2 | 2.3 | 1.4   | 0.4           | 2.3           |     |
| 26-Feb  | 1.1                           | Z  | 0.1 | 0.1                             | 0.0 | 0.2                   | 0.1 | 0.1 | 0.1 | 0.0 | 0.2 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0   | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.1   | 0.1           | 1.1           |     |
| 27-Feb  | 0.1                           | 0.1  | Z   | 0.2                             | 0.2 | 0.2                   | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.0   | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.1   | 0.1           | 0.2           |     |
| 28-Feb  | 0.1                           | 0.1  | 0.1 | Z                               | 0.4 | 0.4                   | 0.7 | 1.0 | 0.7 | 0.6 | 0.3 | 0.2 | 0.1 | 0.1 | 1.1 | 0.9 | 2.1 | 2.2   | 2.3 | 2.2 | 1.2 | 0.8 | 0.5 | 0.9   | 0.8           | 2.3           |     |
|   |                               |  |     |                                 |     |                       |     |     |     |     |     |     |     |     |     |     |     |       |     |     |     |     |     | Diurnal Average   |               |               |     |
|   |                               |  |     |                                 |     |                       |     |     |     |     |     |     |     |     |     |     |     |       |     |     |     |     |     | Diurnal Maximum   |               |               |     |
| 0.7 0.6 0.6 0.7 0.7 0.6 0.7 0.5 0.7 0.5 0.4 0.5 0.4 0.5 0.5 0.5 0.7 0.7 0.6 0.5 0.5 0.6 0.7 0.8 |                               |  |     |                                 |     |                       |     |     |     |     |     |     |     |     |     |     |     |       |     |     |     |     |     | 7.0 5.8 6.0 5.5 6.4 4.3 4.2 2.5 2.7 2.2 1.6 1.9 1.7 3.5 3.2 5.2 3.5 3.5 2.3 2.2 1.4 2.9 3.1 9.4 |               |               |     |
| Z - zerospan C - Calibration  |                               |  |     |                                 |     |                       |     |     |     |     |     |     |     |     |     |     |     |       |     |     |     |     |     |   |               |               |     |
| Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 10 ppb 24-hr 3 ppb                         |                               |  |     |                                 |     |                       |     |     |     |     |     |     |     |     |     |     |     |       |     |     |     |     |     |   |               |               |     |





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Hydrogen Sulphide (H<sub>2</sub>S) - ppb  
Mildred Lake - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 2                             | 614                    | 96.09    | 96.09               |
| 3 - 4                             | 18                     | 2.82     | 98.90               |
| 5 - 7                             | 6                      | 0.94     | 99.84               |
| 8 - 11                            | 1                      | 0.16     | 100.00              |
| > 11                              | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 639

Total Number of Hours: 672





**Wood Buffalo Environmental Association  
Frequency Distribution**

**Hydrogen Sulphide (H<sub>2</sub>S) - ppb  
Mildred Lake - February 2023**

| Concentration<br>Ranges (ppb) | Wind Direction |     |    |     |   |     |    |     |    |     |    |     |    |     |    |     | Totals |
|-------------------------------|----------------|-----|----|-----|---|-----|----|-----|----|-----|----|-----|----|-----|----|-----|--------|
|                               | N              | NNE | NE | ENE | E | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |        |
| 0 - 2                         | 137            | 61  | 15 | 8   | 5 | 18  | 44 | 57  | 57 | 37  | 7  | 21  | 29 | 19  | 27 | 66  | 608    |
| 3 - 4                         | 0              | 1   | 1  | 0   | 0 | 2   | 9  | 2   | 3  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 18     |
| 5 - 7                         | 0              | 0   | 0  | 0   | 0 | 0   | 3  | 3   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 6      |
| 8 - 11                        | 0              | 0   | 0  | 0   | 0 | 0   | 1  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 1      |
| > 11                          | 0              | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| <b>Totals</b>                 | 137            | 62  | 16 | 8   | 5 | 20  | 57 | 62  | 60 | 37  | 7  | 21  | 29 | 19  | 27 | 66  | 633    |

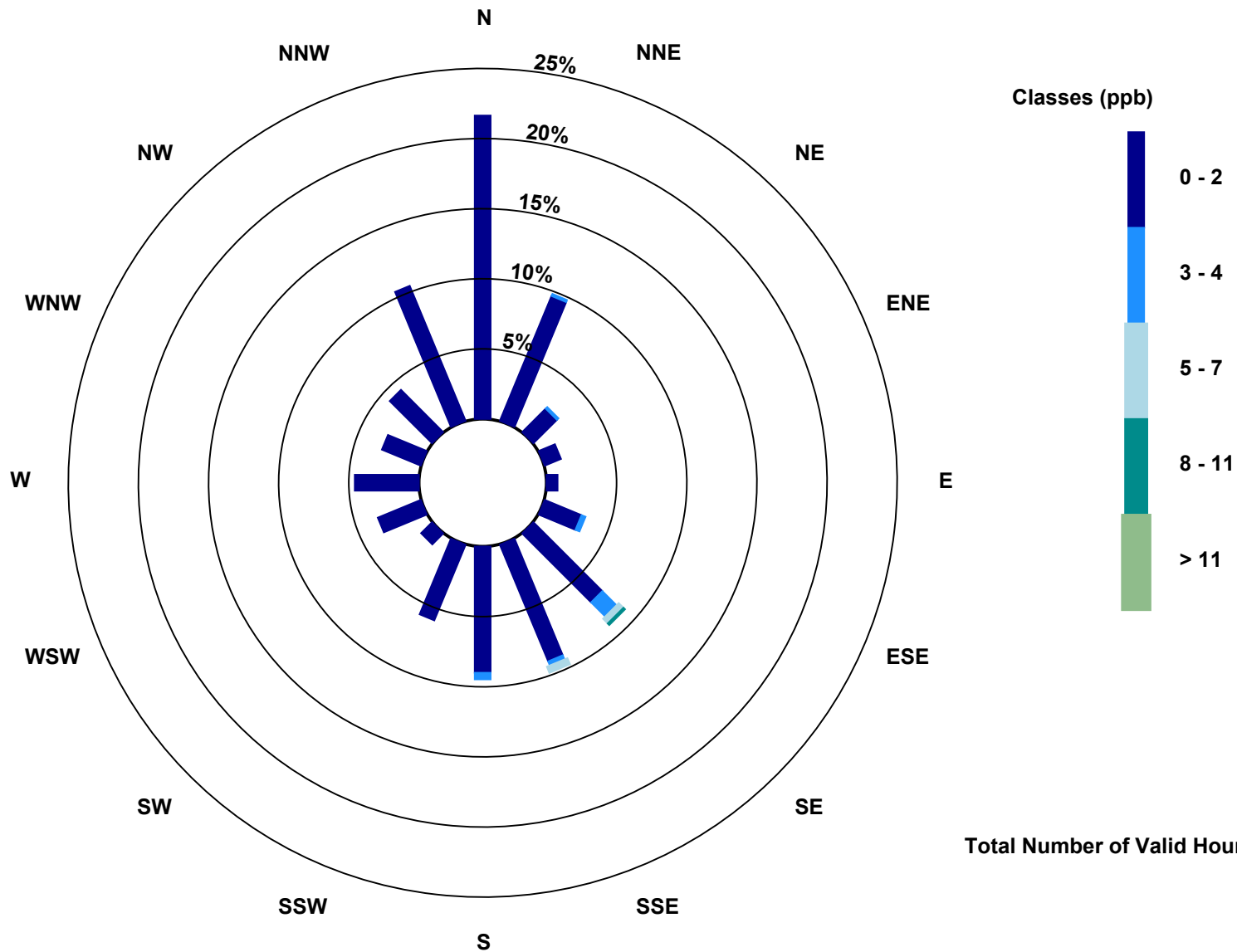
Total Number of Valid Hours: 633

Total Number of Hours: 672

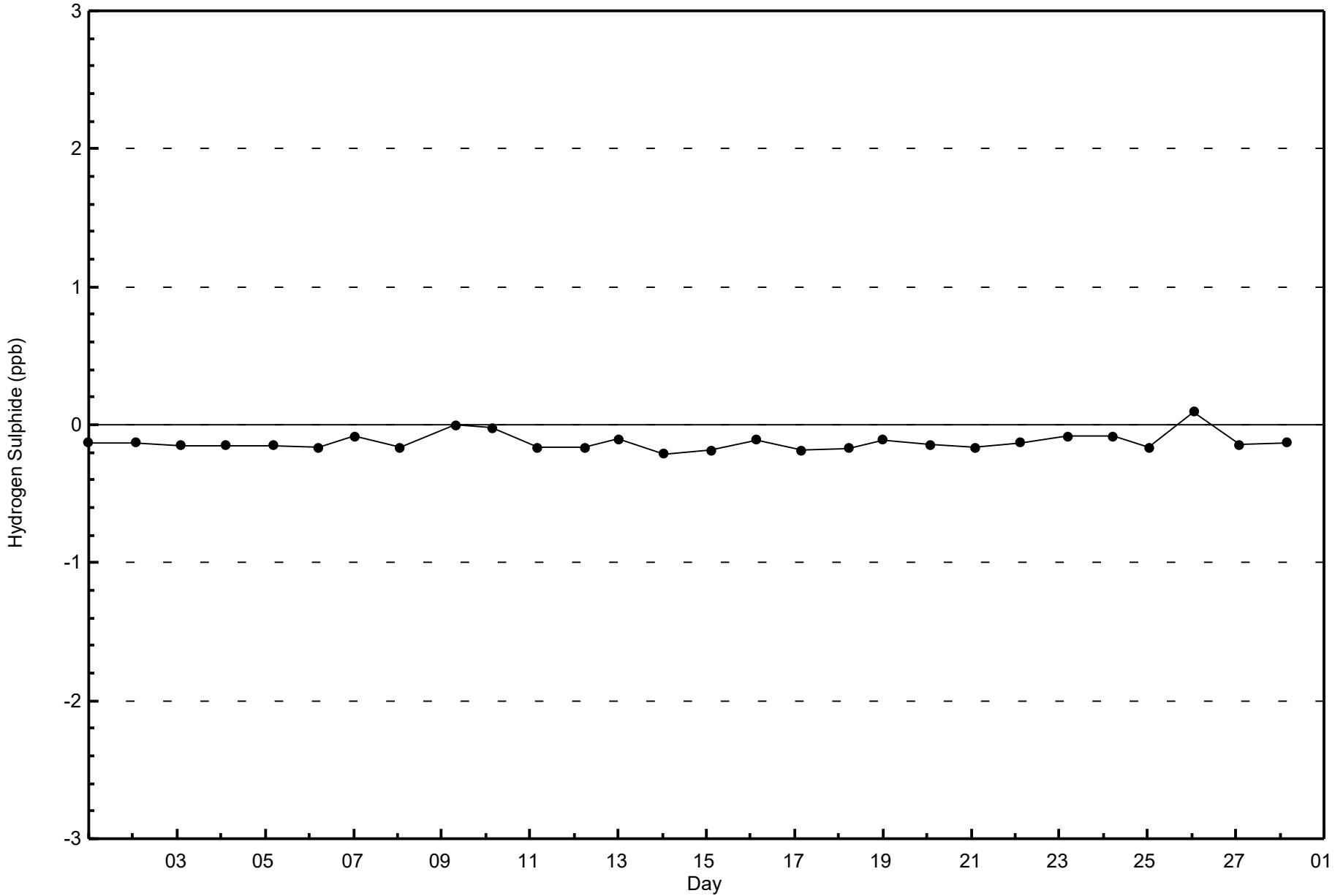


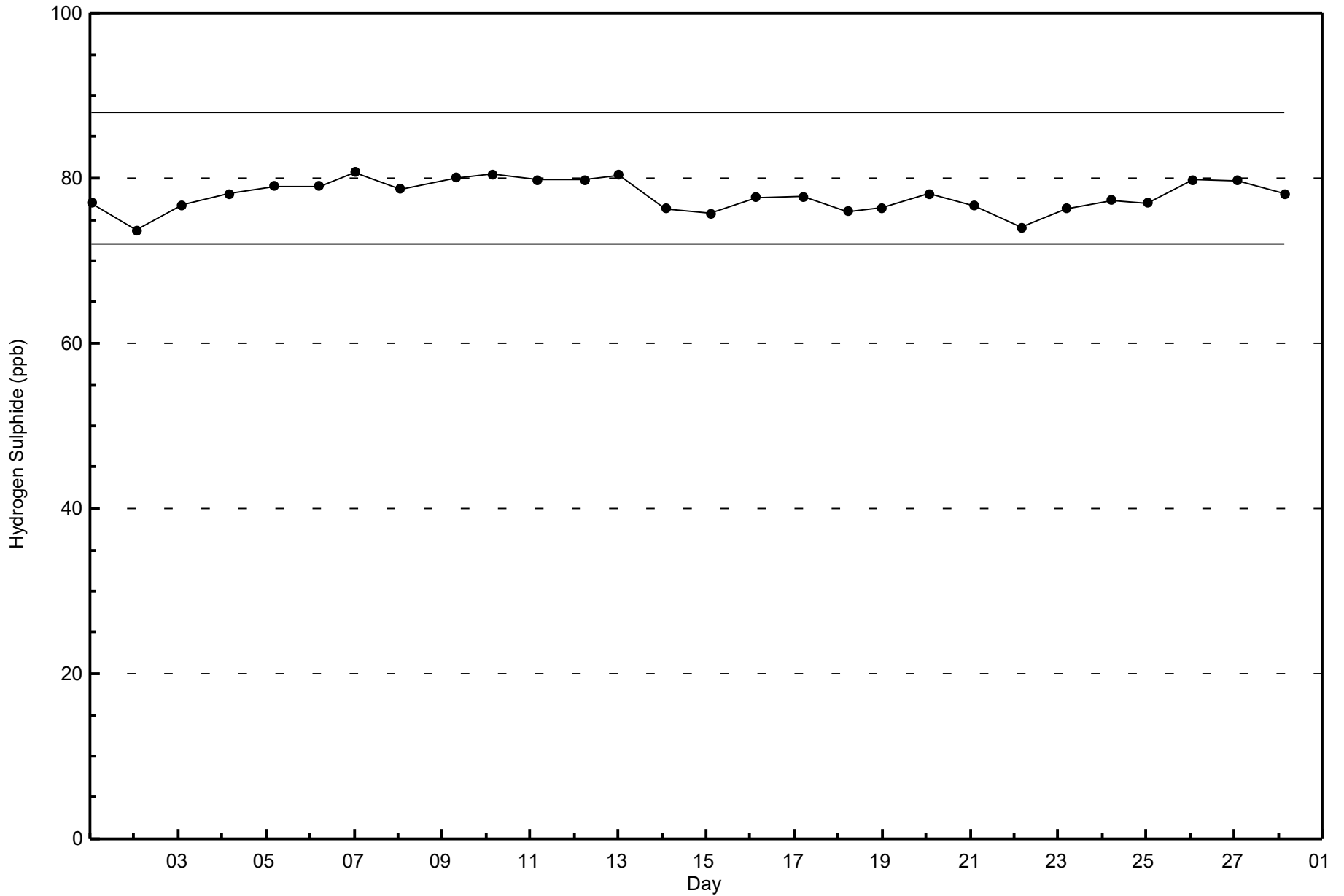
Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Hydrogen Sulphide (H<sub>2</sub>S) - ppb  
Mildred Lake



Total Number of Valid Hours: 633







**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

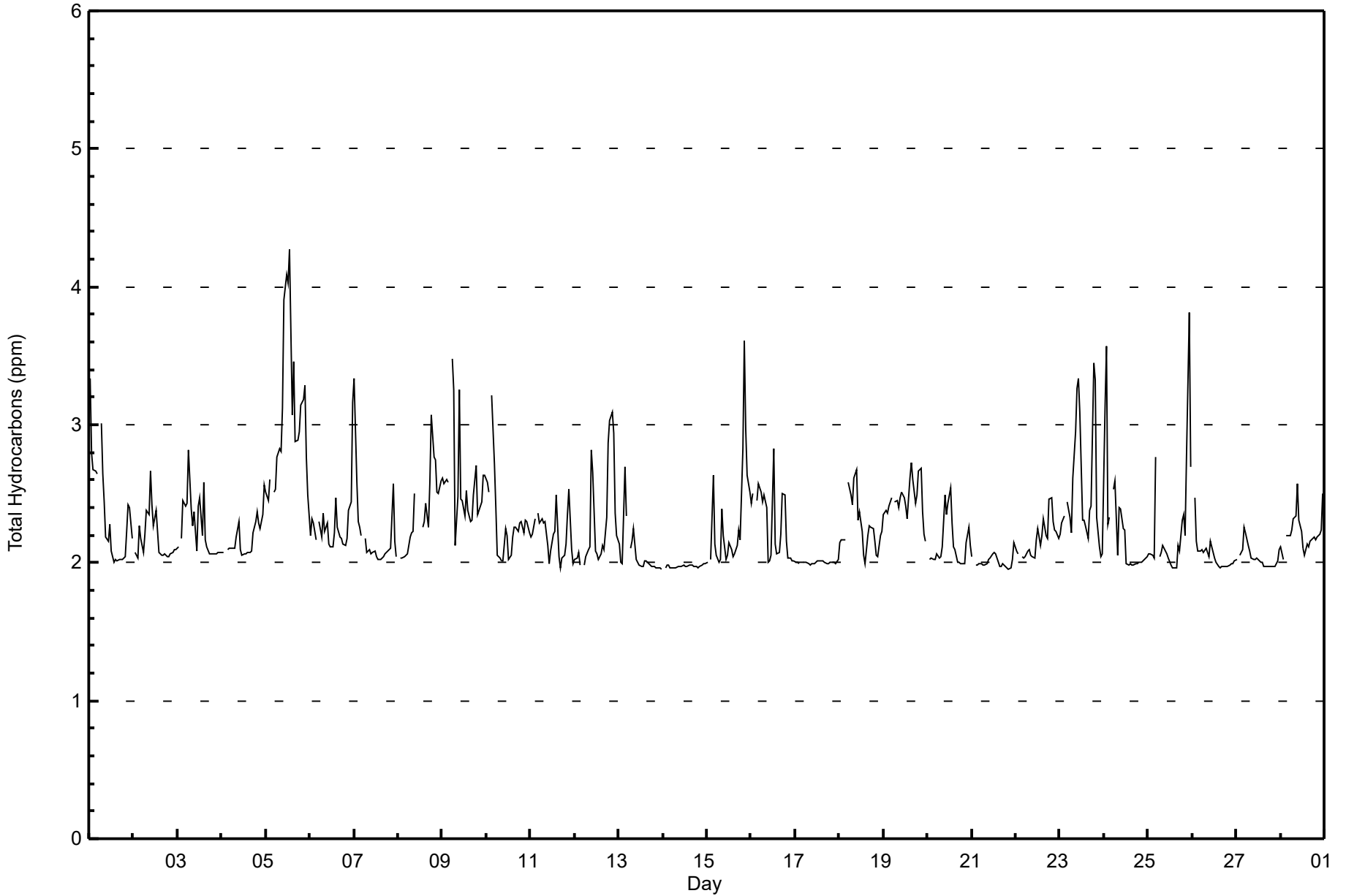
**Total Hydrocarbons (THC) - ppm**  
**Mildred Lake - February 2023**

| Maximum Value: 4.3 ppm on Feb 5 14:00       |                               | Maximum Daily Average: 3.1 ppm on Feb 5  |     | Hours in Service: 672           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |               |               |
|---|-------------------------------|--|-----|---------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----------------|---------------|---------------|
| Minimum Value: 2.0 ppm on Feb 14 00:00      |                               | Minimum Daily Average: 2.0 ppm on Feb 14   |     | Hours of Data: 641              |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |               |               |
| Maximum Diurnal Average: 2.4 ppm at hour 10 |                               | Minimum Diurnal Average: 2.2 ppm at hour 17  |     | Hours of Missing Data: 31       |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |               |               |
| Monthly Average: 2.26 ppm                   |                               | Percentiles: P <sub>1</sub> = 2.0 P <sub>10</sub> = 2.0 Q <sub>1</sub> = 2.0 Median = 2.1 Q <sub>3</sub> = 2.4 P <sub>90</sub> = 2.6 P <sub>99</sub> = 3.5 |     | Hours of Calibration: 31        |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |               |               |
|   |                               |  |     | Percent Operational Time: 100.0 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |               |               |
| Day   | Hourly Period Ending At (MST) |  |     |                                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 | Daily Average | Daily Maximum |
|   | 1                             | 2  | 3   | 4                               | 5   | 6   | 7   | 8   | 9   | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19  | 20  | 21  | 22  | 23  | 24              |               |               |
| 1-Feb                                       | 3.3                           | 2.8  | 2.7 | 2.7                             | 2.6 | Z   | 3.0 | 2.6 | 2.4 | 2.2 | 2.2 | 2.3 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.2 | 2.4 | 2.4 | 2.2 | 2.4             | 3.3           |               |
| 2-Feb                                       | Z                             | 2.1  | 2.0 | 2.3                             | 2.2 | 2.1 | 2.2 | 2.4 | 2.3 | 2.7 | 2.4 | 2.3 | 2.4 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.0 | 2.0 | 2.1 | 2.1 | 2.1 | 2.1             | 2.7           |               |
| 3-Feb                                       | 2.1                           | Z  | 2.2 | 2.5                             | 2.4 | 2.4 | 2.8 | 2.4 | 2.3 | 2.4 | 2.1 | 2.4 | 2.5 | 2.2 | 2.6 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1             | 2.8           |               |
| 4-Feb                                       | 2.1                           | 2.1  | Z   | 2.1                             | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.3 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.3 | 2.4 | 2.3 | 2.2 | 2.3 | 2.6             |               |               |
| 5-Feb                                       | 2.5                           | 2.4  | 2.6 | Z                               | 2.5 | 2.5 | 2.8 | 2.8 | 2.8 | 3.1 | 3.9 | 4.1 | 4.0 | 4.3 | 3.1 | 3.5 | 2.9 | 2.9 | 3.0 | 3.1 | 3.2 | 3.3 | 2.8 | 2.5             | 4.3           |               |
| 6-Feb                                       | 2.2                           | 2.3  | 2.3 | 2.2                             | Z   | 2.3 | 2.2 | 2.4 | 2.2 | 2.3 | 2.1 | 2.1 | 2.1 | 2.2 | 2.5 | 2.3 | 2.2 | 2.2 | 2.1 | 2.1 | 2.2 | 2.4 | 2.4 | 3.2             | 3.2           |               |
| 7-Feb                                       | 3.3                           | 2.6  | 2.3 | 2.3                             | 2.2 | Z   | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1 | 2.1 | 2.1 | 2.1 | 2.6 | 2.2 | 2.0             | 3.3           |               |
| 8-Feb                                       | Z                             | 2.0  | 2.0 | 2.0                             | 2.1 | 2.1 | 2.2 | 2.2 | 2.2 | 2.5 | C   | C   | C   | 2.3 | 2.3 | 2.4 | 2.3 | 2.6 | 3.1 | 2.8 | 2.7 | 2.5 | 2.5 | 2.6             | 3.1           |               |
| 9-Feb                                       | 2.6                           | 2.6  | 2.6 | 2.6                             | Z   | 3.5 | 3.2 | 2.1 | 2.5 | 3.3 | 2.5 | 2.5 | 2.3 | 2.5 | 2.4 | 2.3 | 2.3 | 2.5 | 2.7 | 2.3 | 2.4 | 2.4 | 2.6 | 2.6             | 3.5           |               |
| 10-Feb                                      | 2.6                           | 2.5  | Z   | 3.2                             | 2.7 | 2.4 | 2.1 | 2.0 | 2.0 | 2.0 | 2.2 | 2.2 | 2.0 | 2.1 | 2.2 | 2.3 | 2.3 | 2.2 | 2.3 | 2.3 | 2.2 | 2.3 | 2.3 | 2.2             | 3.2           |               |
| 11-Feb                                      | 2.2                           | 2.2  | 2.3 | Z                               | 2.4 | 2.3 | 2.3 | 2.3 | 2.3 | 2.1 | 2.0 | 2.1 | 2.2 | 2.2 | 2.5 | 2.0 | 2.0 | 2.0 | 2.1 | 2.1 | 2.3 | 2.5 | 2.1 | 2.0             | 2.5           |               |
| 12-Feb                                      | 2.0                           | 2.0  | 2.1 | 2.0                             | Z   | 2.0 | 2.0 | 2.1 | 2.1 | 2.8 | 2.7 | 2.1 | 2.1 | 2.0 | 2.1 | 2.1 | 2.1 | 2.3 | 2.9 | 3.0 | 3.1 | 2.9 | 2.4 | 2.2             | 3.1           |               |
| 13-Feb                                      | 2.1                           | 2.0  | 2.0 | 2.7                             | 2.3 | Z   | 2.1 | 2.2 | 2.2 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0             | 2.7           |               |
| 14-Feb                                      | Z                             | 2.0  | 2.0 | 2.0                             | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0             | 2.0           |               |
| 15-Feb                                      | 2.0                           | Z  | 2.0 | 2.6                             | 2.1 | 2.1 | 2.0 | 2.0 | 2.4 | 2.2 | 2.0 | 2.1 | 2.1 | 2.1 | 2.0 | 2.1 | 2.1 | 2.2 | 2.2 | 2.8 | 3.6 | 3.0 | 2.6 | 2.5             | 3.6           |               |
| 16-Feb                                      | 2.4                           | 2.5  | Z   | 2.5                             | 2.6 | 2.5 | 2.4 | 2.5 | 2.4 | 2.0 | 2.0 | 2.1 | 2.8 | 2.1 | 2.1 | 2.1 | 2.2 | 2.5 | 2.5 | 2.2 | 2.0 | 2.0 | 2.0 | 2.0             | 2.8           |               |
| 17-Feb                                      | 2.0                           | 2.0  | 2.0 | Z                               | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0             | 2.0           |               |
| 18-Feb                                      | 2.1                           | 2.2  | 2.2 | 2.2                             | Z   | 2.6 | 2.5 | 2.4 | 2.6 | 2.7 | 2.3 | 2.4 | 2.2 | 2.1 | 2.0 | 2.2 | 2.3 | 2.3 | 2.2 | 2.2 | 2.1 | 2.0 | 2.2 | 2.2             | 2.7           |               |
| 19-Feb                                      | 2.3                           | 2.4  | 2.4 | 2.4                             | 2.5 | Z   | 2.4 | 2.4 | 2.4 | 2.5 | 2.5 | 2.5 | 2.4 | 2.3 | 2.6 | 2.7 | 2.6 | 2.4 | 2.5 | 2.7 | 2.7 | 2.4 | 2.2 | 2.2             | 2.7           |               |
| 20-Feb                                      | Z                             | 2.0  | 2.0 | 2.0                             | 2.0 | 2.1 | 2.0 | 2.0 | 2.1 | 2.5 | 2.3 | 2.4 | 2.5 | 2.3 | 2.1 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1 | 2.3 | 2.1             | 2.5           |               |
| 21-Feb                                      | 2.0                           | Z  | 2.0 | 2.0                             | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1 | 2.1 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1             | 2.1           |               |
| 22-Feb                                      | 2.1                           | 2.1  | Z   | 2.0                             | 2.0 | 2.0 | 2.1 | 2.1 | 2.1 | 2.0 | 2.0 | 2.2 | 2.3 | 2.1 | 2.2 | 2.3 | 2.2 | 2.2 | 2.5 | 2.5 | 2.3 | 2.2 | 2.2 | 2.2             | 2.5           |               |
| 23-Feb                                      | 2.2                           | 2.3  | 2.3 | Z                               | 2.4 | 2.3 | 2.2 | 2.6 | 2.9 | 3.3 | 3.3 | 3.1 | 2.3 | 2.3 | 2.3 | 2.2 | 2.4 | 2.4 | 3.5 | 3.3 | 2.3 | 2.1 | 2.0 | 2.1             | 3.5           |               |
| 24-Feb                                      | 3.1                           | 3.6  | 2.3 | Z                               | 2.5 | 2.6 | 2.1 | 2.4 | 2.4 | 2.2 | 2.2 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0             | 3.6           |               |
| 25-Feb                                      | 2.1                           | 2.1  | 2.1 | 2.0                             | 2.8 | Z   | 2.0 | 2.1 | 2.1 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1 | 2.1 | 2.3 | 2.4 | 2.2 | 2.8 | 3.8 | 2.7             | 3.8           |               |
| 26-Feb                                      | Z                             | 2.5  | 2.2 | 2.1                             | 2.1 | 2.1 | 2.1 | 2.1 | 2.0 | 2.2 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0             | 2.5           |               |
| 27-Feb                                      | 2.0                           | Z  | 2.1 | 2.1                             | 2.3 | 2.2 | 2.1 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1             | 2.3           |               |
| 28-Feb                                      | 2.1                           | 2.0  | Z   | 2.2                             | 2.2 | 2.2 | 2.2 | 2.3 | 2.3 | 2.6 | 2.3 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.5             | 2.6           |               |
|   |                               |  |     |                                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Diurnal Average |               |               |
|   |                               |  |     |                                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Diurnal Maximum |               |               |
| Z - zerospan      C - Calibration           |                               |  |     |                                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |               |               |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Total Hydrocarbons (THC) - ppm**  
**Mildred Lake - February 2023**





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Total Hydrocarbons (THC) - ppm**  
**Mildred Lake - February 2023**

| <b>Concentration Ranges (ppm)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 2.0                           | 196                    | 30.58    | 30.58               |
| 2.1 - 3.0                         | 417                    | 65.05    | 95.63               |
| 3.1 - 10.0                        | 28                     | 4.37     | 100.00              |
| > 10.0                            | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 641

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Total Hydrocarbons (THC) - ppm  
Mildred Lake - February 2023**

| <b>Concentration<br/>Ranges (ppm)</b> | <b>Wind Direction</b> |     |    |     |   |     |    |     |    |     |    |     |    |     |    |     | <b>Totals</b> |
|---------------------------------------|-----------------------|-----|----|-----|---|-----|----|-----|----|-----|----|-----|----|-----|----|-----|---------------|
|                                       | N                     | NNE | NE | ENE | E | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |               |
| 0 - 2.0                               | 60                    | 43  | 9  | 5   | 1 | 1   | 5  | 6   | 23 | 5   | 1  | 7   | 8  | 1   | 5  | 15  | 195           |
| 2.1 - 3.0                             | 75                    | 18  | 6  | 3   | 5 | 20  | 51 | 48  | 34 | 31  | 3  | 12  | 19 | 16  | 21 | 51  | 413           |
| 3.1 - 10.0                            | 2                     | 0   | 1  | 0   | 0 | 0   | 3  | 8   | 5  | 1   | 3  | 1   | 0  | 2   | 2  | 0   | 28            |
| > 10.0                                | 0                     | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| <b>Totals</b>                         | 137                   | 61  | 16 | 8   | 6 | 21  | 59 | 62  | 62 | 37  | 7  | 20  | 27 | 19  | 28 | 66  | 636           |

Total Number of Valid Hours: 636

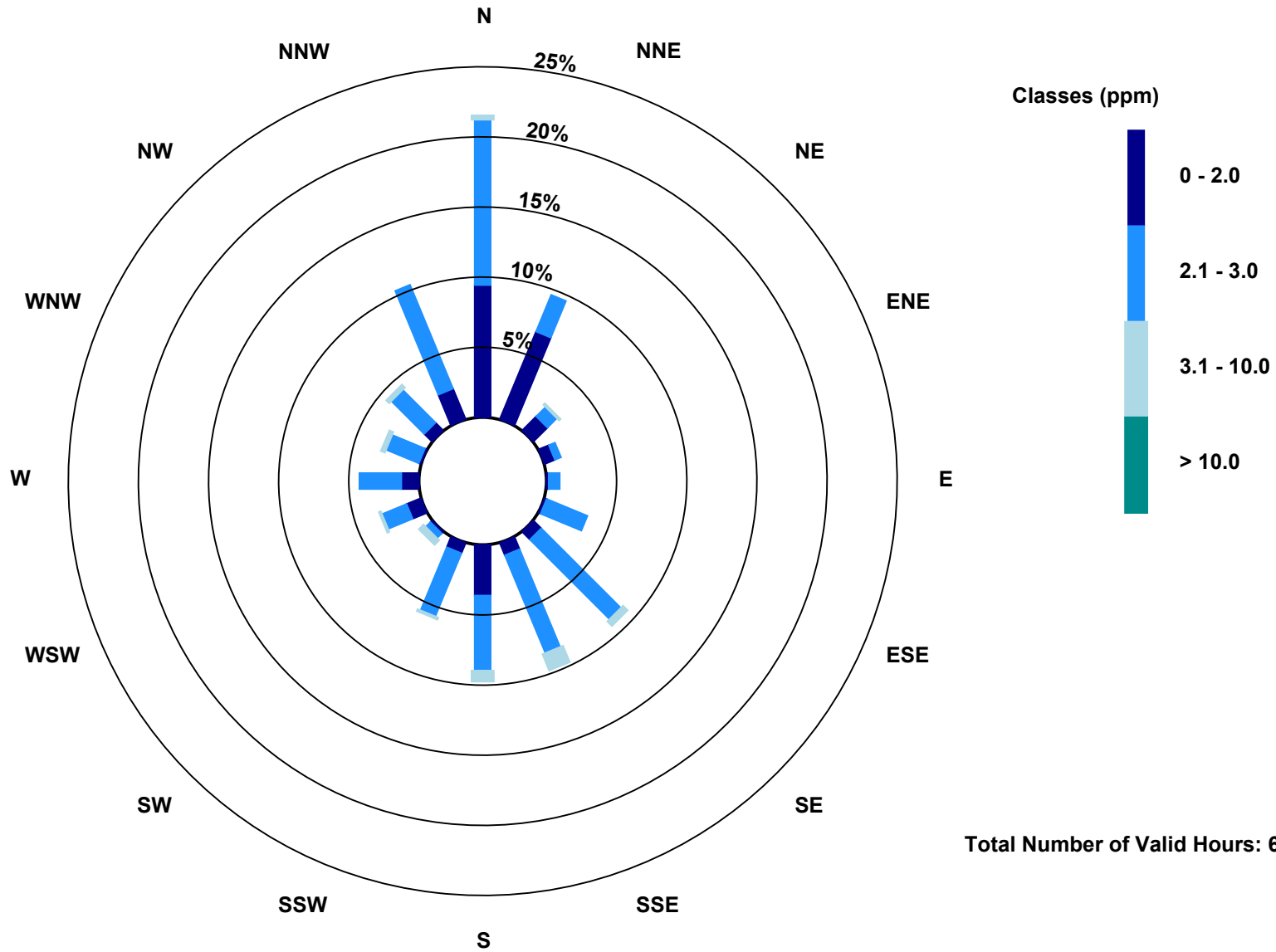
Total Number of Hours: 672



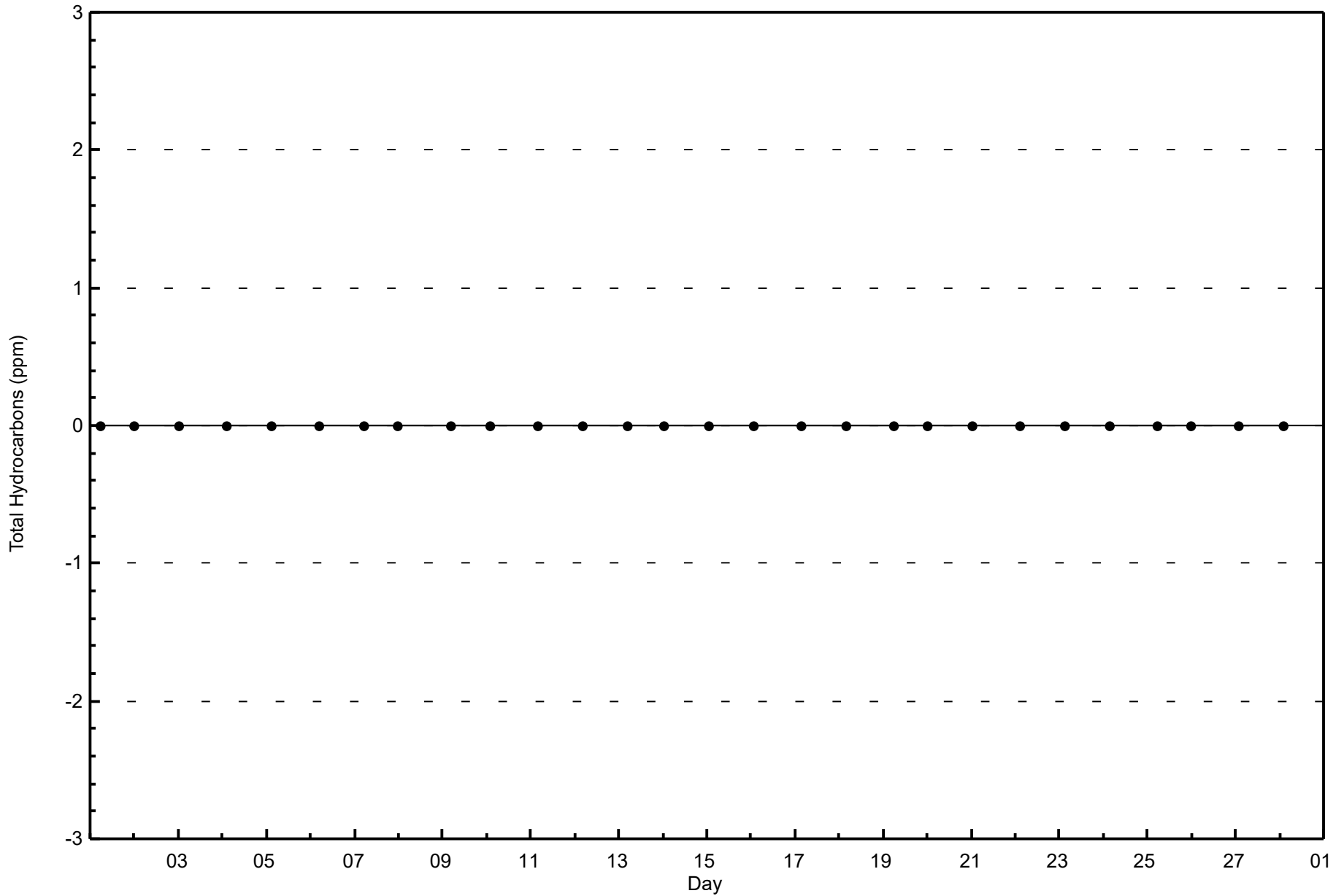


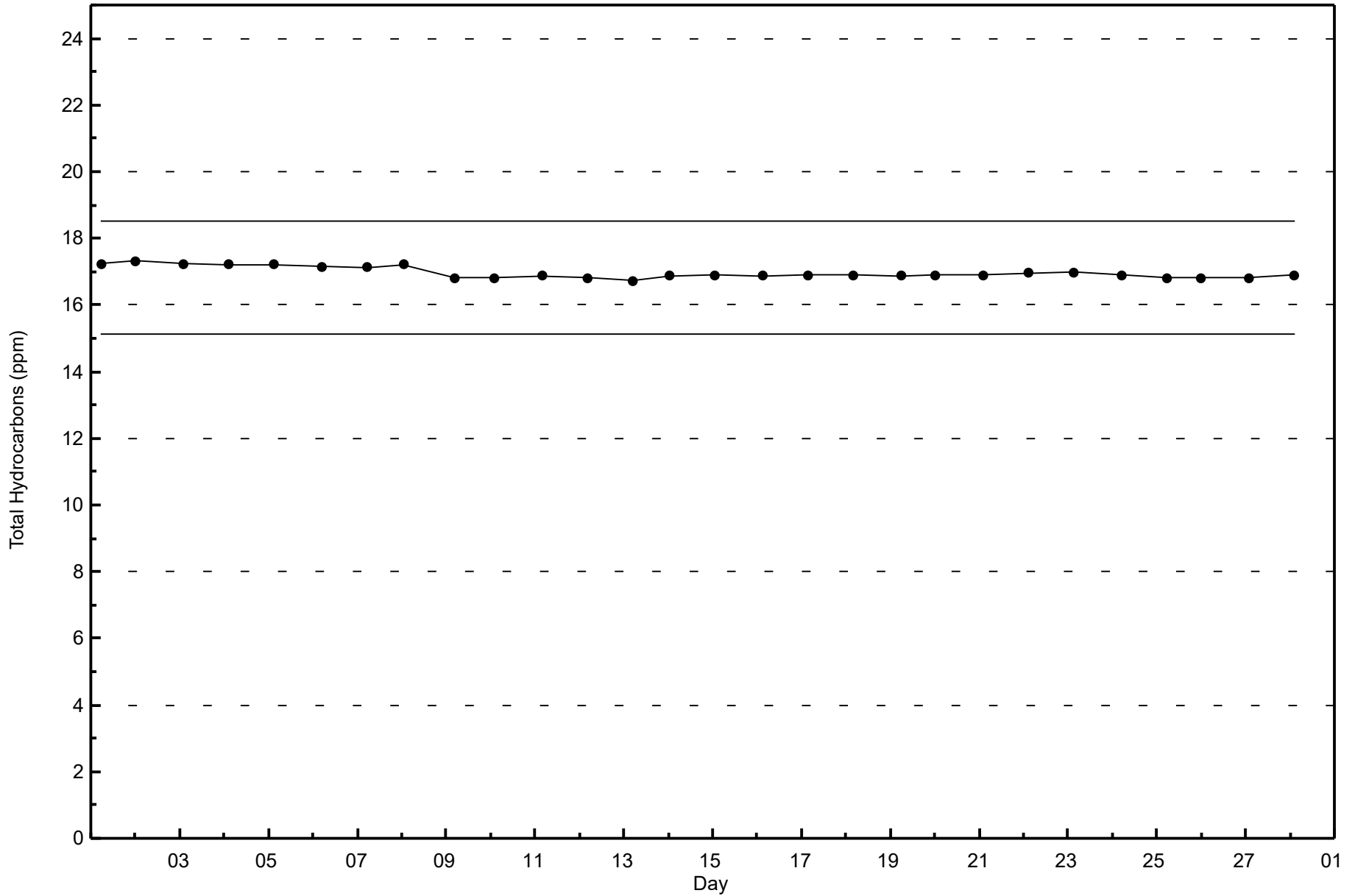
Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Total Hydrocarbons (THC) - ppm  
Mildred Lake



Total Number of Valid Hours: 636







Summary of Hour Averages

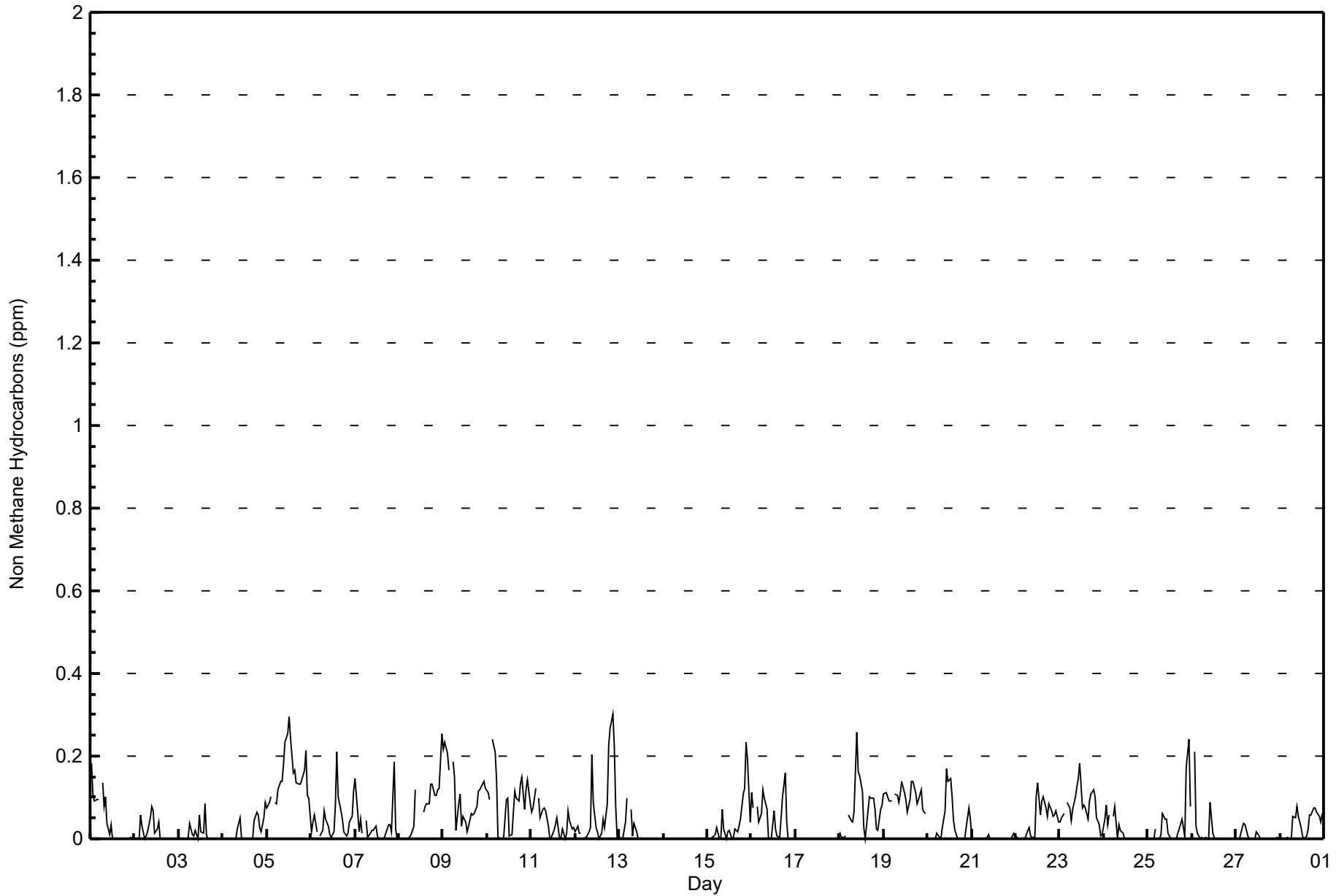
Mildred Lake - February 2023

| Maximum Value: 0.303 ppm on Feb 12 21:00      |                               | Maximum Daily Average: 0.151 ppm on Feb 5  |       | Hours in Service:         | 672   |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |               |                 |  |
|---|-------------------------------|--|-------|---------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------------|-----------------|--|
| Minimum Value: 0.000 ppm on Feb 1 13:00       |                               | Minimum Daily Average: 0.000 ppm on Feb 14   |       | Hours of Data:            | 641   |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |               |                 |  |
| Maximum Diurnal Average: 0.063 ppm at hour 22 |                               | Minimum Diurnal Average: 0.031 ppm at hour 14  |       | Hours of Missing Data:    | 31    |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |               |                 |  |
| Monthly Average: 0.045 ppm                    |                               | Percentiles: P <sub>1</sub> = 0.0 P <sub>10</sub> = 0.0 Q <sub>1</sub> = 0.0 Median = 0.0 Q <sub>3</sub> = 0.1 P <sub>90</sub> = 0.1 P <sub>99</sub> = 0.2 |       | Hours of Calibration:     | 31    |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |               |                 |  |
|   |                               |  |       | Percent Operational Time: | 100.0 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |               |                 |  |
| Day   | Hourly Period Ending At (MST) |  |       |                           |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Daily Average | Daily Maximum   |  |
|   | 1                             | 2  | 3     | 4                         | 5     | 6     | 7     | 8     | 9     | 10    | 11    | 12    | 13    | 14    | 15    | 16    | 17    | 18    | 19    | 20    | 21    | 22    | 23    | 24    |               |                 |  |
| 1-Feb   | 0.185                         | 0.109  | 0.091 | 0.096                     | 0.095 | Z     | 0.134 | 0.078 | 0.102 | 0.036 | 0.011 | 0.035 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.001 | 0.002 | 0.000 | 0.042         | 0.185           |  |
| 2-Feb   | Z                             | 0.000  | 0.000 | 0.057                     | 0.030 | 0.001 | 0.008 | 0.018 | 0.052 | 0.078 | 0.067 | 0.015 | 0.024 | 0.041 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.017         | 0.078           |  |
| 3-Feb   | 0.000                         | Z  | 0.001 | 0.001                     | 0.000 | 0.004 | 0.037 | 0.012 | 0.008 | 0.019 | 0.000 | 0.058 | 0.016 | 0.013 | 0.085 | 0.009 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.011         | 0.085           |  |
| 4-Feb   | 0.000                         | 0.000  | Z     | 0.000                     | 0.000 | 0.000 | 0.000 | 0.000 | 0.023 | 0.052 | 0.005 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.001 | 0.043 | 0.064 | 0.058 | 0.026 | 0.018 | 0.052 | 0.087 | 0.019         | 0.087           |  |
| 5-Feb   | 0.075                         | 0.088  | 0.102 | Z                         | 0.087 | 0.086 | 0.119 | 0.138 | 0.139 | 0.178 | 0.233 | 0.253 | 0.294 | 0.243 | 0.158 | 0.167 | 0.137 | 0.134 | 0.133 | 0.141 | 0.166 | 0.213 | 0.105 | 0.097 | 0.151         | 0.294           |  |
| 6-Feb   | 0.017                         | 0.041  | 0.057 | 0.017                     | Z     | 0.007 | 0.022 | 0.066 | 0.047 | 0.032 | 0.012 | 0.002 | 0.018 | 0.081 | 0.212 | 0.103 | 0.069 | 0.048 | 0.018 | 0.007 | 0.013 | 0.041 | 0.054 | 0.116 | 0.048         | 0.212           |  |
| 7-Feb   | 0.147                         | 0.060  | 0.017 | 0.046                     | 0.014 | Z     | 0.044 | 0.004 | 0.013 | 0.020 | 0.021 | 0.032 | 0.008 | 0.000 | 0.000 | 0.001 | 0.002 | 0.012 | 0.032 | 0.033 | 0.017 | 0.185 | 0.025 | 0.000 | 0.032         | 0.185           |  |
| 8-Feb   | Z                             | 0.000  | 0.000 | 0.000                     | 0.000 | 0.000 | 0.012 | 0.019 | 0.029 | 0.118 | C     | C     | C     | 0.064 | 0.079 | 0.084 | 0.084 | 0.133 | 0.132 | 0.103 | 0.104 | 0.118 | 0.122 | 0.253 | 0.073         | 0.253           |  |
| 9-Feb   | 0.216                         | 0.235  | 0.206 | 0.165                     | Z     | 0.186 | 0.149 | 0.021 | 0.086 | 0.107 | 0.029 | 0.054 | 0.042 | 0.017 | 0.031 | 0.060 | 0.057 | 0.062 | 0.077 | 0.114 | 0.120 | 0.133 | 0.138 | 0.122 | 0.106         | 0.235           |  |
| 10-Feb  | 0.112                         | 0.096  | Z     | 0.240                     | 0.211 | 0.141 | 0.003 | 0.000 | 0.000 | 0.000 | 0.094 | 0.097 | 0.005 | 0.011 | 0.063 | 0.116 | 0.100 | 0.090 | 0.133 | 0.149 | 0.071 | 0.119 | 0.141 | 0.089 | 0.090         | 0.240           |  |
| 11-Feb  | 0.065                         | 0.076  | 0.121 | Z                         | 0.097 | 0.052 | 0.071 | 0.076 | 0.069 | 0.030 | 0.000 | 0.002 | 0.019 | 0.033 | 0.049 | 0.000 | 0.005 | 0.025 | 0.000 | 0.014 | 0.069 | 0.044 | 0.024 | 0.028 | 0.042         | 0.121           |  |
| 12-Feb  | 0.016                         | 0.030  | 0.014 | 0.013                     | Z     | 0.002 | 0.005 | 0.016 | 0.029 | 0.204 | 0.090 | 0.028 | 0.019 | 0.000 | 0.013 | 0.047 | 0.029 | 0.084 | 0.227 | 0.267 | 0.303 | 0.224 | 0.079 | 0.002 | 0.076         | 0.303           |  |
| 13-Feb  | 0.002                         | 0.000  | 0.000 | 0.039                     | 0.097 | Z     | 0.072 | 0.006 | 0.037 | 0.016 | 0.000 | 0.000 | 0.000 | 0.001 | 0.000 | 0.000 | 0.000 | 0.001 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.012         | 0.097           |  |
| 14-Feb  | Z                             | 0.000  | 0.000 | 0.000                     | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000         | 0.000           |  |
| 15-Feb  | 0.000                         | Z  | 0.000 | 0.006                     | 0.011 | 0.027 | 0.000 | 0.001 | 0.072 | 0.022 | 0.001 | 0.018 | 0.019 | 0.001 | 0.005 | 0.025 | 0.017 | 0.031 | 0.047 | 0.108 | 0.123 | 0.234 | 0.192 | 0.042 | 0.044         | 0.234           |  |
| 16-Feb  | 0.111                         | 0.074  | Z     | 0.079                     | 0.042 | 0.060 | 0.120 | 0.099 | 0.072 | 0.000 | 0.000 | 0.002 | 0.067 | 0.024 | 0.007 | 0.003 | 0.051 | 0.102 | 0.159 | 0.041 | 0.000 | 0.000 | 0.000 | 0.000 | 0.048         | 0.159           |  |
| 17-Feb  | 0.000                         | 0.000  | 0.000 | Z                         | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.004 | 0.000         | 0.004           |  |
| 18-Feb  | 0.014                         | 0.004  | 0.002 | 0.005                     | Z     | 0.057 | 0.046 | 0.042 | 0.063 | 0.258 | 0.164 | 0.153 | 0.114 | 0.029 | 0.000 | 0.069 | 0.101 | 0.098 | 0.100 | 0.070 | 0.023 | 0.019 | 0.072 | 0.081 | 0.069         | 0.258           |  |
| 19-Feb  | 0.108                         | 0.110  | 0.103 | 0.092                     | 0.092 | Z     | 0.110 | 0.106 | 0.089 | 0.109 | 0.138 | 0.112 | 0.096 | 0.065 | 0.097 | 0.138 | 0.139 | 0.111 | 0.083 | 0.094 | 0.119 | 0.071 | 0.063 | 0.061 | 0.100         | 0.139           |  |
| 20-Feb  | Z                             | 0.000  | 0.000 | 0.000                     | 0.000 | 0.015 | 0.002 | 0.001 | 0.026 | 0.067 | 0.169 | 0.139 | 0.147 | 0.101 | 0.042 | 0.019 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.027 | 0.074 | 0.046 | 0.038         | 0.169           |  |
| 21-Feb  | 0.011                         | Z  | 0.000 | 0.000                     | 0.000 | 0.000 | 0.000 | 0.000 | 0.004 | 0.009 | 0.001 | 0.001 | 0.000 | 0.001 | 0.001 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.006 | 0.012 | 0.002         | 0.012           |  |
| 22-Feb  | 0.005                         | 0.002  | Z     | 0.000                     | 0.001 | 0.000 | 0.019 | 0.029 | 0.006 | 0.004 | 0.002 | 0.102 | 0.136 | 0.056 | 0.092 | 0.101 | 0.076 | 0.055 | 0.085 | 0.068 | 0.053 | 0.058 | 0.069 | 0.039 | 0.046         | 0.136           |  |
| 23-Feb  | 0.042                         | 0.050  | 0.061 | Z                         | 0.088 | 0.074 | 0.045 | 0.072 | 0.103 | 0.126 | 0.147 | 0.182 | 0.073 | 0.082 | 0.074 | 0.049 | 0.091 | 0.108 | 0.118 | 0.103 | 0.050 | 0.035 | 0.008 | 0.010 | 0.078         | 0.182           |  |
| 24-Feb  | 0.049                         | 0.081  | 0.032 | 0.057                     | Z     | 0.054 | 0.079 | 0.001 | 0.032 | 0.020 | 0.013 | 0.002 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.018         | 0.081           |  |
| 25-Feb  | 0.000                         | 0.000  | 0.001 | 0.000                     | 0.025 | Z     | 0.000 | 0.012 | 0.063 | 0.046 | 0.048 | 0.013 | 0.000 | 0.000 | 0.000 | 0.000 | 0.014 | 0.023 | 0.046 | 0.028 | 0.002 | 0.172 | 0.241 | 0.078 | 0.035         | 0.241           |  |
| 26-Feb  | Z                             | 0.211  | 0.031 | 0.012                     | 0.000 | 0.002 | 0.000 | 0.005 | 0.001 | 0.000 | 0.087 | 0.014 | 0.003 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.016         | 0.211           |  |
| 27-Feb  | 0.000                         | Z  | 0.000 | 0.027                     | 0.037 | 0.033 | 0.007 | 0.001 | 0.000 | 0.000 | 0.000 | 0.017 | 0.006 | 0.000 | 0.000 | 0.001 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.003 | 0.000 | 0.006         | 0.037           |  |
| 28-Feb  | 0.001                         | 0.000  | Z     | 0.000                     | 0.004 | 0.001 | 0.002 | 0.053 | 0.051 | 0.078 | 0.056 | 0.028 | 0.008 | 0.000 | 0.006 | 0.022 | 0.057 | 0.058 | 0.074 | 0.074 | 0.066 | 0.054 | 0.042 | 0.062 | 0.035         | 0.078           |  |
|   |                               | 0.051  | 0.053 | 0.036                     | 0.040 | 0.040 | 0.035 | 0.039 | 0.031 | 0.043 | 0.058 | 0.051 | 0.050 | 0.041 | 0.031 | 0.036 | 0.036 | 0.037 | 0.043 | 0.055 | 0.053 | 0.047 | 0.063 | 0.054 | 0.044         | Diurnal Average |  |
|   |                               | 0.216  | 0.235 | 0.206                     | 0.240 | 0.211 | 0.186 | 0.149 | 0.138 | 0.139 | 0.258 | 0.233 | 0.253 | 0.294 | 0.243 | 0.212 | 0.167 | 0.139 | 0.134 | 0.227 | 0.267 | 0.303 | 0.234 | 0.241 | 0.253         | Diurnal Maximum |  |
| Z - zerspan                                   |                               | C - Calibration  |       |                           |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |               |                 |  |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Non Methane Hydrocarbons (NMHC) - ppm**  
**Mildred Lake - February 2023**





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Non Methane Hydrocarbons (NMHC) - ppm**  
**Mildred Lake - February 2023**

| <b>Concentration Ranges (ppm)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 0.005                         | 264                    | 41.19    | 41.19               |
| 0.006 - 0.05                      | 165                    | 25.74    | 66.93               |
| 0.06 - 0.1                        | 176                    | 27.46    | 94.38               |
| > 0.1                             | 36                     | 5.62     | 100.00              |

Total Number of Valid Hours: 641

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Non Methane Hydrocarbons (NMHC) - ppm  
Mildred Lake - February 2023**

| <b>Concentration<br/>Ranges (ppm)</b> | <b>Wind Direction</b> |            |           |            |          |            |           |            |           |            |           |            |           |            |           |            | <b>Totals</b> |
|---------------------------------------|-----------------------|------------|-----------|------------|----------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|---------------|
|                                       | <b>N</b>              | <b>NNE</b> | <b>NE</b> | <b>ENE</b> | <b>E</b> | <b>ESE</b> | <b>SE</b> | <b>SSE</b> | <b>S</b>  | <b>SSW</b> | <b>SW</b> | <b>WSW</b> | <b>W</b>  | <b>WNW</b> | <b>NW</b> | <b>NNW</b> |               |
| 0 - 0.005                             | 73                    | 53         | 9         | 7          | 2        | 2          | 16        | 14         | 31        | 7          | 1         | 3          | 8         | 1          | 11        | 25         | 263           |
| 0.006 - 0.05                          | 25                    | 2          | 2         | 1          | 1        | 5          | 16        | 22         | 16        | 15         | 2         | 11         | 15        | 9          | 6         | 17         | 165           |
| 0.06 - 0.1                            | 33                    | 6          | 4         | 0          | 3        | 10         | 22        | 20         | 13        | 14         | 2         | 5          | 4         | 5          | 9         | 22         | 172           |
| > 0.1                                 | 6                     | 0          | 1         | 0          | 0        | 4          | 5         | 6          | 2         | 1          | 2         | 1          | 0         | 4          | 2         | 2          | 36            |
| <b>Totals</b>                         | <b>137</b>            | <b>61</b>  | <b>16</b> | <b>8</b>   | <b>6</b> | <b>21</b>  | <b>59</b> | <b>62</b>  | <b>62</b> | <b>37</b>  | <b>7</b>  | <b>20</b>  | <b>27</b> | <b>19</b>  | <b>28</b> | <b>66</b>  | <b>636</b>    |

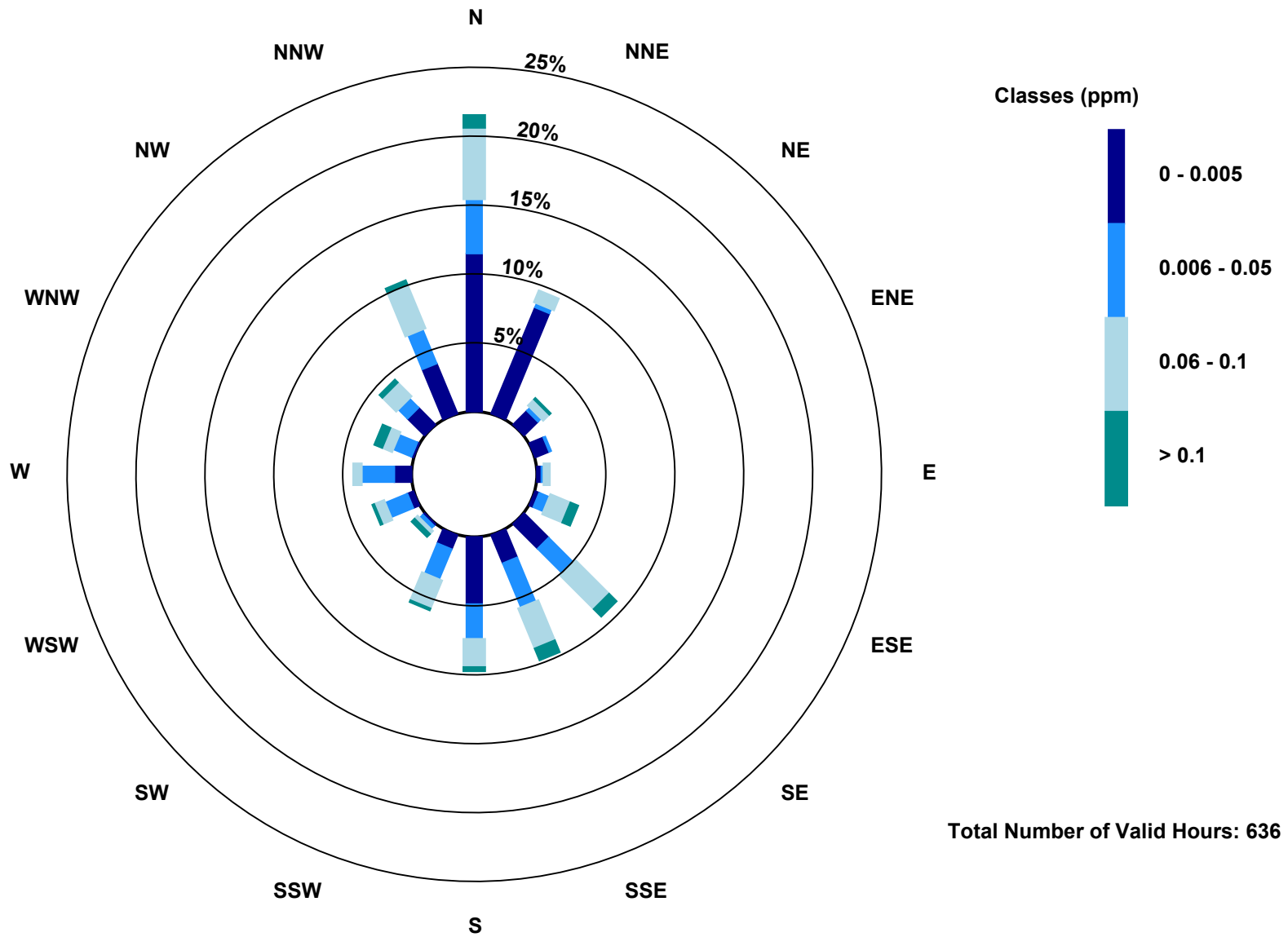
Total Number of Valid Hours: 636

Total Number of Hours: 672

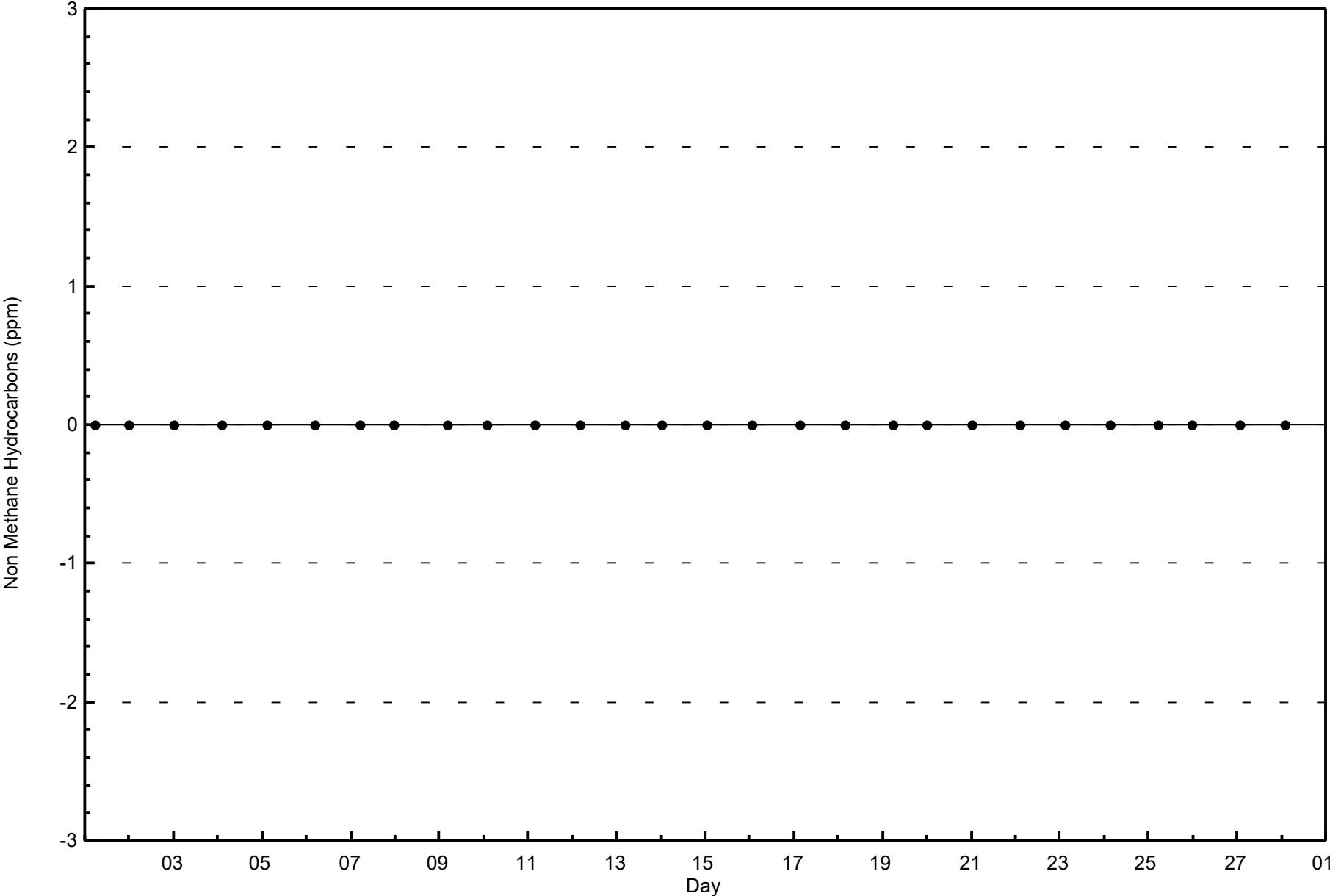


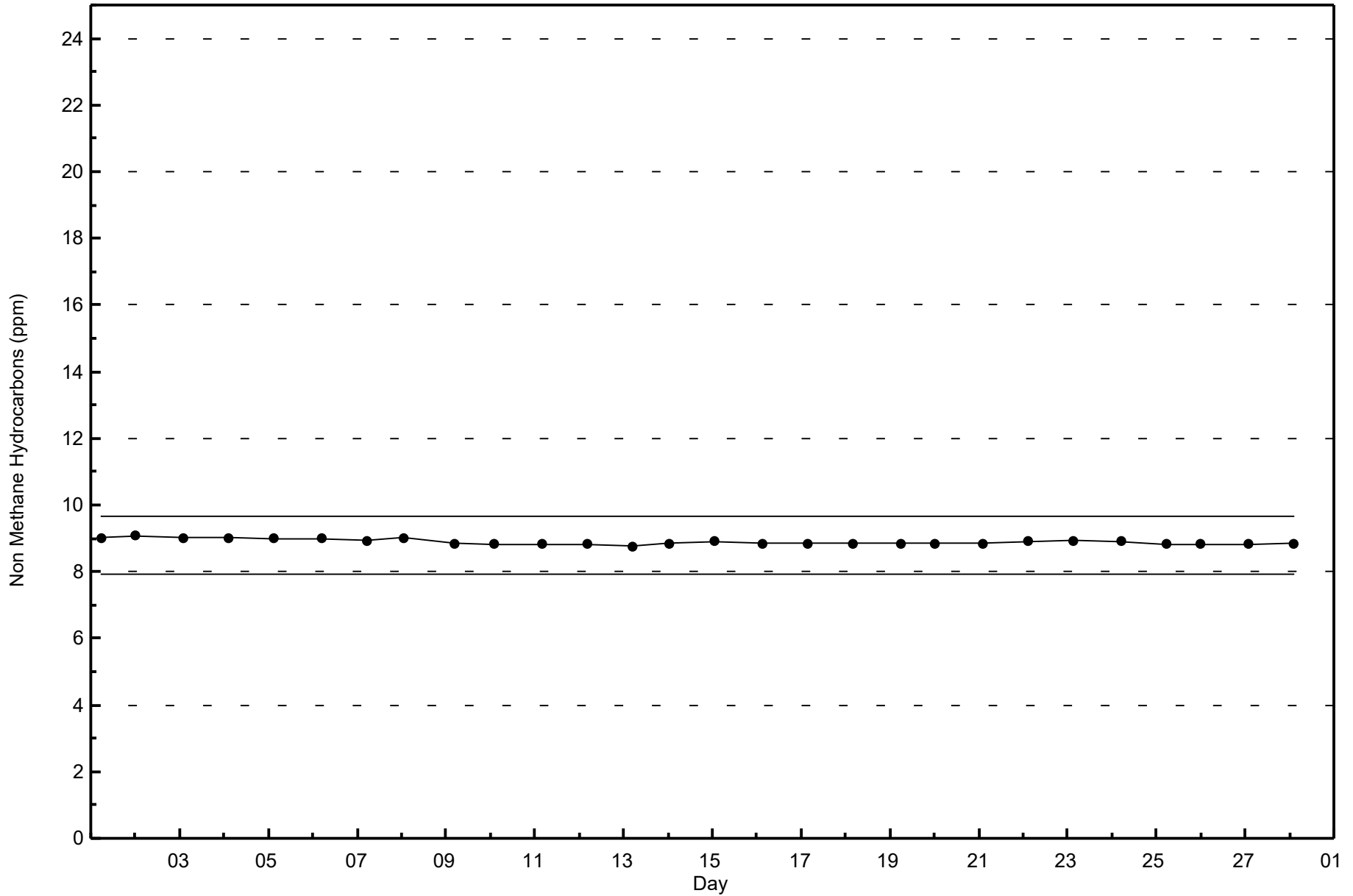
Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Non Methane Hydrocarbons (NMHC) - ppm  
Mildred Lake









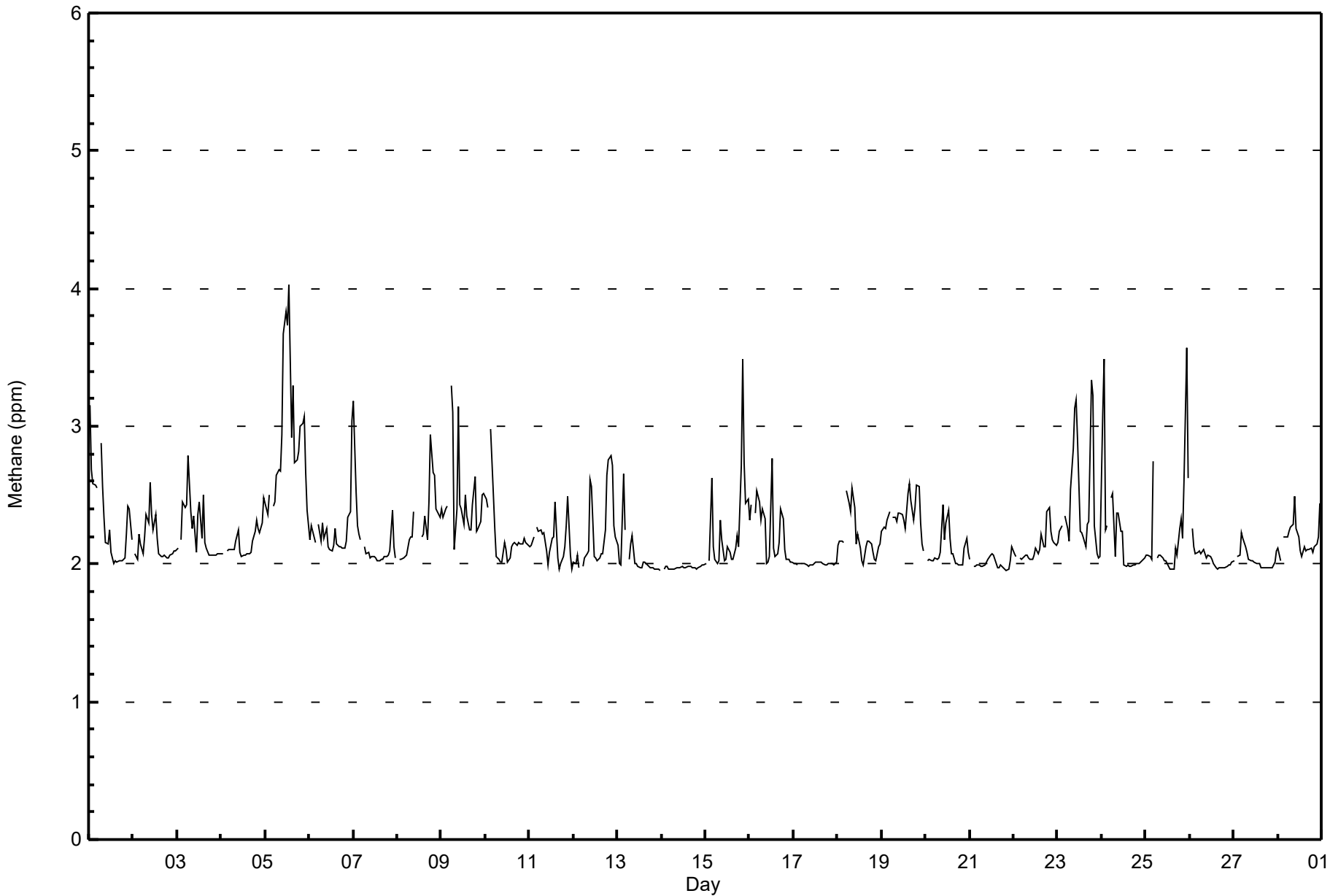


| Number of Exceedences (AAAQO):              |                               | 1-hr: 0  |     | 24-hr: 0                        |     | Hours in Service: 672 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |               |               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
|---|-------------------------------|--|-----|---------------------------------|-----|-----------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----------------|---------------|---------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----------------|
| Maximum Value: 4.0 ppm on Feb 5 14:00       |                               | Maximum Daily Average: 2.9 ppm on Feb 5  |     | Hours of Data: 641              |     |                       |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |               |               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| Minimum Value: 2.0 ppm on Feb 14 00:00      |                               | Minimum Daily Average: 2.0 ppm on Feb 14   |     | Hours of Missing Data: 31       |     |                       |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |               |               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| Maximum Diurnal Average: 2.3 ppm at hour 10 |                               | Minimum Diurnal Average: 2.1 ppm at hour 17  |     | Hours of Calibration: 31        |     |                       |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |               |               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| Monthly Average: 2.21 ppm                   |                               | Percentiles: P <sub>1</sub> = 2.0 P <sub>10</sub> = 2.0 Q <sub>1</sub> = 2.0 Median = 2.1 Q <sub>3</sub> = 2.3 P <sub>90</sub> = 2.5 P <sub>99</sub> = 3.4 |     | Percent Operational Time: 100.0 |     |                       |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |               |               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| Day   | Hourly Period Ending At (MST) |  |     |                                 |     |                       |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 | Daily Average | Daily Maximum |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
|   | 1                             | 2  | 3   | 4                               | 5   | 6                     | 7   | 8   | 9   | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19  | 20  | 21  | 22  | 23  | 24              |               |               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 1-Feb                                       | 3.1                           | 2.7  | 2.6 | 2.6                             | 2.5 | Z                     | 2.9 | 2.6 | 2.3 | 2.2 | 2.1 | 2.2 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.2 | 2.4 | 2.4 | 2.2 | 2.3             | 3.1           |               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 2-Feb                                       | Z                             | 2.1  | 2.0 | 2.2                             | 2.1 | 2.1                   | 2.2 | 2.4 | 2.3 | 2.6 | 2.4 | 2.2 | 2.4 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.0 | 2.0 | 2.1 | 2.1 | 2.1 | 2.1             | 2.2           | 2.6           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 3-Feb                                       | 2.1                           | Z  | 2.2 | 2.5                             | 2.4 | 2.4                   | 2.8 | 2.4 | 2.3 | 2.3 | 2.1 | 2.4 | 2.5 | 2.2 | 2.5 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1             | 2.2           | 2.8           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 4-Feb                                       | 2.1                           | 2.1  | Z   | 2.1                             | 2.1 | 2.1                   | 2.1 | 2.1 | 2.2 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | 2.3 | 2.3 | 2.2 | 2.3 | 2.5             | 2.2           | 2.5           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 5-Feb                                       | 2.4                           | 2.4  | 2.5 | Z                               | 2.4 | 2.4                   | 2.6 | 2.7 | 2.7 | 2.9 | 3.7 | 3.8 | 3.7 | 4.0 | 2.9 | 3.3 | 2.7 | 2.8 | 2.8 | 3.0 | 3.0 | 3.1 | 2.7 | 2.4             | 2.9           | 4.0           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 6-Feb                                       | 2.2                           | 2.3  | 2.2 | 2.2                             | Z   | 2.3                   | 2.2 | 2.3 | 2.2 | 2.3 | 2.1 | 2.1 | 2.1 | 2.1 | 2.3 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.3 | 2.4 | 3.0             | 2.2           | 3.0           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 7-Feb                                       | 3.2                           | 2.5  | 2.3 | 2.2                             | 2.2 | Z                     | 2.1 | 2.1 | 2.1 | 2.0 | 2.1 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1 | 2.1 | 2.1 | 2.1 | 2.4 | 2.1 | 2.0             | 2.2           | 3.2           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 8-Feb                                       | Z                             | 2.0  | 2.0 | 2.0                             | 2.1 | 2.1                   | 2.2 | 2.2 | 2.2 | 2.4 | C   | C   | C   | 2.2 | 2.2 | 2.4 | 2.2 | 2.4 | 2.9 | 2.7 | 2.6 | 2.4 | 2.4 | 2.3             | 2.3           | 2.9           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 9-Feb                                       | 2.4                           | 2.3  | 2.4 | 2.4                             | Z   | 3.3                   | 3.1 | 2.1 | 2.4 | 3.1 | 2.4 | 2.4 | 2.3 | 2.5 | 2.4 | 2.2 | 2.3 | 2.4 | 2.6 | 2.2 | 2.3 | 2.3 | 2.5 | 2.5             | 2.5           | 3.3           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 10-Feb                                      | 2.5                           | 2.4  | Z   | 3.0                             | 2.5 | 2.3                   | 2.1 | 2.0 | 2.0 | 2.0 | 2.2 | 2.1 | 2.0 | 2.0 | 2.1 | 2.1 | 2.2 | 2.1 | 2.2 | 2.1 | 2.1 | 2.2 | 2.2 | 2.1             | 2.2           | 3.0           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 11-Feb                                      | 2.1                           | 2.1  | 2.2 | Z                               | 2.3 | 2.2                   | 2.2 | 2.2 | 2.2 | 2.1 | 2.0 | 2.1 | 2.2 | 2.2 | 2.4 | 2.0 | 2.0 | 2.0 | 2.1 | 2.1 | 2.3 | 2.5 | 2.1 | 2.0             | 2.2           | 2.5           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 12-Feb                                      | 2.0                           | 2.0  | 2.1 | 2.0                             | Z   | 2.0                   | 2.0 | 2.1 | 2.1 | 2.6 | 2.6 | 2.1 | 2.0 | 2.0 | 2.0 | 2.1 | 2.1 | 2.2 | 2.6 | 2.8 | 2.8 | 2.7 | 2.3 | 2.2             | 2.2           | 2.8           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 13-Feb                                      | 2.1                           | 2.0  | 2.0 | 2.7                             | 2.2 | Z                     | 2.0 | 2.1 | 2.2 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0             | 2.1           | 2.7           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 14-Feb                                      | Z                             | 2.0  | 2.0 | 2.0                             | 2.0 | 2.0                   | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0             | 2.0           | 2.0           | 2.0 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 15-Feb                                      | 2.0                           | Z  | 2.0 | 2.6                             | 2.1 | 2.0                   | 2.0 | 2.0 | 2.3 | 2.2 | 2.0 | 2.0 | 2.1 | 2.1 | 2.0 | 2.0 | 2.1 | 2.2 | 2.1 | 2.7 | 3.5 | 2.7 | 2.4 | 2.5             | 2.3           | 3.5           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 16-Feb                                      | 2.3                           | 2.4  | Z   | 2.4                             | 2.5 | 2.4                   | 2.3 | 2.4 | 2.3 | 2.0 | 2.0 | 2.1 | 2.8 | 2.1 | 2.1 | 2.1 | 2.2 | 2.4 | 2.3 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0             | 2.2           | 2.8           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 17-Feb                                      | 2.0                           | 2.0  | 2.0 | Z                               | 2.0 | 2.0                   | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0             | 2.0           | 2.0           | 2.0 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 18-Feb                                      | 2.1                           | 2.2  | 2.2 | 2.2                             | Z   | 2.5                   | 2.4 | 2.4 | 2.5 | 2.4 | 2.1 | 2.2 | 2.1 | 2.0 | 2.0 | 2.1 | 2.2 | 2.2 | 2.1 | 2.1 | 2.0 | 2.0 | 2.1 | 2.1             | 2.2           | 2.5           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 19-Feb                                      | 2.2                           | 2.3  | 2.3 | 2.3                             | 2.4 | Z                     | 2.3 | 2.3 | 2.3 | 2.4 | 2.4 | 2.4 | 2.3 | 2.3 | 2.5 | 2.6 | 2.5 | 2.3 | 2.4 | 2.6 | 2.6 | 2.3 | 2.1 | 2.1             | 2.4           | 2.6           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 20-Feb                                      | Z                             | 2.0  | 2.0 | 2.0                             | 2.0 | 2.0                   | 2.0 | 2.0 | 2.1 | 2.4 | 2.2 | 2.3 | 2.4 | 2.2 | 2.1 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1 | 2.2 | 2.1             | 2.1           | 2.4           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 21-Feb                                      | 2.0                           | Z  | 2.0 | 2.0                             | 2.0 | 2.0                   | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1 | 2.1 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1             | 2.0           | 2.1           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 22-Feb                                      | 2.1                           | 2.1  | Z   | 2.0                             | 2.0 | 2.0                   | 2.1 | 2.1 | 2.0 | 2.0 | 2.0 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.1 | 2.1 | 2.4 | 2.4 | 2.2 | 2.2 | 2.2 | 2.1             | 2.1           | 2.4           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 23-Feb                                      | 2.2                           | 2.2  | 2.3 | Z                               | 2.4 | 2.3                   | 2.2 | 2.5 | 2.8 | 3.1 | 3.2 | 2.9 | 2.2 | 2.2 | 2.2 | 2.1 | 2.3 | 2.3 | 3.3 | 3.2 | 2.3 | 2.1 | 2.0 | 2.1             | 2.5           | 3.3           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 24-Feb                                      | 3.1                           | 3.5  | 2.2 | 2.3                             | Z   | 2.5                   | 2.5 | 2.1 | 2.4 | 2.4 | 2.2 | 2.2 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0             | 2.2           | 3.5           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 25-Feb                                      | 2.1                           | 2.1  | 2.1 | 2.0                             | 2.7 | Z                     | 2.0 | 2.1 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1 | 2.1 | 2.3 | 2.3 | 2.2 | 2.6 | 3.6 | 2.6             | 2.2           | 3.6           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 26-Feb                                      | Z                             | 2.3  | 2.1 | 2.1                             | 2.1 | 2.1                   | 2.1 | 2.1 | 2.1 | 2.0 | 2.1 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0             | 2.0           | 2.3           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 27-Feb                                      | 2.0                           | Z  | 2.1 | 2.1                             | 2.2 | 2.2                   | 2.1 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1             | 2.0           | 2.2           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 28-Feb                                      | 2.1                           | 2.0  | Z   | 2.2                             | 2.2 | 2.2                   | 2.2 | 2.3 | 2.3 | 2.5 | 2.3 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.4             | 2.2           | 2.5           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 2.3   |                               |  |     |                                 |     |                       |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | 2.2             | 2.2           | 2.2           | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.3 | 2.2 | 2.2 | 2.2 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | Diurnal Average |
| 3.2   |                               |  |     |                                 |     |                       |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | 3.5             | 2.6           | 3.0           | 2.7 | 3.3 | 3.1 | 2.7 | 2.8 | 3.1 | 3.7 | 3.8 | 3.7 | 4.0 | 2.9 | 3.3 | 2.7 | 2.8 | 3.3 | 3.2 | 3.5 | 3.1 | 3.6 | 3.0 | 2.2 | 2.5 | Diurnal Maximum |
| Z - zerospan                                |                               |  |     |                                 |     |                       |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | C - Calibration |               |               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Methane (CH<sub>4</sub>) - ppm**  
**Mildred Lake - February 2023**





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Methane (CH<sub>4</sub>) - ppm**  
**Mildred Lake - February 2023**

| <b>Concentration Ranges (ppm)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 2.0                           | 210                    | 32.76    | 32.76               |
| 2.1 - 3.0                         | 412                    | 64.27    | 97.04               |
| 3.1 - 10.0                        | 19                     | 2.96     | 100.00              |
| > 10.0                            | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 641

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Methane (CH<sub>4</sub>) - ppm  
Mildred Lake - February 2023**

| Concentration<br>Ranges (ppm) | Wind Direction |     |    |     |   |     |    |     |    |     |    |     |    |     |    |     | Totals |
|-------------------------------|----------------|-----|----|-----|---|-----|----|-----|----|-----|----|-----|----|-----|----|-----|--------|
|                               | N              | NNE | NE | ENE | E | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |        |
| 0 - 2.0                       | 62             | 43  | 10 | 5   | 1 | 2   | 5  | 6   | 25 | 7   | 1  | 10  | 9  | 1   | 5  | 17  | 209    |
| 2.1 - 3.0                     | 74             | 18  | 6  | 3   | 5 | 19  | 51 | 50  | 33 | 30  | 5  | 9   | 18 | 16  | 22 | 49  | 408    |
| 3.1 - 10.0                    | 1              | 0   | 0  | 0   | 0 | 0   | 3  | 6   | 4  | 0   | 1  | 1   | 0  | 2   | 1  | 0   | 19     |
| > 10.0                        | 0              | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| <b>Totals</b>                 | 137            | 61  | 16 | 8   | 6 | 21  | 59 | 62  | 62 | 37  | 7  | 20  | 27 | 19  | 28 | 66  | 636    |

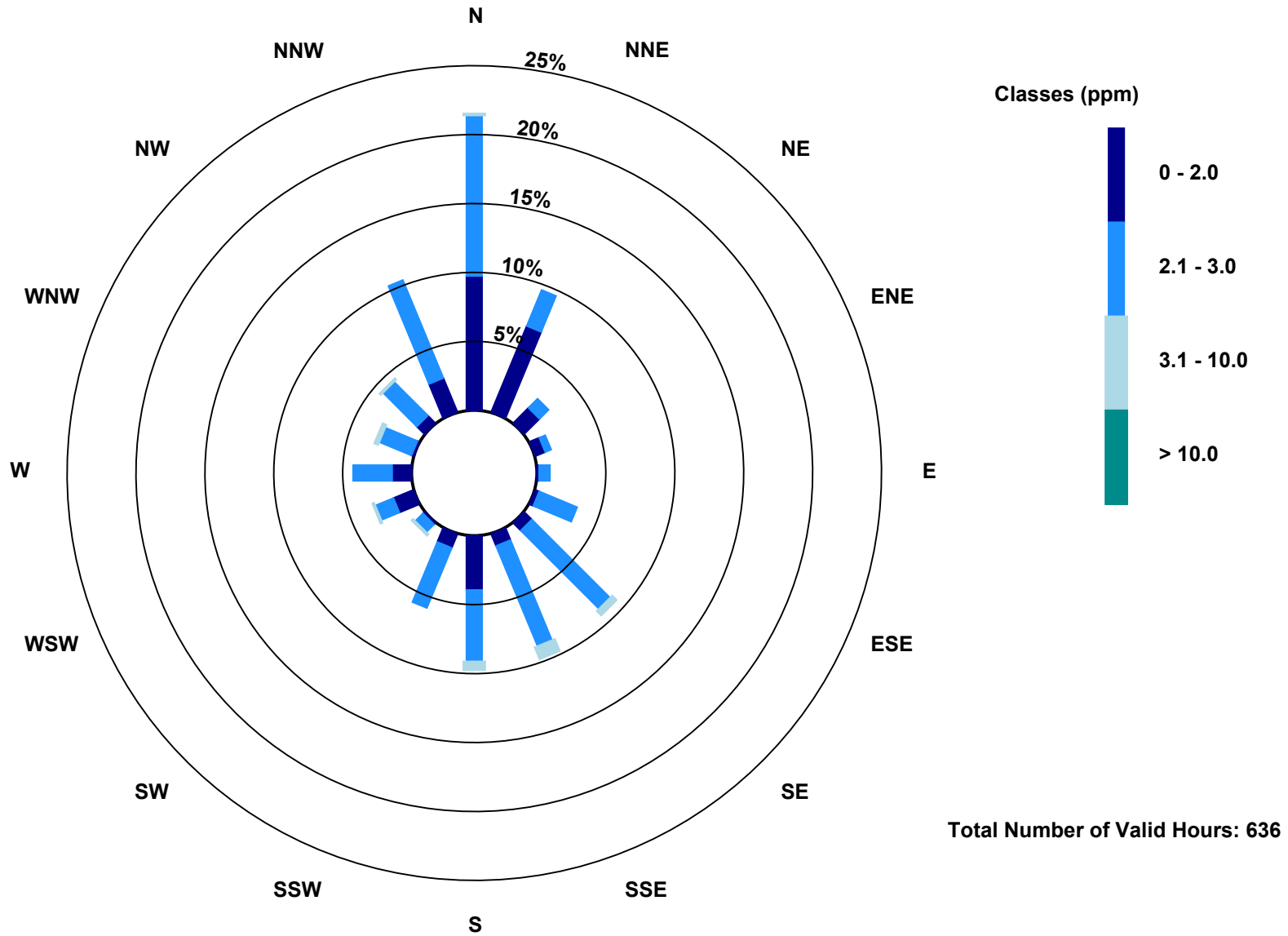
Total Number of Valid Hours: 636

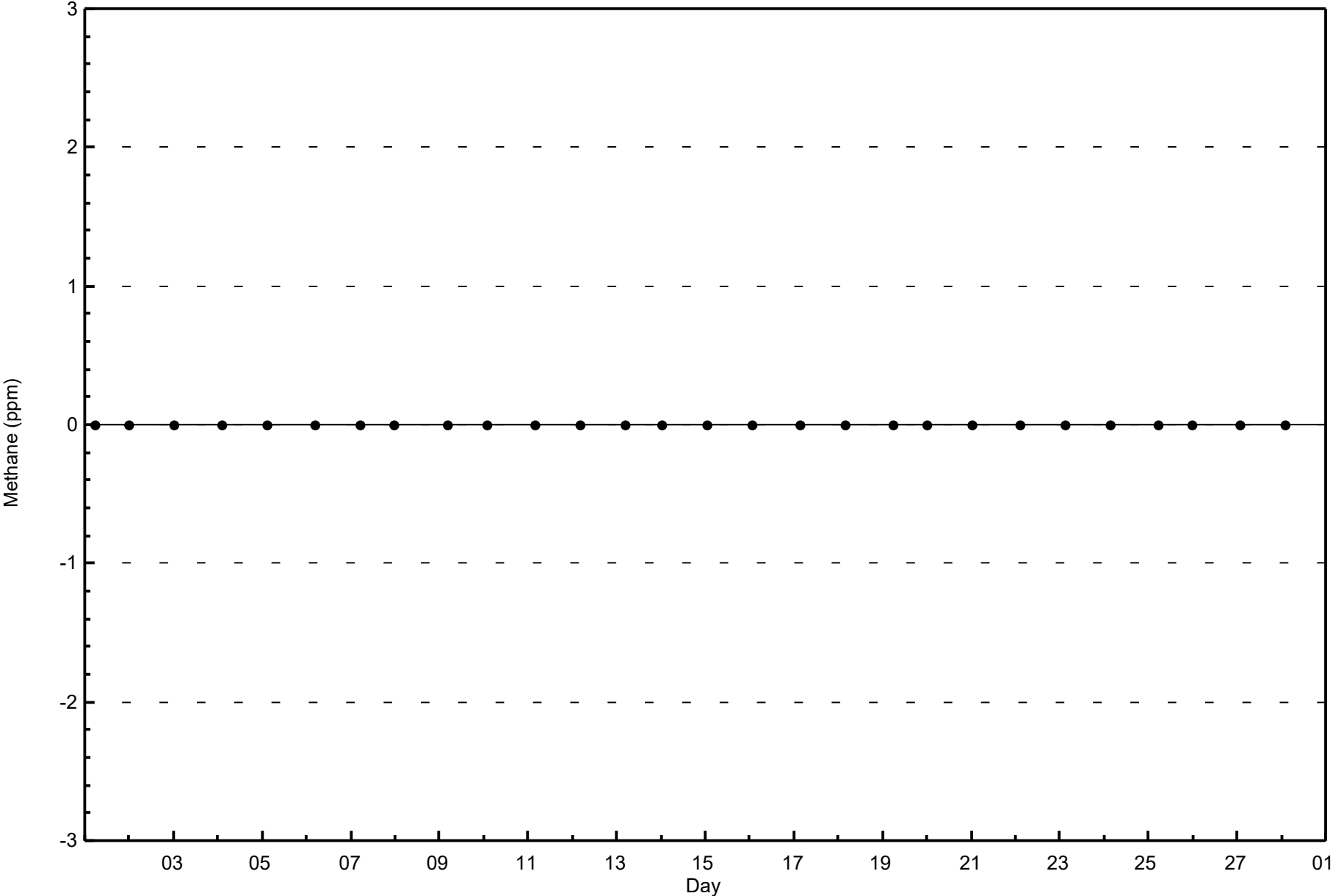
Total Number of Hours: 672



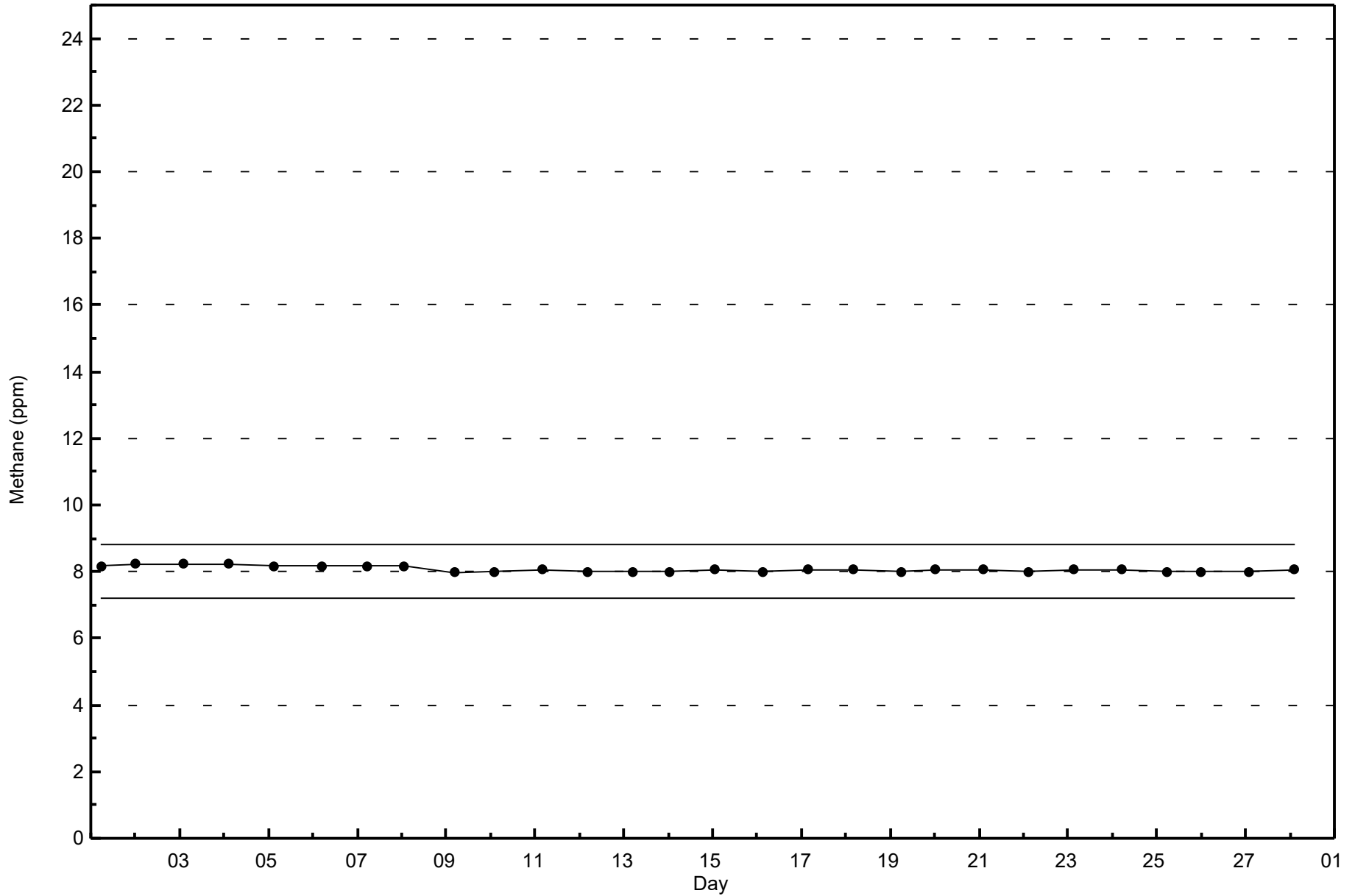
Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Methane (CH<sub>4</sub>) - ppm  
Mildred Lake











**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

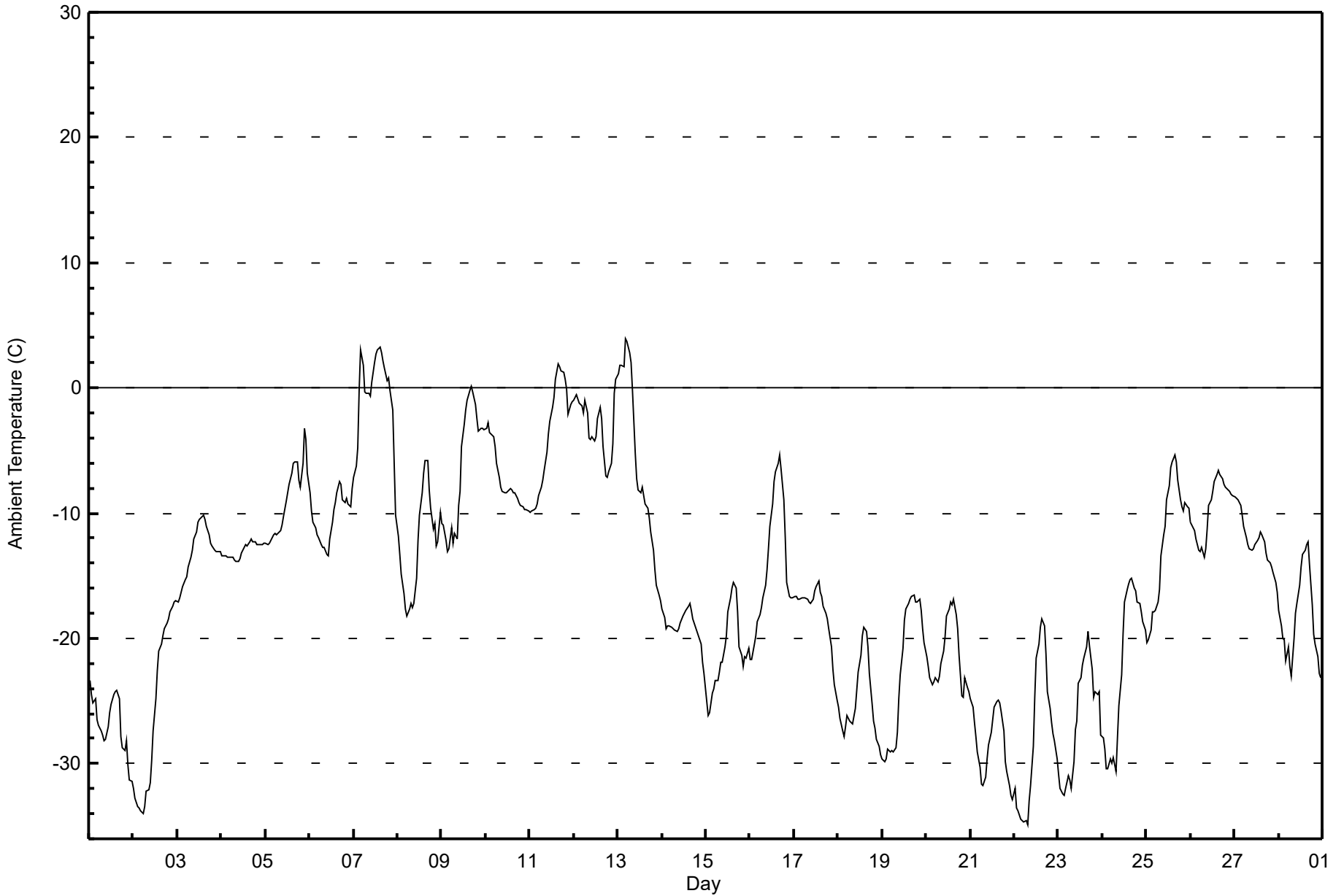
**Ambient Temperature (AT) - C**  
**Mildred Lake - February 2023**

| Maximum Value: 3.9 C on Feb 13 05:00      Maximum Daily Average: -0.6 C on Feb 7  |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Hours in Service:         | 672   |                 |               |               |
|---|-------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------------------------|-------|-----------------|---------------|---------------|
| Minimum Value: -34.9 C on Feb 22 08:00      Minimum Daily Average: -28.4 C on Feb 21  |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Hours of Data:            | 672   |                 |               |               |
| Maximum Diurnal Average: -11.7 C at hour 16      Minimum Diurnal Average: -18.0 C at hour 8   |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Hours of Missing Data:    | 0     |                 |               |               |
| Monthly Average: -15.58 C      Percentiles: P <sub>1</sub> = -33.7 P <sub>10</sub> = -28.2 Q <sub>1</sub> = -22.3 Median = -15.7 Q <sub>3</sub> = -9.1 P <sub>90</sub> = -3.3 P <sub>99</sub> = 2.8 |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Hours of Calibration:     | 0     |                 |               |               |
|   |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Percent Operational Time: | 100.0 |                 |               |               |
| Day   | Hourly Period Ending At (MST) |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                           |       |                 | Daily Average | Daily Maximum |
|   | 1                             | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     | 10    | 11    | 12    | 13    | 14    | 15    | 16    | 17    | 18    | 19    | 20    | 21    | 22                        | 23    | 24              |               |               |
| 1-Feb   | -23.3                         | -24.4 | -25.1 | -24.9 | -26.5 | -27.0 | -27.4 | -27.7 | -28.2 | -28.1 | -27.1 | -26.0 | -25.3 | -24.5 | -24.2 | -24.2 | -24.8 | -27.9 | -28.8 | -28.9 | -28.2 | -30.1                     | -31.3 | -31.4           | -26.9         | -23.3         |
| 2-Feb   | -32.0                         | -32.8 | -33.4 | -33.5 | -33.7 | -34.0 | -33.5 | -32.2 | -32.1 | -31.5 | -29.8 | -27.4 | -24.8 | -22.5 | -21.0 | -20.4 | -19.8 | -19.2 | -18.8 | -18.4 | -17.9 | -17.5                     | -17.1 | -17.0           | -25.8         | -17.0         |
| 3-Feb   | -17.0                         | -16.8 | -16.3 | -15.8 | -15.4 | -15.1 | -14.3 | -13.5 | -13.0 | -12.0 | -11.5 | -10.7 | -10.4 | -10.3 | -10.1 | -10.5 | -11.1 | -11.7 | -12.4 | -12.7 | -12.9 | -13.1                     | -13.1 | -13.1           | -13.0         | -10.1         |
| 4-Feb   | -13.4                         | -13.4 | -13.4 | -13.5 | -13.5 | -13.5 | -13.5 | -13.8 | -13.9 | -13.8 | -13.6 | -13.2 | -12.5 | -12.6 | -12.3 | -12.1 | -12.3 | -12.3 | -12.5 | -12.5 | -12.5 | -12.5                     | -12.5 | -12.4           | -13.0         | -12.1         |
| 5-Feb   | -12.4                         | -12.5 | -12.4 | -12.2 | -11.7 | -11.6 | -11.7 | -11.5 | -11.4 | -11.0 | -10.3 | -9.1  | -8.4  | -7.7  | -6.8  | -6.0  | -5.9  | -5.9  | -7.4  | -7.9  | -6.1  | -3.2                      | -4.2  | -6.8            | -8.9          | -3.2          |
| 6-Feb   | -8.3                          | -9.9  | -10.7 | -11.1 | -11.8 | -11.9 | -12.5 | -12.7 | -12.8 | -13.3 | -13.4 | -12.1 | -10.7 | -9.7  | -9.1  | -8.4  | -7.5  | -7.7  | -9.0  | -9.2  | -8.8  | -9.3                      | -9.5  | -8.1            | -10.3         | -7.5          |
| 7-Feb   | -7.2                          | -6.3  | -4.8  | -0.2  | 3.0   | 1.8   | -0.3  | -0.4  | -0.4  | -0.7  | 0.5   | 2.0   | 2.8   | 3.1   | 3.3   | 2.8   | 2.2   | 1.6   | 0.6   | 0.8   | -0.2  | -1.7                      | -6.1  | -10.2           | -0.6          | 3.3           |
| 8-Feb   | -11.9                         | -13.2 | -14.8 | -16.5 | -17.6 | -18.3 | -17.6 | -17.2 | -17.6 | -17.2 | -15.2 | -12.2 | -10.2 | -8.3  | -6.8  | -5.8  | -5.8  | -8.1  | -9.6  | -11.3 | -10.9 | -12.6                     | -12.3 | -9.9            | -12.5         | -5.8          |
| 9-Feb   | -10.8                         | -11.0 | -12.1 | -13.1 | -12.9 | -11.2 | -12.4 | -11.6 | -12.1 | -9.4  | -8.2  | -4.6  | -2.9  | -1.8  | -1.0  | -0.2  | 0.1   | -0.3  | -1.3  | -2.4  | -3.4  | -3.2                      | -3.2  | -3.3            | -6.3          | 0.1           |
| 10-Feb  | -3.3                          | -2.8  | -3.5  | -3.7  | -3.9  | -4.7  | -6.1  | -7.1  | -8.0  | -8.3  | -8.4  | -8.4  | -8.3  | -8.0  | -8.1  | -8.3  | -8.4  | -8.8  | -9.2  | -9.4  | -9.5  | -9.7                      | -9.7  | -9.9            | -7.3          | -2.8          |
| 11-Feb  | -9.9                          | -9.8  | -9.7  | -9.6  | -9.3  | -8.6  | -8.0  | -7.3  | -6.5  | -5.1  | -3.6  | -2.7  | -1.6  | -0.7  | 0.7   | 1.9   | 1.7   | 1.4   | 1.2   | 0.7   | -0.1  | -2.1                      | -1.3  | -1.1            | -3.7          | 1.9           |
| 12-Feb  | -1.0                          | -0.5  | -0.9  | -1.2  | -1.5  | -2.0  | -1.0  | -2.0  | -4.0  | -4.1  | -3.9  | -4.3  | -3.9  | -2.5  | -1.6  | -2.5  | -4.7  | -7.0  | -7.1  | -6.7  | -6.1  | -4.5                      | -0.5  | 0.7             | -3.0          | 0.7           |
| 13-Feb  | 1.1                           | 1.8   | 1.8   | 1.7   | 3.9   | 3.7   | 2.8   | 2.1   | -0.2  | -5.2  | -7.2  | -8.1  | -8.3  | -7.9  | -8.6  | -9.2  | -9.6  | -10.4 | -11.6 | -13.0 | -14.6 | -15.7                     | -16.5 | -17.0           | -6.0          | 3.9           |
| 14-Feb  | -17.7                         | -18.3 | -19.2 | -19.0 | -19.0 | -19.1 | -19.2 | -19.3 | -19.4 | -19.2 | -18.7 | -18.2 | -18.0 | -17.8 | -17.5 | -17.2 | -17.8 | -18.4 | -19.1 | -19.5 | -19.8 | -20.5                     | -21.9 | -22.8           | -19.0         | -17.2         |
| 15-Feb  | -25.0                         | -26.2 | -26.0 | -24.4 | -24.0 | -23.3 | -23.4 | -22.7 | -21.9 | -21.9 | -20.7 | -19.8 | -17.9 | -16.8 | -16.0 | -15.6 | -16.0 | -17.9 | -20.7 | -21.4 | -22.3 | -21.5                     | -21.5 | -20.8           | -21.2         | -15.6         |
| 16-Feb  | -21.7                         | -21.7 | -20.4 | -19.8 | -18.7 | -18.1 | -17.6 | -16.8 | -15.7 | -14.5 | -12.9 | -11.0 | -9.3  | -7.5  | -6.7  | -6.0  | -5.3  | -6.5  | -8.9  | -12.0 | -15.6 | -16.6                     | -16.8 | -16.8           | -14.0         | -5.3          |
| 17-Feb  | -16.6                         | -16.7 | -16.8 | -16.9 | -16.8 | -16.8 | -16.8 | -16.9 | -17.1 | -17.2 | -16.9 | -16.2 | -15.9 | -15.5 | -16.3 | -16.6 | -17.4 | -18.0 | -18.4 | -19.2 | -20.7 | -22.5                     | -23.7 | -24.9           | -17.9         | -15.5         |
| 18-Feb  | -25.5                         | -26.3 | -27.4 | -27.8 | -27.0 | -26.2 | -26.6 | -26.7 | -26.8 | -25.6 | -24.1 | -22.7 | -21.4 | -19.8 | -19.1 | -19.5 | -20.6 | -22.8 | -25.2 | -26.6 | -27.1 | -28.1                     | -28.6 | -29.2           | -25.0         | -19.1         |
| 19-Feb  | -29.6                         | -29.8 | -29.6 | -28.9 | -29.1 | -29.0 | -29.1 | -28.7 | -27.5 | -24.8 | -22.9 | -20.7 | -18.5 | -17.7 | -17.3 | -16.9 | -16.7 | -16.6 | -17.1 | -17.1 | -16.9 | -17.8                     | -19.2 | -20.3           | -22.6         | -16.6         |
| 20-Feb  | -21.5                         | -22.3 | -23.2 | -23.7 | -23.5 | -23.1 | -23.5 | -23.1 | -22.0 | -21.0 | -19.9 | -18.2 | -17.6 | -17.1 | -17.3 | -16.9 | -18.1 | -19.2 | -21.4 | -24.5 | -24.7 | -23.1                     | -23.9 | -24.3           | -21.4         | -16.9         |
| 21-Feb  | -24.8                         | -25.5 | -26.7 | -27.9 | -29.1 | -30.3 | -31.6 | -31.7 | -31.1 | -29.6 | -28.5 | -27.5 | -26.4 | -25.4 | -25.0 | -24.9 | -25.2 | -25.8 | -27.4 | -29.9 | -30.7 | -31.8                     | -32.6 | -32.9           | -28.4         | -24.8         |
| 22-Feb  | -32.0                         | -33.6 | -33.8 | -34.4 | -34.6 | -34.7 | -34.5 | -34.9 | -33.0 | -31.7 | -28.7 | -24.7 | -21.6 | -20.5 | -19.1 | -18.4 | -19.0 | -21.2 | -24.2 | -25.6 | -26.8 | -27.7                     | -28.2 | -29.6           | -28.0         | -18.4         |
| 23-Feb  | -30.9                         | -32.0 | -32.4 | -32.6 | -32.0 | -30.9 | -31.3 | -32.0 | -29.8 | -27.2 | -26.6 | -23.6 | -23.2 | -22.2 | -21.6 | -20.7 | -19.4 | -20.6 | -22.5 | -24.7 | -24.2 | -24.5                     | -24.2 | -27.7           | -26.5         | -19.4         |
| 24-Feb  | -28.0                         | -28.8 | -30.4 | -30.4 | -29.7 | -29.9 | -29.5 | -30.7 | -27.9 | -25.3 | -23.0 | -19.6 | -17.1 | -16.0 | -15.7 | -15.3 | -15.2 | -16.0 | -16.2 | -17.1 | -17.3 | -17.9                     | -18.6 | -19.4           | -22.3         | -15.2         |
| 25-Feb  | -20.4                         | -20.1 | -19.4 | -17.9 | -17.8 | -17.8 | -17.1 | -16.1 | -13.4 | -11.8 | -11.0 | -8.9  | -7.8  | -6.4  | -5.9  | -5.3  | -6.0  | -7.4  | -8.9  | -9.5  | -9.8  | -9.2                      | -9.5  | -9.6            | -12.0         | -5.3          |
| 26-Feb  | -10.7                         | -11.1 | -11.4 | -12.0 | -12.9 | -13.1 | -12.7 | -13.5 | -12.9 | -11.3 | -9.4  | -9.0  | -8.2  | -7.4  | -6.9  | -6.6  | -6.9  | -7.3  | -7.7  | -7.9  | -8.2  | -8.3                      | -8.5  | -8.6            | -9.7          | -6.6          |
| 27-Feb  | -8.7                          | -8.8  | -9.0  | -9.3  | -10.2 | -11.1 | -12.0 | -12.6 | -12.9 | -13.0 | -12.9 | -12.5 | -12.1 | -12.0 | -11.5 | -11.7 | -12.2 | -13.2 | -13.7 | -14.0 | -14.3 | -14.8                     | -15.6 | -16.3           | -12.3         | -8.7          |
| 28-Feb  | -17.7                         | -19.0 | -20.0 | -20.1 | -21.8 | -20.7 | -22.3 | -23.0 | -20.0 | -17.9 | -17.2 | -15.7 | -14.3 | -13.3 | -13.0 | -12.5 | -12.2 | -14.1 | -17.3 | -19.6 | -20.5 | -21.5                     | -22.8 | -23.1           | -18.3         | -12.2         |
|   |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                           |       | Diurnal Average |               |               |
|   |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                           |       | Diurnal Maximum |               |               |
|   |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                           |       |                 |               |               |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Ambient Temperature (AT) - C**  
**Mildred Lake - February 2023**





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Ambient Temperature (AT) - C  
Mildred Lake - February 2023**

| <b>Concentration Ranges (C)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---------------------------------|------------------------|----------|---------------------|
| -50 - -20                       | 208                    | 30.95    | 30.95               |
| -20 - 0                         | 436                    | 64.88    | 95.83               |
| 0 - 10                          | 28                     | 4.17     | 100.00              |
| 10 - 20                         | 0                      | 0.00     | 100.00              |
| > 20                            | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 672

Total Number of Hours: 672



**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

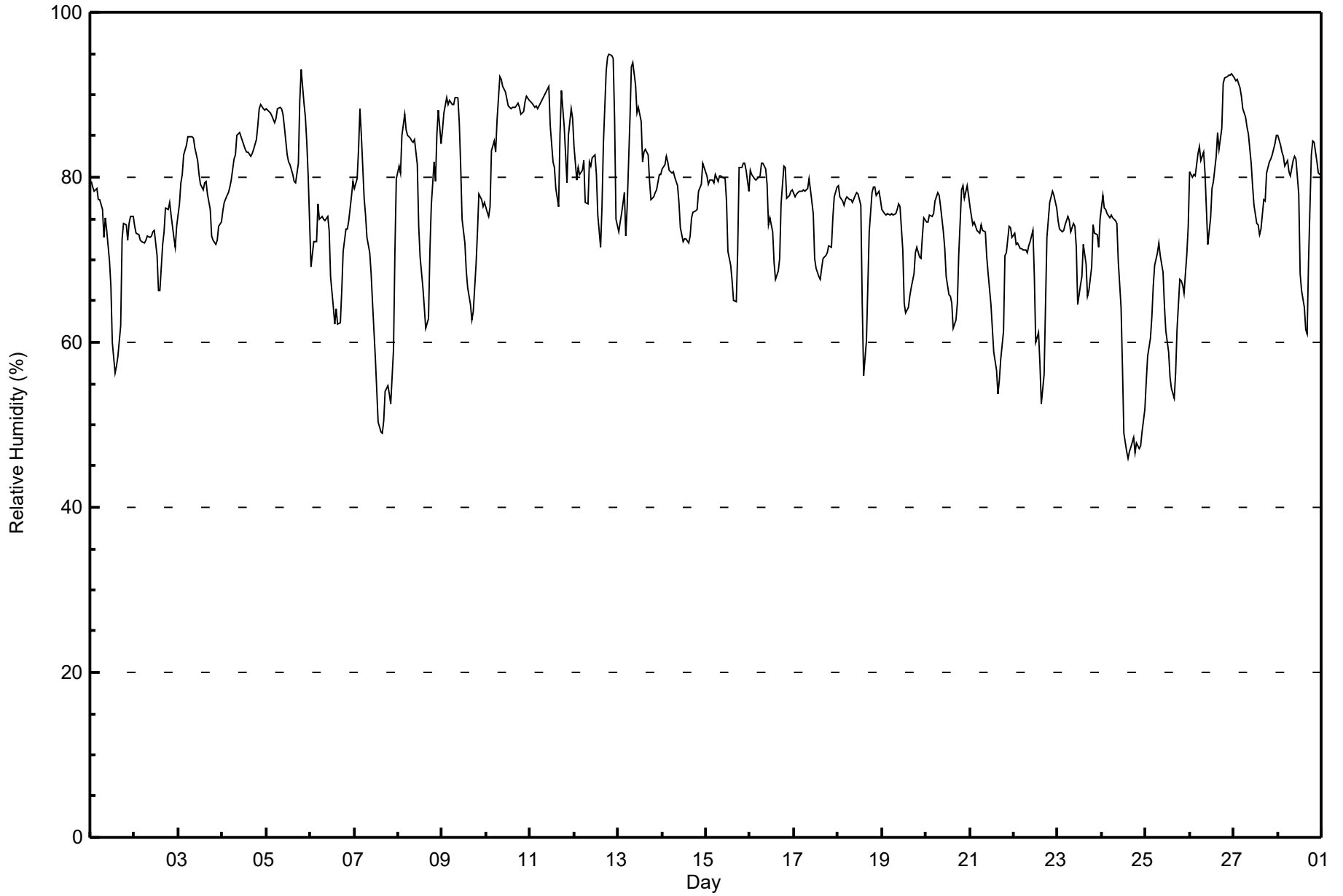
**Relative Humidity (RH) - %**  
**Mildred Lake - February 2023**

| <b>Maximum Value: 94.9 % on Feb 12 20:00</b>     |                               | <b>Maximum Daily Average: 86.8 % on Feb 10</b>   |      | <b>Hours in Service: 672</b>           |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |               |               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
|--|-------------------------------|--|------|--|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|---------------|---------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----------------|
| <b>Minimum Value: 46.0 % on Feb 24 15:00</b>     |                               | <b>Minimum Daily Average: 60.2 % on Feb 24</b>   |      | <b>Hours of Data: 672</b>              |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |               |               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| <b>Maximum Diurnal Average: 80.2 % at hour 9</b> |                               | <b>Minimum Diurnal Average: 67.6 % at hour 16</b>  |      | <b>Hours of Missing Data: 0</b>        |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |               |               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| <b>Monthly Average: 76.02 %</b>                  |                               | <b>Percentiles: P<sub>1</sub> = 47.7 P<sub>10</sub> = 64.2 Q<sub>1</sub> = 71.6 Median = 77.0 Q<sub>3</sub> = 81.9 P<sub>90</sub> = 88.1 P<sub>99</sub> = 93.0</b> |      | <b>Hours of Calibration: 0</b>         |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |               |               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
|  |                               |  |      | <b>Percent Operational Time: 100.0</b> |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |               |               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| Day  | Hourly Period Ending At (MST) |  |      |  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Daily Average | Daily Maximum |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
|  | 1                             | 2  | 3    | 4                                      | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20   | 21   | 22   | 23   | 24   |               |               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 1-Feb  | 79.5                          | 78.8   | 78.2 | 78.6                                   | 77.2 | 77.4 | 76.1 | 72.7 | 75.1 | 73.5 | 69.9 | 66.8 | 60.0 | 56.3 | 57.1 | 58.3 | 62.0 | 72.5 | 74.5 | 74.2 | 72.4 | 74.4 | 75.2 | 75.2 | 71.5          | 79.5          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 2-Feb  | 74.2                          | 73.3   | 73.0 | 72.4                                   | 72.1 | 72.0 | 72.4 | 72.9 | 72.7 | 72.9 | 73.4 | 73.6 | 70.6 | 66.2 | 66.3 | 71.9 | 73.4 | 76.3 | 76.1 | 77.0 | 75.4 | 72.7 | 71.5 | 74.1 | 72.8          | 77.0          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 3-Feb  | 76.8                          | 79.4   | 80.3 | 82.6                                   | 83.9 | 85.0 | 84.9 | 84.9 | 84.8 | 83.6 | 82.1 | 80.4 | 79.1 | 78.4 | 79.4 | 79.4 | 78.0 | 76.0 | 72.9 | 72.4 | 71.8 | 72.4 | 74.1 | 74.6 | 79.1          | 85.0          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 4-Feb  | 76.0                          | 76.9   | 77.8 | 78.2                                   | 78.8 | 79.7 | 82.2 | 82.7 | 85.1 | 85.5 | 85.0 | 84.3 | 83.3 | 83.0 | 83.1 | 82.6 | 82.9 | 83.3 | 84.5 | 86.3 | 88.3 | 88.8 | 88.4 | 88.2 | 83.1          | 88.8          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 5-Feb  | 88.2                          | 88.0   | 87.8 | 87.5                                   | 86.6 | 87.1 | 88.3 | 88.5 | 88.4 | 87.6 | 86.1 | 82.6 | 81.8 | 81.5 | 80.4 | 79.5 | 79.4 | 81.7 | 89.4 | 93.1 | 88.9 | 87.4 | 84.2 | 80.2 | 85.6          | 93.1          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 6-Feb  | 69.2                          | 70.7   | 72.3 | 72.2                                   | 76.7 | 74.9 | 75.3 | 75.0 | 74.7 | 75.2 | 73.6 | 68.0 | 64.2 | 62.1 | 64.0 | 62.3 | 66.3 | 71.1 | 73.7 | 73.8 | 74.8 | 77.8 | 79.5 | 71.2 | 79.5          |               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 7-Feb  | 78.7                          | 79.8   | 83.4 | 88.3                                   | 85.0 | 77.4 | 75.3 | 72.7 | 70.9 | 68.2 | 64.8 | 58.1 | 54.3 | 50.3 | 49.1 | 49.0 | 50.4 | 54.0 | 54.7 | 53.8 | 52.6 | 59.2 | 71.1 | 79.9 | 65.9          | 88.3          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 8-Feb  | 81.4                          | 80.5   | 85.1 | 87.6                                   | 85.7 | 85.1 | 84.8 | 84.4 | 84.3 | 84.6 | 81.6 | 74.1 | 70.3 | 66.6 | 64.3 | 61.8 | 62.9 | 71.0 | 76.6 | 81.9 | 79.6 | 85.3 | 88.1 | 84.0 | 78.8          | 88.1          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 9-Feb  | 85.7                          | 87.8   | 89.7 | 88.8                                   | 89.4 | 88.9 | 88.8 | 89.7 | 89.6 | 86.6 | 81.3 | 74.9 | 72.1 | 68.7 | 66.6 | 64.6 | 62.7 | 63.8 | 69.5 | 73.4 | 78.0 | 77.3 | 76.5 | 77.0 | 78.8          | 89.7          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 10-Feb   | 75.8                          | 75.2   | 76.4 | 83.2                                   | 84.4 | 83.1 | 86.9 | 92.2 | 91.9 | 91.1 | 90.4 | 89.5 | 88.7 | 88.2 | 88.4 | 88.4 | 88.5 | 88.9 | 88.4 | 87.6 | 87.9 | 89.2 | 89.8 | 89.3 | 86.8          | 92.2          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 11-Feb   | 89.1                          | 89.1   | 88.4 | 88.7                                   | 88.3 | 88.6 | 89.3 | 89.7 | 90.1 | 90.7 | 91.0 | 86.2 | 81.8 | 81.2 | 78.6 | 76.5 | 85.3 | 90.5 | 86.1 | 82.6 | 79.3 | 85.0 | 88.4 | 87.1 | 86.3          | 91.0          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 12-Feb   | 83.7                          | 79.6   | 81.1 | 80.3                                   | 80.9 | 82.0 | 77.0 | 76.7 | 81.9 | 81.3 | 82.4 | 82.6 | 80.3 | 75.5 | 71.5 | 76.5 | 84.0 | 93.0 | 94.6 | 94.9 | 94.8 | 94.5 | 87.2 | 75.0 | 83.0          | 94.9          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 13-Feb   | 73.4                          | 74.5   | 75.6 | 78.1                                   | 72.9 | 76.4 | 87.1 | 93.3 | 93.9 | 91.2 | 87.8 | 88.5 | 86.7 | 81.8 | 83.1 | 83.4 | 82.7 | 79.5 | 77.3 | 77.7 | 78.1 | 78.5 | 80.4 | 80.4 | 81.8          | 93.9          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 14-Feb   | 80.9                          | 81.5   | 82.5 | 81.9                                   | 80.9 | 80.5 | 80.7 | 79.9 | 79.0 | 77.0 | 73.8 | 72.3 | 72.5 | 72.6 | 72.1 | 73.0 | 75.1 | 75.7 | 75.9 | 76.1 | 78.3 | 79.2 | 81.7 | 81.2 | 77.7          | 82.5          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 15-Feb   | 80.2                          | 79.1   | 79.6 | 79.6                                   | 79.3 | 80.3 | 79.6 | 80.1 | 80.2 | 79.9 | 77.2 | 70.9 | 69.3 | 67.5 | 65.1 | 64.9 | 71.2 | 81.2 | 81.2 | 81.7 | 81.7 | 80.8 | 78.2 | 77.0 | 77.0          | 81.7          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 16-Feb   | 80.9                          | 80.4   | 79.8 | 79.7                                   | 79.8 | 80.2 | 81.8 | 81.7 | 80.9 | 79.2 | 74.2 | 75.0 | 73.5 | 69.7 | 67.6 | 68.7 | 70.2 | 76.8 | 81.4 | 81.2 | 77.5 | 77.7 | 78.3 | 78.6 | 77.3          | 81.8          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 17-Feb   | 77.6                          | 77.9   | 78.1 | 78.4                                   | 78.3 | 78.5 | 78.4 | 78.7 | 79.9 | 78.5 | 75.6 | 70.2 | 68.9 | 68.0 | 67.6 | 69.0 | 70.2 | 70.5 | 70.9 | 71.6 | 71.5 | 75.1 | 77.6 | 78.8 | 74.6          | 79.9          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 18-Feb   | 79.0                          | 77.7   | 77.1 | 76.7                                   | 77.3 | 77.6 | 77.3 | 77.4 | 76.9 | 77.7 | 78.1 | 78.0 | 76.6 | 64.8 | 55.9 | 60.2 | 66.7 | 73.5 | 78.2 | 78.8 | 78.8 | 77.9 | 78.3 | 77.3 | 74.9          | 79.0          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 19-Feb   | 76.1                          | 75.7   | 75.5 | 75.6                                   | 75.4 | 75.5 | 75.4 | 75.5 | 76.1 | 76.7 | 76.5 | 71.3 | 64.7 | 63.5 | 64.2 | 65.6 | 66.5 | 68.3 | 70.9 | 71.4 | 70.4 | 70.2 | 73.0 | 75.1 | 72.0          | 76.7          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 20-Feb   | 74.5                          | 74.6   | 75.4 | 75.3                                   | 75.6 | 77.0 | 78.1 | 77.7 | 76.5 | 73.4 | 71.3 | 68.0 | 65.8 | 65.5 | 64.7 | 61.7 | 62.7 | 64.7 | 70.7 | 78.6 | 79.0 | 77.4 | 78.9 | 77.8 | 72.7          | 79.0          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 21-Feb   | 76.4                          | 74.3   | 74.6 | 74.0                                   | 73.5 | 73.3 | 74.3 | 73.5 | 73.4 | 70.4 | 68.3 | 64.6 | 61.7 | 58.9 | 56.6 | 53.8 | 55.4 | 58.0 | 61.4 | 70.5 | 70.8 | 74.0 | 73.9 | 72.7 | 68.3          | 76.4          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 22-Feb   | 73.1                          | 71.9   | 72.1 | 71.4                                   | 71.3 | 71.3 | 71.3 | 70.8 | 71.7 | 72.2 | 73.5 | 68.1 | 60.0 | 61.3 | 57.5 | 52.5 | 56.2 | 64.5 | 72.7 | 77.0 | 77.5 | 78.3 | 77.8 | 76.3 | 69.6          | 78.3          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 23-Feb   | 74.7                          | 73.7   | 73.4 | 73.5                                   | 74.3 | 75.3 | 74.8 | 73.5 | 74.3 | 74.0 | 71.6 | 64.6 | 67.0 | 68.0 | 71.9 | 69.5 | 65.5 | 66.3 | 69.1 | 74.3 | 73.2 | 73.1 | 71.5 | 74.9 | 71.8          | 75.3          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 24-Feb   | 77.8                          | 76.3   | 76.1 | 75.6                                   | 75.0 | 75.4 | 75.1 | 74.8 | 74.4 | 69.9 | 64.2 | 56.9 | 49.0 | 46.8 | 46.0 | 46.8 | 47.3 | 48.4 | 46.6 | 47.7 | 47.2 | 47.5 | 49.2 | 51.8 | 60.2          | 77.8          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 25-Feb   | 55.2                          | 58.2   | 60.5 | 63.0                                   | 66.7 | 69.3 | 70.8 | 72.0 | 70.6 | 68.5 | 64.3 | 61.4 | 58.8 | 55.7 | 54.4 | 53.2 | 56.2 | 61.5 | 67.7 | 67.5 | 66.9 | 65.9 | 70.6 | 74.0 | 63.9          | 74.0          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 26-Feb   | 80.6                          | 80.0   | 80.4 | 80.2                                   | 82.9 | 83.7 | 82.1 | 83.0 | 80.5 | 76.1 | 71.9 | 75.1 | 78.7 | 79.4 | 82.6 | 85.4 | 83.3 | 86.0 | 91.4 | 92.1 | 92.2 | 92.4 | 92.5 | 92.5 | 83.5          | 92.5          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 27-Feb   | 92.0                          | 91.7   | 91.9 | 90.9                                   | 89.8 | 88.3 | 87.3 | 86.2 | 85.3 | 81.6 | 78.9 | 76.6 | 74.4 | 74.2 | 73.0 | 73.7 | 77.3 | 77.1 | 80.4 | 81.8 | 82.2 | 82.7 | 84.1 | 85.2 | 82.8          | 92.0          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 28-Feb   | 85.1                          | 83.9   | 83.0 | 82.5                                   | 81.3 | 82.0 | 80.7 | 80.2 | 82.0 | 82.6 | 82.2 | 78.0 | 68.3 | 66.3 | 64.2 | 61.6 | 61.0 | 69.9 | 82.7 | 84.3 | 84.2 | 81.9 | 80.6 | 80.3 | 77.9          | 85.1          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
|  |                               |  |      |  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 78.4 | 78.2          | 78.9          | 79.5 | 79.4 | 79.5 | 79.9 | 80.0 | 80.2 | 78.9 | 76.9 | 73.8 | 70.9 | 68.7 | 67.8 | 67.6 | 69.0 | 72.5 | 75.6 | 77.2 | 76.9 | 77.6 | 78.6 | 78.5 | Diurnal Average |
|  |                               |  |      |  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 92.0 | 91.7          | 91.9          | 90.9 | 89.8 | 88.9 | 89.3 | 93.3 | 93.9 | 91.2 | 91.0 | 89.5 | 88.7 | 88.2 | 88.4 | 88.4 | 88.5 | 93.0 | 94.6 | 94.9 | 94.8 | 94.5 | 92.5 | 92.5 | Diurnal Maximum |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Relative Humidity (RH) - %**  
**Mildred Lake - February 2023**





Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Speed (WS) - km/h

Mildred Lake - February 2023

|  |   |                                |
|--|---|--------------------------------|
| Maximum Speed: 24 km/h on Feb 13 15:00             | Maximum Daily Speed Average: 12.7 km/h on Feb 7   | Hours in Service: 672          |
| Minimum Speed Value: 0 km/h on Feb 16 17:00        | Minimum Daily Speed Average: 1.4 km/h on Feb 16   | Hours of Data: 666             |
| Maximum Diurnal Speed Average: 2.4 km/h at hour 18 | Minimum Diurnal Speed Average: 0.5 km/h at hour 2   | Hours of Missing Data: 6       |
| Monthly Average Velocity: 1.3 km/h 346.3 deg       | Percentiles: P <sub>1</sub> = 0 P <sub>10</sub> = 3 Q <sub>1</sub> = 4 Median = 7 Q <sub>3</sub> = 10 P <sub>90</sub> = 14 P <sub>99</sub> = 22 | Percent Operational Time: 99.1 |

| Day    | Hourly Period Ending At (MST) |       |       |       |       |       |       |       |      |       |       |       |       |       |       |       |       |       |       |       |       |       |       |         | Daily Average | Daily Maximum |     |        |     |
|--------|-------------------------------|-------|-------|-------|-------|-------|-------|-------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------|---------------|---------------|-----|--------|-----|
|        | 1                             | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9    | 10    | 11    | 12    | 13    | 14    | 15    | 16    | 17    | 18    | 19    | 20    | 21    | 22    | 23    | 24      |               |               |     |        |     |
| 1-Feb  | N9                            | N4    | UO    | N5    | N4    | N7    | NNW10 | N9    | N6   | NNW6  | NNW8  | NW8   | NW11  | NW9   | NW6   | N4    | N3    | NNW4  | NNW4  | NW6   | NW6   | NNW4  | SSE3  | S4      | NNW5.3        | NW11          |     |        |     |
| 2-Feb  | SSE4                          | S5    | S5    | SE5   | S6    | SSW5  | SSE5  | SSE7  | SSE8 | SSE8  | SSE7  | SSE9  | SE9   | SSE10 | SE18  | SE21  | SE20  | SE20  | SE22  | SE22  | SE21  | SE20  | SE18  | SE19    | SSE11.9       | SE22          |     |        |     |
| 3-Feb  | SE20                          | SSE19 | SSE16 | SSE15 | SSE12 | SSE14 | SSE12 | SSE9  | SSE8 | S6    | S4    | N6    | NW7   | N9    | N9    | NNE9  | NNE9  | NNE8  | NNE8  | NNE7  | NNE6  | NNE5  | NNE4  | N6      | ESE3.5        | SE20          |     |        |     |
| 4-Feb  | N8                            | NNE5  | N7    | N9    | N8    | N8    | N9    | N11   | N11  | N10   | N10   | N9    | N9    | N9    | N7    | NNE4  | NNW4  | N5    | N6    | N8    | N6    | NNW7  | N6    | NNW6    | N7.5          | N11           |     |        |     |
| 5-Feb  | NNW5                          | N5    | N2    | N2    | SE0   | NNE4  | N4    | NNW5  | N4   | NW3   | WVW1  | WSW1  | SSE5  | S4    | SSE6  | SW1   | SSW3  | SSW3  | E0    | S3    | SW3   | WVW9  | NW16  | NNW14   | WVW2.0        | NW16          |     |        |     |
| 6-Feb  | WVW18                         | W17   | W13   | W11   | W10   | WVW12 | W10   | W10   | W10  | N9    | NE7   | E4    | SSE6  | ESE6  | ESE7  | E5    | SE3   | NNW5  | N7    | NNW1  | N3    | N4    | SW2   | SW4     | WVW3.9        | WVW18         |     |        |     |
| 7-Feb  | SE1                           | S4    | SE3   | WSW11 | W17   | WVW22 | WVW16 | W17   | W14  | WSW11 | WSW12 | W16   | W16   | W21   | W22   | W22   | W18   | W16   | WSW15 | W19   | WVW12 | WVW10 | NNW19 | N12     | W12.7         | W22           |     |        |     |
| 8-Feb  | N14                           | N8    | N3    | NNW5  | NW2   | SSW2  | SSE1  | E2    | S2   | SSW4  | S5    | SE7   | M     | SE9   | SE8   | SE7   | SE4   | SSE4  | SSE6  | SE5   | SSE7  | SE4   | SSE5  | SE7     | SE2.5         | N14           |     |        |     |
| 9-Feb  | SE6                           | SE7   | SSE6  | SSE6  | SSE7  | SSE8  | S7    | S7    | SSE6 | SSE10 | S6    | SE8   | SSE11 | SSE13 | SE10  | SE8   | SE7   | SE3   | N4    | UO    | UO    | NNE1  | SE1   | E2      | SSE5.9        | SSE13         |     |        |     |
| 10-Feb | NE2                           | NNE4  | N11   | N10   | NNW10 | N11   | N11   | N13   | N11  | N11   | N10   | N11   | N12   | N11   | NNW12 | NNW13 | N11   | NNW9  | NNW10 | N10   | NNW8  | N5    | N4    | NE3     | N9.1          | N13           |     |        |     |
| 11-Feb | N2                            | N1    | NE2   | ESE3  | SSE5  | SSE7  | SSE6  | SSE5  | ESE1 | SSW7  | SSW9  | SSE8  | SE9   | SE8   | SE7   | SW11  | WSW14 | W13   | WVW13 | WVW13 | WVW14 | WVW3  | W13   | WSW14   | SW4.1         | WSW14         |     |        |     |
| 12-Feb | WSW13                         | WSW16 | W13   | WSW8  | WSW6  | WSW6  | W13   | WVW10 | W4   | WVW6  | NW8   | NNW8  | NNW7  | NNW5  | S1    | NNE5  | N7    | N10   | N6    | N4    | NE0   | SE5   | SE13  | SE16    | WVW3.3        | SE16          |     |        |     |
| 13-Feb | SSE13                         | S8    | S6    | SW6   | WSW15 | WSW17 | W21   | W15   | N17  | N21   | N23   | N23   | N24   | N24   | N24   | N18   | N16   | N13   | N11   | NNE13 | NNE14 | NNE12 | NNE13 | NNW10.5 | N24           |               |     |        |     |
| 14-Feb | N11                           | N8    | N7    | NNW8  | N7    | N7    | NNE6  | NNE5  | NE6  | NNE6  | NE6   | NE6   | NE4   | NNE6  | NNE6  | NNE8  | NNE8  | NNE7  | NNE4  | N3    | N4    | N4    | N0    | UO      | NNE5.7        | N11           |     |        |     |
| 15-Feb | ENE1                          | ESE3  | SE4   | SSW6  | SSW4  | SSW4  | S3    | SSE5  | SSE3 | S4    | S3    | S4    | SSE5  | SE7   | ESE8  | ESE8  | SE7   | ESE4  | SE3   | SSE5  | SE4   | ESE4  | S4    | SSE6    | SSE3.9        | ESE8          |     |        |     |
| 16-Feb | SSE5                          | SSE4  | SSE6  | SE6   | SSE7  | SSE6  | SE3   | SSE4  | S6   | S8    | SSW7  | S9    | SSE8  | S5    | S3    | SSE2  | W0    | N10   | N13   | N13   | NNE11 | N10   | N8    | N6      | ESE1.4        | N13           |     |        |     |
| 17-Feb | NNE6                          | NNE6  | NNE7  | NNE6  | N5    | NNE4  | ENE5  | NE6   | NNE7 | NNE8  | NNE8  | NNE8  | N8    | NNE8  | NNE11 | N11   | N11   | N10   | N10   | NNE9  | NNE10 | N8    | N6    | NNW4    | NNE7.3        | N11           |     |        |     |
| 18-Feb | N7                            | NNW6  | NNW5  | NNW6  | NNW7  | NNW8  | N8    | N8    | N6   | N5    | NNW7  | NW8   | NW9   | NNW6  | NE4   | S3    | WSW3  | W1    | NNE4  | NE4   | NE2   | SSE0  | SSW4  | S3      | NNW3.8        | NW9           |     |        |     |
| 19-Feb | ESE4                          | ESE3  | ESE3  | ESE2  | ESE2  | NE3   | NNE2  | N5    | NNE3 | NNW6  | NNW5  | NNW4  | WVW3  | NW7   | NW9   | NNW10 | NNW9  | NNW7  | NNW4  | NNW7  | N10   | N11   | N12   | N11     | N4.7          | N12           |     |        |     |
| 20-Feb | N9                            | N6    | NNE5  | N3    | NW5   | N2    | S2    | SE2   | SSE4 | ESE4  | SE6   | S5    | SSW5  | SSW5  | SSW1  | N5    | NNE9  | NNE8  | N6    | NNW2  | N7    | N9    | N8    | NNW11   | N2.6          | NNW11         |     |        |     |
| 21-Feb | N9                            | NNE13 | NNE11 | NNE10 | NNE10 | N7    | NNW6  | NNW6  | NNW5 | NNW7  | NW8   | NW10  | NW9   | NNW10 | N11   | NNE13 | N11   | N7    | NNE5  | N4    | NNW4  | W2    | SW4   | SSW5    | N6.6          | NNE13         |     |        |     |
| 22-Feb | SSW6                          | SSW2  | S5    | S4    | SSE4  | S3    | S5    | S4    | SSW5 | S5    | S4    | S1    | SSW5  | SSW8  | WSW7  | WVW7  | SW5   | W4    | NW3   | WVW2  | NW1   | SSW2  | SSW3  | SSW2    | SSW3.1        | SSW8          |     |        |     |
| 23-Feb | S3                            | N2    | N3    | W1    | NNW4  | NNW6  | NW6   | NW2   | UO   | NW0   | S5    | SSW5  | SSW4  | SW4   | S3    | SE4   | SE7   | SE6   | SE6   | SSE5  | S7    | SSW4  | S6    | SSE6    | S1.9          | SE7           |     |        |     |
| 24-Feb | SSE6                          | S7    | S5    | SSE7  | SSE6  | SSE5  | S6    | S5    | SE8  | SE14  | SE12  | SSE14 | S19   | S19   | S18   | S15   | SSE16 | S16   | S18   | S16   | S14   | S14   | S11   | S9      | S11.3         | S19           |     |        |     |
| 25-Feb | S8                            | S9    | S8    | S10   | SE5   | SE3   | SSE4  | SE3   | WSW8 | WSW7  | WSW7  | WVW8  | WSW7  | SSW9  | SSE9  | SE8   | SE7   | ESE6  | SSE4  | S4    | ENE2  | ESE6  | SSE6  | ESE6    | S4.4          | S10           |     |        |     |
| 26-Feb | ESE6                          | ESE6  | ESE7  | ESE6  | ESE2  | ENE3  | NNE4  | N7    | N6   | N4    | ESE3  | ENE6  | ENE7  | NE8   | NE8   | ENE7  | E8    | ENE7  | NE6   | NNE7  | N7    | N7    | N7    | NNE6    | NE4.7         | NE8           |     |        |     |
| 27-Feb | NNE7                          | N6    | N8    | N10   | NNW10 | NNW12 | NNW12 | N12   | N13  | N14   | N13   | N14   | N14   | NNW15 | N12   | NNE12 | NNE13 | NNE12 | NNE10 | NNE9  | NNE7  | NNW7  | N7    | N7      | N10.6         | NNW15         |     |        |     |
| 28-Feb | NNW5                          | NNW4  | NNW4  | NW5   | NNW5  | NNW4  | NNW4  | NNW4  | NNW4 | NNW4  | NNW4  | NNW4  | NNW4  | NNW6  | NW6   | NW7   | W6    | SSW7  | SSW6  | WSW4  | NW1   | SSW1  | S0    | SSW4    | SSW4          | SSW5          | SE4 | WVW2.2 | NW7 |

|   |                 |
|---|-----------------|
| NNE1.0 NNE0.5 NNE0.6 NW0.6 WVW1.5 NW1.7 NW2.3 NW2.2 WVW1.9 NNW1.6 NNW1.6 NNW1.7 NW1.7 NNW1.1 NNE0.9 NNE1.7 NNE1.4 N2.4 N2.3 N1.9 N2.2 N1.8 NNW1.0 NE0.6 | Diurnal Average |
| SE20 SSE19 SSE16 SSE15 W17 WVW22 W21 W17 N17 N21 N23 N23 N24 N24 N24 N24 N24 N24 SE20 SE22 SE22 SE21 SE20 NNW19 SE19                                    | Diurnal Maximum |

M - Maintenance UO - Unstable Operation  
 All monthly, daily, and diurnal averages have been calculated using vector methods



**Wood Buffalo Environmental Association**  
**Summary of Hour Standard Deviations**

**Wind Speed (WS) - km/h**  
**Mildred Lake - February 2023**

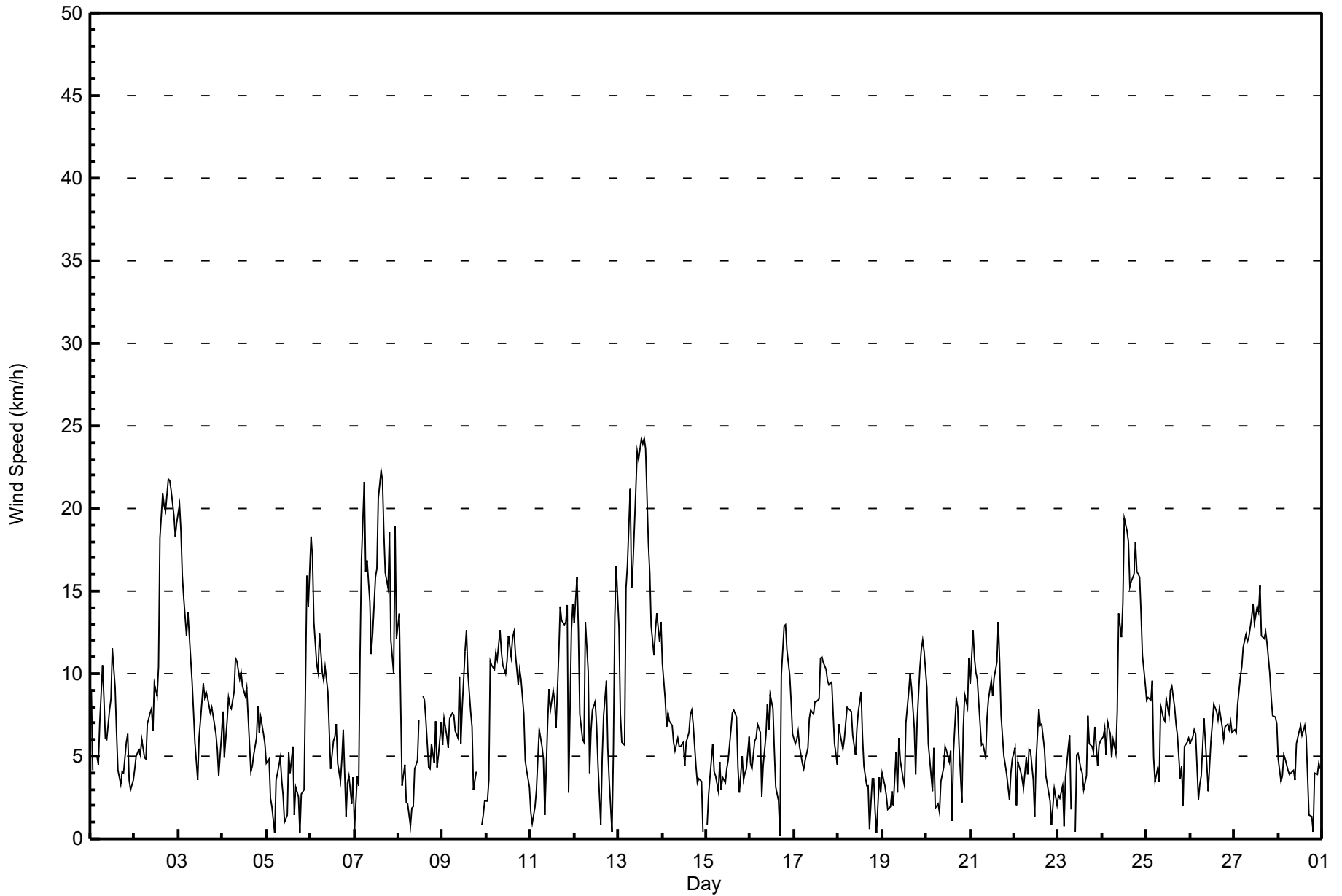
| Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0<br>Maximum Value: 8 km/h on Feb 7 04:00<br>Minimum Value: 0 km/h on Feb 15 02:00<br>Percentiles: P <sub>1</sub> = 1 P <sub>10</sub> = 1 Q <sub>1</sub> = 1 Median = 2 Q <sub>3</sub> = 2 P <sub>90</sub> = 4 P <sub>99</sub> = 6 |                               |   |    |   |   |   |   |   |    |    |    |    |    |    |    |    | Hours in Service: 672<br>Hours of Data: 666<br>Hours of Missing Data: 6<br>Hours of Calibration: 0<br>Percent Operational Time: 99.1 |    |    |    |    |    |    |    |               |   |
|--|-------------------------------|---|----|---|---|---|---|---|----|----|----|----|----|----|----|----|--|----|----|----|----|----|----|----|---------------|---|
| Day  | Hourly Period Ending At (MST) |   |    |   |   |   |   |   |    |    |    |    |    |    |    |    |  |    |    |    |    |    |    |    | Daily Maximum |   |
|  | 1                             | 2 | 3  | 4 | 5 | 6 | 7 | 8 | 9  | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17   | 18 | 19 | 20 | 21 | 22 | 23 | 24 |               |   |
| 1-Feb  | 2                             | 3 | UO | 1 | 1 | 2 | 2 | 3 | 2  | 1  | 2  | 2  | 2  | 3  | 2  | 1  | 1  | 1  | 1  | 2  | 1  | 2  | 1  | 1  | 3             | 5 |
| 2-Feb  | 2                             | 1 | 2  | 1 | 1 | 1 | 1 | 2 | 2  | 2  | 2  | 3  | 2  | 2  | 5  | 5  | 5  | 4  | 4  | 4  | 4  | 4  | 4  | 4  | 4             | 5 |
| 3-Feb  | 4                             | 3 | 3  | 3 | 2 | 3 | 2 | 2 | 2  | 2  | 2  | 4  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 1  | 1  | 3  | 4             |   |
| 4-Feb  | 2                             | 1 | 1  | 2 | 1 | 1 | 2 | 2 | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 1  | 1  | 1  | 2  | 1  | 2  | 1  | 2  | 1  | 2             |   |
| 5-Feb  | 1                             | 1 | 1  | 1 | 1 | 2 | 1 | 1 | 1  | 2  | 2  | 2  | 1  | 1  | 2  | 2  | 1  | 2  | 1  | 1  | 3  | 2  | 5  | 3  | 5             |   |
| 6-Feb  | 5                             | 4 | 4  | 5 | 3 | 3 | 2 | 2 | 3  | 2  | 2  | 2  | 2  | 2  | 2  | 1  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 1  | 5             |   |
| 7-Feb  | 1                             | 2 | 1  | 8 | 6 | 6 | 4 | 5 | 5  | 4  | 4  | 6  | 5  | 6  | 7  | 6  | 5  | 5  | 7  | 6  | 4  | 3  | 4  | 4  | 8             |   |
| 8-Feb  | 3                             | 3 | 1  | 1 | 2 | 2 | 1 | 1 | 1  | 1  | 1  | 2  | M  | 2  | 2  | 1  | 2  | 2  | 1  | 1  | 2  | 1  | 1  | 1  | 3             |   |
| 9-Feb  | 2                             | 1 | 1  | 2 | 1 | 1 | 1 | 2 | 2  | 1  | 2  | 2  | 2  | 3  | 2  | 2  | 1  | 1  | 2  | UO | UO | 1  | 1  | 1  | 3             |   |
| 10-Feb   | 1                             | 2 | 2  | 2 | 2 | 3 | 2 | 2 | 2  | 2  | 2  | 3  | 3  | 3  | 2  | 3  | 3  | 2  | 2  | 3  | 2  | 1  | 1  | 2  | 3             |   |
| 11-Feb   | 1                             | 1 | 2  | 1 | 2 | 1 | 1 | 1 | 1  | 3  | 2  | 1  | 2  | 2  | 1  | 5  | 5  | 4  | 4  | 4  | 4  | 2  | 8  | 4  | 8             |   |
| 12-Feb   | 5                             | 6 | 4  | 2 | 2 | 3 | 4 | 4 | 2  | 2  | 1  | 2  | 1  | 1  | 2  | 1  | 2  | 2  | 2  | 1  | 2  | 3  | 4  | 4  | 6             |   |
| 13-Feb   | 3                             | 3 | 2  | 3 | 6 | 6 | 6 | 5 | 5  | 5  | 6  | 6  | 6  | 7  | 6  | 6  | 5  | 5  | 3  | 3  | 4  | 4  | 4  | 4  | 7             |   |
| 14-Feb   | 3                             | 3 | 2  | 2 | 2 | 2 | 2 | 1 | 2  | 1  | 1  | 2  | 2  | 1  | 2  | 2  | 2  | 2  | 2  | 1  | 1  | 1  | 1  | UO | 3             |   |
| 15-Feb   | 1                             | 0 | 1  | 1 | 1 | 1 | 1 | 1 | 1  | 1  | 1  | 1  | 1  | 1  | 2  | 2  | 2  | 2  | 1  | 2  | 1  | 1  | 1  | 2  | 2             |   |
| 16-Feb   | 1                             | 2 | 1  | 1 | 2 | 3 | 1 | 1 | 2  | 2  | 2  | 2  | 2  | 1  | 2  | 2  | 2  | 5  | 2  | 4  | 4  | 2  | 2  | 2  | 5             |   |
| 17-Feb   | 2                             | 2 | 1  | 2 | 1 | 1 | 1 | 2 | 2  | 2  | 2  | 2  | 2  | 2  | 3  | 3  | 3  | 3  | 2  | 2  | 2  | 2  | 1  | 2  | 3             |   |
| 18-Feb   | 1                             | 1 | 1  | 1 | 1 | 2 | 1 | 1 | 2  | 1  | 1  | 2  | 2  | 3  | 2  | 2  | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 3             |   |
| 19-Feb   | 1                             | 1 | 1  | 1 | 1 | 1 | 1 | 1 | 1  | 3  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 1  | 1  | 2  | 2  | 2  | 3  | 3             |   |
| 20-Feb   | 2                             | 2 | 1  | 1 | 1 | 2 | 2 | 1 | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 2  | 2  | 2  | 1  | 1  | 1  | 1  | 2  | 2  | 2             |   |
| 21-Feb   | 2                             | 3 | 3  | 2 | 2 | 2 | 1 | 1 | 1  | 2  | 2  | 2  | 3  | 3  | 3  | 4  | 3  | 2  | 1  | 1  | 1  | 1  | 3  | 1  | 4             |   |
| 22-Feb   | 1                             | 1 | 2  | 1 | 1 | 2 | 2 | 1 | 1  | 1  | 1  | 1  | 2  | 2  | 2  | 2  | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 2  | 2             |   |
| 23-Feb   | 2                             | 2 | 1  | 2 | 1 | 1 | 1 | 2 | UO | 2  | 1  | 1  | 1  | 1  | 2  | 2  | 2  | 1  | 2  | 1  | 1  | 1  | 2  | 2  | 2             |   |
| 24-Feb   | 3                             | 1 | 2  | 2 | 1 | 2 | 1 | 1 | 3  | 3  | 3  | 3  | 4  | 4  | 4  | 4  | 4  | 3  | 5  | 4  | 4  | 3  | 2  | 2  | 5             |   |
| 25-Feb   | 2                             | 2 | 2  | 2 | 2 | 1 | 2 | 2 | 3  | 2  | 2  | 3  | 2  | 3  | 1  | 1  | 1  | 1  | 1  | 2  | 2  | 1  | 2  | 2  | 3             |   |
| 26-Feb   | 1                             | 2 | 1  | 1 | 2 | 1 | 1 | 1 | 1  | 1  | 2  | 1  | 2  | 2  | 2  | 2  | 1  | 2  | 2  | 2  | 1  | 1  | 1  | 1  | 2             |   |
| 27-Feb   | 1                             | 1 | 2  | 2 | 2 | 2 | 2 | 2 | 3  | 3  | 3  | 4  | 4  | 4  | 4  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 2  | 2  | 4             |   |
| 28-Feb   | 1                             | 1 | 1  | 0 | 1 | 1 | 1 | 1 | 1  | 1  | 1  | 2  | 2  | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 2  | 1  | 1  | 2             |   |
|  |                               |   |    |   |   |   |   |   |    |    |    |    |    |    |    |    | Diurnal Maximum  |    |    |    |    |    |    |    |               |   |
|  |                               |   |    |   |   |   |   |   |    |    |    |    |    |    |    |    | 5 6 4 8 6 6 6 5 5 5 6 6 6 7 7 6 5 5 7 6 4 4 8 4  |    |    |    |    |    |    |    |               |   |
| M - Maintenance  |                               |   |    |   |   |   |   |   |    |    |    |    |    |    |    |    | UO - Unstable Operation  |    |    |    |    |    |    |    |               |   |





**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Wind Speed (WS) - km/h**  
**Mildred Lake - February 2023**





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Wind Speed (WS) - km/h  
Mildred Lake - February 2023**

| <b>Wind Speed Ranges (km/h)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---------------------------------|------------------------|----------|---------------------|
| 0 - 5                           | 245                    | 36.79    | 36.79               |
| 6 - 11                          | 309                    | 46.40    | 83.18               |
| 12 - 19                         | 92                     | 13.81    | 97.00               |
| 20 - 28                         | 20                     | 3.00     | 100.00              |
| 29 - 38                         | 0                      | 0.00     | 100.00              |
| > 38                            | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 666

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Wind Speed (WS) - km/h  
Mildred Lake - February 2023**

| <b>Wind Speed<br/>Ranges (km/h)</b> | <b>Wind Direction</b> |            |           |            |          |            |           |            |          |            |           |            |          |            |           |            | <b>Totals</b> |
|-------------------------------------|-----------------------|------------|-----------|------------|----------|------------|-----------|------------|----------|------------|-----------|------------|----------|------------|-----------|------------|---------------|
|                                     | <b>N</b>              | <b>NNE</b> | <b>NE</b> | <b>ENE</b> | <b>E</b> | <b>ESE</b> | <b>SE</b> | <b>SSE</b> | <b>S</b> | <b>SSW</b> | <b>SW</b> | <b>WSW</b> | <b>W</b> | <b>WNW</b> | <b>NW</b> | <b>NNW</b> |               |
| 0 - 5                               | 33                    | 17         | 9         | 4          | 5        | 13         | 21        | 24         | 36       | 27         | 5         | 3          | 6        | 4          | 9         | 29         | 245           |
| 6 - 11                              | 87                    | 37         | 8         | 4          | 1        | 11         | 25        | 33         | 19       | 10         | 2         | 10         | 5        | 7          | 18        | 32         | 309           |
| 12 - 19                             | 18                    | 9          | 0         | 0          | 0        | 0          | 7         | 10         | 9        | 0          | 0         | 9          | 14       | 8          | 1         | 7          | 92            |
| 20 - 28                             | 7                     | 0          | 0         | 0          | 0        | 0          | 8         | 0          | 0        | 0          | 0         | 0          | 4        | 1          | 0         | 0          | 20            |
| 29 - 38                             | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0             |
| > 38                                | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0             |
| <b>Totals</b>                       | 145                   | 63         | 17        | 8          | 6        | 24         | 61        | 67         | 64       | 37         | 7         | 22         | 29       | 20         | 28        | 68         | 666           |

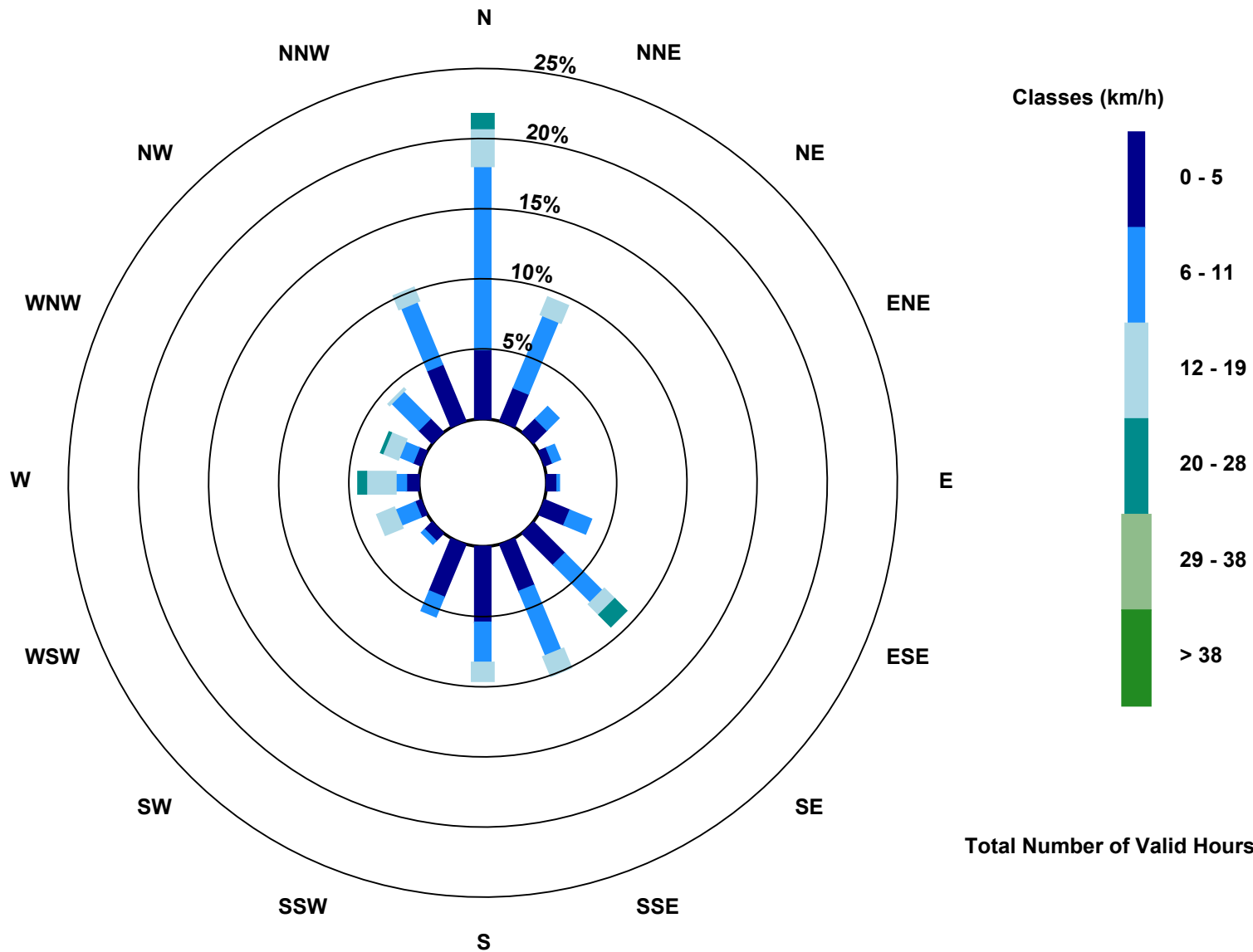
Total Number of Valid Hours: 666

Total Number of Hours: 672



Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Wind Speed (WS) - km/h  
Mildred Lake



Total Number of Valid Hours: 666



**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

**Wind Direction (WD) - deg**  
**Mildred Lake - February 2023**

|  |                                |
|--|--------------------------------|
| Direction of Maximum Speed: 350 deg on Feb 13 15:00          | Hours in Service: 672          |
| Direction of Maximum Daily Speed Average: 275.8 deg on Feb 7 | Hours of Data: 666             |
| Direction of Minimum Speed: 280 deg on Feb 16 17:00          | Hours of Missing Data: 6       |
| Direction of Minimum Daily Speed Average: 1.4 deg on Feb 16  | Percent Operational Time: 99.1 |
| Monthly Average Direction: 346.3 deg                         |                                |

| Day             | Hourly Period Ending At (MST) |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      | Daily Average |      |       |       |       |       |       |       |       |       |       |       |       |      |      |      |     |     |       |     |     |       |      |
|-----------------|-------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|---------------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|------|------|-----|-----|-------|-----|-----|-------|------|
|                 | 1                             | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19  | 20  | 21  | 22  | 23  | 24   |               |      |       |       |       |       |       |       |       |       |       |       |       |      |      |      |     |     |       |     |     |       |      |
| 1-Feb           | 353                           | 0   | UO  | 355 | 351 | 353 | 338 | 354 | 358 | 341 | 332 | 304 | 317 | 310 | 315 | 352 | 358 | 343 | 334 | 323 | 318 | 329 | 161 | 182  | 334.6         |      |       |       |       |       |       |       |       |       |       |       |       |      |      |      |     |     |       |     |     |       |      |
| 2-Feb           | 152                           | 177 | 187 | 132 | 191 | 193 | 147 | 147 | 158 | 165 | 156 | 164 | 141 | 149 | 139 | 140 | 140 | 141 | 143 | 142 | 143 | 143 | 142 | 143  | 147.2         |      |       |       |       |       |       |       |       |       |       |       |       |      |      |      |     |     |       |     |     |       |      |
| 3-Feb           | 145                           | 149 | 148 | 153 | 156 | 150 | 150 | 166 | 155 | 186 | 191 | 355 | 323 | 354 | 10  | 20  | 33  | 30  | 33  | 28  | 14  | 18  | 28  | 359  | 112.2         |      |       |       |       |       |       |       |       |       |       |       |       |      |      |      |     |     |       |     |     |       |      |
| 4-Feb           | 5                             | 12  | 358 | 358 | 359 | 360 | 349 | 356 | 1   | 5   | 2   | 3   | 4   | 355 | 352 | 16  | 328 | 349 | 5   | 354 | 357 | 341 | 352 | 342  | 357.2         |      |       |       |       |       |       |       |       |       |       |       |       |      |      |      |     |     |       |     |     |       |      |
| 5-Feb           | 344                           | 1   | 350 | 6   | 134 | 15  | 356 | 333 | 9   | 315 | 300 | 251 | 152 | 190 | 160 | 233 | 195 | 202 | 97  | 171 | 236 | 282 | 306 | 299  | 300.0         |      |       |       |       |       |       |       |       |       |       |       |       |      |      |      |     |     |       |     |     |       |      |
| 6-Feb           | 283                           | 278 | 281 | 275 | 280 | 284 | 281 | 273 | 281 | 351 | 40  | 81  | 151 | 120 | 121 | 93  | 135 | 342 | 357 | 341 | 357 | 356 | 215 | 224  | 291.3         |      |       |       |       |       |       |       |       |       |       |       |       |      |      |      |     |     |       |     |     |       |      |
| 7-Feb           | 143                           | 174 | 134 | 253 | 269 | 282 | 285 | 277 | 270 | 246 | 256 | 260 | 274 | 271 | 269 | 277 | 278 | 268 | 251 | 268 | 291 | 298 | 348 | 1    | 275.8         |      |       |       |       |       |       |       |       |       |       |       |       |      |      |      |     |     |       |     |     |       |      |
| 8-Feb           | 0                             | 7   | 4   | 331 | 326 | 205 | 148 | 89  | 179 | 205 | 174 | 141 | M   | 141 | 145 | 139 | 138 | 161 | 150 | 142 | 155 | 144 | 149 | 134  | 135.9         |      |       |       |       |       |       |       |       |       |       |       |       |      |      |      |     |     |       |     |     |       |      |
| 9-Feb           | 142                           | 132 | 166 | 148 | 150 | 150 | 169 | 170 | 167 | 154 | 174 | 142 | 148 | 148 | 144 | 131 | 128 | 140 | 1   | UO  | UO  | 19  | 128 | 85   | 147.4         |      |       |       |       |       |       |       |       |       |       |       |       |      |      |      |     |     |       |     |     |       |      |
| 10-Feb          | 54                            | 20  | 351 | 355 | 347 | 0   | 6   | 358 | 358 | 357 | 359 | 1   | 359 | 358 | 348 | 347 | 351 | 343 | 341 | 354 | 346 | 356 | 356 | 49   | 355.6         |      |       |       |       |       |       |       |       |       |       |       |       |      |      |      |     |     |       |     |     |       |      |
| 11-Feb          | 3                             | 357 | 45  | 112 | 152 | 161 | 162 | 155 | 107 | 201 | 195 | 157 | 144 | 138 | 145 | 217 | 240 | 263 | 282 | 287 | 302 | 300 | 259 | 241  | 224.7         |      |       |       |       |       |       |       |       |       |       |       |       |      |      |      |     |     |       |     |     |       |      |
| 12-Feb          | 252                           | 254 | 276 | 252 | 244 | 252 | 278 | 282 | 267 | 288 | 325 | 336 | 338 | 347 | 184 | 24  | 355 | 353 | 6   | 355 | 53  | 137 | 128 | 138  | 286.1         |      |       |       |       |       |       |       |       |       |       |       |       |      |      |      |     |     |       |     |     |       |      |
| 13-Feb          | 151                           | 175 | 173 | 225 | 247 | 256 | 262 | 276 | 351 | 4   | 358 | 356 | 354 | 1   | 350 | 351 | 0   | 10  | 5   | 10  | 17  | 18  | 15  | 13   | 347.0         |      |       |       |       |       |       |       |       |       |       |       |       |      |      |      |     |     |       |     |     |       |      |
| 14-Feb          | 9                             | 3   | 352 | 345 | 358 | 10  | 21  | 28  | 36  | 17  | 39  | 36  | 44  | 31  | 28  | 13  | 31  | 31  | 25  | 355 | 354 | 9   | 351 | UO   | 16.5          |      |       |       |       |       |       |       |       |       |       |       |       |      |      |      |     |     |       |     |     |       |      |
| 15-Feb          | 69                            | 117 | 131 | 192 | 202 | 192 | 184 | 147 | 149 | 189 | 177 | 177 | 152 | 130 | 122 | 123 | 135 | 119 | 135 | 154 | 139 | 111 | 182 | 168  | 150.4         |      |       |       |       |       |       |       |       |       |       |       |       |      |      |      |     |     |       |     |     |       |      |
| 16-Feb          | 153                           | 163 | 155 | 145 | 154 | 153 | 128 | 148 | 170 | 185 | 193 | 171 | 162 | 177 | 179 | 155 | 280 | 2   | 357 | 5   | 22  | 3   | 359 | 11   | 112.0         |      |       |       |       |       |       |       |       |       |       |       |       |      |      |      |     |     |       |     |     |       |      |
| 17-Feb          | 15                            | 33  | 25  | 26  | 3   | 15  | 58  | 39  | 29  | 29  | 27  | 16  | 11  | 12  | 16  | 11  | 5   | 9   | 8   | 15  | 20  | 8   | 352 | 343  | 16.2          |      |       |       |       |       |       |       |       |       |       |       |       |      |      |      |     |     |       |     |     |       |      |
| 18-Feb          | 350                           | 344 | 346 | 343 | 345 | 339 | 351 | 359 | 6   | 359 | 327 | 319 | 323 | 343 | 35  | 186 | 238 | 275 | 17  | 40  | 55  | 168 | 199 | 175  | 344.5         |      |       |       |       |       |       |       |       |       |       |       |       |      |      |      |     |     |       |     |     |       |      |
| 19-Feb          | 118                           | 108 | 112 | 116 | 106 | 53  | 28  | 354 | 14  | 334 | 341 | 331 | 295 | 317 | 324 | 327 | 335 | 339 | 344 | 346 | 357 | 356 | 357 | 4    | 350.4         |      |       |       |       |       |       |       |       |       |       |       |       |      |      |      |     |     |       |     |     |       |      |
| 20-Feb          | 10                            | 3   | 22  | 353 | 313 | 10  | 179 | 140 | 154 | 111 | 146 | 190 | 210 | 194 | 203 | 9   | 23  | 20  | 10  | 338 | 360 | 356 | 355 | 343  | 6.3           |      |       |       |       |       |       |       |       |       |       |       |       |      |      |      |     |     |       |     |     |       |      |
| 21-Feb          | 1                             | 12  | 14  | 12  | 19  | 7   | 341 | 338 | 327 | 343 | 322 | 318 | 325 | 347 | 5   | 15  | 1   | 5   | 29  | 7   | 339 | 281 | 214 | 205  | 354.1         |      |       |       |       |       |       |       |       |       |       |       |       |      |      |      |     |     |       |     |     |       |      |
| 22-Feb          | 212                           | 202 | 182 | 178 | 168 | 179 | 188 | 173 | 199 | 186 | 179 | 178 | 212 | 211 | 247 | 289 | 232 | 265 | 325 | 284 | 321 | 198 | 204 | 194  | 212.0         |      |       |       |       |       |       |       |       |       |       |       |       |      |      |      |     |     |       |     |     |       |      |
| 23-Feb          | 171                           | 4   | 7   | 278 | 339 | 335 | 322 | 309 | UO  | 314 | 188 | 201 | 211 | 214 | 183 | 124 | 129 | 139 | 141 | 157 | 171 | 199 | 191 | 164  | 176.9         |      |       |       |       |       |       |       |       |       |       |       |       |      |      |      |     |     |       |     |     |       |      |
| 24-Feb          | 154                           | 177 | 174 | 165 | 167 | 148 | 174 | 188 | 143 | 141 | 134 | 147 | 182 | 179 | 180 | 169 | 168 | 170 | 187 | 184 | 182 | 180 | 178 | 174  | 170.5         |      |       |       |       |       |       |       |       |       |       |       |       |      |      |      |     |     |       |     |     |       |      |
| 25-Feb          | 178                           | 176 | 177 | 179 | 134 | 140 | 151 | 146 | 246 | 250 | 246 | 282 | 243 | 201 | 151 | 145 | 131 | 111 | 167 | 172 | 78  | 112 | 147 | 120  | 174.8         |      |       |       |       |       |       |       |       |       |       |       |       |      |      |      |     |     |       |     |     |       |      |
| 26-Feb          | 102                           | 105 | 104 | 106 | 118 | 67  | 14  | 356 | 353 | 1   | 112 | 75  | 74  | 43  | 45  | 65  | 95  | 61  | 36  | 19  | 8   | 7   | 6   | 13   | 49.4          |      |       |       |       |       |       |       |       |       |       |       |       |      |      |      |     |     |       |     |     |       |      |
| 27-Feb          | 16                            | 8   | 356 | 353 | 341 | 345 | 340 | 348 | 354 | 351 | 3   | 9   | 349 | 350 | 348 | 4   | 33  | 17  | 13  | 17  | 16  | 13  | 342 | 349  | 359.1         |      |       |       |       |       |       |       |       |       |       |       |       |      |      |      |     |     |       |     |     |       |      |
| 28-Feb          | 333                           | 339 | 337 | 326 | 332 | 332 | 334 | 337 | 337 | 343 | 329 | 316 | 316 | 272 | 203 | 201 | 244 | 306 | 207 | 175 | 204 | 195 | 193 | 142  | 295.4         |      |       |       |       |       |       |       |       |       |       |       |       |      |      |      |     |     |       |     |     |       |      |
| Diurnal Average |                               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | 20.8 | 23.4          | 16.2 | 310.2 | 289.3 | 308.6 | 303.8 | 319.6 | 336.8 | 337.4 | 338.5 | 340.8 | 319.1 | 330.4 | 20.3 | 20.5 | 30.1 | 9.6 | 3.9 | 354.5 | 1.3 | 6.4 | 343.9 | 56.1 |

M - Maintenance      UO - Unstable Operation  
 All monthly, daily, and diurnal averages have been calculated using vector methods



**Wood Buffalo Environmental Association**  
**Summary of Hour Standard Deviations**

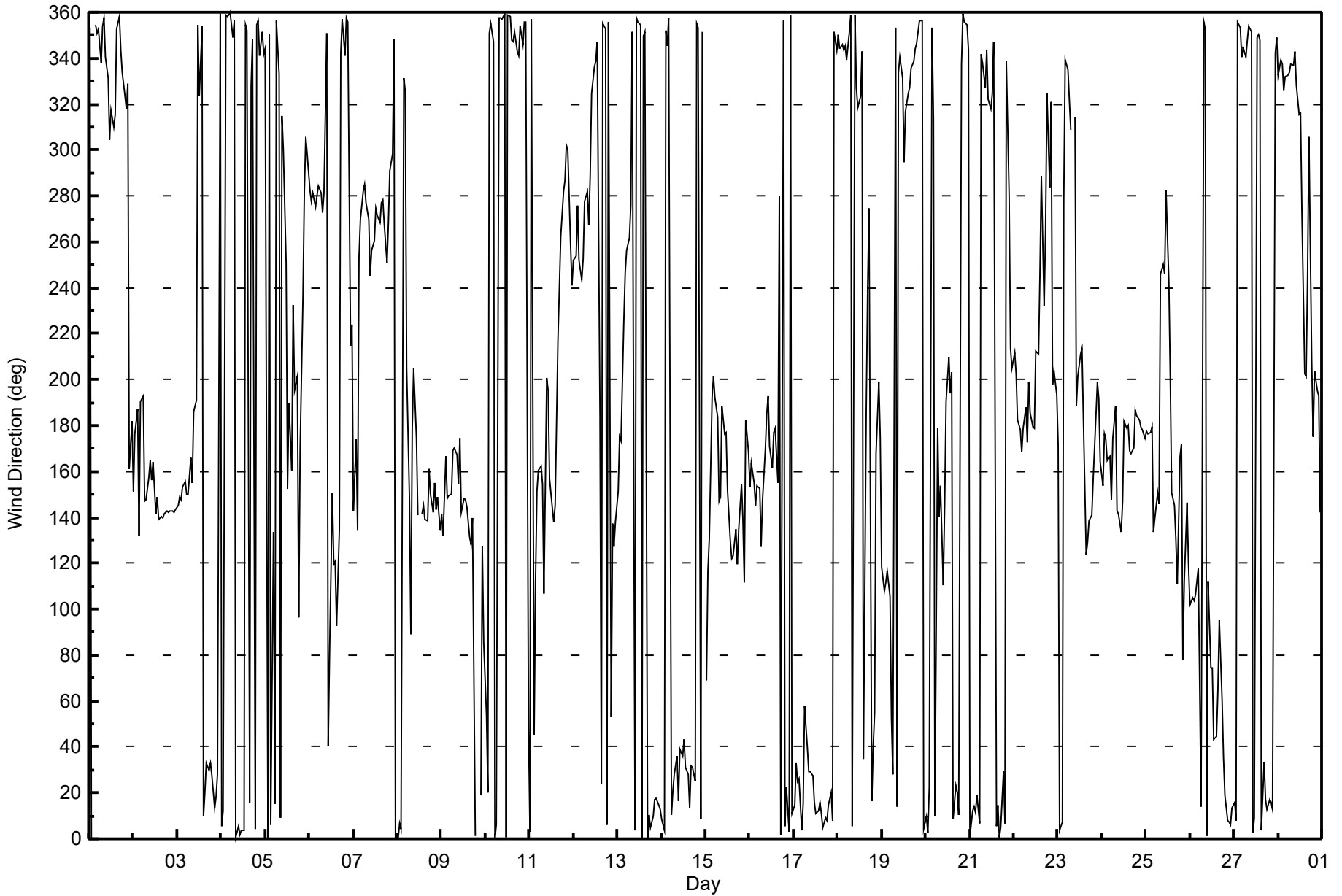
**Wind Direction (WD) - deg**  
**Mildred Lake - February 2023**

|  |                                |
|--|--------------------------------|
| Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0  | Hours in Service: 672          |
| Maximum Value: 95 deg on Feb 28 20:00  | Hours of Data: 666             |
| Minimum Value: 5 deg on Feb 23 07:00   | Hours of Missing Data: 6       |
| Percentiles: P <sub>1</sub> = 8 P <sub>10</sub> = 12 Q <sub>1</sub> = 15 Median = 19 Q <sub>3</sub> = 26 P <sub>90</sub> = 43 P <sub>99</sub> = 88 | Hours of Calibration: 0        |
|  | Percent Operational Time: 99.1 |

| Day    | Hourly Period Ending At (MST) |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    | Daily Maximum |
|--------|-------------------------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|---------------|
|        | 1                             | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |               |
| 1-Feb  | 11                            | 16 | UO | 15 | 14 | 11 | 11 | 14 | 13 | 15 | 14 | 19 | 12 | 16 | 26 | 17 | 15 | 14 | 17 | 20 | 10 | 42 | 23 | 12 | 42            |
| 2-Feb  | 34                            | 27 | 19 | 31 | 9  | 15 | 29 | 15 | 19 | 16 | 22 | 16 | 16 | 13 | 15 | 14 | 15 | 13 | 13 | 13 | 13 | 13 | 14 | 12 | 34            |
| 3-Feb  | 12                            | 11 | 12 | 12 | 13 | 12 | 12 | 14 | 17 | 24 | 25 | 23 | 23 | 20 | 20 | 18 | 18 | 20 | 19 | 27 | 17 | 17 | 19 | 40 | 40            |
| 4-Feb  | 18                            | 20 | 11 | 13 | 13 | 13 | 12 | 13 | 14 | 14 | 16 | 19 | 16 | 17 | 18 | 32 | 17 | 26 | 15 | 13 | 18 | 14 | 22 | 17 | 32            |
| 5-Feb  | 19                            | 20 | 33 | 39 | 88 | 29 | 26 | 20 | 43 | 61 | 91 | 72 | 26 | 46 | 43 | 80 | 28 | 71 | 93 | 53 | 80 | 17 | 27 | 22 | 93            |
| 6-Feb  | 17                            | 17 | 18 | 24 | 21 | 16 | 15 | 17 | 17 | 28 | 28 | 29 | 30 | 34 | 23 | 19 | 43 | 23 | 14 | 81 | 32 | 33 | 86 | 28 | 86            |
| 7-Feb  | 80                            | 37 | 38 | 47 | 19 | 19 | 17 | 19 | 20 | 25 | 23 | 24 | 23 | 19 | 19 | 17 | 17 | 20 | 24 | 21 | 32 | 19 | 17 | 19 | 80            |
| 8-Feb  | 16                            | 18 | 21 | 15 | 36 | 62 | 61 | 34 | 28 | 15 | 20 | 18 | M  | 17 | 17 | 17 | 21 | 32 | 12 | 20 | 19 | 18 | 23 | 13 | 62            |
| 9-Feb  | 17                            | 12 | 13 | 17 | 12 | 11 | 14 | 17 | 18 | 9  | 26 | 14 | 12 | 12 | 13 | 17 | 15 | 26 | 59 | UO | UO | 72 | 70 | 37 | 72            |
| 10-Feb | 24                            | 32 | 11 | 12 | 13 | 17 | 16 | 14 | 14 | 15 | 16 | 16 | 16 | 19 | 15 | 14 | 15 | 15 | 15 | 17 | 17 | 24 | 24 | 63 | 63            |
| 11-Feb | 30                            | 75 | 37 | 25 | 26 | 14 | 20 | 22 | 72 | 30 | 20 | 13 | 15 | 16 | 21 | 25 | 24 | 23 | 18 | 17 | 16 | 82 | 38 | 20 | 82            |
| 12-Feb | 26                            | 22 | 20 | 25 | 30 | 30 | 19 | 32 | 41 | 16 | 14 | 14 | 23 | 43 | 84 | 30 | 11 | 12 | 19 | 42 | 86 | 52 | 17 | 15 | 86            |
| 13-Feb | 12                            | 27 | 37 | 30 | 23 | 22 | 19 | 21 | 28 | 17 | 18 | 16 | 17 | 19 | 16 | 17 | 18 | 20 | 17 | 17 | 19 | 18 | 20 | 21 | 37            |
| 14-Feb | 19                            | 18 | 22 | 14 | 15 | 17 | 19 | 21 | 22 | 27 | 25 | 32 | 36 | 21 | 19 | 23 | 19 | 19 | 29 | 20 | 20 | 20 | 81 | UO | 81            |
| 15-Feb | 62                            | 24 | 19 | 16 | 19 | 15 | 25 | 36 | 42 | 35 | 28 | 25 | 19 | 20 | 26 | 27 | 16 | 14 | 22 | 14 | 24 | 11 | 26 | 14 | 62            |
| 16-Feb | 25                            | 38 | 17 | 12 | 17 | 20 | 51 | 30 | 21 | 15 | 21 | 16 | 16 | 29 | 38 | 69 | 93 | 20 | 15 | 19 | 21 | 15 | 14 | 20 | 93            |
| 17-Feb | 19                            | 17 | 17 | 18 | 24 | 27 | 29 | 19 | 21 | 19 | 20 | 27 | 25 | 27 | 20 | 19 | 17 | 17 | 18 | 18 | 18 | 15 | 18 | 21 | 29            |
| 18-Feb | 10                            | 12 | 10 | 8  | 10 | 13 | 9  | 13 | 14 | 21 | 13 | 14 | 17 | 39 | 60 | 81 | 44 | 89 | 20 | 10 | 37 | 87 | 11 | 19 | 89            |
| 19-Feb | 17                            | 15 | 28 | 46 | 35 | 17 | 21 | 13 | 48 | 35 | 27 | 34 | 42 | 12 | 11 | 12 | 11 | 15 | 13 | 12 | 14 | 13 | 16 | 15 | 48            |
| 20-Feb | 15                            | 17 | 21 | 41 | 13 | 33 | 70 | 31 | 29 | 27 | 27 | 19 | 20 | 22 | 75 | 51 | 16 | 14 | 9  | 58 | 10 | 8  | 11 | 11 | 75            |
| 21-Feb | 15                            | 16 | 16 | 14 | 16 | 21 | 20 | 16 | 16 | 19 | 16 | 16 | 24 | 28 | 25 | 21 | 18 | 14 | 14 | 11 | 11 | 48 | 30 | 16 | 48            |
| 22-Feb | 12                            | 84 | 34 | 20 | 24 | 26 | 15 | 16 | 19 | 14 | 17 | 87 | 53 | 22 | 26 | 23 | 28 | 21 | 37 | 52 | 87 | 43 | 22 | 53 | 87            |
| 23-Feb | 50                            | 50 | 13 | 76 | 15 | 15 | 5  | 74 | UO | 90 | 13 | 17 | 23 | 38 | 23 | 27 | 18 | 15 | 14 | 8  | 10 | 20 | 24 | 11 | 90            |
| 24-Feb | 21                            | 9  | 14 | 11 | 12 | 14 | 19 | 11 | 21 | 14 | 16 | 18 | 14 | 14 | 13 | 14 | 15 | 13 | 16 | 14 | 14 | 14 | 14 | 15 | 21            |
| 25-Feb | 14                            | 14 | 13 | 15 | 33 | 44 | 44 | 52 | 27 | 29 | 24 | 28 | 32 | 28 | 14 | 14 | 15 | 15 | 39 | 55 | 52 | 16 | 16 | 15 | 55            |
| 26-Feb | 12                            | 16 | 15 | 11 | 56 | 18 | 20 | 9  | 10 | 18 | 74 | 21 | 19 | 21 | 21 | 24 | 13 | 19 | 24 | 17 | 15 | 14 | 14 | 15 | 74            |
| 27-Feb | 15                            | 15 | 13 | 14 | 13 | 13 | 12 | 13 | 13 | 16 | 18 | 20 | 20 | 18 | 15 | 19 | 17 | 18 | 17 | 18 | 18 | 18 | 14 | 13 | 20            |
| 28-Feb | 8                             | 24 | 29 | 8  | 7  | 8  | 9  | 15 | 16 | 56 | 18 | 17 | 21 | 37 | 22 | 17 | 39 | 70 | 48 | 95 | 11 | 11 | 14 | 26 | 95            |
|        | 80                            | 84 | 38 | 76 | 88 | 62 | 70 | 74 | 72 | 90 | 91 | 87 | 53 | 46 | 84 | 81 | 93 | 89 | 93 | 95 | 87 | 87 | 86 | 63 |               |

Diurnal Maximum

M - Maintenance UO - Unstable Operation





## WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY  
MONITORING PROGRAM  
MONTHLY REPORT

### **AMS03 LOWER CAMP METEOROLOGY FEBRUARY 2023**

Operations, Data Collection,  
QA/QC, Data Validation and Reporting by:  
Wood Buffalo Environmental Association  
Fort McMurray, Alberta

March 31, 2023



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - LOWER CAMP MET TOWER (AMS03)  
FEBRUARY 2023

MONTHLY SUMMARY for  
AMD SECTION III.B.1(c)

| Parameter                                | Hours of<br>Data | Hours of<br>Calibration | Hours<br>without Data | Operational<br>Time | Maximum<br>1-Hour Value | 1-Hour<br>Exceedances | Maximum<br>24-Hour Value | 24-Hour<br>Exceedances |
|--|------------------|-------------------------|-----------------------|---------------------|-------------------------|-----------------------|--------------------------|------------------------|
| Temperature 20 m (C) Average             | 622              | 0                       | 50                    | 92.56               | 4.3                     | -                     | -0.6                     | -                      |
| Temperature 45 m (C) Average             | 627              | 0                       | 45                    | 93.3                | 4.2                     | -                     | -0.5                     | -                      |
| Temperature 100 m (C) Average            | 627              | 0                       | 45                    | 93.3                | 4.9                     | -                     | -0.2                     | -                      |
| Temperature 163 m (C) Average            | 627              | 0                       | 45                    | 93.3                | 4.6                     | -                     | -0.2                     | -                      |
| Relative Humidity 20 m (%) Average       | 615              | 0                       | 57                    | 91.52               | 93.4                    | -                     | 84.3                     | -                      |
| Relative Humidity 45 m (%) Average       | 627              | 0                       | 45                    | 93.3                | 92.4                    | -                     | 85.0                     | -                      |
| Relative Humidity 100 m (%) Average      | 627              | 0                       | 45                    | 93.3                | 89.7                    | -                     | 82.4                     | -                      |
| Relative Humidity 163 m (%) Average      | 627              | 0                       | 45                    | 93.3                | 93.7                    | -                     | 84.7                     | -                      |
| Wind Speed 20 m (km/h) Average           | 627              | 0                       | 45                    | 93.3                | 28                      | -                     | 17.0                     | -                      |
| Wind Speed 45 m (km/h) Average           | 625              | 0                       | 47                    | 93.01               | 43                      | -                     | 24.0                     | -                      |
| Wind Speed 100 m (km/h) Average          | 624              | 0                       | 48                    | 92.86               | 49                      | -                     | 30.0                     | -                      |
| Wind Speed 163 m (km/h) Average          | 611              | 0                       | 61                    | 90.92               | 48                      | -                     | 34.0                     | -                      |
| Wind Direction 20 m (deg) Average        | 627              | 0                       | 45                    | 93.3                | -                       | -                     | -                        | -                      |
| Wind Direction 45 m (deg) Average        | 625              | 0                       | 47                    | 93.01               | -                       | -                     | -                        | -                      |
| Wind Direction 100 m (deg) Average       | 624              | 0                       | 48                    | 92.86               | -                       | -                     | -                        | -                      |
| Wind Direction 163 m (deg) Average       | 611              | 0                       | 61                    | 90.92               | -                       | -                     | -                        | -                      |
| Vertical Wind Speed 20 m (km/h) Average  | 627              | 0                       | 45                    | 93.3                | 0.3                     | -                     | 0.0                      | -                      |
| Vertical Wind Speed 45 m (km/h) Average  | 625              | 0                       | 47                    | 93.01               | 1.3                     | -                     | 0.6                      | -                      |
| Vertical Wind Speed 100 m (km/h) Average | 624              | 0                       | 48                    | 92.86               | 1.8                     | -                     | 0.4                      | -                      |
| Vertical Wind Speed 163 m (km/h) Average | 611              | 0                       | 61                    | 90.92               | 2.8                     | -                     | 0.9                      | -                      |

Note : Operational time includes periods of data collection and instrument calibration

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - LOWER CAMP MET TOWER (AMS03)  
 FEBRUARY 2023

MONTHLY SUMMARY FOR AIR QUALITY/ METEOROLOGICAL MONITORING MEASUREMENTS

| Parameter                                | Number | Mean   | StnDev | Total | Percentile |       |       |        |      |      |      |
|--|--------|--------|--------|-------|------------|-------|-------|--------|------|------|------|
|  |        |        |        |       | Min        | P10   | Q1    | Median | Q3   | P90  | Max  |
| Temperature 20 m (C) Average             | 622    | -15.56 | 9.4    | -     | -36.2      | -29.3 | -22.6 | -15.6  | -9   | -3.3 | 4.3  |
| Temperature 45 m (C) Average             | 627    | -15.32 | 9      | -     | -34        | -28   | -21.7 | -15.6  | -9.3 | -3   | 4.2  |
| Temperature 100 m (C) Average            | 627    | -14.76 | 8.6    | -     | -31.2      | -26   | -21.2 | -15.6  | -8.3 | -2   | 4.9  |
| Temperature 163 m (C) Average            | 627    | -14.49 | 8.5    | -     | -30.9      | -25.2 | -20.9 | -15.4  | -8.6 | -1.4 | 4.6  |
| Relative Humidity 20 m (%) Average       | 615    | 72.49  | 9.7    | -     | 42.1       | 59.6  | 68.7  | 73.4   | 79   | 84   | 93.4 |
| Relative Humidity 45 m (%) Average       | 627    | 73.51  | 9.9    | -     | 42.6       | 59.4  | 69    | 74.6   | 80.3 | 85.6 | 92.4 |
| Relative Humidity 100 m (%) Average      | 627    | 71.05  | 9.9    | -     | 40.5       | 56.8  | 65.8  | 72.7   | 77.6 | 82.4 | 89.7 |
| Relative Humidity 163 m (%) Average      | 627    | 71.73  | 10.9   | -     | 40.9       | 55.3  | 65.2  | 73.2   | 79.3 | 85   | 93.7 |
| Wind Speed 20 m (km/h) Average           | 627    | 7.5    | 6      | -     | 0          | 2     | 3     | 6      | 10   | 17   | 28   |
| Wind Speed 45 m (km/h) Average           | 625    | 10.6   | 8      | -     | 0          | 2     | 5     | 8      | 14   | 21   | 43   |
| Wind Speed 100 m (km/h) Average          | 624    | 13.4   | 9      | -     | 1          | 3     | 7     | 11     | 17   | 27   | 49   |
| Wind Speed 163 m (km/h) Average          | 611    | 16.2   | 10     | -     | 0          | 5     | 9     | 14     | 21   | 31   | 48   |
| Wind Direction 20 m (deg) Average        | 627    | -      | -      | -     | -          | -     | -     | -      | -    | -    | -    |
| Wind Direction 45 m (deg) Average        | 625    | -      | -      | -     | -          | -     | -     | -      | -    | -    | -    |
| Wind Direction 100 m (deg) Average       | 624    | -      | -      | -     | -          | -     | -     | -      | -    | -    | -    |
| Wind Direction 163 m (deg) Average       | 611    | -      | -      | -     | -          | -     | -     | -      | -    | -    | -    |
| Vertical Wind Speed 20 m (km/h) Average  | 627    | -0.23  | 0.4    | -     | -1.9       | -0.8  | -0.3  | -0.1   | 0    | 0    | 0.3  |
| Vertical Wind Speed 45 m (km/h) Average  | 625    | 0.02   | 0.4    | -     | -2.8       | -0.3  | -0.1  | 0      | 0.2  | 0.4  | 1.3  |
| Vertical Wind Speed 100 m (km/h) Average | 624    | 0.03   | 0.4    | -     | -1.8       | -0.4  | -0.1  | 0.1    | 0.2  | 0.4  | 1.8  |
| Vertical Wind Speed 163 m (km/h) Average | 611    | 0.3    | 0.4    | -     | -0.8       | -0.1  | 0     | 0.2    | 0.4  | 0.8  | 2.8  |

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - LOWER CAMP MET TOWER (AMS03)  
FEBRUARY 2023

OPERATIONAL NOTES

| Parameter   | Period<br>Start   | Period<br>End     | Duration<br>(Hours) | Notes   |
|---|-------------------|-------------------|---------------------|---|
| ALL PARAMETERS  | 10 Feb 2023 17:00 | 28 Feb 2023 16:00 | 45                  | DAS Failure - data not recorded                   |
| Relative Humidity, Temperature at 20m                   | 27 Feb 2023 13:00 | 27 Feb 2023 17:00 | 5                   | Flat line in sensor output signal                 |
| Relative Humidity at 20m                                | 21 Feb 2023 11:00 | 21 Feb 2023 11:00 | 1                   | Flat line in sensor output signal                 |
| Relative Humidity at 20m                                | 25 Feb 2023 19:00 | 26 Feb 2023 00:00 | 6                   | Flat line in sensor output signal                 |
| Wind Speed, Wind Direction, Vertical Wind Speed at 45m  | 13 Feb 2023 10:00 | 13 Feb 2023 11:00 | 2                   | Flat line in sensor output signal - Sensor frozen |
| Wind Speed, Wind Direction, Vertical Wind Speed at 100m | 13 Feb 2023 10:00 | 13 Feb 2023 12:00 | 3                   | Flat line in sensor output signal - Sensor frozen |
| Wind Speed, Wind Direction, Vertical Wind Speed at 163m | 13 Feb 2023 09:00 | 13 Feb 2023 14:00 | 6                   | Flat line in sensor output signal - Sensor frozen |
| Wind Speed, Wind Direction, Vertical Wind Speed at 163m | 18 Feb 2023 09:00 | 18 Feb 2023 12:00 | 4                   | Flat line in sensor output signal - Sensor frozen |
| Wind Speed, Wind Direction, Vertical Wind Speed at 163m | 18 Feb 2023 14:00 | 18 Feb 2023 14:00 | 1                   | Flat line in sensor output signal - Sensor frozen |
| Wind Speed, Wind Direction, Vertical Wind Speed at 163m | 28 Feb 2023 08:00 | 28 Feb 2023 12:00 | 5                   | Flat line in sensor output signal - Sensor frozen |



**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

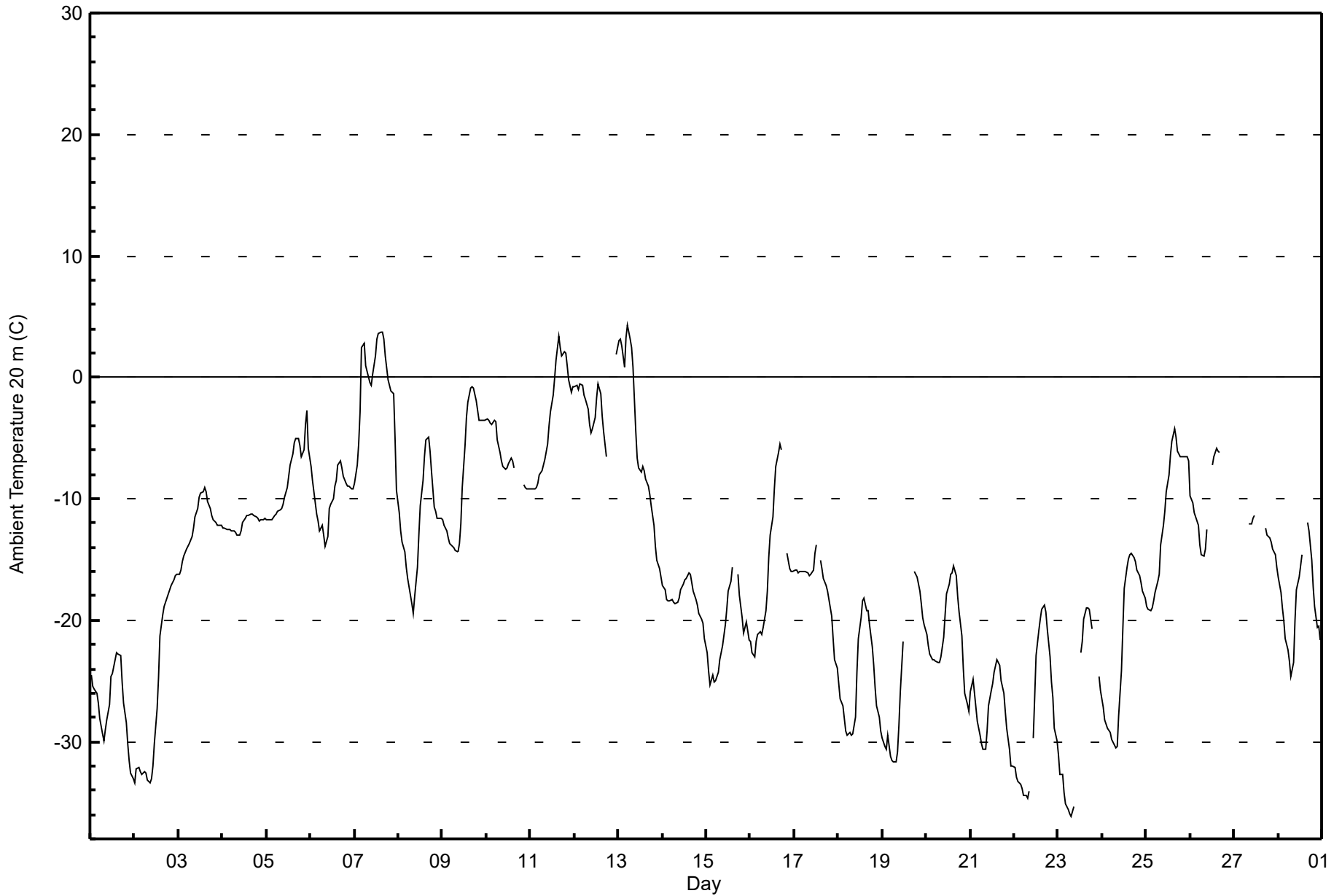
**Ambient Temperature 20 m (AT20m) - C**  
**Lower Camp Met Tower - February 2023**

| Maximum Value: 4.3 C on Feb 13 06:00        |                               | Maximum Daily Average: -0.6 C on Feb 7   |       | Hours in Service: 672          |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |   |               |               |
|---|-------------------------------|--|-------|--------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---|---------------|---------------|
| Minimum Value: -36.2 C on Feb 23 08:00      |                               | Minimum Daily Average: -27.9 C on Feb 23   |       | Hours of Data: 622             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |   |               |               |
| Maximum Diurnal Average: -10.6 C at hour 16 |                               | Minimum Diurnal Average: -18.9 C at hour 8   |       | Hours of Missing Data: 50      |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |   |               |               |
| Monthly Average: -15.56 C                   |                               | Percentiles: P <sub>1</sub> = -34.4 P <sub>10</sub> = -29.3 Q <sub>1</sub> = -22.6 Median = -15.6 Q <sub>3</sub> = -9.0 P <sub>90</sub> = -3.3 P <sub>99</sub> = 3.2 |       | Hours of Calibration: 0        |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |   |               |               |
|   |                               |  |       | Percent Operational Time: 92.6 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |   |               |               |
| Day   | Hourly Period Ending At (MST) |  |       |                                |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |   | Daily Average | Daily Maximum |
|   | 1                             | 2  | 3     | 4                              | 5     | 6     | 7     | 8     | 9     | 10    | 11    | 12    | 13    | 14    | 15    | 16    | 17    | 18    | 19    | 20    | 21    | 22    | 23    | 24  |               |               |
| 1-Feb                                       | -24.5                         | -25.5  | -25.7 | -26.0                          | -26.8 | -28.1 | -29.4 | -29.9 | -29.0 | -28.2 | -26.9 | -24.6 | -24.4 | -23.3 | -22.6 | -22.8 | -23.0 | -25.0 | -26.9 | -28.4 | -30.2 | -31.6 | -32.5 | -33.1   | -27.0         | -22.6         |
| 2-Feb                                       | -33.4                         | -32.3  | -32.1 | -32.4                          | -32.7 | -32.5 | -32.5 | -33.1 | -33.4 | -33.0 | -32.0 | -30.2 | -27.2 | -24.8 | -21.3 | -19.6 | -18.8 | -18.5 | -17.9 | -17.5 | -17.1 | -16.6 | -16.3 | -16.3   | -25.9         | -16.3         |
| 3-Feb                                       | -16.2                         | -15.8  | -15.2 | -14.7                          | -14.2 | -13.9 | -13.7 | -13.1 | -12.4 | -11.5 | -10.8 | -9.9  | -9.5  | -9.4  | -9.1  | -9.5  | -10.3 | -10.8 | -11.4 | -11.8 | -12.0 | -12.2 | -12.2 | -12.2   | -12.2         | -9.1          |
| 4-Feb                                       | -12.4                         | -12.4  | -12.5 | -12.5                          | -12.5 | -12.6 | -12.8 | -13.0 | -13.0 | -12.6 | -12.0 | -11.7 | -11.3 | -11.4 | -11.3 | -11.3 | -11.3 | -11.5 | -11.6 | -11.8 | -11.7 | -11.7 | -11.6 | -11.6   | -12.0         | -11.3         |
| 5-Feb                                       | -11.7                         | -11.7  | -11.7 | -11.7                          | -11.4 | -11.3 | -11.1 | -10.9 | -10.8 | -10.5 | -9.9  | -9.0  | -8.1  | -7.2  | -6.3  | -5.4  | -5.0  | -5.0  | -5.6  | -6.6  | -5.9  | -3.8  | -2.7  | -5.8  | -8.3          | -2.7          |
| 6-Feb                                       | -7.3                          | -8.5   | -9.4  | -11.3                          | -11.8 | -12.6 | -12.2 | -13.0 | -13.9 | -13.2 | -10.8 | -10.5 | -10.0 | -9.0  | -8.5  | -7.3  | -6.9  | -7.5  | -8.2  | -8.7  | -8.9  | -9.0  | -9.2  | -9.1  | -9.9          | -6.9          |
| 7-Feb                                       | -8.7                          | -7.2   | -5.5  | -2.8                           | 2.5   | 2.8   | 1.0   | 0.5   | -0.5  | -0.7  | 0.3   | 1.8   | 3.2   | 3.6   | 3.7   | 3.7   | 3.1   | 1.8   | -0.2  | -0.7  | -1.1  | -1.3  | -5.0  | -9.3  | -0.6          | 3.7           |
| 8-Feb                                       | -11.1                         | -12.6  | -13.5 | -14.4                          | -15.7 | -16.6 | -18.0 | -18.7 | -19.4 | -18.0 | -15.6 | -13.0 | -10.6 | -8.5  | -6.6  | -5.2  | -5.0  | -6.1  | -7.7  | -10.7 | -11.0 | -11.6 | -11.6 | -11.6   | -12.2         | -5.0          |
| 9-Feb                                       | -11.7                         | -12.2  | -12.7 | -13.2                          | -13.7 | -13.9 | -14.0 | -14.3 | -14.4 | -13.7 | -12.1 | -9.1  | -5.6  | -3.3  | -2.0  | -0.9  | -0.7  | -0.9  | -2.0  | -2.7  | -3.6  | -3.5  | -3.5  | -3.6  | -7.8          | -0.7          |
| 10-Feb                                      | -3.4                          | -3.5   | -3.8  | -3.8                           | -3.5  | -3.7  | -5.2  | -6.2  | -6.9  | -7.4  | -7.6  | -7.5  | -7.1  | -6.7  | -6.9  | -7.5  | DF    | DF    | DF    | DF    | -8.9  | -9.1  | -9.2  | -9.2  | -6.3          | -3.4          |
| 11-Feb                                      | -9.2                          | -9.2   | -9.2  | -9.1                           | -8.7  | -8.1  | -7.6  | -7.2  | -6.8  | -5.4  | -3.9  | -2.8  | -1.5  | -0.1  | 1.4   | 3.4   | 2.5   | 1.8   | 2.1   | 2.0   | 1.0   | -0.2  | -1.2  | -0.7  | -3.2          | 3.4           |
| 12-Feb                                      | -0.7                          | -0.7   | -1.0  | -0.6                           | -0.6  | -1.4  | -1.8  | -2.6  | -3.9  | -4.6  | -4.2  | -3.3  | -1.7  | -0.5  | -1.4  | -3.2  | -4.5  | -6.5  | DF    | DF    | DF    | DF    | DF    | 1.9   | -2.2          | 1.9           |
| 13-Feb                                      | 3.1                           | 3.2  | 2.6   | 0.9                            | 3.2   | 4.3   | 3.2   | 2.5   | 0.9   | -4.5  | -6.7  | -7.5  | -7.8  | -7.3  | -7.7  | -8.4  | -8.9  | -9.6  | -10.6 | -12.2 | -13.9 | -15.0 | -15.8 | -16.4   | -5.4          | 4.3           |
| 14-Feb                                      | -17.1                         | -17.5  | -18.2 | -18.4                          | -18.4 | -18.3 | -18.5 | -18.6 | -18.6 | -18.2 | -17.5 | -17.0 | -16.6 | -16.6 | -16.1 | -16.2 | -16.9 | -17.6 | -18.3 | -18.8 | -19.4 | -19.9 | -20.2 | -21.5   | -18.1         | -16.1         |
| 15-Feb                                      | -22.6                         | -24.1  | -25.4 | -24.5                          | -25.1 | -24.9 | -24.3 | -23.2 | -22.7 | -22.1 | -20.4 | -19.1 | -17.6 | -16.8 | -15.6 | DF    | DF    | -16.3 | -17.9 | -19.8 | -21.1 | -20.6 | -20.1 | -21.7   | -21.2         | -15.6         |
| 16-Feb                                      | -21.7                         | -22.7  | -23.0 | -21.8                          | -21.2 | -20.9 | -21.1 | -20.6 | -19.2 | -17.5 | -14.8 | -13.0 | -11.5 | -9.1  | -7.3  | -6.2  | -5.5  | -6.0  | DF    | DF    | -14.5 | -15.7 | -16.0 | -16.0   | -15.7         | -5.5          |
| 17-Feb                                      | -15.9                         | -15.9  | -16.0 | -16.0                          | -16.0 | -16.0 | -16.0 | -16.1 | -16.3 | -16.2 | -15.8 | -14.5 | -13.8 | DF    | -15.1 | -15.8 | -16.6 | -17.2 | -17.6 | -18.3 | -19.7 | -21.6 | -23.3 | -24.0   | -17.1         | -13.8         |
| 18-Feb                                      | -25.2                         | -26.5  | -27.0 | -28.1                          | -29.1 | -29.4 | -29.3 | -29.5 | -29.4 | -28.0 | -24.2 | -21.5 | -19.8 | -18.4 | -18.2 | -19.2 | -19.2 | -20.4 | -22.2 | -23.7 | -25.5 | -27.1 | -28.0 | -29.2   | -24.9         | -18.2         |
| 19-Feb                                      | -29.7                         | -30.4  | -30.6 | -29.5                          | -31.2 | -31.6 | -31.7 | -31.6 | -30.8 | -28.7 | -25.8 | -21.7 | DF    | DF    | DF    | DF    | DF    | -16.0 | -16.2 | -16.5 | -17.6 | -18.6 | -19.7 | -20.4   | -25.2         | -16.0         |
| 20-Feb                                      | -21.2                         | -22.1  | -22.8 | -23.2                          | -23.2 | -23.4 | -23.5 | -23.5 | -23.0 | -21.4 | -19.6 | -17.8 | -17.1 | -16.3 | -16.1 | -15.6 | -16.4 | -18.0 | -19.3 | -21.3 | -24.0 | -26.0 | -27.0 | -27.5   | -21.2         | -15.6         |
| 21-Feb                                      | -25.9                         | -24.9  | -26.0 | -27.2                          | -28.3 | -29.5 | -30.2 | -30.7 | -30.6 | -29.2 | -27.1 | -25.8 | -25.2 | -24.2 | -23.2 | -23.5 | -23.7 | -25.0 | -26.0 | -27.5 | -28.9 | -30.6 | -32.0 | -32.0   | -27.4         | -23.2         |
| 22-Feb                                      | -32.1                         | -32.9  | -33.3 | -33.5                          | -33.8 | -34.4 | -34.4 | -34.6 | -34.1 | DF    | -29.7 | -26.4 | -22.9 | -20.8 | -19.9 | -19.1 | -18.7 | -19.4 | -20.8 | -23.0 | -25.1 | -26.3 | -28.8 | -29.9   | -27.6         | -18.7         |
| 23-Feb                                      | -31.1                         | -32.7  | -32.7 | -34.2                          | -35.1 | -35.6 | -35.9 | -36.2 | -35.3 | DF    | DF    | DF    | -22.7 | -21.7 | -20.0 | -18.9 | -19.0 | -19.1 | -20.7 | DF    | DF    | DF    | -24.7 | -25.8   | -27.9         | -18.9         |
| 24-Feb                                      | -27.2                         | -28.2  | -28.6 | -28.9                          | -29.3 | -29.8 | -30.0 | -30.5 | -30.4 | -27.8 | -24.2 | -20.7 | -17.3 | -15.6 | -15.0 | -14.6 | -14.5 | -14.9 | -15.1 | -15.9 | -16.3 | -16.9 | -17.6 | -18.1   | -22.0         | -14.5         |
| 25-Feb                                      | -18.8                         | -19.1  | -19.2 | -19.0                          | -18.5 | -17.7 | -16.8 | -16.2 | -13.8 | -12.1 | -11.1 | -9.4  | -8.0  | -6.4  | -5.3  | -4.3  | -5.0  | -6.0  | -6.5  | -6.5  | -6.5  | -6.5  | -6.5  | -6.9  | -11.1         | -4.3          |
| 26-Feb                                      | -9.8                          | -10.4  | -11.1 | -11.5                          | -12.2 | -13.8 | -14.6 | -14.7 | -14.1 | -12.5 | DF    | DF    | -7.2  | -6.5  | -5.9  | -6.0  | -6.2  | DF    | DF    | DF    | DF    | DF    | DF    | DF  | --            | -5.9          |
| 27-Feb                                      | DF                            | DF   | DF    | DF                             | DF    | DF    | DF    | DF    | -12.1 | -12.1 | -11.7 | -11.4 | UO    | UO    | UO    | UO    | UO    | -12.5 | -13.0 | -13.3 | -13.6 | -14.1 | -14.6 | -15.6   | --            | -11.4         |
| 28-Feb                                      | -16.4                         | -17.7  | -19.0 | -20.0                          | -21.5 | -22.4 | -23.4 | -24.6 | -23.5 | -20.0 | -17.5 | -16.4 | -15.6 | -14.6 | DF    | DF    | -11.9 | -12.7 | -15.1 | -17.3 | -18.9 | -20.6 | -20.5 | -21.6   | -18.7         | -11.9         |
|   |                               |  |       |                                |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Diurnal Average   |               |               |
|   |                               |  |       |                                |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Diurnal Maximum   |               |               |
|   |                               |  |       |                                |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | -17.1 -17.5 -17.9 -18.1 -18.1 -18.3 -18.7 -18.9 -18.5 -16.5 -15.9 -14.3 -13.0 -11.8 -11.1 -10.6 -10.9 -12.3 -13.7 -14.4 -15.0 -15.6 -16.5 -16.6 |               |               |
|   |                               |  |       |                                |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | 3.1 3.2 2.6 0.9 3.2 4.3 3.2 2.5 0.9 -0.7 0.3 1.8 3.2 3.6 3.7 3.7 3.1 1.8 2.1 2.0 1.0 -0.2 -1.2 1.9  |               |               |
| DF - DAS Failure                            |                               |  |       |                                |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | UO - Unstable Operation   |               |               |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Ambient Temperature 20 m (AT20m) - C**  
**Lower Camp Met Tower - February 2023**





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Ambient Temperature 20 m (AT20m) - C  
Lower Camp Met Tower - February 2023**

| <b>Concentration Ranges (C)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---------------------------------|------------------------|----------|---------------------|
| -50 - -20                       | 192                    | 30.87    | 30.87               |
| -20 - 0                         | 401                    | 64.47    | 95.34               |
| 0 - 10                          | 29                     | 4.66     | 100.00              |
| 10 - 20                         | 0                      | 0.00     | 100.00              |
| > 20                            | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 622

Total Number of Hours: 672



**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

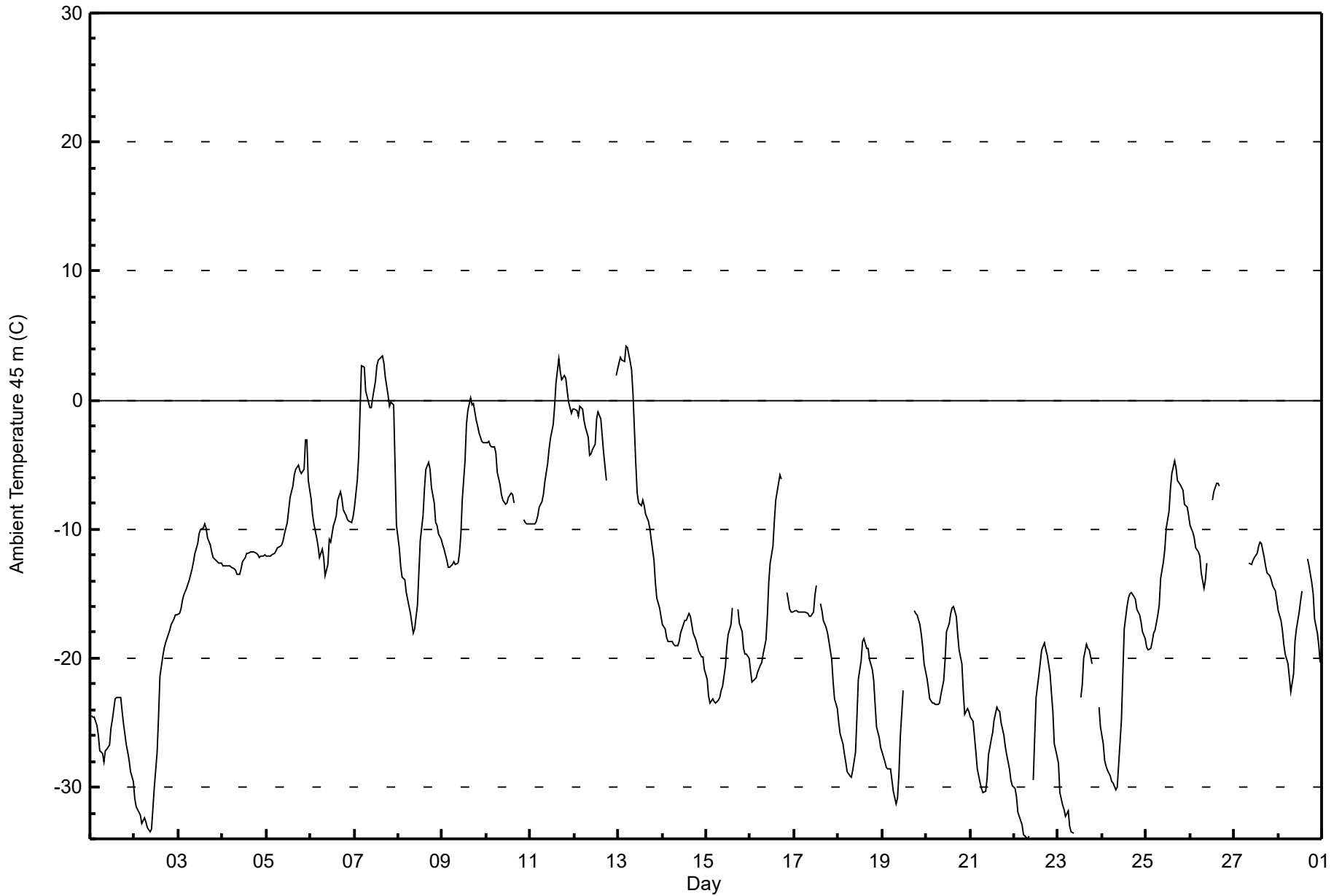
**Ambient Temperature 45 m (AT45m) - C**  
**Lower Camp Met Tower - February 2023**

| Maximum Value: 4.2 C on Feb 13 05:00        |                               | Maximum Daily Average: -0.5 C on Feb 7   |       | Hours in Service: 672          |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |               |               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
|---|-------------------------------|--|-------|--------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------------|---------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-----------------|
| Minimum Value: -34.0 C on Feb 22 08:00      |                               | Minimum Daily Average: -27.1 C on Feb 21   |       | Hours of Data: 627             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |               |               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| Maximum Diurnal Average: -10.8 C at hour 16 |                               | Minimum Diurnal Average: -18.5 C at hour 8   |       | Hours of Missing Data: 45      |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |               |               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| Monthly Average: -15.32 C                   |                               | Percentiles: P <sub>1</sub> = -33.4 P <sub>10</sub> = -28.0 Q <sub>1</sub> = -21.7 Median = -15.6 Q <sub>3</sub> = -9.3 P <sub>90</sub> = -3.0 P <sub>99</sub> = 3.1 |       | Hours of Calibration: 0        |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |               |               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
|   |                               |  |       | Percent Operational Time: 93.3 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |               |               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| Day   | Hourly Period Ending At (MST) |  |       |                                |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Daily Average | Daily Maximum |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
|   | 1                             | 2  | 3     | 4                              | 5     | 6     | 7     | 8     | 9     | 10    | 11    | 12    | 13    | 14    | 15    | 16    | 17    | 18    | 19    | 20    | 21    | 22    | 23    | 24    |               |               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 1-Feb                                       | -24.5                         | -24.5  | -24.5 | -25.2                          | -25.9 | -27.2 | -27.4 | -28.0 | -27.2 | -27.1 | -26.8 | -25.5 | -24.8 | -23.2 | -23.1 | -23.1 | -23.0 | -24.1 | -25.1 | -26.7 | -27.2 | -27.9 | -28.8 | -29.6 | -25.9         | -23.0         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 2-Feb                                       | -30.8                         | -31.5  | -31.9 | -32.2                          | -32.8 | -32.4 | -32.7 | -33.1 | -33.5 | -33.2 | -31.6 | -29.9 | -27.3 | -24.6 | -21.4 | -19.9 | -19.2 | -18.8 | -18.2 | -17.9 | -17.5 | -17.0 | -16.7 | -16.6 | -25.9         | -16.6         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 3-Feb                                       | -16.6                         | -16.2  | -15.6 | -15.1                          | -14.6 | -14.3 | -13.9 | -13.0 | -12.5 | -11.9 | -11.1 | -10.3 | -10.0 | -9.9  | -9.6  | -10.0 | -10.7 | -11.2 | -11.8 | -12.2 | -12.4 | -12.5 | -12.6 | -12.6 | -12.5         | -9.6          |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 4-Feb                                       | -12.8                         | -12.8  | -12.9 | -12.9                          | -12.9 | -13.0 | -13.0 | -13.2 | -13.5 | -13.5 | -13.1 | -12.5 | -11.8 | -11.9 | -11.7 | -11.7 | -11.7 | -11.9 | -11.9 | -12.0 | -12.2 | -12.1 | -12.1 | -12.0 | -12.5         | -11.7         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 5-Feb                                       | -12.1                         | -12.1  | -12.1 | -12.0                          | -11.8 | -11.7 | -11.5 | -11.3 | -11.2 | -10.9 | -10.3 | -9.5  | -8.5  | -7.6  | -6.7  | -5.8  | -5.3  | -5.0  | -5.5  | -5.7  | -5.3  | -3.0  | -3.0  | -6.3  | -8.5          | -3.0          |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 6-Feb                                       | -7.7                          | -8.8   | -9.6  | -10.7                          | -11.3 | -12.2 | -11.6 | -12.2 | -13.6 | -12.7 | -10.8 | -11.0 | -9.7  | -9.4  | -9.0  | -7.8  | -7.1  | -7.6  | -8.5  | -9.0  | -9.3  | -9.4  | -9.5  | -9.0  | -9.9          | -7.1          |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 7-Feb                                       | -8.3                          | -6.2   | -4.4  | -0.8                           | 2.7   | 2.6   | 0.7   | 0.3   | -0.6  | -0.6  | 0.1   | 1.4   | 2.7   | 3.2   | 3.3   | 3.4   | 2.9   | 1.8   | 0.4   | -0.4  | -0.1  | -0.4  | -5.0  | -9.7  | -0.5          | 3.4           |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 8-Feb                                       | -11.4                         | -12.9  | -13.7 | -14.0                          | -14.9 | -15.4 | -16.6 | -17.3 | -18.0 | -17.7 | -15.9 | -13.4 | -10.9 | -8.9  | -6.9  | -5.4  | -4.9  | -5.4  | -6.8  | -8.0  | -9.4  | -9.8  | -10.4 | -10.7 | -11.6         | -4.9          |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 9-Feb                                       | -11.2                         | -11.5  | -12.4 | -13.0                          | -13.0 | -12.8 | -12.5 | -12.7 | -12.7 | -11.9 | -10.5 | -7.8  | -4.7  | -1.9  | -0.8  | 0.2   | -0.4  | -0.2  | -1.5  | -2.0  | -2.5  | -3.2  | -3.3  | -3.3  | -6.9          | 0.2           |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 10-Feb                                      | -3.3                          | -3.2   | -3.5  | -3.6                           | -3.6  | -4.1  | -5.6  | -6.6  | -7.3  | -7.8  | -8.0  | -8.0  | -7.5  | -7.2  | -7.3  | -7.9  | DF    | DF    | DF    | DF    | -9.3  | -9.5  | -9.6  | -9.5  | -6.6          | -3.2          |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 11-Feb                                      | -9.6                          | -9.5   | -9.6  | -9.4                           | -8.9  | -8.3  | -7.9  | -7.3  | -6.4  | -4.9  | -3.8  | -3.0  | -1.8  | -0.5  | 1.4   | 3.2   | 2.2   | 1.5   | 1.9   | 1.7   | 0.7   | -0.2  | -1.0  | -0.6  | -3.3          | 3.2           |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 12-Feb                                      | -0.7                          | -0.8   | -1.2  | -0.5                           | -0.6  | -1.6  | -2.1  | -2.9  | -4.2  | -4.2  | -3.9  | -3.4  | -1.4  | -1.0  | -1.4  | -2.8  | -4.1  | -6.2  | DF    | DF    | DF    | DF    | DF    | 1.9   | -2.2          | 1.9           |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 13-Feb                                      | 2.9                           | 3.3  | 3.1   | 2.9                            | 4.2   | 4.1   | 3.0   | 2.3   | 0.5   | -5.0  | -7.2  | -7.9  | -8.2  | -7.8  | -8.2  | -8.8  | -9.4  | -10.0 | -10.8 | -12.5 | -14.2 | -15.3 | -16.1 | -16.8 | -5.5          | 4.2           |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 14-Feb                                      | -17.4                         | -17.8  | -18.4 | -18.7                          | -18.7 | -18.7 | -18.9 | -19.0 | -19.0 | -18.7 | -18.0 | -17.4 | -17.1 | -17.1 | -16.6 | -16.8 | -17.4 | -18.0 | -18.6 | -19.0 | -19.5 | -19.9 | -19.9 | -20.8 | -18.4         | -16.6         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 15-Feb                                      | -21.7                         | -22.9  | -23.5 | -23.2                          | -23.4 | -23.4 | -23.3 | -23.0 | -22.5 | -22.2 | -20.7 | -19.1 | -18.2 | -17.4 | -16.1 | DF    | DF    | -16.2 | -17.3 | -17.9 | -19.2 | -19.7 | -19.7 | -20.0 | -20.5         | -16.1         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 16-Feb                                      | -21.0                         | -21.8  | -21.6 | -21.5                          | -21.1 | -20.6 | -20.3 | -19.7 | -18.6 | -16.8 | -14.1 | -12.6 | -11.3 | -9.4  | -7.7  | -6.5  | -5.8  | -6.1  | DF    | DF    | -15.0 | -16.2 | -16.4 | -16.4 | -15.5         | -5.8          |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 17-Feb                                      | -16.3                         | -16.4  | -16.5 | -16.5                          | -16.4 | -16.4 | -16.4 | -16.6 | -16.7 | -16.7 | -16.4 | -15.1 | -14.3 | DF    | -15.7 | -16.3 | -17.1 | -17.6 | -18.0 | -18.7 | -20.1 | -21.8 | -23.1 | -23.9 | -17.5         | -14.3         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 18-Feb                                      | -25.0                         | -25.9  | -26.7 | -27.3                          | -28.1 | -28.8 | -29.1 | -29.3 | -28.7 | -27.3 | -24.6 | -21.6 | -20.2 | -18.7 | -18.5 | -19.3 | -19.3 | -20.1 | -20.9 | -21.7 | -23.5 | -25.3 | -26.2 | -26.9 | -24.3         | -18.5         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 19-Feb                                      | -27.3                         | -28.0  | -28.5 | -28.6                          | -28.6 | -29.4 | -30.3 | -31.3 | -30.8 | -29.0 | -26.1 | -22.5 | DF    | DF    | DF    | DF    | DF    | -16.3 | -16.5 | -16.7 | -17.4 | -18.2 | -19.1 | -20.5 | -24.5         | -16.3         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 20-Feb                                      | -21.5                         | -22.3  | -23.1 | -23.5                          | -23.4 | -23.6 | -23.6 | -23.5 | -22.9 | -21.8 | -20.1 | -17.9 | -17.3 | -16.5 | -16.1 | -16.0 | -16.7 | -18.2 | -19.4 | -20.4 | -22.7 | -24.3 | -23.9 | -24.1 | -20.9         | -16.0         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 21-Feb                                      | -24.6                         | -24.9  | -26.1 | -27.2                          | -28.6 | -29.7 | -30.1 | -30.4 | -30.3 | -29.3 | -27.5 | -26.3 | -25.8 | -24.8 | -23.8 | -24.1 | -24.1 | -25.0 | -26.0 | -26.8 | -27.5 | -28.6 | -29.5 | -29.9 | -27.1         | -23.8         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 22-Feb                                      | -30.1                         | -30.7  | -32.0 | -32.6                          | -32.9 | -33.7 | -33.8 | -34.0 | -33.8 | DF    | -29.4 | -26.2 | -23.0 | -21.3 | -20.3 | -19.3 | -18.8 | -19.3 | -19.8 | -21.2 | -22.7 | -24.2 | -26.6 | -27.6 | -26.7         | -18.8         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 23-Feb                                      | -28.2                         | -30.5  | -31.4 | -31.7                          | -32.3 | -31.8 | -33.0 | -33.5 | -33.6 | DF    | DF    | DF    | -23.0 | -22.0 | -20.0 | -18.9 | -19.3 | -19.3 | -20.4 | DF    | DF    | DF    | -23.9 | -25.3 | -26.6         | -18.9         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 24-Feb                                      | -26.7                         | -27.9  | -28.3 | -28.7                          | -29.1 | -29.5 | -29.6 | -30.2 | -30.0 | -28.2 | -24.8 | -21.2 | -17.7 | -16.0 | -15.4 | -15.0 | -14.9 | -15.2 | -15.5 | -16.2 | -16.7 | -17.2 | -17.9 | -18.5 | -22.1         | -14.9         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 25-Feb                                      | -19.2                         | -19.4  | -19.3 | -18.7                          | -18.0 | -17.9 | -16.6 | -15.9 | -13.8 | -12.6 | -11.6 | -10.0 | -8.6  | -6.9  | -5.7  | -4.7  | -5.3  | -6.3  | -6.6  | -6.7  | -7.0  | -8.0  | -8.3  | -9.0  | -11.5         | -4.7          |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 26-Feb                                      | -9.8                          | -10.3  | -10.7 | -11.4                          | -11.8 | -12.1 | -13.4 | -14.5 | -14.0 | -12.7 | DF    | DF    | -7.7  | -7.1  | -6.4  | -6.5  | -6.6  | DF    | DF    | DF    | DF    | DF    | DF    | DF    | --            | -6.4          |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 27-Feb                                      | DF                            | DF   | DF    | DF                             | DF    | DF    | DF    | DF    | -12.6 | -12.7 | -12.4 | -12.2 | -11.9 | -11.3 | -11.0 | -11.2 | -12.2 | -12.9 | -13.4 | -13.6 | -13.9 | -14.4 | -14.8 | -15.6 | --            | -11.0         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 28-Feb                                      | -16.4                         | -17.0  | -17.8 | -18.9                          | -19.7 | -20.4 | -21.5 | -22.6 | -21.2 | -18.8 | -17.7 | -16.4 | -15.6 | -14.8 | DF    | DF    | -12.3 | -12.9 | -14.2 | -15.1 | -17.0 | -18.0 | -19.0 | -20.3 | -17.6         | -12.3         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
|   |                               |  |       |                                |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | -16.7 | -17.1         | -17.5         | -17.6 | -17.6 | -17.9 | -18.2 | -18.5 | -18.2 | -16.5 | -16.0 | -14.6 | -13.2 | -12.1 | -11.3 | -10.8 | -11.2 | -12.3 | -13.5 | -13.9 | -14.4 | -15.0 | -16.0 | -16.1 | Diurnal Average |
|   |                               |  |       |                                |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | 2.9   | 3.3           | 3.1           | 2.9   | 4.2   | 4.1   | 3.0   | 2.3   | 0.5   | -0.6  | 0.1   | 1.4   | 2.7   | 3.2   | 3.3   | 3.4   | 2.9   | 1.8   | 1.9   | 1.7   | 0.7   | -0.2  | -1.0  | 1.9   | Diurnal Maximum |
| DF - DAS Failure                            |                               |  |       |                                |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |               |               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Ambient Temperature 45 m (AT45m) - C**  
**Lower Camp Met Tower - February 2023**







**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Ambient Temperature 45 m (AT45m) - C  
Lower Camp Met Tower - February 2023**

| <b>Concentration Ranges (C)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---------------------------------|------------------------|----------|---------------------|
| -50 - -20                       | 187                    | 29.82    | 29.82               |
| -20 - 0                         | 409                    | 65.23    | 95.06               |
| 0 - 10                          | 31                     | 4.94     | 100.00              |
| 10 - 20                         | 0                      | 0.00     | 100.00              |
| > 20                            | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 627

Total Number of Hours: 672



**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

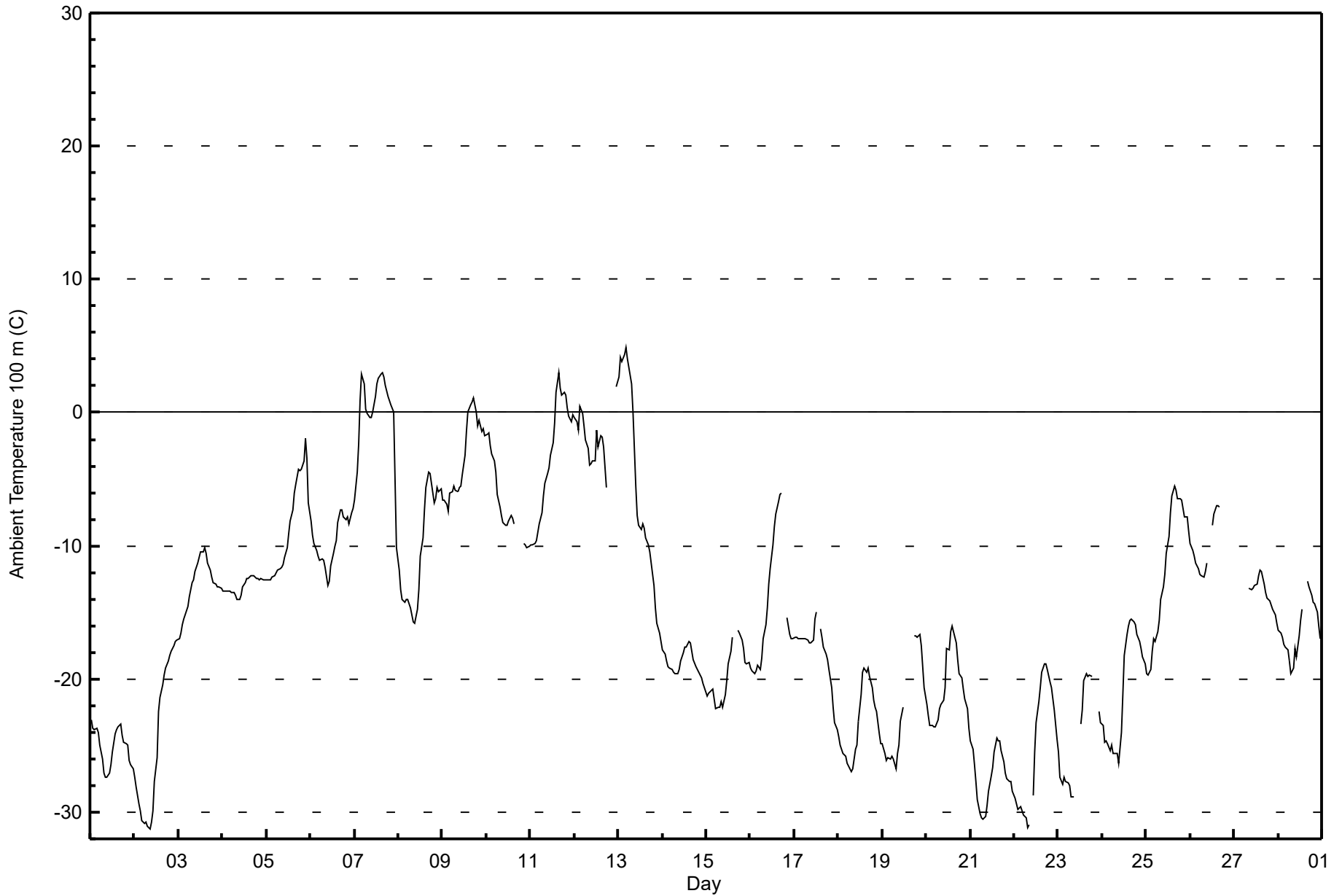
**Ambient Temperature 100 m (AT100m) - C**  
**Lower Camp Met Tower - February 2023**

| Maximum Value: 4.9 C on Feb 13 05:00      Maximum Daily Average: -0.2 C on Feb 7  |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Hours in Service:         | 672   |       |               |               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
|---|-------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------------------------|-------|-------|---------------|---------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-----------------|
| Minimum Value: -31.2 C on Feb 2 09:00      Minimum Daily Average: -27.3 C on Feb 21   |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Hours of Data:            | 627   |       |               |               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| Maximum Diurnal Average: -11.2 C at hour 16      Minimum Diurnal Average: -17.0 C at hour 8   |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Hours of Missing Data:    | 45    |       |               |               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| Monthly Average: -14.76 C      Percentiles: P <sub>1</sub> = -30.7 P <sub>10</sub> = -26.0 Q <sub>1</sub> = -21.2 Median = -15.6 Q <sub>3</sub> = -8.3 P <sub>90</sub> = -2.0 P <sub>99</sub> = 3.0 |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Hours of Calibration:     | 0     |       |               |               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
|   |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Percent Operational Time: | 93.3  |       |               |               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| Day   | Hourly Period Ending At (MST) |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                           |       |       | Daily Average | Daily Maximum |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
|   | 1                             | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     | 10    | 11    | 12    | 13    | 14    | 15    | 16    | 17    | 18    | 19    | 20    | 21    | 22                        | 23    | 24    |               |               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 1-Feb   | -23.1                         | -23.7 | -23.8 | -23.7 | -24.0 | -24.9 | -26.1 | -27.0 | -27.4 | -27.4 | -27.1 | -26.4 | -25.5 | -24.1 | -23.8 | -23.6 | -23.4 | -24.2 | -24.7 | -24.8 | -25.0 | -26.1                     | -26.4 | -26.7 | -25.1         | -23.1         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 2-Feb   | -27.4                         | -28.1 | -29.4 | -29.9 | -30.6 | -30.8 | -30.7 | -31.0 | -31.2 | -30.7 | -29.9 | -27.7 | -25.9 | -22.4 | -21.3 | -20.4 | -19.7 | -19.2 | -18.6 | -18.3 | -17.9 | -17.5                     | -17.2 | -17.1 | -24.7         | -17.1         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 3-Feb   | -17.0                         | -16.6 | -16.0 | -15.5 | -14.9 | -14.6 | -13.8 | -12.8 | -12.6 | -11.9 | -11.2 | -10.8 | -10.5 | -10.5 | -10.2 | -10.5 | -11.3 | -11.8 | -12.4 | -12.7 | -12.9 | -13.1                     | -13.1 | -13.2 | -12.9         | -10.2         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 4-Feb   | -13.4                         | -13.4 | -13.4 | -13.4 | -13.4 | -13.5 | -13.5 | -13.7 | -14.0 | -14.0 | -13.7 | -13.1 | -12.7 | -12.4 | -12.5 | -12.2 | -12.3 | -12.4 | -12.4 | -12.4 | -12.6 | -12.4                     | -12.6 | -12.5 | -13.0         | -12.2         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 5-Feb   | -12.6                         | -12.6 | -12.5 | -12.3 | -12.2 | -12.0 | -11.8 | -11.7 | -11.6 | -11.4 | -10.9 | -10.1 | -9.1  | -8.1  | -7.3  | -6.1  | -5.4  | -4.3  | -4.3  | -4.3  | -3.6  | -1.9                      | -3.5  | -6.8  | -8.6          | -1.9          |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 6-Feb   | -8.2                          | -9.2  | -9.8  | -10.3 | -10.8 | -11.1 | -11.0 | -11.1 | -11.6 | -12.9 | -12.6 | -11.5 | -10.5 | -10.1 | -9.6  | -8.3  | -7.3  | -7.3  | -7.9  | -8.1  | -7.8  | -8.4                      | -7.5  | -7.2  | -9.6          | -7.2          |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 7-Feb   | -6.6                          | -4.5  | -2.4  | 0.9   | 2.9   | 2.2   | 0.3   | -0.1  | -0.4  | -0.4  | 0.1   | 1.2   | 2.2   | 2.6   | 2.9   | 3.0   | 2.6   | 2.1   | 1.2   | 0.9   | 0.6   | 0.0                       | -5.1  | -10.1 | -0.2          | 3.0           |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 8-Feb   | -11.9                         | -13.3 | -14.1 | -14.2 | -14.1 | -14.0 | -14.6 | -15.2 | -15.7 | -15.8 | -14.8 | -13.2 | -10.8 | -9.4  | -7.3  | -5.6  | -4.5  | -4.6  | -5.3  | -6.8  | -6.4  | -5.6                      | -5.9  | -5.7  | -10.4         | -4.5          |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 9-Feb   | -6.5                          | -6.6  | -6.9  | -7.4  | -6.0  | -6.0  | -5.5  | -5.8  | -5.9  | -5.6  | -5.6  | -4.7  | -3.2  | -1.4  | 0.0   | 0.6   | 0.8   | 1.1   | 0.0   | -1.0  | -0.5  | -1.4                      | -1.2  | -1.8  | -3.4          | 1.1           |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 10-Feb  | -1.6                          | -1.5  | -2.5  | -3.1  | -3.6  | -4.5  | -6.1  | -7.1  | -7.7  | -8.2  | -8.5  | -8.5  | -8.1  | -7.8  | -7.9  | -8.3  | DF    | DF    | DF    | DF    | -9.8  | -9.9                      | -10.1 | -10.0 | -6.7          | -1.5          |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 11-Feb  | -9.9                          | -10.0 | -9.9  | -9.6  | -9.0  | -8.4  | -7.5  | -6.2  | -5.3  | -4.5  | -4.1  | -3.2  | -2.2  | -0.7  | 1.5   | 3.0   | 1.9   | 1.3   | 1.5   | 1.3   | 0.4   | -0.3                      | -0.7  | -0.1  | -3.4          | 3.0           |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 12-Feb  | -0.3                          | -0.7  | -1.3  | 0.5   | 0.0   | -1.0  | -2.0  | -2.7  | -4.0  | -3.9  | -3.6  | -3.6  | -1.3  | -2.6  | -1.7  | -1.9  | -2.6  | -5.6  | DF    | DF    | DF    | DF                        | DF    | 2.0   | -1.9          | 2.0           |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 13-Feb  | 2.7                           | 4.1   | 3.8   | 4.4   | 4.9   | 4.1   | 2.8   | 2.1   | 0.0   | -5.5  | -7.7  | -8.5  | -8.7  | -8.3  | -8.7  | -9.4  | -9.9  | -10.4 | -11.2 | -12.9 | -14.6 | -15.8                     | -16.5 | -17.2 | -5.7          | 4.9           |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 14-Feb  | -17.8                         | -18.2 | -18.6 | -19.1 | -19.1 | -19.3 | -19.5 | -19.5 | -19.6 | -19.3 | -18.6 | -18.1 | -17.6 | -17.6 | -17.2 | -17.3 | -17.9 | -18.6 | -19.1 | -19.3 | -19.5 | -19.9                     | -20.3 | -20.7 | -18.8         | -17.2         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 15-Feb  | -21.3                         | -21.0 | -20.9 | -20.8 | -21.5 | -22.2 | -22.1 | -21.7 | -22.1 | -21.2 | -20.1 | -18.8 | -17.9 | -16.9 | DF    | DF    | -16.4 | -16.6 | -17.1 | -17.7 | -18.7 | -18.9                     | -18.8 | -19.8 | -19.8         | -16.4         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 16-Feb  | -19.2                         | -19.4 | -19.6 | -19.4 | -18.9 | -19.3 | -18.4 | -17.0 | -15.9 | -14.7 | -12.9 | -11.7 | -9.9  | -8.6  | -7.7  | -6.7  | -6.1  | -6.1  | DF    | DF    | -15.4 | -16.7                     | -17.0 | -17.0 | -14.4         | -6.1          |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 17-Feb  | -16.9                         | -16.9 | -17.0 | -17.0 | -17.0 | -16.9 | -17.0 | -17.1 | -17.3 | -17.3 | -17.0 | -15.6 | -15.0 | DF    | -16.2 | -16.9 | -17.6 | -18.2 | -18.6 | -19.3 | -20.6 | -22.1                     | -23.3 | -23.8 | -18.0         | -15.0         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 18-Feb  | -24.4                         | -25.0 | -25.6 | -25.7 | -25.8 | -26.4 | -26.7 | -26.9 | -26.8 | -25.3 | -25.0 | -23.2 | -21.2 | -19.5 | -19.1 | -19.5 | -19.2 | -19.8 | -20.7 | -21.6 | -22.1 | -22.5                     | -24.1 | -24.9 | -23.4         | -19.1         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 19-Feb  | -24.9                         | -25.5 | -26.1 | -25.9 | -26.0 | -25.8 | -26.0 | -26.8 | -25.6 | -24.9 | -23.2 | -22.1 | DF    | DF    | DF    | DF    | DF    | -16.7 | -16.8 | -16.9 | -16.7 | -17.5                     | -19.1 | -20.6 | -22.5         | -16.7         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 20-Feb  | -21.9                         | -22.8 | -23.5 | -23.5 | -23.6 | -23.6 | -23.1 | -22.3 | -21.9 | -21.6 | -20.6 | -17.7 | -17.8 | -16.4 | -16.0 | -16.5 | -17.3 | -18.6 | -19.6 | -19.9 | -20.7 | -21.4                     | -22.2 | -23.7 | -20.7         | -16.0         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 21-Feb  | -24.6                         | -25.3 | -26.5 | -27.7 | -29.0 | -30.1 | -30.4 | -30.6 | -30.4 | -29.4 | -28.4 | -27.3 | -26.7 | -25.5 | -24.4 | -24.7 | -24.6 | -25.4 | -26.2 | -27.1 | -27.5 | -27.7                     | -27.7 | -28.5 | -27.3         | -24.4         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 22-Feb  | -28.9                         | -29.4 | -29.8 | -29.5 | -29.9 | -30.2 | -30.5 | -31.1 | -30.9 | DF    | -28.7 | -25.5 | -23.3 | -21.7 | -20.6 | -19.4 | -18.8 | -18.9 | -19.3 | -20.2 | -20.7 | -21.5                     | -22.3 | -24.5 | -25.0         | -18.8         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 23-Feb  | -25.5                         | -27.4 | -27.9 | -27.4 | -27.7 | -27.8 | -28.0 | -28.9 | -28.9 | DF    | DF    | DF    | -23.3 | -22.3 | -20.1 | -19.6 | -19.8 | -19.7 | -19.8 | DF    | DF    | DF                        | -22.4 | -23.2 | -24.4         | -19.6         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 24-Feb  | -23.5                         | -24.7 | -24.7 | -24.8 | -25.4 | -24.9 | -25.6 | -25.6 | -25.6 | -26.4 | -24.0 | -21.2 | -18.3 | -16.7 | -16.0 | -15.6 | -15.5 | -15.7 | -15.9 | -16.6 | -17.2 | -17.7                     | -18.3 | -18.9 | -20.8         | -15.5         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 25-Feb  | -19.6                         | -19.7 | -19.3 | -17.9 | -17.0 | -17.1 | -16.5 | -15.6 | -14.1 | -13.1 | -12.1 | -10.6 | -9.3  | -7.5  | -6.3  | -5.5  | -5.8  | -6.5  | -6.4  | -6.5  | -7.2  | -7.8                      | -7.8  | -8.8  | -11.6         | -5.5          |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 26-Feb  | -9.9                          | -10.4 | -10.8 | -11.3 | -11.7 | -12.1 | -12.3 | -12.4 | -11.9 | -11.3 | DF    | DF    | -8.5  | -7.6  | -7.0  | -7.0  | -7.1  | DF    | DF    | DF    | DF    | DF                        | DF    | DF    | --            | -7.0          |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 27-Feb  | DF                            | DF    | DF    | DF    | DF    | DF    | DF    | DF    | -13.1 | -13.3 | -13.2 | -13.0 | -12.8 | -12.3 | -11.8 | -11.9 | -12.9 | -13.5 | -14.0 | -14.2 | -14.4 | -14.8                     | -15.2 | -15.8 | --            | -11.8         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 28-Feb  | -16.3                         | -16.6 | -16.9 | -17.4 | -17.6 | -17.8 | -18.7 | -19.6 | -19.2 | -17.7 | -18.3 | -16.7 | -15.6 | -14.7 | DF    | DF    | -12.7 | -13.1 | -13.7 | -14.3 | -14.3 | -14.9                     | -16.0 | -16.9 | -16.3         | -12.7         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
|   |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | -15.9                     | -16.2 | -16.5 | -16.3         | -16.3         | -16.6 | -16.8 | -17.0 | -16.8 | -15.7 | -15.9 | -14.7 | -13.5 | -12.4 | -11.7 | -11.2 | -11.5 | -12.4 | -13.4 | -13.6 | -13.8 | -14.2 | -15.2 | -15.3 | Diurnal Average |
|   |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | 2.7                       | 4.1   | 3.8   | 4.4           | 4.9           | 4.1   | 2.8   | 2.1   | 0.0   | -0.4  | 0.1   | 1.2   | 2.2   | 2.6   | 2.9   | 3.0   | 2.6   | 2.1   | 1.5   | 1.3   | 0.6   | 0.0   | -0.7  | 2.0   | Diurnal Maximum |
| DF - DAS Failure  |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                           |       |       |               |               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Ambient Temperature 100 m (AT100m) - C**  
**Lower Camp Met Tower - February 2023**





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Ambient Temperature 100 m (AT100m) - C  
Lower Camp Met Tower - February 2023**

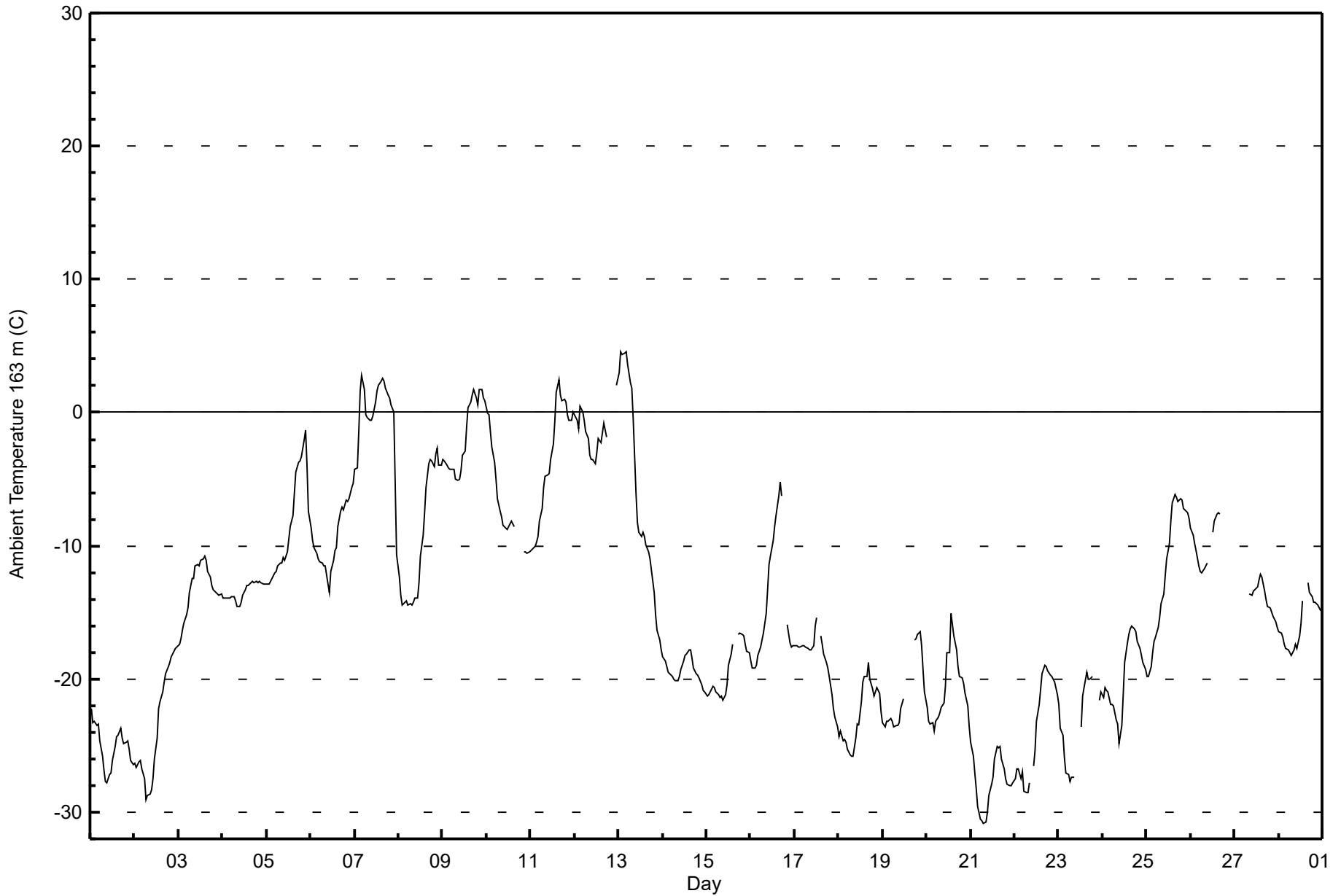
| <b>Concentration Ranges (C)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---------------------------------|------------------------|----------|---------------------|
| -50 - -20                       | 174                    | 27.75    | 27.75               |
| -20 - 0                         | 414                    | 66.03    | 93.78               |
| 0 - 10                          | 39                     | 6.22     | 100.00              |
| 10 - 20                         | 0                      | 0.00     | 100.00              |
| > 20                            | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 627

Total Number of Hours: 672



| Maximum Value: 4.6 C on Feb 13 05:00  |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Maximum Daily Average: -0.2 C on Feb 7   |       |       |               |               |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | Hours in Service: 672          |  |
|---|-------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--|-------|-------|---------------|---------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--------------------------------|--|
| Minimum Value: -30.9 C on Feb 21 08:00  |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Minimum Daily Average: -27.7 C on Feb 21   |       |       |               |               |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | Hours of Data: 627             |  |
| Maximum Diurnal Average: -11.5 C at hour 16   |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Minimum Diurnal Average: -16.3 C at hour 8   |       |       |               |               |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | Hours of Missing Data: 45      |  |
| Monthly Average: -14.49 C   |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Percentiles: P <sub>1</sub> = -29.0 P <sub>10</sub> = -25.2 Q <sub>1</sub> = -20.9 Median = -15.4 Q <sub>3</sub> = -8.6 P <sub>90</sub> = -1.4 P <sub>99</sub> = 2.7 |       |       |               |               |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | Hours of Calibration: 0        |  |
|   |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |  |       |       |               |               |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | Percent Operational Time: 93.3 |  |
| Day   | Hourly Period Ending At (MST) |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |  |       |       | Daily Average | Daily Maximum |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                |  |
|   | 1                             | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     | 10    | 11    | 12    | 13    | 14    | 15    | 16    | 17    | 18    | 19    | 20    | 21    | 22   | 23    | 24    |               |               |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                |  |
| 1-Feb   | -22.3                         | -23.3 | -23.2 | -23.5 | -23.4 | -24.6 | -25.8 | -26.9 | -27.7 | -27.8 | -27.2 | -27.1 | -26.1 | -25.0 | -24.3 | -24.2 | -23.7 | -24.4 | -24.8 | -24.7 | -24.6 | -25.3  | -26.1 | -26.4 | -25.1         | -22.3         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                |  |
| 2-Feb   | -26.3                         | -26.6 | -26.3 | -26.1 | -26.7 | -27.5 | -29.0 | -28.8 | -28.7 | -28.3 | -27.5 | -26.0 | -24.4 | -22.2 | -21.7 | -20.9 | -20.2 | -19.6 | -19.1 | -18.7 | -18.4 | -18.0  | -17.7 | -17.6 | -23.6         | -17.6         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                |  |
| 3-Feb   | -17.4                         | -17.0 | -16.4 | -15.8 | -15.1 | -14.6 | -13.5 | -12.4 | -12.5 | -11.5 | -11.4 | -11.5 | -11.1 | -11.0 | -10.8 | -11.1 | -11.9 | -12.4 | -13.0 | -13.3 | -13.5 | -13.7  | -13.7 | -13.7 | -13.3         | -10.8         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                |  |
| 4-Feb   | -13.9                         | -14.0 | -13.9 | -13.9 | -13.9 | -13.9 | -13.8 | -14.2 | -14.5 | -14.5 | -14.2 | -13.7 | -13.3 | -13.0 | -13.0 | -12.8 | -12.7 | -12.8 | -12.7 | -12.7 | -12.8 | -12.8  | -12.9 | -12.9 | -13.4         | -12.7         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                |  |
| 5-Feb   | -12.8                         | -12.8 | -12.7 | -12.5 | -12.0 | -12.0 | -11.5 | -11.3 | -11.3 | -10.9 | -11.1 | -10.4 | -9.5  | -8.6  | -7.7  | -6.0  | -4.5  | -3.7  | -3.6  | -3.3  | -2.1  | -1.3   | -3.9  | -7.4  | -8.5          | -1.3          |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                |  |
| 6-Feb   | -8.7                          | -9.6  | -10.2 | -10.6 | -11.0 | -11.2 | -11.3 | -11.5 | -11.5 | -12.8 | -13.5 | -11.9 | -11.1 | -10.3 | -10.1 | -8.6  | -7.4  | -7.1  | -7.3  | -6.6  | -6.7  | -6.5   | -5.6  | -5.3  | -9.4          | -5.3          |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                |  |
| 7-Feb   | -4.3                          | -4.2  | -1.5  | 1.7   | 2.8   | 1.7   | -0.2  | -0.4  | -0.6  | -0.6  | -0.3  | 0.8   | 1.6   | 2.1   | 2.4   | 2.5   | 2.3   | 1.8   | 1.3   | 1.1   | 0.6   | 0.0  | -5.3  | -10.7 | -0.2          | 2.8           |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                |  |
| 8-Feb   | -12.3                         | -13.8 | -14.4 | -14.3 | -14.1 | -14.4 | -14.3 | -14.5 | -14.3 | -13.9 | -14.0 | -12.8 | -10.8 | -9.2  | -7.6  | -5.6  | -3.9  | -3.5  | -3.6  | -4.1  | -3.1  | -2.7   | -4.0  | -3.9  | -9.5          | -2.7          |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                |  |
| 9-Feb   | -3.5                          | -3.6  | -3.9  | -4.1  | -4.3  | -4.2  | -4.3  | -5.0  | -5.1  | -5.0  | -4.3  | -3.2  | -2.9  | -1.1  | 0.4   | 0.8   | 1.3   | 1.8   | 1.1   | 0.6   | 1.7   | 1.7  | 1.1   | 0.9   | -1.8          | 1.8           |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                |  |
| 10-Feb  | -0.1                          | -0.2  | -1.4  | -2.6  | -3.7  | -5.0  | -6.5  | -7.4  | -7.8  | -8.5  | -8.7  | -8.8  | -8.5  | -8.2  | -8.4  | -8.6  | DF    | DF    | DF    | DF    | -10.4 | -10.4  | -10.5 | -10.4 | -6.8          | -0.1          |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                |  |
| 11-Feb  | -10.3                         | -10.2 | -10.0 | -9.7  | -9.3  | -8.1  | -7.2  | -5.6  | -4.8  | -4.7  | -4.6  | -3.6  | -2.3  | -0.7  | 1.5   | 2.5   | 1.3   | 0.8   | 1.0   | 0.8   | -0.1  | -0.6   | -0.6  | 0.0   | -3.5          | 2.5           |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                |  |
| 12-Feb  | -0.1                          | -0.5  | -1.2  | 0.5   | 0.0   | -0.5  | -1.4  | -2.0  | -3.2  | -3.5  | -3.5  | -3.8  | -3.0  | -2.0  | -2.3  | -1.5  | -0.8  | -1.9  | DF    | DF    | DF    | DF   | DF    | 2.0   | -1.5          | 2.0           |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                |  |
| 13-Feb  | 3.0                           | 4.5   | 4.3   | 4.5   | 4.6   | 3.6   | 2.2   | 1.8   | -0.5  | -6.1  | -8.3  | -9.0  | -9.3  | -8.9  | -9.3  | -10.0 | -10.5 | -11.0 | -11.8 | -13.5 | -15.2 | -16.3  | -17.1 | -17.8 | -6.1          | 4.6           |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                |  |
| 14-Feb  | -18.3                         | -18.7 | -19.1 | -19.5 | -19.6 | -19.8 | -20.0 | -20.1 | -20.1 | -19.9 | -19.3 | -18.6 | -18.2 | -18.1 | -17.8 | -17.9 | -18.5 | -19.1 | -19.6 | -19.7 | -19.9 | -20.4  | -20.9 | -21.0 | -19.3         | -17.8         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                |  |
| 15-Feb  | -21.3                         | -21.2 | -21.0 | -20.6 | -20.7 | -20.9 | -21.2 | -21.4 | -21.3 | -21.6 | -21.2 | -20.4 | -19.0 | -18.2 | -17.4 | DF    | DF    | -16.7 | -16.6 | -16.6 | -16.8 | -17.4  | -17.9 | -18.1 | -19.4         | -16.6         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                |  |
| 16-Feb  | -18.7                         | -19.2 | -19.2 | -19.0 | -18.2 | -17.6 | -17.1 | -16.5 | -15.1 | -13.3 | -11.4 | -10.7 | -9.7  | -8.6  | -7.7  | -6.2  | -5.2  | -6.3  | DF    | DF    | -15.9 | -17.3  | -17.6 | -17.5 | -14.0         | -5.2          |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                |  |
| 17-Feb  | -17.5                         | -17.5 | -17.6 | -17.6 | -17.5 | -17.5 | -17.6 | -17.7 | -17.8 | -17.9 | -17.6 | -16.1 | -15.4 | DF    | -16.7 | -17.4 | -18.2 | -18.7 | -19.2 | -19.8 | -21.1 | -22.2  | -22.9 | -23.6 | -18.5         | -15.4         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                |  |
| 18-Feb  | -24.3                         | -24.0 | -24.6 | -24.6 | -24.8 | -25.3 | -25.7 | -25.8 | -25.8 | -24.4 | -23.4 | -23.5 | -21.7 | -20.2 | -19.8 | -19.8 | -18.8 | -20.1 | -20.7 | -21.2 | -21.0 | -20.7  | -21.1 | -22.4 | -22.7         | -18.8         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                |  |
| 19-Feb  | -23.2                         | -23.6 | -23.2 | -23.2 | -23.0 | -23.2 | -23.6 | -23.5 | -23.5 | -23.2 | -22.2 | -21.5 | DF    | DF    | DF    | DF    | DF    | -17.1 | -17.0 | -16.7 | -16.4 | -17.5  | -19.3 | -21.0 | -21.2         | -16.4         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                |  |
| 20-Feb  | -22.1                         | -23.1 | -23.4 | -23.2 | -23.9 | -23.2 | -22.9 | -22.5 | -22.2 | -21.9 | -20.6 | -18.1 | -18.1 | -15.1 | -15.9 | -16.8 | -17.8 | -19.1 | -19.8 | -20.0 | -20.4 | -21.1  | -22.1 | -23.6 | -20.7         | -15.1         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                |  |
| 21-Feb  | -24.8                         | -25.8 | -27.0 | -28.2 | -29.6 | -30.5 | -30.7 | -30.9 | -30.8 | -30.0 | -28.7 | -27.9 | -27.4 | -26.1 | -25.0 | -25.1 | -25.1 | -26.0 | -26.8 | -27.5 | -27.9 | -28.0  | -28.0 | -27.8 | -27.7         | -24.8         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                |  |
| 22-Feb  | -27.5                         | -26.7 | -26.8 | -27.5 | -26.9 | -28.4 | -28.6 | -28.5 | -27.8 | DF    | -26.6 | -25.4 | -23.1 | -21.9 | -20.8 | -19.7 | -18.9 | -19.1 | -19.4 | -19.7 | -19.9 | -20.1  | -20.2 | -21.2 | -23.7         | -18.9         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                |  |
| 23-Feb  | -22.0                         | -23.7 | -24.2 | -25.9 | -27.1 | -27.2 | -27.7 | -27.4 | -27.4 | DF    | DF    | DF    | -23.6 | -21.3 | -20.6 | -19.5 | -20.0 | -20.0 | -19.8 | DF    | DF    | DF   | -21.6 | -21.0 | -23.3         | -19.5         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                |  |
| 24-Feb  | -21.4                         | -20.6 | -20.8 | -21.0 | -21.9 | -21.9 | -22.0 | -23.1 | -23.3 | -24.9 | -23.5 | -21.2 | -18.8 | -17.3 | -16.6 | -16.2 | -16.1 | -16.3 | -16.5 | -17.1 | -17.7 | -18.2  | -18.8 | -19.2 | -19.8         | -16.1         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                |  |
| 25-Feb  | -19.8                         | -19.8 | -19.1 | -18.1 | -17.2 | -16.9 | -16.1 | -15.4 | -14.3 | -13.6 | -12.5 | -11.0 | -9.8  | -8.1  | -6.8  | -6.1  | -6.3  | -6.7  | -6.5  | -6.6  | -7.2  | -7.3   | -7.5  | -8.0  | -11.7         | -6.1          |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                |  |
| 26-Feb  | -8.7                          | -9.2  | -9.9  | -10.4 | -11.5 | -11.9 | -12.0 | -11.7 | -11.5 | -11.3 | DF    | DF    | -9.0  | -8.2  | -7.6  | -7.5  | -7.7  | DF    | DF    | DF    | DF    | DF   | DF    | DF    | --            | -7.5          |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                |  |
| 27-Feb  | DF                            | DF    | DF    | DF    | DF    | DF    | DF    | DF    | -13.6 | -13.7 | -13.4 | -13.3 | -13.1 | -12.6 | -12.1 | -12.3 | -13.4 | -14.0 | -14.5 | -14.7 | -14.9 | -15.3  | -15.7 | -16.2 | --            | -12.1         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                |  |
| 28-Feb  | -16.5                         | -16.5 | -16.9 | -17.4 | -17.7 | -17.9 | -18.0 | -18.3 | -17.8 | -17.4 | -17.7 | -16.7 | -15.8 | -14.2 | DF    | DF    | -12.8 | -13.5 | -13.9 | -14.3 | -14.2 | -14.5  | -14.7 | -14.9 | -16.0         | -12.8         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                |  |
|   |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Diurnal Average  |       |       |               |               |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                |  |
|   |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Diurnal Maximum  |       |       |               |               |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                |  |
| -15.4 -15.6 -15.7 -15.6 -15.8 -16.0 -16.3 -16.3 -16.2 -15.4 -15.6 -14.8 -13.8 -12.6 -12.1 -11.5 -11.6 -12.5 -13.4 -13.4 -13.5 -13.8 -14.8 -14.8 |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |  |       |       |               |               |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                |  |
| 3.0 4.5 4.3 4.5 4.6 3.6 2.2 1.8 -0.5 -0.6 -0.3 0.8 1.6 2.1 2.4 2.5 2.3 1.8 1.3 1.1 1.7 1.7 1.1 2.0  |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |  |       |       |               |               |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                |  |
| DF - DAS Failure  |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |  |       |       |               |               |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                |  |





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Ambient Temperature 163 m (AT163m) - C  
Lower Camp Met Tower - February 2023**

| <b>Concentration Ranges (C)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---------------------------------|------------------------|----------|---------------------|
| -50 - -20                       | 180                    | 28.71    | 28.71               |
| -20 - 0                         | 405                    | 64.59    | 93.30               |
| 0 - 10                          | 42                     | 6.70     | 100.00              |
| 10 - 20                         | 0                      | 0.00     | 100.00              |
| > 20                            | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 627

Total Number of Hours: 672



**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

**Relative Humidity 20m (RH20m) - %**  
**Lower Camp Met Tower - February 2023**

| Maximum Value: 93.4 % on Feb 10 09:00     |                               | Maximum Daily Average: 84.3 % on Feb 10   |      | Hours in Service:         | 672  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |               |               |
|---|-------------------------------|---|------|---------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----------------|---------------|---------------|
| Minimum Value: 42.1 % on Feb 24 17:00     |                               | Minimum Daily Average: 58.1 % on Feb 24   |      | Hours of Data:            | 615  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |               |               |
| Maximum Diurnal Average: 77.5 % at hour 9 |                               | Minimum Diurnal Average: 64.0 % at hour 17  |      | Hours of Missing Data:    | 57   |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |               |               |
| Monthly Average: 72.49 %                  |                               | Percentiles: P <sub>1</sub> = 42.9 P <sub>10</sub> = 59.6 Q <sub>1</sub> = 68.7 Median = 73.4 Q <sub>3</sub> = 79.0 P <sub>90</sub> = 84.0 P <sub>99</sub> = 90.7 |      | Hours of Calibration:     | 0    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |               |               |
|   |                               |   |      | Percent Operational Time: | 91.5 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |               |               |
| Day                                       | Hourly Period Ending At (MST) |   |      |                           |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 | Daily Average | Daily Maximum |
|   | 1                             | 2   | 3    | 4                         | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20   | 21   | 22   | 23   | 24              |               |               |
| 1-Feb                                     | 77.2                          | 76.6  | 76.5 | 76.1                      | 75.0 | 74.5 | 73.7 | 73.5 | 73.5 | 71.6 | 67.9 | 59.7 | 56.8 | 51.4 | 48.8 | 50.4 | 50.9 | 60.0 | 68.7 | 71.5 | 73.5 | 73.4 | 71.9 | 71.0            | 67.7          | 77.2          |
| 2-Feb                                     | 70.4                          | 71.3  | 71.4 | 71.1                      | 70.8 | 71.0 | 70.9 | 70.4 | 70.2 | 70.2 | 70.7 | 71.9 | 73.3 | 73.2 | 71.6 | 72.1 | 71.3 | 73.4 | 73.8 | 73.6 | 71.7 | 68.2 | 67.4 | 70.8            | 71.3          | 73.8          |
| 3-Feb                                     | 73.2                          | 77.1  | 77.5 | 79.3                      | 80.1 | 81.7 | 83.6 | 83.4 | 82.6 | 81.5 | 79.6 | 76.6 | 76.2 | 74.2 | 74.5 | 75.4 | 73.3 | 72.0 | 69.3 | 68.8 | 68.8 | 68.8 | 68.9 | 69.7            | 75.7          | 83.6          |
| 4-Feb                                     | 70.9                          | 71.7  | 73.6 | 74.4                      | 75.0 | 76.0 | 78.5 | 80.5 | 81.4 | 82.6 | 80.3 | 78.1 | 78.7 | 78.4 | 79.6 | 78.2 | 79.7 | 79.4 | 81.6 | 84.0 | 86.8 | 86.2 | 85.7 | 84.9            | 79.4          | 86.8          |
| 5-Feb                                     | 85.1                          | 84.8  | 85.5 | 86.4                      | 85.5 | 85.9 | 85.6 | 85.7 | 85.5 | 84.6 | 82.4 | 79.6 | 78.4 | 78.9 | 77.6 | 77.6 | 77.2 | 79.0 | 82.7 | 85.5 | 84.1 | 85.0 | 78.2 | 80.6            | 82.6          | 86.4          |
| 6-Feb                                     | 64.6                          | 65.8  | 66.1 | 72.0                      | 75.1 | 76.9 | 73.5 | 75.0 | 77.4 | 71.2 | 60.8 | 60.6 | 60.7 | 58.5 | 59.6 | 56.3 | 58.0 | 63.3 | 69.0 | 70.3 | 71.2 | 71.0 | 71.8 | 72.6            | 67.6          | 77.4          |
| 7-Feb                                     | 72.9                          | 75.1  | 78.9 | 82.2                      | 84.0 | 74.2 | 69.8 | 67.7 | 70.2 | 69.4 | 64.4 | 57.8 | 50.8 | 46.0 | 44.9 | 44.3 | 45.8 | 49.6 | 55.0 | 55.6 | 54.1 | 56.9 | 68.4 | 76.9            | 63.1          | 84.0          |
| 8-Feb                                     | 80.2                          | 77.9  | 80.5 | 83.1                      | 86.1 | 84.7 | 84.2 | 82.2 | 80.6 | 78.1 | 74.5 | 73.4 | 71.0 | 64.5 | 63.1 | 60.1 | 57.5 | 62.9 | 69.0 | 82.2 | 83.4 | 79.4 | 79.1 | 79.6            | 75.7          | 86.1          |
| 9-Feb                                     | 80.9                          | 82.2  | 83.2 | 84.0                      | 84.5 | 85.0 | 85.0 | 85.2 | 85.0 | 83.3 | 80.1 | 76.4 | 70.6 | 65.1 | 61.7 | 61.3 | 61.4 | 59.7 | 61.2 | 62.2 | 62.0 | 64.2 | 65.3 | 66.7            | 73.2          | 85.2          |
| 10-Feb                                    | 66.8                          | 68.2  | 74.3 | 80.3                      | 82.5 | 79.8 | 83.2 | 91.9 | 93.4 | 92.0 | 91.1 | 88.5 | 86.2 | 85.6 | 86.0 | 87.6 | DF   | DF   | DF   | DF   | 84.6 | 88.5 | 88.2 | 87.3            | 84.3          | 93.4          |
| 11-Feb                                    | 87.0                          | 87.5  | 88.0 | 86.9                      | 86.5 | 86.1 | 86.6 | 87.2 | 87.9 | 87.8 | 86.8 | 84.1 | 82.9 | 79.6 | 75.5 | 69.4 | 80.8 | 90.8 | 83.7 | 76.6 | 75.5 | 78.1 | 84.2 | 84.7            | 83.5          | 90.8          |
| 12-Feb                                    | 81.2                          | 80.3  | 81.1 | 77.9                      | 77.3 | 79.6 | 79.4 | 79.6 | 79.7 | 78.9 | 77.3 | 76.6 | 70.7 | 65.8 | 70.3 | 78.0 | 82.5 | 90.2 | DF   | DF   | DF   | DF   | DF   | 70.3            | 77.7          | 90.2          |
| 13-Feb                                    | 65.2                          | 68.4  | 70.9 | 76.8                      | 72.5 | 72.7 | 83.6 | 91.8 | 91.7 | 85.9 | 83.7 | 85.6 | 80.2 | 76.1 | 80.0 | 80.6 | 77.8 | 74.5 | 70.7 | 72.1 | 73.2 | 74.4 | 76.7 | 77.4            | 77.6          | 91.8          |
| 14-Feb                                    | 78.1                          | 77.0  | 79.1 | 79.6                      | 78.5 | 76.9 | 76.2 | 76.4 | 75.8 | 74.7 | 70.6 | 66.8 | 67.7 | 70.6 | 65.9 | 66.4 | 69.2 | 70.2 | 70.7 | 72.0 | 75.9 | 78.4 | 79.4 | 80.6            | 74.0          | 80.6          |
| 15-Feb                                    | 79.6                          | 79.2  | 77.5 | 77.3                      | 76.1 | 76.9 | 76.9 | 77.7 | 77.8 | 77.6 | 76.8 | 73.6 | 69.2 | 72.5 | 65.6 | DF   | DF   | 64.5 | 73.5 | 79.9 | 79.9 | 77.8 | 76.7 | 77.6            | 75.6          | 79.9          |
| 16-Feb                                    | 79.2                          | 78.4  | 78.0 | 78.9                      | 79.3 | 79.2 | 79.4 | 79.9 | 80.6 | 81.6 | 80.0 | 78.4 | 75.3 | 71.1 | 67.4 | 67.5 | 71.1 | DF   | DF   | 73.2 | 73.0 | 72.7 | 73.2 | 75.7            | 81.6          |               |
| 17-Feb                                    | 73.3                          | 73.3  | 73.5 | 74.4                      | 74.4 | 74.4 | 73.6 | 73.2 | 76.1 | 75.4 | 70.4 | 62.3 | 58.8 | DF   | 62.5 | 64.2 | 66.1 | 66.4 | 66.8 | 67.3 | 67.6 | 70.8 | 75.6 | 76.9            | 70.3          | 76.9          |
| 18-Feb                                    | 76.9                          | 76.6  | 75.7 | 75.2                      | 74.1 | 73.4 | 73.8 | 73.2 | 72.1 | 71.6 | 72.5 | 64.7 | 61.3 | 52.0 | 50.8 | 58.0 | 58.5 | 65.1 | 70.6 | 77.1 | 77.9 | 77.0 | 74.8 | 72.7            | 69.8          | 77.9          |
| 19-Feb                                    | 72.1                          | 71.6  | 71.9 | 72.9                      | 70.9 | 71.2 | 71.2 | 71.1 | 71.6 | 72.5 | 74.1 | 73.4 | DF   | DF   | DF   | DF   | DF   | 65.9 | 67.3 | 69.0 | 72.8 | 75.8 | 74.3 | 72.7            | 71.7          | 75.8          |
| 20-Feb                                    | 71.3                          | 72.3  | 72.7 | 72.3                      | 71.9 | 72.5 | 72.3 | 73.4 | 72.8 | 72.7 | 68.8 | 65.3 | 64.4 | 60.8 | 60.0 | 56.3 | 54.9 | 59.3 | 62.6 | 69.9 | 76.6 | 77.8 | 76.4 | 75.4            | 68.9          | 77.8          |
| 21-Feb                                    | 76.0                          | 72.3  | 71.9 | 71.3                      | 70.9 | 70.5 | 70.3 | 69.8 | 68.8 | 66.6 | UO   | 57.2 | 55.8 | 52.1 | 47.1 | 46.4 | 46.9 | 51.4 | 54.4 | 59.2 | 64.6 | 69.2 | 70.9 | 72.0            | 63.3          | 76.0          |
| 22-Feb                                    | 71.6                          | 71.2  | 70.2 | 70.0                      | 69.7 | 69.4 | 69.4 | 69.2 | 69.3 | DF   | 68.8 | 66.4 | 61.8 | 62.2 | 60.3 | 60.7 | 59.4 | 56.0 | 59.9 | 68.9 | 74.1 | 76.8 | 74.1 | 73.8            | 67.5          | 76.8          |
| 23-Feb                                    | 71.8                          | 70.4  | 70.7 | 69.4                      | 69.1 | 68.7 | 68.4 | 68.1 | 67.6 | DF   | DF   | DF   | 63.8 | 64.5 | 59.2 | 55.9 | 65.7 | 60.6 | 65.5 | DF   | DF   | DF   | 74.1 | 75.3            | 67.2          | 75.3          |
| 24-Feb                                    | 74.7                          | 74.2  | 73.7 | 73.4                      | 73.0 | 72.9 | 72.7 | 72.4 | 72.4 | 73.0 | 70.5 | 62.9 | 51.3 | 44.7 | 42.9 | 42.8 | 42.1 | 42.3 | 42.1 | 42.2 | 42.8 | 42.9 | 44.2 | 47.1            | 58.1          | 74.7          |
| 25-Feb                                    | 48.9                          | 53.1  | 58.7 | 61.9                      | 65.7 | 65.6 | 66.2 | 67.3 | 68.0 | 67.0 | 64.3 | 62.3 | 60.4 | 55.0 | 51.6 | 48.9 | 52.4 | 56.0 | UO   | UO   | UO   | UO   | UO   | UO              | 59.6          | 68.0          |
| 26-Feb                                    | 75.3                          | 74.7  | 77.9 | 76.0                      | 79.0 | 82.3 | 82.7 | 83.0 | 81.2 | 75.8 | DF   | DF   | 74.6 | 71.5 | 74.6 | 80.4 | 76.7 | DF   | DF   | DF   | DF   | DF   | DF   | DF              | --            | 83.0          |
| 27-Feb                                    | DF                            | DF  | DF   | DF                        | DF   | DF   | DF   | DF   | 80.3 | 75.3 | 70.5 | 69.0 | UO   | UO   | UO   | UO   | UO   | 73.4 | 76.7 | 79.0 | 78.7 | 79.8 | 81.0 | 84.2            | --            | 84.2          |
| 28-Feb                                    | 84.6                          | 83.9  | 83.5 | 82.9                      | 80.6 | 79.6 | 78.6 | 77.1 | 76.1 | 75.6 | 73.7 | 73.8 | 71.8 | 69.8 | DF   | DF   | 60.0 | 62.3 | 71.4 | 78.7 | 82.6 | 84.5 | 81.9 | 79.6            | 76.9          | 84.6          |
|   |                               |   |      |                           |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Diurnal Average |               |               |
|   |                               |   |      |                           |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Diurnal Maximum |               |               |
|   |                               |   |      |                           |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 76.9            |               |               |

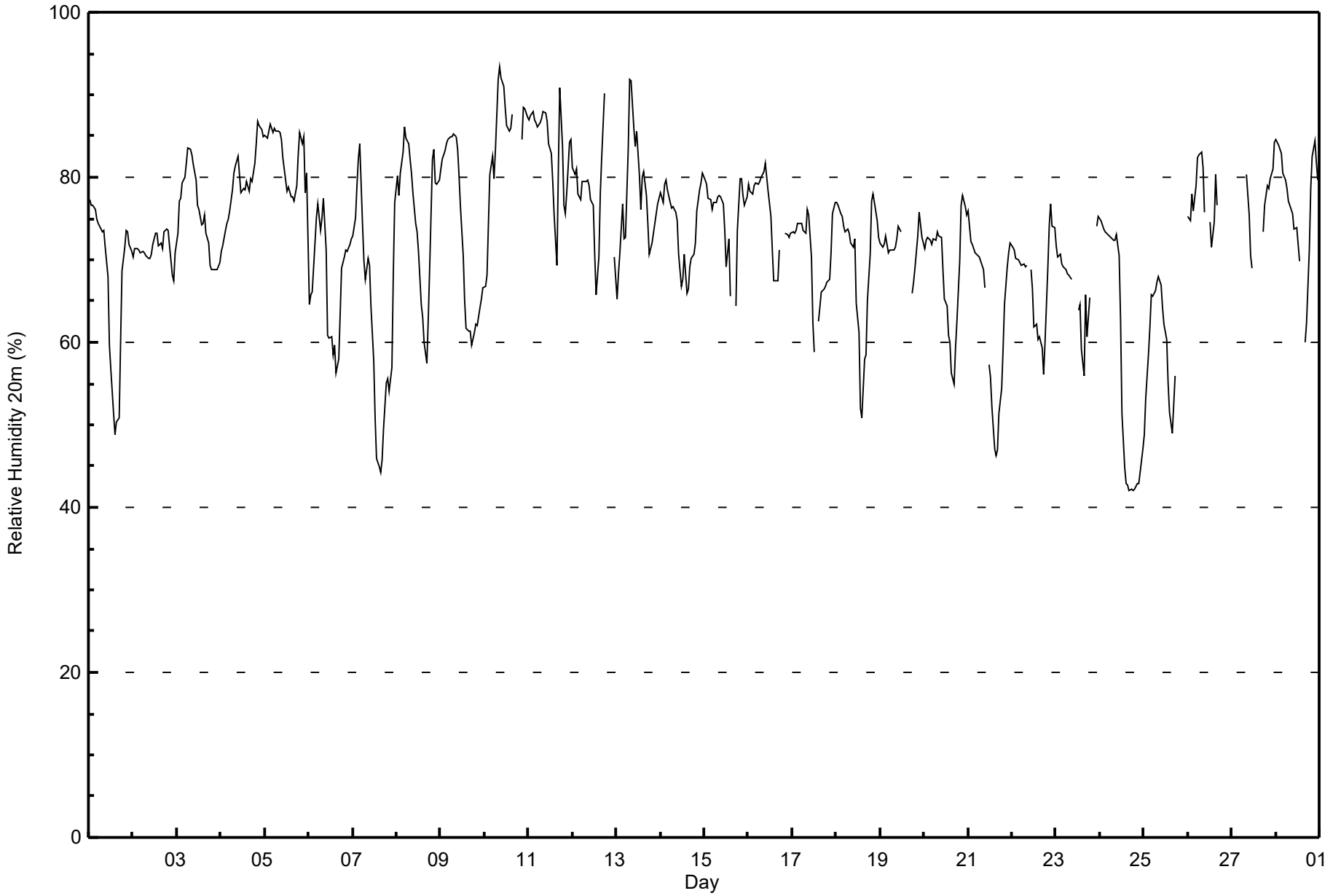
DF - DAS Failure                      UO - Unstable Operation





**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Relative Humidity 20m (RH20m) - %**  
**Lower Camp Met Tower - February 2023**





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Relative Humidity 20m (RH20m) - %  
Lower Camp Met Tower - February 2023**

| <b>Concentration Ranges (%)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---------------------------------|------------------------|----------|---------------------|
| 0 - 20                          | 0                      | 0.00     | 0.00                |
| 20 - 40                         | 0                      | 0.00     | 0.00                |
| 40 - 60                         | 67                     | 10.89    | 10.89               |
| 60 - 80                         | 427                    | 69.43    | 80.33               |
| 80 - 100                        | 121                    | 19.67    | 100.00              |

Total Number of Valid Hours: 615

Total Number of Hours: 672



**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

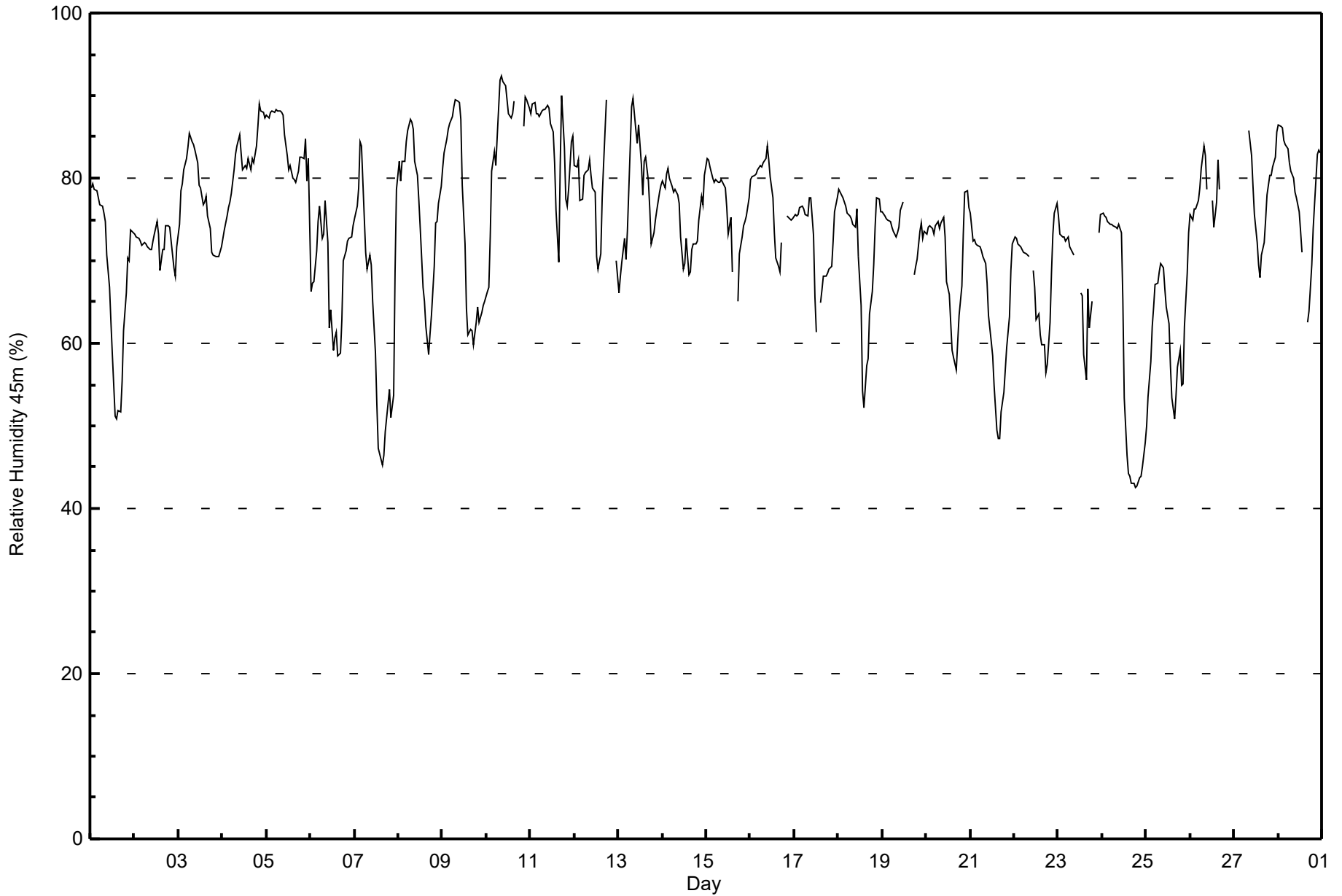
**Relative Humidity 45m (RH45m) - %**  
**Lower Camp Met Tower - February 2023**

| Maximum Value: 92.4 % on Feb 10 09:00   |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Hours in Service: 672          |               |               |
|---|-------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|--------------------------------|---------------|---------------|
| Maximum Daily Average: 85.0 % on Feb 10   |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Hours of Data: 627             |               |               |
| Minimum Value: 42.6 % on Feb 24 19:00   |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Hours of Missing Data: 45      |               |               |
| Minimum Daily Average: 59.4 % on Feb 24   |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Hours of Calibration: 0        |               |               |
| Maximum Diurnal Average: 79.3 % at hour 9   |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Percent Operational Time: 93.3 |               |               |
| Minimum Diurnal Average: 65.5 % at hour 17  |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                                |               |               |
| Monthly Average: 73.51 %  |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                                |               |               |
| Percentiles: P <sub>1</sub> = 43.9 P <sub>10</sub> = 59.4 Q <sub>1</sub> = 69.0 Median = 74.6 Q <sub>3</sub> = 80.3 P <sub>90</sub> = 85.6 P <sub>99</sub> = 89.6 |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                                |               |               |
| Day   | Hourly Period Ending At (MST) |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                                | Daily Average | Daily Maximum |
|   | 1                             | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20   | 21   | 22   | 23   | 24                             |               |               |
| 1-Feb   | 78.8                          | 79.2 | 78.6 | 78.4 | 77.6 | 76.7 | 76.6 | 75.8 | 74.8 | 70.6 | 66.8 | 62.5 | 58.6 | 51.2 | 50.9 | 51.8 | 51.7 | 55.4 | 61.4 | 66.2 | 70.3 | 70.0 | 73.8 | 73.4                           | 68.0          | 79.2          |
| 2-Feb   | 73.3                          | 72.9 | 72.6 | 72.4 | 71.9 | 72.3 | 72.0 | 71.6 | 71.4 | 71.4 | 72.3 | 73.3 | 74.8 | 73.2 | 68.8 | 71.3 | 71.4 | 74.2 | 74.3 | 74.1 | 72.4 | 69.1 | 68.2 | 71.8                           | 72.1          | 74.8          |
| 3-Feb   | 74.5                          | 78.5 | 79.2 | 81.1 | 82.3 | 83.7 | 85.4 | 84.5 | 84.0 | 83.5 | 81.9 | 79.2 | 78.8 | 76.8 | 77.2 | 77.8 | 75.5 | 74.0 | 71.1 | 70.7 | 70.6 | 70.5 | 70.5 | 71.6                           | 77.6          | 85.4          |
| 4-Feb   | 72.7                          | 73.7 | 75.4 | 76.4 | 77.1 | 78.2 | 81.0 | 82.9 | 84.0 | 85.2 | 83.1 | 81.1 | 81.6 | 81.2 | 82.4 | 80.9 | 82.4 | 81.9 | 83.9 | 86.2 | 88.9 | 88.2 | 88.0 | 87.3                           | 81.8          | 88.9          |
| 5-Feb   | 87.6                          | 87.4 | 87.9 | 88.1 | 88.0 | 88.2 | 88.2 | 88.2 | 88.0 | 87.6 | 85.3 | 82.8 | 81.1 | 81.6 | 80.1 | 79.8 | 79.6 | 80.9 | 82.5 | 82.6 | 82.4 | 84.7 | 79.6 | 82.4                           | 84.3          | 88.2          |
| 6-Feb   | 66.3                          | 67.3 | 67.5 | 71.1 | 74.7 | 76.6 | 72.7 | 73.3 | 77.3 | 72.2 | 61.9 | 64.1 | 59.2 | 60.7 | 61.3 | 58.5 | 58.8 | 62.8 | 69.9 | 71.2 | 72.3 | 72.7 | 72.9 | 74.3                           | 68.3          | 77.3          |
| 7-Feb   | 75.1                          | 76.7 | 78.8 | 84.4 | 84.0 | 75.3 | 71.0 | 68.9 | 70.8 | 69.4 | 65.1 | 58.8 | 52.5 | 47.3 | 45.9 | 45.3 | 46.4 | 49.3 | 52.7 | 54.4 | 51.1 | 53.7 | 68.6 | 78.7                           | 63.5          | 84.4          |
| 8-Feb   | 82.1                          | 79.7 | 82.0 | 82.1 | 84.3 | 85.8 | 87.0 | 86.8 | 85.9 | 82.0 | 80.3 | 77.3 | 73.9 | 66.7 | 65.1 | 62.1 | 58.7 | 61.1 | 63.4 | 69.3 | 74.6 | 74.7 | 77.0 | 78.9                           | 75.9          | 87.0          |
| 9-Feb   | 81.3                          | 83.1 | 84.8 | 85.9 | 86.6 | 87.5 | 88.6 | 89.6 | 89.3 | 89.2 | 87.2 | 79.2 | 72.0 | 64.3 | 60.9 | 61.7 | 61.5 | 59.8 | 62.5 | 64.5 | 62.5 | 63.6 | 64.6 | 65.1                           | 74.8          | 89.6          |
| 10-Feb  | 66.2                          | 66.7 | 72.9 | 80.8 | 83.3 | 81.6 | 85.1 | 91.9 | 92.4 | 91.6 | 91.2 | 89.4 | 87.8 | 87.3 | 87.8 | 89.3 | DF   | DF   | DF   | DF   | 86.3 | 89.9 | 89.5 | 88.5                           | 85.0          | 92.4          |
| 11-Feb  | 87.9                          | 88.9 | 89.1 | 87.8 | 87.8 | 87.4 | 88.1 | 88.3 | 88.3 | 88.9 | 88.5 | 86.6 | 85.7 | 81.8 | 76.0 | 69.8 | 81.6 | 90.0 | 83.7 | 77.4 | 76.6 | 78.7 | 84.5 | 85.1                           | 84.5          | 90.0          |
| 12-Feb  | 81.6                          | 81.4 | 82.3 | 77.4 | 77.5 | 80.4 | 80.6 | 81.0 | 82.1 | 80.3 | 78.8 | 78.3 | 70.6 | 69.0 | 70.9 | 77.5 | 81.7 | 89.4 | DF   | DF   | DF   | DF   | DF   | 70.0                           | 78.5          | 89.4          |
| 13-Feb  | 66.1                          | 68.1 | 69.9 | 72.7 | 70.1 | 73.5 | 83.5 | 88.6 | 89.7 | 86.0 | 84.3 | 86.4 | 81.7 | 78.0 | 82.0 | 82.6 | 79.7 | 76.2 | 72.0 | 73.4 | 74.8 | 76.1 | 78.4 | 79.2                           | 78.0          | 89.7          |
| 14-Feb  | 79.7                          | 78.8 | 80.5 | 81.2 | 80.1 | 79.0 | 78.2 | 78.6 | 78.0 | 76.9 | 73.0 | 69.0 | 69.6 | 72.7 | 68.2 | 68.7 | 71.3 | 72.0 | 72.0 | 72.4 | 74.9 | 77.7 | 76.8 | 80.3                           | 75.4          | 81.2          |
| 15-Feb  | 82.3                          | 82.2 | 81.4 | 80.0 | 79.5 | 79.8 | 79.5 | 79.5 | 79.9 | 79.6 | 78.8 | 76.5 | 73.2 | 75.3 | 68.7 | DF   | DF   | 65.0 | 70.8 | 72.8 | 74.3 | 74.7 | 75.3 | 77.6                           | 76.7          | 82.3          |
| 16-Feb  | 79.8                          | 80.2 | 80.4 | 80.5 | 81.1 | 81.5 | 81.4 | 81.9 | 82.4 | 83.9 | 82.2 | 80.1 | 77.6 | 73.3 | 70.3 | 69.3 | 68.7 | 72.3 | DF   | DF   | 75.4 | 75.1 | 74.9 | 75.2                           | 77.6          | 83.9          |
| 17-Feb  | 75.6                          | 75.4 | 75.6 | 76.5 | 76.6 | 76.3 | 75.7 | 75.4 | 77.7 | 77.7 | 73.1 | 65.6 | 61.3 | DF   | 64.9 | 66.4 | 68.1 | 68.1 | 68.4 | 69.0 | 69.3 | 72.4 | 75.9 | 77.7                           | 72.3          | 77.7          |
| 18-Feb  | 78.6                          | 78.3 | 77.6 | 77.1 | 76.6 | 75.8 | 75.4 | 75.1 | 74.3 | 74.0 | 76.3 | 70.5 | 64.6 | 54.2 | 52.3 | 57.2 | 58.1 | 63.5 | 66.2 | 69.5 | 74.1 | 77.6 | 77.5 | 75.9                           | 70.8          | 78.6          |
| 19-Feb  | 75.9                          | 75.4 | 75.0 | 74.9 | 74.7 | 74.0 | 73.6 | 72.9 | 73.3 | 74.1 | 76.1 | 77.2 | DF   | DF   | DF   | DF   | DF   | 68.3 | 69.3 | 70.2 | 73.6 | 74.6 | 72.6 | 73.6                           | 73.6          | 77.2          |
| 20-Feb  | 73.2                          | 74.0 | 74.3 | 73.9 | 73.1 | 74.2 | 74.7 | 74.0 | 74.6 | 75.3 | 72.9 | 67.5 | 65.9 | 62.5 | 59.1 | 58.3 | 56.7 | 60.1 | 63.3 | 67.0 | 73.2 | 78.3 | 78.6 | 76.5                           | 70.1          | 78.6          |
| 21-Feb  | 75.8                          | 72.3 | 72.6 | 72.0 | 71.9 | 71.7 | 71.3 | 70.5 | 69.7 | 67.3 | 63.4 | 60.2 | 58.4 | 54.9 | 49.4 | 48.4 | 48.4 | 51.7 | 54.0 | 56.8 | 59.6 | 63.2 | 68.9 | 72.0                           | 63.5          | 75.8          |
| 22-Feb  | 72.9                          | 72.7 | 72.0 | 71.6 | 71.4 | 71.0 | 70.9 | 70.7 | 70.5 | DF   | 68.8 | 66.8 | 63.0 | 63.5 | 61.1 | 59.9 | 59.8 | 56.4 | 57.4 | 62.6 | 68.5 | 73.1 | 75.8 | 76.9                           | 67.7          | 76.9          |
| 23-Feb  | 75.5                          | 73.2 | 72.9 | 72.9 | 72.4 | 72.9 | 71.7 | 71.4 | 70.7 | DF   | DF   | DF   | 66.1 | 65.8 | 58.7 | 55.5 | 66.6 | 61.8 | 65.2 | DF   | DF   | DF   | 73.4 | 75.5                           | 69.0          | 75.5          |
| 24-Feb  | 75.8                          | 75.4 | 75.2 | 74.7 | 74.4 | 74.5 | 74.3 | 74.0 | 73.9 | 74.4 | 73.5 | 65.3 | 53.4 | 46.5 | 44.2 | 43.9 | 43.1 | 43.1 | 42.6 | 42.7 | 43.8 | 43.8 | 45.1 | 48.0                           | 59.4          | 75.8          |
| 25-Feb  | 50.1                          | 53.6 | 57.8 | 62.0 | 64.3 | 67.2 | 67.2 | 68.6 | 69.6 | 69.1 | 66.7 | 64.3 | 62.4 | 57.4 | 53.3 | 50.9 | 53.7 | 57.1 | 59.2 | 54.9 | 55.0 | 62.1 | 68.5 | 73.3                           | 61.2          | 73.3          |
| 26-Feb  | 75.6                          | 74.9 | 76.3 | 76.3 | 77.4 | 78.9 | 81.2 | 84.0 | 82.8 | 78.6 | DF   | DF   | 77.3 | 74.0 | 77.1 | 82.3 | 78.6 | DF   | DF   | DF   | DF   | DF   | DF   | DF                             | --            | 84.0          |
| 27-Feb  | DF                            | DF   | DF   | DF   | DF   | DF   | DF   | DF   | 85.8 | 82.6 | 79.0 | 75.6 | 72.2 | 69.5 | 68.0 | 70.7 | 72.2 | 74.9 | 78.0 | 80.4 | 80.3 | 81.3 | 82.6 | 85.6                           | --            | 85.8          |
| 28-Feb  | 86.4                          | 86.3 | 86.0 | 84.6 | 84.1 | 83.6 | 81.8 | 80.8 | 79.9 | 78.3 | 77.6 | 76.0 | 73.6 | 70.9 | DF   | DF   | 62.6 | 63.9 | 69.5 | 74.0 | 76.9 | 82.8 | 83.5 | 83.0                           | 78.5          | 86.4          |
| 75.9 76.2 77.0 77.7 77.9 78.1 78.4 78.8 79.3 78.8 76.5 73.6 70.2 67.7 65.6 65.6 66.7 67.2 68.8 71.3 73.2 74.8 76.2  |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Diurnal Average                |               |               |
| 87.9 88.9 89.1 88.1 88.0 88.2 88.6 91.9 92.4 91.6 91.2 89.4 87.8 87.3 87.8 89.3 82.4 90.0 83.9 86.2 88.9 89.9 89.5 88.5   |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Diurnal Maximum                |               |               |
| DF - DAS Failure  |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                                |               |               |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Relative Humidity 45m (RH45m) - %**  
**Lower Camp Met Tower - February 2023**





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Relative Humidity 45m (RH45m) - %  
Lower Camp Met Tower - February 2023**

| <b>Concentration Ranges (%)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---------------------------------|------------------------|----------|---------------------|
| 0 - 20                          | 0                      | 0.00     | 0.00                |
| 20 - 40                         | 0                      | 0.00     | 0.00                |
| 40 - 60                         | 67                     | 10.69    | 10.69               |
| 60 - 80                         | 394                    | 62.84    | 73.52               |
| 80 - 100                        | 166                    | 26.48    | 100.00              |

Total Number of Valid Hours: 627

Total Number of Hours: 672



**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

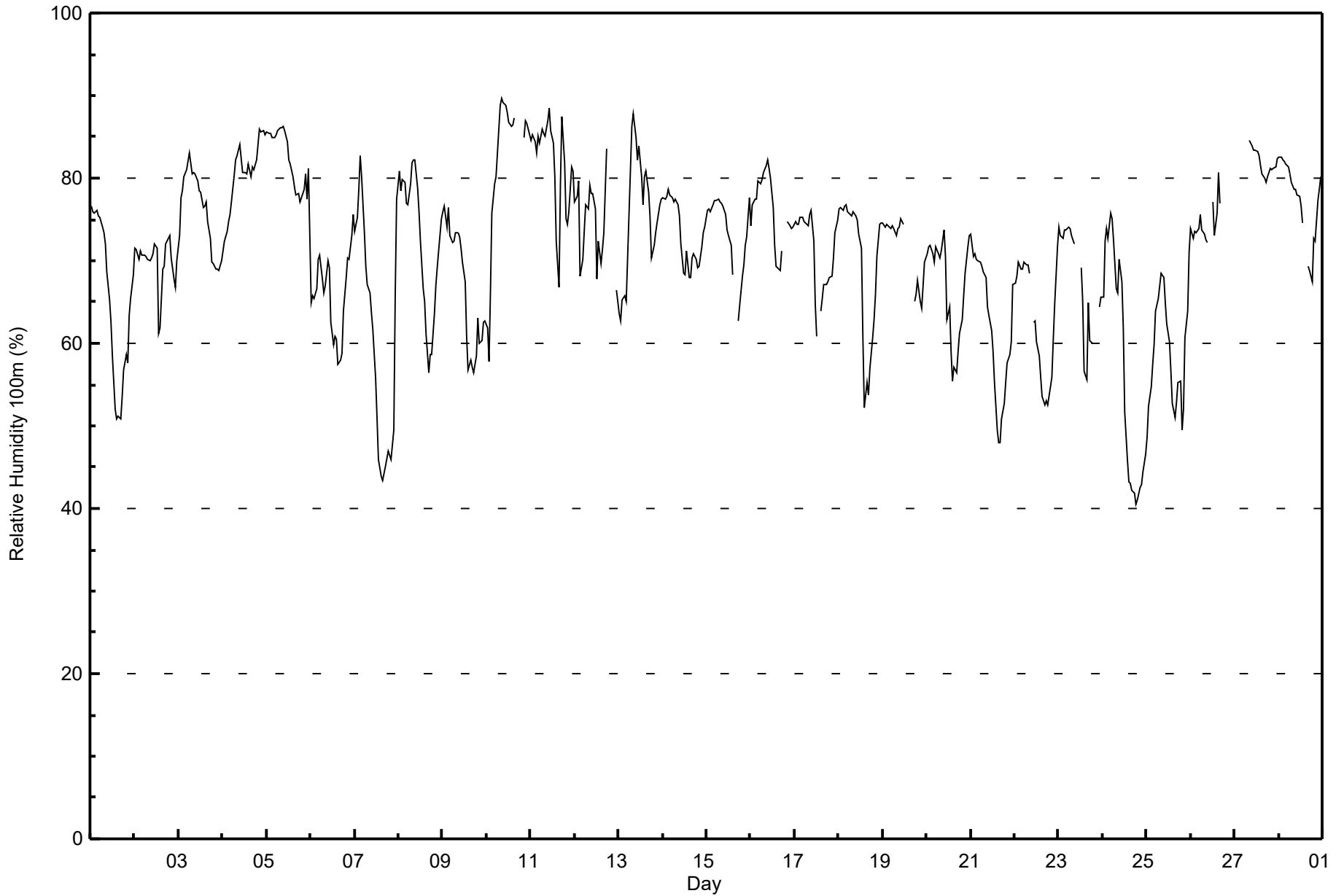
**Relative Humidity 100m (RH100m) - %**  
**Lower Camp Met Tower - February 2023**

| Maximum Value: 89.7 % on Feb 10 09:00      Maximum Daily Average: 82.4 % on Feb 5   |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Hours in Service: 672<br>Hours of Data: 627  |      |                 |               |               |
|---|-------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|--|------|-----------------|---------------|---------------|
| Minimum Value: 40.5 % on Feb 24 19:00      Minimum Daily Average: 56.9 % on Feb 24<br>Maximum Diurnal Average: 76.5 % at hour 10      Minimum Diurnal Average: 64.1 % at hour 19<br>Monthly Average: 71.05 %      Percentiles: P <sub>1</sub> = 43.1 P <sub>10</sub> = 56.8 Q <sub>1</sub> = 65.8 Median = 72.7 Q <sub>3</sub> = 77.6 P <sub>90</sub> = 82.4 P <sub>99</sub> = 87.7 |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Hours of Missing Data: 45<br>Hours of Calibration: 0<br>Percent Operational Time: 93.3 |      |                 |               |               |
| Day   | Hourly Period Ending At (MST) |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |      |                 | Daily Average | Daily Maximum |
|   | 1                             | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20   | 21   | 22   | 23   | 24              |               |               |
| 1-Feb   | 76.6                          | 76.0 | 75.8 | 76.0 | 75.5 | 75.3 | 74.1 | 73.3 | 72.0 | 68.7 | 65.3 | 62.6 | 58.5 | 52.1 | 50.9 | 51.1 | 50.8 | 53.5 | 56.8 | 58.6 | 57.6 | 63.4   | 65.4 | 68.4            | 64.9          | 76.6          |
| 2-Feb   | 71.5                          | 71.4 | 70.2 | 71.2 | 70.7 | 70.7 | 70.5 | 70.2 | 70.1 | 70.4 | 70.8 | 72.0 | 71.6 | 61.3 | 61.9 | 69.1 | 69.4 | 72.0 | 72.7 | 73.0 | 70.4 | 67.8   | 66.7 | 70.0            | 69.8          | 73.0          |
| 3-Feb   | 73.0                          | 77.6 | 78.5 | 80.2 | 81.1 | 82.0 | 83.1 | 80.5 | 80.6 | 80.4 | 79.7 | 78.4 | 78.3 | 76.5 | 76.6 | 77.1 | 74.8 | 72.8 | 69.9 | 69.7 | 68.9 | 69.0   | 68.8 | 70.0            | 76.1          | 83.1          |
| 4-Feb   | 71.1                          | 72.4 | 73.6 | 74.8 | 75.5 | 77.1 | 80.3 | 82.2 | 82.8 | 84.1 | 82.5 | 80.7 | 80.6 | 80.5 | 81.7 | 80.2 | 81.4 | 81.0 | 82.2 | 84.0 | 86.0 | 85.6   | 85.7 | 85.3            | 80.5          | 86.0          |
| 5-Feb   | 85.6                          | 85.5 | 85.4 | 85.0 | 85.0 | 85.2 | 85.7 | 86.2 | 86.2 | 86.2 | 85.7 | 84.4 | 82.2 | 81.8 | 80.1 | 78.9 | 78.0 | 78.1 | 77.2 | 77.6 | 78.6 | 80.4   | 77.5 | 81.2            | 82.4          | 86.2          |
| 6-Feb   | 64.9                          | 65.7 | 65.5 | 66.7 | 70.2 | 70.6 | 67.8 | 66.0 | 66.9 | 69.9 | 69.2 | 62.5 | 59.9 | 60.8 | 60.5 | 57.5 | 57.9 | 58.9 | 64.0 | 67.9 | 70.3 | 70.1   | 73.0 | 75.6            | 65.9          | 75.6          |
| 7-Feb   | 73.5                          | 75.2 | 78.7 | 82.7 | 80.2 | 73.4 | 69.4 | 67.0 | 66.0 | 63.7 | 61.8 | 55.8 | 51.0 | 45.9 | 44.0 | 43.5 | 44.3 | 45.0 | 47.0 | 46.5 | 45.9 | 49.4   | 65.7 | 77.4            | 60.6          | 82.7          |
| 8-Feb   | 80.8                          | 78.4 | 79.8 | 79.5 | 76.9 | 76.8 | 79.3 | 81.8 | 82.3 | 82.3 | 78.8 | 75.9 | 72.3 | 66.7 | 65.1 | 61.2 | 56.5 | 58.7 | 58.7 | 63.5 | 66.9 | 69.1   | 71.1 | 75.0            | 72.4          | 82.3          |
| 9-Feb   | 75.9                          | 76.5 | 74.1 | 76.4 | 73.0 | 72.2 | 72.4 | 73.4 | 73.5 | 72.9 | 71.6 | 69.9 | 67.5 | 60.8 | 56.7 | 58.0 | 57.2 | 56.4 | 58.5 | 63.1 | 60.0 | 60.4   | 62.5 | 62.6            | 66.9          | 76.5          |
| 10-Feb  | 61.9                          | 57.8 | 66.1 | 75.8 | 79.3 | 80.2 | 83.1 | 88.8 | 89.7 | 89.2 | 88.8 | 87.9 | 86.8 | 86.3 | 86.5 | 87.3 | DF   | DF   | DF   | DF   | 85.0 | 86.9   | 86.5 | 85.2            | 82.0          | 89.7          |
| 11-Feb  | 84.5                          | 85.2 | 84.4 | 83.1 | 85.1 | 84.2 | 86.0 | 85.5 | 85.1 | 87.0 | 88.6 | 85.8 | 84.2 | 80.1 | 72.4 | 66.8 | 79.3 | 87.4 | 81.9 | 75.1 | 74.4 | 76.0   | 81.3 | 80.8            | 81.8          | 88.6          |
| 12-Feb  | 77.2                          | 77.8 | 79.7 | 68.2 | 70.2 | 73.6 | 76.7 | 76.2 | 79.2 | 78.1 | 78.1 | 76.2 | 67.9 | 72.4 | 69.7 | 71.3 | 73.4 | 83.6 | DF   | DF   | DF   | DF   | DF   | 66.4            | 74.5          | 83.6          |
| 13-Feb  | 63.6                          | 62.7 | 65.3 | 65.8 | 65.0 | 70.6 | 81.1 | 86.3 | 87.8 | 84.9 | 82.3 | 83.9 | 80.2 | 76.7 | 80.2 | 80.9 | 78.3 | 75.3 | 70.4 | 71.9 | 73.3 | 74.7   | 76.7 | 77.4            | 75.6          | 87.8          |
| 14-Feb  | 77.6                          | 77.4 | 77.8 | 78.7 | 78.0 | 77.6 | 77.1 | 77.4 | 76.8 | 75.5 | 72.0 | 68.5 | 68.3 | 71.3 | 68.0 | 67.9 | 70.4 | 70.9 | 70.1 | 69.2 | 69.3 | 71.7   | 73.5 | 74.1            | 73.3          | 78.7          |
| 15-Feb  | 76.1                          | 76.3 | 76.0 | 76.8 | 77.3 | 77.3 | 77.4 | 77.1 | 76.9 | 76.5 | 75.6 | 73.7 | 73.0 | 71.8 | 68.3 | DF   | DF   | 62.7 | 64.5 | 68.2 | 69.5 | 71.9   | 72.9 | 77.6            | 73.5          | 77.6          |
| 16-Feb  | 74.2                          | 76.7 | 77.5 | 77.4 | 79.7 | 79.4 | 79.8 | 80.6 | 81.6 | 82.2 | 81.3 | 80.1 | 76.5 | 71.9 | 69.4 | 69.0 | 68.8 | 71.2 | DF   | DF   | 74.7 | 74.2   | 73.9 | 74.1            | 76.1          | 82.2          |
| 17-Feb  | 74.7                          | 74.5 | 74.4 | 75.2 | 75.3 | 74.7 | 74.6 | 74.3 | 75.6 | 76.1 | 72.4 | 64.7 | 60.9 | DF   | 63.9 | 65.4 | 67.1 | 67.1 | 67.4 | 67.9 | 68.1 | 70.3   | 73.4 | 75.0            | 71.0          | 76.1          |
| 18-Feb  | 76.3                          | 76.5 | 76.2 | 76.6 | 76.7 | 75.9 | 75.6 | 75.4 | 76.0 | 75.5 | 74.9 | 73.2 | 71.5 | 60.9 | 52.2 | 55.2 | 53.7 | 56.9 | 60.7 | 62.8 | 66.0 | 70.4   | 74.4 | 74.6            | 69.5          | 76.7          |
| 19-Feb  | 74.6                          | 74.1 | 74.4 | 74.3 | 73.9 | 74.2 | 73.8 | 73.0 | 73.9 | 74.1 | 75.1 | 74.3 | DF   | DF   | DF   | DF   | DF   | 65.1 | 66.0 | 67.6 | 65.2 | 64.2   | 67.0 | 69.8            | 71.3          | 75.1          |
| 20-Feb  | 70.8                          | 71.7 | 71.9 | 70.9 | 69.9 | 71.7 | 70.9 | 70.3 | 71.3 | 73.7 | 70.6 | 63.0 | 64.3 | 58.9 | 55.5 | 57.1 | 56.4 | 58.9 | 61.3 | 62.8 | 65.8 | 68.5   | 71.7 | 73.0            | 66.7          | 73.7          |
| 21-Feb  | 73.2                          | 70.4 | 70.8 | 70.2 | 70.0 | 69.7 | 69.3 | 68.7 | 68.0 | 64.3 | 63.4 | 61.4 | 59.0 | 55.2 | 49.4 | 47.9 | 47.9 | 50.8 | 52.7 | 55.2 | 57.6 | 58.7   | 60.1 | 67.1            | 61.7          | 73.2          |
| 22-Feb  | 67.3                          | 68.2 | 69.8 | 68.9 | 68.9 | 69.8 | 69.5 | 69.5 | 68.5 | DF   | 62.6 | 62.7 | 60.2 | 58.4 | 55.9 | 53.5 | 52.5 | 53.0 | 52.6 | 54.7 | 55.9 | 60.6   | 64.7 | 71.7            | 62.6          | 71.7          |
| 23-Feb  | 74.0                          | 73.1 | 72.7 | 73.7 | 73.7 | 74.0 | 73.8 | 73.0 | 72.1 | DF   | DF   | DF   | 69.2 | 65.0 | 56.5 | 55.7 | 64.9 | 60.4 | 59.9 | DF   | DF   | DF   | 64.4 | 65.6            | 67.9          | 74.0          |
| 24-Feb  | 65.5                          | 72.4 | 74.0 | 72.7 | 75.7 | 75.1 | 72.5 | 66.6 | 66.1 | 70.2 | 67.5 | 61.9 | 51.7 | 45.7 | 43.3 | 43.1 | 42.2 | 41.8 | 40.5 | 41.0 | 42.6 | 42.8   | 44.4 | 46.7            | 56.9          | 75.7          |
| 25-Feb  | 48.7                          | 52.3 | 54.8 | 57.4 | 59.8 | 63.9 | 65.4 | 66.9 | 68.4 | 68.0 | 65.0 | 62.4 | 60.2 | 56.6 | 52.8 | 51.0 | 52.9 | 55.3 | 55.4 | 49.5 | 52.1 | 60.7   | 64.0 | 71.1            | 58.9          | 71.1          |
| 26-Feb  | 73.9                          | 72.7 | 73.5 | 73.4 | 73.9 | 75.6 | 73.7 | 73.2 | 72.6 | 72.2 | DF   | DF   | 77.1 | 73.1 | 75.8 | 80.7 | 76.9 | DF   | DF   | DF   | DF   | DF   | DF   | DF              | --            | 80.7          |
| 27-Feb  | DF                            | DF   | DF   | DF   | DF   | DF   | DF   | DF   | 84.5 | 84.0 | 83.4 | 83.4 | 83.3 | 82.7 | 81.6 | 80.5 | 80.0 | 79.4 | 80.2 | 81.2 | 81.0 | 81.2   | 81.4 | 82.3            | --            | 84.5          |
| 28-Feb  | 82.5                          | 82.5 | 82.3 | 82.0 | 81.6 | 81.4 | 80.5 | 79.5 | 78.7 | 78.7 | 78.0 | 77.8 | 76.6 | 74.6 | DF   | DF   | 69.3 | 68.8 | 67.5 | 72.7 | 72.4 | 77.3   | 78.7 | 80.2            | 77.4          | 82.5          |
|   |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |      | Diurnal Average |               |               |
|   |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |      | Diurnal Maximum |               |               |
| 73.0 73.4 74.2 74.6 74.9 75.3 75.7 75.7 76.2 76.5 74.8 72.4 70.1 67.2 64.6 64.4 64.2 64.8 64.1 65.4 67.1 69.0 71.0 73.3<br>85.6 85.5 85.4 85.0 85.1 85.2 86.0 88.8 89.7 89.2 88.8 87.9 86.8 86.3 86.5 87.3 81.4 87.4 82.2 84.0 86.0 86.9 86.5 85.3  |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |      |                 |               |               |
| DF - DAS Failure  |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |      |                 |               |               |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Relative Humidity 100m (RH100m) - %**  
**Lower Camp Met Tower - February 2023**





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Relative Humidity 100m (RH100m) - %  
Lower Camp Met Tower - February 2023**

| <b>Concentration Ranges (%)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---------------------------------|------------------------|----------|---------------------|
| 0 - 20                          | 0                      | 0.00     | 0.00                |
| 20 - 40                         | 0                      | 0.00     | 0.00                |
| 40 - 60                         | 88                     | 14.04    | 14.04               |
| 60 - 80                         | 420                    | 66.99    | 81.02               |
| 80 - 100                        | 119                    | 18.98    | 100.00              |

Total Number of Valid Hours: 627

Total Number of Hours: 672





**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

**Relative Humidity 163 m (RH163m) - %**  
**Lower Camp Met Tower - February 2023**

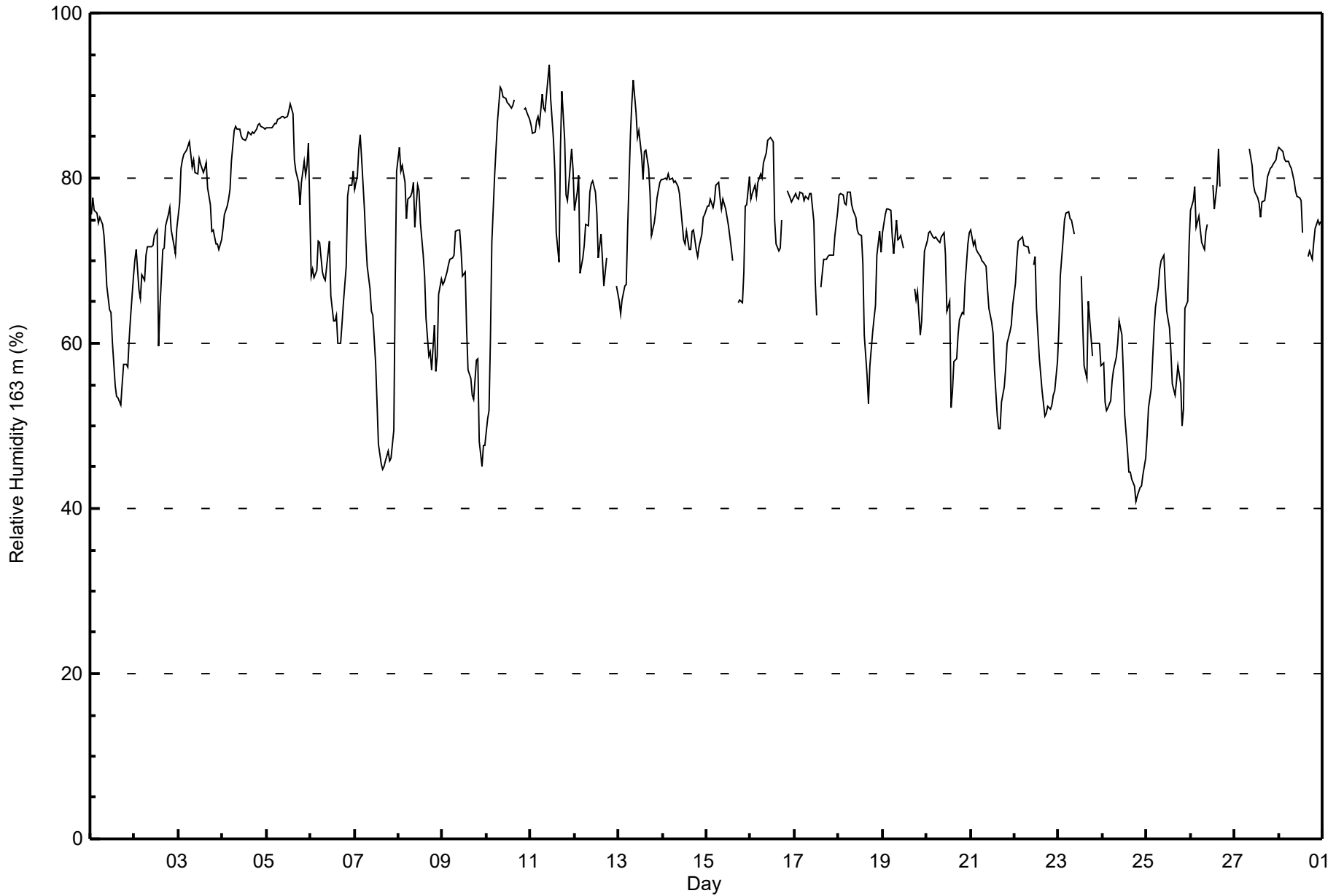
| Maximum Value: 93.7 % on Feb 11 11:00     |                               | Maximum Daily Average: 84.7 % on Feb 5  |      | Hours in Service: 672          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |               |               |
|---|-------------------------------|---|------|--------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----------------|---------------|---------------|
| Minimum Value: 40.9 % on Feb 24 19:00     |                               | Minimum Daily Average: 50.4 % on Feb 24   |      | Hours of Data: 627             |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |               |               |
| Maximum Diurnal Average: 76.9 % at hour 9 |                               | Minimum Diurnal Average: 65.1 % at hour 19  |      | Hours of Missing Data: 45      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |               |               |
| Monthly Average: 71.73 %                  |                               | Percentiles: P <sub>1</sub> = 44.2 P <sub>10</sub> = 55.3 Q <sub>1</sub> = 65.2 Median = 73.2 Q <sub>3</sub> = 79.3 P <sub>90</sub> = 85.0 P <sub>99</sub> = 90.1 |      | Hours of Calibration: 0        |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |               |               |
|   |                               |   |      | Percent Operational Time: 93.3 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |               |               |
| Day                                       | Hourly Period Ending At (MST) |   |      |                                |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 | Daily Average | Daily Maximum |
|   | 1                             | 2   | 3    | 4                              | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20   | 21   | 22   | 23   | 24              |               |               |
| 1-Feb                                     | 75.6                          | 77.6  | 76.2 | 75.8                           | 74.6 | 75.3 | 74.4 | 73.1 | 70.3 | 67.0 | 64.1 | 63.7 | 60.2 | 55.0 | 53.5 | 53.4 | 52.5 | 55.1 | 57.5 | 57.5 | 57.0 | 60.5 | 63.2 | 68.0            | 65.0          | 77.6          |
| 2-Feb                                     | 70.0                          | 71.4  | 66.4 | 65.5                           | 68.4 | 67.7 | 70.8 | 71.7 | 71.6 | 71.6 | 71.9 | 73.1 | 73.7 | 59.6 | 64.4 | 71.3 | 71.5 | 74.2 | 75.5 | 76.4 | 73.8 | 71.9 | 70.8 | 74.0            | 70.7          | 76.4          |
| 3-Feb                                     | 77.0                          | 81.2  | 82.2 | 82.8                           | 83.4 | 84.0 | 84.5 | 81.3 | 82.3 | 80.6 | 80.6 | 82.4 | 81.7 | 80.6 | 81.2 | 81.8 | 78.8 | 76.8 | 73.6 | 73.7 | 72.1 | 72.1 | 71.4 | 72.6            | 79.1          | 84.5          |
| 4-Feb                                     | 74.0                          | 75.6  | 76.6 | 77.4                           | 78.7 | 82.1 | 85.8 | 86.2 | 86.0 | 86.0 | 85.0 | 84.8 | 84.6 | 84.9 | 85.6 | 85.3 | 85.5 | 85.4 | 86.0 | 86.5 | 86.6 | 86.2 | 86.2 | 86.0            | 83.6          | 86.6          |
| 5-Feb                                     | 86.0                          | 86.0  | 86.1 | 86.2                           | 86.5 | 86.5 | 87.1 | 87.3 | 87.4 | 87.5 | 87.3 | 87.5 | 88.2 | 89.0 | 87.8 | 82.2 | 80.8 | 79.4 | 76.8 | 79.4 | 82.0 | 80.3 | 81.5 | 84.3            | 84.7          | 89.0          |
| 6-Feb                                     | 68.2                          | 68.9  | 68.0 | 68.8                           | 72.4 | 72.2 | 68.6 | 67.9 | 67.7 | 70.9 | 72.4 | 65.7 | 62.7 | 62.8 | 63.5 | 60.0 | 60.1 | 62.4 | 64.9 | 69.3 | 77.8 | 79.2 | 79.2 | 80.8            | 68.9          | 80.8          |
| 7-Feb                                     | 78.6                          | 80.3  | 83.5 | 85.3                           | 82.4 | 76.4 | 72.4 | 69.2 | 66.7 | 63.8 | 63.4 | 57.6 | 52.8 | 47.8 | 45.4 | 44.7 | 45.1 | 45.8 | 46.9 | 45.7 | 46.0 | 49.4 | 67.4 | 80.9            | 62.4          | 85.3          |
| 8-Feb                                     | 83.8                          | 80.9  | 81.6 | 79.5                           | 75.0 | 77.4 | 77.8 | 78.3 | 79.4 | 74.1 | 79.1 | 78.5 | 74.5 | 70.7 | 68.2 | 63.0 | 58.5 | 58.9 | 56.8 | 62.1 | 56.5 | 58.5 | 65.9 | 67.8            | 71.1          | 83.8          |
| 9-Feb                                     | 67.2                          | 67.5  | 68.6 | 69.5                           | 70.1 | 70.4 | 70.6 | 73.5 | 73.8 | 73.7 | 71.4 | 68.2 | 68.6 | 61.6 | 56.8 | 55.7 | 53.7 | 53.2 | 58.0 | 58.1 | 48.1 | 45.0 | 47.6 | 47.6            | 62.4          | 73.8          |
| 10-Feb                                    | 50.9                          | 51.8  | 60.6 | 72.1                           | 80.4 | 83.6 | 86.9 | 91.1 | 90.7 | 89.9 | 89.6 | 89.2 | 89.0 | 88.5 | 88.9 | 89.4 | DF   | DF   | DF   | DF   | 88.4 | 88.5 | 88.0 | 87.2            | 82.2          | 91.1          |
| 11-Feb                                    | 86.4                          | 85.5  | 85.6 | 86.9                           | 87.4 | 86.5 | 90.2 | 88.4 | 88.2 | 91.9 | 93.7 | 89.6 | 84.8 | 80.8 | 73.3 | 69.8 | 83.6 | 90.4 | 84.8 | 78.0 | 77.3 | 79.4 | 83.5 | 81.0            | 84.5          | 93.7          |
| 12-Feb                                    | 76.1                          | 78.3  | 80.3 | 68.4                           | 70.4 | 71.8 | 74.4 | 74.2 | 78.4 | 79.3 | 79.6 | 78.3 | 75.7 | 70.3 | 73.2 | 70.1 | 66.9 | 70.3 | DF   | DF   | DF   | DF   | DF   | 67.0            | 73.8          | 80.3          |
| 13-Feb                                    | 65.2                          | 63.5  | 65.3 | 67.0                           | 67.1 | 73.9 | 85.2 | 89.2 | 91.9 | 87.9 | 84.9 | 85.8 | 82.7 | 79.9 | 83.2 | 83.3 | 81.1 | 78.2 | 73.0 | 74.5 | 75.9 | 77.6 | 79.4 | 79.9            | 78.1          | 91.9          |
| 14-Feb                                    | 79.8                          | 79.9  | 79.9 | 80.6                           | 79.8 | 80.0 | 79.6 | 79.7 | 79.0 | 78.2 | 76.2 | 72.5 | 72.0 | 73.5 | 71.4 | 71.3 | 73.6 | 73.8 | 71.4 | 70.4 | 71.7 | 73.2 | 75.3 | 75.5            | 75.8          | 80.6          |
| 15-Feb                                    | 76.6                          | 76.6  | 77.4 | 76.5                           | 77.3 | 79.2 | 79.4 | 77.7 | 76.3 | 77.5 | 76.3 | 75.2 | 74.3 | 71.5 | 70.0 | DF   | DF   | 64.9 | 65.2 | 64.8 | 68.6 | 76.6 | 76.8 | 80.2            | 74.5          | 80.2          |
| 16-Feb                                    | 77.4                          | 78.2  | 79.1 | 77.8                           | 79.5 | 80.5 | 80.0 | 81.9 | 83.0 | 84.6 | 84.8 | 85.0 | 84.4 | 74.9 | 72.0 | 71.2 | 71.5 | 75.0 | DF   | DF   | 78.4 | 77.6 | 77.2 | 77.4            | 78.7          | 85.0          |
| 17-Feb                                    | 78.1                          | 77.6  | 77.5 | 78.3                           | 78.2 | 77.3 | 77.8 | 77.5 | 78.1 | 78.2 | 74.7 | 67.4 | 63.4 | DF   | 66.8 | 68.4 | 70.2 | 70.1 | 70.4 | 70.7 | 70.7 | 73.0 | 75.9 | 73.5            | 78.3          |               |
| 18-Feb                                    | 77.9                          | 78.2  | 78.0 | 76.9                           | 76.8 | 78.3 | 78.2 | 76.8 | 76.2 | 75.2 | 73.8 | 73.2 | 73.0 | 69.7 | 61.1 | 56.1 | 52.7 | 57.3 | 61.4 | 63.1 | 64.5 | 70.7 | 73.6 | 71.0            | 70.6          | 78.3          |
| 19-Feb                                    | 73.4                          | 75.5  | 76.3 | 76.2                           | 76.2 | 72.9 | 70.9 | 75.0 | 72.6 | 72.6 | 73.1 | 71.5 | DF   | DF   | DF   | DF   | DF   | 66.6 | 65.3 | 66.3 | 61.1 | 62.7 | 67.2 | 71.2            | 70.9          | 76.3          |
| 20-Feb                                    | 72.4                          | 73.5  | 73.5 | 72.9                           | 72.7 | 72.9 | 72.4 | 72.2 | 72.8 | 73.3 | 70.7 | 63.8 | 65.0 | 52.2 | 54.3 | 57.8 | 58.1 | 61.0 | 62.8 | 63.7 | 63.6 | 67.3 | 72.0 | 73.4            | 67.3          | 73.5          |
| 21-Feb                                    | 73.7                          | 71.9  | 72.4 | 71.4                           | 70.9 | 70.5 | 70.0 | 69.8 | 69.3 | 66.6 | 64.3 | 62.5 | 61.3 | 56.7 | 51.2 | 49.7 | 49.6 | 52.9 | 54.8 | 56.9 | 60.0 | 61.3 | 62.1 | 64.6            | 63.1          | 73.7          |
| 22-Feb                                    | 67.2                          | 70.3  | 72.4 | 72.6                           | 72.9 | 71.8 | 71.8 | 71.6 | 70.9 | DF   | 69.5 | 70.6 | 64.2 | 58.3 | 56.3 | 54.3 | 51.2 | 51.5 | 52.4 | 52.0 | 52.6 | 53.7 | 54.2 | 57.9            | 62.6          | 72.9          |
| 23-Feb                                    | 61.9                          | 68.1  | 72.6 | 75.0                           | 75.8 | 75.9 | 75.1 | 74.9 | 73.2 | DF   | DF   | DF   | 68.1 | 62.4 | 57.3 | 55.7 | 65.1 | 62.8 | 58.5 | DF   | DF   | DF   | 60.0 | 57.3            | 66.7          | 75.9          |
| 24-Feb                                    | 57.6                          | 52.9  | 51.9 | 52.2                           | 53.0 | 55.5 | 56.7 | 58.2 | 60.0 | 62.7 | 61.0 | 56.6 | 51.4 | 47.0 | 44.4 | 44.4 | 43.6 | 42.8 | 40.9 | 41.6 | 42.5 | 42.7 | 44.1 | 46.1            | 50.4          | 62.7          |
| 25-Feb                                    | 48.7                          | 52.2  | 54.6 | 58.4                           | 61.8 | 64.5 | 66.7 | 68.9 | 70.0 | 70.6 | 67.0 | 64.0 | 61.9 | 58.9 | 55.1 | 53.7 | 55.5 | 57.3 | 55.1 | 50.0 | 52.0 | 64.2 | 65.1 | 72.0            | 60.3          | 72.0          |
| 26-Feb                                    | 76.1                          | 77.3  | 78.9 | 74.1                           | 75.4 | 73.8 | 72.2 | 71.3 | 73.6 | 74.4 | DF   | DF   | 79.2 | 76.3 | 79.3 | 83.6 | 79.0 | DF   | DF   | DF   | DF   | DF   | DF   | DF              | --            | 83.6          |
| 27-Feb                                    | DF                            | DF  | DF   | DF                             | DF   | DF   | DF   | DF   | 83.6 | 81.5 | 79.1 | 78.4 | 77.6 | 76.9 | 75.3 | 77.1 | 77.3 | 78.6 | 80.1 | 81.2 | 81.3 | 81.7 | 82.2 | 83.3            | --            | 83.6          |
| 28-Feb                                    | 83.7                          | 83.4  | 83.2 | 82.4                           | 82.0 | 82.0 | 81.5 | 81.1 | 79.7 | 78.4 | 77.7 | 77.6 | 77.2 | 73.4 | DF   | DF   | 70.5 | 71.1 | 70.2 | 72.2 | 73.9 | 74.9 | 74.4 | 74.7            | 77.5          | 83.7          |
|   |                               |   |      |                                |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Diurnal Average |               |               |
|   |                               |   |      |                                |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Diurnal Maximum |               |               |
|   |                               |   |      |                                |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 77.5            |               |               |
|   |                               |   |      |                                |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 83.7            |               |               |

DF - DAS Failure



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Relative Humidity 163 m (RH163m) - %**  
**Lower Camp Met Tower - February 2023**





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Relative Humidity 163 m (RH163m) - %  
Lower Camp Met Tower - February 2023**

| <b>Concentration Ranges (%)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---------------------------------|------------------------|----------|---------------------|
| 0 - 20                          | 0                      | 0.00     | 0.00                |
| 20 - 40                         | 0                      | 0.00     | 0.00                |
| 40 - 60                         | 100                    | 15.95    | 15.95               |
| 60 - 80                         | 389                    | 62.04    | 77.99               |
| 80 - 100                        | 138                    | 22.01    | 100.00              |

Total Number of Valid Hours: 627

Total Number of Hours: 672



|  |   |                                |
|--|---|--------------------------------|
| Maximum Speed: 28 km/h on Feb 2 20:00              | Maximum Daily Speed Average: 16.1 km/h on Feb 24  | Hours in Service: 672          |
| Minimum Speed Value: 0 km/h on Feb 5 17:00         | Minimum Daily Speed Average: 0.8 km/h on Feb 15   | Hours of Data: 627             |
| Maximum Diurnal Speed Average: 1.8 km/h at hour 18 | Minimum Diurnal Speed Average: 0.4 km/h at hour 15  | Hours of Missing Data: 45      |
| Monthly Average Velocity: 0.4 km/h 301.4 deg       | Percentiles: P <sub>1</sub> = 0 P <sub>10</sub> = 2 Q <sub>1</sub> = 3 Median = 6 Q <sub>3</sub> = 10 P <sub>90</sub> = 17 P <sub>99</sub> = 25 | Percent Operational Time: 93.3 |

| Day    | Hourly Period Ending At (MST) |       |      |       |       |       |       |      |       |       |       |       |       |       |       |       |       |       |       |       |       |      |       |       | Daily Average | Daily Maximum |      |
|--------|-------------------------------|-------|------|-------|-------|-------|-------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|-------|-------|---------------|---------------|------|
|        | 1                             | 2     | 3    | 4     | 5     | 6     | 7     | 8    | 9     | 10    | 11    | 12    | 13    | 14    | 15    | 16    | 17    | 18    | 19    | 20    | 21    | 22   | 23    | 24    |               |               |      |
| 1-Feb  | NW3                           | N2    | NNW3 | WNW3  | NNW4  | NW4   | NNW5  | NNW3 | NNW4  | NNW3  | NNW5  | NW6   | NW9   | NNW9  | NW6   | NW4   | SW3   | NW1   | WNW3  | NW2   | NW1   | WSW0 | SE1   | SE2   | NW3.1         | NNW9          |      |
| 2-Feb  | SE4                           | SE7   | SE9  | SE8   | SSE7  | SE10  | SE9   | SE9  | SE8   | SE8   | SE8   | SE9   | SE6   | SSE7  | SE15  | SE25  | SE26  | SE22  | SE28  | SE28  | SE25  | SE23 | SE21  | SE21  | SE14.2        | SE28          |      |
| 3-Feb  | SE20                          | SE23  | SE20 | SE20  | SSE18 | SSE18 | SE17  | SE15 | SE6   | SE5   | SE4   | NNW5  | NNW4  | NNW7  | N8    | N9    | NNE8  | N8    | NNE6  | N6    | NNW5  | N5   | N3    | NNW5  | ESE4.6        | SE23          |      |
| 4-Feb  | N7                            | N3    | NNW4 | NNW6  | NNW5  | NNW5  | NNW5  | NNW6 | NNW8  | NNW8  | NNW8  | NNW8  | N9    | NNW8  | N6    | NNW3  | NW4   | NNW4  | NNW4  | NNW5  | NNW5  | NW6  | NW5   | NNW5  | NNW5.6        | N9            |      |
| 5-Feb  | NW4                           | NNW4  | NW3  | NNW3  | NNW2  | N5    | NNW4  | NW4  | NNW3  | NW3   | WSW2  | WSW1  | S2    | WSW2  | SSE3  | ENE1  | ESE0  | W1    | NW1   | SSE0  | N1    | WNW6 | WNW19 | NW13  | NW2.9         | WNW19         |      |
| 6-Feb  | WNW21                         | WNW17 | W16  | WSW10 | WSW8  | W6    | W11   | W8   | WNW6  | NNW3  | NW1   | SW2   | S3    | SE7   | SE6   | ESE1  | N0    | NNW6  | NNW6  | NNW4  | NNW6  | NNW4 | NW2   | NNW3  | WNW4.4        | WNW21         |      |
| 7-Feb  | NNW3                          | SE5   | SE9  | SSE7  | WSW13 | WNW22 | WNW17 | W13  | W14   | WSW18 | WSW11 | WSW15 | W17   | W23   | W24   | W23   | W19   | W14   | WSW12 | W10   | W9    | WNW6 | NNW14 | NNW12 | W11.1         | W24           |      |
| 8-Feb  | NNW8                          | NNW7  | NW3  | NW4   | NNW2  | NNW2  | NW1   | NNW2 | NNW2  | WSW1  | SE2   | SE5   | SE9   | SE9   | SSE8  | SSE6  | SE5   | S2    | SSW1  | NNW2  | SSE1  | SE8  | SE10  | SE15  | SE1.9         | SE15          |      |
| 9-Feb  | SE13                          | SE18  | SE17 | SE15  | SE18  | SE16  | SE18  | SE20 | SE18  | SE18  | SE17  | SE16  | SE13  | SE18  | SE18  | SE13  | SE7   | SE6   | SE3   | SE7   | SE9   | SE7  | SE6   | S2    | SE12.9        | SE20          |      |
| 10-Feb | SE1                           | NW2   | NNW6 | NNW5  | NNW5  | NNW9  | NNW9  | NNW6 | NNW6  | NNW6  | NNW7  | NNW7  | NNW9  | NNW9  | NNW8  | NW10  | DF    | DF    | DF    | DF    | NNW6  | NNW5 | NNW5  | NNW3  | NNW6.0        | NW10          |      |
| 11-Feb | NW3                           | NNW2  | N2   | E1    | SE3   | SE7   | SE9   | SE10 | SE8   | SE8   | SE7   | SE9   | SE11  | SE7   | SE8   | SSW13 | WSW20 | WSW10 | W11   | WNW17 | NW14  | W3   | WSW10 | W18   | SSW3.5        | WSW20         |      |
| 12-Feb | WSW18                         | W17   | W8   | WSW16 | WSW14 | WSW10 | W10   | W7   | NW5   | WSW13 | WSW9  | WSW4  | N6    | N5    | N4    | N11   | N9    | N6    | DF    | DF    | DF    | DF   | DF    | SE17  | W6.2          | WSW18         |      |
| 13-Feb | SSE24                         | SSE13 | ESE5 | NNW3  | W12   | WSW18 | W19   | W15  | NNW16 | N26   | N25   | N24   | N28   | N25   | NNW19 | NNW21 | N20   | N18   | N14   | N12   | N14   | N13  | N11   | N12   | NNW10.9       | N28           |      |
| 14-Feb | NNW9                          | N12   | NNW6 | NW4   | NNW4  | N6    | N7    | N5   | N4    | NNW4  | N4    | NNW6  | NNW5  | N6    | NNW5  | N8    | NNE8  | NNE7  | N5    | NNW4  | N4    | NW2  | WNW1  | NW3   | N5.2          | N12           |      |
| 15-Feb | NNW2                          | NW2   | W1   | SW1   | NW2   | WSW1  | WNW0  | ESE0 | SE1   | W2    | SE0   | SE1   | SE3   | ESE7  | ESE7  | DF    | DF    | SE3   | SW2   | SSE1  | E1    | SE1  | WSW1  | SE3   | SE0.8         | ESE7          |      |
| 16-Feb | SSE3                          | SE4   | SSE3 | SSE5  | SSE3  | W1    | NNW3  | NW2  | NW1   | SE3   | SE4   | SE5   | SE10  | SE3   | SE2   | ESE1  | NNW1  | NNW7  | DF    | DF    | NNW12 | N11  | NNW11 | N8    | NE1.1         | NNW12         |      |
| 17-Feb | NNE3                          | NNE4  | N6   | N4    | NW3   | NNW4  | NNE5  | NE5  | NNE7  | NNE5  | N7    | N8    | NNW9  | DF    | N12   | N13   | N12   | N10   | N11   | N11   | N10   | NNW6 | NNW2  | NNW5  | N6.8          | N13           |      |
| 18-Feb | NW4                           | NNW3  | NNW5 | WNW4  | NW4   | NW3   | WNW3  | WNW3 | NW2   | WNW3  | WNW2  | W1    | NW5   | NNW8  | WNW5  | WSW10 | W5    | WNW3  | NW1   | WNW2  | NW4   | NW2  | NW1   | WNW1  | WNW3.0        | WSW10         |      |
| 19-Feb | NNW1                          | NW2   | NW1  | S2    | NW3   | NNW3  | NNW4  | NW3  | NNW1  | NNW4  | W2    | NNW2  | DF    | DF    | DF    | DF    | DF    | DF    | NW5   | WNW3  | WNW2  | NNW4 | NNW6  | NNW5  | NNW6          | NNW2.8        | NNW6 |
| 20-Feb | NNW6                          | N5    | NNW4 | NW5   | N4    | N3    | ENE0  | SE2  | ESE3  | WNW1  | SSE3  | SSW3  | SW6   | SW6   | SW5   | N6    | N10   | NNW7  | NNW4  | NW3   | NW4   | NW4  | NNW5  | NNW5  | NNW2.4        | N10           |      |
| 21-Feb | NW5                           | NNW9  | N11  | N10   | N7    | NNW4  | NW4   | NNW4 | NW4   | NW4   | NNW5  | NNW7  | NW8   | NNW10 | N10   | N14   | NNW11 | N7    | N6    | NNW4  | NW3   | NNW2 | NW1   | SSE1  | NNW6.0        | N14           |      |
| 22-Feb | SSW3                          | SSW4  | SE5  | SE6   | SSE4  | SE7   | SSE7  | SE6  | SE8   | DF    | SE7   | SE5   | SW6   | WSW12 | WSW11 | WSW11 | WSW10 | WNW2  | W3    | NW2   | NNW1  | SSE1 | NNW2  | S0    | SSW3.3        | WSW12         |      |
| 23-Feb | W0                            | NNW3  | NW1  | NNW3  | NW3   | NNW4  | W1    | ESE1 | NNW1  | DF    | DF    | DF    | WSW7  | SW7   | SW4   | SSE4  | SE7   | SE6   | ESE3  | DF    | DF    | DF   | SSE3  | SE10  | S1.2          | SE10          |      |
| 24-Feb | SE13                          | SE12  | SE11 | SE16  | SE14  | SE13  | SE10  | SE16 | SE19  | ESE7  | ESE9  | SE16  | SSE19 | S24   | S25   | SSE22 | SSE25 | SSE22 | S26   | S23   | S21   | S19  | SSE15 | SSE10 | SSE16.1       | S26           |      |
| 25-Feb | SE9                           | SE15  | SE14 | SE16  | SE13  | ESE7  | ESE8  | ESE8 | SSE5  | SSW8  | WSW12 | WSW16 | WSW12 | SW10  | S4    | SSE3  | ESE6  | ESE4  | SE3   | SSE4  | ESE5  | ESE3 | ESE5  | ESE7  | SSE5.5        | WSW16         |      |
| 26-Feb | ESE7                          | ESE5  | ESE5 | ESE6  | WNW2  | NW3   | NNW3  | NNW3 | NW2   | NNW2  | DF    | DF    | E4    | E6    | ENE5  | ESE6  | ESE7  | DF    | DF    | DF    | DF    | DF   | DF    | DF    | ---           | ESE7          |      |
| 27-Feb | DF                            | DF    | DF   | DF    | DF    | DF    | DF    | DF   | NNW12 | NNW15 | N14   | N14   | NNW14 | N14   | N13   | N11   | NNE15 | N13   | N11   | N10   | N7    | NNW6 | NW5   | NNW3  | ---           | NNE15         |      |
| 28-Feb | NW2                           | NW2   | NW3  | WNW3  | NW3   | NW2   | WNW2  | NNW2 | NW1   | W1    | WSW3  | WSW10 | WSW11 | WSW11 | DF    | DF    | W5    | WNW3  | WSW1  | SSW1  | SSW1  | SSW3 | S3    | SSE4  | WSW2.6        | WSW11         |      |

|   |                 |
|---|-----------------|
| S0.6 SSE0.9 SE1.1 SSE1.4 SW1.3WSW1.1WSW0.9 S0.8NNE0.6NNW1.4 NW0.7WNW0.9WNW1.6 W1.5WNW0.4 NW1.3NNW0.9 N1.8 NW0.8 NW0.9NNW1.6 N0.7 NW1.1 ENE0.4 | Diurnal Average |
| SSE24 SE23 SE20 SE20 SE18WNW22 W19 SE20 SE19 N26 N25 N24 N28 N25 S25 SE25 SE26 SE22 SE28 SE28 SE25 SE23 SE21 SE21                             | Diurnal Maximum |

DF - DAS Failure  
 All monthly, daily, and diurnal averages have been calculated using vector methods



**Wood Buffalo Environmental Association**  
**Summary of Hour Standard Deviations**

**Wind Speed 20 m (WS20m) - km/h**  
**Lower Camp Met Tower - February 2023**

|  |                                |
|--|--------------------------------|
| Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0  | Hours in Service: 672          |
| Maximum Value: 9 km/h on Feb 13 13:00  | Hours of Data: 627             |
| Minimum Value: 0 km/h on Feb 19 01:00  | Hours of Missing Data: 45      |
| Percentiles: P <sub>1</sub> = 1 P <sub>10</sub> = 1 Q <sub>1</sub> = 1 Median = 2 Q <sub>3</sub> = 3 P <sub>90</sub> = 5 P <sub>99</sub> = 8 | Hours of Calibration: 0        |
|  | Percent Operational Time: 93.3 |

| Day    | Hourly Period Ending At (MST) |    |    |    |    |    |    |    |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    | Daily Maximum |   |
|--------|-------------------------------|----|----|----|----|----|----|----|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|---------------|---|
|        | 1                             | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |               |   |
| 1-Feb  | 1                             | 1  | 2  | 1  | 1  | 1  | 2  | 2  | 1 | 1  | 2  | 3  | 3  | 3  | 3  | 2  | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 3             |   |
| 2-Feb  | 1                             | 2  | 1  | 2  | 2  | 2  | 2  | 2  | 1 | 3  | 2  | 2  | 2  | 3  | 6  | 8  | 8  | 7  | 7  | 8  | 7  | 7  | 6  | 6  | 8             |   |
| 3-Feb  | 5                             | 6  | 5  | 5  | 4  | 4  | 3  | 4  | 3 | 2  | 2  | 3  | 2  | 3  | 3  | 3  | 3  | 2  | 2  | 2  | 2  | 1  | 1  | 3  | 6             |   |
| 4-Feb  | 2                             | 1  | 1  | 2  | 2  | 2  | 2  | 2  | 4 | 2  | 3  | 3  | 3  | 3  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 4             |   |
| 5-Feb  | 1                             | 2  | 1  | 1  | 1  | 2  | 2  | 2  | 2 | 1  | 2  | 1  | 1  | 1  | 2  | 3  | 1  | 1  | 2  | 2  | 2  | 4  | 7  | 6  | 7             |   |
| 6-Feb  | 7                             | 6  | 7  | 3  | 2  | 3  | 3  | 4  | 4 | 2  | 1  | 1  | 1  | 2  | 2  | 1  | 2  | 3  | 3  | 2  | 2  | 2  | 1  | 1  | 7             |   |
| 7-Feb  | 1                             | 2  | 3  | 6  | 5  | 8  | 6  | 5  | 4 | 4  | 3  | 4  | 6  | 7  | 7  | 7  | 6  | 4  | 3  | 3  | 3  | 2  | 6  | 4  | 8             |   |
| 8-Feb  | 3                             | 3  | 1  | 2  | 1  | 1  | 1  | 1  | 1 | 1  | 2  | 2  | 3  | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 2  | 3  | 4  | 4             |   |
| 9-Feb  | 5                             | 2  | 2  | 2  | 2  | 4  | 4  | 2  | 2 | 1  | 2  | 2  | 3  | 4  | 3  | 3  | 2  | 2  | 2  | 3  | 2  | 2  | 2  | 1  | 5             |   |
| 10-Feb | 1                             | 1  | 3  | 2  | 3  | 4  | 3  | 2  | 2 | 2  | 2  | 2  | 3  | 3  | 3  | 3  | DF | DF | DF | DF | 2  | 2  | 1  | 1  | 4             |   |
| 11-Feb | 1                             | 1  | 1  | 1  | 2  | 2  | 3  | 2  | 3 | 2  | 2  | 2  | 2  | 3  | 3  | 4  | 5  | 3  | 4  | 6  | 5  | 2  | 6  | 5  | 6             |   |
| 12-Feb | 5                             | 6  | 5  | 4  | 4  | 4  | 4  | 4  | 3 | 3  | 4  | 2  | 3  | 2  | 3  | 2  | 4  | 3  | DF | DF | DF | DF | DF | 6  | 6             |   |
| 13-Feb | 6                             | 5  | 4  | 2  | 6  | 6  | 6  | 5  | 6 | 8  | 8  | 8  | 9  | 8  | 7  | 7  | 7  | 6  | 5  | 4  | 5  | 5  | 4  | 5  | 9             |   |
| 14-Feb | 5                             | 5  | 2  | 2  | 2  | 2  | 2  | 2  | 2 | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 3  | 3  | 2  | 1  | 2  | 1  | 1  | 1  | 5             |   |
| 15-Feb | 1                             | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1 | 1  | 1  | 1  | 2  | 2  | 2  | 2  | DF | DF | 2  | 1  | 1  | 1  | 2  | 1  | 2             | 2 |
| 16-Feb | 2                             | 2  | 1  | 1  | 1  | 1  | 2  | 1  | 1 | 2  | 1  | 2  | 2  | 2  | 2  | 1  | 1  | 4  | DF | DF | 5  | 4  | 4  | 3  | 5             |   |
| 17-Feb | 1                             | 2  | 2  | 2  | 1  | 2  | 2  | 2  | 2 | 2  | 2  | 3  | 3  | DF | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 1  | 2  | 3             |   |
| 18-Feb | 1                             | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 1 | 1  | 1  | 2  | 3  | 3  | 3  | 3  | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 0  | 3             |   |
| 19-Feb | 0                             | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1 | 2  | 1  | 1  | DF | DF | DF | DF | DF | 2  | 1  | 1  | 1  | 2  | 2  | 3  | 3             |   |
| 20-Feb | 2                             | 1  | 1  | 2  | 2  | 2  | 1  | 1  | 1 | 1  | 1  | 1  | 2  | 1  | 1  | 4  | 2  | 2  | 1  | 1  | 2  | 1  | 2  | 2  | 4             |   |
| 21-Feb | 2                             | 3  | 3  | 2  | 2  | 2  | 2  | 2  | 1 | 2  | 2  | 3  | 3  | 4  | 4  | 5  | 4  | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 5             |   |
| 22-Feb | 1                             | 1  | 2  | 2  | 2  | 2  | 1  | 2  | 2 | DF | 1  | 3  | 3  | 2  | 2  | 2  | 3  | 2  | 2  | 1  | 1  | 1  | 1  | 1  | 3             |   |
| 23-Feb | 0                             | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 1 | DF | DF | DF | 2  | 1  | 3  | 3  | 2  | 1  | 2  | DF | DF | DF | 1  | 3  | 3             |   |
| 24-Feb | 2                             | 2  | 4  | 3  | 4  | 3  | 3  | 4  | 5 | 4  | 4  | 4  | 5  | 4  | 4  | 4  | 4  | 3  | 5  | 4  | 3  | 3  | 3  | 3  | 5             |   |
| 25-Feb | 3                             | 3  | 3  | 2  | 2  | 2  | 2  | 3  | 2 | 2  | 4  | 5  | 3  | 3  | 2  | 2  | 3  | 2  | 2  | 3  | 2  | 1  | 2  | 2  | 5             |   |
| 26-Feb | 2                             | 2  | 2  | 2  | 1  | 1  | 2  | 2  | 1 | 1  | DF | DF | 3  | 3  | 3  | 3  | 3  | DF | DF | DF | DF | DF | DF | DF | 3             |   |
| 27-Feb | DF                            | DF | DF | DF | DF | DF | DF | DF | 4 | 5  | 5  | 4  | 5  | 4  | 4  | 4  | 5  | 5  | 3  | 3  | 2  | 2  | 2  | 2  | 5             |   |
| 28-Feb | 1                             | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1 | 1  | 2  | 2  | 2  | 2  | DF | DF | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 2  | 2             |   |
|        | 7                             | 6  | 7  | 6  | 6  | 8  | 6  | 5  | 6 | 8  | 8  | 8  | 9  | 8  | 7  | 8  | 8  | 7  | 7  | 8  | 7  | 7  | 7  | 6  |               |   |

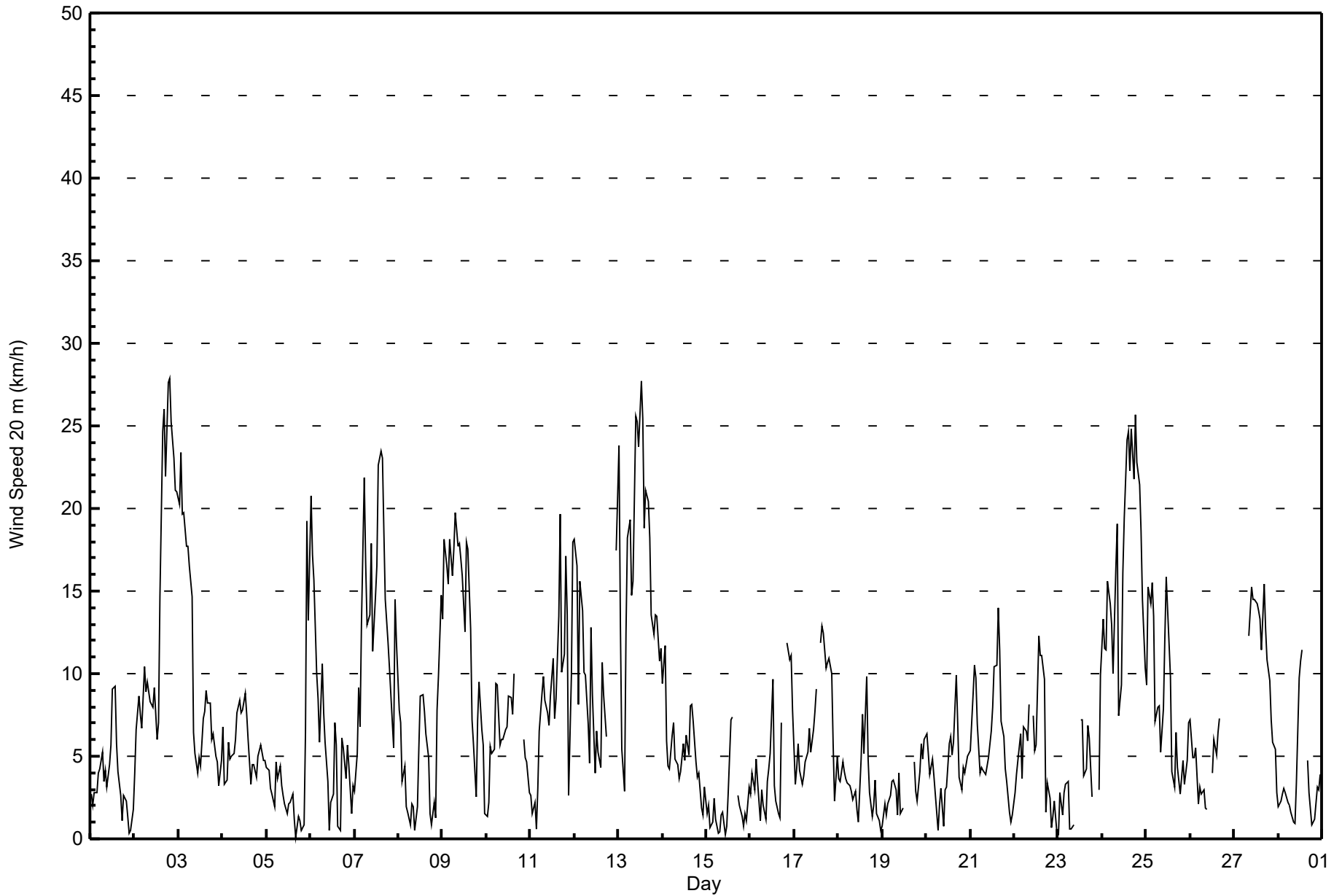
Diurnal Maximum

DF - DAS Failure



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Wind Speed 20 m (WS20m) - km/h**  
**Lower Camp Met Tower - February 2023**





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Wind Speed 20 m (WS20m) - km/h  
Lower Camp Met Tower - February 2023**

| <b>Wind Speed Ranges (km/h)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---------------------------------|------------------------|----------|---------------------|
| 0 - 5                           | 305                    | 48.64    | 48.64               |
| 6 - 11                          | 192                    | 30.62    | 79.27               |
| 12 - 19                         | 94                     | 14.99    | 94.26               |
| 20 - 28                         | 36                     | 5.74     | 100.00              |
| 29 - 38                         | 0                      | 0.00     | 100.00              |
| > 38                            | 0                      | 0.00     | 100.00              |

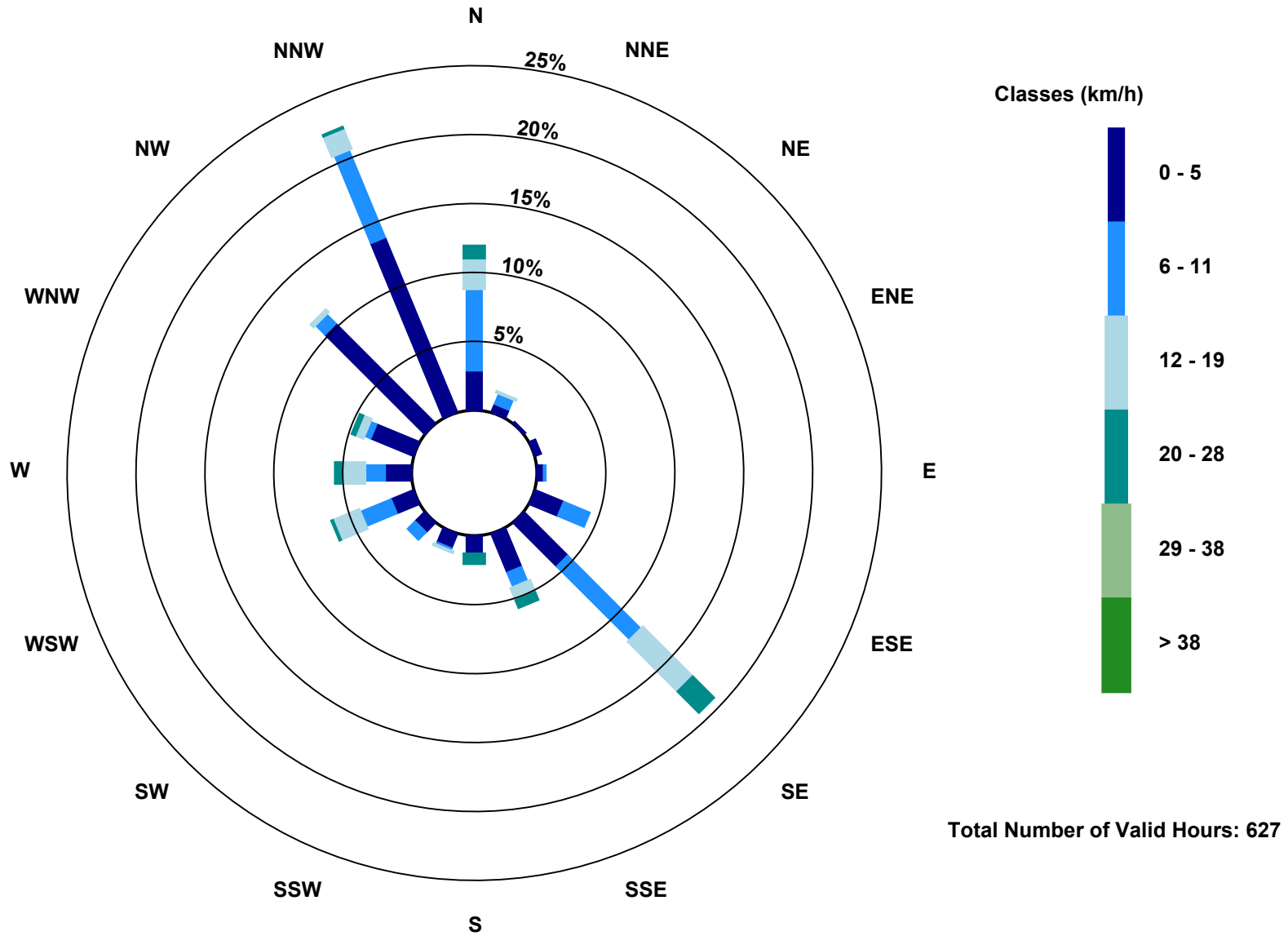
Total Number of Valid Hours: 627

Total Number of Hours: 672



Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Wind Speed 20 m (WS20m) - km/h  
Lower Camp Met Tower







|  |   |                                |
|--|---|--------------------------------|
| Maximum Speed: 43 km/h on Feb 2 20:00              | Maximum Daily Speed Average: 20.7 km/h on Feb 2   | Hours in Service: 672          |
| Minimum Speed Value: 0 km/h on Feb 16 07:00        | Minimum Daily Speed Average: 2.3 km/h on Feb 16   | Hours of Data: 625             |
| Maximum Diurnal Speed Average: 2.9 km/h at hour 18 | Minimum Diurnal Speed Average: 0.6 km/h at hour 8   | Hours of Missing Data: 47      |
| Monthly Average Velocity: 0.8 km/h 334.4 deg       | Percentiles: P <sub>1</sub> = 1 P <sub>10</sub> = 2 Q <sub>1</sub> = 5 Median = 8 Q <sub>3</sub> = 14 P <sub>90</sub> = 21 P <sub>99</sub> = 38 | Percent Operational Time: 93.0 |

| Day  | Hourly Period Ending At (MST) |       |          |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |      |          |       |                 | Daily Average | Daily Maximum |
|--|-------------------------------|-------|----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|----------|-------|-----------------|---------------|---------------|
|  | 1                             | 2     | 3        | 4     | 5     | 6     | 7     | 8     | 9     | 10    | 11    | 12    | 13    | 14    | 15    | 16    | 17    | 18    | 19    | 20    | 21   | 22       | 23    | 24              |               |               |
| 1-Feb  | NNW6                          | NW4   | NNW4     | NNW6  | NNW4  | NNW8  | NNW13 | NNW12 | NNW12 | NNW10 | NNW10 | NW8   | NW12  | NNW12 | NW8   | NNW7  | SW3   | N1    | NNW4  | NW2   | W1   | SSW1     | SSE5  | SE7             | NNW5.4        | NNW13         |
| 2-Feb  | SE11                          | SE11  | SE10     | SE10  | SE8   | SE12  | SE11  | SE10  | SE10  | SE10  | ESE8  | ESE9  | SE6   | SE12  | SE25  | SE39  | SE39  | SE35  | SE42  | SE43  | SE39 | SE36     | SE33  | SE31            | SE20.7        | SE43          |
| 3-Feb  | SE29                          | SE33  | SE28     | SE27  | SSE21 | SSE21 | SE20  | SE17  | SE8   | SE8   | SE4   | NNW6  | NNW6  | NNW10 | N11   | N14   | NNE12 | N12   | NNE9  | N9    | N8   | N7       | N5    | NNW7            | ESE6.2        | SE33          |
| 4-Feb  | N10                           | N5    | NNW6     | NNW9  | NNW8  | NNW9  | NNW8  | NNW10 | NNW12 | N12   | NNW11 | N10   | N11   | N10   | N8    | NNW4  | NW5   | NNW6  | NNW6  | NNW8  | NNW8 | NNW9     | NW7   | NW7             | NNW8.1        | N12           |
| 5-Feb  | NNW6                          | NNW6  | NW4      | NNW4  | NNW2  | NNW6  | NNW5  | NW6   | NNW4  | NW3   | WSW3  | WSW2  | SSE3  | WSW2  | SE4   | ESE1  | SSW1  | SSW2  | WSW1  | SW3   | SE3  | W15WNW28 | NW18  | WNW3.9          | WNW28         |               |
| 6-Feb  | WNW29                         | W24   | W22WSW17 | WSW16 | W12   | W19   | W17   | W13   | NNW8  | NNW2  | W2    | SSE2  | SE8   | SE7   | E2    | ESE2  | NNW7  | NNW8  | NNW4  | NNW8  | NNW6 | NNW4     | NW4   | WNW7.2          | WNW29         |               |
| 7-Feb  | NW3                           | SE7   | SE13     | SSW9  | WSW22 | WNW31 | WNW24 | W18   | WSW21 | WSW26 | WSW17 | WSW20 | W23   | W32   | W34   | W33   | W26   | W22   | WSW21 | WSW18 | W13  | WNW9     | NNW21 | NNW17           | W16.8         | W34           |
| 8-Feb  | NNW14                         | NNW12 | NNW7     | NW10  | WNW3  | W2    | N1    | NW2   | WNW2  | SSW1  | ESE6  | SE8   | SE10  | SE10  | SE9   | SE8   | SE8   | SSE5  | SE5   | SSE1  | SE8  | SE14     | ESE13 | SE18            | ESE3.2        | SE18          |
| 9-Feb  | SE19                          | SE19  | SE19     | SE18  | SE21  | SE18  | SE19  | SE20  | SE18  | SE18  | SE18  | SE18  | SE16  | SE22  | SE21  | SE17  | SE10  | SE6   | ESE1  | SSE3  | SE9  | SE8      | SE7   | SE5             | SE14.4        | SE22          |
| 10-Feb   | SE4                           | NNW1  | NNW10    | NNW9  | NNW11 | NNW14 | NNW14 | NNW9  | NNW10 | NNW10 | NNW10 | NNW11 | NNW12 | NNW12 | NNW11 | NW14  | DF    | DF    | DF    | DF    | NNW9 | NNW7     | NNW7  | N4              | NNW9.0        | NNW14         |
| 11-Feb   | NNW4                          | NNW2  | N3       | E0    | SE6   | SE10  | SE12  | SE13  | SE10  | SSE7  | S7    | SE11  | SE14  | SE11  | SSE12 | SW18  | WSW25 | WSW16 | W17   | WNW25 | NW19 | WNW4     | WSW17 | WSW28           | SW5.4         | WSW28         |
| 12-Feb   | WSW27                         | W25   | W12      | WSW25 | WSW21 | WSW17 | WSW16 | WSW13 | W8    | WSW16 | W9    | W4    | NNW5  | NNW5  | NW4   | NNW10 | NNW7  | NNW6  | DF    | DF    | DF   | DF       | DF    | SE27            | W9.6          | WSW27         |
| 13-Feb   | SSE30                         | SSE20 | SE8      | WSW4  | WSW22 | WSW26 | WSW29 | W22   | N23   | UO    | UO    | N38   | N41   | N39   | NNW28 | NNW30 | N31   | N29   | N22   | N18   | N20  | N21      | N18   | N18             | NNW14.3       | N41           |
| 14-Feb   | N15                           | N18   | NNW12    | NNW9  | NNW8  | N10   | N11   | N7    | N6    | N5    | N5    | N7    | NNW6  | N7    | N6    | N11   | NNE12 | NNE10 | N7    | NNW6  | NNW7 | NNW5     | WNW2  | NNW4            | N7.9          | N18           |
| 15-Feb   | WNW2                          | NW2   | S1       | SE5   | WSW2  | SW2   | SSE2  | ESE2  | SE6   | SSW2  | SE1   | SE1   | ESE4  | ESE10 | ESE9  | DF    | DF    | ESE5  | ESE3  | SE5   | ESE6 | SE4      | SE7   | SE3.3           | ESE10         |               |
| 16-Feb   | SE6                           | SE7   | SE8      | SE7   | SE6   | SSE3  | WNW0  | N0    | SSE1  | SE7   | SE5   | SE6   | SE10  | ESE5  | ESE3  | E1    | NNW2  | NNW11 | DF    | DF    | N18  | N16      | N16   | N12             | ENE2.3        | N18           |
| 17-Feb   | NNE4                          | NNE7  | N8       | N6    | NNW4  | NNW6  | NNE7  | NE8   | NNE10 | NNE7  | N9    | N10   | NNW11 | DF    | N16   | N18   | N18   | N17   | N16   | N17   | N15  | NNW10    | NNW6  | NNW10           | N10.1         | N18           |
| 18-Feb   | NNW8                          | NNW7  | NNW4     | NNW6  | NNW7  | NNW7  | NNW4  | N3    | NNW4  | NW5   | WNW3  | NW2   | NW6   | NNW10 | NW6   | WSW10 | W7    | W4    | NNW3  | NW3   | NNW3 | NW2      | WSW1  | SSE2            | NW4.1         | WSW10         |
| 19-Feb   | SSE5                          | SE7   | SSE7     | SSE7  | SSE4  | NW3   | NNW6  | NNW7  | NNW3  | NNW6  | NW4   | NW3   | DF    | DF    | DF    | DF    | DF    | NNW8  | NW5   | NW3   | NNW9 | NNW10    | NNW10 | NNW12           | NNW3.1        | NNW12         |
| 20-Feb   | NNW10                         | N8    | N6       | NW7   | NNW7  | N4    | NW1   | E2    | SE6   | ENE1  | SE4   | SSW3  | SW5   | SW6   | WSW3  | N9    | N15   | N11   | NNW6  | NW5   | NNW7 | N10      | NNW12 | NNW16           | NNW4.8        | NNW16         |
| 21-Feb   | NNW12                         | NNW15 | N16      | N14   | N10   | NNW8  | NW8   | NNW8  | NW9   | NW7   | NNW7  | NNW8  | NW10  | NNW14 | N14   | N21   | NNW17 | N11   | N10   | N9    | NNW8 | W3       | WSW3  | S4              | NNW9.4        | N21           |
| 22-Feb   | SE7                           | SE6   | SE11     | SE10  | SE8   | SE11  | SE10  | SE10  | SE10  | DF    | SE5   | SE4   | WSW6  | WSW13 | WSW12 | WSW12 | WSW13 | W5    | WNW5  | W4    | W1   | S1       | W1    | S1              | S4.0          | WSW13         |
| 23-Feb   | SW2                           | NNW4  | NNW3     | NW3   | NW4   | SE2   | SE9   | SE8   | DF    | DF    | DF    | WSW6  | WSW6  | SW3   | SE4   | SE9   | SE8   | SE7   | DF    | DF    | DF   | SE6      | SE13  | SSE2.6          | SE13          |               |
| 24-Feb   | SE15                          | SE12  | SE15     | SE18  | SE20  | SE20  | SE15  | SE20  | SE22  | ESE12 | SE17  | SE22  | SSE21 | S25   | S27   | SSE24 | SSE27 | SSE25 | S29   | S26   | S23  | S21      | SSE17 | S12             | SSE18.7       | S29           |
| 25-Feb   | SSE10                         | SE17  | SE16     | SE15  | SE15  | SE10  | SE9   | SE8   | SSW6  | SW9   | WSW15 | WSW19 | WSW14 | SW11  | S4    | SE4   | ESE9  | ESE8  | SSE6  | S7    | SE8  | SE8      | SE9   | ESE11           | SSE7.1        | WSW19         |
| 26-Feb   | ESE12                         | ESE10 | ESE10    | ESE10 | SE2   | N1    | NNW6  | NNW6  | NW6   | NW5   | DF    | DF    | E5    | E9    | ENE7  | ESE9  | ESE11 | DF    | DF    | DF    | DF   | DF       | DF    | DF              | ---           | ESE12         |
| 27-Feb   | DF                            | DF    | DF       | DF    | DF    | DF    | DF    | DF    | NNW18 | N22   | N21   | N21   | N20   | N18   | N20   | N18   | NNE22 | N22   | N18   | N15   | N12  | N10      | NNW10 | NNW7            | ---           | NNE22         |
| 28-Feb   | NNW5                          | NNW5  | NW4      | NW3   | NNW5  | WNW3  | NNW2  | NW2   | WNW1  | NW2   | W3    | WSW8  | WSW10 | WSW11 | DF    | DF    | W5    | WNW4  | NW2   | WSW1  | WSW2 | SSW3     | SSE6  | SE9             | W2.4          | WSW11         |
| SE0.7 SE1.2 ESE1.7 SSE1.3 SW2.2WSW1.5 W1.4WSW0.6 N1.3 NW1.8 NW0.7NNW2.0 NW2.3 NW1.8 N0.9NNW2.1 N1.5 N2.9 N1.4 NW1.7 N2.7NNE1.8NNW1.7 NE1.0 |                               |       |          |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |      |          |       | Diurnal Average |               |               |
| SSE30 SE33 SE28 SE27 WSW22WNW31WSW29 W22 N23 WSW26 N21 N38 N41 N39 W34 SE39 SE39 SE35 SE42 SE43 SE39 SE36 SE33 SE31                        |                               |       |          |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |      |          |       | Diurnal Maximum |               |               |

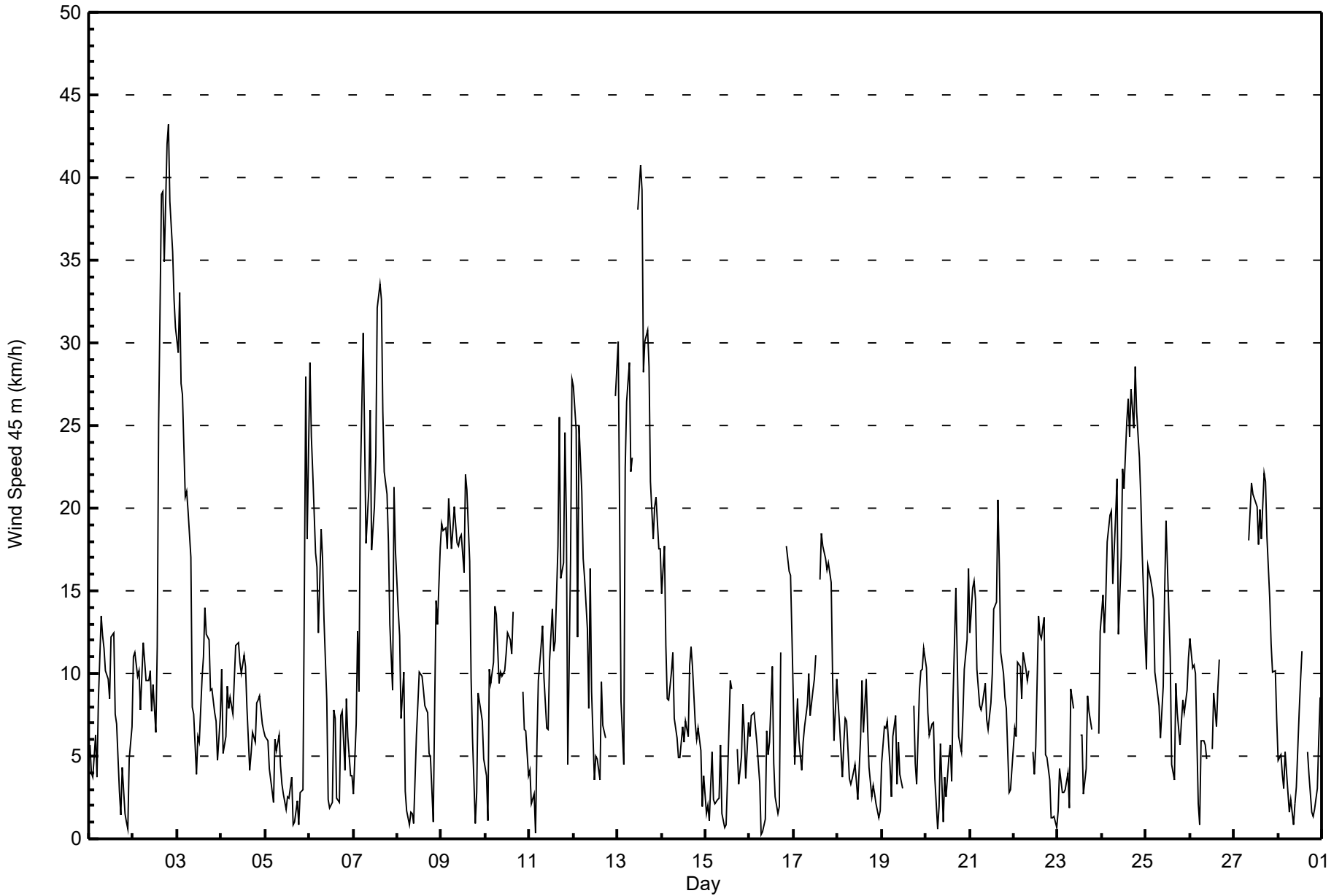
DF - DAS Failure UO - Unstable Operation  
 All monthly, daily, and diurnal averages have been calculated using vector methods



**Wood Buffalo Environmental Association**  
**Summary of Hour Standard Deviations**

**Wind Speed 45 m (WS45m) - km/h**  
**Lower Camp Met Tower - February 2023**

| Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0<br>Maximum Value: 9 km/h on Feb 13 14:00   |                               |    |    |    |    |    |    |    |   |    | Hours in Service: 672<br>Hours of Data: 625<br>Hours of Missing Data: 47<br>Hours of Calibration: 0<br>Percent Operational Time: 93.0 |    |    |    |    |    |    |    |    |    |    |                         |    |    |               |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|--|-------------------------------|----|----|----|----|----|----|----|---|----|---|----|----|----|----|----|----|----|----|----|----|-------------------------|----|----|---------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Minimum Value: 0 km/h on Feb 18 20:00  |                               |    |    |    |    |    |    |    |   |    |   |    |    |    |    |    |    |    |    |    |    |                         |    |    |               |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Percentiles: P <sub>1</sub> = 1 P <sub>10</sub> = 1 Q <sub>1</sub> = 1 Median = 2 Q <sub>3</sub> = 3 P <sub>90</sub> = 5 P <sub>99</sub> = 7 |                               |    |    |    |    |    |    |    |   |    |   |    |    |    |    |    |    |    |    |    |    |                         |    |    |               |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Day  | Hourly Period Ending At (MST) |    |    |    |    |    |    |    |   |    |   |    |    |    |    |    |    |    |    |    |    |                         |    |    | Daily Maximum |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|  | 1                             | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9 | 10 | 11  | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22                      | 23 | 24 |               |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 1-Feb  | 2                             | 1  | 3  | 2  | 1  | 2  | 1  | 2  | 1 | 1  | 2   | 4  | 3  | 3  | 3  | 2  | 2  | 1  | 1  | 1  | 1  | 1                       | 1  | 1  | 4             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 2-Feb  | 2                             | 2  | 2  | 3  | 1  | 2  | 3  | 1  | 2 | 2  | 2   | 2  | 1  | 4  | 6  | 7  | 7  | 5  | 5  | 6  | 6  | 5                       | 5  | 5  | 7             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 3-Feb  | 4                             | 4  | 5  | 5  | 4  | 3  | 2  | 3  | 3 | 3  | 2   | 3  | 3  | 2  | 3  | 2  | 2  | 3  | 3  | 2  | 3  | 1                       | 1  | 5  | 5             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 4-Feb  | 3                             | 1  | 2  | 2  | 2  | 2  | 2  | 2  | 3 | 2  | 3   | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2                       | 2  | 1  | 3             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 5-Feb  | 1                             | 2  | 1  | 1  | 1  | 2  | 1  | 2  | 2 | 2  | 2   | 1  | 1  | 2  | 3  | 3  | 1  | 2  | 1  | 2  | 2  | 6                       | 7  | 7  | 7             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 6-Feb  | 8                             | 6  | 8  | 4  | 2  | 3  | 3  | 5  | 6 | 2  | 1   | 1  | 2  | 2  | 3  | 1  | 1  | 4  | 4  | 3  | 2  | 3                       | 1  | 1  | 8             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 7-Feb  | 2                             | 4  | 1  | 7  | 6  | 8  | 6  | 5  | 3 | 3  | 3   | 3  | 7  | 7  | 7  | 7  | 6  | 4  | 2  | 3  | 3  | 2                       | 6  | 4  | 8             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 8-Feb  | 4                             | 4  | 1  | 2  | 2  | 1  | 1  | 1  | 1 | 1  | 2   | 2  | 3  | 2  | 1  | 1  | 2  | 2  | 2  | 1  | 3  | 2                       | 2  | 2  | 4             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 9-Feb  | 2                             | 2  | 2  | 2  | 1  | 3  | 2  | 2  | 2 | 1  | 1   | 2  | 2  | 4  | 2  | 2  | 4  | 2  | 2  | 1  | 2  | 1                       | 2  | 1  | 4             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 10-Feb   | 1                             | 1  | 3  | 1  | 2  | 4  | 3  | 3  | 2 | 3  | 2   | 2  | 3  | 2  | 3  | 3  | DF | DF | DF | DF | 2  | 2                       | 2  | 2  | 4             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 11-Feb   | 1                             | 1  | 1  | 1  | 2  | 2  | 2  | 1  | 3 | 2  | 2   | 2  | 2  | 2  | 2  | 4  | 5  | 3  | 5  | 6  | 5  | 4                       | 8  | 4  | 8             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 12-Feb   | 4                             | 6  | 7  | 3  | 3  | 4  | 4  | 5  | 4 | 3  | 5   | 2  | 1  | 2  | 2  | 1  | 4  | 2  | DF | DF | DF | DF                      | DF | 5  | 7             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 13-Feb   | 4                             | 4  | 4  | 4  | 6  | 6  | 7  | 5  | 6 | UO | UO  | 7  | 8  | 9  | 6  | 7  | 6  | 6  | 5  | 3  | 4  | 5                       | 4  | 4  | 9             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 14-Feb   | 5                             | 5  | 2  | 2  | 2  | 2  | 2  | 2  | 2 | 2  | 2   | 2  | 1  | 2  | 2  | 2  | 2  | 3  | 2  | 1  | 1  | 2                       | 1  | 1  | 5             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 15-Feb   | 1                             | 1  | 1  | 3  | 1  | 1  | 1  | 2  | 1 | 1  | 1   | 2  | 1  | 2  | 1  | 2  | DF | DF | 2  | 1  | 2  | 1                       | 1  | 2  | 3             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 16-Feb   | 1                             | 3  | 2  | 1  | 1  | 1  | 1  | 1  | 1 | 2  | 2   | 2  | 2  | 2  | 2  | 1  | 2  | 6  | DF | DF | 5  | 5                       | 4  | 3  | 6             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 17-Feb   | 2                             | 1  | 2  | 2  | 1  | 1  | 2  | 2  | 2 | 3  | 2   | 3  | 3  | DF | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3                       | 3  | 1  | 3             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 18-Feb   | 2                             | 2  | 3  | 1  | 1  | 1  | 1  | 2  | 1 | 1  | 2   | 2  | 2  | 2  | 3  | 1  | 2  | 2  | 1  | 0  | 1  | 1                       | 1  | 1  | 3             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 19-Feb   | 2                             | 1  | 1  | 1  | 2  | 2  | 1  | 1  | 2 | 3  | 2   | 1  | DF | DF | DF | DF | DF | 2  | 1  | 1  | 2  | 3                       | 3  | 3  | 3             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 20-Feb   | 2                             | 1  | 2  | 2  | 3  | 1  | 1  | 1  | 1 | 1  | 1   | 1  | 2  | 2  | 1  | 5  | 2  | 3  | 1  | 1  | 2  | 1                       | 3  | 2  | 5             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 21-Feb   | 3                             | 3  | 3  | 2  | 2  | 2  | 2  | 2  | 2 | 2  | 2   | 3  | 3  | 4  | 4  | 5  | 3  | 3  | 2  | 1  | 2  | 2                       | 2  | 1  | 5             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 22-Feb   | 1                             | 2  | 1  | 1  | 1  | 1  | 2  | 2  | 3 | DF | 1   | 2  | 2  | 2  | 1  | 1  | 2  | 3  | 1  | 1  | 1  | 1                       | 1  | 1  | 3             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 23-Feb   | 1                             | 2  | 1  | 1  | 1  | 1  | 1  | 2  | 2 | DF | DF  | DF | 2  | 1  | 2  | 3  | 1  | 1  | 2  | DF | DF | DF                      | 1  | 3  | 3             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 24-Feb   | 2                             | 2  | 2  | 2  | 2  | 1  | 2  | 3  | 2 | 4  | 3   | 3  | 5  | 4  | 4  | 4  | 5  | 4  | 6  | 5  | 3  | 3                       | 4  | 3  | 6             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 25-Feb   | 3                             | 2  | 2  | 2  | 1  | 2  | 2  | 4  | 3 | 3  | 3   | 5  | 3  | 3  | 2  | 2  | 5  | 3  | 3  | 4  | 2  | 1                       | 1  | 1  | 5             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 26-Feb   | 1                             | 1  | 1  | 3  | 2  | 1  | 2  | 2  | 3 | 2  | DF  | DF | 4  | 3  | 3  | 4  | 4  | DF | DF | DF | DF | DF                      | DF | DF | 4             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 27-Feb   | DF                            | DF | DF | DF | DF | DF | DF | DF | 4 | 4  | 4   | 4  | 4  | 4  | 3  | 3  | 3  | 4  | 3  | 2  | 2  | 1                       | 2  | 2  | 4             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 28-Feb   | 1                             | 1  | 1  | 1  | 2  | 2  | 1  | 1  | 1 | 1  | 2   | 2  | 2  | 1  | DF | DF | 1  | 2  | 1  | 1  | 1  | 1                       | 2  | 2  | 2             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Diurnal Maximum  |                               |    |    |    |    |    |    |    |   |    |   |    |    |    |    |    |    |    |    |    |    |                         |    | 8  | 6             | 8 | 7 | 6 | 8 | 7 | 5 | 6 | 4 | 5 | 7 | 8 | 9 | 7 | 7 | 7 | 6 | 6 | 6 | 6 | 6 | 8 | 7 |
| DF - DAS Failure   |                               |    |    |    |    |    |    |    |   |    |   |    |    |    |    |    |    |    |    |    |    | UO - Unstable Operation |    |    |               |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Wind Speed 45 m (WS45m) - km/h  
Lower Camp Met Tower - February 2023**

| <b>Wind Speed Ranges (km/h)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---------------------------------|------------------------|----------|---------------------|
| 0 - 5                           | 173                    | 27.68    | 27.68               |
| 6 - 11                          | 245                    | 39.20    | 66.88               |
| 12 - 19                         | 120                    | 19.20    | 86.08               |
| 20 - 28                         | 62                     | 9.92     | 96.00               |
| 29 - 38                         | 18                     | 2.88     | 98.88               |
| > 38                            | 7                      | 1.12     | 100.00              |

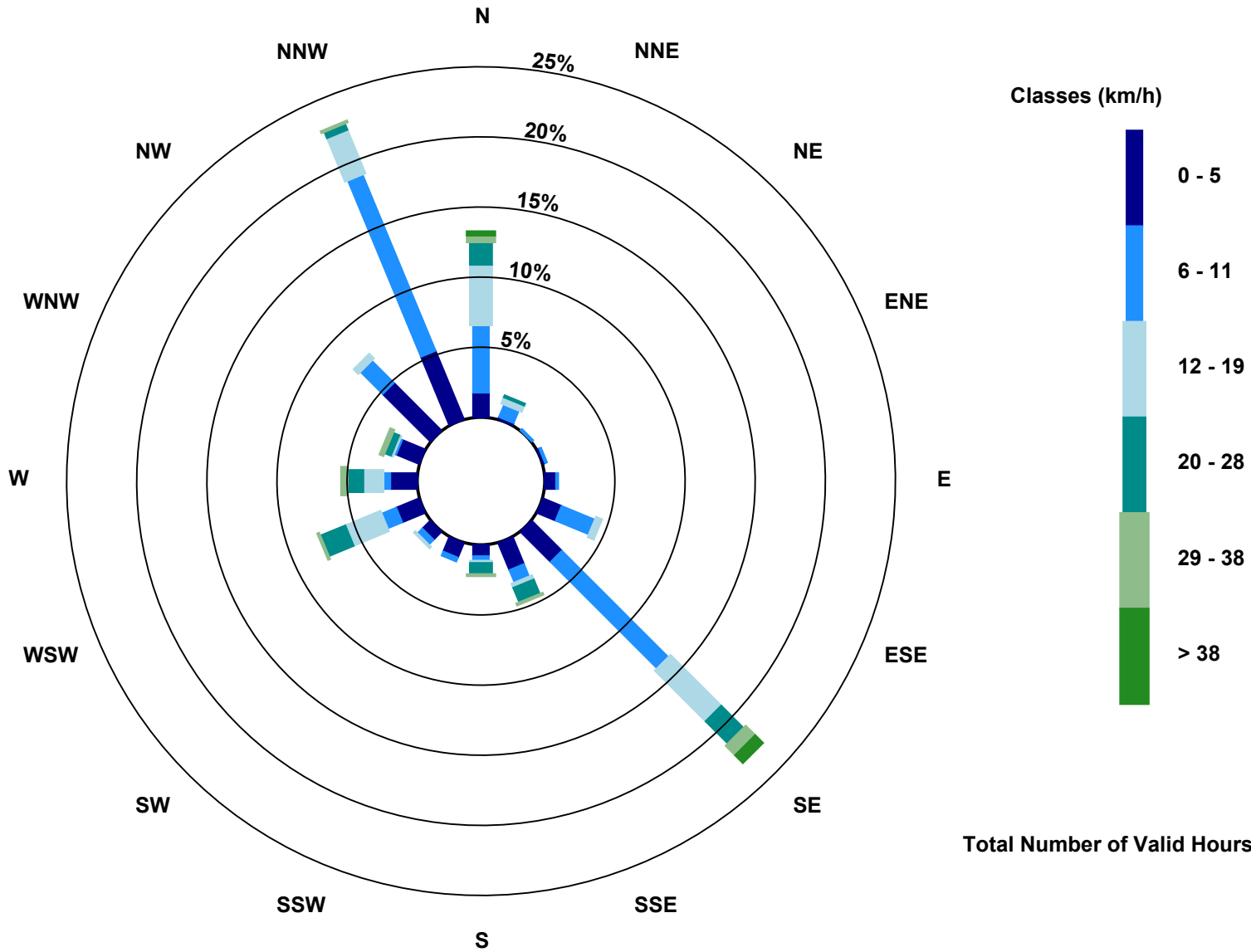
Total Number of Valid Hours: 625

Total Number of Hours: 672



Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Wind Speed 45 m (WS45m) - km/h  
Lower Camp Met Tower





|   |  |                                |
|---|--|--------------------------------|
| Maximum Speed: 49 km/h on Feb 13 13:00            | Maximum Daily Speed Average: 25.4 km/h on Feb 2  | Hours in Service: 672          |
| Minimum Speed Value: 1 km/h on Feb 10 00:00       | Minimum Daily Speed Average: 1.0 km/h on Feb 23  | Hours of Data: 624             |
| Maximum Diurnal Speed Average: 4.2 km/h at hour 7 | Minimum Diurnal Speed Average: 0.3 km/h at hour 24   | Hours of Missing Data: 48      |
| Monthly Average Velocity: 1.5 km/h 301.1 deg      | Percentiles: P <sub>1</sub> = 1 P <sub>10</sub> = 3 Q <sub>1</sub> = 7 Median = 11 Q <sub>3</sub> = 17 P <sub>90</sub> = 27 P <sub>99</sub> = 44 | Percent Operational Time: 92.9 |

| Day    | Hourly Period Ending At (MST) |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Daily Average | Daily Maximum |       |
|--------|-------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------------|---------------|-------|
|        | 1                             | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     | 10    | 11    | 12    | 13    | 14    | 15    | 16    | 17    | 18    | 19    | 20    | 21    | 22    | 23    | 24    |               |               |       |
| 1-Feb  | NNW15                         | N10   | N5    | NNW10 | NNW11 | N17   | NNW17 | N18   | N15   | NNW11 | NNW12 | NW12  | NW14  | NNW14 | NNW10 | NNW10 | WNW2  | N3    | NE4   | NW6   | NW12  | NNW2  | SW3   | SW3   | NNW9.1        | N18           |       |
| 2-Feb  | SSE6                          | S9    | S10   | SE15  | SSE13 | SSE16 | SSE12 | SSE10 | SSE8  | SE15  | SE15  | SSE15 | SE14  | SE29  | SE36  | SE44  | SE45  | SE42  | SE47  | SE48  | SE46  | SE43  | SE39  | SE37  | SE25.4        | SE48          |       |
| 3-Feb  | SE35                          | SE36  | SE32  | SE29  | SSE25 | SSE24 | SSE23 | SSE23 | SSE11 | SSE10 | SSW4  | NNW6  | NNW6  | NNW11 | N11   | N14   | NNE13 | NNE13 | NNE10 | NNE9  | N9    | NNE7  | NNE6  | N9    | ESE7.0        | SE36          |       |
| 4-Feb  | N12                           | NNE6  | N9    | N12   | N10   | N11   | N11   | NNW13 | N15   | N13   | N13   | N11   | N11   | N11   | N8    | NNW4  | NW6   | NNW7  | N8    | NNW11 | N10   | NNW11 | NNW9  | NNW8  | N9.9          | N15           |       |
| 5-Feb  | NNW7                          | NNW7  | NNW4  | NNW3  | WNW2  | NNW5  | NNW7  | NW7   | NNW5  | WNW4  | W3    | W2    | SE4   | SSW4  | SE6   | SSW6  | SSE6  | SSE11 | SSE8  | SSW5  | WSW9  | WNW26 | WNW35 | NW23  | WNW4.3        | WNW35         |       |
| 6-Feb  | WNW35                         | W31   | W29   | W24   | W25   | W22   | W24   | W23   | W25   | N12   | NNE4  | NW2   | ESE3  | ESE8  | ESE9  | E5    | ESE7  | NNW4  | NNW6  | W2    | NE1   | NNW6  | SSW2  | SW9   | W9.3          | WNW35         |       |
| 7-Feb  | WSW9                          | SSW9  | SSW10 | WSW24 | W31   | WNW39 | WNW32 | W26   | W30   | WSW32 | WSW25 | WSW27 | W29   | W40   | W41   | W43   | W36   | W34   | WSW31 | W32   | W20   | WNW18 | NNW26 | N21   | W25.2         | W43           |       |
| 8-Feb  | N19                           | N17   | N11   | NNW12 | NNW11 | NW5   | N4    | NE6   | NE4   | SSE3  | S5    | SE10  | SSE10 | SE11  | SE11  | SE11  | SE14  | SE10  | SSE10 | SE11  | SE16  | SE21  | SE21  | SE21  | ESE4.9        | SSE21         |       |
| 9-Feb  | SE21                          | SE19  | SSE15 | SSE14 | SSE14 | SSE14 | SSW11 | S11   | S12   | SSE14 | SSE16 | SSE18 | SSE20 | SSE27 | SSE23 | SE17  | SE13  | SE8   | E2    | NNW3  | S6    | S3    | SSW3  | ESE1  | SSE12.0       | SSE27         |       |
| 10-Feb | N2                            | E2    | NNW14 | NNW13 | NNW15 | N17   | N16   | NNW15 | N14   | NNW14 | NNW14 | NNW15 | N17   | N15   | NNW15 | NNW17 | DF    | DF    | DF    | DF    | NNW11 | NNW8  | NNW9  | N5    | NNW12.2       | NNW17         |       |
| 11-Feb | N3                            | NW2   | W1    | SE3   | SSE8  | SSE12 | S11   | SSW8  | SSW7  | SW11  | SSW10 | SSE11 | SE13  | SE13  | S16   | SW24  | WSW31 | WSW23 | W22   | WNW31 | WNW25 | WNW9  | WSW28 | WSW39 | SW9.8         | WSW39         |       |
| 12-Feb | WSW39                         | WSW37 | W19   | W29   | W24   | WSW25 | WSW26 | WSW24 | WSW19 | W14   | WNW6  | WNW3  | NNW3  | WNW4  | ESE2  | ENE3  | N4    | NNW11 | DF    | DF    | DF    | DF    | DF    | SE33  | WSW12.8       | WSW39         |       |
| 13-Feb | SSE37                         | S29   | SSW15 | SW18  | WSW35 | WSW36 | WSW36 | W30   | N26   | UO    | UO    | UO    | N49   | N45   | NNW35 | NNW37 | N36   | N34   | N27   | N21   | N25   | NNE26 | N21   | N21   | NNW15.1       | N49           |       |
| 14-Feb | N19                           | N23   | N17   | NNW14 | NNW13 | N12   | N12   | N8    | N6    | N6    | N6    | N7    | N6    | N7    | N6    | N11   | NNE12 | NNE12 | NNE10 | N9    | N11   | N9    | NW1   | N3    | N9.8          | N23           |       |
| 15-Feb | NNW1                          | E2    | SE7   | SSE9  | SSE5  | SSE6  | S5    | SE6   | SSE7  | S3    | E1    | SSW1  | SE6   | ESE10 | ESE10 | DF    | DF    | SE8   | SE9   | SE11  | SE13  | SE13  | SE11  | SE14  | SE6.8         | SE14          |       |
| 16-Feb | SE14                          | SE13  | SE11  | SE16  | SE13  | SE10  | SSE6  | SSE3  | SSE7  | S11   | S7    | SSE10 | SSE10 | S6    | S3    | SSW2  | N1    | N16   | DF    | DF    | N18   | N18   | N18   | N13   | ESE3.3        | N18           |       |
| 17-Feb | NNE5                          | NNE7  | N9    | N7    | NNW5  | N8    | NNE8  | NE10  | NNE11 | NNE8  | NNE10 | N9    | N11   | DF    | N15   | N18   | N19   | N18   | N18   | N17   | N14   | N11   | N14   | N14   | N11.4         | N19           |       |
| 18-Feb | N14                           | N11   | NNW9  | NNW10 | NNW14 | NNW15 | NNW14 | NNW12 | NNW10 | N8    | NW6   | NW5   | NW7   | NNW10 | NW7   | W7    | WNW4  | NNW4  | NNE6  | NE3   | NE2   | SE3   | SE7   | SE10  | NNW6.1        | NNW15         |       |
| 19-Feb | SE10                          | SE11  | SE14  | SE13  | SSE8  | SSE7  | SSE1  | N3    | N5    | NW5   | NNW8  | NNW7  | DF    | DF    | DF    | DF    | DF    | NNW14 | NNW10 | NNW11 | NNW18 | N19   | NNW19 | N18   | N4.1          | NNW19         |       |
| 20-Feb | N11                           | N9    | N10   | N13   | NNW11 | NW3   | W3    | WSW3  | S5    | SE5   | SE5   | WSW1  | W4    | SW3   | WNW2  | N9    | NNE15 | NNE13 | NNE9  | NNE8  | N12   | N13   | N19   | N21   | N6.6          | N21           |       |
| 21-Feb | N17                           | N19   | N19   | N16   | N13   | N11   | N11   | NNW13 | NNW14 | NNW12 | NNW9  | NW9   | NW12  | NNW15 | N16   | N23   | NNW20 | N15   | NNE14 | N11   | N11   | NNW7  | W4    | SW8   | N12.5         | N23           |       |
| 22-Feb | SW7                           | WSW8  | SSW4  | SSW5  | SSW4  | SSW5  | SSW6  | SSW6  | SW7   | DF    | S4    | SSW3  | W6    | WSW12 | WSW11 | W10   | WSW11 | W10   | NW7   | NNW7  | NNW6  | ESE2  | SE2   | SE4   | WSW4.5        | WSW12         |       |
| 23-Feb | SE5                           | SE2   | NNW2  | N8    | NNW11 | NNW11 | NW6   | W3    | W3    | DF    | DF    | DF    | WSW4  | WNW5  | WSW2  | SE4   | SE9   | SE11  | SSE13 | DF    | DF    | DF    | SSW8  | S11   | S1.0          | SSE13         |       |
| 24-Feb | SSE13                         | SSE12 | SSE16 | SSE18 | SSE18 | SSE23 | SSE23 | SSE25 | SSE26 | SE21  | SE23  | SSE24 | S23   | S27   | S30   | SSE27 | SSE31 | S31   | S36   | S32   | S27   | S25   | S21   | S19   | SSE23.3       | S36           |       |
| 25-Feb | S16                           | S17   | S14   | SSW13 | SSW14 | S12   | SSW8  | SSW9  | WSW13 | SW12  | WSW19 | WSW22 | WSW17 | SW17  | SW12  | S5    | SE4   | ESE10 | ESE13 | S11   | SSW16 | SSE8  | SE14  | SE14  | SE15          | S9.7          | WSW22 |
| 26-Feb | SE15                          | ESE15 | ESE16 | ESE16 | ESE8  | ESE4  | ENE2  | NNE5  | NE4   | NNW1  | DF    | DF    | E6    | ENE8  | ENE7  | ESE10 | ESE13 | DF    | DF    | DF    | DF    | DF    | DF    | DF    | ---           | ESE16         |       |
| 27-Feb | DF                            | DF    | DF    | DF    | DF    | DF    | DF    | DF    | DF    | N23   | N25   | N23   | N22   | N23   | NNW20 | N21   | N18   | NNE24 | N24   | N20   | N17   | N16   | N14   | NNW17 | NNW15         | ---           | N25   |
| 28-Feb | NNW13                         | NNW13 | NNW13 | N11   | NNW11 | NNW10 | NNW9  | NNW8  | NW3   | NNW7  | WNW5  | WNW6  | W6    | W6    | DF    | DF    | W4    | W4    | W2    | NE1   | SE3   | SE6   | S7    | SE10  | NNW4.2        | NNW13         |       |

|       |        |        |        |       |       |       |      |        |        |        |       |        |        |        |        |       |      |      |        |      |        |        |        |                 |
|-------|--------|--------|--------|-------|-------|-------|------|--------|--------|--------|-------|--------|--------|--------|--------|-------|------|------|--------|------|--------|--------|--------|-----------------|
| SW0.8 | SSW1.3 | SSW0.5 | WSW1.5 | W3.6  | W3.3  | W4.2  | W3.8 | NNW3.0 | NNW2.2 | NNW1.9 | W2.0  | NNW2.7 | NNW1.6 | NNW0.5 | NNW1.9 | NE1.3 | N2.6 | N0.9 | NNW1.9 | N3.4 | NNE2.7 | NNW2.2 | ESE0.3 | Diurnal Average |
| WSW39 | WSW37  | SE32   | SE29   | WSW35 | WNW39 | WSW36 | W30  | W30    | WSW32  | WSW25  | WSW27 | N49    | N45    | W41    | SE44   | SE45  | SE42 | SE47 | SE48   | SE46 | SE43   | SE39   | WSW39  | Diurnal Maximum |

DF - DAS Failure UO - Unstable Operation  
 All monthly, daily, and diurnal averages have been calculated using vector methods



**Wood Buffalo Environmental Association**  
**Summary of Hour Standard Deviations**

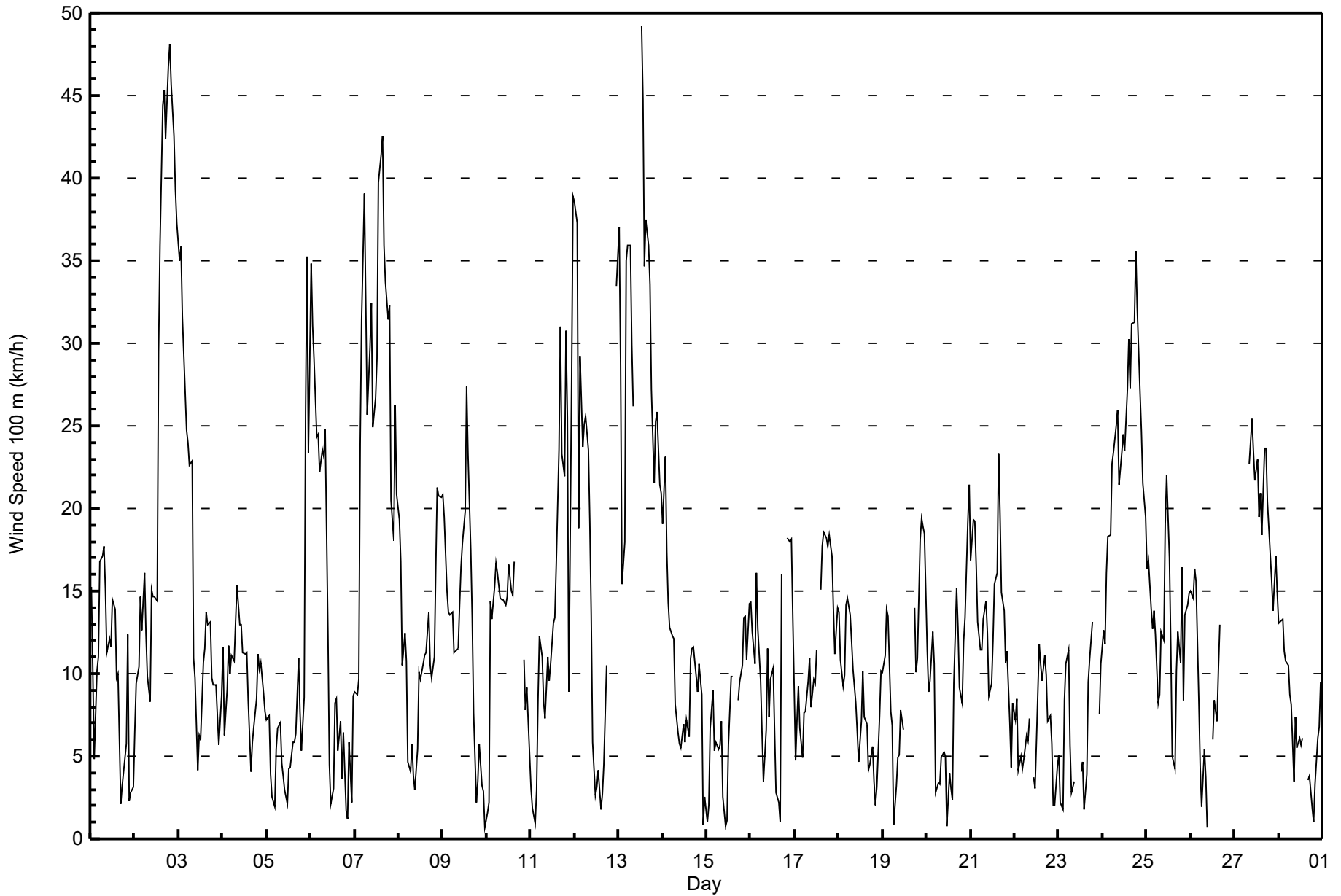
**Wind Speed 100 m (WS100m) - km/h**  
**Lower Camp Met Tower - February 2023**

|  |                                |
|--|--------------------------------|
| Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0  | Hours in Service: 672          |
| Maximum Value: 10 km/h on Feb 11 23:00   | Hours of Data: 624             |
| Minimum Value: 0 km/h on Feb 28 20:00  | Hours of Missing Data: 48      |
| Percentiles: P <sub>1</sub> = 1 P <sub>10</sub> = 1 Q <sub>1</sub> = 2 Median = 2 Q <sub>3</sub> = 3 P <sub>90</sub> = 4 P <sub>99</sub> = 7 | Hours of Calibration: 0        |
|  | Percent Operational Time: 92.9 |

| Day    | Hourly Period Ending At (MST) |    |    |    |    |    |    |    |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    | Daily Maximum |
|--------|-------------------------------|----|----|----|----|----|----|----|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|---------------|
|        | 1                             | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |               |
| 1-Feb  | 2                             | 4  | 2  | 2  | 2  | 4  | 2  | 2  | 2 | 1  | 1  | 3  | 4  | 3  | 3  | 2  | 1  | 1  | 2  | 4  | 3  | 2  | 1  | 1  | 4             |
| 2-Feb  | 3                             | 2  | 2  | 3  | 1  | 2  | 3  | 2  | 3 | 3  | 2  | 1  | 2  | 4  | 3  | 5  | 6  | 4  | 4  | 4  | 4  | 5  | 4  | 4  | 6             |
| 3-Feb  | 4                             | 3  | 5  | 4  | 4  | 4  | 3  | 4  | 3 | 3  | 1  | 3  | 2  | 2  | 2  | 2  | 2  | 3  | 2  | 2  | 3  | 2  | 2  | 5  | 5             |
| 4-Feb  | 3                             | 1  | 1  | 2  | 1  | 1  | 1  | 2  | 2 | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 1  | 2  | 2  | 1  | 1  | 1  | 2  | 1  | 3             |
| 5-Feb  | 1                             | 1  | 1  | 1  | 1  | 2  | 1  | 1  | 2 | 2  | 3  | 1  | 2  | 2  | 3  | 3  | 2  | 4  | 2  | 2  | 4  | 5  | 6  | 7  | 7             |
| 6-Feb  | 7                             | 6  | 8  | 4  | 2  | 2  | 4  | 2  | 3 | 4  | 2  | 1  | 3  | 2  | 2  | 2  | 2  | 4  | 3  | 1  | 2  | 3  | 3  | 2  | 8             |
| 7-Feb  | 3                             | 2  | 2  | 9  | 5  | 7  | 6  | 5  | 3 | 2  | 3  | 3  | 7  | 6  | 6  | 6  | 6  | 3  | 2  | 3  | 5  | 4  | 4  | 3  | 9             |
| 8-Feb  | 3                             | 4  | 2  | 2  | 2  | 1  | 1  | 2  | 2 | 1  | 1  | 4  | 3  | 2  | 2  | 2  | 2  | 1  | 2  | 2  | 2  | 1  | 2  | 2  | 4             |
| 9-Feb  | 1                             | 2  | 1  | 1  | 1  | 2  | 2  | 2  | 1 | 1  | 1  | 2  | 3  | 6  | 3  | 2  | 3  | 1  | 2  | 1  | 2  | 1  | 1  | 1  | 6             |
| 10-Feb | 1                             | 1  | 3  | 1  | 2  | 2  | 1  | 2  | 2 | 2  | 2  | 2  | 2  | 2  | 2  | 2  | DF | DF | DF | DF | 2  | 2  | 2  | 2  | 3             |
| 11-Feb | 0                             | 1  | 1  | 2  | 2  | 1  | 2  | 2  | 3 | 2  | 2  | 2  | 2  | 2  | 4  | 4  | 4  | 2  | 5  | 7  | 5  | 5  | 10 | 2  | 10            |
| 12-Feb | 2                             | 6  | 9  | 2  | 3  | 3  | 4  | 4  | 4 | 3  | 3  | 2  | 1  | 2  | 1  | 1  | 3  | 2  | DF | DF | DF | DF | DF | 4  | 9             |
| 13-Feb | 4                             | 4  | 4  | 7  | 4  | 4  | 5  | 4  | 5 | UO | UO | UO | 6  | 8  | 6  | 7  | 6  | 6  | 5  | 4  | 4  | 6  | 4  | 4  | 8             |
| 14-Feb | 5                             | 5  | 2  | 2  | 1  | 2  | 3  | 1  | 2 | 2  | 2  | 2  | 1  | 1  | 1  | 2  | 3  | 2  | 2  | 1  | 3  | 1  | 1  | 1  | 5             |
| 15-Feb | 1                             | 1  | 2  | 2  | 1  | 1  | 2  | 1  | 1 | 3  | 1  | 1  | 3  | 1  | 2  | DF | DF | 1  | 1  | 1  | 2  | 1  | 2  | 2  | 3             |
| 16-Feb | 3                             | 5  | 5  | 2  | 1  | 3  | 3  | 2  | 1 | 3  | 2  | 2  | 3  | 2  | 2  | 1  | 2  | 7  | DF | DF | 4  | 4  | 3  | 3  | 7             |
| 17-Feb | 2                             | 1  | 2  | 2  | 1  | 1  | 2  | 2  | 2 | 2  | 2  | 3  | 3  | DF | 2  | 3  | 2  | 3  | 2  | 2  | 2  | 2  | 1  | 1  | 3             |
| 18-Feb | 1                             | 2  | 1  | 0  | 1  | 1  | 0  | 1  | 1 | 1  | 2  | 2  | 3  | 2  | 3  | 2  | 1  | 1  | 1  | 2  | 1  | 2  | 1  | 2  | 3             |
| 19-Feb | 2                             | 3  | 2  | 2  | 2  | 2  | 1  | 1  | 2 | 4  | 3  | 2  | DF | DF | DF | DF | DF | 2  | 1  | 2  | 1  | 1  | 2  | 2  | 4             |
| 20-Feb | 2                             | 1  | 2  | 2  | 3  | 1  | 1  | 1  | 2 | 1  | 2  | 1  | 2  | 2  | 2  | 4  | 2  | 3  | 2  | 2  | 2  | 3  | 4  | 2  | 4             |
| 21-Feb | 5                             | 4  | 3  | 2  | 2  | 2  | 3  | 2  | 2 | 3  | 3  | 3  | 3  | 3  | 4  | 4  | 3  | 3  | 2  | 2  | 1  | 3  | 1  | 3  | 5             |
| 22-Feb | 2                             | 2  | 2  | 1  | 1  | 1  | 1  | 2  | 3 | DF | 1  | 2  | 2  | 2  | 1  | 1  | 2  | 1  | 2  | 2  | 3  | 1  | 1  | 1  | 3             |
| 23-Feb | 1                             | 1  | 2  | 2  | 2  | 2  | 1  | 1  | 1 | DF | DF | DF | 2  | 1  | 1  | 2  | 1  | 2  | 1  | DF | DF | DF | 3  | 4  | 4             |
| 24-Feb | 2                             | 1  | 4  | 2  | 2  | 2  | 2  | 2  | 2 | 2  | 2  | 3  | 5  | 4  | 4  | 5  | 5  | 3  | 5  | 5  | 4  | 4  | 4  | 4  | 5             |
| 25-Feb | 4                             | 3  | 2  | 2  | 2  | 2  | 2  | 3  | 3 | 3  | 2  | 4  | 3  | 3  | 3  | 2  | 5  | 3  | 4  | 4  | 3  | 1  | 2  | 1  | 5             |
| 26-Feb | 2                             | 2  | 1  | 2  | 2  | 2  | 1  | 2  | 3 | 1  | DF | DF | 3  | 3  | 2  | 4  | 5  | DF | DF | DF | DF | DF | DF | DF | 5             |
| 27-Feb | DF                            | DF | DF | DF | DF | DF | DF | DF | 3 | 3  | 3  | 2  | 3  | 4  | 3  | 2  | 3  | 3  | 3  | 2  | 3  | 2  | 2  | 2  | 4             |
| 28-Feb | 1                             | 1  | 1  | 2  | 1  | 2  | 0  | 1  | 1 | 2  | 2  | 2  | 1  | 2  | DF | DF | 1  | 1  | 1  | 0  | 1  | 1  | 1  | 3  | 3             |
|        | 7                             | 6  | 9  | 9  | 5  | 7  | 6  | 5  | 5 | 4  | 3  | 4  | 7  | 8  | 6  | 7  | 6  | 7  | 5  | 7  | 5  | 6  | 10 | 7  |               |

Diurnal Maximum

DF - DAS Failure UO - Unstable Operation







**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Wind Speed 100 m (WS100m) - km/h  
Lower Camp Met Tower - February 2023**

| <b>Wind Speed Ranges (km/h)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---------------------------------|------------------------|----------|---------------------|
| 0 - 5                           | 119                    | 19.07    | 19.07               |
| 6 - 11                          | 213                    | 34.13    | 53.21               |
| 12 - 19                         | 166                    | 26.60    | 79.81               |
| 20 - 28                         | 70                     | 11.22    | 91.03               |
| 29 - 38                         | 40                     | 6.41     | 97.44               |
| > 38                            | 16                     | 2.56     | 100.00              |

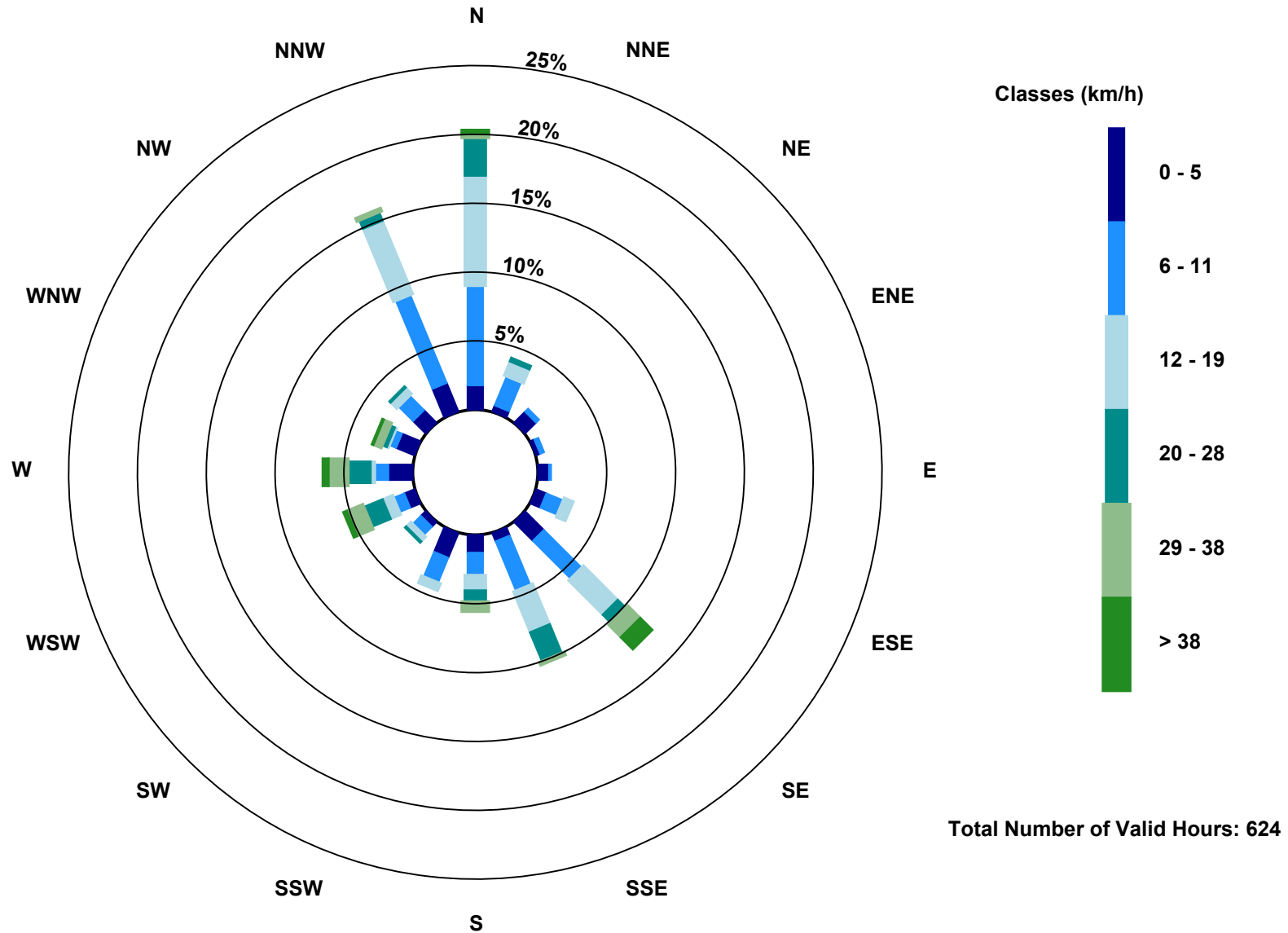
Total Number of Valid Hours: 624

Total Number of Hours: 672



Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Wind Speed 100 m (WS100m) - km/h  
Lower Camp Met Tower





|   |  |                                |
|---|--|--------------------------------|
| Maximum Speed: 48 km/h on Feb 2 17:00             | Maximum Daily Speed Average: 31.2 km/h on Feb 7  | Hours in Service: 672          |
| Minimum Speed Value: 0 km/h on Feb 12 14:00       | Minimum Daily Speed Average: 3.4 km/h on Feb 23  | Hours of Data: 611             |
| Maximum Diurnal Speed Average: 4.6 km/h at hour 8 | Minimum Diurnal Speed Average: 0.3 km/h at hour 15   | Hours of Missing Data: 61      |
| Monthly Average Velocity: 1.1 km/h 282.2 deg      | Percentiles: P <sub>1</sub> = 1 P <sub>10</sub> = 5 Q <sub>1</sub> = 9 Median = 14 Q <sub>3</sub> = 21 P <sub>90</sub> = 31 P <sub>99</sub> = 46 | Percent Operational Time: 90.9 |

| Day    | Hourly Period Ending At (MST) |       |       |           |       |           |          |         |       |       |       |       |       |       |          |           |       |          |          |       |          |       |       |         | Daily Average | Daily Maximum |     |
|--------|-------------------------------|-------|-------|-----------|-------|-----------|----------|---------|-------|-------|-------|-------|-------|-------|----------|-----------|-------|----------|----------|-------|----------|-------|-------|---------|---------------|---------------|-----|
|        | 1                             | 2     | 3     | 4         | 5     | 6         | 7        | 8       | 9     | 10    | 11    | 12    | 13    | 14    | 15       | 16        | 17    | 18       | 19       | 20    | 21       | 22    | 23    | 24      |               |               |     |
| 1-Feb  | NNE20                         | NE17  | ENE7  | NNE12     | N19   | N24       | N21      | N25     | N22   | N13   | N13   | NW14  | NW15  | NNW14 | NNW11    | NNW11     | N5    | NNW7     | N6       | NW13  | NW20     | NW15  | NW8   | SW2     | N12.3         | N25           |     |
| 2-Feb  | SSE3                          | S10   | S17   | SSE17     | SSE22 | S28       | SSE20    | SSE21   | SSE22 | SSE21 | SE22  | SE21  | SE26  | SE35  | SE39     | SE46      | SE48  | SE45     | SE47     | SE47  | SE48     | SE44  | SE41  | SE39    | SSE29.7       | SE48          |     |
| 3-Feb  | SE35                          | SSE32 | SSE31 | SSE27     | SSE26 | SSE27     | S27      | S19     | S13   | SSW8  | WSW9  | NNW6  | NW7   | NNW10 | NNE11    | NNE13     | NNE13 | NNE14    | NE11     | NE10  | NNE11    | NE9   | NE7   | NNE8    | SE6.8         | SE35          |     |
| 4-Feb  | NNE13                         | NE9   | NNE9  | NNE12     | NNE11 | NNE12     | NNE10    | N12     | N15   | N13   | N12   | N11   | N10   | N11   | N8       | N4        | N6    | NNW6     | NNE8     | NNE11 | NNE10    | N9    | N9    | N6      | N9.7          | N15           |     |
| 5-Feb  | N6                            | NNE6  | NE4   | ENE3      | ESE2  | NE4       | NNE4     | N5      | NNE3  | NE3   | W3    | SW2   | SE7   | SSW7  | SSE9     | S12       | S16   | S23      | S12      | WSW9  | W22WNW35 | NW38  | NW25  | W3.6    | NW38          |               |     |
| 6-Feb  | WNW37                         | W36   | W34   | W28       | W28   | W26WNW29  | WNW25    | WNW27   | NNW14 | NE7   | NE3   | SE5   | ESE6  | ESE9  | ESE11    | SE13      | SSE5  | ESE5     | SSE13    | SSE12 | SSE8     | SSE15 | S15   | W8.2    | WNW37         |               |     |
| 7-Feb  | S12WSW20                      | WSW21 | W36   | W38WNW46  | WNW39 | W34       | W35      | W37     | W30   | W31   | W33   | W44   | W46   | W48   | W43      | W41       | W40   | W42      | W28WNW28 | NNW25 | N21      |       |       | W31.2   | W48           |               |     |
| 8-Feb  | N23                           | N20   | NNE15 | NNE16     | NNE11 | N5        | N6       | NNE8    | NE5   | SSE3  | S9    | SSE12 | S11   | SE11  | SE14     | SE15      | SE17  | SSE14    | SSE17    | SSE18 | SSE23    | S17   | SSE22 | SSE25   | SE6.3         | SSE25         |     |
| 9-Feb  | S25                           | SSW21 | SW18  | SW17      | SW14  | SW12WSW20 | SW19     | SW16    | SW13  | SSW17 | S16   | SSE21 | SSE28 | S25   | SSE19    | SSE20     | SSE13 | SE6      | SSE8     | S19   | SSW16    | SSW12 | S11   | S14.9   | SSE28         |               |     |
| 10-Feb | S12                           | SSE7  | NNE11 | NNE16     | N14   | N16       | N14      | N14     | NNE14 | N16   | N14   | N16   | N17   | N15   | N16      | N18       | DF    | DF       | DF       | DF    | NNW11    | NNW9  | NNW11 | NNE6    | N11.4         | N18           |     |
| 11-Feb | NNW4                          | N2    | W2    | S5        | S8    | S15       | SSW12    | WSW11   | WSW14 | SW15  | SSW13 | S11   | SSE13 | SSE15 | SSW22    | SW28WSW35 | W29   | W26WNW36 | WNW32    | W14   | W35      | W47   |       | WSW14.0 | W47           |               |     |
| 12-Feb | W45                           | W46   | W28   | W29WNW21  | W23   | W28       | W26WNW19 | NW12    | NNW6  | NW3   | NNW2  | WNW0  | ESE9  | SE13  | SE16     | SE13      | DF    | DF       | DF       | DF    | DF       | SSE38 |       | W11.6   | W46           |               |     |
| 13-Feb | S42                           | SSW34 | SW25  | SW27WSW42 | WSW41 | W40       | W35      | UO      | UO    | UO    | UO    | UO    | UO    | UO    | N38      | N41       | N38   | N38      | N31      | N26   | NNE31    | NNE32 | NNE25 | N23     | NW13.7        | WSW42         |     |
| 14-Feb | N22                           | N27   | N19   | N17       | N14   | NNE13     | NNE13    | NNE8    | NNE6  | NNE6  | NNE6  | NNE7  | N5    | N7    | NNE6     | N10       | NNE11 | NNE12    | NE14     | NNE10 | NNE12    | NNE12 | ENE2  | E1      | NNE10.6       | N27           |     |
| 15-Feb | ENE1                          | ESE4  | SSE6  | S11       | S12   | S14       | S13      | S13     | S13   | S8    | S1    | S3    | SSE7  | SE9   | SE11     | DF        | DF    | SE10     | SSE12    | SSE15 | SSE17    | SE17  | SSE17 | SSE19   | SSE10.1       | SSE19         |     |
| 16-Feb | SE16                          | SE14  | SE14  | SE20      | SE17  | SE18      | SE16     | SSE10   | SSE15 | SSE17 | SE17  | SSE14 | SSE16 | S11   | SW6WSW12 | W10       | N18   | DF       | DF       | NNE17 | N18      | N18   | N14   | SE6.3   | SE20          |               |     |
| 17-Feb | NNE5                          | NNE8  | NNE9  | NNE7      | N5    | N9        | NE8      | NE10    | NNE11 | NE8   | NNE9  | N9    | N11   | DF    | N14      | N16       | N17   | NNE18    | NNE18    | NNE18 | NNE19    | NNE20 | NNE16 | N17     | NNE12.2       | NNE20         |     |
| 18-Feb | NNE19                         | NE18  | NE11  | NE9       | NNE11 | N15       | N14      | N12     | UO    | UO    | UO    | UO    | NNW7  | UO    | NNW8     | NW7       | NNW4  | N6       | NE8      | ENE9  | E6       | SE8   | SSE7  | SSE12   | NNE6.6        | NNE19         |     |
| 19-Feb | SSE10                         | SE14  | SE18  | SE19      | SE18  | SE14      | SE8      | ESE8    | ESE12 | SE8   | W1    | WNW4  | DF    | DF    | DF       | DF        | DF    | NNW17    | N14      | N19   | N26      | N24   | N21   | N21     | ENE5.3        | NNE26         |     |
| 20-Feb | NNE18                         | N12   | N17   | N17       | NNW9  | N4        | SSW2     | SSE2    | SSE6  | ESE7  | ESE4  | NE1   | NW4   | NW1   | NNW4     | N10       | NNE15 | NNE16    | NE14     | NE12  | NNE12    | NNE14 | NNE29 | N31     | NNE9.2        | N31           |     |
| 21-Feb | NNE26                         | N23   | NNE23 | NNE19     | NNE17 | NNE16     | NNE19    | N17     | N19   | N19   | N9    | NNW9  | NNW12 | NNW15 | N16      | N23       | N19   | N15      | NNE16    | NNE15 | N14      | N9    | N3    | SW6     | N15.1         | NNE26         |     |
| 22-Feb | WSW9                          | WNW7  | WNW7  | W10       | WNW9  | W8        | WSW9     | W7WSW11 | DF    | W6    | W6    | NW8   | W8    | WNW7  | WNW6     | WNW6      | WNW9  | N6       | NNE6     | NNE7  | NE5      | NE7   | NNE6  | WNW5.4  | WSW11         |               |     |
| 23-Feb | N5                            | N9    | NNE17 | NNE22     | NNE19 | NNE19     | N9       | N7      | NNW10 | DF    | DF    | DF    | WNW3  | NNW5  | WSW3     | SSE2      | SE9   | SSE13    | SSE16    | DF    | DF       | DF    | S19   | SSW13   | NE3.4         | NNE22         |     |
| 24-Feb | S10                           | SSW14 | SSW18 | SSW18     | S22   | SSW22     | SSW24    | SSW24   | S26   | SSE26 | SSE24 | SSE26 | S25   | S28   | S32      | SSE30     | SSE34 | S36      | S40      | S37   | S33      | S31   | S29   | SSW28   | S26.1         | S40           |     |
| 25-Feb | SSW24                         | SSW22 | SW16  | SW14      | SW15  | SW16      | SW16     | WSW16   | WSW13 | WSW17 | WSW22 | WSW19 | SW17  | SSW5  | SSE5     | SE10      | SE15  | SSW14    | SW21     | SSW11 | SSE8     | S15   | SE17  | SW12.3  | SSW24         |               |     |
| 26-Feb | SSE16                         | SSE15 | SE18  | SE20      | SE14  | ESE12     | ESE12    | ESE13   | ESE13 | ESE7  | DF    | DF    | E7    | ENE9  | ENE7     | ESE10     | E14   | DF       | DF       | DF    | DF       | DF    | DF    | DF      | ---           | SE20          |     |
| 27-Feb | DF                            | DF    | DF    | DF        | DF    | DF        | DF       | DF      | DF    | N24   | N26   | N23   | N21   | N22   | N19      | N21       | N18   | NNE25    | NNE25    | NNE23 | NNE21    | NNE20 | N19   | N21     | N20           | ---           | N26 |
| 28-Feb | N18                           | N19   | N19   | NNE15     | NNE12 | N12       | N9       | UO      | UO    | UO    | UO    | UO    | NW6   | NW4   | DF       | DF        | NW3   | WNW4     | W3       | NE2   | SE3      | SSE5  | S8    | S11     | ---           | N19           |     |

|             |      |      |      |       |       |      |            |        |        |        |        |        |        |        |       |        |        |        |      |      |        |                 |     |                 |  |  |
|-------------|------|------|------|-------|-------|------|------------|--------|--------|--------|--------|--------|--------|--------|-------|--------|--------|--------|------|------|--------|-----------------|-----|-----------------|--|--|
| SW1.0WSW1.9 | W1.1 | W1.4 | W3.1 | W3.1  | W4.4  | W4.6 | W3.3WNW1.2 | WSW1.8 | WSW1.8 | WSW1.4 | SSW1.6 | WNW0.3 | NNW1.0 | ESE1.5 | NE1.5 | ENE1.1 | NNW1.3 | NNE2.7 | N2.8 | N1.5 | SSE1.4 | Diurnal Average |     |                 |  |  |
| W45         | W46  | W34  | W36  | WSW42 | WNW46 | W40  | W35        | W35    | W37    | W30    | W31    | W33    | W44    | W46    | W48   | SE48   | SE45   | SE47   | SE47 | SE48 | SE44   | SE41            | W47 | Diurnal Maximum |  |  |

DF - DAS Failure      UO - Unstable Operation  
 All monthly, daily, and diurnal averages have been calculated using vector methods



**Wood Buffalo Environmental Association**  
**Summary of Hour Standard Deviations**

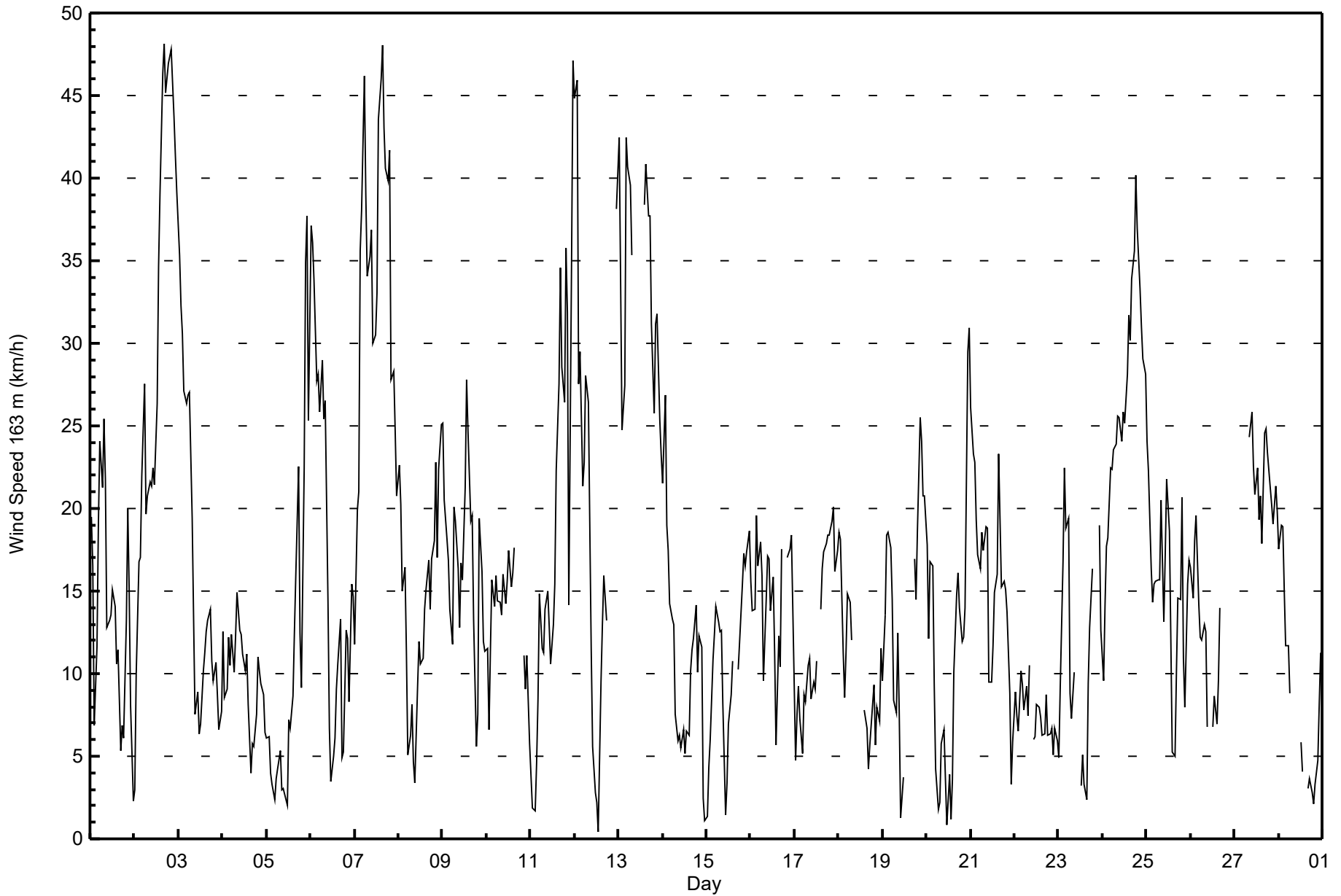
**Wind Speed 163 m (WS163m) - km/h**  
**Lower Camp Met Tower - February 2023**

|  |                                |
|--|--------------------------------|
| Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0  | Hours in Service: 672          |
| Maximum Value: 10 km/h on Feb 11 23:00   | Hours of Data: 611             |
| Minimum Value: 0 km/h on Feb 18 18:00  | Hours of Missing Data: 61      |
| Percentiles: P <sub>1</sub> = 1 P <sub>10</sub> = 1 Q <sub>1</sub> = 2 Median = 2 Q <sub>3</sub> = 3 P <sub>90</sub> = 4 P <sub>99</sub> = 7 | Hours of Calibration: 0        |
|  | Percent Operational Time: 90.9 |

| Day    | Hourly Period Ending At (MST) |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    | Daily Maximum |
|--------|-------------------------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|---------------|
|        | 1                             | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |               |
| 1-Feb  | 1                             | 4  | 2  | 3  | 2  | 6  | 2  | 3  | 3  | 2  | 2  | 3  | 3  | 3  | 2  | 2  | 1  | 2  | 5  | 2  | 2  | 3  | 1  | 6  |               |
| 2-Feb  | 2                             | 2  | 1  | 2  | 2  | 2  | 5  | 3  | 2  | 4  | 3  | 2  | 3  | 2  | 3  | 5  | 6  | 4  | 5  | 5  | 4  | 4  | 4  | 6  |               |
| 3-Feb  | 4                             | 4  | 4  | 3  | 3  | 3  | 2  | 2  | 3  | 2  | 3  | 1  | 2  | 2  | 2  | 2  | 3  | 3  | 2  | 3  | 2  | 2  | 5  | 5  |               |
| 4-Feb  | 2                             | 1  | 1  | 1  | 1  | 1  | 1  | 2  | 1  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 1  | 1  | 2  | 1  | 1  | 2  | 1  | 2  |               |
| 5-Feb  | 1                             | 1  | 2  | 1  | 1  | 2  | 1  | 2  | 1  | 2  | 3  | 1  | 2  | 2  | 3  | 3  | 3  | 3  | 4  | 2  | 6  | 3  | 6  | 7  |               |
| 6-Feb  | 6                             | 5  | 8  | 4  | 3  | 2  | 5  | 3  | 3  | 4  | 2  | 2  | 3  | 3  | 2  | 5  | 2  | 3  | 3  | 4  | 4  | 1  | 4  | 5  |               |
| 7-Feb  | 4                             | 4  | 4  | 6  | 5  | 6  | 5  | 5  | 2  | 2  | 3  | 3  | 7  | 5  | 5  | 4  | 4  | 2  | 3  | 4  | 7  | 6  | 3  | 7  |               |
| 8-Feb  | 3                             | 3  | 2  | 2  | 2  | 1  | 1  | 1  | 1  | 2  | 1  | 1  | 2  | 3  | 1  | 3  | 3  | 2  | 3  | 3  | 2  | 2  | 2  | 3  |               |
| 9-Feb  | 2                             | 2  | 2  | 3  | 1  | 1  | 5  | 3  | 3  | 2  | 2  | 1  | 2  | 4  | 3  | 2  | 2  | 4  | 3  | 4  | 2  | 2  | 2  | 5  |               |
| 10-Feb | 2                             | 3  | 5  | 2  | 2  | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 2  | 2  | 1  | DF | DF | DF | DF | 1  | 2  | 1  | 5  |               |
| 11-Feb | 1                             | 1  | 1  | 2  | 2  | 2  | 1  | 2  | 3  | 3  | 3  | 1  | 1  | 2  | 3  | 4  | 2  | 2  | 5  | 6  | 5  | 6  | 10 | 10 |               |
| 12-Feb | 2                             | 3  | 9  | 4  | 3  | 4  | 2  | 2  | 2  | 3  | 1  | 2  | 1  | 2  | 1  | 3  | 2  | 4  | DF | DF | DF | DF | DF | 9  |               |
| 13-Feb | 4                             | 5  | 3  | 6  | 3  | 4  | 4  | 4  | UO | UO | UO | UO | UO | UO | 5  | 6  | 6  | 7  | 6  | 4  | 5  | 7  | 5  | 7  |               |
| 14-Feb | 5                             | 5  | 2  | 1  | 1  | 2  | 3  | 2  | 2  | 1  | 2  | 2  | 2  | 1  | 2  | 1  | 2  | 2  | 1  | 1  | 2  | 2  | 2  | 5  |               |
| 15-Feb | 1                             | 1  | 1  | 1  | 1  | 1  | 2  | 2  | 2  | 2  | 2  | 1  | 2  | 2  | 1  | DF | DF | 1  | 1  | 3  | 2  | 1  | 2  | 3  |               |
| 16-Feb | 3                             | 5  | 4  | 1  | 2  | 2  | 4  | 3  | 3  | 3  | 3  | 2  | 2  | 3  | 2  | 3  | 2  | 6  | DF | DF | 3  | 4  | 3  | 6  |               |
| 17-Feb | 2                             | 2  | 2  | 2  | 2  | 1  | 2  | 2  | 2  | 2  | 2  | 3  | 2  | DF | 2  | 3  | 2  | 3  | 3  | 3  | 2  | 2  | 2  | 3  |               |
| 18-Feb | 1                             | 1  | 2  | 1  | 1  | 1  | 1  | 2  | UO | UO | UO | UO | 3  | UO | 3  | 2  | 1  | 0  | 2  | 1  | 2  | 2  | 2  | 3  |               |
| 19-Feb | 3                             | 2  | 3  | 2  | 2  | 2  | 2  | 1  | 4  | 7  | 1  | 2  | DF | DF | DF | DF | DF | 2  | 2  | 2  | 1  | 1  | 3  | 7  |               |
| 20-Feb | 3                             | 2  | 2  | 3  | 2  | 2  | 1  | 1  | 2  | 1  | 2  | 1  | 2  | 1  | 2  | 3  | 2  | 2  | 2  | 1  | 1  | 4  | 6  | 6  |               |
| 21-Feb | 5                             | 4  | 3  | 3  | 3  | 3  | 4  | 3  | 3  | 3  | 4  | 3  | 4  | 3  | 3  | 3  | 3  | 3  | 2  | 2  | 1  | 2  | 2  | 5  |               |
| 22-Feb | 1                             | 2  | 1  | 2  | 2  | 1  | 1  | 2  | 3  | DF | 2  | 2  | 1  | 1  | 2  | 2  | 1  | 2  | 2  | 1  | 1  | 1  | 1  | 3  |               |
| 23-Feb | 1                             | 4  | 2  | 3  | 2  | 4  | 1  | 1  | 1  | DF | DF | DF | 2  | 1  | 2  | 1  | 2  | 1  | 1  | DF | DF | DF | 2  | 4  |               |
| 24-Feb | 3                             | 1  | 2  | 2  | 2  | 1  | 1  | 1  | 2  | 2  | 2  | 3  | 5  | 4  | 4  | 5  | 3  | 4  | 4  | 4  | 4  | 4  | 3  | 5  |               |
| 25-Feb | 2                             | 2  | 2  | 2  | 1  | 2  | 2  | 3  | 2  | 2  | 2  | 3  | 2  | 3  | 3  | 2  | 4  | 2  | 4  | 2  | 3  | 2  | 3  | 4  |               |
| 26-Feb | 2                             | 1  | 1  | 1  | 4  | 2  | 2  | 4  | 5  | 3  | DF | DF | 3  | 3  | 2  | 6  | 5  | DF | DF | DF | DF | DF | DF | 6  |               |
| 27-Feb | DF                            | DF | DF | DF | DF | DF | DF | DF | 2  | 3  | 3  | 3  | 3  | 4  | 3  | 2  | 3  | 3  | 4  | 3  | 3  | 2  | 2  | 4  |               |
| 28-Feb | 1                             | 1  | 1  | 2  | 1  | 1  | 1  | UO | UO | UO | UO | UO | 1  | 1  | DF | DF | 1  | 1  | 1  | 1  | 1  | 0  | 2  | 2  |               |
|        | 6                             | 5  | 9  | 6  | 5  | 6  | 5  | 5  | 5  | 7  | 4  | 3  | 7  | 5  | 5  | 6  | 6  | 7  | 6  | 6  | 7  | 7  | 10 | 7  |               |

Diurnal Maximum

DF - DAS Failure UO - Unstable Operation





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Wind Speed 163 m (WS163m) - km/h  
Lower Camp Met Tower - February 2023**

| <b>Wind Speed Ranges (km/h)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---------------------------------|------------------------|----------|---------------------|
| 0 - 5                           | 64                     | 10.47    | 10.47               |
| 6 - 11                          | 162                    | 26.51    | 36.99               |
| 12 - 19                         | 213                    | 34.86    | 71.85               |
| 20 - 28                         | 101                    | 16.53    | 88.38               |
| 29 - 38                         | 43                     | 7.04     | 95.42               |
| > 38                            | 28                     | 4.58     | 100.00              |

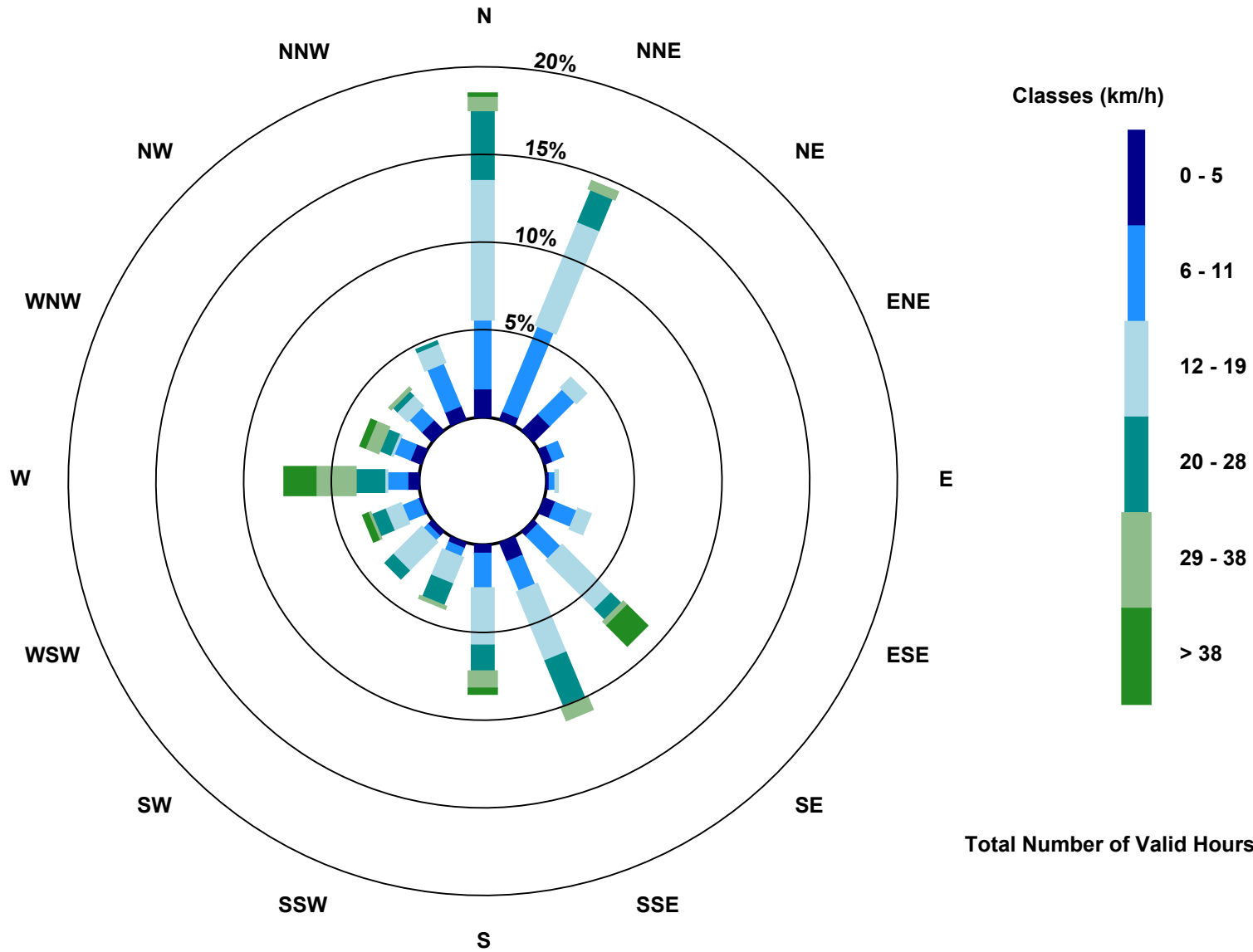
Total Number of Valid Hours: 611

Total Number of Hours: 672



Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Wind Speed 163 m (WS163m) - km/h  
Lower Camp Met Tower





**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

**Wind Direction 20 m (WD20m) - deg**  
**Lower Camp Met Tower - February 2023**

|   |                                |
|---|--------------------------------|
| Direction of Maximum Speed: 134 deg on Feb 2 20:00            | Hours in Service: 672          |
| Direction of Maximum Daily Speed Average: 156.4 deg on Feb 24 | Hours of Data: 627             |
| Direction of Minimum Speed: 102 deg on Feb 5 17:00            | Hours of Missing Data: 45      |
| Direction of Minimum Daily Speed Average: 0.8 deg on Feb 15   | Percent Operational Time: 93.3 |
| Monthly Average Direction: 301.4 deg                          |                                |

| Day             | Hourly Period Ending At (MST) |       |       |       |       |       |       |      |       |       |       |       |       |       |       |       |       |       |       |       |      |       |      |     | Daily Average |
|-----------------|-------------------------------|-------|-------|-------|-------|-------|-------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|-------|------|-----|---------------|
|                 | 1                             | 2     | 3     | 4     | 5     | 6     | 7     | 8    | 9     | 10    | 11    | 12    | 13    | 14    | 15    | 16    | 17    | 18    | 19    | 20    | 21   | 22    | 23   | 24  |               |
| 1-Feb           | 308                           | 358   | 334   | 302   | 340   | 323   | 341   | 332  | 329   | 330   | 327   | 321   | 306   | 340   | 308   | 326   | 229   | 316   | 302   | 308   | 324  | 256   | 140  | 133 | 322.2         |
| 2-Feb           | 135                           | 142   | 143   | 142   | 147   | 141   | 138   | 139  | 136   | 140   | 143   | 131   | 145   | 149   | 129   | 135   | 135   | 132   | 136   | 134   | 135  | 133   | 134  | 135 | 136.1         |
| 3-Feb           | 137                           | 140   | 139   | 143   | 158   | 153   | 141   | 140  | 131   | 125   | 130   | 346   | 331   | 338   | 354   | 1     | 19    | 11    | 19    | 3     | 345  | 357   | 1    | 347 | 118.2         |
| 4-Feb           | 353                           | 353   | 334   | 341   | 342   | 337   | 326   | 333  | 343   | 348   | 346   | 348   | 351   | 347   | 351   | 331   | 309   | 340   | 337   | 331   | 333  | 325   | 323  | 327 | 339.4         |
| 5-Feb           | 326                           | 336   | 323   | 345   | 341   | 349   | 329   | 324  | 348   | 320   | 244   | 249   | 181   | 247   | 152   | 63    | 102   | 271   | 311   | 159   | 7    | 283   | 298  | 315 | 311.0         |
| 6-Feb           | 290                           | 283   | 273   | 254   | 255   | 269   | 265   | 270  | 286   | 327   | 321   | 226   | 176   | 143   | 131   | 102   | 349   | 342   | 345   | 348   | 343  | 342   | 319  | 346 | 284.3         |
| 7-Feb           | 342                           | 133   | 131   | 151   | 257   | 285   | 297   | 279  | 260   | 251   | 251   | 251   | 267   | 267   | 264   | 273   | 273   | 263   | 254   | 260   | 265  | 282   | 341  | 345 | 269.9         |
| 8-Feb           | 338                           | 339   | 325   | 323   | 339   | 331   | 324   | 338  | 337   | 245   | 137   | 137   | 136   | 141   | 152   | 149   | 145   | 190   | 194   | 340   | 147  | 131   | 131  | 133 | 130.2         |
| 9-Feb           | 135                           | 138   | 141   | 141   | 138   | 138   | 137   | 134  | 134   | 133   | 135   | 132   | 127   | 138   | 137   | 138   | 131   | 143   | 136   | 139   | 138  | 146   | 142  | 173 | 136.6         |
| 10-Feb          | 135                           | 324   | 344   | 348   | 329   | 345   | 343   | 336  | 331   | 330   | 331   | 338   | 340   | 341   | 331   | 322   | DF    | DF    | DF    | DF    | 339  | 343   | 333  | 337 | 336.6         |
| 11-Feb          | 326                           | 332   | 355   | 83    | 146   | 134   | 134   | 129  | 130   | 135   | 142   | 137   | 139   | 136   | 144   | 210   | 246   | 256   | 275   | 291   | 307  | 262   | 241  | 262 | 211.6         |
| 12-Feb          | 256                           | 266   | 278   | 255   | 250   | 249   | 259   | 265  | 307   | 254   | 251   | 254   | 351   | 352   | 349   | 352   | 352   | 351   | DF    | DF    | DF   | DF    | DF   | 137 | 272.1         |
| 13-Feb          | 148                           | 155   | 120   | 340   | 265   | 257   | 259   | 266  | 348   | 2     | 354   | 351   | 351   | 355   | 342   | 342   | 352   | 0     | 354   | 357   | 360  | 8     | 357  | 349 | 343.4         |
| 14-Feb          | 345                           | 350   | 334   | 326   | 333   | 349   | 3     | 2    | 5     | 346   | 359   | 347   | 343   | 354   | 348   | 352   | 14    | 12    | 0     | 339   | 349  | 310   | 298  | 316 | 349.9         |
| 15-Feb          | 329                           | 315   | 263   | 217   | 321   | 254   | 299   | 121  | 146   | 271   | 146   | 130   | 139   | 106   | 108   | DF    | DF    | 127   | 218   | 162   | 101  | 133   | 256  | 149 | 135.5         |
| 16-Feb          | 161                           | 136   | 154   | 159   | 161   | 275   | 335   | 325  | 311   | 145   | 138   | 127   | 135   | 134   | 138   | 107   | 328   | 335   | DF    | DF    | 347  | 356   | 347  | 359 | 40.7          |
| 17-Feb          | 13                            | 25    | 3     | 353   | 320   | 334   | 24    | 37   | 13    | 20    | 7     | 352   | 346   | DF    | 354   | 353   | 355   | 3     | 358   | 357   | 355  | 344   | 332  | 340 | 358.0         |
| 18-Feb          | 321                           | 336   | 344   | 302   | 323   | 313   | 293   | 286  | 305   | 285   | 291   | 279   | 315   | 331   | 298   | 250   | 261   | 293   | 311   | 297   | 323  | 322   | 309  | 303 | 302.3         |
| 19-Feb          | 343                           | 323   | 310   | 187   | 314   | 329   | 335   | 318  | 330   | 335   | 278   | 338   | DF    | DF    | DF    | DF    | DF    | 325   | 303   | 293   | 339  | 340   | 341  | 345 | 327.2         |
| 20-Feb          | 348                           | 357   | 341   | 306   | 351   | 5     | 68    | 137  | 120   | 284   | 159   | 200   | 224   | 220   | 235   | 353   | 3     | 347   | 330   | 324   | 323  | 318   | 327  | 337 | 327.3         |
| 21-Feb          | 319                           | 336   | 356   | 355   | 349   | 331   | 312   | 328  | 323   | 314   | 332   | 328   | 315   | 343   | 350   | 352   | 344   | 0     | 355   | 338   | 324  | 331   | 324  | 163 | 340.2         |
| 22-Feb          | 204                           | 205   | 145   | 146   | 156   | 145   | 154   | 143  | 143   | DF    | 141   | 139   | 233   | 243   | 240   | 240   | 241   | 288   | 259   | 324   | 328  | 165   | 334  | 170 | 196.8         |
| 23-Feb          | 270                           | 331   | 313   | 333   | 326   | 335   | 264   | 114  | 333   | DF    | DF    | DF    | 237   | 235   | 226   | 147   | 134   | 134   | 110   | DF    | DF   | DF    | 156  | 138 | 181.6         |
| 24-Feb          | 135                           | 139   | 141   | 139   | 138   | 133   | 135   | 137  | 135   | 112   | 121   | 137   | 164   | 175   | 172   | 161   | 161   | 166   | 182   | 178   | 171  | 169   | 164  | 166 | 156.4         |
| 25-Feb          | 144                           | 142   | 138   | 133   | 125   | 116   | 115   | 121  | 162   | 213   | 242   | 243   | 244   | 234   | 174   | 150   | 123   | 118   | 142   | 163   | 121  | 122   | 112  | 113 | 156.3         |
| 26-Feb          | 113                           | 114   | 114   | 122   | 290   | 325   | 336   | 332  | 326   | 347   | DF    | DF    | 82    | 80    | 66    | 116   | 109   | DF    | DF    | DF    | DF   | DF    | DF   | DF  | --            |
| 27-Feb          | DF                            | DF    | DF    | DF    | DF    | DF    | DF    | DF   | 343   | 348   | 349   | 354   | 348   | 350   | 8     | 359   | 18    | 10    | 5     | 1     | 359  | 346   | 326  | 336 | --            |
| 28-Feb          | 325                           | 310   | 314   | 302   | 316   | 323   | 302   | 339  | 310   | 270   | 245   | 240   | 243   | 237   | DF    | DF    | 263   | 282   | 255   | 210   | 204  | 198   | 185  | 155 | 254.0         |
| 172.8           | 150.0                         | 126.8 | 162.9 | 219.4 | 253.6 | 254.1 | 172.7 | 30.3 | 326.9 | 321.4 | 303.3 | 290.0 | 277.4 | 288.4 | 316.2 | 340.7 | 355.4 | 309.0 | 313.5 | 348.1 | 10.6 | 325.0 | 72.2 |     |               |
| Diurnal Average |                               |       |       |       |       |       |       |      |       |       |       |       |       |       |       |       |       |       |       |       |      |       |      |     |               |

DF - DAS Failure  
 All monthly, daily, and diurnal averages have been calculated using vector methods





**Wood Buffalo Environmental Association**  
**Summary of Hour Standard Deviations**

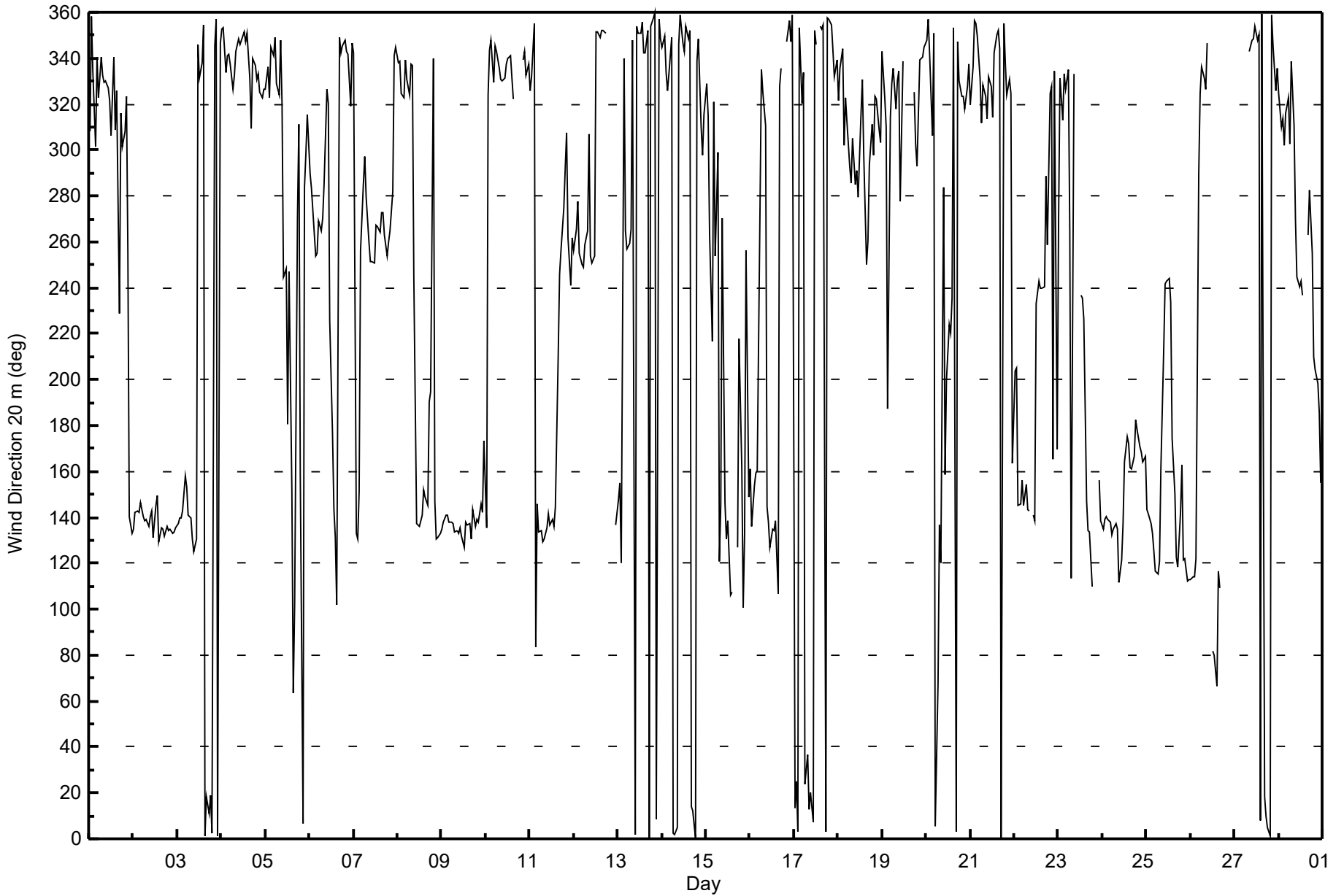
**Wind Direction 20 m (WD20m) - deg**  
**Lower Camp Met Tower - February 2023**

| Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0<br>Maximum Value: 104 deg on Feb 15 07:00  |                               |    |    |    |    |    |     |    |    |    |    |     |    |    |    |     | Hours in Service: 672<br>Hours of Data: 627<br>Hours of Missing Data: 45<br>Hours of Calibration: 0<br>Percent Operational Time: 93.3 |    |    |    |    |    |    |               |     |
|--|-------------------------------|----|----|----|----|----|-----|----|----|----|----|-----|----|----|----|-----|---|----|----|----|----|----|----|---------------|-----|
| Minimum Value: 3 deg on Feb 9 10:00  |                               |    |    |    |    |    |     |    |    |    |    |     |    |    |    |     |   |    |    |    |    |    |    |               |     |
| Percentiles: P <sub>1</sub> = 5 P <sub>10</sub> = 11 Q <sub>1</sub> = 14 Median = 19 Q <sub>3</sub> = 32 P <sub>90</sub> = 60 P <sub>99</sub> = 94 |                               |    |    |    |    |    |     |    |    |    |    |     |    |    |    |     |   |    |    |    |    |    |    |               |     |
| Day  | Hourly Period Ending At (MST) |    |    |    |    |    |     |    |    |    |    |     |    |    |    |     |   |    |    |    |    |    |    | Daily Maximum |     |
|  | 1                             | 2  | 3  | 4  | 5  | 6  | 7   | 8  | 9  | 10 | 11 | 12  | 13 | 14 | 15 | 16  | 17  | 18 | 19 | 20 | 21 | 22 | 23 |               | 24  |
| 1-Feb  | 33                            | 68 | 33 | 34 | 13 | 20 | 18  | 30 | 21 | 16 | 16 | 31  | 22 | 20 | 34 | 35  | 30  | 69 | 39 | 32 | 49 | 86 | 81 | 29            | 86  |
| 2-Feb  | 16                            | 9  | 6  | 12 | 12 | 9  | 14  | 9  | 14 | 17 | 16 | 12  | 15 | 18 | 20 | 15  | 14  | 16 | 14 | 14 | 13 | 15 | 14 | 13            | 20  |
| 3-Feb  | 14                            | 12 | 13 | 11 | 14 | 12 | 7   | 8  | 23 | 26 | 24 | 38  | 31 | 21 | 18 | 15  | 22  | 19 | 21 | 24 | 21 | 17 | 26 | 43            | 43  |
| 4-Feb  | 14                            | 21 | 18 | 18 | 16 | 19 | 17  | 17 | 14 | 15 | 16 | 14  | 20 | 16 | 33 | 19  | 17  | 18 | 16 | 23 | 16 | 25 | 19 | 33            | 33  |
| 5-Feb  | 19                            | 20 | 28 | 30 | 32 | 24 | 27  | 17 | 44 | 38 | 64 | 65  | 36 | 69 | 68 | 78  | 101   | 65 | 89 | 83 | 94 | 47 | 24 | 19            | 101 |
| 6-Feb  | 18                            | 20 | 18 | 17 | 19 | 30 | 13  | 52 | 53 | 29 | 91 | 71  | 34 | 16 | 24 | 100 | 99  | 23 | 24 | 22 | 16 | 26 | 33 | 25            | 100 |
| 7-Feb  | 42                            | 49 | 13 | 63 | 14 | 22 | 19  | 20 | 14 | 10 | 13 | 13  | 20 | 16 | 16 | 17  | 17  | 15 | 12 | 15 | 27 | 22 | 20 | 14            | 63  |
| 8-Feb  | 19                            | 15 | 14 | 20 | 36 | 40 | 75  | 19 | 29 | 75 | 61 | 13  | 13 | 13 | 11 | 11  | 12  | 60 | 82 | 29 | 85 | 10 | 7  | 6             | 85  |
| 9-Feb  | 17                            | 6  | 6  | 7  | 4  | 5  | 6   | 5  | 4  | 3  | 5  | 7   | 13 | 9  | 6  | 7   | 12  | 12 | 59 | 16 | 10 | 11 | 21 | 41            | 59  |
| 10-Feb   | 63                            | 56 | 26 | 12 | 15 | 17 | 15  | 19 | 17 | 18 | 18 | 17  | 18 | 16 | 19 | 13  | DF  | DF | DF | DF | 17 | 20 | 21 | 36            | 63  |
| 11-Feb   | 25                            | 44 | 40 | 85 | 25 | 14 | 10  | 10 | 11 | 12 | 20 | 12  | 10 | 18 | 20 | 28  | 12  | 16 | 18 | 19 | 18 | 74 | 26 | 14            | 85  |
| 12-Feb   | 13                            | 20 | 37 | 12 | 13 | 28 | 21  | 39 | 47 | 15 | 13 | 55  | 33 | 22 | 38 | 6   | 11  | 16 | DF | DF | DF | DF | DF | 17            | 55  |
| 13-Feb   | 12                            | 28 | 66 | 74 | 27 | 16 | 14  | 15 | 30 | 16 | 14 | 14  | 15 | 17 | 17 | 14  | 15  | 17 | 15 | 13 | 18 | 20 | 19 | 16            | 74  |
| 14-Feb   | 19                            | 14 | 16 | 18 | 16 | 17 | 16  | 21 | 26 | 24 | 26 | 20  | 19 | 13 | 18 | 16  | 18  | 19 | 19 | 16 | 17 | 59 | 60 | 27            | 60  |
| 15-Feb   | 50                            | 36 | 83 | 81 | 19 | 59 | 104 | 90 | 60 | 42 | 89 | 62  | 40 | 14 | 17 | DF  | DF  | 91 | 22 | 33 | 71 | 75 | 64 | 27            | 104 |
| 16-Feb   | 62                            | 31 | 32 | 12 | 15 | 70 | 50  | 50 | 39 | 36 | 15 | 14  | 11 | 58 | 49 | 58  | 72  | 22 | DF | DF | 16 | 20 | 14 | 16            | 72  |
| 17-Feb   | 27                            | 24 | 20 | 22 | 23 | 22 | 23  | 23 | 19 | 26 | 21 | 17  | 15 | DF | 13 | 13  | 13  | 17 | 15 | 15 | 14 | 20 | 64 | 17            | 64  |
| 18-Feb   | 16                            | 38 | 17 | 15 | 18 | 20 | 20  | 40 | 32 | 21 | 69 | 102 | 49 | 21 | 44 | 11  | 20  | 22 | 41 | 22 | 20 | 44 | 59 | 56            | 102 |
| 19-Feb   | 33                            | 26 | 69 | 34 | 20 | 20 | 14  | 12 | 48 | 29 | 67 | 65  | DF | DF | DF | DF  | DF  | 15 | 25 | 24 | 14 | 14 | 21 | 26            | 69  |
| 20-Feb   | 13                            | 12 | 18 | 21 | 21 | 45 | 84  | 27 | 36 | 73 | 42 | 19  | 14 | 11 | 17 | 39  | 15  | 14 | 18 | 30 | 21 | 19 | 24 | 14            | 84  |
| 21-Feb   | 34                            | 16 | 12 | 11 | 15 | 21 | 21  | 27 | 23 | 26 | 34 | 32  | 30 | 24 | 19 | 16  | 15  | 16 | 11 | 25 | 19 | 34 | 84 | 52            | 84  |
| 22-Feb   | 28                            | 17 | 22 | 13 | 19 | 8  | 7   | 11 | 10 | DF | 8  | 17  | 32 | 10 | 10 | 7   | 14  | 76 | 36 | 30 | 86 | 52 | 31 | 95            | 95  |
| 23-Feb   | 94                            | 40 | 34 | 29 | 21 | 23 | 83  | 75 | 92 | DF | DF | DF  | 11 | 11 | 50 | 26  | 13  | 16 | 60 | DF | DF | DF | 23 | 6             | 94  |
| 24-Feb   | 4                             | 9  | 11 | 7  | 13 | 12 | 14  | 7  | 8  | 35 | 29 | 14  | 20 | 13 | 8  | 9   | 9   | 7  | 9  | 10 | 7  | 8  | 9  | 13            | 35  |
| 25-Feb   | 15                            | 8  | 8  | 6  | 8  | 14 | 13  | 25 | 43 | 19 | 14 | 14  | 15 | 19 | 50 | 47  | 24  | 31 | 48 | 50 | 27 | 25 | 17 | 11            | 50  |
| 26-Feb   | 11                            | 16 | 17 | 27 | 53 | 31 | 46  | 26 | 48 | 46 | DF | DF  | 40 | 26 | 28 | 21  | 19  | DF | DF | DF | DF | DF | DF | DF            | 53  |
| 27-Feb   | DF                            | DF | DF | DF | DF | DF | DF  | DF | 15 | 14 | 14 | 15  | 14 | 13 | 18 | 18  | 14  | 17 | 14 | 14 | 16 | 15 | 15 | 32            | 32  |
| 28-Feb   | 32                            | 33 | 34 | 10 | 10 | 30 | 23  | 48 | 68 | 63 | 62 | 9   | 7  | 6  | DF | DF  | 20  | 20 | 63 | 75 | 49 | 24 | 20 | 33            | 75  |
|  |                               |    |    |    |    |    |     |    |    |    |    |     |    |    |    |     | 94 68 83 85 53 70 104 90 92 75 91 102 49 69 68 100 101 91 89 83 94 86 84 95   |    |    |    |    |    |    |               |     |
| Diurnal Maximum  |                               |    |    |    |    |    |     |    |    |    |    |     |    |    |    |     |   |    |    |    |    |    |    |               |     |
| DF - DAS Failure   |                               |    |    |    |    |    |     |    |    |    |    |     |    |    |    |     |   |    |    |    |    |    |    |               |     |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Wind Direction 20 m (WD20m) - deg**  
**Lower Camp Met Tower - February 2023**





**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

**Wind Direction 45 m (WD45m) - deg**  
**Lower Camp Met Tower - February 2023**

|  |                                |
|--|--------------------------------|
| Direction of Maximum Speed: 132 deg on Feb 2 20:00           | Hours in Service: 672          |
| Direction of Maximum Daily Speed Average: 130.8 deg on Feb 2 | Hours of Data: 625             |
| Direction of Minimum Speed: 289 deg on Feb 16 07:00          | Hours of Missing Data: 47      |
| Direction of Minimum Daily Speed Average: 2.3 deg on Feb 16  | Percent Operational Time: 93.0 |
| Monthly Average Direction: 334.4 deg                         |                                |

| Day    | Hourly Period Ending At (MST) |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |     |       |       |       |     |      |       |       | Daily Average |
|--------|-------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-----|-------|-------|-------|-----|------|-------|-------|---------------|
|        | 1                             | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     | 10    | 11    | 12    | 13    | 14    | 15    | 16    | 17  | 18    | 19    | 20    | 21  | 22   | 23    | 24    |               |
| 1-Feb  | 332                           | 321   | 340   | 330   | 333   | 330   | 333   | 331   | 330   | 329   | 328   | 313   | 304   | 337   | 313   | 332   | 235 | 2     | 327   | 314   | 271 | 194  | 153   | 141   | 325.2         |
| 2-Feb  | 136                           | 134   | 130   | 131   | 135   | 128   | 128   | 128   | 126   | 126   | 117   | 113   | 128   | 132   | 126   | 133   | 133 | 130   | 133   | 132   | 133 | 131  | 132   | 132   | 130.8         |
| 3-Feb  | 133                           | 137   | 136   | 137   | 151   | 149   | 140   | 145   | 135   | 131   | 138   | 347   | 338   | 339   | 357   | 2     | 18  | 11    | 18    | 5     | 349 | 6    | 4     | 347   | 109.7         |
| 4-Feb  | 356                           | 0     | 339   | 345   | 345   | 343   | 333   | 337   | 345   | 350   | 348   | 349   | 353   | 350   | 351   | 329   | 312 | 339   | 338   | 333   | 335 | 327  | 325   | 325   | 341.8         |
| 5-Feb  | 327                           | 336   | 319   | 336   | 332   | 348   | 331   | 324   | 343   | 307   | 257   | 257   | 161   | 240   | 144   | 120   | 166 | 197   | 245   | 228   | 129 | 274  | 297   | 313   | 303.0         |
| 6-Feb  | 289                           | 280   | 272   | 255   | 250   | 259   | 268   | 260   | 270   | 346   | 335   | 262   | 147   | 130   | 124   | 98    | 109 | 337   | 342   | 340   | 342 | 339  | 331   | 319   | 281.3         |
| 7-Feb  | 321                           | 141   | 136   | 213   | 252   | 283   | 294   | 275   | 258   | 250   | 252   | 251   | 266   | 265   | 264   | 272   | 270 | 262   | 249   | 257   | 268 | 303  | 340   | 347   | 268.2         |
| 8-Feb  | 340                           | 342   | 334   | 325   | 300   | 279   | 11    | 321   | 289   | 194   | 122   | 128   | 130   | 130   | 140   | 137   | 127 | 152   | 138   | 161   | 130 | 126  | 123   | 127   | 117.7         |
| 9-Feb  | 128                           | 128   | 131   | 131   | 132   | 131   | 132   | 132   | 129   | 129   | 129   | 129   | 135   | 146   | 137   | 134   | 127 | 141   | 113   | 157   | 127 | 135  | 129   | 138   | 132.3         |
| 10-Feb | 136                           | 332   | 335   | 332   | 329   | 346   | 344   | 339   | 334   | 335   | 334   | 339   | 343   | 342   | 333   | 324   | DF  | DF    | DF    | DF    | 340 | 345  | 334   | 349   | 337.8         |
| 11-Feb | 327                           | 328   | 354   | 80    | 142   | 138   | 136   | 131   | 134   | 167   | 174   | 137   | 135   | 130   | 149   | 214   | 244 | 253   | 275   | 290   | 305 | 289  | 245   | 256   | 220.8         |
| 12-Feb | 253                           | 260   | 276   | 251   | 246   | 244   | 255   | 257   | 274   | 253   | 265   | 268   | 341   | 332   | 322   | 345   | 335 | 332   | DF    | DF    | DF  | DF   | DF    | 132   | 259.7         |
| 13-Feb | 148                           | 162   | 145   | 240   | 255   | 254   | 257   | 264   | 349   | UO    | UO    | 349   | 353   | 358   | 343   | 342   | 354 | 1     | 357   | 359   | 3   | 11   | 1     | 352   | 339.4         |
| 14-Feb | 350                           | 354   | 339   | 330   | 337   | 351   | 4     | 4     | 5     | 349   | 2     | 353   | 346   | 355   | 353   | 14    | 13  | 5     | 345   | 345   | 334 | 301  | 346   | 352.8 |               |
| 15-Feb | 303                           | 324   | 179   | 144   | 248   | 219   | 156   | 118   | 136   | 208   | 137   | 125   | 120   | 108   | 109   | DF    | DF  | 118   | 121   | 133   | 119 | 119  | 138   | 125   | 127.6         |
| 16-Feb | 135                           | 138   | 132   | 138   | 143   | 156   | 289   | 8     | 150   | 132   | 139   | 126   | 130   | 111   | 117   | 87    | 347 | 342   | DF    | DF    | 351 | 358  | 351   | 360   | 60.4          |
| 17-Feb | 16                            | 25    | 4     | 357   | 327   | 341   | 26    | 36    | 14    | 20    | 11    | 354   | 347   | DF    | 357   | 356   | 357 | 3     | 360   | 0     | 358 | 346  | 329   | 338   | 359.7         |
| 18-Feb | 338                           | 329   | 332   | 338   | 334   | 348   | 339   | 352   | 346   | 326   | 297   | 320   | 322   | 334   | 309   | 251   | 266 | 281   | 340   | 325   | 338 | 308  | 249   | 166   | 319.3         |
| 19-Feb | 147                           | 140   | 148   | 149   | 155   | 323   | 331   | 340   | 329   | 335   | 325   | 308   | DF    | DF    | DF    | DF    | DF  | 332   | 324   | 311   | 341 | 340  | 334   | 343   | 337.0         |
| 20-Feb | 348                           | 350   | 352   | 323   | 343   | 356   | 312   | 101   | 126   | 74    | 146   | 200   | 232   | 220   | 245   | 356   | 8   | 355   | 344   | 322   | 340 | 349  | 336   | 330   | 342.0         |
| 21-Feb | 332                           | 342   | 357   | 356   | 351   | 337   | 325   | 330   | 325   | 325   | 327   | 328   | 318   | 342   | 352   | 353   | 345 | 4     | 3     | 352   | 334 | 260  | 237   | 174   | 341.6         |
| 22-Feb | 144                           | 144   | 136   | 131   | 138   | 133   | 135   | 135   | 130   | DF    | 128   | 126   | 249   | 244   | 239   | 244   | 238 | 274   | 282   | 274   | 274 | 176  | 281   | 178   | 180.2         |
| 23-Feb | 214                           | 327   | 331   | 311   | 321   | 309   | 124   | 139   | 143   | DF    | DF    | DF    | 237   | 242   | 233   | 133   | 127 | 132   | 126   | DF    | DF  | DF   | 133   | 128   | 149.9         |
| 24-Feb | 126                           | 129   | 130   | 130   | 129   | 126   | 126   | 128   | 128   | 121   | 127   | 136   | 164   | 175   | 172   | 161   | 161 | 167   | 183   | 180   | 175 | 172  | 168   | 173   | 152.9         |
| 25-Feb | 153                           | 146   | 141   | 140   | 141   | 129   | 134   | 135   | 207   | 221   | 241   | 242   | 245   | 235   | 174   | 142   | 115 | 111   | 181   | 182   | 124 | 125  | 127   | 120   | 162.0         |
| 26-Feb | 115                           | 118   | 116   | 117   | 137   | 9     | 334   | 339   | 319   | 316   | DF    | DF    | 82    | 80    | 70    | 113   | 108 | DF    | DF    | DF    | DF  | DF   | DF    | DF    | --            |
| 27-Feb | DF                            | DF    | DF    | DF    | DF    | DF    | DF    | DF    | 344   | 350   | 350   | 355   | 349   | 349   | 6     | 0     | 16  | 8     | 4     | 1     | 0   | 351  | 335   | 337   | --            |
| 28-Feb | 331                           | 330   | 319   | 315   | 332   | 296   | 329   | 316   | 294   | 316   | 264   | 251   | 254   | 241   | DF    | DF    | 260 | 284   | 315   | 251   | 242 | 195  | 150   | 137   | 269.0         |
|        | 130.7                         | 130.8 | 111.9 | 165.4 | 220.1 | 256.7 | 280.4 | 237.2 | 350.0 | 312.6 | 309.7 | 333.1 | 317.1 | 309.7 | 354.9 | 337.6 | 5.5 | 359.7 | 348.9 | 315.3 | 2.6 | 13.0 | 336.3 | 56.2  |               |

Diurnal Average

DF - DAS Failure      UO - Unstable Operation  
 All monthly, daily, and diurnal averages have been calculated using vector methods



**Wood Buffalo Environmental Association**  
**Summary of Hour Standard Deviations**

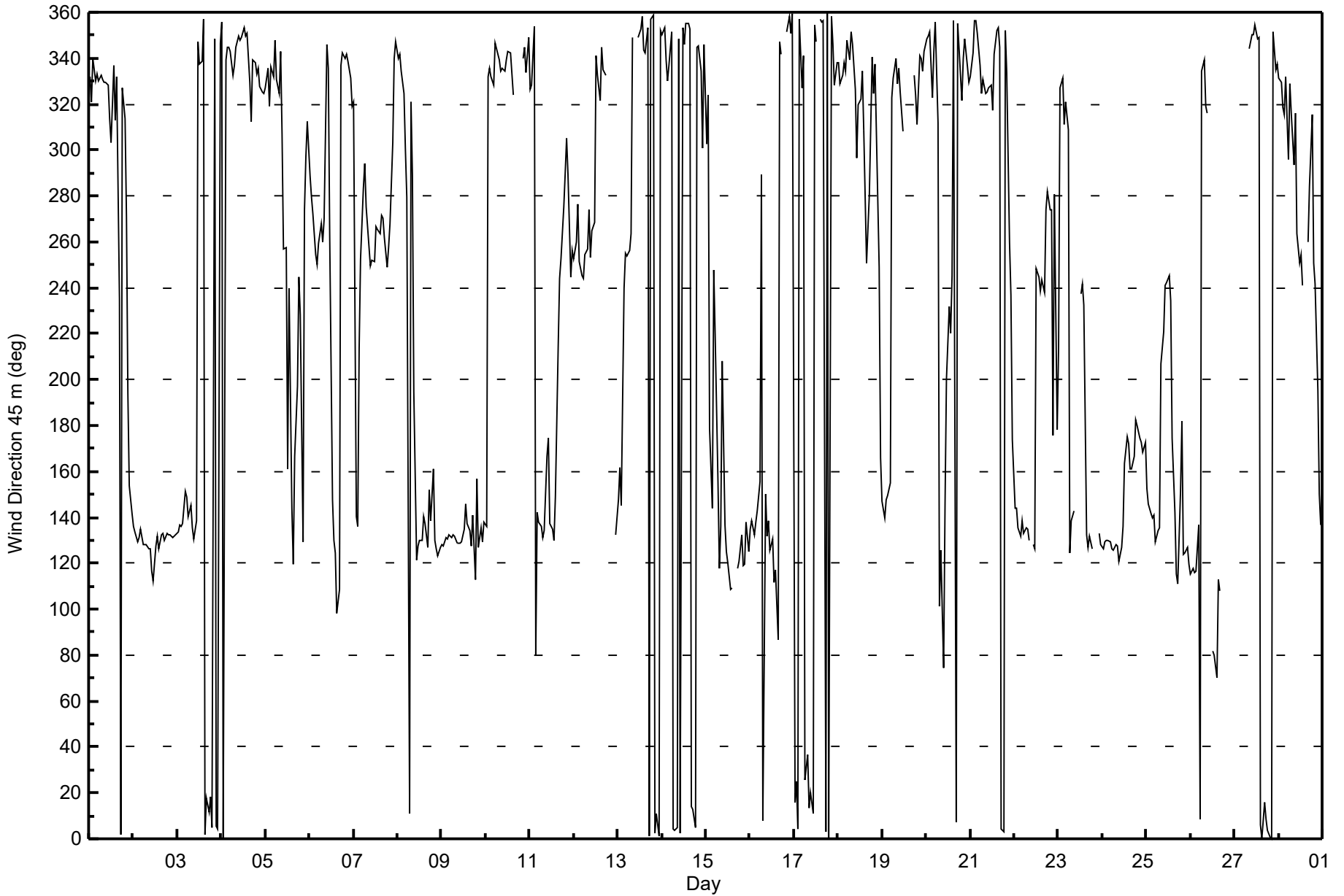
**Wind Direction 45 m (WD45m) - deg**  
**Lower Camp Met Tower - February 2023**

|  |                                |
|--|--------------------------------|
| Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0  | Hours in Service: 672          |
| Maximum Value: 102 deg on Feb 9 19:00  | Hours of Data: 625             |
| Minimum Value: 2 deg on Feb 9 05:00  | Hours of Missing Data: 47      |
| Percentiles: P <sub>1</sub> = 3 P <sub>10</sub> = 6 Q <sub>1</sub> = 9 Median = 12 Q <sub>3</sub> = 22 P <sub>90</sub> = 41 P <sub>99</sub> = 89 | Hours of Calibration: 0        |
|  | Percent Operational Time: 93.0 |

| Day    | Hourly Period Ending At (MST) |    |    |    |    |    |    |     |    |    |    |    |    |    |    |     |    |    |     |    |    |    |    |    | Daily Maximum |
|--------|-------------------------------|----|----|----|----|----|----|-----|----|----|----|----|----|----|----|-----|----|----|-----|----|----|----|----|----|---------------|
|        | 1                             | 2  | 3  | 4  | 5  | 6  | 7  | 8   | 9  | 10 | 11 | 12 | 13 | 14 | 15 | 16  | 17 | 18 | 19  | 20 | 21 | 22 | 23 | 24 |               |
| 1-Feb  | 11                            | 19 | 39 | 13 | 17 | 7  | 6  | 7   | 7  | 6  | 8  | 24 | 17 | 15 | 30 | 21  | 24 | 51 | 32  | 36 | 74 | 98 | 9  | 10 | 98            |
| 2-Feb  | 6                             | 6  | 4  | 6  | 10 | 6  | 10 | 8   | 10 | 12 | 15 | 7  | 14 | 9  | 8  | 6   | 6  | 7  | 6   | 6  | 6  | 7  | 7  | 6  | 15            |
| 3-Feb  | 7                             | 6  | 8  | 7  | 12 | 10 | 4  | 8   | 20 | 14 | 28 | 32 | 24 | 16 | 13 | 7   | 15 | 13 | 16  | 20 | 14 | 13 | 19 | 32 | 32            |
| 4-Feb  | 8                             | 15 | 10 | 9  | 9  | 11 | 11 | 10  | 11 | 7  | 11 | 11 | 9  | 12 | 12 | 27  | 16 | 11 | 10  | 11 | 16 | 10 | 17 | 15 | 27            |
| 5-Feb  | 13                            | 13 | 18 | 23 | 28 | 18 | 21 | 11  | 37 | 31 | 60 | 59 | 35 | 65 | 49 | 102 | 91 | 51 | 81  | 57 | 78 | 22 | 20 | 18 | 102           |
| 6-Feb  | 12                            | 15 | 13 | 12 | 6  | 10 | 7  | 15  | 24 | 17 | 42 | 63 | 49 | 14 | 18 | 67  | 48 | 24 | 16  | 32 | 13 | 15 | 13 | 18 | 67            |
| 7-Feb  | 52                            | 43 | 7  | 44 | 8  | 19 | 13 | 16  | 9  | 5  | 7  | 9  | 13 | 11 | 10 | 11  | 12 | 10 | 6   | 10 | 27 | 22 | 19 | 9  | 52            |
| 8-Feb  | 10                            | 9  | 8  | 5  | 38 | 55 | 62 | 16  | 27 | 68 | 11 | 7  | 9  | 9  | 10 | 6   | 8  | 27 | 54  | 81 | 14 | 4  | 4  | 3  | 81            |
| 9-Feb  | 5                             | 4  | 3  | 3  | 2  | 4  | 4  | 5   | 3  | 3  | 4  | 3  | 11 | 8  | 7  | 4   | 9  | 10 | 102 | 28 | 7  | 9  | 12 | 11 | 102           |
| 10-Feb | 14                            | 85 | 7  | 6  | 9  | 13 | 9  | 12  | 10 | 12 | 11 | 10 | 11 | 10 | 12 | 10  | DF | DF | DF  | DF | 11 | 13 | 15 | 30 | 85            |
| 11-Feb | 15                            | 33 | 33 | 86 | 12 | 11 | 6  | 6   | 8  | 26 | 24 | 9  | 6  | 8  | 21 | 23  | 8  | 10 | 14  | 12 | 13 | 70 | 17 | 8  | 86            |
| 12-Feb | 6                             | 13 | 33 | 6  | 7  | 13 | 12 | 19  | 38 | 9  | 16 | 56 | 27 | 22 | 28 | 7   | 24 | 12 | DF  | DF | DF | DF | DF | 12 | 56            |
| 13-Feb | 8                             | 21 | 42 | 68 | 15 | 10 | 7  | 10  | 29 | UO | UO | 8  | 9  | 10 | 12 | 10  | 10 | 11 | 10  | 8  | 13 | 14 | 12 | 9  | 68            |
| 14-Feb | 10                            | 10 | 10 | 11 | 9  | 11 | 10 | 15  | 22 | 16 | 20 | 13 | 13 | 8  | 12 | 11  | 11 | 15 | 15  | 14 | 12 | 35 | 42 | 14 | 42            |
| 15-Feb | 32                            | 33 | 77 | 11 | 27 | 43 | 17 | 40  | 13 | 65 | 79 | 45 | 29 | 8  | 10 | DF  | DF | 12 | 16  | 11 | 7  | 8  | 23 | 7  | 79            |
| 16-Feb | 19                            | 19 | 9  | 11 | 11 | 31 | 98 | 101 | 64 | 15 | 17 | 19 | 8  | 30 | 42 | 41  | 55 | 12 | DF  | DF | 11 | 14 | 8  | 8  | 101           |
| 17-Feb | 23                            | 18 | 14 | 14 | 19 | 16 | 17 | 15  | 14 | 17 | 13 | 13 | 9  | DF | 8  | 6   | 8  | 9  | 8   | 9  | 9  | 11 | 17 | 5  | 23            |
| 18-Feb | 8                             | 12 | 31 | 11 | 15 | 11 | 21 | 26  | 21 | 24 | 33 | 69 | 37 | 15 | 38 | 10  | 11 | 22 | 27  | 20 | 27 | 43 | 49 | 84 | 84            |
| 19-Feb | 14                            | 12 | 9  | 9  | 19 | 71 | 9  | 6   | 39 | 22 | 25 | 35 | DF | DF | DF | DF  | DF | 10 | 9   | 18 | 7  | 12 | 10 | 11 | 71            |
| 20-Feb | 7                             | 8  | 12 | 18 | 14 | 11 | 77 | 21  | 16 | 90 | 30 | 21 | 20 | 12 | 21 | 34  | 9  | 9  | 12  | 35 | 12 | 5  | 8  | 5  | 90            |
| 21-Feb | 11                            | 11 | 9  | 8  | 12 | 11 | 13 | 16  | 8  | 17 | 25 | 27 | 27 | 18 | 14 | 11  | 10 | 13 | 6   | 13 | 6  | 26 | 32 | 38 | 38            |
| 22-Feb | 11                            | 11 | 6  | 5  | 5  | 4  | 5  | 3   | 8  | DF | 10 | 25 | 31 | 8  | 7  | 5   | 9  | 27 | 18  | 20 | 80 | 38 | 55 | 77 | 80            |
| 23-Feb | 23                            | 35 | 15 | 32 | 18 | 28 | 62 | 6   | 5  | DF | DF | DF | 15 | 14 | 65 | 40  | 9  | 12 | 9   | DF | DF | DF | 8  | 6  | 65            |
| 24-Feb | 4                             | 5  | 3  | 3  | 3  | 3  | 4  | 3   | 3  | 16 | 9  | 9  | 19 | 11 | 8  | 9   | 8  | 7  | 8   | 9  | 8  | 8  | 9  | 14 | 19            |
| 25-Feb | 18                            | 8  | 6  | 9  | 11 | 11 | 15 | 33  | 40 | 16 | 10 | 9  | 12 | 17 | 45 | 38  | 21 | 14 | 34  | 41 | 16 | 7  | 9  | 5  | 45            |
| 26-Feb | 5                             | 4  | 6  | 11 | 57 | 82 | 18 | 13  | 26 | 13 | DF | DF | 30 | 17 | 20 | 14  | 13 | DF | DF  | DF | DF | DF | DF | DF | 82            |
| 27-Feb | DF                            | DF | DF | DF | DF | DF | DF | DF  | 10 | 8  | 7  | 8  | 9  | 9  | 11 | 12  | 8  | 7  | 7   | 9  | 9  | 8  | 10 | 11 | 12            |
| 28-Feb | 9                             | 10 | 15 | 20 | 11 | 21 | 39 | 34  | 63 | 41 | 49 | 12 | 5  | 6  | DF | DF  | 16 | 20 | 36  | 33 | 41 | 22 | 20 | 6  | 63            |
|        | 52                            | 85 | 77 | 86 | 57 | 82 | 98 | 101 | 64 | 90 | 79 | 69 | 49 | 65 | 65 | 102 | 91 | 51 | 102 | 81 | 80 | 98 | 55 | 84 |               |

Diurnal Maximum

DF - DAS Failure UO - Unstable Operation





**Wood Buffalo Environmental Association**

**Summary of Hour Averages**

**Wind Direction 100 m (WD100m) - deg**

**Lower Camp Met Tower - February 2023**

|  |  |                           |      |
|--|--|---------------------------|------|
| Direction of Maximum Speed: 355 deg on Feb 13 13:00          |  | Hours in Service:         | 672  |
| Direction of Maximum Daily Speed Average: 139.6 deg on Feb 2 |  | Hours of Data:            | 624  |
| Direction of Minimum Speed: 122 deg on Feb 10 00:00          |  | Hours of Missing Data:    | 48   |
| Direction of Minimum Daily Speed Average: 1.0 deg on Feb 23  |  | Percent Operational Time: | 92.9 |
| Monthly Average Direction: 301.1 deg                         |  |                           |      |

| Day             | Hourly Period Ending At (MST) |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |       | Daily Average |       |       |       |       |       |       |       |       |       |       |       |       |       |       |      |     |     |       |       |      |       |       |
|-----------------|-------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-------|---------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|-----|-----|-------|-------|------|-------|-------|
|                 | 1                             | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19  | 20  | 21  | 22  | 23  | 24    |               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |      |     |     |       |       |      |       |       |
| 1-Feb           | 345                           | 357 | 352 | 346 | 347 | 349 | 347 | 349 | 353 | 341 | 333 | 309 | 305 | 331 | 321 | 337 | 301 | 0   | 35  | 324 | 326 | 330 | 232 | 216   | 337.5         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |      |     |     |       |       |      |       |       |
| 2-Feb           | 154                           | 172 | 169 | 140 | 152 | 149 | 153 | 159 | 153 | 140 | 138 | 161 | 137 | 134 | 132 | 137 | 137 | 135 | 138 | 137 | 136 | 136 | 136 | 137   | 139.6         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |      |     |     |       |       |      |       |       |
| 3-Feb           | 138                           | 142 | 141 | 143 | 150 | 149 | 156 | 160 | 159 | 167 | 206 | 347 | 334 | 339 | 1   | 4   | 22  | 16  | 25  | 14  | 4   | 22  | 17  | 354   | 122.6         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |      |     |     |       |       |      |       |       |
| 4-Feb           | 1                             | 16  | 353 | 355 | 357 | 358 | 349 | 348 | 350 | 355 | 351 | 352 | 355 | 350 | 353 | 343 | 325 | 339 | 349 | 348 | 352 | 341 | 339 | 333   | 350.5         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |      |     |     |       |       |      |       |       |
| 5-Feb           | 336                           | 344 | 335 | 333 | 295 | 343 | 344 | 326 | 345 | 299 | 262 | 268 | 135 | 204 | 142 | 195 | 163 | 167 | 164 | 196 | 237 | 282 | 301 | 314   | 288.6         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |      |     |     |       |       |      |       |       |
| 6-Feb           | 289                           | 277 | 273 | 266 | 264 | 267 | 281 | 274 | 273 | 352 | 25  | 324 | 123 | 115 | 120 | 100 | 119 | 337 | 347 | 259 | 47  | 339 | 200 | 236   | 278.0         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |      |     |     |       |       |      |       |       |
| 7-Feb           | 242                           | 213 | 199 | 245 | 259 | 283 | 292 | 272 | 262 | 256 | 256 | 255 | 266 | 267 | 263 | 272 | 270 | 263 | 255 | 263 | 272 | 301 | 342 | 353   | 269.3         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |      |     |     |       |       |      |       |       |
| 8-Feb           | 349                           | 352 | 352 | 344 | 347 | 326 | 349 | 34  | 54  | 168 | 170 | 140 | 156 | 126 | 131 | 136 | 133 | 132 | 162 | 141 | 146 | 146 | 143 | 144   | 121.8         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |      |     |     |       |       |      |       |       |
| 9-Feb           | 144                           | 145 | 167 | 160 | 163 | 167 | 197 | 190 | 178 | 165 | 163 | 155 | 155 | 156 | 157 | 140 | 137 | 132 | 93  | 341 | 172 | 187 | 210 | 122   | 158.5         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |      |     |     |       |       |      |       |       |
| 10-Feb          | 6                             | 80  | 346 | 344 | 340 | 352 | 351 | 348 | 349 | 347 | 345 | 348 | 351 | 350 | 342 | 338 | DF  | DF  | DF  | DF  | 341 | 345 | 340 | 10    | 347.1         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |      |     |     |       |       |      |       |       |
| 11-Feb          | 349                           | 326 | 262 | 132 | 151 | 160 | 169 | 194 | 208 | 216 | 203 | 154 | 140 | 136 | 174 | 221 | 246 | 254 | 276 | 289 | 302 | 288 | 253 | 252   | 235.2         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |      |     |     |       |       |      |       |       |
| 12-Feb          | 254                           | 257 | 273 | 264 | 260 | 255 | 258 | 257 | 256 | 273 | 298 | 294 | 337 | 301 | 116 | 77  | 8   | 348 | DF  | DF  | DF  | DF  | DF  | 142   | 258.2         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |      |     |     |       |       |      |       |       |
| 13-Feb          | 160                           | 186 | 196 | 222 | 250 | 254 | 257 | 265 | 349 | UO  | UO  | UO  | 355 | 358 | 346 | 346 | 355 | 2   | 1   | 2   | 9   | 16  | 8   | 359   | 330.6         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |      |     |     |       |       |      |       |       |
| 14-Feb          | 358                           | 359 | 349 | 346 | 347 | 360 | 8   | 5   | 7   | 353 | 10  | 3   | 349 | 359 | 0   | 354 | 15  | 16  | 19  | 5   | 5   | 10  | 323 | 352   | 0.5           |       |       |       |       |       |       |       |       |       |       |       |       |       |       |      |     |     |       |       |      |       |       |
| 15-Feb          | 333                           | 98  | 128 | 160 | 159 | 149 | 174 | 146 | 155 | 170 | 100 | 200 | 128 | 117 | 117 | DF  | DF  | 131 | 141 | 139 | 142 | 132 | 141 | 145   | 140.0         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |      |     |     |       |       |      |       |       |
| 16-Feb          | 135                           | 141 | 139 | 132 | 142 | 133 | 152 | 153 | 162 | 169 | 171 | 165 | 161 | 172 | 179 | 212 | 355 | 352 | DF  | DF  | 360 | 1   | 356 | 2     | 118.4         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |      |     |     |       |       |      |       |       |
| 17-Feb          | 20                            | 23  | 7   | 6   | 344 | 354 | 33  | 36  | 15  | 26  | 15  | 357 | 349 | DF  | 0   | 0   | 360 | 5   | 4   | 4   | 8   | 3   | 349 | 349   | 4.9           |       |       |       |       |       |       |       |       |       |       |       |       |       |       |      |     |     |       |       |      |       |       |
| 18-Feb          | 351                           | 359 | 344 | 344 | 344 | 337 | 339 | 346 | 344 | 353 | 316 | 310 | 324 | 339 | 321 | 271 | 300 | 330 | 24  | 40  | 53  | 127 | 130 | 138   | 343.8         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |      |     |     |       |       |      |       |       |
| 19-Feb          | 140                           | 144 | 141 | 143 | 149 | 149 | 156 | 0   | 5   | 325 | 340 | 328 | DF  | DF  | DF  | DF  | DF  | DF  | 337 | 336 | 333 | 347 | 349 | 348   | 352           | 359.9 |       |       |       |       |       |       |       |       |       |       |       |       |       |      |     |     |       |       |      |       |       |
| 20-Feb          | 360                           | 352 | 7   | 355 | 334 | 312 | 274 | 241 | 169 | 124 | 129 | 253 | 266 | 234 | 290 | 358 | 14  | 12  | 14  | 21  | 358 | 0   | 360 | 350   | 357.4         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |      |     |     |       |       |      |       |       |
| 21-Feb          | 359                           | 357 | 3   | 5   | 1   | 357 | 353 | 346 | 340 | 347 | 331 | 326 | 321 | 340 | 350 | 354 | 348 | 7   | 16  | 8   | 349 | 335 | 267 | 230   | 350.0         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |      |     |     |       |       |      |       |       |
| 22-Feb          | 216                           | 237 | 208 | 211 | 206 | 200 | 206 | 206 | 215 | DF  | 180 | 208 | 273 | 255 | 257 | 268 | 255 | 268 | 317 | 337 | 341 | 111 | 124 | 144   | 243.1         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |      |     |     |       |       |      |       |       |
| 23-Feb          | 145                           | 138 | 344 | 352 | 338 | 344 | 320 | 260 | 261 | DF  | DF  | DF  | 252 | 288 | 255 | 137 | 126 | 142 | 153 | DF  | DF  | DF  | 192 | 169   | 182.0         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |      |     |     |       |       |      |       |       |
| 24-Feb          | 163                           | 160 | 154 | 154 | 157 | 149 | 156 | 159 | 156 | 139 | 144 | 148 | 170 | 177 | 174 | 164 | 164 | 169 | 185 | 184 | 181 | 181 | 181 | 184   | 166.0         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |      |     |     |       |       |      |       |       |
| 25-Feb          | 179                           | 172 | 175 | 194 | 196 | 177 | 195 | 205 | 239 | 233 | 243 | 246 | 246 | 232 | 180 | 142 | 118 | 116 | 182 | 205 | 148 | 134 | 153 | 133   | 190.6         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |      |     |     |       |       |      |       |       |
| 26-Feb          | 129                           | 122 | 120 | 115 | 117 | 112 | 62  | 30  | 51  | 343 | DF  | DF  | 84  | 72  | 72  | 109 | 104 | DF  | DF  | DF  | DF  | DF  | DF  | DF    | --            |       |       |       |       |       |       |       |       |       |       |       |       |       |       |      |     |     |       |       |      |       |       |
| 27-Feb          | DF                            | DF  | DF  | DF  | DF  | DF  | DF  | DF  | 349 | 351 | 350 | 355 | 349 | 347 | 3   | 3   | 15  | 9   | 5   | 4   | 5   | 0   | 345 | 347   | --            |       |       |       |       |       |       |       |       |       |       |       |       |       |       |      |     |     |       |       |      |       |       |
| 28-Feb          | 340                           | 344 | 347 | 350 | 338 | 331 | 331 | 330 | 326 | 343 | 303 | 293 | 276 | 261 | DF  | DF  | 261 | 275 | 276 | 35  | 143 | 146 | 178 | 144   | 324.9         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |      |     |     |       |       |      |       |       |
| Diurnal Average |                               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | 215.1 | 207.9         | 194.7 | 239.5 | 259.4 | 267.4 | 276.4 | 275.0 | 300.6 | 300.7 | 284.5 | 271.6 | 313.6 | 311.5 | 342.1 | 336.2 | 37.2 | 6.8 | 8.7 | 320.8 | 358.1 | 13.9 | 329.0 | 120.3 |

DF - DAS Failure      UO - Unstable Operation  
 All monthly, daily, and diurnal averages have been calculated using vector methods



**Wood Buffalo Environmental Association**  
**Summary of Hour Standard Deviations**

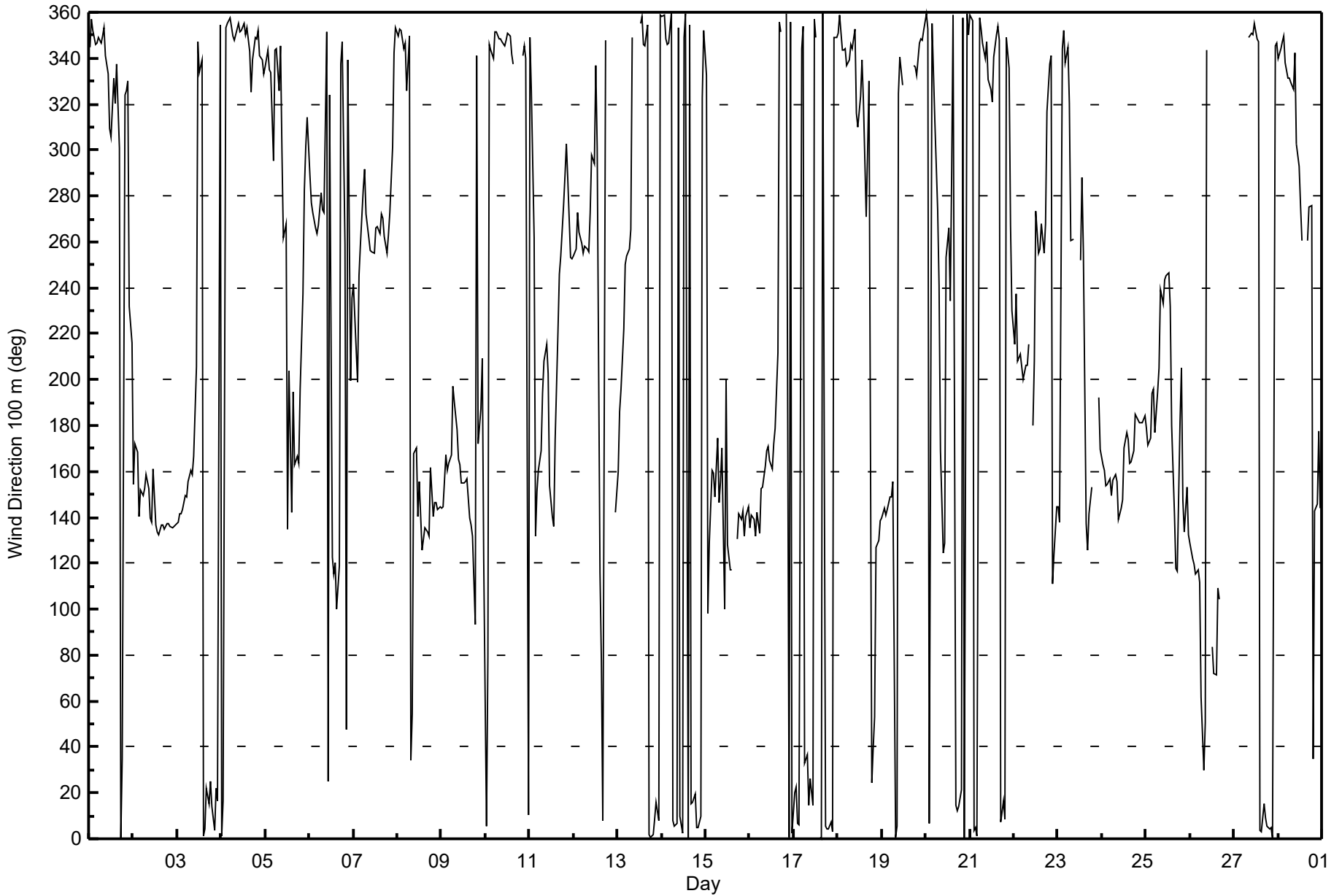
**Wind Direction 100 m (WD100m) - deg**  
**Lower Camp Met Tower - February 2023**

|  |                                |
|--|--------------------------------|
| Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0  | Hours in Service: 672          |
| Maximum Value: 101 deg on Feb 26 10:00   | Hours of Data: 624             |
| Minimum Value: 2 deg on Feb 28 02:00   | Hours of Missing Data: 48      |
| Percentiles: P <sub>1</sub> = 3 P <sub>10</sub> = 5 Q <sub>1</sub> = 6 Median = 10 Q <sub>3</sub> = 17 P <sub>90</sub> = 31 P <sub>99</sub> = 82 | Hours of Calibration: 0        |
|  | Percent Operational Time: 92.9 |

| Day    | Hourly Period Ending At (MST) |    |    |    |    |    |    |    |    |     |    |    |    |    |    |    |    |    |    |    |    |    |    |    | Daily Maximum |
|--------|-------------------------------|----|----|----|----|----|----|----|----|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|---------------|
|        | 1                             | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10  | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |               |
| 1-Feb  | 9                             | 9  | 13 | 10 | 9  | 4  | 6  | 7  | 7  | 9   | 5  | 17 | 14 | 11 | 19 | 10 | 44 | 28 | 21 | 19 | 5  | 39 | 30 | 23 | 44            |
| 2-Feb  | 25                            | 7  | 11 | 6  | 7  | 9  | 10 | 10 | 24 | 11  | 10 | 6  | 11 | 3  | 3  | 5  | 4  | 5  | 4  | 4  | 4  | 5  | 5  | 4  | 25            |
| 3-Feb  | 6                             | 5  | 6  | 6  | 8  | 6  | 5  | 4  | 10 | 10  | 32 | 18 | 20 | 11 | 11 | 6  | 11 | 11 | 14 | 20 | 11 | 13 | 14 | 31 | 32            |
| 4-Feb  | 8                             | 14 | 5  | 5  | 5  | 6  | 6  | 6  | 5  | 6   | 6  | 8  | 7  | 8  | 10 | 25 | 10 | 11 | 5  | 6  | 10 | 7  | 10 | 11 | 25            |
| 5-Feb  | 9                             | 9  | 15 | 29 | 33 | 21 | 10 | 15 | 30 | 31  | 68 | 59 | 29 | 38 | 38 | 38 | 9  | 13 | 7  | 30 | 27 | 10 | 19 | 17 | 68            |
| 6-Feb  | 8                             | 10 | 10 | 8  | 5  | 8  | 7  | 7  | 6  | 30  | 25 | 51 | 69 | 16 | 13 | 27 | 16 | 76 | 19 | 63 | 78 | 20 | 92 | 20 | 92            |
| 7-Feb  | 15                            | 20 | 19 | 8  | 3  | 17 | 9  | 12 | 5  | 4   | 4  | 5  | 10 | 7  | 6  | 7  | 8  | 5  | 4  | 5  | 27 | 11 | 13 | 7  | 27            |
| 8-Feb  | 7                             | 6  | 7  | 6  | 4  | 14 | 15 | 11 | 19 | 36  | 24 | 9  | 13 | 7  | 8  | 10 | 6  | 8  | 14 | 8  | 7  | 3  | 4  | 5  | 36            |
| 9-Feb  | 3                             | 5  | 6  | 7  | 4  | 4  | 23 | 15 | 14 | 6   | 4  | 4  | 4  | 5  | 4  | 6  | 10 | 11 | 63 | 39 | 13 | 29 | 31 | 86 | 86            |
| 10-Feb | 49                            | 38 | 8  | 6  | 4  | 8  | 5  | 5  | 5  | 6   | 6  | 6  | 6  | 8  | 8  | 6  | DF | DF | DF | DF | 7  | 11 | 11 | 24 | 49            |
| 11-Feb | 13                            | 50 | 76 | 40 | 22 | 8  | 8  | 11 | 17 | 19  | 19 | 14 | 8  | 9  | 20 | 17 | 5  | 6  | 11 | 10 | 9  | 39 | 8  | 2  | 76            |
| 12-Feb | 3                             | 6  | 25 | 4  | 8  | 7  | 5  | 6  | 11 | 9   | 21 | 48 | 32 | 19 | 61 | 23 | 56 | 8  | DF | DF | DF | DF | DF | 8  | 61            |
| 13-Feb | 6                             | 20 | 23 | 14 | 8  | 6  | 4  | 7  | 28 | UO  | UO | UO | 6  | 7  | 8  | 7  | 7  | 9  | 7  | 7  | 11 | 11 | 10 | 7  | 28            |
| 14-Feb | 8                             | 7  | 6  | 6  | 5  | 10 | 7  | 14 | 17 | 11  | 15 | 14 | 15 | 10 | 14 | 9  | 8  | 11 | 9  | 10 | 7  | 14 | 78 | 29 | 78            |
| 15-Feb | 61                            | 28 | 5  | 14 | 14 | 23 | 16 | 10 | 11 | 82  | 66 | 64 | 23 | 6  | 8  | DF | DF | 6  | 6  | 10 | 8  | 4  | 13 | 5  | 82            |
| 16-Feb | 8                             | 8  | 11 | 5  | 7  | 12 | 19 | 32 | 12 | 5   | 10 | 10 | 11 | 22 | 48 | 74 | 91 | 10 | DF | DF | 9  | 9  | 6  | 5  | 91            |
| 17-Feb | 21                            | 11 | 11 | 11 | 18 | 13 | 16 | 11 | 11 | 14  | 12 | 11 | 9  | DF | 8  | 6  | 6  | 7  | 8  | 7  | 7  | 9  | 6  | 6  | 21            |
| 18-Feb | 3                             | 7  | 5  | 4  | 3  | 7  | 3  | 7  | 5  | 5   | 12 | 34 | 28 | 12 | 29 | 16 | 21 | 10 | 15 | 31 | 25 | 23 | 8  | 5  | 34            |
| 19-Feb | 10                            | 11 | 9  | 8  | 17 | 14 | 89 | 22 | 44 | 84  | 11 | 20 | DF | DF | DF | DF | DF | 5  | 3  | 4  | 7  | 3  | 4  | 5  | 89            |
| 20-Feb | 7                             | 7  | 10 | 12 | 10 | 23 | 31 | 15 | 22 | 8   | 17 | 81 | 27 | 36 | 44 | 27 | 7  | 10 | 12 | 17 | 5  | 4  | 7  | 6  | 81            |
| 21-Feb | 12                            | 9  | 8  | 8  | 10 | 9  | 12 | 12 | 7  | 13  | 18 | 20 | 16 | 15 | 11 | 8  | 8  | 9  | 4  | 11 | 5  | 14 | 30 | 15 | 30            |
| 22-Feb | 14                            | 17 | 25 | 9  | 15 | 13 | 11 | 10 | 12 | DF  | 23 | 27 | 18 | 15 | 9  | 10 | 8  | 9  | 17 | 5  | 11 | 55 | 52 | 14 | 55            |
| 23-Feb | 16                            | 43 | 60 | 13 | 7  | 10 | 12 | 29 | 13 | DF  | DF | DF | 25 | 26 | 36 | 39 | 8  | 9  | 5  | DF | DF | DF | 21 | 9  | 60            |
| 24-Feb | 4                             | 5  | 4  | 3  | 3  | 2  | 4  | 3  | 4  | 8   | 6  | 7  | 17 | 9  | 7  | 8  | 7  | 6  | 6  | 7  | 7  | 7  | 8  | 10 | 17            |
| 25-Feb | 13                            | 13 | 11 | 11 | 12 | 14 | 16 | 31 | 15 | 11  | 7  | 6  | 7  | 15 | 39 | 30 | 19 | 8  | 34 | 11 | 28 | 4  | 9  | 5  | 39            |
| 26-Feb | 4                             | 4  | 4  | 4  | 9  | 26 | 60 | 28 | 51 | 101 | DF | DF | 18 | 16 | 19 | 11 | 12 | DF | DF | DF | DF | DF | DF | DF | 101           |
| 27-Feb | DF                            | DF | DF | DF | DF | DF | DF | DF | 6  | 5   | 5  | 6  | 7  | 7  | 9  | 9  | 6  | 6  | 5  | 8  | 7  | 7  | 6  | 5  | 9             |
| 28-Feb | 2                             | 2  | 3  | 5  | 3  | 5  | 3  | 7  | 20 | 8   | 17 | 20 | 9  | 12 | DF | DF | 18 | 16 | 36 | 37 | 13 | 17 | 14 | 14 | 37            |
|        | 61                            | 50 | 76 | 40 | 33 | 26 | 89 | 32 | 51 | 101 | 68 | 81 | 69 | 38 | 61 | 74 | 91 | 76 | 63 | 63 | 78 | 55 | 92 | 86 |               |

Diurnal Maximum

DF - DAS Failure UO - Unstable Operation







**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

**Wind Direction 163 m (WD163m) - deg**  
**Lower Camp Met Tower - February 2023**

|  |                                |
|--|--------------------------------|
| Direction of Maximum Speed: 140 deg on Feb 2 17:00           | Hours in Service: 672          |
| Direction of Maximum Daily Speed Average: 272.5 deg on Feb 7 | Hours of Data: 611             |
| Direction of Minimum Speed: 293 deg on Feb 12 14:00          | Hours of Missing Data: 61      |
| Direction of Minimum Daily Speed Average: 3.4 deg on Feb 23  | Percent Operational Time: 90.9 |
| Monthly Average Direction: 282.2 deg                         |                                |

| Day    | Hourly Period Ending At (MST) |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |      |      |       |      |     |     |       | Daily Average |
|--------|-------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|------|-------|------|-----|-----|-------|---------------|
|        | 1                             | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     | 10    | 11    | 12    | 13    | 14    | 15    | 16    | 17    | 18   | 19   | 20    | 21   | 22  | 23  | 24    |               |
| 1-Feb  | 13                            | 38    | 62    | 23    | 9     | 4     | 357   | 7     | 10    | 4     | 349   | 310   | 311   | 331   | 328   | 340   | 351   | 343  | 349  | 320   | 317  | 318 | 313 | 235   | 350.6         |
| 2-Feb  | 156                           | 185   | 188   | 168   | 168   | 173   | 154   | 161   | 155   | 149   | 144   | 146   | 138   | 136   | 137   | 140   | 140   | 140  | 142  | 142   | 141  | 141 | 141 | 142   | 146.5         |
| 3-Feb  | 145                           | 149   | 149   | 152   | 152   | 155   | 170   | 180   | 173   | 200   | 252   | 338   | 320   | 346   | 13    | 13    | 30    | 25   | 37   | 34    | 22   | 40  | 41  | 12    | 132.1         |
| 4-Feb  | 15                            | 40    | 16    | 12    | 18    | 26    | 16    | 3     | 2     | 10    | 4     | 2     | 9     | 358   | 4     | 10    | 351   | 346  | 22   | 15    | 26   | 356 | 4   | 352   | 9.7           |
| 5-Feb  | 8                             | 16    | 47    | 64    | 120   | 44    | 21    | 352   | 27    | 40    | 281   | 230   | 131   | 192   | 164   | 180   | 175   | 171  | 179  | 240   | 268  | 292 | 308 | 317   | 268.6         |
| 6-Feb  | 289                           | 279   | 277   | 275   | 276   | 281   | 290   | 287   | 288   | 343   | 50    | 41    | 132   | 103   | 122   | 117   | 131   | 154  | 110  | 159   | 152  | 154 | 168 | 170   | 266.9         |
| 7-Feb  | 190                           | 244   | 240   | 259   | 266   | 285   | 292   | 277   | 269   | 264   | 261   | 260   | 268   | 269   | 266   | 275   | 274   | 268  | 264  | 270   | 279  | 296 | 348 | 5     | 272.5         |
| 8-Feb  | 6                             | 11    | 19    | 20    | 17    | 355   | 358   | 17    | 45    | 149   | 178   | 155   | 173   | 138   | 135   | 141   | 143   | 155  | 156  | 153   | 161  | 174 | 157 | 166   | 130.7         |
| 9-Feb  | 180                           | 192   | 220   | 220   | 228   | 228   | 239   | 232   | 229   | 216   | 198   | 172   | 156   | 163   | 186   | 164   | 161   | 157  | 126  | 161   | 174  | 198 | 196 | 182   | 191.2         |
| 10-Feb | 170                           | 159   | 14    | 27    | 3     | 5     | 10    | 10    | 14    | 9     | 8     | 9     | 5     | 4     | 357   | 356   | DF    | DF   | DF   | DF    | 345  | 347 | 339 | 21    | 6.4           |
| 11-Feb | 347                           | 352   | 268   | 191   | 173   | 180   | 209   | 244   | 238   | 234   | 213   | 176   | 163   | 163   | 194   | 230   | 251   | 259  | 279  | 291   | 303  | 279 | 262 | 259   | 246.4         |
| 12-Feb | 263                           | 262   | 275   | 280   | 285   | 275   | 275   | 277   | 283   | 310   | 334   | 319   | 344   | 293   | 113   | 126   | 134   | 131  | DF   | DF    | DF   | DF  | DF  | 152   | 260.9         |
| 13-Feb | 179                           | 209   | 215   | 231   | 253   | 257   | 261   | 270   | UO    | UO    | UO    | UO    | UO    | UO    | 352   | 351   | 1     | 8    | 8    | 10    | 18   | 23  | 17  | 8     | 316.5         |
| 14-Feb | 7                             | 8     | 3     | 4     | 3     | 12    | 20    | 16    | 16    | 12    | 26    | 17    | 6     | 9     | 13    | 1     | 20    | 21   | 38   | 20    | 19   | 32  | 62  | 87    | 14.2          |
| 15-Feb | 78                            | 116   | 148   | 173   | 178   | 179   | 185   | 173   | 176   | 187   | 178   | 178   | 154   | 133   | 126   | DF    | DF    | 140  | 150  | 161   | 155  | 146 | 149 | 147   | 158.2         |
| 16-Feb | 142                           | 143   | 141   | 131   | 138   | 129   | 130   | 152   | 161   | 148   | 145   | 151   | 158   | 185   | 231   | 251   | 264   | 353  | DF   | DF    | 15   | 9   | 7   | 10    | 133.2         |
| 17-Feb | 31                            | 27    | 21    | 23    | 6     | 11    | 43    | 41    | 22    | 35    | 23    | 8     | 0     | DF    | 10    | 11    | 9     | 14   | 16   | 13    | 22   | 31  | 22  | 11    | 18.5          |
| 18-Feb | 15                            | 37    | 41    | 34    | 13    | 7     | 2     | 0     | UO    | UO    | UO    | UO    | 337   | UO    | 336   | 319   | 343   | 9    | 48   | 65    | 84   | 139 | 153 | 168   | 24.9          |
| 19-Feb | 157                           | 141   | 139   | 142   | 137   | 130   | 126   | 122   | 122   | 129   | 280   | 291   | DF    | DF    | DF    | DF    | DF    | 337  | 349  | 354   | 11   | 10  | 6   | 6     | 60.2          |
| 20-Feb | 17                            | 10    | 7     | 11    | 335   | 10    | 196   | 164   | 148   | 116   | 113   | 48    | 304   | 322   | 335   | 7     | 26    | 29   | 36   | 36    | 30   | 17  | 13  | 9     | 18.4          |
| 21-Feb | 16                            | 10    | 14    | 17    | 14    | 15    | 13    | 6     | 1     | 5     | 351   | 334   | 328   | 344   | 354   | 0     | 356   | 11   | 21   | 21    | 10   | 4   | 352 | 227   | 5.0           |
| 22-Feb | 243                           | 282   | 289   | 280   | 299   | 270   | 257   | 262   | 254   | DF    | 259   | 270   | 311   | 277   | 289   | 303   | 290   | 307  | 353  | 16    | 23   | 34  | 37  | 29    | 294.8         |
| 23-Feb | 7                             | 354   | 19    | 30    | 22    | 19    | 9     | 357   | 340   | DF    | DF    | DF    | 290   | 347   | 245   | 158   | 135   | 148  | 161  | DF    | DF   | DF  | 177 | 192   | 37.8          |
| 24-Feb | 190                           | 203   | 196   | 200   | 190   | 192   | 192   | 192   | 188   | 165   | 168   | 164   | 178   | 181   | 177   | 168   | 167   | 174  | 188  | 188   | 187  | 188 | 189 | 194   | 182.9         |
| 25-Feb | 200                           | 203   | 216   | 225   | 221   | 215   | 232   | 237   | 255   | 250   | 258   | 256   | 248   | 231   | 198   | 148   | 130   | 133  | 197  | 222   | 193  | 168 | 170 | 146   | 214.1         |
| 26-Feb | 153                           | 148   | 138   | 136   | 133   | 119   | 114   | 107   | 107   | 104   | DF    | DF    | 83    | 70    | 70    | 105   | 101   | DF   | DF   | DF    | DF   | DF  | DF  | DF    | --            |
| 27-Feb | DF                            | DF    | DF    | DF    | DF    | DF    | DF    | DF    | 356   | 356   | 356   | 0     | 353   | 351   | 6     | 11    | 19    | 14   | 12   | 12    | 13   | 10  | 356 | 359   | --            |
| 28-Feb | 357                           | 360   | 9     | 18    | 12    | 354   | 349   | UO    | UO    | UO    | UO    | UO    | 318   | 318   | DF    | DF    | 318   | 302  | 264  | 45    | 135  | 162 | 173 | 173   | --            |
|        | 232.8                         | 255.2 | 264.1 | 272.0 | 264.2 | 273.0 | 274.5 | 275.4 | 276.7 | 291.2 | 253.2 | 249.4 | 251.5 | 208.4 | 281.4 | 343.9 | 107.0 | 51.7 | 77.0 | 331.1 | 13.0 | 7.7 | 1.4 | 148.8 |               |
|        | Diurnal Average               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |      |      |       |      |     |     |       |               |

DF - DAS Failure      UO - Unstable Operation  
 All monthly, daily, and diurnal averages have been calculated using vector methods



**Wood Buffalo Environmental Association**  
**Summary of Hour Standard Deviations**

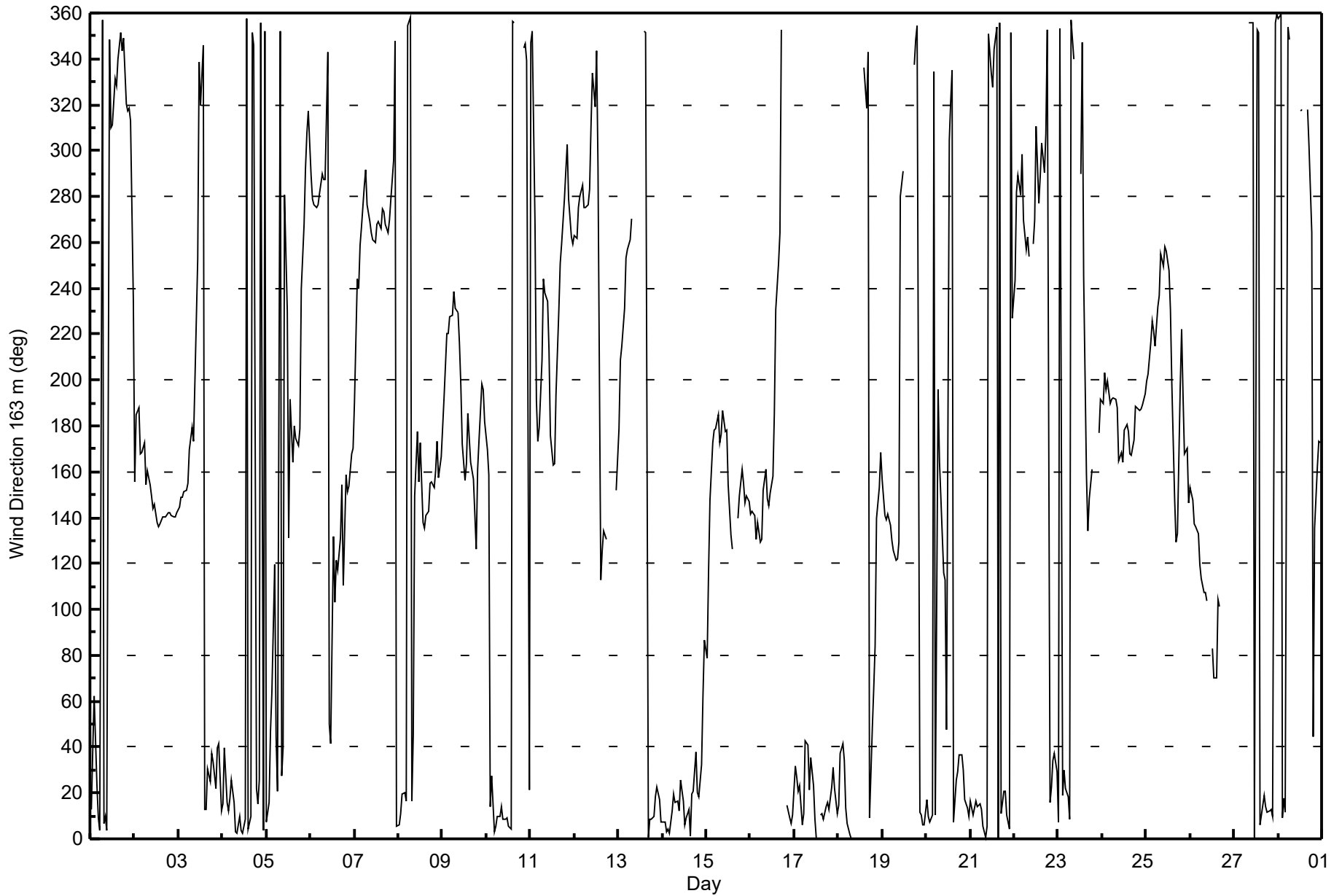
**Wind Direction 163 m (WD163m) - deg**  
**Lower Camp Met Tower - February 2023**

| Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0   |                               |    |    |    |    |    |    |    |    | Hours in Service: 672          |    |    |    |    |    |    |    |    |    |    |    |    |    |    |               |
|---|-------------------------------|----|----|----|----|----|----|----|----|--------------------------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|---------------|
| Maximum Value: 98 deg on Feb 12 14:00   |                               |    |    |    |    |    |    |    |    | Hours of Data: 611             |    |    |    |    |    |    |    |    |    |    |    |    |    |    |               |
| Minimum Value: 2 deg on Feb 12 00:00  |                               |    |    |    |    |    |    |    |    | Hours of Missing Data: 61      |    |    |    |    |    |    |    |    |    |    |    |    |    |    |               |
| Percentiles: P <sub>1</sub> = 3 P <sub>10</sub> = 4 Q <sub>1</sub> = 6 Median = 8 Q <sub>3</sub> = 13 P <sub>90</sub> = 22 P <sub>99</sub> = 70 |                               |    |    |    |    |    |    |    |    | Hours of Calibration: 0        |    |    |    |    |    |    |    |    |    |    |    |    |    |    |               |
|   |                               |    |    |    |    |    |    |    |    | Percent Operational Time: 90.9 |    |    |    |    |    |    |    |    |    |    |    |    |    |    |               |
| Day   | Hourly Period Ending At (MST) |    |    |    |    |    |    |    |    |                                |    |    |    |    |    |    |    |    |    |    |    |    |    |    | Daily Maximum |
|   | 1                             | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10                             | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |               |
| 1-Feb   | 7                             | 9  | 15 | 9  | 4  | 4  | 6  | 5  | 5  | 10                             | 6  | 12 | 11 | 10 | 15 | 7  | 11 | 7  | 21 | 7  | 5  | 4  | 20 | 27 |               |
| 2-Feb   | 70                            | 6  | 2  | 8  | 5  | 4  | 13 | 8  | 8  | 7                              | 3  | 5  | 3  | 2  | 4  | 5  | 4  | 5  | 5  | 4  | 5  | 5  | 5  | 70 |               |
| 3-Feb   | 7                             | 6  | 6  | 6  | 6  | 6  | 7  | 5  | 8  | 15                             | 20 | 36 | 24 | 12 | 9  | 8  | 10 | 10 | 14 | 17 | 11 | 13 | 13 | 41 |               |
| 4-Feb   | 8                             | 9  | 6  | 5  | 5  | 5  | 11 | 5  | 5  | 6                              | 7  | 8  | 12 | 7  | 12 | 24 | 6  | 18 | 7  | 4  | 8  | 8  | 10 | 9  |               |
| 5-Feb   | 11                            | 16 | 10 | 16 | 28 | 34 | 19 | 27 | 32 | 46                             | 85 | 65 | 11 | 27 | 18 | 19 | 5  | 5  | 14 | 12 | 12 | 7  | 20 | 19 |               |
| 6-Feb   | 6                             | 6  | 7  | 10 | 7  | 7  | 6  | 7  | 5  | 29                             | 13 | 34 | 48 | 18 | 10 | 15 | 13 | 38 | 55 | 10 | 11 | 12 | 10 | 7  |               |
| 7-Feb   | 26                            | 7  | 10 | 3  | 4  | 14 | 7  | 8  | 5  | 4                              | 4  | 6  | 8  | 6  | 5  | 4  | 5  | 3  | 3  | 4  | 22 | 7  | 19 | 8  |               |
| 8-Feb   | 5                             | 6  | 7  | 5  | 4  | 19 | 14 | 5  | 24 | 43                             | 11 | 10 | 13 | 13 | 6  | 6  | 4  | 7  | 5  | 5  | 6  | 8  | 6  | 10 |               |
| 9-Feb   | 8                             | 10 | 10 | 7  | 8  | 11 | 7  | 4  | 6  | 10                             | 6  | 12 | 3  | 9  | 4  | 8  | 6  | 10 | 27 | 28 | 12 | 5  | 7  | 8  |               |
| 10-Feb  | 4                             | 32 | 17 | 6  | 10 | 7  | 6  | 4  | 4  | 4                              | 6  | 5  | 4  | 7  | 6  | 4  | DF | DF | DF | DF | 7  | 9  | 7  | 27 |               |
| 11-Feb  | 13                            | 60 | 65 | 19 | 13 | 6  | 12 | 15 | 10 | 8                              | 14 | 15 | 10 | 18 | 7  | 14 | 5  | 6  | 9  | 8  | 7  | 27 | 7  | 2  |               |
| 12-Feb  | 4                             | 3  | 11 | 5  | 9  | 5  | 6  | 6  | 11 | 10                             | 15 | 33 | 55 | 98 | 5  | 8  | 7  | 8  | DF | DF | DF | DF | DF | 7  |               |
| 13-Feb  | 8                             | 13 | 13 | 9  | 6  | 5  | 3  | 7  | UO | UO                             | UO | UO | UO | UO | 7  | 6  | 7  | 9  | 7  | 7  | 8  | 9  | 9  | 7  |               |
| 14-Feb  | 9                             | 6  | 5  | 4  | 5  | 9  | 7  | 13 | 15 | 14                             | 16 | 16 | 23 | 11 | 18 | 10 | 7  | 8  | 8  | 7  | 5  | 13 | 55 | 55 |               |
| 15-Feb  | 32                            | 10 | 9  | 9  | 4  | 4  | 4  | 5  | 5  | 7                              | 70 | 18 | 9  | 8  | 7  | DF | DF | 5  | 7  | 7  | 6  | 9  | 8  | 7  |               |
| 16-Feb  | 8                             | 13 | 11 | 3  | 6  | 5  | 13 | 16 | 8  | 6                              | 4  | 7  | 9  | 11 | 34 | 5  | 19 | 17 | DF | DF | 8  | 8  | 7  | 6  |               |
| 17-Feb  | 22                            | 10 | 10 | 11 | 14 | 14 | 14 | 9  | 10 | 16                             | 10 | 12 | 10 | DF | 10 | 6  | 6  | 7  | 8  | 7  | 8  | 7  | 4  | 5  |               |
| 18-Feb  | 5                             | 3  | 6  | 7  | 6  | 5  | 6  | 13 | UO | UO                             | UO | UO | 21 | UO | 22 | 16 | 15 | 12 | 11 | 4  | 12 | 19 | 15 | 6  |               |
| 19-Feb  | 10                            | 8  | 3  | 4  | 3  | 5  | 5  | 8  | 6  | 83                             | 74 | 34 | DF | DF | DF | DF | DF | 5  | 4  | 4  | 5  | 4  | 4  | 5  |               |
| 20-Feb  | 6                             | 7  | 4  | 6  | 12 | 22 | 72 | 30 | 24 | 9                              | 27 | 77 | 31 | 56 | 49 | 22 | 7  | 9  | 7  | 4  | 2  | 5  | 4  | 4  |               |
| 21-Feb  | 9                             | 7  | 7  | 7  | 9  | 8  | 8  | 11 | 7  | 8                              | 16 | 17 | 13 | 13 | 10 | 7  | 8  | 7  | 3  | 7  | 6  | 9  | 56 | 8  |               |
| 22-Feb  | 10                            | 20 | 14 | 10 | 8  | 13 | 8  | 9  | 9  | DF                             | 9  | 14 | 17 | 15 | 15 | 14 | 19 | 10 | 19 | 5  | 9  | 9  | 9  | 13 |               |
| 23-Feb  | 8                             | 5  | 10 | 4  | 4  | 5  | 7  | 6  | 10 | DF                             | DF | DF | 28 | 20 | 31 | 30 | 10 | 10 | 6  | DF | DF | DF | 4  | 8  |               |
| 24-Feb  | 15                            | 9  | 4  | 7  | 5  | 5  | 3  | 4  | 6  | 5                              | 6  | 7  | 14 | 8  | 6  | 5  | 6  | 5  | 5  | 5  | 5  | 6  | 5  | 15 |               |
| 25-Feb  | 6                             | 7  | 9  | 7  | 6  | 7  | 9  | 15 | 8  | 11                             | 8  | 4  | 6  | 11 | 32 | 20 | 18 | 7  | 32 | 4  | 25 | 11 | 7  | 7  |               |
| 26-Feb  | 6                             | 8  | 4  | 4  | 7  | 9  | 9  | 11 | 10 | 20                             | DF | DF | 13 | 12 | 17 | 14 | 13 | DF | DF | DF | DF | DF | DF | 20 |               |
| 27-Feb  | DF                            | DF | DF | DF | DF | DF | DF | DF | 6  | 4                              | 5  | 6  | 7  | 8  | 7  | 10 | 5  | 5  | 5  | 7  | 6  | 5  | 6  | 4  |               |
| 28-Feb  | 4                             | 3  | 2  | 4  | 6  | 4  | 5  | UO | UO | UO                             | UO | UO | 13 | 19 | DF | DF | 21 | 27 | 8  | 44 | 12 | 15 | 8  | 12 |               |
|   |                               |    |    |    |    |    |    |    |    | Diurnal Maximum                |    |    |    |    |    |    |    |    |    |    |    |    |    |    |               |
|   |                               |    |    |    |    |    |    |    |    |                                |    |    |    |    |    |    |    |    |    |    |    |    |    |    |               |
| DF - DAS Failure UO - Unstable Operation  |                               |    |    |    |    |    |    |    |    |                                |    |    |    |    |    |    |    |    |    |    |    |    |    |    |               |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Wind Direction 163 m (WD163m) - deg**  
**Lower Camp Met Tower - February 2023**





**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

**Vertical Wind Speed 20 m (VW20m) - km/h**  
**Lower Camp Met Tower - February 2023**

| Maximum Value: 0.3 km/h on Feb 17 11:00      Maximum Daily Average: 0.0 km/h on Feb 10<br>Minimum Value: -1.9 km/h on Feb 24 15:00      Minimum Daily Average: -0.9 km/h on Feb 24<br>Maximum Diurnal Average: -0.1 km/h at hour 23      Minimum Diurnal Average: -0.4 km/h at hour 14<br>Monthly Average: -0.23 km/h      Percentiles: P <sub>1</sub> = -1.4 P <sub>10</sub> = -0.8 Q <sub>1</sub> = -0.3 Median = -0.1 Q <sub>3</sub> = 0.0 P <sub>90</sub> = 0.0 P <sub>99</sub> = 0.2 |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Hours in Service:         | 672           |                 |      |      |      |      |      |      |     |     |     |
|---|-------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|---------------------------|---------------|-----------------|------|------|------|------|------|------|-----|-----|-----|
|   |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Hours of Data:            | 627           |                 |      |      |      |      |      |      |     |     |     |
|   |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Hours of Missing Data:    | 45            |                 |      |      |      |      |      |      |     |     |     |
|   |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Hours of Calibration:     | 0             |                 |      |      |      |      |      |      |     |     |     |
|   |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Percent Operational Time: | 93.3          |                 |      |      |      |      |      |      |     |     |     |
| Day   | Hourly Period Ending At (MST) |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                           | Daily Average | Daily Maximum   |      |      |      |      |      |      |     |     |     |
|   | 1                             | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20   | 21   | 22   | 23   | 24                        |               |                 |      |      |      |      |      |      |     |     |     |
| 1-Feb   | -0.1                          | 0.0  | 0.0  | -0.1 | 0.1  | -0.1 | -0.1 | 0.0  | 0.0  | 0.0  | 0.0  | 0.1  | -0.2 | -0.2 | -0.2 | 0.0  | -0.1 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0                       | 0.0           | 0.0             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0 | 0.0 | 0.1 |
| 2-Feb   | 0.0                           | 0.0  | -0.1 | -0.1 | -0.2 | -0.4 | -0.4 | -0.5 | -0.3 | -0.5 | -0.7 | -0.5 | -0.4 | -0.2 | -0.6 | -1.3 | -1.3 | -0.8 | -1.4 | -1.2 | -1.1 | -1.0 | -0.8 | -1.1                      | -0.6          | -0.6            | -0.6 | -0.6 | -0.6 | -0.6 | -0.6 | -0.6 | 0.0 |     |     |
| 3-Feb   | -0.8                          | -1.3 | -1.0 | -1.1 | -1.0 | -1.0 | -1.1 | -1.0 | -0.3 | -0.2 | 0.0  | -0.1 | -0.1 | -0.1 | 0.0  | -0.1 | 0.1  | 0.0  | 0.2  | 0.0  | 0.0  | 0.1  | 0.0  | 0.0                       | -0.4          | -0.4            | -0.4 | -0.4 | -0.4 | -0.4 | -0.4 | -0.4 | 0.2 |     |     |
| 4-Feb   | -0.1                          | 0.0  | 0.1  | -0.1 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | -0.1 | -0.1 | -0.2 | -0.2 | 0.0  | -0.1 | -0.1 | -0.2 | 0.0  | 0.2  | 0.1  | 0.0  | 0.0  | 0.0  | 0.0                       | 0.0           | 0.0             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.2 |     |     |
| 5-Feb   | 0.0                           | 0.0  | -0.1 | 0.0  | 0.0  | -0.1 | -0.1 | -0.1 | -0.1 | 0.0  | -0.2 | -0.2 | -0.2 | -0.3 | -0.2 | -0.1 | -0.1 | 0.0  | 0.0  | 0.0  | 0.0  | -0.2 | -0.6 | -0.3                      | -0.1          | -0.1            | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | 0.0 |     |     |
| 6-Feb   | -0.8                          | -0.7 | -0.8 | -0.5 | -0.3 | -0.3 | -0.3 | -0.1 | 0.0  | 0.0  | 0.0  | -0.2 | -0.3 | -0.6 | -0.1 | -0.1 | -0.1 | -0.2 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0                       | -0.2          | -0.2            | -0.2 | -0.2 | -0.2 | -0.2 | -0.2 | -0.2 | 0.0 |     |     |
| 7-Feb   | 0.0                           | 0.0  | 0.0  | -0.1 | -0.5 | -1.1 | -0.5 | -0.8 | -0.7 | -1.1 | -0.7 | -1.0 | -0.8 | -1.0 | -1.3 | -1.2 | -1.0 | -0.7 | -0.5 | -0.6 | -0.4 | -0.2 | -0.2 | -0.2                      | -0.6          | -0.6            | -0.6 | -0.6 | -0.6 | -0.6 | -0.6 | -0.6 | 0.0 |     |     |
| 8-Feb   | 0.2                           | 0.0  | -0.1 | -0.1 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | -0.4 | -0.5 | -0.6 | -0.5 | -0.5 | -0.2 | 0.0  | 0.0  | 0.0  | 0.0  | 0.1  | 0.2  | -0.4                      | -0.1          | -0.1            | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | 0.2 |     |     |
| 9-Feb   | -1.0                          | -0.8 | -0.9 | -0.8 | -0.8 | -0.4 | -0.4 | -0.4 | -0.4 | -0.4 | -0.9 | -0.7 | -0.8 | -0.9 | -0.8 | -0.8 | -0.6 | -0.1 | 0.1  | -0.1 | 0.1  | 0.0  | 0.0  | 0.0                       | -0.5          | -0.5            | -0.5 | -0.5 | -0.5 | -0.5 | -0.5 | -0.5 | 0.1 |     |     |
| 10-Feb  | 0.0                           | 0.0  | 0.0  | 0.1  | 0.0  | -0.1 | -0.2 | 0.2  | 0.2  | 0.1  | 0.1  | 0.1  | 0.0  | -0.2 | -0.1 | -0.2 | DF   | DF   | DF   | DF   | 0.0  | -0.2 | -0.1 | -0.1                      | 0.0           | 0.0             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.2 |     |     |
| 11-Feb  | 0.0                           | 0.0  | -0.1 | 0.0  | 0.0  | -0.4 | -0.4 | -0.3 | -0.1 | -0.1 | -0.2 | -0.5 | -0.6 | -0.4 | -0.2 | -0.7 | -1.0 | -0.6 | -0.3 | -0.5 | -0.6 | -0.2 | -0.4 | -1.1                      | -0.4          | -0.4            | -0.4 | -0.4 | -0.4 | -0.4 | -0.4 | -0.4 | 0.0 |     |     |
| 12-Feb  | -1.1                          | -0.7 | -0.3 | -0.7 | -0.6 | -0.2 | -0.5 | -0.3 | -0.2 | -0.9 | -0.6 | -0.3 | -0.2 | 0.1  | 0.0  | -0.1 | 0.0  | 0.1  | DF   | DF   | DF   | DF   | DF   | -0.8                      | -0.4          | -0.4            | -0.4 | -0.4 | -0.4 | -0.4 | -0.4 | -0.4 | 0.1 |     |     |
| 13-Feb  | -1.1                          | -0.4 | -0.2 | 0.0  | -0.5 | -0.9 | -1.1 | -0.6 | -0.1 | 0.1  | -0.6 | -0.7 | -0.7 | -0.3 | 0.0  | -0.3 | -0.2 | 0.0  | 0.0  | -0.2 | -0.1 | 0.1  | 0.2  | -0.3                      | -0.3          | -0.3            | -0.3 | -0.3 | -0.3 | -0.3 | -0.3 | -0.3 | 0.2 |     |     |
| 14-Feb  | -0.2                          | -0.1 | 0.0  | 0.1  | 0.0  | 0.1  | 0.1  | 0.0  | -0.1 | 0.1  | -0.1 | -0.2 | 0.0  | -0.3 | -0.1 | -0.2 | 0.0  | 0.1  | -0.1 | -0.1 | 0.0  | -0.1 | 0.0  | 0.0                       | 0.0           | 0.0             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.1 |     |     |
| 15-Feb  | 0.0                           | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | -0.1 | -0.1 | 0.0  | -0.4 | -0.5 | -0.3 | DF   | DF   | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | -0.1                      | -0.1          | -0.1            | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | 0.0 |     |     |
| 16-Feb  | 0.0                           | 0.0  | 0.0  | -0.1 | 0.0  | 0.0  | 0.1  | 0.0  | 0.0  | 0.1  | 0.0  | -0.1 | -0.4 | -0.1 | -0.2 | -0.1 | 0.1  | -0.1 | DF   | DF   | 0.0  | 0.0  | -0.3 | 0.0                       | -0.1          | -0.1            | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | 0.1 |     |     |
| 17-Feb  | 0.0                           | 0.2  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.1  | 0.0  | 0.2  | 0.3  | -0.2 | -0.3 | DF   | -0.3 | -0.2 | -0.3 | 0.2  | -0.1 | 0.0  | 0.0  | 0.0  | -0.1 | 0.0                       | 0.0           | 0.0             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.3 |     |     |
| 18-Feb  | -0.1                          | -0.1 | 0.0  | 0.0  | -0.1 | -0.1 | -0.1 | 0.0  | 0.0  | 0.0  | 0.2  | 0.0  | -0.2 | 0.1  | 0.0  | -0.7 | -0.2 | -0.1 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | -0.1                      | -0.1          | -0.1            | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | 0.2 |     |     |
| 19-Feb  | 0.0                           | 0.0  | 0.0  | -0.1 | 0.0  | 0.0  | 0.0  | -0.1 | 0.0  | 0.0  | -0.1 | 0.1  | DF   | DF   | DF   | DF   | DF   | -0.1 | -0.1 | 0.0  | -0.1 | -0.3 | -0.1 | -0.1                      | -0.1          | -0.1            | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | 0.1 |     |     |
| 20-Feb  | 0.0                           | 0.0  | -0.1 | -0.1 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | -0.1 | -0.3 | -0.5 | -0.7 | -0.6 | -0.3 | 0.0  | 0.1  | -0.1 | -0.1 | 0.0  | 0.0  | 0.0  | 0.0  | -0.1                      | -0.1          | -0.1            | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | 0.1 |     |     |
| 21-Feb  | -0.2                          | -0.2 | 0.1  | 0.0  | 0.0  | -0.1 | -0.1 | 0.0  | -0.1 | -0.1 | 0.3  | 0.0  | -0.1 | 0.0  | 0.0  | -0.1 | -0.1 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0                       | 0.0           | 0.0             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.3 |     |     |
| 22-Feb  | -0.1                          | -0.1 | 0.0  | -0.1 | -0.1 | 0.0  | -0.1 | -0.1 | -0.2 | DF   | -0.5 | -0.4 | -0.5 | -0.9 | -0.7 | -0.7 | -0.5 | 0.0  | -0.1 | 0.0  | 0.0  | 0.0  | 0.0  | -0.2                      | -0.2          | -0.2            | -0.2 | -0.2 | -0.2 | -0.2 | -0.2 | -0.2 | 0.0 |     |     |
| 23-Feb  | 0.0                           | 0.0  | 0.0  | 0.0  | 0.0  | 0.1  | 0.0  | 0.0  | 0.0  | DF   | DF   | DF   | -0.8 | -0.7 | -0.5 | -0.3 | -0.4 | -0.2 | 0.0  | DF   | DF   | DF   | 0.0  | -0.2                      | -0.2          | -0.2            | -0.2 | -0.2 | -0.2 | -0.2 | -0.2 | -0.2 | 0.1 |     |     |
| 24-Feb  | -0.2                          | -0.4 | -0.6 | -0.6 | -0.8 | -0.1 | 0.0  | -0.2 | -1.0 | -0.5 | -0.2 | -0.9 | -1.2 | -1.7 | -1.9 | -1.3 | -1.4 | -1.6 | -1.8 | -1.7 | -1.3 | -1.1 | -0.7 | -0.9                      | -0.9          | -0.9            | -0.9 | -0.9 | -0.9 | -0.9 | -0.9 | -0.9 | 0.0 |     |     |
| 25-Feb  | -0.4                          | -1.0 | -0.8 | -0.5 | -0.4 | -0.2 | 0.0  | -0.1 | -0.1 | -0.6 | -0.9 | -0.9 | -0.8 | -0.8 | -0.2 | -0.4 | -0.2 | -0.2 | -0.1 | 0.2  | 0.2  | 0.0  | 0.0  | -0.3                      | -0.4          | -0.4            | -0.4 | -0.4 | -0.4 | -0.4 | -0.4 | -0.4 | 0.2 |     |     |
| 26-Feb  | -0.2                          | -0.1 | 0.1  | 0.0  | 0.0  | 0.1  | 0.1  | 0.0  | 0.0  | 0.0  | DF   | DF   | 0.0  | -0.1 | 0.0  | -0.2 | -0.2 | DF   | DF   | DF   | DF   | DF   | DF   | DF                        | --            | --              | --   | --   | --   | --   | --   | --   | 0.1 |     |     |
| 27-Feb  | DF                            | DF   | DF   | DF   | DF   | DF   | DF   | DF   | -0.1 | -0.4 | -0.3 | -0.4 | -0.2 | -0.6 | 0.0  | 0.0  | 0.1  | 0.2  | 0.1  | 0.0  | 0.1  | -0.1 | 0.0  | 0.0                       | --            | --              | --   | --   | --   | --   | --   | --   | 0.2 |     |     |
| 28-Feb  | 0.0                           | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | -0.2 | -0.9 | -1.0 | -0.9 | DF   | DF   | -0.3 | -0.1 | 0.0  | 0.0  | 0.0  | -0.1 | 0.0  | -0.2                      | -0.2          | -0.2            | -0.2 | -0.2 | -0.2 | -0.2 | -0.2 | -0.2 | 0.0 |     |     |
|   |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Diurnal Average           |               | Diurnal Maximum |      |      |      |      |      |      |     |     |     |
|   |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 0.2                       |               | 0.0             |      |      |      |      |      |      |     |     |     |
| DF - DAS Failure  |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                           |               |                 |      |      |      |      |      |      |     |     |     |



**Wood Buffalo Environmental Association**  
**Summary of Hour Standard Deviations**

**Vertical Wind Speed 20 m (VW20m) - km/h**  
**Lower Camp Met Tower - February 2023**

| Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0<br>Maximum Value: 4.9 km/h on Feb 2 20:00   |                               | Hours in Service: 672<br>Hours of Data: 627<br>Hours of Missing Data: 45<br>Hours of Calibration: 0<br>Percent Operational Time: 93.3 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |               |
|---|-------------------------------|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---------------|
| Minimum Value: 0.1 km/h on Feb 23 01:00<br>Percentiles: P <sub>1</sub> = 0.1 P <sub>10</sub> = 0.2 Q <sub>1</sub> = 0.4 Median = 0.9 Q <sub>3</sub> = 1.5 P <sub>90</sub> = 2.3 P <sub>99</sub> = 4.2 |                               |   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |               |
| Day   | Hourly Period Ending At (MST) |   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Daily Maximum |
|   | 1                             | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19  | 20  | 21  | 22  | 23  | 24  |               |
| 1-Feb   | 0.4                           | 0.2   | 0.2 | 0.3 | 0.3 | 0.3 | 0.6 | 0.5 | 0.6 | 0.4 | 0.7 | 1.4 | 1.9 | 1.8 | 1.4 | 0.7 | 0.4 | 0.1 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 | 0.1 | 1.9           |
| 2-Feb   | 0.2                           | 0.4   | 0.5 | 0.8 | 0.6 | 1.2 | 0.9 | 0.8 | 0.7 | 1.2 | 0.8 | 1.4 | 0.8 | 1.1 | 3.0 | 4.4 | 4.2 | 4.2 | 4.6 | 4.9 | 4.2 | 4.1 | 3.6 | 3.4 | 4.9           |
| 3-Feb   | 3.3                           | 3.3   | 2.9 | 2.7 | 1.9 | 1.8 | 1.4 | 1.4 | 0.9 | 0.9 | 0.7 | 1.0 | 1.0 | 1.5 | 1.4 | 1.5 | 1.5 | 1.5 | 1.2 | 1.1 | 1.0 | 0.8 | 0.7 | 1.0 | 3.3           |
| 4-Feb   | 1.0                           | 0.6   | 0.7 | 1.0 | 0.9 | 1.0 | 1.0 | 1.1 | 1.4 | 1.3 | 1.3 | 1.3 | 1.4 | 1.5 | 1.1 | 0.8 | 0.8 | 0.9 | 0.8 | 1.0 | 1.0 | 1.0 | 1.0 | 0.8 | 1.5           |
| 5-Feb   | 0.8                           | 0.8   | 0.5 | 0.5 | 0.4 | 0.8 | 0.8 | 0.7 | 0.7 | 0.6 | 0.8 | 0.7 | 0.6 | 0.7 | 0.8 | 0.8 | 0.3 | 0.3 | 0.2 | 0.3 | 0.3 | 1.3 | 3.6 | 2.5 | 3.6           |
| 6-Feb   | 3.7                           | 3.3   | 2.8 | 1.3 | 1.2 | 1.0 | 1.6 | 1.6 | 1.7 | 0.6 | 0.5 | 0.7 | 0.6 | 1.0 | 1.2 | 0.6 | 0.4 | 0.9 | 0.9 | 0.5 | 0.9 | 0.8 | 0.2 | 0.4 | 3.7           |
| 7-Feb   | 0.4                           | 0.4   | 0.9 | 1.4 | 2.1 | 4.0 | 3.4 | 2.6 | 2.2 | 2.0 | 1.6 | 2.0 | 3.0 | 4.0 | 4.3 | 4.0 | 3.3 | 2.6 | 1.6 | 1.7 | 0.9 | 0.5 | 2.2 | 1.8 | 4.3           |
| 8-Feb   | 1.6                           | 1.4   | 0.5 | 0.5 | 0.3 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.3 | 0.9 | 1.3 | 1.1 | 0.9 | 0.6 | 0.5 | 0.3 | 0.2 | 0.4 | 0.5 | 0.7 | 0.8 | 1.2 | 1.6           |
| 9-Feb   | 1.7                           | 1.4   | 1.3 | 1.2 | 1.0 | 1.0 | 1.0 | 1.0 | 0.9 | 0.9 | 1.1 | 1.4 | 1.7 | 1.7 | 1.3 | 1.0 | 0.9 | 0.3 | 0.5 | 0.5 | 0.6 | 0.6 | 0.5 | 0.1 | 1.7           |
| 10-Feb  | 0.2                           | 0.3   | 0.8 | 0.7 | 1.0 | 1.6 | 1.6 | 1.3 | 1.3 | 1.3 | 1.4 | 1.5 | 1.7 | 1.7 | 1.6 | 1.7 | DF  | DF  | DF  | DF  | 1.2 | 0.8 | 0.9 | 0.6 | 1.7           |
| 11-Feb  | 0.5                           | 0.3   | 0.4 | 0.2 | 0.3 | 1.0 | 1.1 | 0.8 | 0.6 | 0.7 | 0.7 | 1.0 | 1.4 | 1.2 | 1.1 | 1.6 | 2.3 | 1.7 | 2.1 | 3.2 | 2.4 | 0.7 | 1.6 | 2.8 | 3.2           |
| 12-Feb  | 2.6                           | 3.1   | 2.0 | 2.2 | 1.8 | 1.7 | 2.1 | 1.8 | 1.6 | 1.5 | 1.0 | 0.9 | 0.9 | 0.9 | 0.6 | 0.8 | 1.0 | 0.8 | DF  | DF  | DF  | DF  | DF  | 2.7 | 3.1           |
| 13-Feb  | 2.7                           | 1.9   | 1.1 | 0.7 | 2.2 | 2.9 | 3.1 | 2.5 | 3.1 | 4.4 | 4.1 | 3.5 | 4.2 | 4.4 | 3.5 | 3.7 | 3.5 | 3.4 | 2.4 | 1.8 | 2.3 | 2.7 | 2.2 | 1.9 | 4.4           |
| 14-Feb  | 1.6                           | 1.9   | 1.0 | 0.8 | 0.8 | 1.1 | 1.2 | 1.0 | 0.9 | 0.9 | 1.0 | 1.2 | 1.1 | 1.0 | 1.2 | 1.3 | 1.4 | 1.2 | 0.8 | 0.5 | 0.4 | 0.3 | 0.2 | 0.2 | 1.9           |
| 15-Feb  | 0.1                           | 0.1   | 0.1 | 0.2 | 0.1 | 0.2 | 0.1 | 0.2 | 0.3 | 0.3 | 0.3 | 0.3 | 0.7 | 1.4 | 1.7 | DF  | DF  | 0.3 | 0.2 | 0.2 | 0.3 | 0.2 | 0.3 | 0.3 | 1.7           |
| 16-Feb  | 0.3                           | 0.4   | 0.3 | 0.5 | 0.4 | 0.3 | 0.5 | 0.3 | 0.1 | 0.5 | 0.4 | 0.8 | 1.3 | 0.6 | 0.5 | 0.5 | 0.3 | 1.1 | DF  | DF  | 2.1 | 2.0 | 1.8 | 1.4 | 2.1           |
| 17-Feb  | 0.8                           | 0.9   | 1.1 | 0.9 | 0.6 | 0.8 | 0.8 | 1.1 | 1.2 | 1.2 | 1.4 | 1.5 | 1.6 | DF  | 1.8 | 1.9 | 1.9 | 1.9 | 1.8 | 1.8 | 1.6 | 1.0 | 0.4 | 0.5 | 1.9           |
| 18-Feb  | 0.3                           | 0.4   | 0.2 | 0.2 | 0.2 | 0.3 | 0.2 | 0.2 | 0.2 | 0.7 | 0.8 | 0.9 | 1.6 | 1.6 | 1.5 | 1.1 | 0.8 | 0.3 | 0.1 | 0.2 | 0.2 | 0.1 | 0.1 | 0.1 | 1.6           |
| 19-Feb  | 0.1                           | 0.2   | 0.2 | 0.2 | 0.2 | 0.3 | 0.3 | 0.3 | 0.4 | 0.8 | 0.5 | 0.6 | DF  | DF  | DF  | DF  | DF  | 0.8 | 0.3 | 0.3 | 0.5 | 0.8 | 0.6 | 1.1 | 1.1           |
| 20-Feb  | 0.9                           | 0.6   | 0.6 | 0.6 | 0.5 | 0.3 | 0.1 | 0.1 | 0.4 | 0.4 | 0.6 | 0.5 | 0.8 | 0.7 | 0.5 | 1.2 | 1.6 | 1.0 | 0.5 | 0.3 | 0.4 | 0.3 | 0.6 | 0.5 | 1.6           |
| 21-Feb  | 0.7                           | 1.4   | 1.3 | 1.1 | 1.1 | 0.7 | 0.7 | 0.8 | 0.4 | 1.1 | 1.4 | 1.9 | 1.9 | 2.0 | 2.0 | 2.4 | 1.9 | 1.0 | 0.5 | 0.4 | 0.3 | 0.2 | 0.1 | 0.3 | 2.4           |
| 22-Feb  | 0.3                           | 0.3   | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.6 | DF  | 0.9 | 0.9 | 1.1 | 1.4 | 1.2 | 1.0 | 0.9 | 0.7 | 0.3 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 1.4           |
| 23-Feb  | 0.1                           | 0.2   | 0.1 | 0.3 | 0.2 | 0.3 | 0.2 | 0.1 | 0.1 | DF  | DF  | DF  | 1.0 | 0.8 | 0.4 | 0.7 | 0.9 | 0.5 | 0.3 | DF  | DF  | DF  | 0.2 | 0.4 | 1.0           |
| 24-Feb  | 0.8                           | 0.9   | 1.3 | 1.3 | 1.6 | 1.7 | 1.5 | 1.5 | 1.8 | 1.9 | 2.1 | 2.4 | 2.3 | 2.2 | 2.2 | 2.2 | 2.3 | 2.1 | 2.4 | 2.2 | 1.8 | 1.8 | 1.6 | 1.4 | 2.4           |
| 25-Feb  | 1.2                           | 1.5   | 1.4 | 1.3 | 1.0 | 1.0 | 0.9 | 1.0 | 1.3 | 1.4 | 1.9 | 2.2 | 1.8 | 1.6 | 1.3 | 0.9 | 1.2 | 0.9 | 0.8 | 0.8 | 0.7 | 0.3 | 0.4 | 0.8 | 2.2           |
| 26-Feb  | 0.9                           | 0.6   | 0.5 | 0.8 | 0.3 | 0.3 | 0.5 | 0.6 | 0.4 | 0.4 | DF  | DF  | 1.2 | 1.5 | 1.3 | 1.4 | 1.5 | DF  | DF  | DF  | DF  | DF  | DF  | DF  | 1.5           |
| 27-Feb  | DF                            | DF  | DF  | DF  | DF  | DF  | DF  | DF  | 2.3 | 2.4 | 2.3 | 2.4 | 2.4 | 2.1 | 2.4 | 2.0 | 2.5 | 2.4 | 1.9 | 1.5 | 1.3 | 0.9 | 0.9 | 0.6 | 2.5           |
| 28-Feb  | 0.2                           | 0.2   | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.3 | 0.7 | 0.8 | 1.0 | 0.8 | DF  | DF  | 1.0 | 0.5 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 1.0           |
| Diurnal Maximum   |                               |   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |               |
| 3.7 3.3 2.9 2.7 2.2 4.0 3.4 2.6 3.1 4.4 4.1 3.5 4.2 4.4 4.3 4.4 4.2 4.2 4.6 4.9 4.2 4.1 3.6 3.4   |                               |   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |               |
| DF - DAS Failure  |                               |   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |               |



| Maximum Value: 1.3 km/h on Feb 24 07:00     |                               | Maximum Daily Average: 0.6 km/h on Feb 2  |      | Hours in Service: 672          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |   |               |               |     |     |
|---|-------------------------------|---|------|--------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|---|---------------|---------------|-----|-----|
| Minimum Value: -2.8 km/h on Feb 13 12:00    |                               | Minimum Daily Average: -0.4 km/h on Feb 7   |      | Hours of Data: 625             |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |   |               |               |     |     |
| Maximum Diurnal Average: 0.1 km/h at hour 4 |                               | Minimum Diurnal Average: -0.1 km/h at hour 14   |      | Hours of Missing Data: 47      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |   |               |               |     |     |
| Monthly Average: 0.02 km/h                  |                               | Percentiles: P <sub>1</sub> = -1.0 P <sub>10</sub> = -0.3 Q <sub>1</sub> = -0.1 Median = 0.0 Q <sub>3</sub> = 0.2 P <sub>90</sub> = 0.4 P <sub>99</sub> = 1.0 |      | Hours of Calibration: 0        |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |   |               |               |     |     |
|   |                               |   |      | Percent Operational Time: 93.0 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |   |               |               |     |     |
| Day   | Hourly Period Ending At (MST) |   |      |                                |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |   | Daily Average | Daily Maximum |     |     |
|   | 1                             | 2   | 3    | 4                              | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20   | 21   | 22   | 23   | 24  |               |               |     |     |
| 1-Feb                                       | -0.1                          | -0.1  | 0.1  | -0.1                           | 0.0  | -0.2 | -0.2 | -0.2 | -0.2 | -0.3 | -0.2 | 0.1  | -0.3 | -0.6 | -0.2 | -0.1 | 0.1  | 0.1  | 0.1  | 0.0  | 0.0  | 0.1  | 0.2  | 0.3   | -0.1          | 0.3           |     |     |
| 2-Feb                                       | 0.7                           | 0.6   | 0.5  | 0.7                            | 0.4  | 0.2  | 0.2  | 0.1  | 0.2  | 0.0  | -0.2 | 0.0  | 0.2  | 0.5  | 0.8  | 1.0  | 0.9  | 0.6  | 1.2  | 0.9  | 1.0  | 0.9  | 1.0  | 0.8   | 0.6           | 1.2           |     |     |
| 3-Feb                                       | 1.0                           | 1.1   | 0.9  | 1.2                            | 0.6  | 0.6  | 0.4  | 0.5  | 0.0  | 0.0  | 0.3  | -0.1 | -0.2 | -0.2 | 0.1  | -0.1 | 0.1  | 0.0  | 0.2  | 0.1  | 0.1  | 0.0  | 0.0  | -0.1  | 0.3           | 1.2           |     |     |
| 4-Feb                                       | 0.0                           | 0.0   | 0.1  | -0.1                           | 0.0  | -0.1 | -0.1 | 0.0  | -0.1 | -0.1 | -0.1 | -0.1 | -0.3 | -0.3 | -0.2 | -0.1 | -0.1 | -0.2 | -0.1 | 0.0  | -0.1 | -0.1 | -0.2 | -0.1  | -0.2          | 0.1           | 0.1 |     |
| 5-Feb                                       | -0.1                          | -0.1  | -0.1 | 0.0                            | 0.0  | -0.1 | -0.1 | -0.2 | -0.2 | -0.1 | -0.1 | -0.1 | -0.2 | -0.2 | 0.1  | -0.1 | 0.0  | 0.1  | 0.0  | 0.1  | 0.3  | 0.1  | -1.0 | -0.5  | -0.1          | 0.3           | 0.3 |     |
| 6-Feb                                       | -1.2                          | -0.5  | -0.6 | -0.1                           | -0.1 | 0.1  | -0.1 | 0.1  | 0.3  | -0.1 | 0.1  | 0.1  | 0.0  | 0.0  | 0.4  | -0.1 | 0.0  | -0.3 | -0.2 | 0.0  | -0.2 | 0.0  | 0.0  | -0.1  | -0.1          | 0.4           | 0.4 |     |
| 7-Feb                                       | 0.0                           | 0.4   | 1.0  | 0.2                            | -0.2 | -1.1 | -0.8 | -0.8 | -0.4 | -0.6 | -0.4 | -0.5 | -0.7 | -0.8 | -1.2 | -1.2 | -1.1 | -0.6 | -0.2 | -0.4 | -0.2 | -0.2 | -0.5 | -0.3  | -0.4          | 1.0           | 1.0 |     |
| 8-Feb                                       | -0.1                          | -0.1  | -0.2 | -0.3                           | 0.0  | 0.1  | 0.0  | 0.0  | 0.0  | 0.1  | 0.1  | 0.1  | 0.0  | 0.1  | 0.2  | 0.1  | 0.0  | 0.2  | 0.3  | 0.1  | 0.3  | 0.6  | 0.7  | 0.2   | 0.1           | 0.7           | 0.7 |     |
| 9-Feb                                       | -0.1                          | 0.2   | 0.2  | 0.2                            | 0.2  | 0.6  | 0.9  | 0.8  | 0.6  | 0.6  | 0.2  | 0.4  | 0.2  | 0.5  | 0.3  | 0.1  | -0.1 | 0.3  | 0.1  | 0.2  | 0.7  | 0.5  | 0.4  | 0.2   | 0.3           | 0.9           | 0.9 |     |
| 10-Feb                                      | 0.1                           | 0.0   | -0.1 | 0.0                            | -0.1 | 0.0  | -0.1 | 0.0  | -0.1 | 0.0  | 0.0  | -0.2 | -0.2 | -0.3 | -0.2 | -0.5 | DF   | DF   | DF   | DF   | -0.1 | -0.1 | -0.2 | 0.0   | -0.1          | 0.1           | 0.1 |     |
| 11-Feb                                      | 0.0                           | 0.0   | -0.1 | 0.1                            | 0.3  | 0.0  | 0.1  | 0.3  | 0.4  | 0.2  | 0.1  | 0.2  | 0.3  | 0.3  | 0.5  | 0.1  | -0.1 | -0.3 | -0.4 | -1.1 | -1.0 | -0.1 | 0.0  | -0.8  | 0.0           | 0.5           | 0.5 |     |
| 12-Feb                                      | -0.9                          | -0.8  | -0.5 | -0.2                           | 0.2  | 0.6  | -0.3 | 0.4  | -0.5 | -0.5 | -0.1 | 0.0  | -0.1 | 0.1  | 0.0  | -0.3 | -0.2 | 0.0  | DF   | DF   | DF   | DF   | DF   | DF  | 0.9           | -0.1          | 0.9 | 0.9 |
| 13-Feb                                      | 0.8                           | 0.9   | 0.2  | 0.1                            | -0.2 | -0.3 | -0.7 | -0.6 | -0.3 | UO   | UO   | -2.8 | -0.7 | -0.3 | -0.5 | -0.9 | -0.3 | 0.1  | 0.0  | -0.1 | 0.0  | 0.3  | 0.3  | 0.0   | -0.2          | 0.9           | 0.9 |     |
| 14-Feb                                      | 0.0                           | -0.1  | -0.1 | -0.1                           | 0.0  | 0.0  | 0.0  | 0.1  | 0.0  | 0.0  | 0.0  | -0.1 | -0.2 | -0.1 | -0.3 | -0.2 | -0.2 | 0.1  | 0.1  | 0.0  | 0.0  | -0.1 | 0.0  | 0.1   | 0.0           | 0.1           | 0.1 | 0.1 |
| 15-Feb                                      | 0.0                           | 0.0   | 0.0  | 0.3                            | 0.1  | 0.1  | 0.1  | 0.1  | 0.1  | 0.3  | 0.0  | 0.0  | 0.0  | -0.2 | 0.0  | DF   | DF   | 0.2  | 0.1  | 0.2  | 0.3  | 0.2  | 0.0  | 0.2   | 0.1           | 0.3           | 0.3 | 0.3 |
| 16-Feb                                      | 0.2                           | 0.3   | 0.4  | 0.2                            | 0.1  | 0.1  | 0.1  | 0.1  | 0.1  | 0.1  | 0.8  | 0.6  | 0.2  | 0.3  | 0.1  | 0.0  | 0.0  | -0.1 | DF   | DF   | -0.2 | 0.0  | -0.2 | -0.1  | 0.1           | 0.8           | 0.8 |     |
| 17-Feb                                      | 0.0                           | 0.2   | 0.0  | 0.0                            | -0.1 | 0.0  | 0.0  | 0.0  | 0.0  | 0.2  | 0.2  | -0.2 | -0.5 | DF   | -0.2 | -0.3 | -0.2 | 0.1  | 0.0  | 0.2  | 0.0  | -0.1 | -0.1 | -0.2  | 0.0           | 0.2           | 0.2 |     |
| 18-Feb                                      | -0.1                          | -0.1  | 0.0  | 0.0                            | -0.1 | -0.1 | 0.0  | 0.0  | 0.0  | 0.0  | 0.3  | 0.2  | 0.0  | 0.0  | 0.2  | 0.0  | -0.1 | -0.1 | 0.0  | 0.0  | 0.1  | 0.1  | 0.0  | 0.0   | 0.0           | 0.0           | 0.3 | 0.3 |
| 19-Feb                                      | 0.2                           | 0.3   | 0.2  | 0.3                            | 0.1  | 0.1  | 0.0  | -0.1 | -0.1 | -0.1 | -0.1 | 0.0  | DF   | DF   | DF   | DF   | DF   | -0.2 | 0.0  | 0.0  | -0.1 | -0.2 | -0.1 | 0.0   | 0.0           | 0.3           | 0.3 | 0.3 |
| 20-Feb                                      | -0.1                          | -0.1  | -0.1 | -0.1                           | 0.0  | 0.0  | 0.0  | 0.1  | 0.4  | -0.1 | -0.1 | -0.4 | -0.5 | -0.2 | -0.1 | 0.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.1  | -0.2 | -0.4  | -0.1          | 0.4           | 0.4 | 0.4 |
| 21-Feb                                      | -0.4                          | -0.3  | -0.1 | -0.2                           | -0.1 | -0.1 | -0.2 | 0.0  | -0.3 | 0.0  | 0.6  | 0.3  | 0.2  | -0.4 | -0.2 | -0.2 | -0.4 | 0.3  | 0.0  | -0.1 | -0.1 | 0.0  | 0.0  | 0.1   | -0.1          | 0.6           | 0.6 | 0.6 |
| 22-Feb                                      | 0.2                           | 0.3   | 0.6  | 0.5                            | 0.6  | 0.6  | 0.6  | 0.6  | 0.5  | DF   | 0.2  | -0.1 | -0.1 | -0.2 | -0.2 | -0.1 | 0.2  | -0.1 | -0.1 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0   | 0.0           | 0.2           | 0.6 | 0.6 |
| 23-Feb                                      | 0.1                           | 0.0   | 0.0  | 0.0                            | 0.0  | 0.0  | 0.1  | 0.5  | 0.4  | DF   | DF   | DF   | -0.4 | -0.3 | -0.2 | 0.0  | 0.2  | 0.1  | 0.3  | DF   | DF   | DF   | 0.3  | 0.6   | 0.1           | 0.6           | 0.6 |     |
| 24-Feb                                      | 0.5                           | 0.4   | 0.2  | 0.3                            | -0.1 | 1.1  | 1.3  | 0.9  | -0.3 | 0.2  | 0.7  | 0.7  | 0.6  | -0.4 | -0.7 | -0.1 | -0.3 | -0.8 | -0.2 | -0.5 | -0.2 | -0.1 | -0.2 | 0.2   | 0.1           | 1.3           | 1.3 |     |
| 25-Feb                                      | 0.0                           | 0.0   | 0.2  | 0.1                            | 0.2  | 0.3  | 0.4  | 0.3  | 0.1  | -0.1 | -0.2 | 0.1  | -0.3 | 0.0  | 0.3  | -0.2 | 0.3  | 0.2  | 0.0  | 0.6  | 0.4  | 0.4  | 0.4  | 0.1   | 0.2           | 0.6           | 0.6 | 0.6 |
| 26-Feb                                      | 0.2                           | 0.2   | 0.5  | 0.3                            | 0.1  | 0.1  | 0.0  | 0.0  | -0.1 | -0.2 | DF   | DF   | 0.1  | 0.1  | 0.1  | 0.1  | 0.2  | DF   | DF   | DF   | DF   | DF   | DF   | DF  | --            | 0.5           | 0.5 | 0.5 |
| 27-Feb                                      | DF                            | DF  | DF   | DF                             | DF   | DF   | DF   | DF   | -0.2 | -0.4 | -0.4 | -0.5 | -0.5 | -0.6 | -0.1 | 0.1  | -0.1 | 0.2  | 0.1  | -0.2 | 0.0  | 0.0  | -0.1 | 0.0   | --            | 0.2           | 0.2 | 0.2 |
| 28-Feb                                      | 0.0                           | 0.0   | 0.0  | 0.0                            | 0.1  | 0.0  | 0.0  | 0.0  | 0.1  | 0.0  | 0.3  | -0.3 | -0.5 | -0.3 | DF   | DF   | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.4   | 0.5           | 0.0           | 0.5 | 0.5 |
|   |                               |   |      |                                |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Diurnal Average   |               |               |     |     |
|   |                               |   |      |                                |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Diurnal Maximum   |               |               |     |     |
|   |                               |   |      |                                |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 0.0 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.0 0.0 0.1 -0.1 -0.1 -0.1 -0.1 0.0 0.0 0.1 0.0 0.0 0.1 0.0 0.1 |               |               |     |     |
|   |                               |   |      |                                |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 1.0 1.1 1.0 1.2 0.6 1.1 1.3 0.9 0.6 0.8 0.7 0.7 0.6 0.5 0.8 1.0 0.9 0.6 1.2 0.9 1.0 0.9 1.0 0.9 |               |               |     |     |
| DF - DAS Failure                            |                               |   |      |                                |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | UO - Unstable Operation   |               |               |     |     |



**Wood Buffalo Environmental Association**  
**Summary of Hour Standard Deviations**

**Vertical Wind Speed 45 m (VW45m) - km/h**  
**Lower Camp Met Tower - February 2023**

| Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0<br>Maximum Value: 4.4 km/h on Feb 7 16:00<br>Minimum Value: 0.1 km/h on Feb 8 08:00<br>Percentiles: P <sub>1</sub> = 0.1 P <sub>10</sub> = 0.2 Q <sub>1</sub> = 0.4 Median = 0.8 Q <sub>3</sub> = 1.3 P <sub>90</sub> = 2.1 P <sub>99</sub> = 3.6 |                               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Hours in Service: 672<br>Hours of Data: 625<br>Hours of Missing Data: 47<br>Hours of Calibration: 0<br>Percent Operational Time: 93.0 |               |     |
|---|-------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---|---------------|-----|
| Day   | Hourly Period Ending At (MST) |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |   | Daily Maximum |     |
|   | 1                             | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19  | 20  | 21  | 22  | 23  | 24  |               |     |
| 1-Feb   | 0.4                           | 0.4 | 0.2 | 0.4 | 0.4 | 0.3 | 0.4 | 0.6 | 0.8 | 0.5 | 0.8 | 1.5 | 2.1 | 1.8 | 1.6 | 0.8 | 0.5 | 0.2 | 0.5 | 0.2 | 0.3 | 0.3 | 0.4 | 0.2   | 2.1           |     |
| 2-Feb   | 0.4                           | 0.3 | 0.4 | 0.6 | 0.5 | 0.8 | 0.8 | 0.6 | 0.8 | 0.8 | 0.7 | 0.8 | 0.8 | 1.4 | 2.3 | 2.9 | 2.7 | 3.0 | 2.9 | 3.1 | 2.8 | 2.8 | 2.6 | 2.5   | 3.1           |     |
| 3-Feb   | 2.4                           | 2.1 | 2.1 | 2.1 | 2.0 | 1.7 | 1.0 | 1.2 | 0.6 | 0.9 | 0.5 | 0.8 | 0.9 | 1.3 | 1.2 | 1.0 | 1.3 | 1.3 | 1.2 | 1.0 | 0.9 | 0.7 | 0.6 | 0.9   | 2.4           |     |
| 4-Feb   | 0.8                           | 0.6 | 0.7 | 0.9 | 0.9 | 0.8 | 1.0 | 1.1 | 1.3 | 1.0 | 1.2 | 1.2 | 1.1 | 1.3 | 1.1 | 0.9 | 0.8 | 0.7 | 0.7 | 1.0 | 0.9 | 1.0 | 0.9 | 0.7   | 1.3           |     |
| 5-Feb   | 0.7                           | 0.7 | 0.4 | 0.4 | 0.4 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.8 | 0.8 | 0.7 | 0.7 | 0.7 | 0.9 | 0.3 | 0.4 | 0.2 | 0.4 | 0.5 | 1.4 | 3.3 | 2.7   | 3.3           |     |
| 6-Feb   | 3.5                           | 3.6 | 2.5 | 1.1 | 0.8 | 1.2 | 1.4 | 1.5 | 2.0 | 0.8 | 0.7 | 1.0 | 0.7 | 1.0 | 1.1 | 0.7 | 0.5 | 0.7 | 0.7 | 0.3 | 0.6 | 0.7 | 0.3 | 0.3   | 3.6           |     |
| 7-Feb   | 0.5                           | 0.8 | 0.8 | 1.5 | 1.9 | 4.0 | 3.6 | 3.2 | 2.1 | 1.4 | 1.3 | 1.8 | 3.1 | 4.0 | 3.7 | 4.4 | 3.6 | 2.5 | 1.2 | 1.7 | 0.9 | 0.8 | 1.8 | 1.5   | 4.4           |     |
| 8-Feb   | 1.5                           | 1.4 | 0.6 | 0.6 | 0.3 | 0.2 | 0.1 | 0.1 | 0.1 | 0.2 | 0.3 | 0.6 | 0.9 | 0.9 | 0.8 | 0.6 | 0.5 | 0.5 | 0.4 | 0.5 | 0.5 | 0.7 | 0.6 | 0.8   | 1.5           |     |
| 9-Feb   | 1.2                           | 0.9 | 0.8 | 0.8 | 0.8 | 0.6 | 0.6 | 0.7 | 0.5 | 0.5 | 0.5 | 0.8 | 1.2 | 1.2 | 0.8 | 0.7 | 0.7 | 0.4 | 0.4 | 0.3 | 0.5 | 0.5 | 0.4 | 0.2   | 1.2           |     |
| 10-Feb  | 0.2                           | 0.3 | 0.6 | 0.6 | 1.1 | 1.4 | 1.3 | 1.4 | 1.2 | 1.3 | 1.3 | 1.4 | 1.6 | 1.5 | 1.7 | 1.8 | DF  | DF  | DF  | DF  | 1.1 | 0.6 | 0.8 | 0.4   | 1.8           |     |
| 11-Feb  | 0.4                           | 0.3 | 0.3 | 0.2 | 0.5 | 0.9 | 0.8 | 0.7 | 0.5 | 0.8 | 0.8 | 0.8 | 1.0 | 0.8 | 1.0 | 1.6 | 1.9 | 1.6 | 2.2 | 2.9 | 2.5 | 0.9 | 1.5 | 2.2   | 2.9           |     |
| 12-Feb  | 2.1                           | 3.1 | 2.5 | 1.5 | 1.4 | 1.5 | 2.1 | 1.9 | 2.0 | 1.1 | 0.7 | 0.9 | 0.8 | 0.8 | 0.5 | 0.3 | 0.5 | 0.6 | DF  | DF  | DF  | DF  | DF  | DF  | 2.2           | 3.1 |
| 13-Feb  | 2.4                           | 2.1 | 1.3 | 1.2 | 2.3 | 2.6 | 2.4 | 2.4 | 2.5 | UO  | UO  | 3.2 | 3.5 | 3.7 | 3.4 | 3.5 | 2.9 | 2.9 | 2.1 | 1.7 | 2.3 | 2.8 | 2.1 | 1.6   | 3.7           |     |
| 14-Feb  | 1.4                           | 1.6 | 1.1 | 1.0 | 0.9 | 0.9 | 0.9 | 1.0 | 0.9 | 0.8 | 0.9 | 1.1 | 1.0 | 0.9 | 1.0 | 1.1 | 1.2 | 1.1 | 0.7 | 0.5 | 0.2 | 0.2 | 0.2 | 0.2   | 1.6           |     |
| 15-Feb  | 0.2                           | 0.1 | 0.1 | 0.3 | 0.2 | 0.1 | 0.2 | 0.3 | 0.3 | 0.3 | 0.3 | 0.4 | 0.8 | 0.9 | 1.5 | DF  | DF  | 0.4 | 0.3 | 0.2 | 0.4 | 0.4 | 0.5 | 0.5   | 1.5           |     |
| 16-Feb  | 0.5                           | 0.5 | 0.4 | 0.4 | 0.5 | 0.4 | 0.2 | 0.2 | 0.2 | 0.5 | 0.6 | 0.5 | 0.8 | 0.4 | 0.5 | 0.4 | 0.2 | 1.0 | DF  | DF  | 1.7 | 1.5 | 1.4 | 1.0   | 1.7           |     |
| 17-Feb  | 0.7                           | 0.9 | 0.9 | 0.7 | 0.6 | 0.8 | 0.7 | 1.0 | 0.9 | 1.0 | 1.3 | 1.3 | 1.4 | DF  | 1.3 | 1.2 | 1.3 | 1.6 | 1.4 | 1.6 | 1.4 | 0.9 | 0.6 | 0.3   | 1.6           |     |
| 18-Feb  | 0.3                           | 0.3 | 0.2 | 0.2 | 0.3 | 0.3 | 0.3 | 0.3 | 0.2 | 0.7 | 0.9 | 1.2 | 1.8 | 1.9 | 1.7 | 1.0 | 0.6 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2   | 1.9           |     |
| 19-Feb  | 0.3                           | 0.3 | 0.3 | 0.4 | 0.2 | 0.2 | 0.2 | 0.4 | 0.4 | 0.7 | 0.6 | 0.7 | DF  | DF  | DF  | DF  | DF  | 0.9 | 0.3 | 0.4 | 0.3 | 0.8 | 0.9 | 1.2   | 1.2           |     |
| 20-Feb  | 0.8                           | 0.5 | 0.6 | 0.5 | 0.5 | 0.3 | 0.1 | 0.2 | 0.5 | 0.4 | 0.7 | 0.4 | 0.9 | 0.8 | 0.3 | 1.2 | 1.1 | 0.9 | 0.8 | 0.4 | 0.2 | 0.3 | 1.0 | 0.7   | 1.2           |     |
| 21-Feb  | 1.0                           | 1.4 | 1.3 | 1.1 | 1.3 | 0.9 | 0.8 | 1.1 | 0.7 | 1.4 | 1.7 | 2.2 | 2.3 | 2.0 | 1.8 | 1.9 | 1.8 | 0.9 | 0.4 | 0.4 | 0.3 | 0.3 | 0.2 | 0.4   | 2.3           |     |
| 22-Feb  | 0.5                           | 0.5 | 0.5 | 0.4 | 0.4 | 0.3 | 0.3 | 0.3 | 0.5 | DF  | 0.4 | 0.5 | 1.1 | 1.0 | 0.8 | 0.5 | 0.7 | 0.8 | 0.3 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1   | 1.1           |     |
| 23-Feb  | 0.1                           | 0.1 | 0.2 | 0.5 | 0.3 | 0.5 | 0.3 | 0.2 | 0.3 | DF  | DF  | DF  | 1.1 | 0.9 | 0.4 | 0.5 | 0.7 | 0.5 | 0.4 | DF  | DF  | DF  | 0.4 | 0.3   | 1.1           |     |
| 24-Feb  | 0.6                           | 0.7 | 0.7 | 0.8 | 1.1 | 0.9 | 0.8 | 0.8 | 1.0 | 1.9 | 1.8 | 1.6 | 2.5 | 2.8 | 2.5 | 2.7 | 2.9 | 2.3 | 2.8 | 2.4 | 2.2 | 1.9 | 1.8 | 1.9   | 2.9           |     |
| 25-Feb  | 1.6                           | 1.6 | 1.0 | 1.1 | 0.9 | 0.8 | 1.2 | 1.1 | 1.5 | 1.4 | 1.7 | 1.9 | 1.7 | 1.9 | 1.7 | 1.1 | 0.8 | 1.0 | 1.0 | 1.2 | 0.9 | 0.4 | 0.5 | 0.5   | 1.9           |     |
| 26-Feb  | 0.6                           | 0.5 | 0.5 | 0.9 | 0.5 | 0.4 | 0.7 | 0.7 | 0.6 | 0.5 | DF  | DF  | 1.2 | 1.4 | 1.4 | 1.1 | 1.5 | DF  | DF  | DF  | DF  | DF  | DF  | DF  | 1.5           |     |
| 27-Feb  | DF                            | DF  | DF  | DF  | DF  | DF  | DF  | DF  | 2.1 | 2.0 | 1.7 | 1.5 | 2.0 | 1.9 | 1.9 | 1.4 | 1.8 | 1.8 | 1.5 | 1.2 | 1.3 | 0.7 | 1.2 | 0.8   | 2.1           |     |
| 28-Feb  | 0.4                           | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.1 | 0.1 | 0.2 | 0.3 | 0.7 | 0.9 | 0.5 | 0.4 | DF  | DF  | 0.9 | 0.5 | 0.2 | 0.1 | 0.1 | 0.2 | 0.3 | 0.3   | 0.9           |     |
| Diurnal Maximum   |                               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |   |               |     |
| DF - DAS Failure                      UO - Unstable Operation   |                               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |   |               |     |



**Wood Buffalo Environmental Association**

**Summary of Hour Averages**

**Vertical Wind Speed 100 m (VW100m) - km/h**

**Lower Camp Met Tower - February 2023**

| Maximum Value: 1.8 km/h on Feb 24 06:00<br>Maximum Daily Average: 0.4 km/h on Feb 3<br>Minimum Value: -1.8 km/h on Feb 12 00:00<br>Minimum Daily Average: -0.9 km/h on Feb 7<br>Maximum Diurnal Average: 0.2 km/h at hour 22<br>Minimum Diurnal Average: -0.1 km/h at hour 14<br>Monthly Average: 0.03 km/h<br>Percentiles: P <sub>1</sub> = -1.4 P <sub>10</sub> = -0.4 Q <sub>1</sub> = -0.1 Median = 0.1 Q <sub>3</sub> = 0.2 P <sub>90</sub> = 0.4 P <sub>99</sub> = 1.2 |                               |      |      |                         |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Hours in Service: 672<br>Hours of Data: 624<br>Hours of Missing Data: 48<br>Hours of Calibration: 0<br>Percent Operational Time: 92.9 |      |      |                 |               |
|--|-------------------------------|------|------|-------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|---|------|------|-----------------|---------------|
| Day  | Hourly Period Ending At (MST) |      |      |                         |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |   |      |      | Daily Average   | Daily Maximum |
|  | 1                             | 2    | 3    | 4                       | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20   | 21   | 22  | 23   | 24   |                 |               |
| 1-Feb  | 0.1                           | 0.1  | 0.1  | 0.2                     | 0.1  | 0.1  | 0.0  | 0.1  | 0.2  | 0.0  | -0.2 | -0.1 | -0.2 | -0.5 | 0.2  | 0.0  | 0.1  | 0.2  | 0.3  | 0.0  | -0.1 | 0.0   | 0.0  | 0.0  | 0.0             | 0.3           |
| 2-Feb  | 0.0                           | -0.2 | -0.4 | 0.8                     | 0.1  | 0.1  | -0.2 | -0.6 | -0.3 | -0.3 | -0.3 | -0.3 | 0.4  | 0.8  | 0.6  | 0.2  | 0.0  | 0.0  | 0.5  | 0.0  | 0.3  | 0.3   | 0.3  | 0.5  | 0.1             | 0.8           |
| 3-Feb  | 1.0                           | 1.0  | 1.2  | 1.4                     | 1.2  | 0.9  | 0.4  | 0.6  | 0.1  | -0.3 | -0.1 | 0.0  | 0.0  | -0.1 | 0.4  | 0.2  | 0.7  | 0.5  | 0.4  | 0.3  | 0.2  | 0.3   | 0.2  | 0.1  | 0.4             | 1.4           |
| 4-Feb  | 0.4                           | 0.2  | 0.3  | 0.2                     | 0.3  | 0.4  | 0.2  | 0.2  | 0.1  | 0.1  | 0.2  | 0.2  | 0.0  | -0.1 | 0.2  | 0.1  | -0.1 | 0.0  | 0.2  | 0.1  | 0.1  | 0.1   | 0.1  | 0.0  | 0.1             | 0.4           |
| 5-Feb  | 0.0                           | 0.0  | 0.0  | 0.0                     | 0.0  | 0.0  | 0.0  | -0.1 | -0.1 | 0.0  | 0.1  | -0.2 | -0.2 | -0.3 | 0.1  | 0.0  | 0.0  | -0.1 | -0.1 | -0.2 | -0.3 | 0.1   | -1.0 | -0.5 | -0.1            | 0.1           |
| 6-Feb  | -1.4                          | -0.4 | -0.7 | -0.5                    | -0.2 | 0.2  | -0.3 | -0.1 | 0.7  | 0.3  | 0.6  | -0.1 | -0.1 | 0.2  | 0.3  | 0.0  | 0.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0   | -0.1 | -0.2 | -0.1            | 0.7           |
| 7-Feb  | -0.2                          | -0.3 | -0.3 | -0.9                    | -0.3 | -1.5 | -1.2 | -0.9 | -0.8 | -1.2 | -1.0 | -1.0 | -1.2 | -1.6 | -1.6 | -1.8 | -1.5 | -1.1 | -0.8 | -0.7 | -0.4 | -0.4  | 0.0  | 0.1  | -0.9            | 0.1           |
| 8-Feb  | 0.3                           | 0.1  | 0.0  | 0.0                     | 0.2  | 0.0  | 0.1  | 0.2  | 0.1  | 0.0  | -0.1 | 0.1  | -0.3 | -0.1 | 0.1  | -0.1 | -0.1 | 0.3  | 0.1  | 0.4  | 0.4  | 0.4   | 0.5  | 0.0  | 0.1             | 0.5           |
| 9-Feb  | 0.1                           | 0.2  | -0.5 | -0.1                    | -0.4 | -0.3 | -0.4 | -0.5 | -0.1 | -0.2 | -0.4 | 0.4  | 1.0  | 0.5  | -0.3 | -0.1 | -0.4 | 0.3  | 0.2  | 0.1  | 0.1  | 0.1   | 0.0  | 0.0  | 0.0             | 1.0           |
| 10-Feb   | 0.1                           | 0.1  | 0.2  | 0.1                     | 0.2  | 0.3  | 0.3  | 0.3  | 0.2  | 0.2  | 0.2  | 0.2  | 0.1  | 0.1  | 0.0  | 0.1  | DF   | DF   | DF   | DF   | 0.1  | 0.0   | -0.1 | 0.2  | 0.2             | 0.3           |
| 11-Feb   | 0.1                           | 0.0  | 0.0  | 0.1                     | 0.2  | -0.2 | -0.6 | -0.5 | -0.3 | -0.3 | -0.2 | -0.1 | -0.2 | 0.3  | 0.2  | -0.4 | -1.0 | -0.8 | -0.6 | -1.1 | -1.3 | -0.3  | -0.6 | -1.8 | -0.4            | 0.3           |
| 12-Feb   | -1.8                          | -1.4 | -0.7 | -0.5                    | -0.2 | 0.7  | 0.0  | 1.1  | -1.2 | -0.6 | -0.1 | 0.3  | -0.2 | -0.1 | 0.0  | 0.2  | 0.1  | 0.2  | DF   | DF   | DF   | DF  | DF   | 1.2  | -0.1            | 1.2           |
| 13-Feb   | 0.2                           | 1.0  | -0.3 | -0.4                    | -0.8 | -1.2 | -1.0 | -1.0 | 0.3  | UO   | UO   | UO   | 0.4  | 0.7  | 0.4  | 0.0  | 0.6  | 1.0  | 0.8  | 0.3  | 0.8  | 1.3   | 0.9  | 0.6  | 0.2             | 1.3           |
| 14-Feb   | 0.4                           | 0.4  | 0.3  | 0.1                     | 0.1  | 0.4  | 0.3  | 0.5  | 0.2  | 0.1  | 0.1  | -0.1 | 0.0  | -0.2 | -0.1 | 0.0  | 0.5  | 0.5  | 0.3  | 0.1  | 0.3  | 0.3   | 0.1  | 0.1  | 0.2             | 0.5           |
| 15-Feb   | 0.1                           | 0.1  | 0.1  | -0.1                    | 0.0  | 0.1  | -0.1 | 0.1  | 0.1  | 0.2  | 0.0  | -0.1 | 0.1  | 0.0  | 0.0  | DF   | DF   | 0.2  | 0.3  | 0.1  | 0.2  | -0.1  | 0.0  | 0.0  | 0.0             | 0.3           |
| 16-Feb   | 0.0                           | 0.2  | -0.1 | -0.1                    | 0.0  | -0.2 | -0.1 | 0.1  | 0.0  | -0.3 | 0.1  | -0.5 | 0.1  | 0.0  | 0.1  | 0.0  | 0.0  | 0.3  | DF   | DF   | 0.4  | 0.3   | 0.2  | 0.1  | 0.0             | 0.4           |
| 17-Feb   | 0.1                           | 0.4  | 0.2  | 0.3                     | 0.0  | 0.2  | 0.3  | 0.1  | 0.2  | 0.8  | 0.4  | -0.1 | -0.5 | DF   | 0.2  | 0.1  | 0.4  | 0.7  | 0.3  | 0.6  | 0.5  | 0.4   | 0.1  | 0.0  | 0.2             | 0.8           |
| 18-Feb   | 0.1                           | 0.2  | 0.1  | 0.2                     | 0.2  | 0.1  | 0.2  | 0.2  | 0.2  | 0.2  | 0.0  | 0.7  | 0.5  | 0.0  | 0.7  | -0.1 | -0.1 | 0.0  | 0.2  | 0.1  | 0.1  | 0.1   | 0.3  | 0.3  | 0.2             | 0.7           |
| 19-Feb   | 0.2                           | 0.1  | 0.3  | 0.3                     | 0.0  | 0.1  | 0.1  | 0.1  | 0.2  | -0.2 | -0.1 | 0.0  | DF   | DF   | DF   | DF   | DF   | -0.1 | 0.1  | 0.0  | 0.1  | 0.2   | 0.3  | 0.5  | 0.1             | 0.5           |
| 20-Feb   | 0.3                           | 0.1  | 0.2  | 0.2                     | -0.1 | 0.0  | 0.0  | 0.0  | 0.0  | 0.2  | -0.1 | -0.4 | -0.6 | -0.3 | -0.3 | 0.3  | 0.6  | 0.4  | 0.4  | 0.4  | 0.3  | 0.4   | 0.2  | 0.1  | 0.1             | 0.6           |
| 21-Feb   | 0.1                           | -0.1 | 0.2  | 0.0                     | 0.2  | 0.2  | 0.1  | 0.2  | 0.0  | 0.2  | 0.9  | 1.1  | 0.5  | -0.3 | 0.1  | 0.2  | 0.1  | 1.0  | 0.7  | 0.2  | 0.1  | 0.1   | 0.0  | -0.2 | 0.2             | 1.1           |
| 22-Feb   | -0.2                          | -0.2 | 0.0  | -0.1                    | -0.1 | -0.1 | -0.1 | -0.2 | -0.1 | DF   | 0.0  | 0.0  | -0.2 | -0.3 | -0.4 | -0.2 | 0.0  | 0.0  | 0.0  | 0.1  | 0.1  | 0.1   | 0.1  | 0.1  | -0.1            | 0.1           |
| 23-Feb   | 0.1                           | 0.1  | 0.1  | 0.1                     | 0.1  | 0.2  | -0.1 | 0.0  | 0.0  | DF   | DF   | DF   | -0.3 | -0.5 | -0.2 | -0.1 | 0.1  | 0.1  | 0.5  | DF   | DF   | DF  | -0.1 | -0.4 | 0.0             | 0.5           |
| 24-Feb   | -0.1                          | -0.2 | 0.2  | 0.1                     | 0.3  | 1.8  | 1.6  | 0.2  | -0.3 | 0.4  | 0.6  | 0.3  | 0.5  | -0.7 | -1.2 | -0.4 | -1.0 | -1.3 | -0.9 | -1.3 | -0.5 | -0.4  | -0.1 | 0.0  | -0.1            | 1.8           |
| 25-Feb   | -0.7                          | -0.9 | -0.8 | -0.8                    | -0.6 | -0.1 | -0.2 | -0.5 | -0.2 | -0.2 | -0.1 | -0.2 | -0.6 | 0.0  | 0.3  | -0.3 | 0.4  | 0.4  | 0.1  | 0.5  | 0.0  | 0.4   | 0.2  | -0.1 | -0.2            | 0.5           |
| 26-Feb   | -0.1                          | 0.1  | 0.5  | 0.4                     | 0.4  | 0.0  | 0.1  | 0.5  | 0.3  | 0.0  | DF   | DF   | 0.3  | 0.3  | 0.3  | 0.2  | 0.4  | DF   | DF   | DF   | DF   | DF  | DF   | DF   | --              | 0.5           |
| 27-Feb   | DF                            | DF   | DF   | DF                      | DF   | DF   | DF   | DF   | 0.2  | 0.1  | -0.1 | 0.1  | -0.1 | -0.2 | 0.0  | 0.8  | 0.3  | 1.0  | 0.5  | 0.3  | 0.4  | 0.2   | 0.1  | 0.2  | --              | 1.0           |
| 28-Feb   | 0.1                           | 0.1  | 0.2  | 0.3                     | 0.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.1  | 0.1  | -0.2 | -0.4 | -0.3 | DF   | DF   | 0.1  | 0.0  | 0.0  | 0.1  | 0.1  | 0.1   | -0.1 | 0.2  | 0.0             | 0.3           |
|  | 0.0                           | 0.0  | 0.0  | 0.0                     | 0.0  | 0.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | -0.1 | 0.0  | -0.1 | 0.0  | 0.1  | 0.1  | 0.0  | 0.1  | 0.2   | 0.1  | 0.0  | Diurnal Average |               |
|  | 1.0                           | 1.0  | 1.2  | 1.4                     | 1.2  | 1.8  | 1.6  | 1.1  | 0.7  | 0.8  | 0.9  | 1.1  | 1.0  | 0.8  | 0.7  | 0.8  | 0.7  | 1.0  | 0.8  | 0.6  | 0.8  | 1.3   | 0.9  | 1.2  | Diurnal Maximum |               |
| DF - DAS Failure   |                               |      |      | UO - Unstable Operation |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |   |      |      |                 |               |





**Wood Buffalo Environmental Association**  
**Summary of Hour Standard Deviations**

**Vertical Wind Speed 100 m (VW100m) - km/h**  
**Lower Camp Met Tower - February 2023**

| Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0<br>Maximum Value: 3.9 km/h on Feb 13 13:00<br>Minimum Value: 0.1 km/h on Feb 28 20:00<br>Percentiles: P <sub>1</sub> = 0.1 P <sub>10</sub> = 0.3 Q <sub>1</sub> = 0.5 Median = 0.8 Q <sub>3</sub> = 1.3 P <sub>90</sub> = 2.1 P <sub>99</sub> = 3.4 |                               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Hours in Service: 672<br>Hours of Data: 624<br>Hours of Missing Data: 48<br>Hours of Calibration: 0<br>Percent Operational Time: 92.9 |               |
|---|-------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---|---------------|
| Day   | Hourly Period Ending At (MST) |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |   | Daily Maximum |
|   | 1                             | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19  | 20  | 21  | 22  | 23  | 24  |               |
| 1-Feb   | 0.4                           | 0.6 | 0.2 | 0.8 | 0.6 | 0.4 | 0.5 | 0.8 | 1.2 | 0.9 | 0.6 | 1.8 | 2.2 | 2.2 | 1.8 | 0.9 | 0.7 | 0.4 | 0.8 | 0.3 | 0.4 | 0.4 | 0.4 | 0.2   | 2.2           |
| 2-Feb   | 0.4                           | 0.4 | 0.4 | 0.7 | 0.6 | 0.8 | 0.8 | 0.7 | 0.7 | 0.9 | 0.9 | 0.9 | 0.9 | 1.5 | 1.8 | 2.7 | 2.5 | 2.6 | 3.2 | 3.1 | 2.5 | 2.6 | 2.5 | 2.4   | 3.2           |
| 3-Feb   | 2.3                           | 2.5 | 2.5 | 2.4 | 2.2 | 1.9 | 1.4 | 1.1 | 1.0 | 0.9 | 0.5 | 0.7 | 0.9 | 1.3 | 1.2 | 0.9 | 1.5 | 1.5 | 1.4 | 1.0 | 0.9 | 0.9 | 0.7 | 0.6   | 2.5           |
| 4-Feb   | 0.7                           | 0.7 | 0.5 | 0.6 | 0.6 | 0.6 | 0.5 | 0.7 | 1.0 | 0.8 | 1.0 | 1.2 | 0.9 | 1.3 | 1.0 | 0.8 | 0.5 | 0.5 | 0.6 | 0.5 | 0.6 | 0.7 | 0.4 | 1.3   |               |
| 5-Feb   | 0.4                           | 0.4 | 0.2 | 0.1 | 0.2 | 0.3 | 0.3 | 0.3 | 0.4 | 0.4 | 0.8 | 0.6 | 0.7 | 0.8 | 0.8 | 1.1 | 0.5 | 0.9 | 0.5 | 0.5 | 0.8 | 1.8 | 2.7 | 2.5   | 2.7           |
| 6-Feb   | 3.0                           | 3.6 | 2.3 | 1.2 | 0.8 | 1.3 | 1.6 | 1.5 | 1.3 | 1.0 | 0.7 | 1.1 | 0.6 | 0.8 | 1.0 | 0.9 | 0.8 | 0.7 | 0.8 | 0.5 | 0.7 | 0.5 | 0.5 | 0.6   | 3.6           |
| 7-Feb   | 0.7                           | 1.1 | 1.0 | 1.1 | 1.1 | 3.8 | 3.5 | 3.4 | 1.5 | 0.8 | 1.2 | 1.7 | 2.8 | 3.2 | 3.2 | 3.4 | 3.2 | 1.9 | 0.7 | 1.2 | 1.1 | 1.4 | 1.4 | 1.4   | 3.8           |
| 8-Feb   | 1.4                           | 1.1 | 0.6 | 0.9 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.4 | 0.7 | 0.7 | 0.6 | 0.6 | 0.7 | 0.6 | 0.6 | 0.7 | 0.6 | 0.6 | 0.6 | 0.7 | 0.7   | 1.4           |
| 9-Feb   | 1.1                           | 0.9 | 0.7 | 0.8 | 0.5 | 0.5 | 0.9 | 0.8 | 0.6 | 0.6 | 0.4 | 0.6 | 1.0 | 1.4 | 1.0 | 1.0 | 1.0 | 0.8 | 0.5 | 0.3 | 0.5 | 0.5 | 0.3 | 0.2   | 1.4           |
| 10-Feb  | 0.3                           | 0.4 | 0.3 | 0.3 | 0.6 | 1.0 | 0.9 | 1.1 | 0.8 | 1.0 | 0.9 | 1.2 | 1.2 | 1.3 | 1.6 | 1.3 | DF  | DF  | DF  | DF  | 0.9 | 0.4 | 0.6 | 0.3   | 1.6           |
| 11-Feb  | 0.2                           | 0.1 | 0.2 | 0.2 | 0.5 | 0.8 | 0.6 | 0.7 | 0.6 | 0.8 | 0.9 | 0.9 | 1.2 | 1.1 | 1.0 | 1.7 | 1.5 | 1.1 | 2.3 | 3.1 | 2.4 | 0.9 | 0.7 | 0.9   | 3.1           |
| 12-Feb  | 1.0                           | 2.2 | 2.5 | 0.9 | 1.3 | 1.2 | 1.8 | 1.3 | 1.9 | 0.9 | 0.7 | 0.9 | 0.7 | 0.8 | 0.4 | 0.4 | 0.7 | 0.9 | DF  | DF  | DF  | DF  | DF  | 2.5   | 2.5           |
| 13-Feb  | 2.1                           | 2.3 | 1.7 | 1.7 | 1.8 | 1.7 | 1.4 | 1.9 | 2.5 | UO  | UO  | UO  | 3.9 | 3.6 | 3.0 | 3.3 | 3.1 | 3.1 | 2.5 | 2.0 | 2.6 | 3.4 | 2.3 | 1.8   | 3.9           |
| 14-Feb  | 1.6                           | 1.8 | 0.7 | 0.7 | 0.6 | 1.0 | 1.1 | 1.0 | 0.9 | 0.7 | 1.0 | 1.2 | 1.0 | 0.8 | 1.0 | 1.2 | 1.3 | 1.2 | 1.0 | 0.5 | 0.4 | 0.5 | 0.4 | 0.2   | 1.8           |
| 15-Feb  | 0.2                           | 0.1 | 0.2 | 0.4 | 0.4 | 0.3 | 0.4 | 0.5 | 0.4 | 0.5 | 0.3 | 0.5 | 0.6 | 0.7 | 1.4 | DF  | DF  | 0.5 | 0.5 | 0.5 | 0.6 | 0.6 | 0.7 | 0.8   | 1.4           |
| 16-Feb  | 0.6                           | 0.7 | 0.6 | 0.5 | 0.6 | 0.5 | 0.4 | 0.4 | 0.5 | 0.4 | 0.6 | 0.7 | 0.7 | 0.5 | 0.5 | 0.3 | 0.3 | 0.8 | DF  | DF  | 1.4 | 1.5 | 1.3 | 0.9   | 1.5           |
| 17-Feb  | 0.9                           | 1.0 | 1.0 | 0.8 | 0.6 | 0.7 | 0.8 | 1.0 | 0.9 | 1.2 | 1.2 | 1.2 | 1.4 | DF  | 1.2 | 1.1 | 1.4 | 1.8 | 1.5 | 1.6 | 1.5 | 0.9 | 0.6 | 0.3   | 1.8           |
| 18-Feb  | 0.3                           | 0.4 | 0.2 | 0.2 | 0.2 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 | 0.8 | 1.3 | 2.0 | 2.1 | 2.1 | 1.0 | 0.4 | 0.2 | 0.4 | 0.5 | 0.3 | 0.3 | 0.2 | 0.3   | 2.1           |
| 19-Feb  | 0.4                           | 0.5 | 0.7 | 0.7 | 0.4 | 0.4 | 0.2 | 0.2 | 0.3 | 0.8 | 0.4 | 0.5 | DF  | DF  | DF  | DF  | DF  | 0.6 | 0.2 | 0.5 | 0.4 | 0.6 | 0.7 | 0.9   | 0.9           |
| 20-Feb  | 1.0                           | 0.6 | 0.8 | 0.8 | 0.3 | 0.2 | 0.2 | 0.2 | 0.5 | 0.2 | 0.6 | 0.6 | 1.0 | 0.8 | 0.4 | 1.2 | 1.4 | 1.2 | 1.2 | 0.3 | 0.3 | 0.3 | 1.4 | 1.0   | 1.4           |
| 21-Feb  | 1.5                           | 2.0 | 1.8 | 1.5 | 1.7 | 1.2 | 1.4 | 1.6 | 0.9 | 1.6 | 2.2 | 2.5 | 2.5 | 2.3 | 2.1 | 2.0 | 1.6 | 0.8 | 0.5 | 0.7 | 0.5 | 0.2 | 0.3 | 0.6   | 2.5           |
| 22-Feb  | 0.7                           | 0.7 | 0.7 | 0.5 | 0.5 | 0.3 | 0.3 | 0.4 | 0.7 | DF  | 0.3 | 0.3 | 0.8 | 0.8 | 0.6 | 0.8 | 0.6 | 0.7 | 0.3 | 0.2 | 0.1 | 0.1 | 0.1 | 0.2   | 0.8           |
| 23-Feb  | 0.2                           | 0.3 | 0.3 | 0.9 | 0.5 | 0.6 | 0.3 | 0.3 | 0.2 | DF  | DF  | DF  | 0.9 | 1.0 | 0.5 | 0.5 | 0.6 | 0.8 | 0.9 | DF  | DF  | DF  | 0.6 | 0.5   | 1.0           |
| 24-Feb  | 0.6                           | 0.5 | 0.6 | 0.9 | 0.9 | 0.7 | 0.9 | 0.8 | 0.9 | 1.6 | 1.5 | 1.8 | 3.0 | 3.1 | 2.7 | 3.0 | 2.7 | 2.0 | 2.6 | 2.3 | 2.5 | 2.2 | 2.0 | 2.5   | 3.1           |
| 25-Feb  | 2.0                           | 1.7 | 1.1 | 1.1 | 1.0 | 1.1 | 1.3 | 1.4 | 2.0 | 1.2 | 1.2 | 1.5 | 1.4 | 2.2 | 2.0 | 1.3 | 0.8 | 1.0 | 1.5 | 1.1 | 1.2 | 0.6 | 1.1 | 0.7   | 2.2           |
| 26-Feb  | 0.6                           | 0.6 | 0.6 | 0.9 | 0.9 | 0.6 | 0.8 | 1.1 | 0.9 | 0.8 | DF  | DF  | 1.4 | 1.6 | 1.6 | 1.0 | 1.4 | DF  | DF  | DF  | DF  | DF  | DF  | DF  | 1.6           |
| 27-Feb  | DF                            | DF  | DF  | DF  | DF  | DF  | DF  | DF  | 1.7 | 1.6 | 1.5 | 1.5 | 1.8 | 2.0 | 1.9 | 1.7 | 1.9 | 1.7 | 1.5 | 1.5 | 1.6 | 1.0 | 1.0 | 0.7   | 2.0           |
| 28-Feb  | 0.3                           | 0.2 | 0.3 | 0.3 | 0.1 | 0.1 | 0.1 | 0.2 | 0.3 | 0.3 | 0.8 | 1.0 | 0.6 | 0.4 | DF  | DF  | 0.6 | 0.5 | 0.2 | 0.1 | 0.1 | 0.2 | 0.3 | 0.4   | 1.0           |
| Diurnal Maximum   |                               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |   |               |
| DF - DAS Failure                      UO - Unstable Operation   |                               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |   |               |



| Maximum Value: 2.8 km/h on Feb 12 08:00   |                               | Maximum Daily Average: 0.9 km/h on Feb 13  |      | Hours in Service: 672          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |               |               |
|---|-------------------------------|--|------|--------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----------------|---------------|---------------|
| Minimum Value: -0.8 km/h on Feb 24 18:00  |                               | Minimum Daily Average: 0.0 km/h on Feb 24  |      | Hours of Data: 611             |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |               |               |
| Maximum Diurnal Average: 0.5 km/h at hour 5   |                               | Minimum Diurnal Average: 0.1 km/h at hour 14   |      | Hours of Missing Data: 61      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |               |               |
| Monthly Average: 0.30 km/h  |                               | Percentiles: P <sub>1</sub> = -0.6 P <sub>10</sub> = -0.1 Q <sub>1</sub> = 0.0 Median = 0.2 Q <sub>3</sub> = 0.4 P <sub>90</sub> = 0.8 P <sub>99</sub> = 1.8 |      | Hours of Calibration: 0        |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |               |               |
|   |                               |  |      | Percent Operational Time: 90.9 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |               |               |
| Day   | Hourly Period Ending At (MST) |  |      |                                |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 | Daily Average | Daily Maximum |
|   | 1                             | 2  | 3    | 4                              | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20   | 21   | 22   | 23   | 24              |               |               |
| 1-Feb   | 0.4                           | 0.1  | 0.0  | 0.5                            | 0.3  | 0.3  | 0.4  | 0.4  | 0.2  | 0.1  | 0.1  | 0.4  | 0.5  | -0.1 | 0.7  | 0.1  | 0.2  | 0.3  | 0.2  | 0.2  | 0.2  | 0.1  | 0.1  | 0.1             | 0.2           | 0.7           |
| 2-Feb   | 0.1                           | -0.2   | -0.5 | 0.3                            | 0.0  | -0.3 | 0.0  | -0.7 | -0.2 | 0.2  | 0.7  | 0.7  | 1.4  | 1.4  | 1.0  | 0.3  | 0.2  | -0.2 | 0.7  | -0.1 | 0.7  | 0.8  | 0.8  | 1.1             | 0.3           | 1.4           |
| 3-Feb   | 1.7                           | 1.8  | 1.7  | 2.0                            | 1.6  | 0.8  | 0.6  | 0.6  | 0.0  | 0.1  | 0.1  | 0.0  | 0.1  | 0.2  | 0.3  | 0.0  | 0.5  | 0.3  | 0.3  | 0.2  | 0.3  | 0.2  | 0.0  | 0.2             | 0.6           | 2.0           |
| 4-Feb   | 0.4                           | 0.1  | 0.3  | 0.2                            | 0.4  | 0.6  | 0.4  | 0.2  | 0.2  | 0.1  | 0.3  | 0.2  | 0.1  | 0.0  | 0.4  | 0.2  | 0.2  | 0.1  | 0.3  | 0.3  | 0.4  | 0.3  | 0.2  | 0.2             | 0.3           | 0.6           |
| 5-Feb   | 0.1                           | 0.1  | 0.0  | 0.0                            | 0.1  | 0.1  | 0.1  | 0.2  | 0.1  | 0.1  | 0.0  | 0.2  | 0.0  | -0.1 | 0.2  | -0.1 | -0.5 | -0.1 | -0.1 | 0.0  | 0.6  | 1.5  | 0.3  | 0.5             | 0.2           | 1.5           |
| 6-Feb   | 0.7                           | 1.7  | 1.0  | 1.1                            | 1.4  | 1.5  | 0.7  | 0.9  | 1.5  | 0.6  | 0.3  | -0.1 | -0.1 | -0.1 | 0.0  | 0.0  | 0.1  | 0.2  | 0.3  | 0.3  | 0.2  | 0.0  | 0.1  | 0.0             | 0.5           | 1.7           |
| 7-Feb   | -0.1                          | 0.1  | 0.2  | 1.2                            | 1.8  | 0.7  | 0.5  | 1.0  | 0.8  | 0.4  | 0.3  | 0.7  | 0.4  | 0.6  | 0.6  | 0.2  | 0.6  | 1.0  | 1.1  | 1.3  | 1.0  | 0.5  | 0.3  | 0.1             | 0.6           | 1.8           |
| 8-Feb   | 0.1                           | 0.2  | 0.4  | 0.6                            | 0.5  | 0.1  | 0.1  | 0.4  | 0.1  | 0.1  | -0.1 | 0.0  | -0.2 | -0.1 | 0.3  | 0.3  | 0.3  | 0.6  | 0.6  | 0.7  | 0.1  | -0.3 | -0.1 | -0.4            | 0.2           | 0.7           |
| 9-Feb   | -0.2                          | -0.5   | 0.1  | 0.3                            | 0.2  | 0.3  | 0.3  | 0.3  | 0.5  | 0.2  | -0.1 | 0.1  | 1.5  | 1.1  | -0.5 | 0.3  | -0.1 | 0.3  | 0.2  | 0.0  | 0.1  | 0.0  | -0.1 | -0.1            | 0.2           | 1.5           |
| 10-Feb  | -0.1                          | 0.0  | 0.6  | 0.7                            | 0.4  | 0.3  | 0.4  | 0.5  | 0.4  | 0.4  | 0.2  | 0.2  | 0.1  | 0.3  | 0.4  | 0.5  | DF   | DF   | DF   | DF   | 0.3  | 0.3  | 0.2  | 0.0             | 0.3           | 0.7           |
| 11-Feb  | 0.1                           | 0.1  | 0.1  | 0.0                            | 0.1  | -0.2 | -0.1 | 0.1  | 0.1  | 0.4  | 0.4  | -0.1 | -0.3 | 0.1  | 0.5  | 0.8  | 0.8  | 0.6  | 0.9  | 0.4  | -0.5 | 0.3  | 1.5  | 0.7             | 0.3           | 1.5           |
| 12-Feb  | 0.5                           | 0.9  | 1.1  | 0.8                            | 0.7  | 2.0  | 1.6  | 2.8  | 0.2  | 0.1  | 0.0  | 0.3  | -0.1 | -0.2 | 0.1  | 0.2  | 0.1  | 0.1  | DF   | DF   | DF   | DF   | DF   | 1.8             | 0.7           | 2.8           |
| 13-Feb  | 1.0                           | 2.4  | 0.8  | 0.8                            | 1.6  | 1.1  | 0.8  | 0.5  | UO   | UO   | UO   | UO   | UO   | UO   | 1.0  | 0.6  | 0.8  | 1.0  | 0.8  | 0.1  | 0.8  | 1.2  | 0.7  | 0.4             | 0.9           | 2.4           |
| 14-Feb  | 0.3                           | 0.2  | 0.3  | 0.1                            | 0.1  | 0.4  | 0.3  | 0.5  | 0.2  | 0.3  | -0.1 | 0.0  | 0.1  | -0.1 | -0.1 | 0.6  | 0.5  | 0.1  | 0.2  | 0.4  | 0.3  | 0.0  | 0.1  | 0.2             | 0.6           | 0.6           |
| 15-Feb  | 0.0                           | 0.1  | 0.1  | -0.2                           | -0.2 | -0.2 | -0.3 | 0.0  | -0.2 | -0.1 | 0.0  | -0.2 | 0.0  | -0.2 | -0.3 | DF   | DF   | 0.3  | 0.3  | 0.2  | 0.4  | 0.3  | 0.6  | 0.6             | 0.0           | 0.6           |
| 16-Feb  | 0.0                           | 0.1  | 0.1  | 0.0                            | 0.5  | 0.1  | 0.2  | 0.0  | 0.0  | 0.0  | 0.1  | -0.2 | 0.4  | 0.0  | 0.2  | 0.5  | 0.4  | 0.3  | DF   | DF   | 0.4  | 0.1  | 0.0  | 0.0             | 0.1           | 0.5           |
| 17-Feb  | 0.1                           | 0.3  | 0.1  | 0.2                            | 0.1  | 0.1  | 0.1  | -0.2 | 0.3  | 0.4  | 0.2  | -0.1 | -0.5 | DF   | 0.3  | 0.1  | 0.2  | 0.7  | 0.4  | 0.4  | 0.6  | 0.6  | 0.6  | 0.2             | 0.2           | 0.7           |
| 18-Feb  | 0.4                           | 0.2  | 0.1  | 0.3                            | 0.4  | 0.4  | 0.3  | 0.7  | UO   | UO   | UO   | UO   | 0.8  | UO   | 1.1  | 0.0  | 0.0  | 0.1  | 0.0  | -0.3 | 0.0  | 0.0  | 0.1  | 0.0             | 0.2           | 1.1           |
| 19-Feb  | 0.1                           | 0.3  | 0.4  | 0.3                            | 0.6  | 0.4  | 0.3  | 0.1  | 0.2  | 0.2  | 0.1  | 0.1  | DF   | DF   | DF   | DF   | DF   | 0.4  | 0.5  | 0.4  | 0.4  | 0.6  | 0.4  | 0.5             | 0.3           | 0.6           |
| 20-Feb  | 0.3                           | 0.3  | 0.2  | 0.1                            | 0.1  | 0.1  | 0.0  | 0.1  | 0.1  | 0.2  | 0.0  | -0.2 | -0.6 | -0.3 | -0.5 | 0.4  | 0.5  | 0.5  | 0.3  | 0.3  | 0.6  | 0.6  | 0.4  | 0.2             | 0.2           | 0.6           |
| 21-Feb  | 0.3                           | -0.3   | -0.3 | -0.1                           | -0.1 | 0.2  | 0.4  | 0.4  | 0.2  | 0.2  | 1.1  | 1.9  | 1.2  | 0.0  | 0.1  | 0.3  | 0.4  | 0.8  | 0.5  | 0.3  | 0.3  | 0.2  | 0.2  | 0.2             | 0.3           | 1.9           |
| 22-Feb  | 0.4                           | 0.3  | 0.1  | 0.3                            | 0.1  | 0.3  | 0.3  | 0.3  | 0.4  | DF   | 0.3  | 0.4  | 0.1  | 0.3  | 0.1  | 0.2  | 0.5  | 0.3  | 0.2  | 0.3  | 0.3  | 0.1  | 0.1  | 0.2             | 0.3           | 0.5           |
| 23-Feb  | 0.1                           | 0.2  | 0.4  | 0.7                            | 0.7  | 0.9  | 0.3  | 0.3  | 0.4  | DF   | DF   | DF   | 0.3  | -0.7 | -0.3 | 0.0  | 0.0  | 0.3  | 0.7  | DF   | DF   | DF   | -0.2 | -0.1            | 0.2           | 0.9           |
| 24-Feb  | 0.0                           | -0.2   | -0.2 | -0.2                           | -0.4 | 0.5  | 0.7  | -0.1 | -0.7 | 0.8  | 0.7  | 0.1  | 0.9  | -0.1 | -0.6 | -0.5 | -0.8 | -0.8 | -0.4 | -0.7 | -0.1 | 0.2  | 0.5  | 1.0             | 0.0           | 1.0           |
| 25-Feb  | 0.3                           | -0.3   | -0.2 | -0.2                           | 0.2  | 0.5  | 0.5  | 0.3  | 1.1  | 0.5  | 1.5  | 1.6  | 0.7  | 0.9  | -0.1 | -0.5 | 0.2  | 0.2  | 0.6  | 1.6  | -0.1 | 0.2  | 0.1  | 0.3             | 0.4           | 1.6           |
| 26-Feb  | 0.3                           | 0.2  | 0.3  | 0.1                            | 0.5  | -0.3 | 0.1  | 0.4  | 0.2  | -0.2 | DF   | DF   | -0.1 | 0.2  | 0.3  | -0.1 | 0.0  | DF   | DF   | DF   | DF   | DF   | DF   | DF              | --            | 0.5           |
| 27-Feb  | DF                            | DF   | DF   | DF                             | DF   | DF   | DF   | DF   | 0.3  | 0.2  | 0.1  | 0.0  | -0.1 | 0.2  | -0.4 | 1.0  | -0.1 | 0.9  | 0.2  | 0.0  | 0.4  | 0.2  | 0.4  | 0.4             | --            | 1.0           |
| 28-Feb  | 0.5                           | 0.4  | 0.3  | 0.8                            | 0.5  | 0.5  | 0.4  | UO   | UO   | UO   | UO   | UO   | 0.0  | -0.1 | DF   | DF   | 0.0  | 0.1  | 0.2  | 0.1  | 0.1  | 0.0  | -0.1 | 0.0             | --            | 0.8           |
|   |                               |  |      |                                |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Diurnal Average |               |               |
|   |                               |  |      |                                |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Diurnal Maximum |               |               |
| 0.3 0.3 0.3 0.4 0.5 0.4 0.3 0.4 0.2 0.2 0.3 0.3 0.3 0.1 0.2 0.2 0.2 0.3 0.4 0.3 0.3 0.3 0.3 0.3 0.3 0.3 0.3 |                               |  |      |                                |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |               |               |
| 1.7 2.4 1.7 2.0 1.8 2.0 1.6 2.8 1.5 0.8 1.5 1.9 1.5 1.4 1.1 1.0 0.8 1.0 1.1 1.6 1.0 1.5 1.5 1.8             |                               |  |      |                                |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |               |               |
| DF - DAS Failure UO - Unstable Operation  |                               |  |      |                                |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |               |               |



**Wood Buffalo Environmental Association**  
**Summary of Hour Standard Deviations**

**Vertical Wind Speed 163 m (VW163m) - km/h**  
**Lower Camp Met Tower - February 2023**

| Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0<br>Maximum Value: 4.7 km/h on Feb 2 19:00<br>Minimum Value: 0.1 km/h on Feb 28 21:00<br>Percentiles: P <sub>1</sub> = 0.2 P <sub>10</sub> = 0.3 Q <sub>1</sub> = 0.5 Median = 0.8 Q <sub>3</sub> = 1.3 P <sub>90</sub> = 2.1 P <sub>99</sub> = 3.3 |                               | Hours in Service: 672<br>Hours of Data: 611<br>Hours of Missing Data: 61<br>Hours of Calibration: 0<br>Percent Operational Time: 90.9 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |               |
|--|-------------------------------|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---------------|
| Day  | Hourly Period Ending At (MST) |   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Daily Maximum |
|  | 1                             | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19  | 20  | 21  | 22  | 23  | 24  |               |
| 1-Feb  | 0.6                           | 0.7   | 0.4 | 1.1 | 0.6 | 0.6 | 0.7 | 1.0 | 1.4 | 1.1 | 0.6 | 1.8 | 2.6 | 2.4 | 2.2 | 0.8 | 0.7 | 0.5 | 1.0 | 0.4 | 0.5 | 0.5 | 0.3 | 0.1 | 2.6           |
| 2-Feb  | 0.2                           | 0.2   | 0.3 | 0.6 | 0.7 | 0.8 | 0.9 | 0.8 | 0.9 | 0.9 | 0.8 | 1.1 | 0.8 | 1.2 | 2.1 | 3.3 | 3.3 | 3.5 | 4.7 | 4.3 | 3.3 | 3.3 | 3.2 | 3.0 | 4.7           |
| 3-Feb  | 3.0                           | 3.0   | 2.8 | 2.8 | 2.3 | 1.8 | 1.2 | 0.8 | 1.1 | 0.8 | 0.8 | 0.7 | 0.8 | 1.3 | 1.3 | 0.9 | 1.5 | 1.5 | 1.5 | 1.1 | 1.1 | 1.1 | 0.6 | 0.4 | 3.0           |
| 4-Feb  | 0.5                           | 0.6   | 0.4 | 0.5 | 0.6 | 0.6 | 0.4 | 0.5 | 0.7 | 0.8 | 0.9 | 1.1 | 1.1 | 1.1 | 1.2 | 0.8 | 0.3 | 0.3 | 0.3 | 0.4 | 0.4 | 0.4 | 0.4 | 0.2 | 1.2           |
| 5-Feb  | 0.3                           | 0.2   | 0.1 | 0.2 | 0.3 | 0.3 | 0.4 | 0.4 | 0.4 | 0.3 | 0.8 | 0.5 | 0.4 | 0.8 | 0.9 | 1.3 | 0.8 | 1.1 | 0.5 | 0.6 | 1.0 | 2.0 | 2.1 | 2.2 | 2.2           |
| 6-Feb  | 2.5                           | 3.0   | 2.3 | 1.4 | 1.4 | 1.6 | 2.1 | 1.9 | 1.2 | 1.2 | 0.7 | 0.8 | 0.7 | 0.7 | 0.7 | 1.0 | 1.1 | 1.1 | 1.3 | 0.9 | 0.8 | 0.9 | 0.6 | 0.7 | 3.0           |
| 7-Feb  | 1.3                           | 1.2   | 1.2 | 1.2 | 1.2 | 3.2 | 3.2 | 2.8 | 1.5 | 1.2 | 1.5 | 2.1 | 2.7 | 2.9 | 2.5 | 2.6 | 2.2 | 1.4 | 1.0 | 1.5 | 1.3 | 1.5 | 1.2 | 1.2 | 3.2           |
| 8-Feb  | 1.3                           | 1.1   | 0.8 | 1.1 | 0.3 | 0.2 | 0.2 | 0.3 | 0.3 | 0.2 | 0.3 | 0.5 | 0.7 | 0.6 | 0.7 | 0.8 | 0.8 | 0.8 | 0.8 | 0.7 | 1.0 | 1.0 | 1.1 | 1.1 | 1.3           |
| 9-Feb  | 1.2                           | 1.1   | 1.3 | 0.7 | 0.7 | 0.8 | 1.3 | 0.7 | 0.9 | 1.0 | 0.6 | 0.6 | 1.3 | 1.0 | 0.5 | 1.0 | 1.3 | 1.0 | 0.8 | 0.7 | 0.8 | 0.6 | 0.4 | 0.3 | 1.3           |
| 10-Feb   | 0.4                           | 0.5   | 0.4 | 0.3 | 0.4 | 1.0 | 0.8 | 0.5 | 0.5 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | 1.1 | 0.8 | DF  | DF  | DF  | DF  | 0.7 | 0.4 | 0.4 | 0.3 | 1.1           |
| 11-Feb   | 0.3                           | 0.2   | 0.2 | 0.2 | 0.5 | 0.8 | 0.6 | 0.8 | 0.6 | 0.7 | 0.8 | 0.8 | 1.0 | 1.0 | 1.0 | 2.1 | 1.4 | 1.1 | 2.2 | 3.2 | 2.4 | 1.0 | 1.0 | 0.9 | 3.2           |
| 12-Feb   | 1.2                           | 1.1   | 1.8 | 1.4 | 1.7 | 1.4 | 1.4 | 1.4 | 1.1 | 0.7 | 0.6 | 0.9 | 0.7 | 0.6 | 0.4 | 0.8 | 0.9 | 1.2 | DF  | DF  | DF  | DF  | DF  | 3.2 | 3.2           |
| 13-Feb   | 1.9                           | 2.4   | 1.8 | 2.0 | 1.9 | 1.8 | 1.7 | 1.5 | UO  | UO  | UO  | UO  | UO  | UO  | 2.8 | 2.9 | 3.3 | 3.5 | 2.6 | 2.3 | 2.9 | 3.4 | 2.6 | 1.8 | 3.5           |
| 14-Feb   | 1.9                           | 1.8   | 0.6 | 0.6 | 0.4 | 1.1 | 1.1 | 1.1 | 0.7 | 0.8 | 1.0 | 1.1 | 0.9 | 0.9 | 1.1 | 1.1 | 1.4 | 1.1 | 0.7 | 0.3 | 0.5 | 0.6 | 0.6 | 0.4 | 1.9           |
| 15-Feb   | 0.2                           | 0.2   | 0.2 | 0.3 | 0.3 | 0.3 | 0.5 | 0.6 | 0.4 | 0.6 | 0.3 | 0.5 | 0.6 | 0.5 | 1.2 | DF  | DF  | 0.7 | 0.7 | 0.8 | 0.8 | 0.7 | 1.0 | 1.0 | 1.2           |
| 16-Feb   | 0.6                           | 0.6   | 0.9 | 0.7 | 0.8 | 0.5 | 0.5 | 0.6 | 0.6 | 0.8 | 0.8 | 1.1 | 1.0 | 0.5 | 0.6 | 0.6 | 0.5 | 0.8 | DF  | DF  | 1.5 | 1.7 | 1.4 | 0.9 | 1.7           |
| 17-Feb   | 0.9                           | 1.0   | 1.0 | 1.0 | 0.6 | 0.9 | 0.9 | 0.9 | 0.9 | 1.3 | 1.2 | 1.6 | 1.3 | DF  | 1.4 | 1.1 | 1.5 | 1.9 | 1.5 | 1.8 | 1.6 | 0.8 | 0.6 | 0.4 | 1.9           |
| 18-Feb   | 0.3                           | 0.4   | 0.3 | 0.3 | 0.3 | 0.4 | 0.2 | 1.5 | UO  | UO  | UO  | UO  | 2.4 | UO  | 2.4 | 1.0 | 0.5 | 0.3 | 0.4 | 0.7 | 0.4 | 0.3 | 0.4 | 0.6 | 2.4           |
| 19-Feb   | 0.6                           | 0.5   | 0.7 | 0.7 | 0.6 | 0.6 | 0.4 | 0.4 | 0.4 | 0.8 | 0.4 | 0.5 | DF  | DF  | DF  | DF  | DF  | 0.3 | 0.3 | 0.3 | 0.5 | 0.5 | 0.7 | 0.9 | 0.9           |
| 20-Feb   | 1.4                           | 0.9   | 0.6 | 0.7 | 0.4 | 0.2 | 0.3 | 0.4 | 0.6 | 0.2 | 0.5 | 0.7 | 1.2 | 0.8 | 0.6 | 1.2 | 1.2 | 1.2 | 1.2 | 0.3 | 0.2 | 0.3 | 1.4 | 1.1 | 1.4           |
| 21-Feb   | 1.8                           | 2.2   | 2.2 | 1.9 | 1.9 | 1.6 | 1.8 | 2.2 | 1.3 | 1.7 | 2.4 | 2.8 | 2.8 | 2.6 | 2.1 | 2.1 | 1.5 | 1.0 | 0.5 | 0.7 | 0.6 | 0.4 | 0.3 | 0.4 | 2.8           |
| 22-Feb   | 0.5                           | 0.5   | 0.6 | 0.5 | 0.4 | 0.4 | 0.3 | 0.3 | 0.8 | DF  | 0.4 | 0.5 | 0.8 | 0.9 | 0.9 | 0.8 | 0.9 | 0.7 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.9           |
| 23-Feb   | 0.2                           | 0.2   | 0.5 | 1.2 | 0.8 | 0.6 | 0.3 | 0.2 | 0.2 | DF  | DF  | DF  | 1.3 | 0.9 | 0.7 | 0.3 | 0.7 | 0.9 | 0.9 | DF  | DF  | DF  | 0.8 | 0.6 | 1.3           |
| 24-Feb   | 0.8                           | 0.6   | 0.6 | 0.9 | 0.8 | 0.9 | 0.6 | 0.6 | 0.9 | 1.7 | 1.7 | 2.1 | 3.2 | 3.2 | 2.5 | 2.6 | 2.5 | 1.8 | 2.1 | 2.2 | 2.3 | 2.1 | 1.9 | 1.8 | 3.2           |
| 25-Feb   | 1.2                           | 1.5   | 0.9 | 0.8 | 0.8 | 1.1 | 1.2 | 1.4 | 1.5 | 1.2 | 0.8 | 1.0 | 1.0 | 2.2 | 2.2 | 1.3 | 0.9 | 0.8 | 1.9 | 0.6 | 1.2 | 0.7 | 1.1 | 0.9 | 2.2           |
| 26-Feb   | 0.7                           | 0.8   | 0.7 | 1.0 | 0.8 | 0.7 | 1.1 | 1.2 | 0.8 | 1.4 | DF  | DF  | 1.5 | 2.0 | 1.6 | 1.0 | 1.1 | DF  | DF  | DF  | DF  | DF  | DF  | DF  | 2.0           |
| 27-Feb   | DF                            | DF  | DF  | DF  | DF  | DF  | DF  | DF  | 1.5 | 1.5 | 1.5 | 1.6 | 1.7 | 2.0 | 1.9 | 2.0 | 1.6 | 1.8 | 1.6 | 1.7 | 1.8 | 1.2 | 1.0 | 0.7 | 2.0           |
| 28-Feb   | 0.4                           | 0.2   | 0.3 | 0.3 | 0.2 | 0.3 | 0.3 | UO  | UO  | UO  | UO  | UO  | 0.4 | 0.3 | DF  | DF  | 0.4 | 0.5 | 0.3 | 0.2 | 0.1 | 0.2 | 0.3 | 0.3 | 0.5           |
| Diurnal Maximum  |                               |   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |               |
| DF - DAS Failure                      UO - Unstable Operation  |                               |   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |               |



## WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY  
MONITORING PROGRAM  
MONTHLY REPORT

### **AMS04 BUFFALO VIEWPOINT FEBRUARY 2023**

Operations, Data Collection,  
QA/QC, Data Validation and Reporting by:  
Wood Buffalo Environmental Association  
Fort McMurray, Alberta

March 31, 2023

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - BUFFALO VIEWPOINT (AMS04)  
 FEBRUARY 2023

MONTHLY SUMMARY

| Parameter                         | Hours of Data | Hours of Calibration | Hours without Data | Operational Time | Maximum 1-Hour Value | 1-Hour Exceedances | Maximum 24-Hour Value | 24-Hour Exceedances |
|-----------------------------------|---------------|----------------------|--------------------|------------------|----------------------|--------------------|-----------------------|---------------------|
| SO2 (ppb) Average                 | 618           | 31                   | 54                 | 96.58            | 59.7                 | 0                  | 12.9                  | 0                   |
| H2S (ppb) Average                 | 639           | 33                   | 33                 | 100              | 7.4                  | 0                  | 1.7                   | 0                   |
| THC (ppm) Average                 | 638           | 32                   | 34                 | 99.7             | 3.9                  | -                  | 2.7                   | -                   |
| NMHC(ppm) Average                 | 638           | 32                   | 34                 | 99.7             | 0.186                | -                  | 0.016                 | -                   |
| CH4(ppm) Average                  | 638           | 32                   | 34                 | 99.7             | 3.9                  | -                  | 2.7                   | -                   |
| O3(ppb) Average                   | 641           | 31                   | 31                 | 100              | 36.9                 | 0                  | 31.4                  | -                   |
| NO2(ppb) Average                  | 617           | 38                   | 55                 | 97.47            | 45.6                 | 0                  | 27.6                  | -                   |
| NO(ppb) Average                   | 617           | 38                   | 55                 | 97.47            | 116.1                | -                  | 24.8                  | -                   |
| NOX(ppb) Average                  | 617           | 38                   | 55                 | 97.47            | 161.7                | -                  | 50.1                  | -                   |
| PM2.5(ug/m3) Average              | 671           | 1                    | 1                  | 100              | 49.9                 | 0                  | 15                    | 0                   |
| Temperature (C) Average           | 672           | 0                    | 0                  | 100              | 4.8                  | -                  | -0.6                  | -                   |
| Relative Humidity (%) Average     | 672           | 0                    | 0                  | 100              | 92.1                 | -                  | 85.8                  | -                   |
| Wind Speed 10 m (km/h) Average    | 655           | 0                    | 17                 | 97.47            | 32                   | -                  | 21                    | -                   |
| Wind Direction 10 m (deg) Average | 655           | 0                    | 17                 | 97.47            | -                    | -                  | -                     | -                   |

Note : Operational time includes periods of data collection and instrument calibration

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - BUFFALO VIEWPOINT (AMS04)  
 FEBRUARY 2023

MONTHLY SUMMARY FOR AIR QUALITY/ METEOROLOGICAL MONITORING MEASUREMENTS

| Parameter                         | Number | Mean   | StnDev | Total | Percentile |       |      |        |      |      |       |
|-----------------------------------|--------|--------|--------|-------|------------|-------|------|--------|------|------|-------|
|                                   |        |        |        |       | Min        | P10   | Q1   | Median | Q3   | P90  | Max   |
| SO2 (ppb) Average                 | 618    | 1.73   | 5.7    | -     | 0          | 0     | 0.1  | 0.4    | 0.8  | 3.1  | 59.7  |
| H2S (ppb) Average                 | 639    | 0.43   | 0.5    | -     | 0          | 0.1   | 0.2  | 0.3    | 0.5  | 0.9  | 7.4   |
| THC (ppm) Average                 | 638    | 2.12   | 0.3    | -     | 1.9        | 2     | 2    | 2      | 2.1  | 2.4  | 3.9   |
| NMHC(ppm) Average                 | 638    | 0.002  | 0.016  | -     | 0          | 0     | 0    | 0      | 0    | 0    | 0.186 |
| CH4(ppm) Average                  | 638    | 2.11   | 0.2    | -     | 1.9        | 2     | 2    | 2      | 2.1  | 2.4  | 3.9   |
| O3(ppb) Average                   | 641    | 18.32  | 10.2   | -     | 0.8        | 2.8   | 9.2  | 20.2   | 26.5 | 31.5 | 36.9  |
| NO2(ppb) Average                  | 617    | 13.99  | 11.2   | -     | 0          | 0.9   | 4.3  | 11.8   | 23.1 | 30   | 45.6  |
| NO(ppb) Average                   | 617    | 6.66   | 12.7   | -     | 0          | 0     | 0.5  | 1.3    | 6.9  | 19.3 | 116.1 |
| NOX(ppb) Average                  | 617    | 20.64  | 21.5   | -     | 0          | 1.4   | 5.1  | 14.7   | 27.7 | 50.7 | 161.7 |
| PM2.5(ug/m3) Average              | 671    | 7.08   | 5.3    | -     | 0.5        | 2.4   | 3.7  | 5.8    | 9.1  | 12.8 | 49.9  |
| Temperature 2 m (C) Average       | 672    | -15.41 | 9      | -     | -35.9      | -27.7 | -22  | -15.5  | -8.9 | -3.2 | 4.8   |
| Relative Humidity (%) Average     | 672    | 75.09  | 9.9    | -     | 42.2       | 62    | 70.1 | 76.5   | 81.7 | 87.4 | 92.1  |
| Wind Speed 10 m (km/h) Average    | 655    | 8.1    | 5      | -     | 0          | 3     | 5    | 7      | 10   | 14   | 32    |
| Wind Direction 10 m (deg) Average | 655    | -      | -      | -     | -          | -     | -    | -      | -    | -    | -     |

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - BUFFALO VIEWPOINT (AMS04)  
FEBRUARY 2023

OPERATIONAL NOTES

| Parameter                  | Period<br>Start   | Period<br>End     | Duration<br>(Hours) | Notes   |
|----------------------------|-------------------|-------------------|---------------------|---|
| SO2                        | 15 Feb 2023 15:00 | 16 Feb 2023 12:00 | 22                  | Analyzer Failure - inconsistent response          |
| SO2                        | 16 Feb 2023 13:00 | 16 Feb 2023 13:00 | 1                   | Maintenance - analyzer rebooted                   |
| THC/NMHC/CH4               | 16 Feb 2023 12:00 | 16 Feb 2023 13:00 | 2                   | Maintenance - replaced support gas cylinder       |
| NO2                        | 13 Feb 2023 15:00 | 14 Feb 2023 07:00 | 17                  | Maintenance - to clean reaction cell              |
| Wind Speed, Wind Direction | 13 Feb 2023 19:00 | 14 Feb 2023 11:00 | 17                  | Flat line in sensor output signal - Sensor frozen |



Wood Buffalo Environmental Association

Summary of Hour Averages

Sulphur Dioxide (SO<sub>2</sub>) - ppb

Buffalo Viewpoint - February 2023

|   |   |          |                           |      |
|---|---|----------|---------------------------|------|
| Number of Exceedences (AAAQO):              | 1-hr: 0   | 24-hr: 0 | Hours in Service:         | 672  |
| Maximum Value: 59.7 ppb on Feb 28 18:00     | Maximum Daily Average: 12.9 ppb on Feb 28   |          | Hours of Data:            | 618  |
| Minimum Value: 0.0 ppb on Feb 1 10:00       | Minimum Daily Average: 0.0 ppb on Feb 14  |          | Hours of Missing Data:    | 54   |
| Maximum Diurnal Average: 4.8 ppb at hour 17 | Minimum Diurnal Average: 0.4 ppb at hour 6  |          | Hours of Calibration:     | 31   |
| Monthly Average: 1.73 ppb                   | Percentiles: P <sub>1</sub> = 0.0 P <sub>10</sub> = 0.0 Q <sub>1</sub> = 0.1 Median = 0.4 Q <sub>3</sub> = 0.8 P <sub>90</sub> = 3.1 P <sub>99</sub> = 34.3 |          | Percent Operational Time: | 96.6 |

| Day    | Hourly Period Ending At (MST) |     |      |     |     |     |     |     |      |     |     |     |     |      |      |      |      |      |      |      |      |      |     |     | Daily Average | Daily Maximum |     |     |     |     |     |      |     |     |     |     |      |      |      |      |      |      |      |      |      |     |                 |                 |  |
|--------|-------------------------------|-----|------|-----|-----|-----|-----|-----|------|-----|-----|-----|-----|------|------|------|------|------|------|------|------|------|-----|-----|---------------|---------------|-----|-----|-----|-----|-----|------|-----|-----|-----|-----|------|------|------|------|------|------|------|------|------|-----|-----------------|-----------------|--|
|        | 1                             | 2   | 3    | 4   | 5   | 6   | 7   | 8   | 9    | 10  | 11  | 12  | 13  | 14   | 15   | 16   | 17   | 18   | 19   | 20   | 21   | 22   | 23  | 24  |               |               |     |     |     |     |     |      |     |     |     |     |      |      |      |      |      |      |      |      |      |     |                 |                 |  |
| 1-Feb  | 1.1                           | 0.5 | Z    | 0.4 | 0.2 | 0.3 | 0.9 | 0.3 | 0.0  | 0.0 | 0.0 | 0.2 | 0.0 | 0.0  | 0.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0 | 0.0 | 0.2           | 1.1           |     |     |     |     |     |      |     |     |     |     |      |      |      |      |      |      |      |      |      |     |                 |                 |  |
| 2-Feb  | 0.0                           | 0.0 | 0.0  | Z   | 1.1 | 0.8 | 0.8 | 0.7 | 0.7  | 0.9 | 1.0 | 1.1 | 1.3 | 1.4  | 1.5  | 1.4  | 1.1  | 0.8  | 0.6  | 0.6  | 0.6  | 0.6  | 0.7 | 0.8 | 0.8           | 1.5           |     |     |     |     |     |      |     |     |     |     |      |      |      |      |      |      |      |      |      |     |                 |                 |  |
| 3-Feb  | 0.7                           | 0.8 | 0.7  | 0.7 | Z   | 0.6 | 0.5 | 0.5 | 0.5  | 0.5 | 0.5 | 0.5 | 1.0 | 0.6  | 1.0  | 0.8  | 0.8  | 0.5  | 0.9  | 0.8  | 0.8  | 0.8  | 0.8 | 0.9 | 0.7           | 1.0           |     |     |     |     |     |      |     |     |     |     |      |      |      |      |      |      |      |      |      |     |                 |                 |  |
| 4-Feb  | 0.7                           | 0.6 | 0.6  | 0.6 | 0.6 | Z   | 0.6 | 0.6 | 0.5  | 0.5 | 0.5 | 0.6 | 0.6 | 0.4  | 0.3  | 0.4  | 0.3  | 0.2  | 0.3  | 0.2  | 0.2  | 0.2  | 0.2 | 0.2 | 0.4           | 0.7           |     |     |     |     |     |      |     |     |     |     |      |      |      |      |      |      |      |      |      |     |                 |                 |  |
| 5-Feb  | Z                             | 0.2 | 0.2  | 0.2 | 0.3 | 0.5 | 0.6 | 0.4 | 0.9  | 1.0 | 1.3 | 2.3 | 2.7 | 2.3  | 1.6  | 1.0  | 1.1  | 0.9  | 0.8  | 0.7  | 0.6  | 0.5  | 0.2 | 0.1 | 0.9           | 2.7           |     |     |     |     |     |      |     |     |     |     |      |      |      |      |      |      |      |      |      |     |                 |                 |  |
| 6-Feb  | 0.1                           | Z   | 0.2  | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1  | 0.2 | 0.2 | 5.3 | 7.6 | 3.1  | 3.5  | 3.5  | 1.8  | 1.6  | 3.2  | 3.5  | 2.2  | 2.0  | 2.1 | 1.6 | 1.8           | 7.6           |     |     |     |     |     |      |     |     |     |     |      |      |      |      |      |      |      |      |      |     |                 |                 |  |
| 7-Feb  | 1.0                           | 1.0 | Z    | 0.5 | 0.4 | 0.4 | 0.4 | 0.2 | 0.2  | 0.3 | 0.2 | 0.2 | 0.1 | 0.2  | 0.1  | 0.1  | 0.2  | 0.1  | 0.1  | 0.1  | 0.2  | 0.1  | 0.2 | 0.1 | 0.3           | 1.0           |     |     |     |     |     |      |     |     |     |     |      |      |      |      |      |      |      |      |      |     |                 |                 |  |
| 8-Feb  | 0.1                           | 0.1 | 0.0  | Z   | 0.0 | 0.1 | 0.2 | 0.1 | 0.2  | 0.2 | 0.9 | 3.1 | 4.5 | 4.2  | 2.3  | 1.3  | 1.0  | 0.8  | 0.9  | 0.9  | 0.8  | 0.5  | 0.3 | 0.4 | 1.0           | 4.5           |     |     |     |     |     |      |     |     |     |     |      |      |      |      |      |      |      |      |      |     |                 |                 |  |
| 9-Feb  | 0.3                           | 0.2 | 0.1  | 0.0 | Z   | 0.1 | 0.1 | 0.0 | 0.1  | 0.1 | 0.2 | 0.2 | 0.2 | 0.1  | 0.1  | 0.1  | 0.2  | 0.1  | 0.2  | 17.4 | 4.1  | 0.6  | 0.4 | 0.4 | 1.1           | 17.4          |     |     |     |     |     |      |     |     |     |     |      |      |      |      |      |      |      |      |      |     |                 |                 |  |
| 10-Feb | 0.3                           | 4.8 | 10.8 | 1.6 | 1.0 | Z   | 0.6 | C   | C    | C   | C   | 0.1 | 0.0 | 0.1  | 0.0  | 0.1  | 0.1  | 0.1  | 0.1  | 0.2  | 0.1  | 0.1  | 0.2 | 0.2 | 1.1           | 10.8          |     |     |     |     |     |      |     |     |     |     |      |      |      |      |      |      |      |      |      |     |                 |                 |  |
| 11-Feb | Z                             | 0.1 | 0.1  | 0.2 | 0.1 | 0.3 | 0.7 | 0.7 | 0.6  | 0.4 | 0.5 | 0.4 | 0.2 | 0.3  | 0.2  | 0.2  | 0.0  | 0.1  | 0.0  | 0.1  | 0.1  | 0.0  | 0.1 | 0.0 | 0.2           | 0.7           |     |     |     |     |     |      |     |     |     |     |      |      |      |      |      |      |      |      |      |     |                 |                 |  |
| 12-Feb | 0.0                           | Z   | 0.0  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0 | 0.0 | 0.2 | 0.1 | 0.1  | 0.3  | 5.2  | 1.7  | 0.5  | 0.3  | 1.2  | 1.1  | 0.5  | 0.2 | 0.3 | 0.5           | 5.2           |     |     |     |     |     |      |     |     |     |     |      |      |      |      |      |      |      |      |      |     |                 |                 |  |
| 13-Feb | 0.4                           | 0.3 | Z    | 0.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0 | 0.0 | 0.0           | 0.4           |     |     |     |     |     |      |     |     |     |     |      |      |      |      |      |      |      |      |      |     |                 |                 |  |
| 14-Feb | 0.0                           | 0.0 | 0.0  | Z   | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0 | 0.0 | 0.0 | 0.2 | 0.3  | 0.1  | 0.0  | 0.0  | 0.0  | 0.1  | 0.0  | 0.0  | 0.0  | 0.0 | 0.0 | 0.0           | 0.3           |     |     |     |     |     |      |     |     |     |     |      |      |      |      |      |      |      |      |      |     |                 |                 |  |
| 15-Feb | 0.0                           | 0.1 | 0.1  | 0.1 | Z   | 0.3 | 0.2 | 0.3 | 0.2  | 0.4 | 0.2 | 0.2 | 0.3 | 2.1  | AF   | AF   | AF   | AF   | AF   | AF   | AF   | AF   | AF  | AF  | --            | 2.1           |     |     |     |     |     |      |     |     |     |     |      |      |      |      |      |      |      |      |      |     |                 |                 |  |
| 16-Feb | AF                            | AF  | AF   | AF  | AF  | AF  | AF  | AF  | AF   | AF  | AF  | AF  | M   | 0.9  | 0.8  | 0.6  | 0.5  | 0.7  | 0.8  | 2.0  | 0.9  | 0.6  | 0.7 | 0.9 | --            | 2.0           |     |     |     |     |     |      |     |     |     |     |      |      |      |      |      |      |      |      |      |     |                 |                 |  |
| 17-Feb | Z                             | 0.9 | 0.8  | 0.7 | 0.6 | 0.6 | 0.7 | 0.6 | 0.5  | 0.5 | 0.5 | 1.5 | 4.5 | 1.1  | 1.1  | 0.3  | 0.3  | 0.3  | 0.2  | 0.1  | 0.1  | 0.0  | 0.0 | 0.7 | 4.5           |               |     |     |     |     |     |      |     |     |     |     |      |      |      |      |      |      |      |      |      |     |                 |                 |  |
| 18-Feb | 0.0                           | Z   | 0.0  | 0.0 | 0.0 | 0.0 | 0.2 | 0.4 | 0.3  | 0.3 | 0.4 | 0.6 | 0.5 | 2.1  | 2.8  | 0.9  | 0.8  | 1.1  | 0.8  | 0.5  | 0.4  | 0.1  | 0.1 | 0.4 | 0.6           | 2.8           |     |     |     |     |     |      |     |     |     |     |      |      |      |      |      |      |      |      |      |     |                 |                 |  |
| 19-Feb | 0.3                           | 1.1 | Z    | 1.2 | 1.2 | 1.7 | 1.9 | 4.4 | 18.3 | 8.4 | 5.3 | 3.3 | 2.5 | 10.3 | 8.4  | 1.8  | 1.1  | 1.0  | 0.7  | 0.8  | 0.7  | 0.4  | 0.2 | 0.4 | 3.3           | 18.3          |     |     |     |     |     |      |     |     |     |     |      |      |      |      |      |      |      |      |      |     |                 |                 |  |
| 20-Feb | 0.3                           | 0.5 | 0.5  | Z   | 0.4 | 0.5 | 0.3 | 0.4 | 0.5  | 1.7 | 3.2 | 7.2 | 7.7 | 6.6  | 11.0 | 10.8 | 2.1  | 0.6  | 0.4  | 0.3  | 0.2  | 0.2  | 0.2 | 0.1 | 2.4           | 11.0          |     |     |     |     |     |      |     |     |     |     |      |      |      |      |      |      |      |      |      |     |                 |                 |  |
| 21-Feb | 0.1                           | 0.2 | 0.1  | 0.2 | Z   | 0.2 | 0.2 | 0.2 | 0.3  | 0.2 | 1.2 | 3.3 | 7.9 | 2.1  | 0.5  | 0.3  | 0.2  | 0.2  | 0.2  | 0.2  | 0.1  | 0.2  | 0.1 | 0.0 | 0.8           | 7.9           |     |     |     |     |     |      |     |     |     |     |      |      |      |      |      |      |      |      |      |     |                 |                 |  |
| 22-Feb | 0.1                           | 0.3 | 0.1  | 0.2 | 0.1 | Z   | 0.2 | 0.2 | 0.3  | 0.3 | 0.3 | 0.9 | 3.7 | 11.4 | 10.4 | 39.3 | 45.5 | 5.9  | 1.6  | 0.6  | 0.6  | 1.5  | 3.4 | 1.8 | 5.6           | 45.5          |     |     |     |     |     |      |     |     |     |     |      |      |      |      |      |      |      |      |      |     |                 |                 |  |
| 23-Feb | Z                             | 0.5 | 0.7  | 0.6 | 0.4 | 0.3 | 0.3 | 0.1 | 0.1  | 0.1 | 0.2 | 0.3 | 0.4 | 0.5  | 6.4  | 11.4 | 23.3 | 34.9 | 31.7 | 15.7 | 11.6 | 10.4 | 9.9 | 9.6 | 7.4           | 34.9          |     |     |     |     |     |      |     |     |     |     |      |      |      |      |      |      |      |      |      |     |                 |                 |  |
| 24-Feb | 4.9                           | Z   | 3.7  | 2.4 | 1.5 | 0.9 | 0.7 | 0.6 | 0.7  | 0.8 | 1.0 | 1.0 | 1.7 | 0.7  | 0.4  | 0.5  | 0.5  | 0.6  | 0.5  | 0.6  | 0.6  | 0.8  | 1.0 | 1.1 | 1.2           | 4.9           |     |     |     |     |     |      |     |     |     |     |      |      |      |      |      |      |      |      |      |     |                 |                 |  |
| 25-Feb | 1.3                           | 0.8 | Z    | 0.7 | 0.7 | 0.6 | 0.6 | 0.4 | 0.2  | 0.2 | 0.2 | 0.2 | 0.2 | 0.2  | 0.2  | 0.5  | 0.6  | 0.3  | 0.4  | 0.4  | 0.4  | 0.4  | 0.3 | 0.2 | 0.4           | 1.3           |     |     |     |     |     |      |     |     |     |     |      |      |      |      |      |      |      |      |      |     |                 |                 |  |
| 26-Feb | 0.4                           | 0.5 | 0.4  | Z   | 0.4 | 0.3 | 0.4 | 0.8 | 0.8  | 1.9 | 1.4 | 1.5 | 1.2 | 7.8  | 7.9  | 2.6  | 0.5  | 4.7  | 2.8  | 0.2  | 0.1  | 0.3  | 0.5 | 0.1 | 1.6           | 7.9           |     |     |     |     |     |      |     |     |     |     |      |      |      |      |      |      |      |      |      |     |                 |                 |  |
| 27-Feb | 0.1                           | 0.1 | 0.0  | 0.0 | Z   | 0.2 | 0.1 | 0.0 | 0.0  | 0.0 | 0.1 | 0.1 | 0.1 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0 | 0.0 | 0.0           | 0.2           |     |     |     |     |     |      |     |     |     |     |      |      |      |      |      |      |      |      |      |     |                 |                 |  |
| 28-Feb | 0.0                           | 0.0 | 0.0  | 0.1 | 0.2 | Z   | 0.2 | 0.0 | 0.0  | 0.2 | 0.2 | 0.6 | 2.5 | 5.8  | 27.6 | 34.8 | 45.8 | 59.7 | 58.4 | 30.0 | 16.2 | 7.5  | 4.4 | 3.4 | 12.9          | 59.7          |     |     |     |     |     |      |     |     |     |     |      |      |      |      |      |      |      |      |      |     |                 |                 |  |
|        |                               |     |      |     |     |     |     |     |      |     |     |     |     |      |      |      |      |      |      |      |      |      |     | 0.5 | 0.6           | 0.9           | 0.5 | 0.4 | 0.4 | 0.5 | 1.0 | 0.7  | 0.8 | 1.3 | 1.8 | 2.4 | 3.3  | 4.4  | 4.8  | 4.3  | 3.9  | 2.9  | 1.6  | 1.1  | 1.0  | 0.9 | Diurnal Average |                 |  |
|        |                               |     |      |     |     |     |     |     |      |     |     |     |     |      |      |      |      |      |      |      |      |      |     | 4.9 | 4.8           | 10.8          | 2.4 | 1.5 | 1.7 | 1.9 | 4.4 | 18.3 | 8.4 | 5.3 | 7.2 | 7.9 | 11.4 | 27.6 | 39.3 | 45.8 | 59.7 | 58.4 | 30.0 | 16.2 | 10.4 | 9.9 | 9.6             | Diurnal Maximum |  |

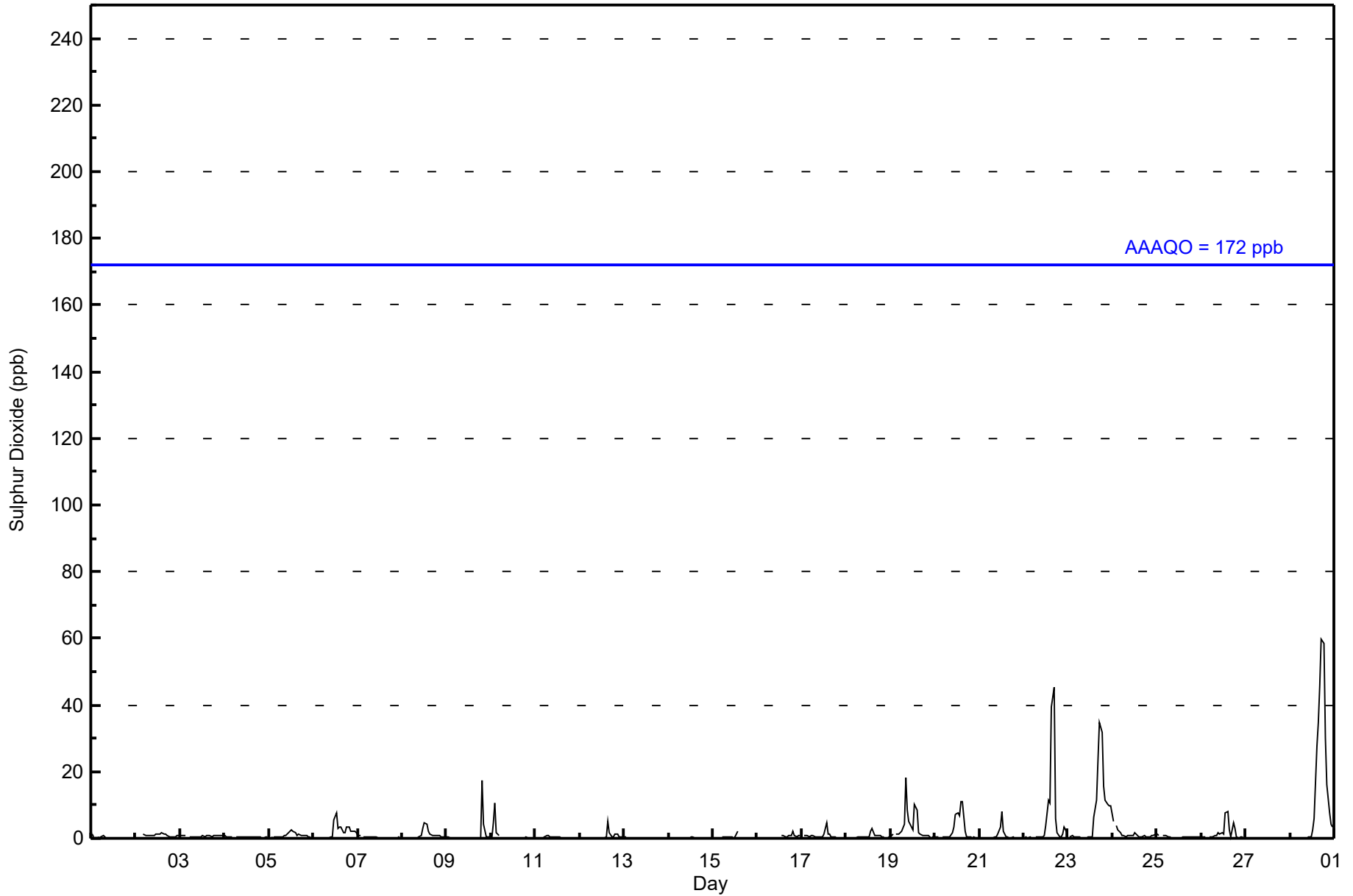
Z - zerospan      C - Calibration      M - Maintenance      AF - Analyzer Failure  
 Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 172 ppb    24-hr 48 ppb





Wood Buffalo Environmental Association  
Hourly Averages

Sulphur Dioxide (SO<sub>2</sub>) - ppb  
Buffalo Viewpoint - February 2023





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Sulphur Dioxide (SO<sub>2</sub>) - ppb  
Buffalo Viewpoint - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 10                            | 597                    | 96.60    | 96.60               |
| 11 - 20                           | 10                     | 1.62     | 98.22               |
| 21 - 60                           | 11                     | 1.78     | 100.00              |
| 61 - 110                          | 0                      | 0.00     | 100.00              |
| 111 - 172                         | 0                      | 0.00     | 100.00              |
| > 172                             | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 618

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Sulphur Dioxide (SO<sub>2</sub>) - ppb  
Buffalo Viewpoint - February 2023**

| <b>Concentration<br/>Ranges (ppb)</b> | <b>Wind Direction</b> |            |           |            |          |            |           |            |          |            |           |            |          |            |           |            | <b>Totals</b> |
|---------------------------------------|-----------------------|------------|-----------|------------|----------|------------|-----------|------------|----------|------------|-----------|------------|----------|------------|-----------|------------|---------------|
|                                       | <b>N</b>              | <b>NNE</b> | <b>NE</b> | <b>ENE</b> | <b>E</b> | <b>ESE</b> | <b>SE</b> | <b>SSE</b> | <b>S</b> | <b>SSW</b> | <b>SW</b> | <b>WSW</b> | <b>W</b> | <b>WNW</b> | <b>NW</b> | <b>NNW</b> |               |
| 0 - 10                                | 141                   | 62         | 17        | 6          | 8        | 9          | 50        | 88         | 27       | 10         | 8         | 24         | 36       | 27         | 33        | 35         | 581           |
| 11 - 20                               | 1                     | 2          | 2         | 0          | 1        | 0          | 0         | 2          | 1        | 0          | 0         | 0          | 0        | 1          | 0         | 0          | 10            |
| 21 - 60                               | 0                     | 0          | 0         | 0          | 0        | 0          | 3         | 0          | 1        | 0          | 0         | 0          | 2        | 2          | 2         | 1          | 11            |
| 61 - 110                              | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0             |
| 111 - 172                             | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0             |
| > 172                                 | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0             |
| <b>Totals</b>                         | 142                   | 64         | 19        | 6          | 9        | 9          | 53        | 90         | 29       | 10         | 8         | 24         | 38       | 30         | 35        | 36         | 602           |

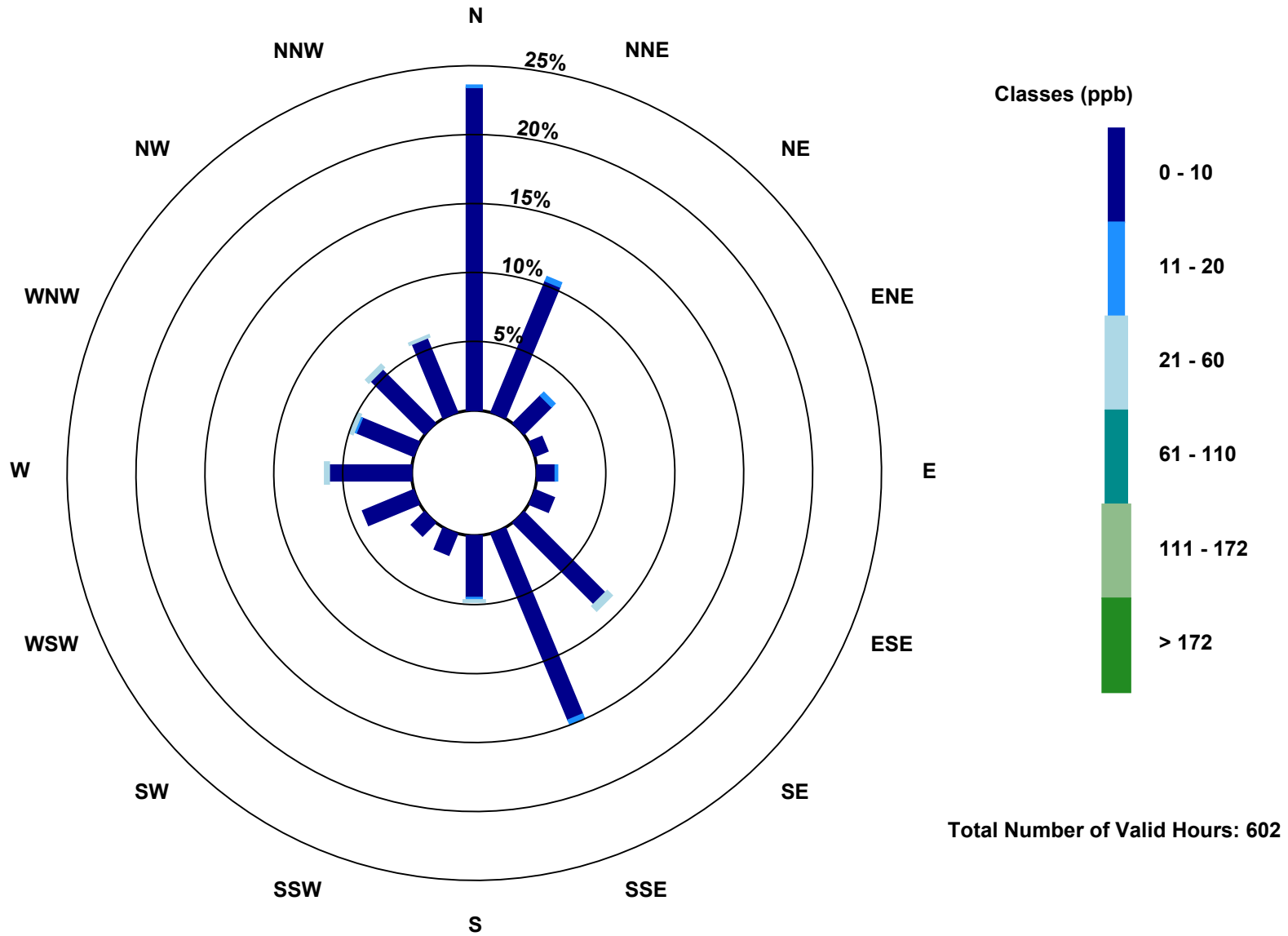
Total Number of Valid Hours: 602

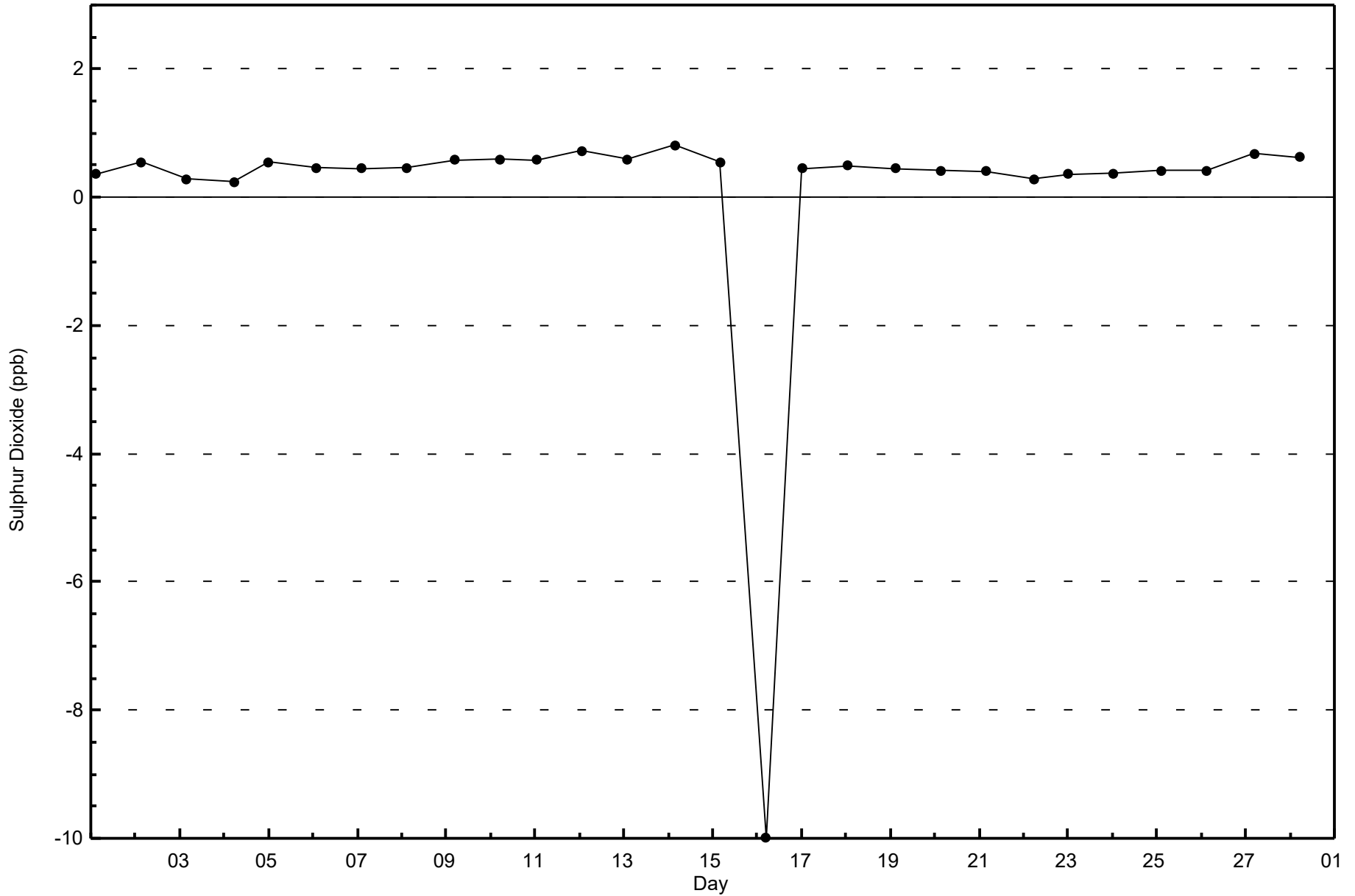
Total Number of Hours: 672

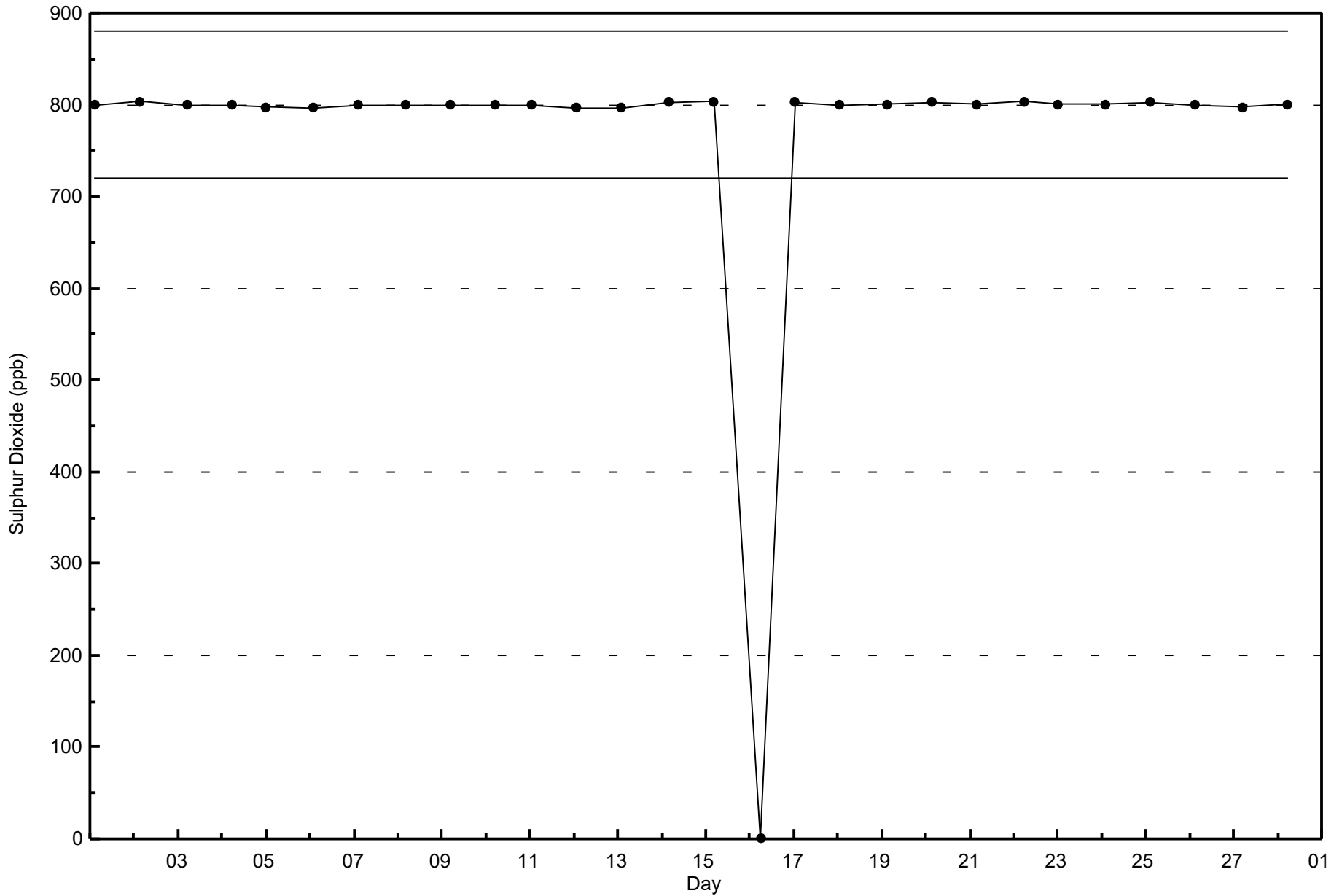


Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Sulphur Dioxide (SO<sub>2</sub>) - ppb  
Buffalo Viewpoint







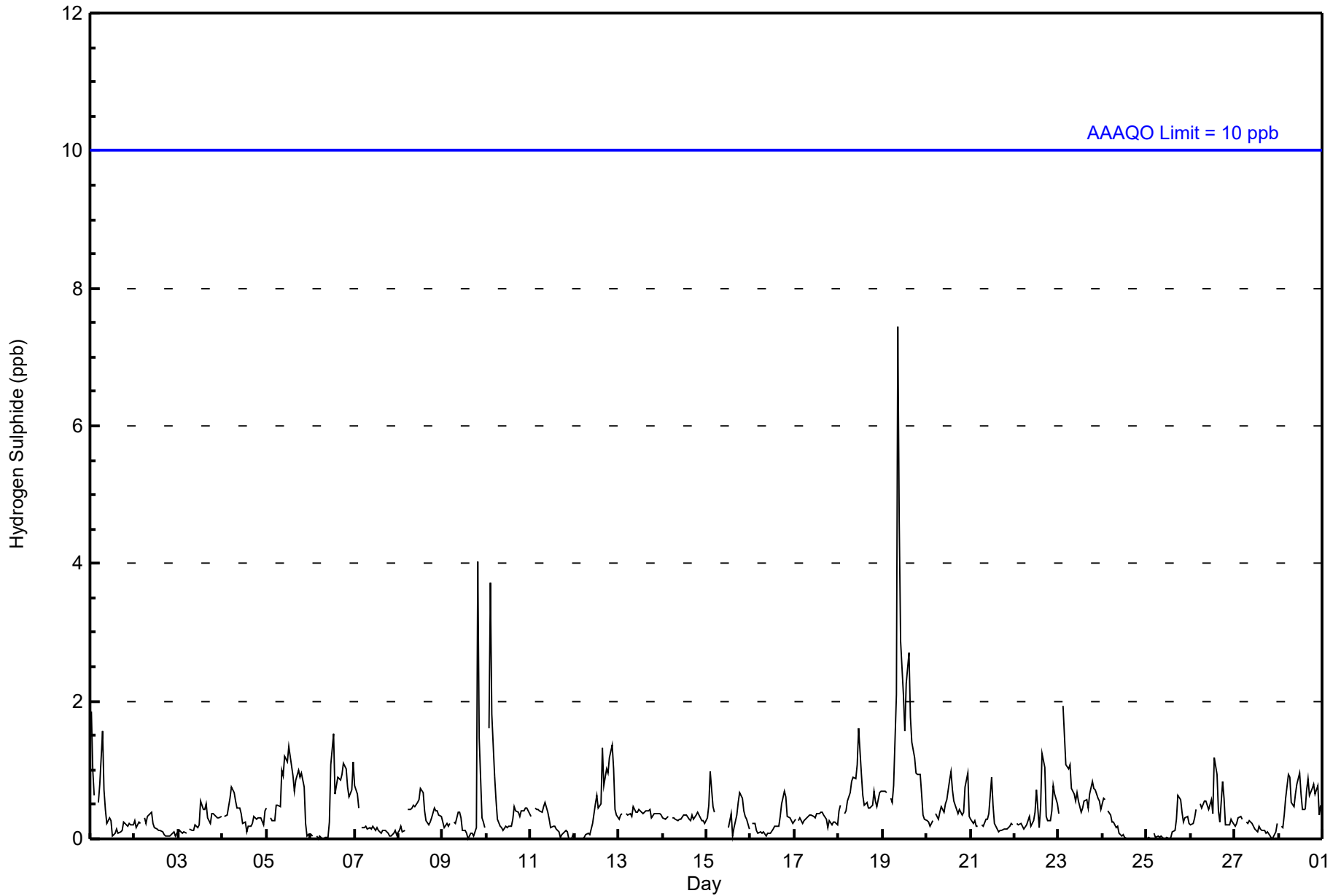


# Wood Buffalo Environmental Association

## Summary of Hour Averages

# Hydrogen Sulphide (H<sub>2</sub>S) - ppb Buffalo Viewpoint - February 2023

| Number of Exceedences (AAAQO):  |                               | 1-hr: 0  |     | 24-hr: 0 |     | Hours in Service:         |     | 672   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |   |               |               |
|---|-------------------------------|--|-----|----------|-----|---------------------------|-----|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---|---------------|---------------|
| Maximum Value: 7.4 ppb on Feb 19 09:00                                  |                               | Maximum Daily Average: 1.7 ppb on Feb 19   |     |          |     | Hours of Data:            |     | 639   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |   |               |               |
| Minimum Value: 0.0 ppb on Feb 6 05:00                                   |                               | Minimum Daily Average: 0.1 ppb on Feb 24   |     |          |     | Hours of Missing Data:    |     | 33    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |   |               |               |
| Maximum Diurnal Average: 0.6 ppb at hour 9                              |                               | Minimum Diurnal Average: 0.3 ppb at hour 24  |     |          |     | Hours of Calibration:     |     | 33    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |   |               |               |
| Monthly Average: 0.43 ppb   |                               | Percentiles: P <sub>1</sub> = 0.0 P <sub>10</sub> = 0.1 Q <sub>1</sub> = 0.2 Median = 0.3 Q <sub>3</sub> = 0.5 P <sub>90</sub> = 0.9 P <sub>99</sub> = 2.2 |     |          |     | Percent Operational Time: |     | 100.0 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |   |               |               |
| Day   | Hourly Period Ending At (MST) |  |     |          |     |                           |     |       |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |   | Daily Average | Daily Maximum |
|   | 1                             | 2  | 3   | 4        | 5   | 6                         | 7   | 8     | 9   | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19  | 20  | 21  | 22  | 23  | 24  |               |               |
| 1-Feb   | 1.9                           | 1.0  | 0.6 | Z        | 0.5 | 0.8                       | 1.6 | 0.7   | 0.4 | 0.2 | 0.3 | 0.3 | 0.0 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2   | 0.4           | 1.9           |
| 2-Feb   | 0.3                           | 0.2  | 0.2 | 0.2      | Z   | 0.3                       | 0.2 | 0.3   | 0.4 | 0.4 | 0.2 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 | 0.1 | 0.1 | 0.1 | 0.1   | 0.2           | 0.4           |
| 3-Feb   | 0.1                           | 0.1  | 0.1 | 0.1      | 0.1 | Z                         | 0.1 | 0.1   | 0.1 | 0.2 | 0.2 | 0.2 | 0.5 | 0.4 | 0.4 | 0.5 | 0.3 | 0.2 | 0.4 | 0.4 | 0.3 | 0.3 | 0.3 | 0.3   | 0.3           | 0.5           |
| 4-Feb   | Z                             | 0.3  | 0.3 | 0.5      | 0.6 | 0.7                       | 0.7 | 0.6   | 0.4 | 0.4 | 0.4 | 0.2 | 0.2 | 0.1 | 0.2 | 0.2 | 0.2 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.2 | 0.4   | 0.7           |               |
| 5-Feb   | 0.5                           | Z  | 0.3 | 0.3      | 0.3 | 0.5                       | 0.5 | 0.5   | 1.0 | 0.9 | 1.2 | 1.1 | 1.3 | 1.2 | 0.9 | 0.7 | 0.8 | 1.0 | 0.9 | 1.0 | 0.8 | 0.2 | 0.0 | 0.1   | 0.7           | 1.3           |
| 6-Feb   | 0.1                           | 0.0  | Z   | 0.0      | 0.0 | 0.0                       | 0.0 | 0.0   | 0.0 | 0.0 | 0.2 | 1.1 | 1.5 | 0.6 | 0.8 | 0.9 | 0.9 | 0.9 | 1.1 | 1.0 | 0.7 | 0.6 | 0.7 | 1.1   | 0.5           | 1.5           |
| 7-Feb   | 0.8                           | 0.7  | 0.5 | Z        | 0.2 | 0.2                       | 0.2 | 0.1   | 0.2 | 0.1 | 0.2 | 0.1 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 | 0.1 | 0.1 | 0.1   | 0.2           | 0.8           |
| 8-Feb   | 0.1                           | 0.2  | 0.1 | 0.1      | Z   | 0.4                       | 0.4 | 0.4   | 0.5 | 0.5 | 0.5 | 0.6 | 0.7 | 0.7 | 0.4 | 0.3 | 0.2 | 0.2 | 0.3 | 0.4 | 0.4 | 0.4 | 0.4 | 0.3   | 0.4           | 0.7           |
| 9-Feb   | 0.2                           | 0.2  | 0.2 | 0.2      | 0.2 | Z                         | 0.2 | 0.2   | 0.4 | 0.4 | 0.3 | 0.1 | 0.1 | 0.1 | 0.0 | 0.1 | 0.1 | 0.0 | 0.2 | 4.0 | 1.5 | 0.3 | 0.3 | 0.2   | 0.4           | 4.0           |
| 10-Feb  | Z                             | 1.6  | 3.7 | 1.8      | 0.9 | 0.6                       | 0.3 | 0.2   | 0.2 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.3 | 0.5 | 0.4 | 0.4 | 0.3 | 0.4 | 0.4 | 0.5 | 0.4 | 0.4   | 0.6           | 3.7           |
| 11-Feb  | 0.3                           | Z  | 0.4 | 0.4      | 0.4 | 0.4                       | 0.4 | 0.5   | 0.5 | 0.4 | 0.3 | 0.2 | 0.2 | 0.2 | 0.1 | 0.1 | 0.0 | 0.1 | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 | 0.1   | 0.2           | 0.5           |
| 12-Feb  | 0.0                           | 0.0  | Z   | 0.0      | 0.0 | 0.0                       | 0.1 | 0.1   | 0.1 | 0.1 | 0.2 | 0.5 | 0.6 | 0.5 | 0.5 | 1.3 | 0.8 | 1.0 | 1.0 | 1.2 | 1.4 | 1.0 | 0.4 | 0.4   | 0.5           | 1.4           |
| 13-Feb  | 0.3                           | 0.3  | 0.4 | Z        | 0.4 | 0.3                       | 0.4 | 0.3   | 0.5 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.3 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4   | 0.4           | 0.5           |
| 14-Feb  | 0.3                           | 0.3  | 0.3 | 0.3      | Z   | 0.3                       | 0.3 | 0.3   | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.4 | 0.3 | 0.4 | 0.4 | 0.3 | 0.3 | 0.3 | 0.2   | 0.3           | 0.4           |
| 15-Feb  | 0.3                           | 0.5  | 1.0 | 0.5      | 0.4 | Z                         | 0.3 | C     | C   | C   | C   | C   | 0.2 | 0.4 | 0.0 | 0.2 | 0.3 | 0.5 | 0.7 | 0.6 | 0.4 | 0.3 | 0.3 | 0.1   | 0.4           | 1.0           |
| 16-Feb  | Z                             | 0.2  | 0.2 | 0.1      | 0.1 | 0.1                       | 0.1 | 0.1   | 0.0 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.3 | 0.5 | 0.7 | 0.6 | 0.3 | 0.3 | 0.3 | 0.2   | 0.2           | 0.7           |
| 17-Feb  | 0.3                           | Z  | 0.3 | 0.3      | 0.2 | 0.3                       | 0.3 | 0.3   | 0.3 | 0.4 | 0.3 | 0.3 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.3 | 0.3 | 0.2 | 0.3 | 0.2 | 0.2 | 0.2   | 0.3           | 0.4           |
| 18-Feb  | 0.4                           | 0.5  | Z   | 0.4      | 0.4 | 0.5                       | 0.7 | 0.8   | 0.9 | 0.9 | 1.1 | 1.6 | 0.9 | 0.6 | 0.5 | 0.5 | 0.4 | 0.4 | 0.5 | 0.7 | 0.6 | 0.5 | 0.7 | 0.7   | 0.7           | 1.6           |
| 19-Feb  | 0.7                           | 0.7  | 0.7 | Z        | 0.6 | 0.5                       | 0.8 | 2.1   | 7.4 | 4.6 | 2.9 | 2.1 | 1.6 | 2.3 | 2.7 | 1.8 | 1.4 | 1.2 | 1.0 | 0.9 | 0.9 | 0.6 | 0.3 | 0.3   | 1.7           | 7.4           |
| 20-Feb  | 0.3                           | 0.2  | 0.2 | 0.3      | Z   | 0.4                       | 0.3 | 0.4   | 0.5 | 0.4 | 0.5 | 0.6 | 0.9 | 1.0 | 0.7 | 0.5 | 0.4 | 0.4 | 0.4 | 0.3 | 0.4 | 0.8 | 1.0 | 0.3   | 0.5           | 1.0           |
| 21-Feb  | 0.3                           | 0.2  | 0.3 | 0.2      | 0.2 | Z                         | 0.2 | 0.2   | 0.3 | 0.3 | 0.4 | 0.9 | 0.5 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.2   | 0.2           | 0.9           |
| 22-Feb  | Z                             | 0.2  | 0.2 | 0.2      | 0.2 | 0.1                       | 0.2 | 0.3   | 0.3 | 0.2 | 0.3 | 0.4 | 0.7 | 0.2 | 0.5 | 1.2 | 1.0 | 0.3 | 0.3 | 0.3 | 0.4 | 0.8 | 0.6 | 0.5   | 0.4           | 1.2           |
| 23-Feb  | 0.4                           | Z  | 1.9 | 1.5      | 1.1 | 1.0                       | 1.1 | 0.7   | 0.7 | 0.5 | 0.7 | 0.5 | 0.4 | 0.4 | 0.6 | 0.6 | 0.5 | 0.6 | 0.8 | 0.7 | 0.7 | 0.6 | 0.6 | 0.4   | 0.7           | 1.9           |
| 24-Feb  | 0.6                           | 0.6  | Z   | 0.4      | 0.3 | 0.2                       | 0.2 | 0.2   | 0.2 | 0.1 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0   | 0.1           | 0.6           |
| 25-Feb  | 0.0                           | 0.0  | 0.0 | Z        | 0.1 | 0.0                       | 0.0 | 0.0   | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.3 | 0.6 | 0.6 | 0.4 | 0.3 | 0.3 | 0.3 | 0.2   | 0.2           | 0.6           |
| 26-Feb  | 0.2                           | 0.2  | 0.3 | 0.4      | Z   | 0.5                       | 0.4 | 0.6   | 0.5 | 0.5 | 0.4 | 0.6 | 0.4 | 1.2 | 0.9 | 0.4 | 0.2 | 0.8 | 0.6 | 0.2 | 0.2 | 0.2 | 0.3 | 0.2   | 0.5           | 1.2           |
| 27-Feb  | 0.2                           | 0.2  | 0.3 | 0.3      | 0.3 | Z                         | 0.2 | 0.2   | 0.3 | 0.2 | 0.2 | 0.2 | 0.1 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.1 | 0.2   | 0.2           | 0.3           |
| 28-Feb  | Z                             | 0.2  | 0.2 | 0.3      | 0.6 | 0.9                       | 0.9 | 0.5   | 0.5 | 0.6 | 0.8 | 1.0 | 0.7 | 0.4 | 0.4 | 0.7 | 0.9 | 0.6 | 0.7 | 0.8 | 0.7 | 0.8 | 0.3 | 0.5   | 0.6           | 1.0           |
|   |                               |  |     |          |     |                           |     |       |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Diurnal Average   |               |               |
|   |                               |  |     |          |     |                           |     |       |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Diurnal Maximum   |               |               |
|   |                               |  |     |          |     |                           |     |       |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | 1.9 1.6 3.7 1.8 1.1 1.0 1.6 2.1 7.4 4.6 2.9 2.1 1.6 2.3 2.7 1.8 1.4 1.2 1.1 4.0 1.5 1.0 1.0 1.1 |               |               |
| Z - zerospan C - Calibration  |                               |  |     |          |     |                           |     |       |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |   |               |               |
| Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 10 ppb 24-hr 3 ppb |                               |  |     |          |     |                           |     |       |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |   |               |               |







**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Hydrogen Sulphide (H<sub>2</sub>S) - ppb  
Buffalo Viewpoint - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 2                             | 633                    | 99.06    | 99.06               |
| 3 - 4                             | 4                      | 0.63     | 99.69               |
| 5 - 7                             | 2                      | 0.31     | 100.00              |
| 8 - 11                            | 0                      | 0.00     | 100.00              |
| > 11                              | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 639

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Hydrogen Sulphide (H<sub>2</sub>S) - ppb  
Buffalo Viewpoint - February 2023**

| Concentration<br>Ranges (ppb) | Wind Direction |     |    |     |   |     |    |     |    |     |    |     |    |     |    |     | Totals |
|-------------------------------|----------------|-----|----|-----|---|-----|----|-----|----|-----|----|-----|----|-----|----|-----|--------|
|                               | N              | NNE | NE | ENE | E | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |        |
| 0 - 2                         | 143            | 62  | 19 | 6   | 9 | 12  | 54 | 104 | 31 | 9   | 8  | 23  | 37 | 31  | 34 | 35  | 617    |
| 3 - 4                         | 0              | 2   | 1  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 1  | 0   | 4      |
| 5 - 7                         | 0              | 0   | 1  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 1  | 0   | 2      |
| 8 - 11                        | 0              | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| > 11                          | 0              | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| <b>Totals</b>                 | 143            | 64  | 21 | 6   | 9 | 12  | 54 | 104 | 31 | 9   | 8  | 23  | 37 | 31  | 36 | 35  | 623    |

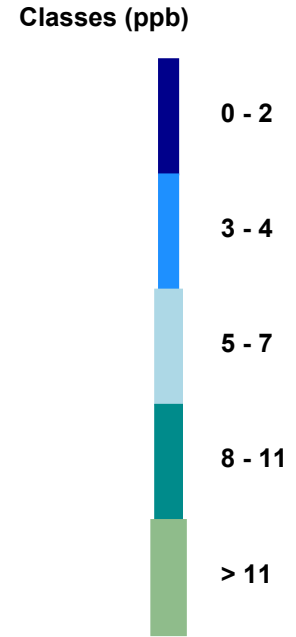
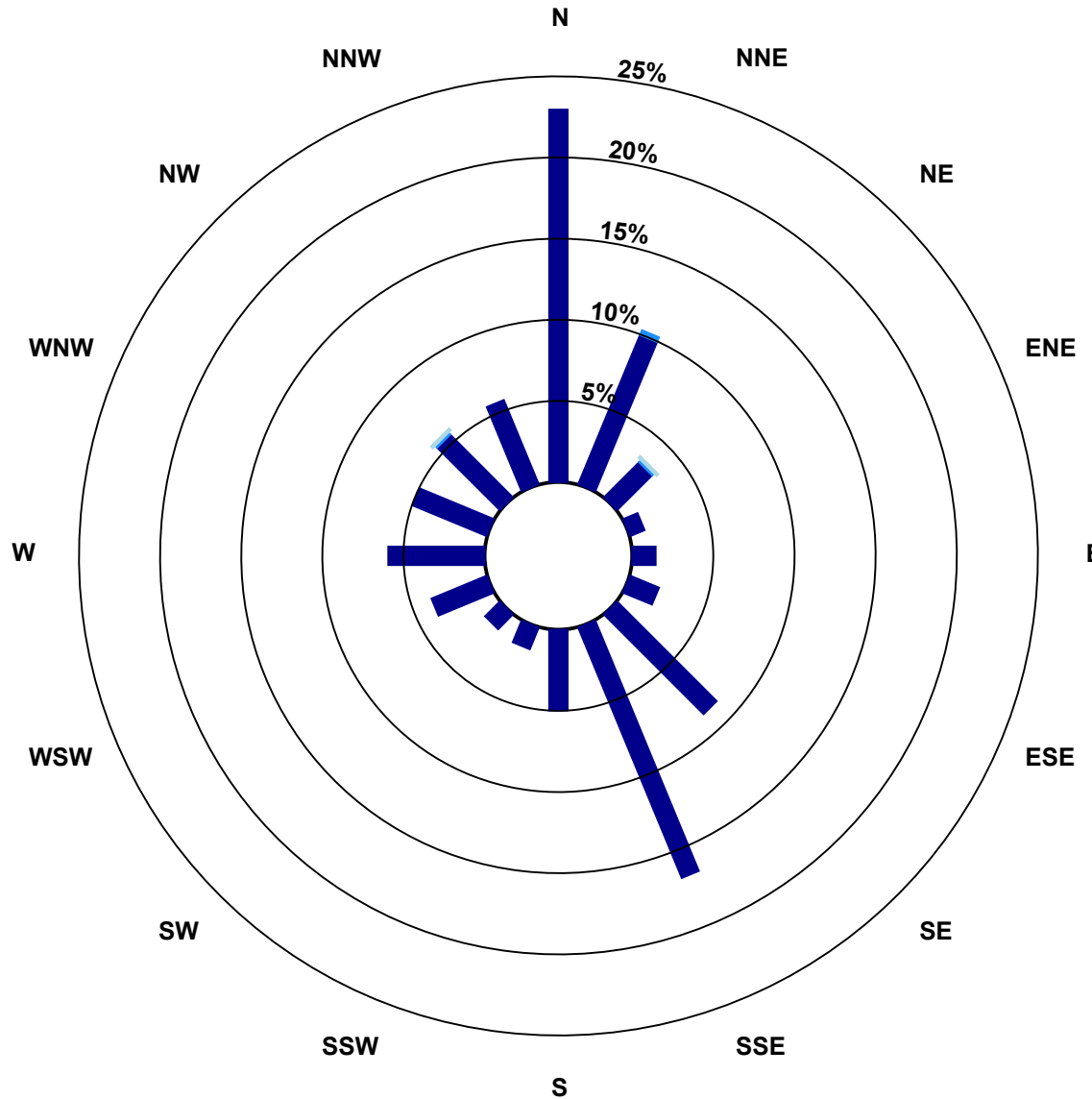
Total Number of Valid Hours: 623

Total Number of Hours: 672

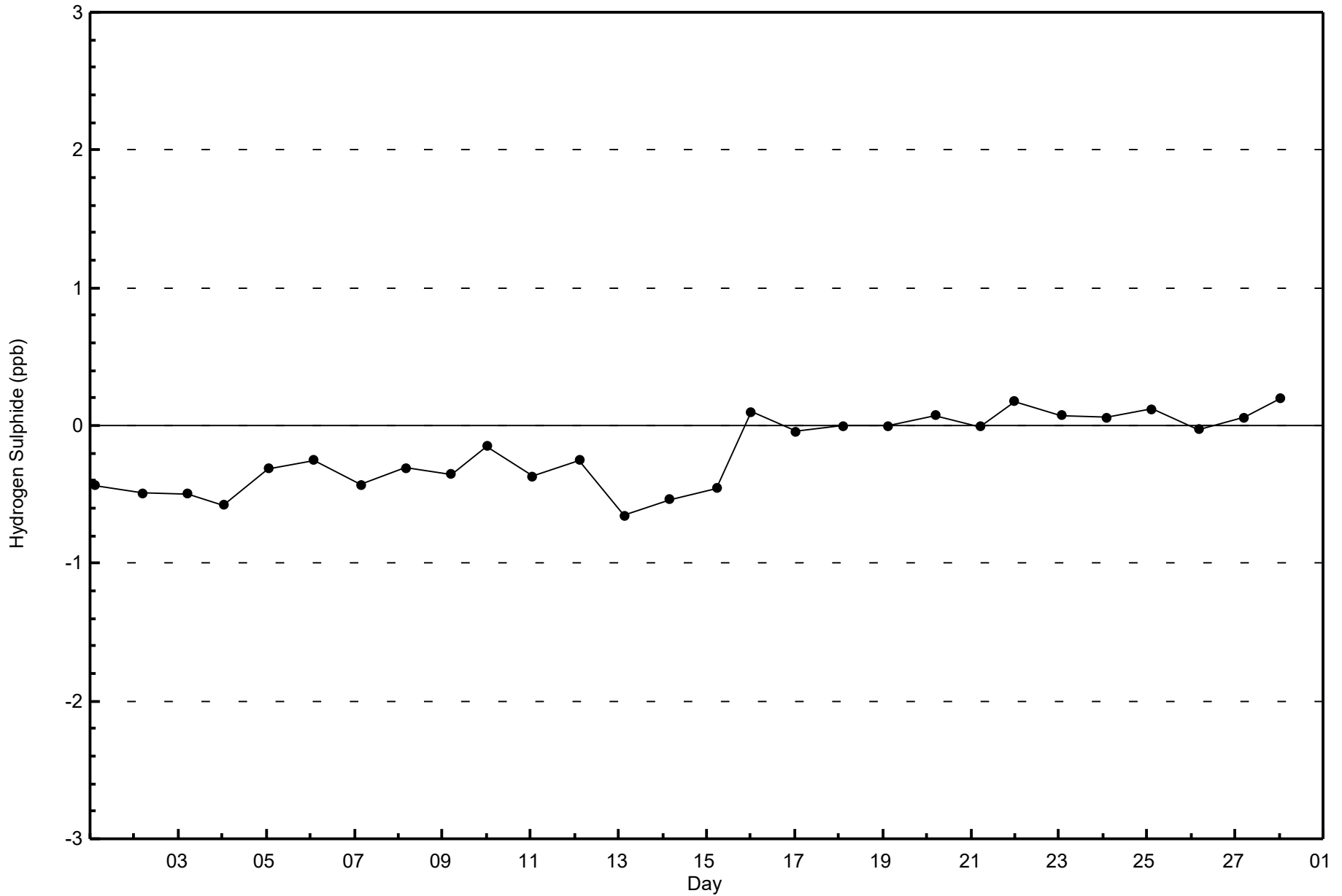


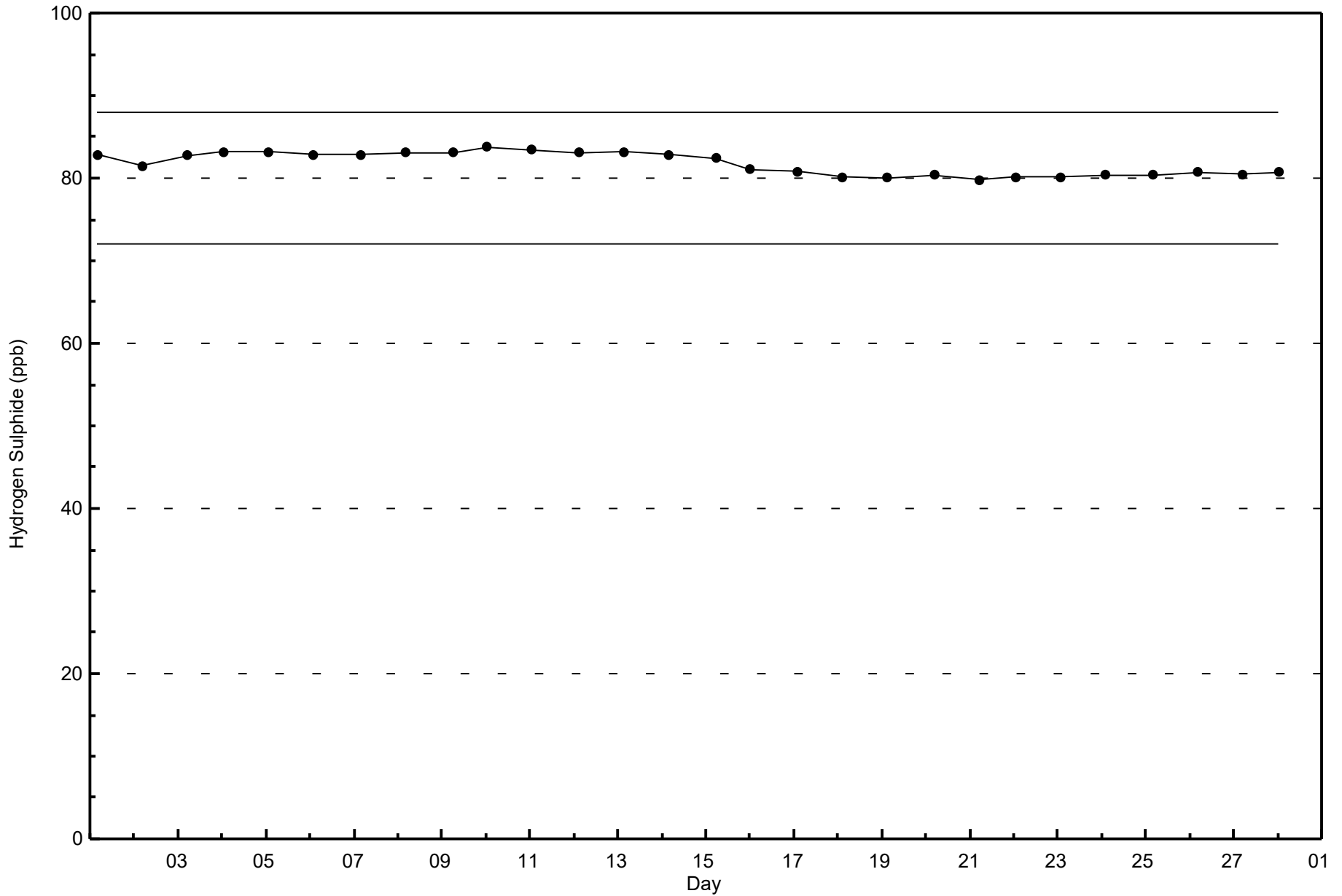
Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Hydrogen Sulphide (H<sub>2</sub>S) - ppb  
Buffalo Viewpoint



Total Number of Valid Hours: 623







**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

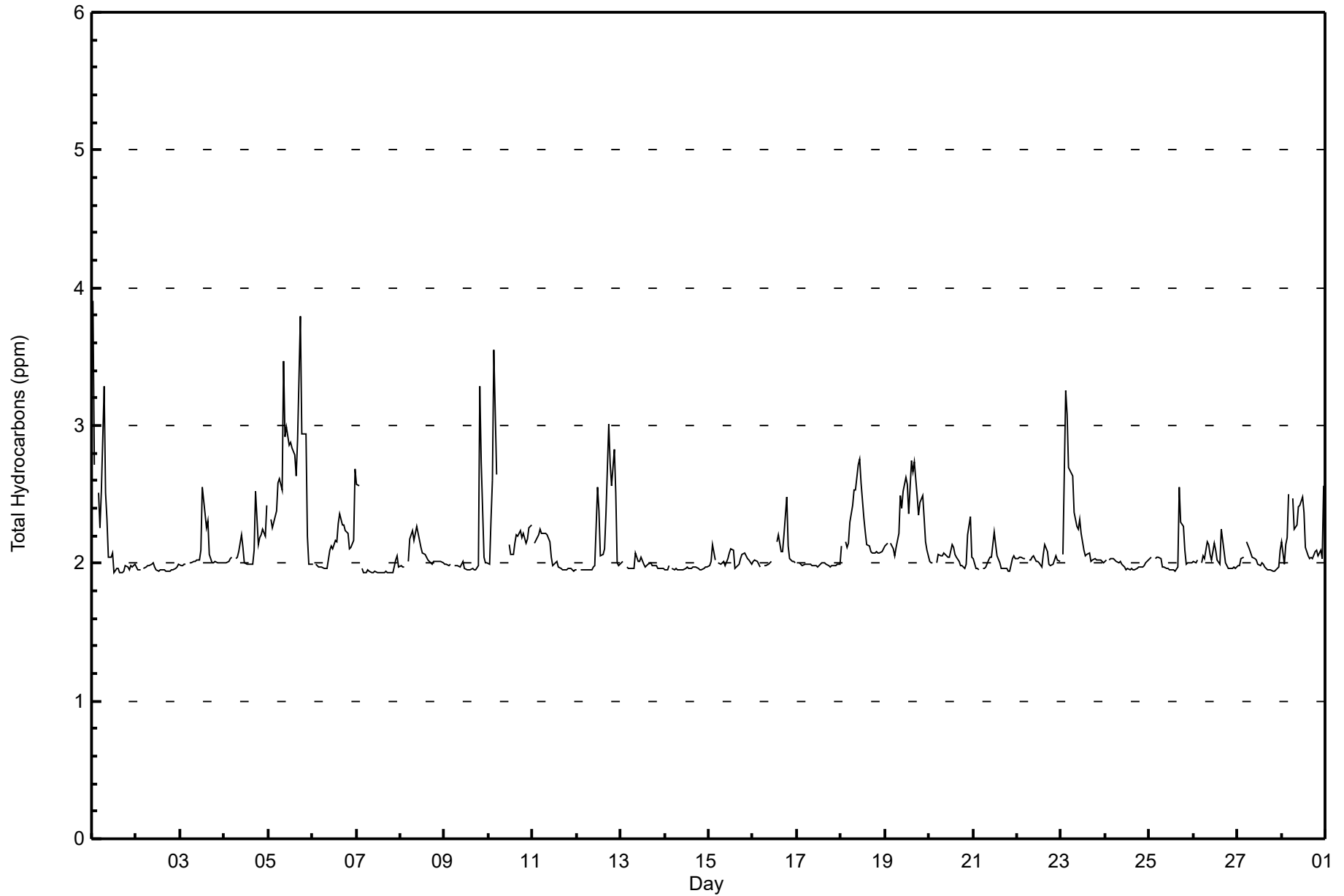
**Total Hydrocarbons (THC) - ppm**  
**Buffalo Viewpoint - February 2023**

| Maximum Value: 3.9 ppm on Feb 1 01:00                          |                               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Maximum Daily Average: 2.7 ppm on Feb 5  |     |     |     |                 | Hours in Service: 672          |               |
|--|-------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|-----|-----|-----|-----------------|--------------------------------|---------------|
| Minimum Value: 1.9 ppm on Feb 7 13:00                          |                               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Minimum Daily Average: 2.0 ppm on Feb 14   |     |     |     |                 | Hours of Data: 638             |               |
| Maximum Diurnal Average: 2.2 ppm at hour 4                     |                               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Minimum Diurnal Average: 2.0 ppm at hour 23  |     |     |     |                 | Hours of Missing Data: 34      |               |
| Monthly Average: 2.12 ppm                                      |                               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Percentiles: P <sub>1</sub> = 1.9 P <sub>10</sub> = 2.0 Q <sub>1</sub> = 2.0 Median = 2.0 Q <sub>3</sub> = 2.1 P <sub>90</sub> = 2.4 P <sub>99</sub> = 3.2 |     |     |     |                 | Hours of Calibration: 32       |               |
|  |                               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |  |     |     |     |                 | Percent Operational Time: 99.7 |               |
| Day  | Hourly Period Ending At (MST) |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |  |     |     |     |                 | Daily Average                  | Daily Maximum |
|  | 1                             | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19  | 20   | 21  | 22  | 23  | 24              |                                |               |
| 1-Feb  | 3.9                           | 2.7 | Z   | 2.5 | 2.3 | 2.5 | 3.3 | 2.5 | 2.3 | 2.0 | 2.0 | 2.1 | 1.9 | 2.0 | 2.0 | 1.9 | 1.9 | 1.9 | 2.0 | 2.0  | 2.0 | 2.0 | 2.0 | 2.0             | 2.2                            | 3.9           |
| 2-Feb  | 2.0                           | 2.0 | 1.9 | Z   | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 1.9 | 2.0 | 1.9 | 2.0 | 1.9 | 1.9 | 1.9 | 2.0  | 2.0 | 2.0 | 2.0 | 2.0             | 2.0                            | 2.0           |
| 3-Feb  | 2.0                           | 2.0 | 2.0 | 2.0 | Z   | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1 | 2.6 | 2.4 | 2.3 | 2.3 | 2.1 | 2.0 | 2.0 | 2.0  | 2.0 | 2.0 | 2.0 | 2.0             | 2.1                            | 2.6           |
| 4-Feb  | 2.0                           | 2.0 | 2.0 | 2.0 | 2.0 | Z   | 2.0 | 2.0 | 2.1 | 2.2 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1 | 2.5 | 2.1 | 2.2  | 2.2 | 2.2 | 2.2 | 2.4             | 2.1                            | 2.5           |
| 5-Feb  | Z                             | 2.3 | 2.3 | 2.3 | 2.4 | 2.6 | 2.6 | 2.5 | 3.5 | 2.9 | 3.0 | 2.9 | 2.9 | 2.8 | 2.8 | 2.6 | 2.9 | 3.8 | 2.9 | 2.9  | 2.9 | 2.2 | 2.0 | 2.0             | 2.7                            | 3.8           |
| 6-Feb  | 2.0                           | Z   | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | 2.3 | 2.4 | 2.3 | 2.3 | 2.2 | 2.2  | 2.1 | 2.1 | 2.2 | 2.7             | 2.1                            | 2.7           |
| 7-Feb  | 2.6                           | 2.6 | Z   | 2.0 | 1.9 | 1.9 | 2.0 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9  | 1.9 | 2.0 | 2.1 | 2.0             | 2.0                            | 2.6           |
| 8-Feb  | 2.0                           | 2.0 | 2.0 | Z   | 2.0 | 2.2 | 2.2 | 2.2 | 2.2 | 2.3 | 2.2 | 2.1 | 2.1 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0  | 2.0 | 2.0 | 2.0 | 2.0             | 2.1                            | 2.3           |
| 9-Feb  | 2.0                           | 2.0 | 2.0 | 2.0 | Z   | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 1.9 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0  | 3.3 | 2.7 | 2.0 | 2.0             | 2.1                            | 3.3           |
| 10-Feb   | 2.0                           | 2.3 | 2.6 | 3.5 | 2.6 | Z   | 2.1 | C   | C   | C   | C   | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2  | 2.1 | 2.2 | 2.3 | 2.3             | 2.3                            | 3.5           |
| 11-Feb   | Z                             | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0  | 2.0 | 2.0 | 1.9 | 1.9             | 2.1                            | 2.2           |
| 12-Feb   | 1.9                           | Z   | 2.0 | 1.9 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.5 | 2.4 | 2.1 | 2.1 | 2.1 | 2.4 | 3.0 | 2.7  | 2.6 | 2.8 | 2.5 | 2.0             | 2.0                            | 3.0           |
| 13-Feb   | 2.0                           | 2.0 | Z   | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0  | 2.0 | 2.0 | 2.0 | 2.0             | 2.0                            | 2.1           |
| 14-Feb   | 2.0                           | 2.0 | 2.0 | Z   | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0  | 2.0 | 2.0 | 2.0 | 2.0             | 2.0                            | 2.0           |
| 15-Feb   | 2.0                           | 2.0 | 2.1 | 2.0 | Z   | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1 | 2.1 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1 | 2.1  | 2.1 | 2.0 | 2.0 | 2.0             | 2.0                            | 2.1           |
| 16-Feb   | 2.0                           | 2.0 | 2.0 | 2.0 | 2.0 | Z   | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | M   | M   | 2.2 | 2.2 | 2.1 | 2.1 | 2.2 | 2.5  | 2.1 | 2.0 | 2.0 | 2.0             | 2.0                            | 2.5           |
| 17-Feb   | Z                             | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0  | 2.0 | 2.0 | 2.0 | 2.0             | 2.0                            | 2.0           |
| 18-Feb   | 2.1                           | Z   | 2.2 | 2.1 | 2.2 | 2.3 | 2.4 | 2.5 | 2.5 | 2.7 | 2.8 | 2.6 | 2.3 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1  | 2.1 | 2.1 | 2.1 | 2.1             | 2.1                            | 2.8           |
| 19-Feb   | 2.1                           | 2.1 | Z   | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.5 | 2.4 | 2.5 | 2.6 | 2.6 | 2.4 | 2.7 | 2.7 | 2.7 | 2.5 | 2.3 | 2.4  | 2.5 | 2.3 | 2.2 | 2.1             | 2.4                            | 2.7           |
| 20-Feb   | 2.0                           | 2.0 | 2.0 | Z   | 2.0 | 2.1 | 2.0 | 2.1 | 2.1 | 2.1 | 2.0 | 2.0 | 2.1 | 2.1 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0  | 2.0 | 2.2 | 2.3 | 2.0             | 2.1                            | 2.3           |
| 21-Feb   | 2.0                           | 2.0 | 2.0 | 2.0 | Z   | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.2 | 2.1 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 1.9  | 1.9 | 2.0 | 2.0 | 2.0             | 2.0                            | 2.2           |
| 22-Feb   | 2.0                           | 2.0 | 2.0 | 2.0 | 2.0 | Z   | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1 | 2.1 | 2.1 | 2.0 | 2.0 | 2.0  | 2.0 | 2.0 | 2.0 | 2.0             | 2.0                            | 2.1           |
| 23-Feb   | Z                             | 2.1 | 3.3 | 3.1 | 2.7 | 2.7 | 2.6 | 2.4 | 2.3 | 2.3 | 2.3 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0  | 2.0 | 2.0 | 2.0 | 2.0             | 2.0                            | 3.3           |
| 24-Feb   | 2.0                           | Z   | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0  | 2.0 | 2.0 | 2.0 | 2.0             | 2.0                            | 2.0           |
| 25-Feb   | 2.0                           | 2.0 | Z   | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 1.9 | 1.9 | 2.0 | 2.6 | 2.3 | 2.3 | 2.1  | 2.0 | 2.0 | 2.0 | 2.0             | 2.0                            | 2.6           |
| 26-Feb   | 2.0                           | 2.0 | 2.0 | Z   | 2.0 | 2.1 | 2.0 | 2.2 | 2.1 | 2.1 | 2.0 | 2.1 | 2.1 | 2.0 | 2.0 | 2.2 | 2.2 | 2.0 | 2.0 | 2.0  | 2.0 | 2.0 | 2.0 | 2.0             | 2.0                            | 2.2           |
| 27-Feb   | 2.0                           | 2.0 | 2.0 | 2.0 | Z   | 2.2 | 2.1 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 1.9 | 1.9  | 1.9 | 1.9 | 2.0 | 2.1             | 2.0                            | 2.2           |
| 28-Feb   | 2.2                           | 2.0 | 2.1 | 2.2 | 2.5 | Z   | 2.5 | 2.2 | 2.3 | 2.4 | 2.4 | 2.5 | 2.4 | 2.1 | 2.1 | 2.0 | 2.0 | 2.0 | 2.1 | 2.1  | 2.1 | 2.1 | 2.0 | 2.6             | 2.2                            | 2.6           |
|  |                               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |  |     |     |     | Diurnal Average |                                |               |
|  |                               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |  |     |     |     | Diurnal Maximum |                                |               |
|  |                               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |  |     |     |     |                 |                                |               |
| Z - zerospan          C - Calibration          M - Maintenance |                               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |  |     |     |     |                 |                                |               |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Total Hydrocarbons (THC) - ppm**  
**Buffalo Viewpoint - February 2023**





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Total Hydrocarbons (THC) - ppm**  
**Buffalo Viewpoint - February 2023**

| <b>Concentration Ranges (ppm)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 2.0                           | 400                    | 62.70    | 62.70               |
| 2.1 - 3.0                         | 230                    | 36.05    | 98.75               |
| 3.1 - 10.0                        | 8                      | 1.25     | 100.00              |
| > 10.0                            | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 638

Total Number of Hours: 672





**Wood Buffalo Environmental Association  
Frequency Distribution**

**Total Hydrocarbons (THC) - ppm  
Buffalo Viewpoint - February 2023**

| <b>Concentration<br/>Ranges (ppm)</b> | <b>Wind Direction</b> |     |    |     |   |     |    |     |    |     |    |     |    |     |    |     | <b>Totals</b> |
|---------------------------------------|-----------------------|-----|----|-----|---|-----|----|-----|----|-----|----|-----|----|-----|----|-----|---------------|
|                                       | N                     | NNE | NE | ENE | E | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |               |
| 0 - 2.0                               | 80                    | 37  | 9  | 3   | 1 | 7   | 41 | 81  | 24 | 10  | 5  | 23  | 31 | 16  | 11 | 5   | 384           |
| 2.1 - 3.0                             | 61                    | 27  | 9  | 3   | 8 | 5   | 15 | 21  | 7  | 0   | 3  | 1   | 7  | 14  | 22 | 27  | 230           |
| 3.1 - 10.0                            | 1                     | 0   | 1  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 2  | 4   | 8             |
| > 10.0                                | 0                     | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| <b>Totals</b>                         | 142                   | 64  | 19 | 6   | 9 | 12  | 56 | 102 | 31 | 10  | 8  | 24  | 38 | 30  | 35 | 36  | 622           |

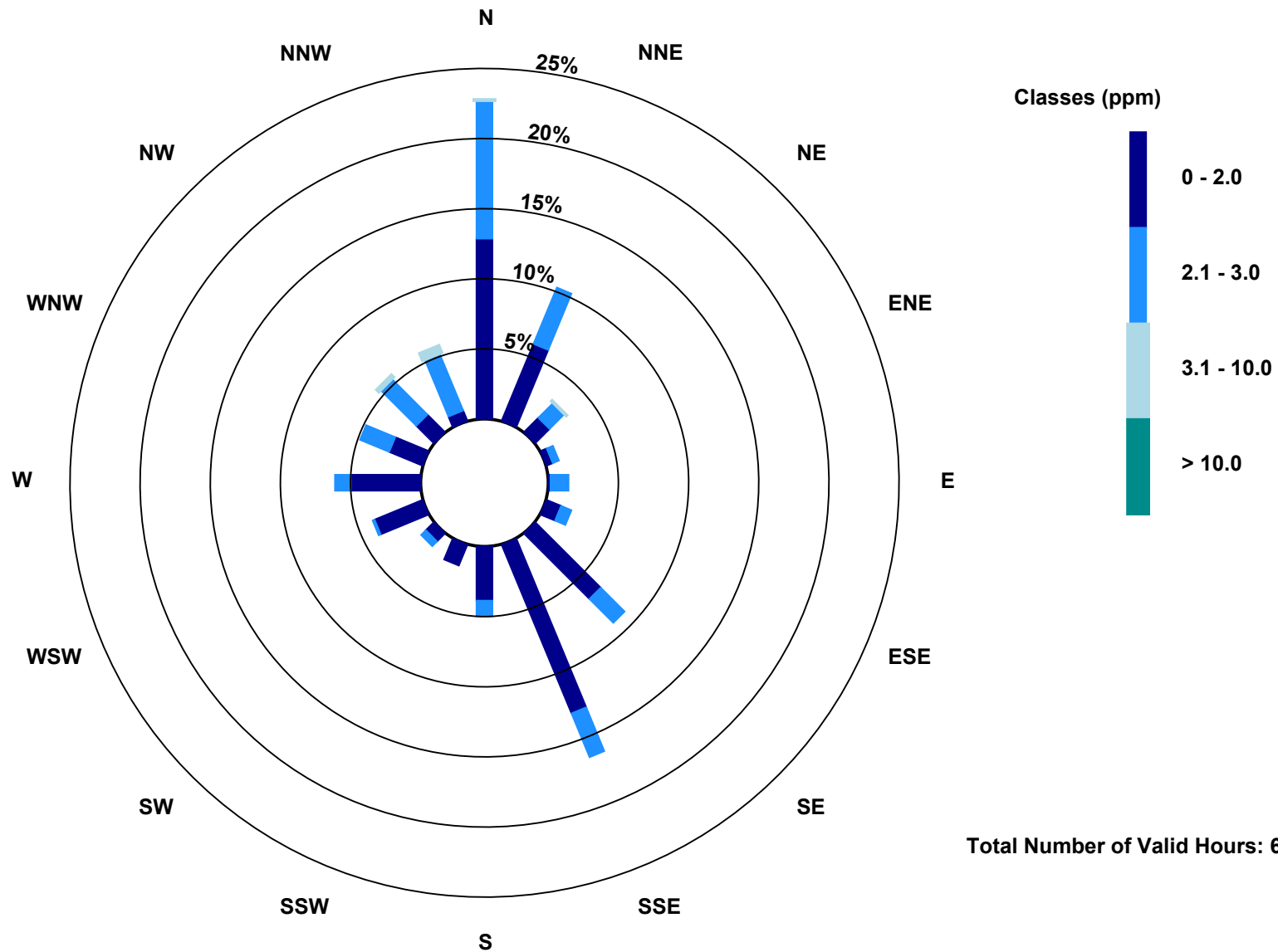
Total Number of Valid Hours: 622

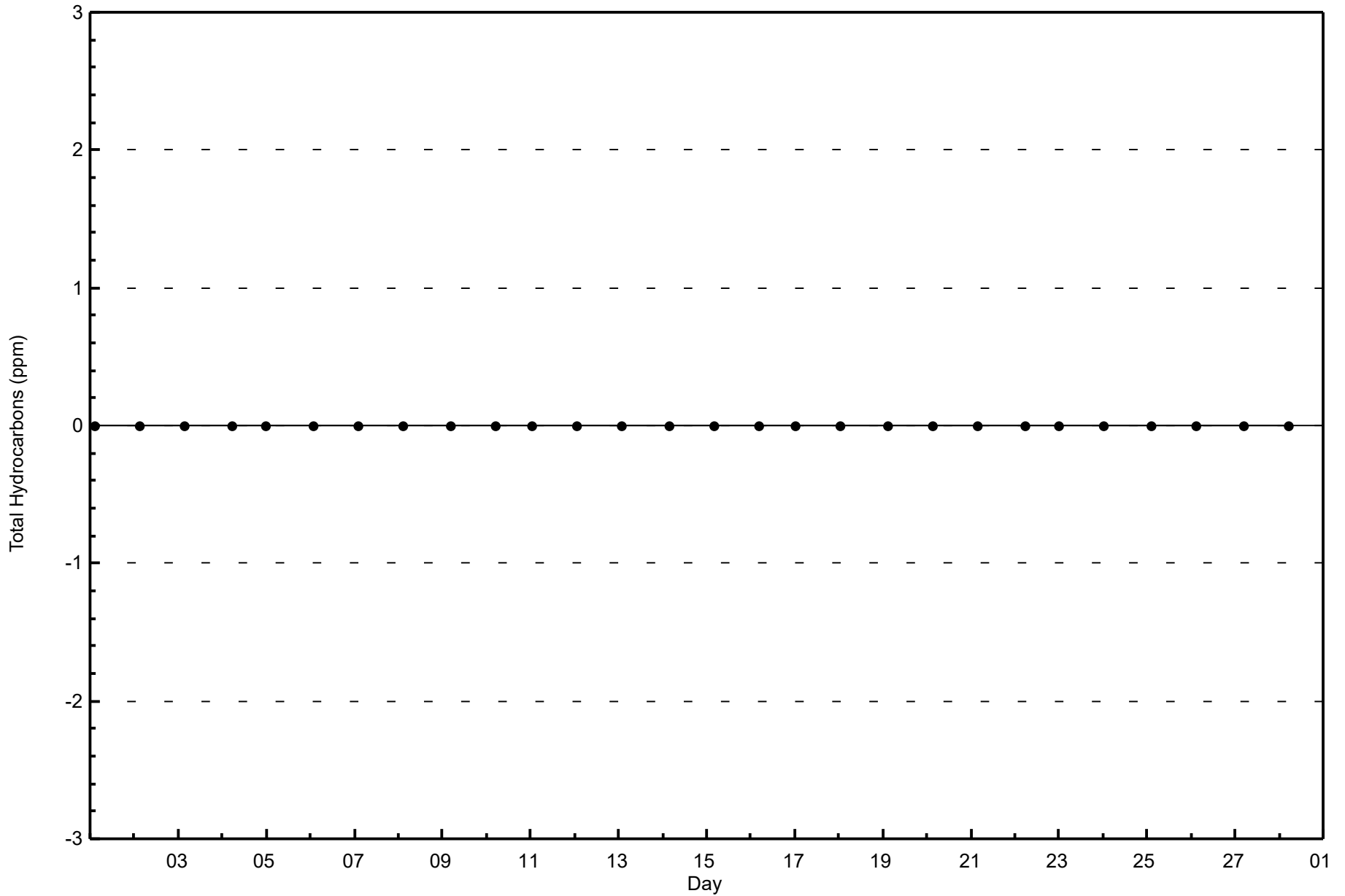
Total Number of Hours: 672

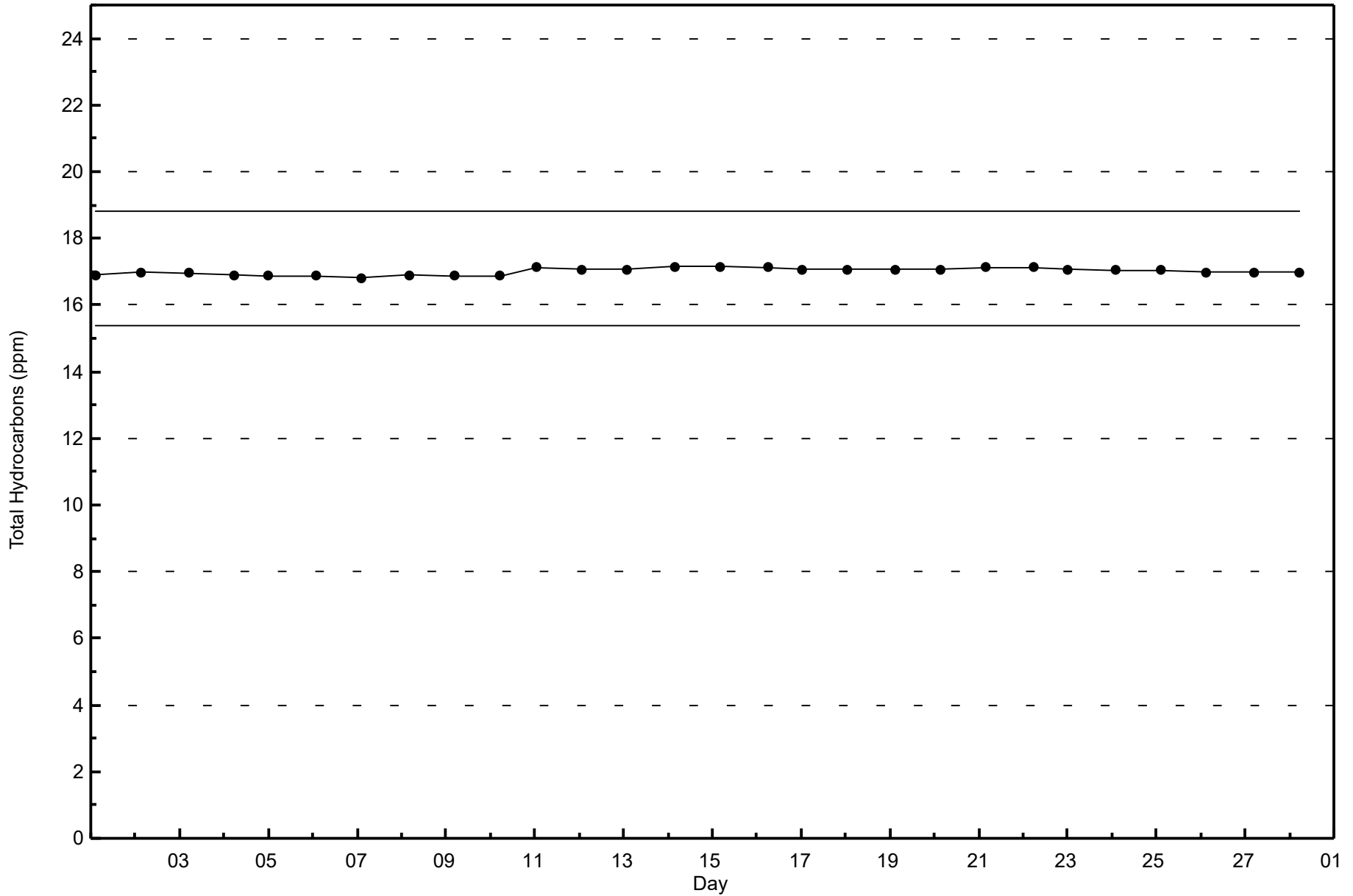


Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Total Hydrocarbons (THC) - ppm  
Buffalo Viewpoint





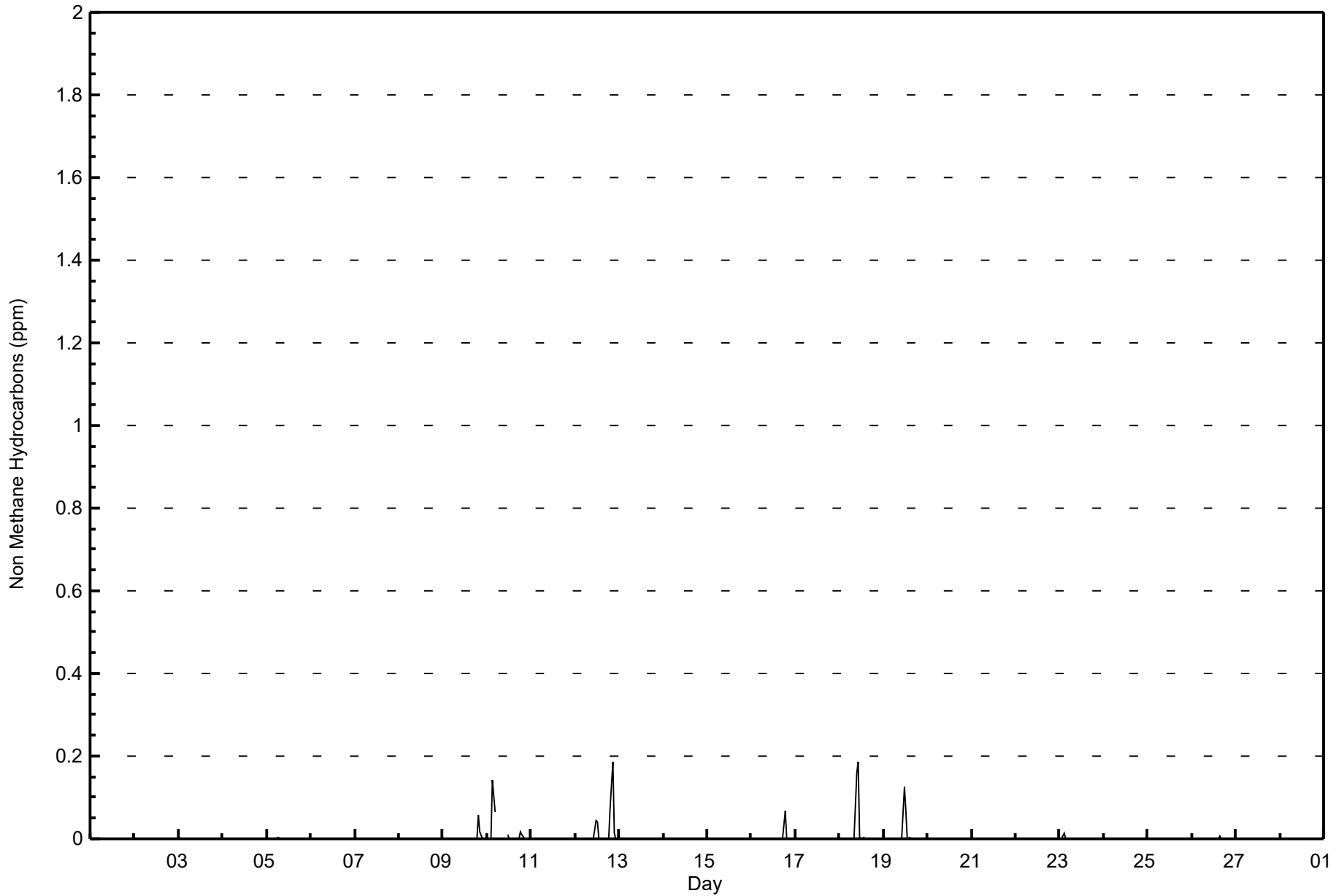






**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Non Methane Hydrocarbons (NMHC) - ppm**  
**Buffalo Viewpoint - February 2023**





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Non Methane Hydrocarbons (NMHC) - ppm  
Buffalo Viewpoint - February 2023**

| <b>Concentration Ranges (ppm)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 0.005                         | 618                    | 96.87    | 96.87               |
| 0.006 - 0.05                      | 10                     | 1.57     | 98.43               |
| 0.06 - 0.1                        | 7                      | 1.10     | 99.53               |
| > 0.1                             | 3                      | 0.47     | 100.00              |

Total Number of Valid Hours: 638

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Non Methane Hydrocarbons (NMHC) - ppm  
Buffalo Viewpoint - February 2023**

| Concentration<br>Ranges (ppm) | Wind Direction |     |    |     |   |     |    |     |    |     |    |     |    |     |    |     | Totals |
|-------------------------------|----------------|-----|----|-----|---|-----|----|-----|----|-----|----|-----|----|-----|----|-----|--------|
|                               | N              | NNE | NE | ENE | E | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |        |
| 0 - 0.005                     | 134            | 59  | 18 | 6   | 8 | 12  | 55 | 101 | 31 | 10  | 8  | 24  | 38 | 30  | 34 | 34  | 602    |
| 0.006 - 0.05                  | 4              | 1   | 0  | 0   | 1 | 0   | 1  | 1   | 0  | 0   | 0  | 0   | 0  | 0   | 1  | 1   | 10     |
| 0.06 - 0.1                    | 4              | 1   | 1  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 1   | 7      |
| > 0.1                         | 0              | 3   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 3      |
| <b>Totals</b>                 | 142            | 64  | 19 | 6   | 9 | 12  | 56 | 102 | 31 | 10  | 8  | 24  | 38 | 30  | 35 | 36  | 622    |

Total Number of Valid Hours: 622

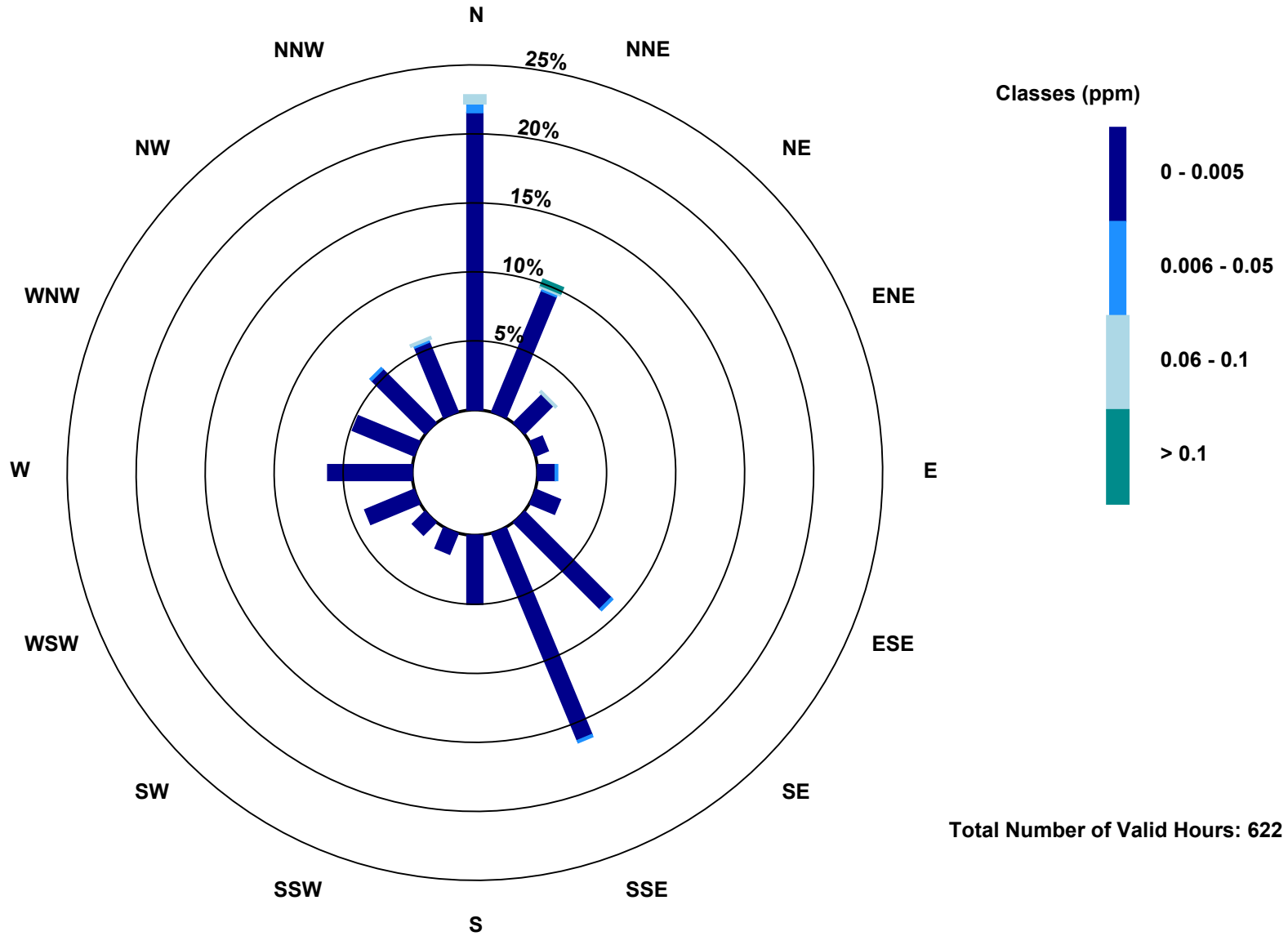
Total Number of Hours: 672

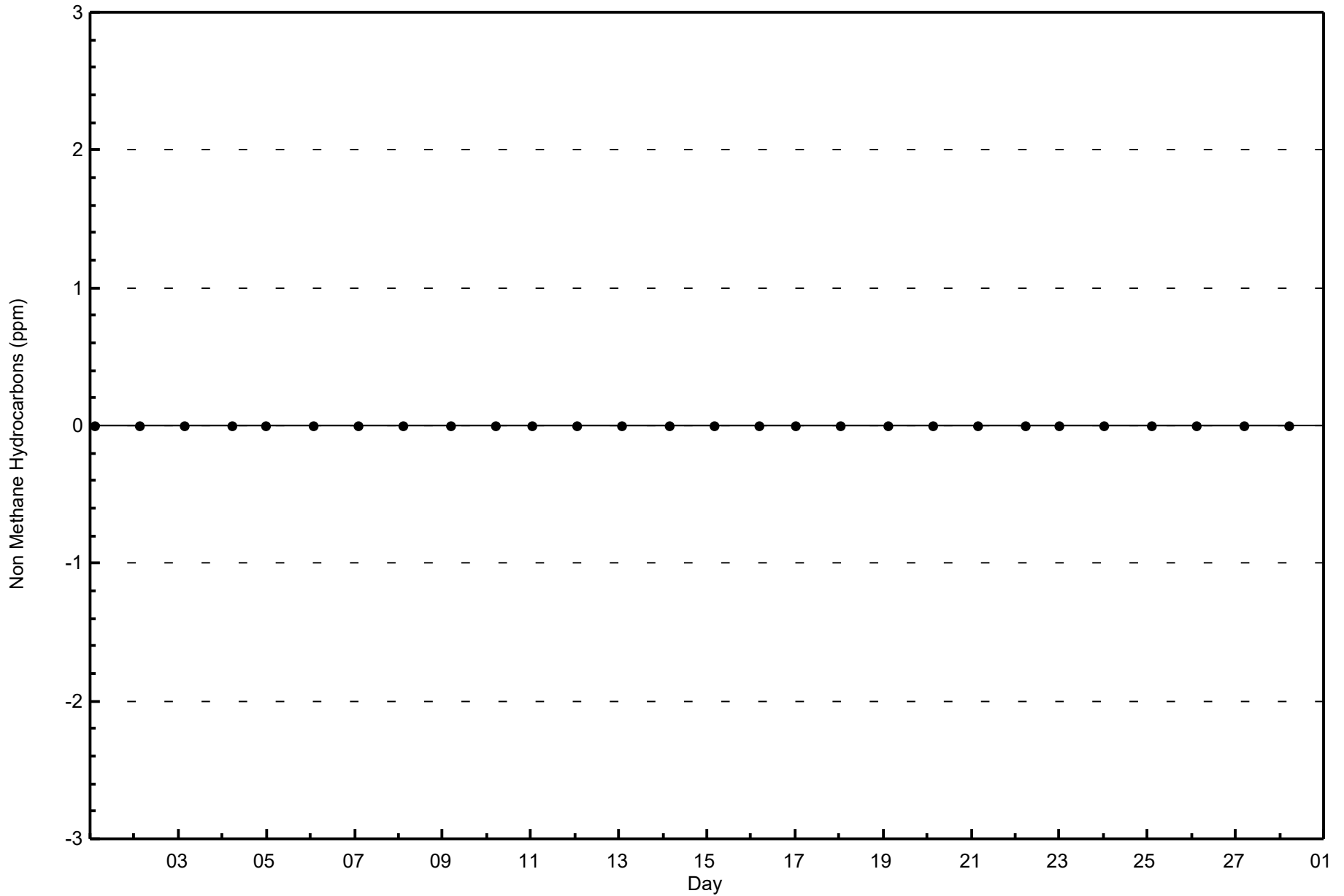


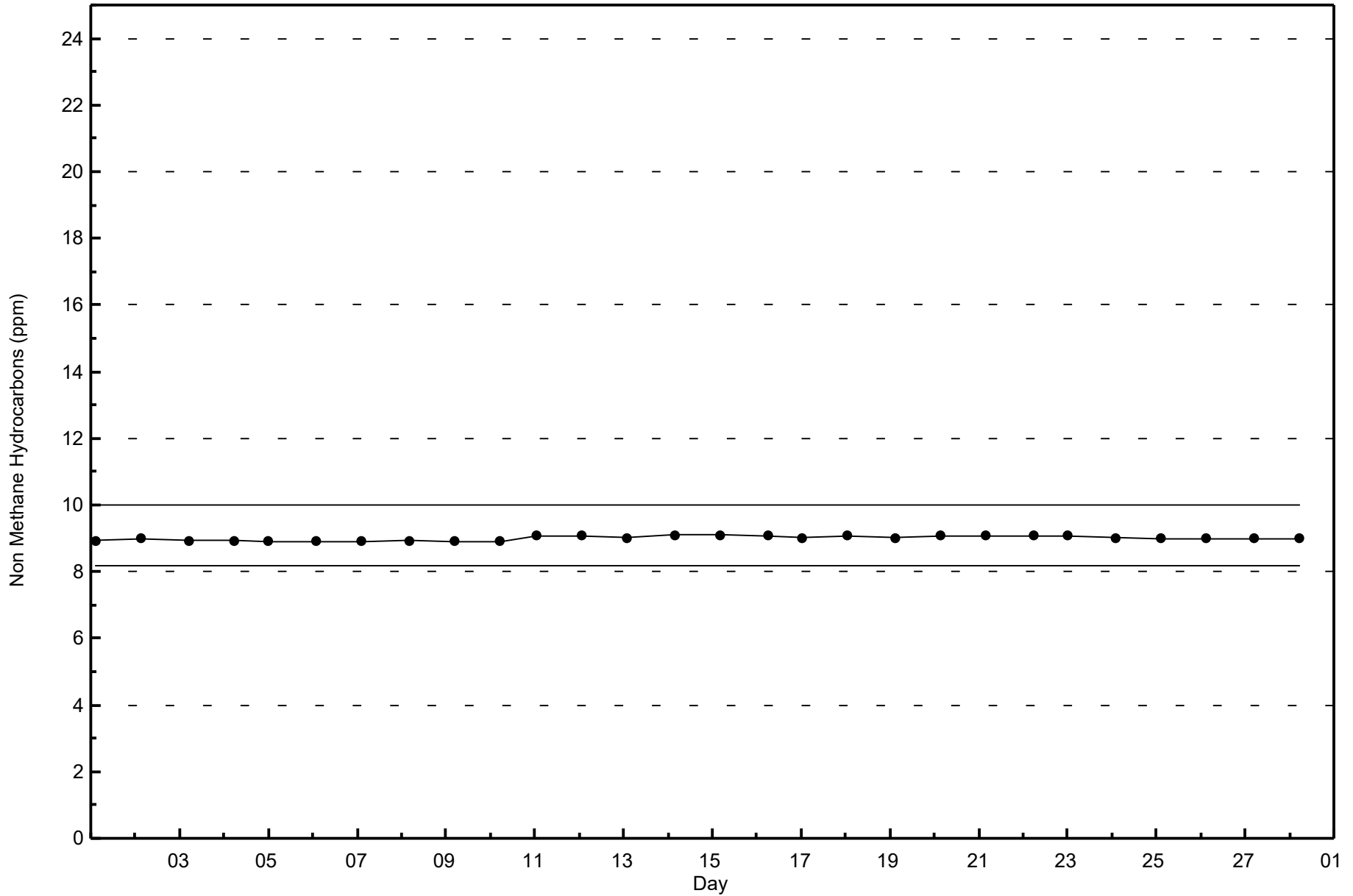


Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Non Methane Hydrocarbons (NMHC) - ppm  
Buffalo Viewpoint









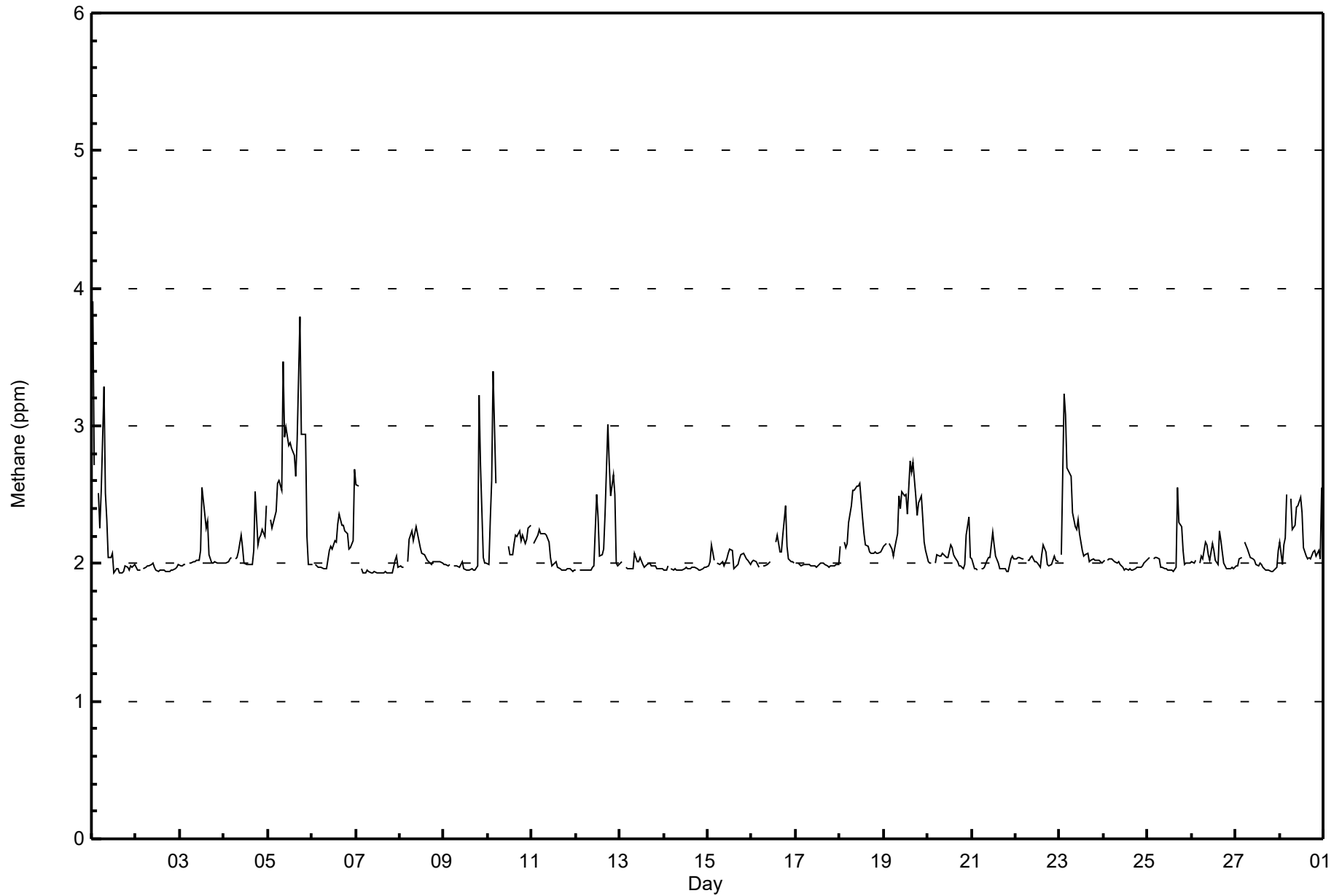
Wood Buffalo Environmental Association

Summary of Hour Averages

Methane (CH<sub>4</sub>) - ppm

Buffalo Viewpoint - February 2023

| Number of Exceedences (AAAQO):             |                               | 1-hr: 0                                     |     | 24-hr: 0   |     | Hours in Service: 672 |     |     |     |     |     |     |     |     |     |     |     |                                |     | 638 |     |     |     |     |               |                 |     |
|--|-------------------------------|---|-----|--|-----|-----------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------------------------------|-----|-----|-----|-----|-----|-----|---------------|-----------------|-----|
| Maximum Value: 3.9 ppm on Feb 1 01:00      |                               | Maximum Daily Average: 2.7 ppm on Feb 5     |     | Hours of Data: 638   |     |                       |     |     |     |     |     |     |     |     |     |     |     | Hours of Missing Data: 34      |     |     |     |     |     |     |               |                 |     |
| Minimum Value: 1.9 ppm on Feb 7 13:00      |                               | Minimum Daily Average: 2.0 ppm on Feb 14    |     | Hours of Calibration: 32   |     |                       |     |     |     |     |     |     |     |     |     |     |     | Percent Operational Time: 99.7 |     |     |     |     |     |     |               |                 |     |
| Maximum Diurnal Average: 2.2 ppm at hour 4 |                               | Minimum Diurnal Average: 2.0 ppm at hour 23 |     | Percentiles: P <sub>1</sub> = 1.9 P <sub>10</sub> = 2.0 Q <sub>1</sub> = 2.0 Median = 2.0 Q <sub>3</sub> = 2.1 P <sub>90</sub> = 2.4 P <sub>99</sub> = 3.2 |     |                       |     |     |     |     |     |     |     |     |     |     |     |                                |     |     |     |     |     |     |               |                 |     |
| Monthly Average: 2.11 ppm                  |                               |   |     |  |     |                       |     |     |     |     |     |     |     |     |     |     |     |                                |     |     |     |     |     |     |               |                 |     |
| Day  | Hourly Period Ending At (MST) |   |     |  |     |                       |     |     |     |     |     |     |     |     |     |     |     |                                |     |     |     |     |     |     | Daily Average | Daily Maximum   |     |
|  | 1                             | 2   | 3   | 4  | 5   | 6                     | 7   | 8   | 9   | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18                             | 19  | 20  | 21  | 22  | 23  | 24  |               |                 |     |
| 1-Feb                                      | 3.9                           | 2.7   | Z   | 2.5  | 2.3 | 2.5                   | 3.3 | 2.5 | 2.3 | 2.0 | 2.0 | 2.1 | 1.9 | 2.0 | 2.0 | 1.9 | 1.9 | 1.9                            | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.2           | 3.9             |     |
| 2-Feb                                      | 2.0                           | 2.0   | 1.9 | Z  | 2.0 | 2.0                   | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 1.9 | 2.0 | 1.9 | 2.0 | 1.9 | 1.9                            | 1.9 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0           | 2.0             |     |
| 3-Feb                                      | 2.0                           | 2.0   | 2.0 | 2.0  | Z   | 2.0                   | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1 | 2.6 | 2.4 | 2.3 | 2.3 | 2.1 | 2.0                            | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1           | 2.6             |     |
| 4-Feb                                      | 2.0                           | 2.0   | 2.0 | 2.0  | 2.0 | Z                     | 2.0 | 2.0 | 2.1 | 2.2 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1 | 2.5                            | 2.1 | 2.2 | 2.2 | 2.2 | 2.2 | 2.4 | 2.1           | 2.5             |     |
| 5-Feb                                      | Z                             | 2.3   | 2.3 | 2.3  | 2.4 | 2.6                   | 2.6 | 2.5 | 3.5 | 2.9 | 3.0 | 2.9 | 2.9 | 2.8 | 2.8 | 2.6 | 2.9 | 3.8                            | 2.9 | 2.9 | 2.9 | 2.2 | 2.0 | 2.0 | 2.7           | 3.8             |     |
| 6-Feb                                      | 2.0                           | Z   | 2.0 | 2.0  | 2.0 | 2.0                   | 2.0 | 2.0 | 2.0 | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | 2.3 | 2.4 | 2.3 | 2.3                            | 2.2 | 2.2 | 2.1 | 2.1 | 2.2 | 2.7 | 2.1           | 2.7             |     |
| 7-Feb                                      | 2.6                           | 2.6   | Z   | 2.0  | 1.9 | 1.9                   | 2.0 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9                            | 1.9 | 1.9 | 1.9 | 2.0 | 2.1 | 2.0 | 2.0           | 2.6             |     |
| 8-Feb                                      | 2.0                           | 2.0   | 2.0 | Z  | 2.0 | 2.2                   | 2.2 | 2.2 | 2.2 | 2.3 | 2.2 | 2.1 | 2.1 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0                            | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1           | 2.3             |     |
| 9-Feb                                      | 2.0                           | 2.0   | 2.0 | 2.0  | Z   | 2.0                   | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 1.9 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0                            | 2.0 | 3.2 | 2.7 | 2.0 | 2.0 | 2.0 | 2.1           | 3.2             |     |
| 10-Feb                                     | 2.0                           | 2.3   | 2.6 | 3.4  | 2.6 | Z                     | 2.1 | C   | C   | C   | C   | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | 2.2                            | 2.2 | 2.2 | 2.1 | 2.2 | 2.3 | 2.3 | 2.3           | 3.4             |     |
| 11-Feb                                     | Z                             | 2.2   | 2.2 | 2.2  | 2.2 | 2.2                   | 2.2 | 2.2 | 2.2 | 2.2 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0                            | 2.0 | 2.0 | 2.0 | 2.0 | 1.9 | 1.9 | 2.1           | 2.2             |     |
| 12-Feb                                     | 1.9                           | Z   | 2.0 | 1.9  | 2.0 | 2.0                   | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.5 | 2.3 | 2.1 | 2.1 | 2.1 | 2.4 | 3.0                            | 2.7 | 2.5 | 2.6 | 2.5 | 2.0 | 2.0 | 2.2           | 3.0             |     |
| 13-Feb                                     | 2.0                           | 2.0   | Z   | 2.0  | 2.0 | 2.0                   | 2.0 | 2.0 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0                            | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0           | 2.1             |     |
| 14-Feb                                     | 2.0                           | 2.0   | 2.0 | Z  | 2.0 | 2.0                   | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0                            | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0           | 2.0             |     |
| 15-Feb                                     | 2.0                           | 2.0   | 2.1 | 2.0  | Z   | 2.0                   | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1 | 2.1 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0                            | 2.1 | 2.1 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0           | 2.1             |     |
| 16-Feb                                     | 2.0                           | 2.0   | 2.0 | 2.0  | 2.0 | Z                     | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | M   | M   | 2.2 | 2.2 | 2.1 | 2.1 | 2.2                            | 2.4 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1           | 2.4             |     |
| 17-Feb                                     | Z                             | 2.0   | 2.0 | 2.0  | 2.0 | 2.0                   | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0                            | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0           | 2.0             |     |
| 18-Feb                                     | 2.1                           | Z   | 2.2 | 2.1  | 2.2 | 2.3                   | 2.4 | 2.5 | 2.5 | 2.6 | 2.6 | 2.6 | 2.3 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1                            | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1           | 2.2             | 2.6 |
| 19-Feb                                     | 2.1                           | 2.1   | Z   | 2.1  | 2.1 | 2.1                   | 2.1 | 2.2 | 2.5 | 2.4 | 2.5 | 2.5 | 2.5 | 2.4 | 2.7 | 2.7 | 2.7 | 2.5                            | 2.3 | 2.4 | 2.5 | 2.3 | 2.2 | 2.1 | 2.4           | 2.7             |     |
| 20-Feb                                     | 2.0                           | 2.0   | 2.0 | Z  | 2.0 | 2.1                   | 2.0 | 2.1 | 2.1 | 2.1 | 2.0 | 2.0 | 2.1 | 2.1 | 2.1 | 2.0 | 2.0 | 2.0                            | 2.0 | 2.0 | 2.0 | 2.2 | 2.3 | 2.0 | 2.1           | 2.3             |     |
| 21-Feb                                     | 2.0                           | 2.0   | 2.0 | 2.0  | Z   | 2.0                   | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.2 | 2.1 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0                            | 2.0 | 1.9 | 1.9 | 2.0 | 2.0 | 2.0 | 2.0           | 2.2             |     |
| 22-Feb                                     | 2.0                           | 2.0   | 2.0 | 2.0  | 2.0 | Z                     | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1 | 2.1 | 2.1 | 2.0                            | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0           | 2.1             |     |
| 23-Feb                                     | Z                             | 2.1   | 3.2 | 3.1  | 2.7 | 2.7                   | 2.6 | 2.4 | 2.3 | 2.3 | 2.3 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.0 | 2.0                            | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.3           | 3.2             |     |
| 24-Feb                                     | 2.0                           | Z   | 2.0 | 2.0  | 2.0 | 2.0                   | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0                            | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0           | 2.0             |     |
| 25-Feb                                     | 2.0                           | 2.0   | Z   | 2.0  | 2.0 | 2.0                   | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 1.9 | 1.9 | 2.0 | 2.6 | 2.3                            | 2.3 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0           | 2.6             |     |
| 26-Feb                                     | 2.0                           | 2.0   | 2.0 | Z  | 2.0 | 2.1                   | 2.0 | 2.2 | 2.1 | 2.1 | 2.0 | 2.1 | 2.1 | 2.0 | 2.0 | 2.2 | 2.2 | 2.0                            | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0           | 2.2             |     |
| 27-Feb                                     | 2.0                           | 2.0   | 2.0 | 2.0  | Z   | 2.2                   | 2.1 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0                            | 1.9 | 1.9 | 1.9 | 1.9 | 2.0 | 2.1 | 2.0           | 2.2             |     |
| 28-Feb                                     | 2.2                           | 2.0   | 2.1 | 2.2  | 2.5 | Z                     | 2.5 | 2.2 | 2.3 | 2.4 | 2.4 | 2.5 | 2.4 | 2.1 | 2.1 | 2.0 | 2.0 | 2.0                            | 2.1 | 2.1 | 2.1 | 2.1 | 2.0 | 2.6 | 2.2           | 2.6             |     |
|  |                               | 2.1   | 2.1 | 2.1  | 2.2 | 2.1                   | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1                            | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.0 | 2.1           | Diurnal Average |     |
|  |                               | 3.9   | 2.7 | 3.2  | 3.4 | 2.7                   | 3.3 | 2.5 | 3.5 | 2.9 | 3.0 | 2.9 | 2.9 | 2.9 | 2.8 | 2.8 | 2.7 | 2.9                            | 3.8 | 2.9 | 3.2 | 2.9 | 2.5 | 2.3 | 2.7           | Diurnal Maximum |     |
| Z - zerspan                                |                               | C - Calibration                             |     |  |     | M - Maintenance       |     |     |     |     |     |     |     |     |     |     |     |                                |     |     |     |     |     |     |               |                 |     |





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Methane (CH<sub>4</sub>) - ppm  
Buffalo Viewpoint - February 2023**

| <b>Concentration Ranges (ppm)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 2.0                           | 400                    | 62.70    | 62.70               |
| 2.1 - 3.0                         | 230                    | 36.05    | 98.75               |
| 3.1 - 10.0                        | 8                      | 1.25     | 100.00              |
| > 10.0                            | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 638

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Methane (CH<sub>4</sub>) - ppm  
Buffalo Viewpoint - February 2023**

| Concentration<br>Ranges (ppm) | Wind Direction |     |    |     |   |     |    |     |    |     |    |     |    |     |    |     | Totals |
|-------------------------------|----------------|-----|----|-----|---|-----|----|-----|----|-----|----|-----|----|-----|----|-----|--------|
|                               | N              | NNE | NE | ENE | E | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |        |
| 0 - 2.0                       | 80             | 37  | 9  | 3   | 1 | 7   | 41 | 81  | 24 | 10  | 5  | 23  | 31 | 16  | 11 | 5   | 384    |
| 2.1 - 3.0                     | 61             | 27  | 9  | 3   | 8 | 5   | 15 | 21  | 7  | 0   | 3  | 1   | 7  | 14  | 22 | 27  | 230    |
| 3.1 - 10.0                    | 1              | 0   | 1  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 2  | 4   | 8      |
| > 10.0                        | 0              | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| <b>Totals</b>                 | 142            | 64  | 19 | 6   | 9 | 12  | 56 | 102 | 31 | 10  | 8  | 24  | 38 | 30  | 35 | 36  | 622    |

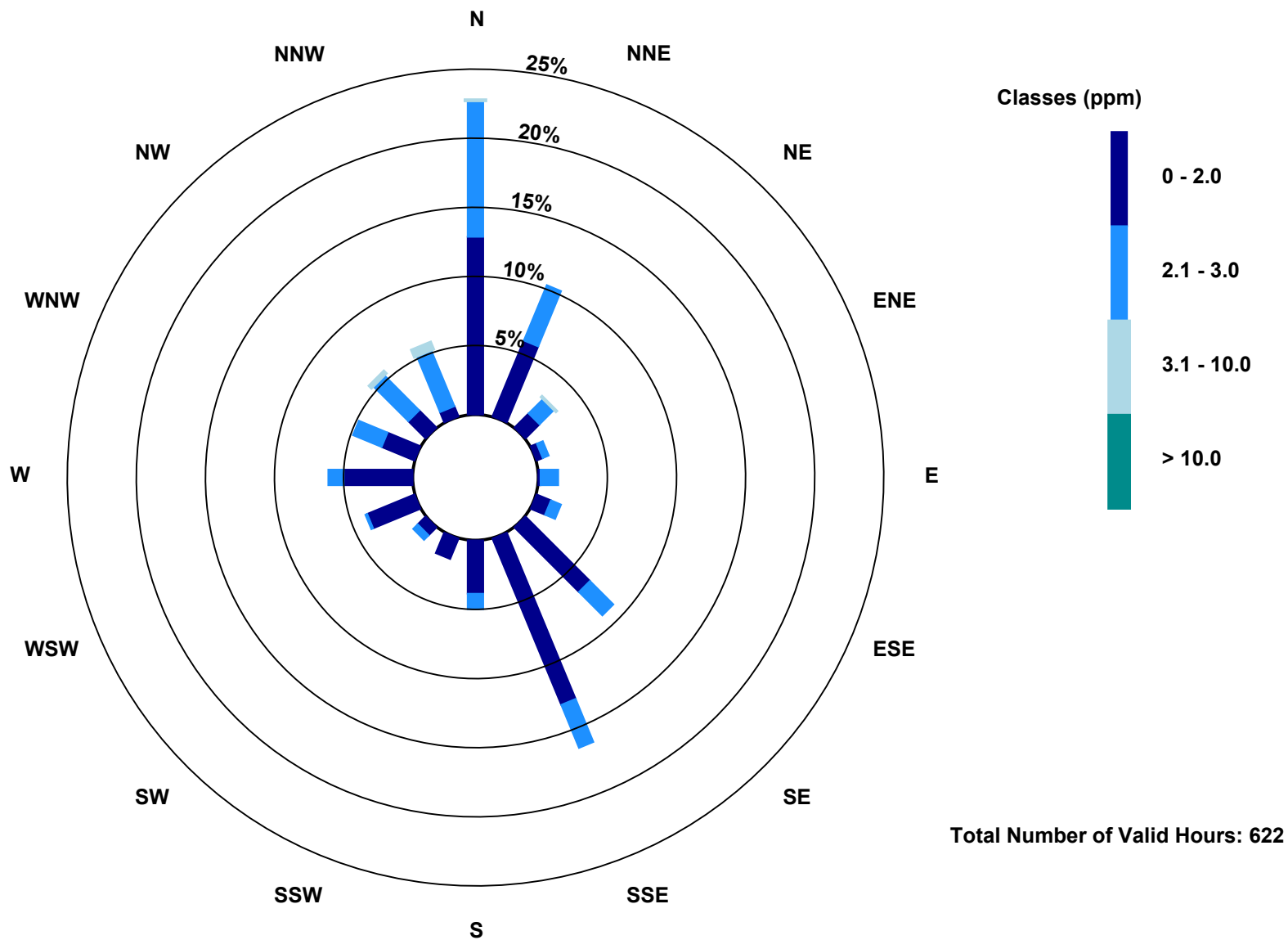
Total Number of Valid Hours: 622

Total Number of Hours: 672

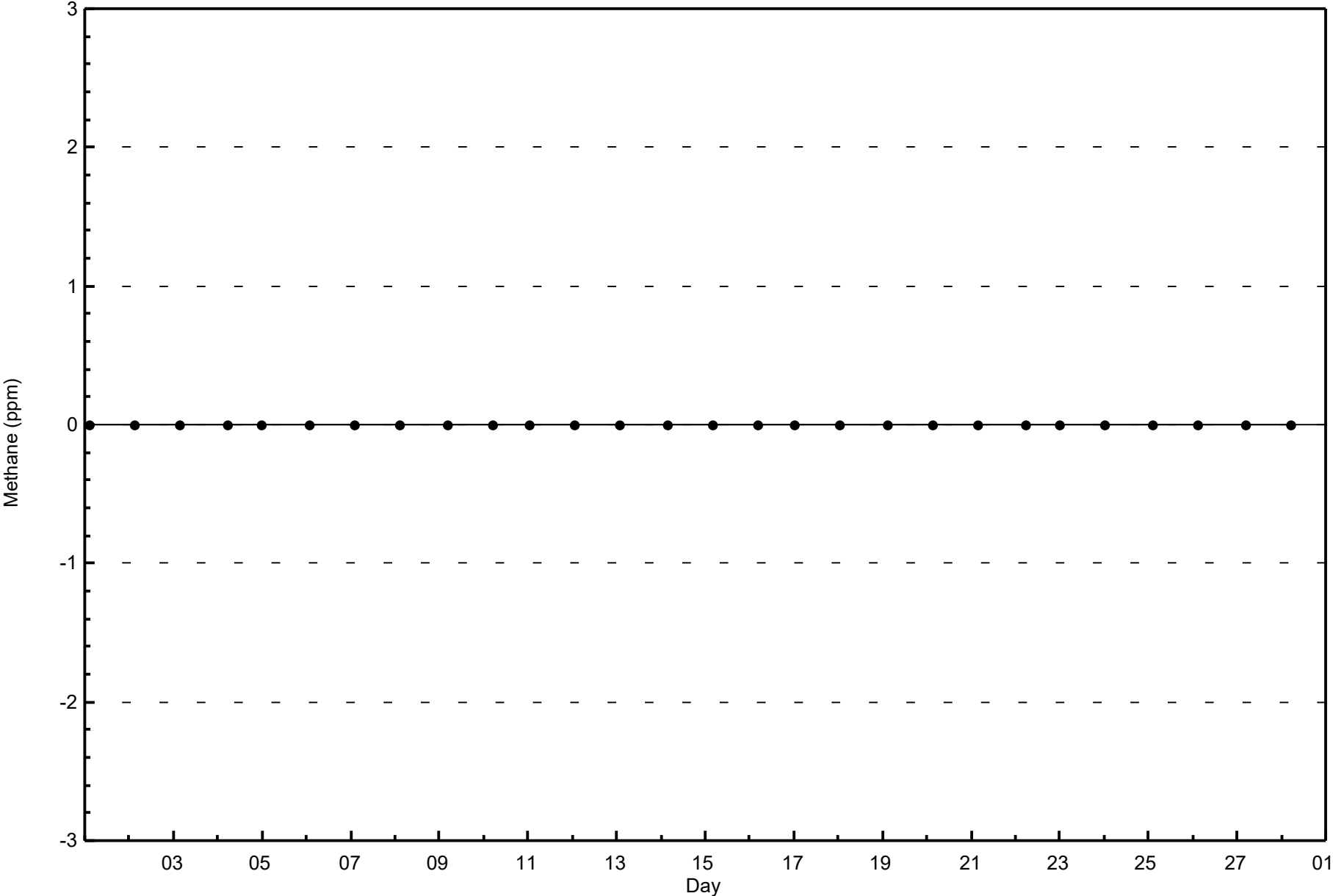


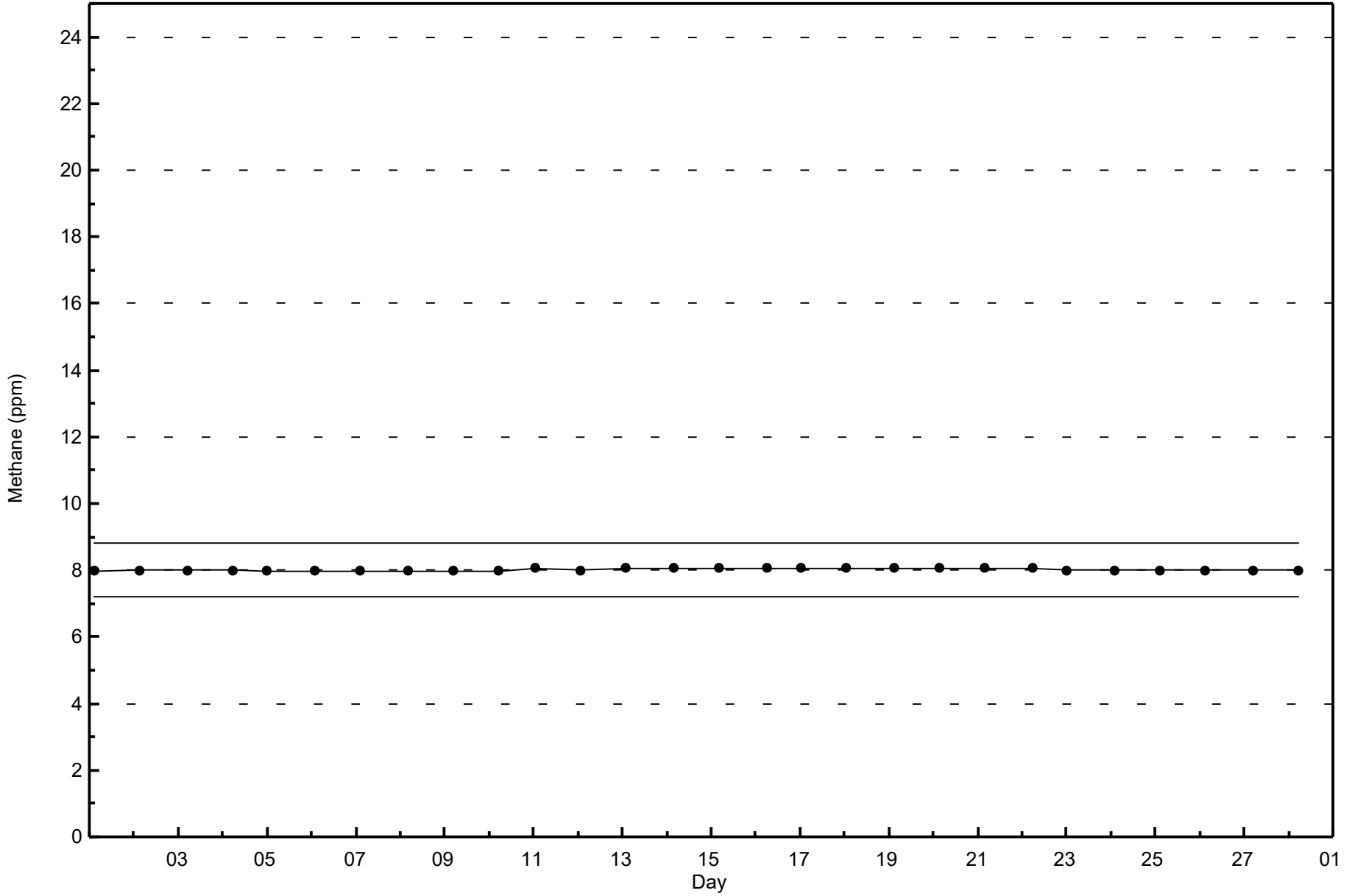
Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Methane (CH<sub>4</sub>) - ppm  
Buffalo Viewpoint











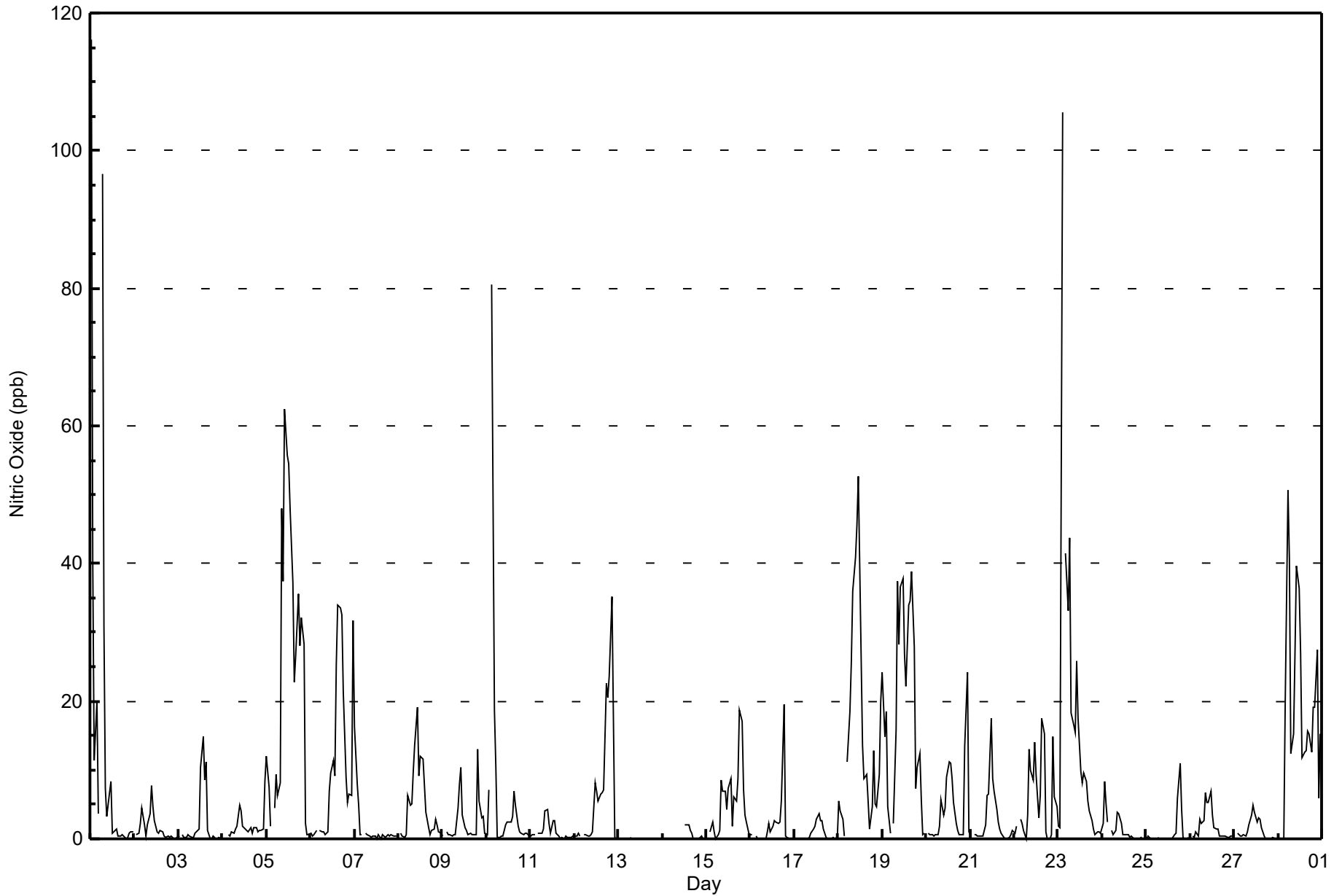
Wood Buffalo Environmental Association

Summary of Hour Averages

Nitric Oxide (NO) - ppb

Buffalo Viewpoint - February 2023

| Maximum Value: 116.1 ppb on Feb 1 01:00      Maximum Daily Average: 24.8 ppb on Feb 5   |                               |      |       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Hours in Service: 672          |      |      |               |               |
|---|-------------------------------|------|-------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|--------------------------------|------|------|---------------|---------------|
| Minimum Value: 0.0 ppb on Feb 3 18:00      Minimum Daily Average: 0.8 ppb on Feb 17   |                               |      |       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Hours of Data: 617             |      |      |               |               |
| Maximum Diurnal Average: 12.0 ppb at hour 11      Minimum Diurnal Average: 2.5 ppb at hour 23   |                               |      |       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Hours of Missing Data: 55      |      |      |               |               |
| Monthly Average: 6.66 ppb      Percentiles: P <sub>1</sub> = 0.0 P <sub>10</sub> = 0.0 Q <sub>1</sub> = 0.5 Median = 1.3 Q <sub>3</sub> = 6.9 P <sub>90</sub> = 19.3 P <sub>99</sub> = 54.2 |                               |      |       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Hours of Calibration: 38       |      |      |               |               |
|   |                               |      |       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Percent Operational Time: 97.5 |      |      |               |               |
| Day   | Hourly Period Ending At (MST) |      |       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                                |      |      | Daily Average | Daily Maximum |
|   | 1                             | 2    | 3     | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20   | 21   | 22                             | 23   | 24   |               |               |
| 1-Feb   | 116.1                         | 40.4 | 11.4  | 20.0 | 3.7  | Z    | 96.7 | 30.8 | 7.2  | 3.3  | 6.7  | 8.2  | 0.8  | 1.1  | 1.5  | 0.4  | 0.5  | 0.7  | 0.4  | 0.1  | 0.2  | 0.9                            | 0.9  | 1.0  | 15.3          | 116.1         |
| 2-Feb   | Z                             | 0.6  | 0.9   | 2.1  | 4.4  | 2.0  | 0.5  | 2.1  | 3.7  | 7.8  | 4.6  | 2.7  | 1.0  | 0.8  | 1.2  | 0.9  | 0.5  | 0.3  | 0.3  | 0.2  | 0.5  | 0.0                            | 0.0  | 0.3  | 1.6           | 7.8           |
| 3-Feb   | 0.5                           | Z    | 0.7   | 0.1  | 0.3  | 0.6  | 0.4  | 0.1  | 0.3  | 0.8  | 1.3  | 1.5  | 10.4 | 14.8 | 8.6  | 11.1 | 1.2  | 0.0  | 0.0  | 0.3  | 0.0  | 0.0                            | 0.2  | 0.0  | 2.3           | 14.8          |
| 4-Feb   | 0.0                           | 0.0  | Z     | 0.6  | 0.4  | 0.9  | 0.9  | 1.5  | 1.7  | 4.8  | 4.0  | 1.8  | 1.4  | 1.3  | 1.0  | 1.6  | 0.9  | 1.7  | 1.6  | 1.0  | 1.3  | 1.2                            | 1.4  | 8.2  | 1.7           | 8.2           |
| 5-Feb   | 12.0                          | 7.5  | 1.8   | Z    | 4.5  | 9.3  | 6.3  | 8.2  | 48.0 | 37.5 | 62.4 | 55.6 | 54.5 | 48.0 | 37.1 | 22.9 | 26.7 | 35.7 | 28.1 | 32.1 | 28.2 | 2.2                            | 0.6  | 0.6  | 24.8          | 62.4          |
| 6-Feb   | 0.8                           | 0.4  | 0.5   | 1.1  | Z    | 1.1  | 0.9  | 0.9  | 0.5  | 0.9  | 6.8  | 9.5  | 11.4 | 9.1  | 25.3 | 33.9 | 33.5 | 32.5 | 21.3 | 9.0  | 5.4  | 6.4                            | 6.4  | 31.8 | 10.9          | 33.9          |
| 7-Feb   | 16.2                          | 7.9  | 5.0   | 0.6  | 0.6  | Z    | 0.8  | 0.7  | 0.5  | 0.1  | 0.4  | 0.4  | 0.1  | 0.5  | 0.1  | 0.6  | 0.4  | 0.2  | 0.6  | 0.5  | 0.5  | 0.4                            | 0.4  | 0.3  | 1.6           | 16.2          |
| 8-Feb   | Z                             | 0.8  | 0.5   | 0.2  | 0.7  | 6.3  | 4.9  | 5.1  | 9.7  | 13.7 | 19.2 | 9.2  | 11.9 | 11.6 | 7.7  | 3.9  | 1.7  | 0.7  | 1.2  | 1.4  | 2.8  | 2.1                            | 1.0  | 0.8  | 5.1           | 19.2          |
| 9-Feb   | 0.5                           | Z    | 1.1   | 0.7  | 0.6  | 0.3  | 0.7  | 0.7  | 4.5  | 8.0  | 10.3 | 3.4  | 1.6  | 1.2  | 0.5  | 0.8  | 0.6  | 0.6  | 0.6  | 13.0 | 5.4  | 3.0                            | 3.2  | 0.9  | 2.7           | 13.0          |
| 10-Feb  | 0.7                           | 7.0  | Z     | 80.5 | 18.7 | 10.6 | 0.2  | 0.2  | 0.5  | 0.5  | 2.1  | 2.5  | 2.4  | 2.5  | 3.3  | 6.9  | 4.9  | 1.9  | 0.9  | 0.8  | 0.7  | 0.8                            | 0.7  | 0.4  | 6.5           | 80.5          |
| 11-Feb  | 0.4                           | 0.7  | 0.5   | Z    | 0.9  | 0.7  | 0.9  | 1.4  | 4.0  | 4.2  | 2.3  | 0.9  | 2.7  | 2.6  | 0.9  | 0.4  | 0.0  | 0.2  | 0.0  | 0.5  | 0.2  | 0.1                            | 0.3  | 0.3  | 1.1           | 4.2           |
| 12-Feb  | 0.3                           | 0.4  | 0.8   | 0.5  | Z    | 0.6  | 0.6  | 0.4  | 0.4  | 0.6  | 0.9  | 8.2  | 7.0  | 5.6  | 6.4  | 6.6  | 7.1  | 22.7 | 20.5 | 23.5 | 35.2 | 17.6                           | 0.3  | 0.0  | 7.2           | 35.2          |
| 13-Feb  | 0.0                           | 0.0  | 0.0   | 0.1  | 0.0  | Z    | 0.2  | 0.0  | C    | C    | C    | C    | C    | C    | M    | M    | M    | M    | M    | M    | M    | M                              | M    | M    | --            | 0.2           |
| 14-Feb  | M                             | M    | M     | M    | M    | M    | M    | C    | C    | C    | C    | C    | 1.9  | 2.0  | 2.0  | 1.2  | 0.9  | 0.0  | 0.0  | 0.1  | 0.0  | 0.3                            | 0.0  | 0.0  | --            | 2.0           |
| 15-Feb  | 0.0                           | Z    | 1.0   | 2.5  | 0.9  | 0.1  | 0.6  | 1.2  | 8.6  | 6.9  | 6.9  | 4.3  | 7.4  | 8.7  | 1.9  | 6.0  | 5.4  | 8.7  | 18.7 | 17.1 | 7.2  | 3.5                            | 2.4  | 0.6  | 5.2           | 18.7          |
| 16-Feb  | 0.6                           | 0.7  | Z     | 0.5  | 0.1  | 0.0  | 0.0  | 0.0  | 0.0  | 1.0  | 2.1  | 1.0  | 1.8  | 2.7  | 2.5  | 2.3  | 2.5  | 5.4  | 19.6 | 0.5  | 0.1  | 0.0                            | 0.0  | 0.0  | 1.9           | 19.6          |
| 17-Feb  | 0.0                           | 0.0  | 0.0   | Z    | 0.0  | 0.0  | 0.0  | 0.0  | 0.1  | 0.9  | 1.4  | 1.8  | 2.8  | 3.6  | 2.7  | 2.6  | 1.3  | 0.1  | 0.0  | 0.0  | 0.0  | 0.2                            | 0.0  | 0.1  | 0.8           | 3.6           |
| 18-Feb  | 5.5                           | 4.1  | 2.8   | 0.4  | Z    | 11.2 | 18.5 | 25.7 | 35.9 | 40.9 | 45.6 | 52.7 | 26.6 | 13.6 | 8.8  | 9.3  | 5.4  | 1.5  | 4.8  | 12.8 | 5.0  | 4.6                            | 9.4  | 20.0 | 15.9          | 52.7          |
| 19-Feb  | 24.1                          | 14.9 | 18.5  | 4.7  | 0.9  | Z    | 2.1  | 15.8 | 37.4 | 28.3 | 36.5 | 37.8 | 26.8 | 22.1 | 33.9 | 34.5 | 38.8 | 27.8 | 7.4  | 10.4 | 12.5 | 5.7                            | 0.6  | 0.7  | 19.2          | 38.8          |
| 20-Feb  | Z                             | 0.8  | 0.5   | 0.5  | 0.4  | 0.6  | 0.6  | 1.9  | 5.6  | 3.4  | 4.5  | 8.8  | 11.3 | 11.0 | 8.6  | 5.4  | 2.3  | 1.2  | 0.5  | 0.7  | 0.6  | 13.5                           | 24.1 | 0.9  | 4.7           | 24.1          |
| 21-Feb  | 0.6                           | Z    | 0.6   | 0.7  | 0.3  | 0.3  | 0.5  | 0.4  | 2.1  | 6.3  | 6.6  | 17.5 | 8.7  | 6.9  | 4.3  | 2.5  | 1.5  | 0.8  | 0.3  | 0.1  | 0.1  | 0.2                            | 0.5  | 1.2  | 2.7           | 17.5          |
| 22-Feb  | 0.7                           | 1.8  | Z     | 2.8  | 2.3  | 1.3  | 0.1  | 3.4  | 12.9 | 9.9  | 8.5  | 14.0 | 9.3  | 3.1  | 6.2  | 17.5 | 15.2 | 0.9  | 0.1  | 0.1  | 0.7  | 14.9                           | 6.2  | 4.6  | 5.9           | 17.5          |
| 23-Feb  | 1.8                           | 1.6  | 105.5 | Z    | 41.5 | 33.1 | 43.7 | 18.3 | 16.5 | 15.4 | 25.8 | 17.5 | 9.7  | 8.2  | 9.6  | 8.3  | 5.4  | 4.1  | 2.5  | 1.4  | 0.7  | 1.0                            | 1.1  | 0.8  | 16.2          | 105.5         |
| 24-Feb  | 2.3                           | 8.4  | 5.1   | 2.5  | Z    | 1.3  | 0.5  | 1.3  | 3.9  | 3.7  | 2.3  | 0.6  | 0.7  | 0.6  | 0.6  | 0.2  | 0.3  | 0.0  | 0.1  | 0.0  | 0.0  | 0.3                            | 0.1  | 0.0  | 1.5           | 8.4           |
| 25-Feb  | 0.0                           | 0.3  | 0.0   | 0.0  | 0.0  | Z    | 0.2  | 0.0  | 0.1  | 0.0  | 0.0  | 0.1  | 0.0  | 0.0  | 0.0  | 0.6  | 0.8  | 5.9  | 11.0 | 4.3  | 0.2  | 0.0                            | 0.0  | 0.2  | 1.0           | 11.0          |
| 26-Feb  | Z                             | 0.5  | 0.2   | 1.0  | 0.4  | 2.9  | 2.2  | 2.7  | 6.8  | 5.3  | 5.2  | 6.9  | 3.5  | 1.6  | 1.4  | 1.4  | 0.4  | 0.5  | 0.5  | 0.3  | 0.2  | 0.2                            | 0.5  | 0.3  | 2.0           | 6.9           |
| 27-Feb  | 0.6                           | Z    | 0.8   | 0.4  | 0.5  | 0.5  | 1.0  | 2.0  | 3.5  | 5.0  | 3.9  | 2.4  | 3.1  | 2.8  | 1.6  | 0.4  | 0.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.2                            | 0.0  | 0.0  | 1.3           | 5.0           |
| 28-Feb  | 0.0                           | 0.0  | Z     | 0.0  | 19.6 | 50.6 | 40.8 | 12.4 | 15.2 | 27.0 | 39.7 | 36.5 | 27.0 | 11.9 | 12.5 | 12.8 | 15.7 | 15.3 | 12.7 | 19.1 | 19.1 | 27.4                           | 6.0  | 15.3 | 19.0          | 50.6          |
| 8.0 4.5 7.2 5.3 4.4 6.1 8.3 5.0 8.8 9.0 12.0 11.8 9.1 7.3 7.1 7.3 6.4 6.3 5.7 5.5 4.7 4.0 2.5 3.3   |                               |      |       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Diurnal Average                |      |      |               |               |
| 116.1 40.4 105.5 80.5 41.5 50.6 96.7 30.8 48.0 40.9 62.4 55.6 54.5 48.0 37.1 34.5 38.8 35.7 28.1 32.1 35.2 27.4 24.1 31.8   |                               |      |       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Diurnal Maximum                |      |      |               |               |
| Z - zerospan      C - Calibration      M - Maintenance  |                               |      |       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                                |      |      |               |               |





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Nitric Oxide (NO) - ppb  
Buffalo Viewpoint - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 20                            | 559                    | 90.60    | 90.60               |
| 21 - 40                           | 42                     | 6.81     | 97.41               |
| 41 - 80                           | 12                     | 1.94     | 99.35               |
| 81 - 159                          | 3                      | 0.49     | 99.84               |
| > 159                             | 0                      | 0.00     | 99.84               |

Total Number of Valid Hours: 617

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Nitric Oxide (NO) - ppb  
Buffalo Viewpoint - February 2023**

| <b>Concentration<br/>Ranges (ppb)</b> | <b>Wind Direction</b> |     |    |     |   |     |    |     |    |     |    |     |    |     |    |     | <b>Totals</b> |
|---------------------------------------|-----------------------|-----|----|-----|---|-----|----|-----|----|-----|----|-----|----|-----|----|-----|---------------|
|                                       | N                     | NNE | NE | ENE | E | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |               |
| 0 - 20                                | 126                   | 55  | 18 | 5   | 9 | 9   | 56 | 99  | 32 | 10  | 7  | 24  | 35 | 25  | 22 | 27  | 559           |
| 21 - 40                               | 8                     | 5   | 3  | 1   | 0 | 2   | 0  | 4   | 0  | 0   | 1  | 0   | 1  | 4   | 10 | 3   | 42            |
| 41 - 80                               | 0                     | 2   | 0  | 0   | 0 | 1   | 0  | 0   | 1  | 0   | 0  | 0   | 1  | 1   | 3  | 3   | 12            |
| 81 - 159                              | 0                     | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 1  | 2   | 3             |
| > 159                                 | 0                     | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| <b>Totals</b>                         | 134                   | 62  | 21 | 6   | 9 | 12  | 56 | 103 | 33 | 10  | 8  | 24  | 37 | 30  | 36 | 35  | 616           |

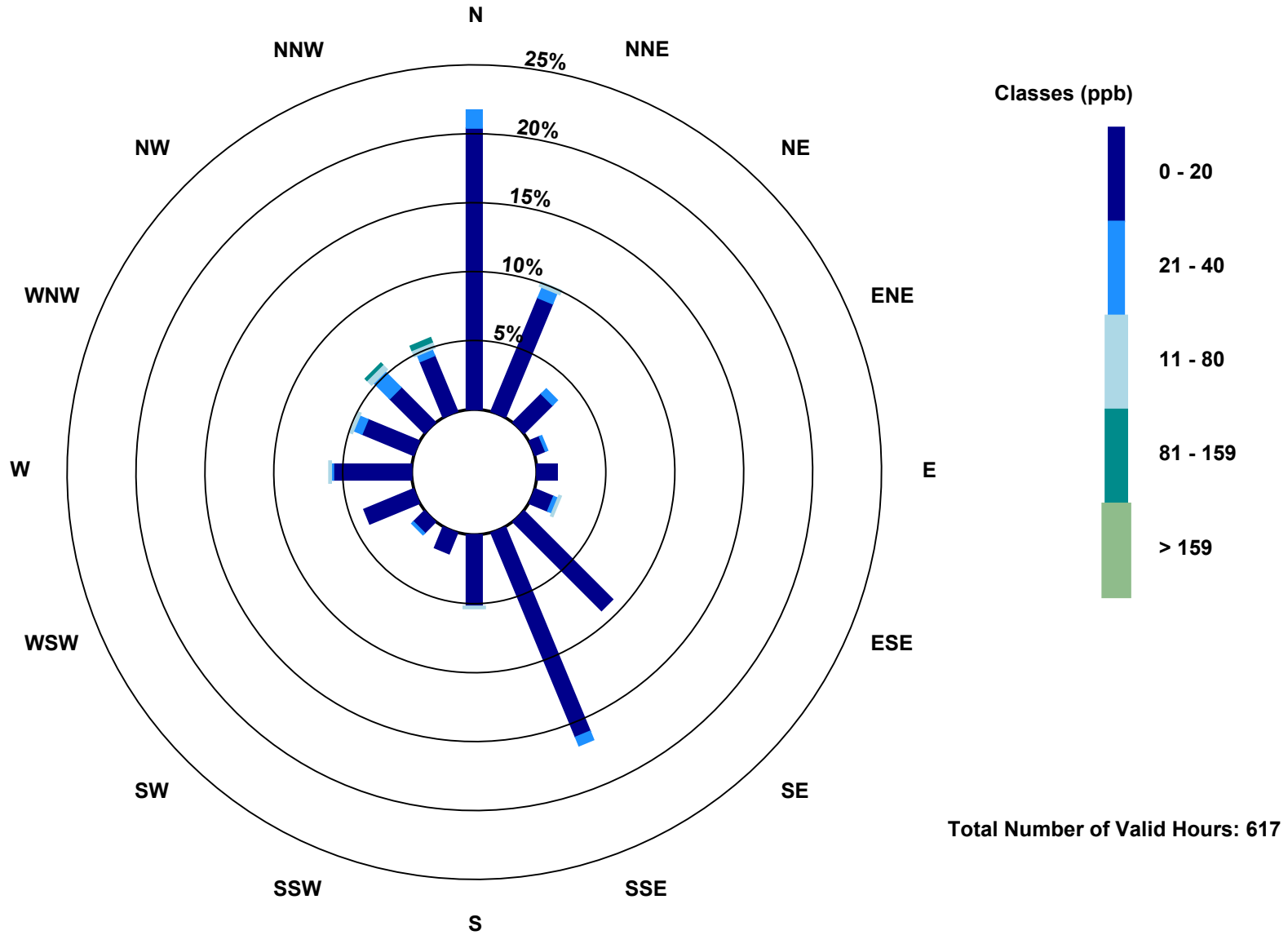
Total Number of Valid Hours: 617

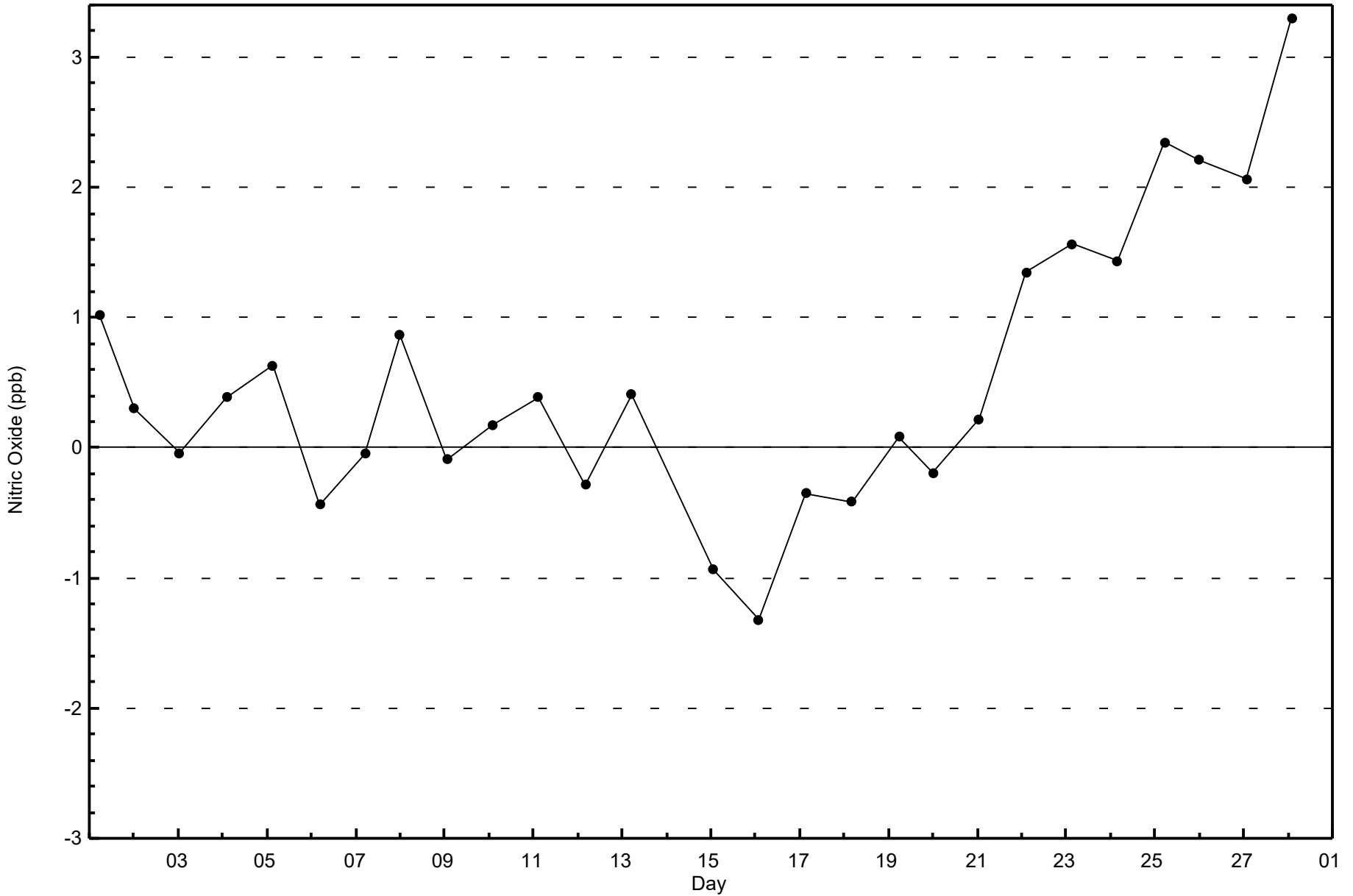
Total Number of Hours: 672



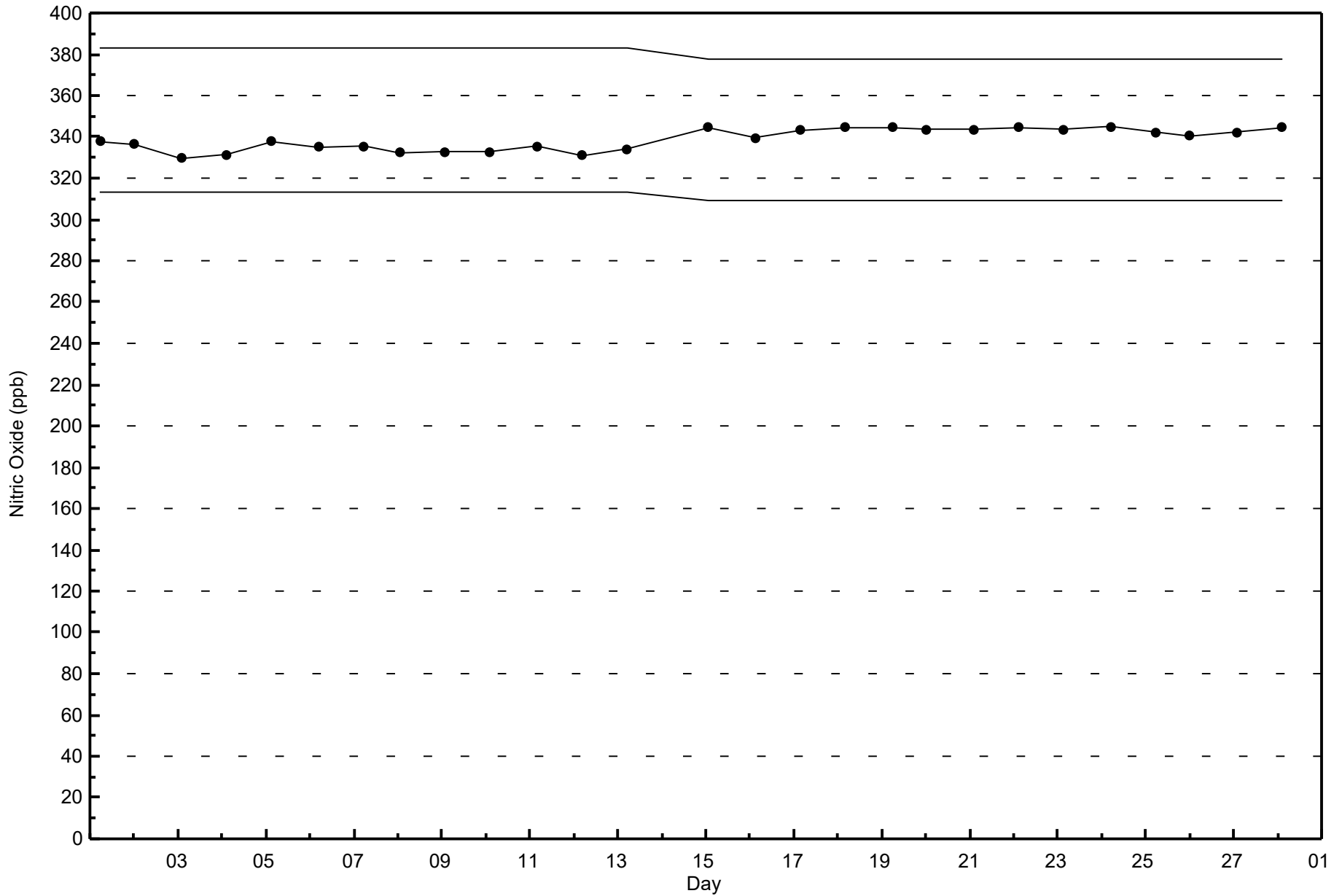
Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Nitric Oxide (NO) - ppb  
Buffalo Viewpoint











# Wood Buffalo Environmental Association

## Summary of Hour Averages

## Nitrogen Dioxide (NO<sub>2</sub>) - ppb Buffalo Viewpoint - February 2023

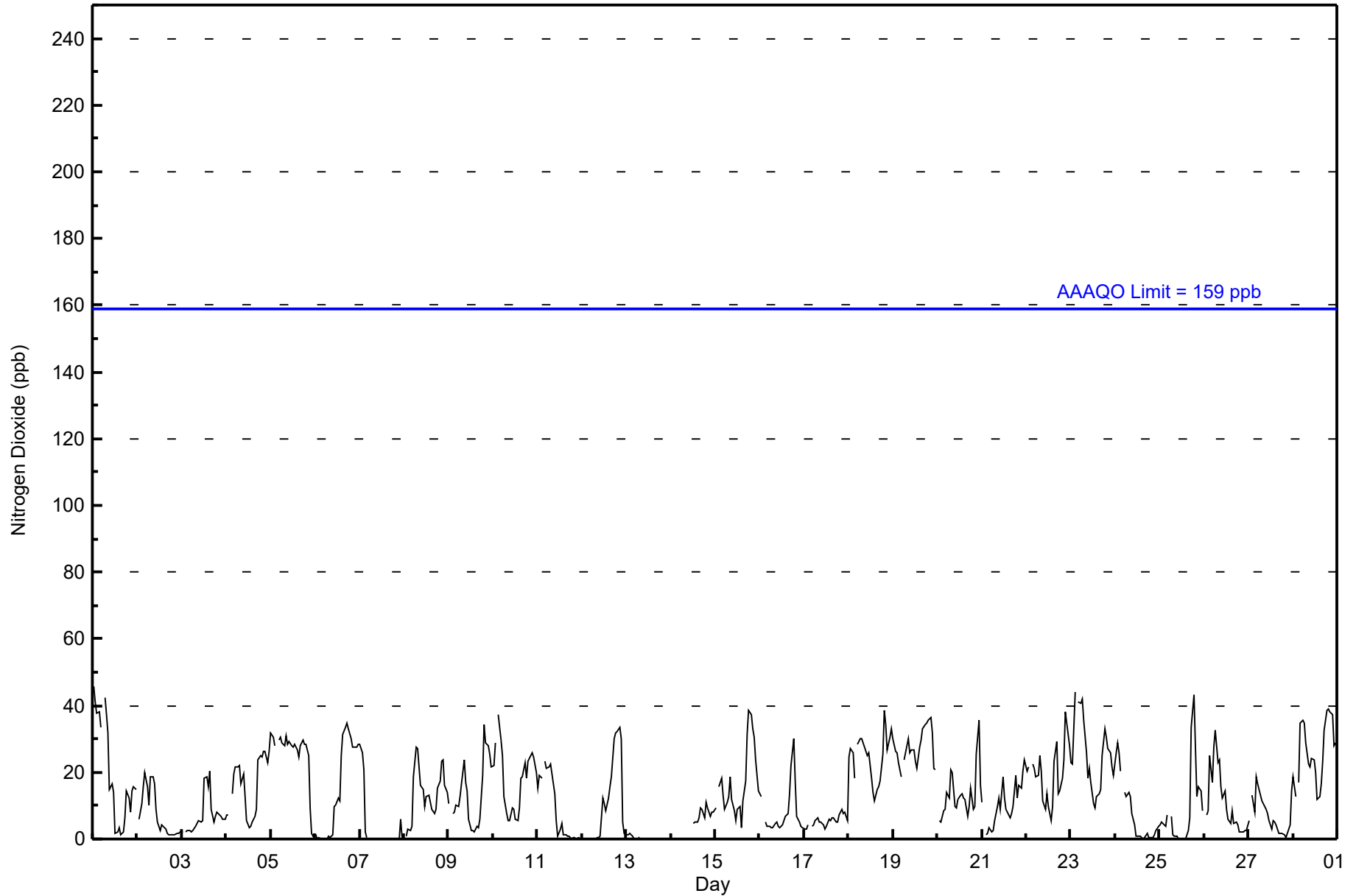
| Number of Exceedences (AAAQO):               |                               | 1-hr: 0  | 24-hr: 0 | Hours in Service: |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                           |      | 672  |      |      |      |               |                 |  |
|--|-------------------------------|--|----------|-------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|---------------------------|------|------|------|------|------|---------------|-----------------|--|
| Maximum Value: 45.6 ppb on Feb 1 01:00       |                               | Maximum Daily Average: 27.6 ppb on Feb 19  |          |                   |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Hours of Data:            | 617  |      |      |      |      |               |                 |  |
| Minimum Value: 0.0 ppb on Feb 6 04:00        |                               | Minimum Daily Average: 3.7 ppb on Feb 7  |          |                   |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Hours of Missing Data:    | 55   |      |      |      |      |               |                 |  |
| Maximum Diurnal Average: 18.6 ppb at hour 19 |                               | Minimum Diurnal Average: 8.4 ppb at hour 14  |          |                   |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Hours of Calibration:     | 38   |      |      |      |      |               |                 |  |
| Monthly Average: 13.99 ppb                   |                               | Percentiles: P <sub>1</sub> = 0.0 P <sub>10</sub> = 0.9 Q <sub>1</sub> = 4.3 Median = 11.8 Q <sub>3</sub> = 23.1 P <sub>90</sub> = 30.0 P <sub>99</sub> = 40.8 |          |                   |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Percent Operational Time: | 97.5 |      |      |      |      |               |                 |  |
| Day  | Hourly Period Ending At (MST) |  |          |                   |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                           |      |      |      |      |      | Daily Average | Daily Maximum   |  |
|  | 1                             | 2  | 3        | 4                 | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19                        | 20   | 21   | 22   | 23   | 24   |               |                 |  |
| 1-Feb  | 45.6                          | 41.2   | 37.9     | 38.0              | 33.4 | Z    | 42.5 | 37.3 | 31.6 | 15.0 | 16.4 | 14.1 | 1.6  | 2.2  | 3.6  | 1.3  | 2.2  | 6.4  | 14.3                      | 12.1 | 8.1  | 14.5 | 15.5 | 14.9 | 19.6          | 45.6            |  |
| 2-Feb  | Z                             | 6.1  | 10.4     | 15.7              | 19.8 | 15.7 | 10.2 | 18.6 | 18.5 | 16.4 | 9.1  | 5.2  | 2.6  | 4.1  | 4.0  | 2.9  | 1.5  | 1.1  | 1.1                       | 1.2  | 1.3  | 1.6  | 1.9  | 2.1  | 7.4           | 19.8            |  |
| 3-Feb  | 2.3                           | Z  | 2.1      | 2.4               | 2.4  | 2.3  | 2.4  | 4.0  | 4.6  | 5.6  | 5.0  | 5.7  | 18.3 | 18.7 | 15.5 | 20.5 | 8.9  | 5.1  | 6.8                       | 7.9  | 7.2  | 6.6  | 6.1  | 6.1  | 7.2           | 20.5            |  |
| 4-Feb  | 7.3                           | 7.4  | Z        | 13.6              | 19.5 | 21.5 | 21.7 | 21.9 | 16.7 | 19.5 | 12.7 | 5.4  | 3.4  | 3.7  | 5.0  | 6.9  | 9.0  | 23.9 | 24.8                      | 24.4 | 26.3 | 26.3 | 23.0 | 26.4 | 16.1          | 26.4            |  |
| 5-Feb  | 31.8                          | 30.6   | 28.0     | Z                 | 29.5 | 30.3 | 28.7 | 28.1 | 30.8 | 28.2 | 29.2 | 28.1 | 27.7 | 28.2 | 26.8 | 24.5 | 27.9 | 29.7 | 28.5                      | 28.5 | 24.8 | 9.2  | 1.9  | 0.9  | 25.3          | 31.8            |  |
| 6-Feb  | 1.4                           | 0.1  | 0.3      | 0.0               | Z    | 0.0  | 0.0  | 0.9  | 0.4  | 1.3  | 9.9  | 10.2 | 12.2 | 11.5 | 24.9 | 31.3 | 33.5 | 34.6 | 33.2                      | 29.9 | 27.6 | 27.6 | 27.4 | 28.6 | 15.1          | 34.6            |  |
| 7-Feb  | 28.2                          | 25.9   | 20.6     | 2.2               | 0.4  | Z    | 0.2  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0                       | 0.0  | 0.0  | 0.2  | 6.0  | 0.5  | 3.7           | 28.2            |  |
| 8-Feb  | Z                             | 1.0  | 2.9      | 2.5               | 3.8  | 18.6 | 27.5 | 27.0 | 21.7 | 16.3 | 14.9 | 9.9  | 12.9 | 13.1 | 11.1 | 8.9  | 7.5  | 9.1  | 15.3                      | 17.2 | 23.2 | 23.8 | 15.9 | 14.0 | 13.8          | 27.5            |  |
| 9-Feb  | 10.5                          | Z  | 7.6      | 8.2               | 10.1 | 9.9  | 12.6 | 16.5 | 23.6 | 17.1 | 14.3 | 5.8  | 2.7  | 2.6  | 2.3  | 3.7  | 3.3  | 6.0  | 19.0                      | 34.4 | 28.8 | 28.0 | 25.4 | 21.8 | 13.7          | 34.4            |  |
| 10-Feb                                       | 22.2                          | 28.8   | Z        | 37.3              | 29.6 | 25.0 | 12.5 | 7.6  | 5.7  | 5.5  | 9.2  | 8.9  | 5.9  | 5.6  | 9.4  | 18.2 | 18.6 | 22.8 | 18.3                      | 23.4 | 24.8 | 25.7 | 24.7 | 20.1 | 17.8          | 37.3            |  |
| 11-Feb                                       | 15.3                          | 19.1   | 18.4     | Z                 | 23.5 | 21.3 | 21.8 | 22.5 | 19.7 | 13.5 | 5.7  | 0.9  | 3.0  | 4.6  | 1.3  | 1.1  | 0.7  | 0.7  | 0.1                       | 0.3  | 0.4  | 0.2  | 0.3  | 0.2  | 8.5           | 23.5            |  |
| 12-Feb                                       | 0.0                           | 0.0  | 0.0      | 0.0               | Z    | 0.0  | 0.0  | 0.0  | 0.5  | 0.6  | 0.8  | 12.3 | 10.7 | 8.5  | 12.1 | 15.7 | 18.6 | 30.2 | 31.8                      | 32.2 | 33.6 | 30.1 | 4.9  | 1.5  | 10.6          | 33.6            |  |
| 13-Feb                                       | 1.1                           | 1.4  | 1.7      | 0.7               | 0.2  | Z    | 0.6  | 0.3  | C    | C    | C    | C    | C    | C    | M    | M    | M    | M    | M                         | M    | M    | M    | M    | M    | --            | 1.7             |  |
| 14-Feb                                       | M                             | M  | M        | M                 | M    | M    | M    | C    | C    | C    | C    | C    | 4.8  | 5.1  | 4.9  | 6.2  | 9.3  | 8.9  | 6.2                       | 11.0 | 9.4  | 6.8  | 8.1  | 7.9  | --            | 11.0            |  |
| 15-Feb                                       | 9.4                           | Z  | 15.5     | 18.1              | 13.0 | 8.8  | 11.2 | 12.8 | 18.5 | 11.9 | 8.3  | 5.7  | 8.9  | 9.6  | 3.6  | 11.6 | 17.5 | 31.5 | 38.4                      | 37.4 | 33.0 | 30.7 | 23.9 | 14.3 | 17.1          | 38.4            |  |
| 16-Feb                                       | 13.4                          | 12.9   | Z        | 5.1               | 3.7  | 3.8  | 3.3  | 3.5  | 4.8  | 5.0  | 4.0  | 3.5  | 4.1  | 5.7  | 6.8  | 7.6  | 13.4 | 22.2 | 29.9                      | 17.3 | 6.9  | 5.0  | 4.0  | 3.2  | 8.2           | 29.9            |  |
| 17-Feb                                       | 2.9                           | 2.9  | 4.1      | Z                 | 4.0  | 4.3  | 5.6  | 6.2  | 4.9  | 4.9  | 4.4  | 3.1  | 4.0  | 6.0  | 5.4  | 6.4  | 6.4  | 5.0  | 5.0                       | 7.4  | 8.7  | 7.7  | 8.0  | 5.6  | 5.3           | 8.7             |  |
| 18-Feb                                       | 24.7                          | 27.1   | 25.8     | 18.2              | Z    | 28.5 | 30.1 | 30.2 | 28.8 | 26.4 | 25.1 | 25.7 | 18.4 | 13.8 | 11.6 | 15.0 | 15.5 | 17.3 | 25.6                      | 38.7 | 34.5 | 26.9 | 30.4 | 32.9 | 24.8          | 38.7            |  |
| 19-Feb                                       | 29.9                          | 26.3   | 25.7     | 23.0              | 18.6 | Z    | 23.6 | 27.9 | 30.1 | 25.7 | 26.6 | 26.7 | 23.1 | 21.1 | 27.7 | 29.8 | 33.1 | 34.5 | 34.6                      | 35.5 | 36.4 | 31.8 | 21.3 | 20.8 | 27.6          | 36.4            |  |
| 20-Feb                                       | Z                             | 5.3  | 5.2      | 8.3               | 9.1  | 13.8 | 12.1 | 20.9 | 20.0 | 9.9  | 9.3  | 11.8 | 13.3 | 13.6 | 12.2 | 12.0 | 6.9  | 9.8  | 15.2                      | 9.1  | 9.9  | 25.3 | 35.8 | 16.0 | 13.3          | 35.8            |  |
| 21-Feb                                       | 10.9                          | Z  | 1.4      | 1.7               | 3.3  | 2.3  | 2.7  | 5.5  | 9.6  | 12.1 | 8.9  | 18.8 | 12.2 | 9.0  | 7.2  | 6.2  | 7.6  | 9.8  | 19.0                      | 12.2 | 15.9 | 15.1 | 20.4 | 23.6 | 10.2          | 23.6            |  |
| 22-Feb                                       | 20.3                          | 21.5   | Z        | 22.5              | 21.1 | 18.8 | 19.2 | 25.1 | 20.4 | 11.3 | 8.7  | 13.7 | 9.8  | 5.5  | 9.9  | 23.5 | 29.1 | 13.7 | 14.2                      | 18.4 | 23.7 | 38.1 | 34.9 | 27.8 | 19.6          | 38.1            |  |
| 23-Feb                                       | 22.9                          | 22.5   | 44.2     | Z                 | 40.9 | 40.5 | 42.1 | 35.6 | 25.7 | 18.4 | 21.2 | 17.1 | 10.5 | 9.4  | 12.8 | 13.7 | 14.8 | 25.1 | 33.2                      | 30.3 | 27.2 | 25.8 | 21.8 | 19.2 | 25.0          | 44.2            |  |
| 24-Feb                                       | 25.7                          | 28.8   | 25.9     | 20.2              | Z    | 14.0 | 12.7 | 14.1 | 12.7 | 7.6  | 4.3  | 0.9  | 1.0  | 0.8  | 0.6  | 0.1  | 0.5  | 1.8  | 0.5                       | 0.3  | 0.3  | 1.3  | 2.7  | 3.9  | 7.9           | 28.8            |  |
| 25-Feb                                       | 4.3                           | 4.9  | 4.2      | 3.8               | 7.3  | Z    | 6.8  | 1.4  | 0.8  | 0.7  | 0.2  | 0.2  | 0.0  | 0.2  | 2.4  | 6.2  | 33.4 | 43.4 | 27.7                      | 12.8 | 15.8 | 14.4 | 8.4  | 8.7  | 43.4          |                 |  |
| 26-Feb                                       | Z                             | 7.3  | 8.3      | 25.0              | 16.9 | 27.6 | 32.6 | 22.7 | 23.7 | 15.5 | 12.2 | 14.4 | 8.9  | 5.9  | 4.8  | 8.5  | 4.5  | 5.0  | 4.2                       | 2.3  | 2.3  | 2.0  | 2.5  | 2.7  | 11.3          | 32.6            |  |
| 27-Feb                                       | 5.7                           | Z  | 13.1     | 8.2               | 18.8 | 16.5 | 13.1 | 11.5 | 10.8 | 8.7  | 7.7  | 5.7  | 3.1  | 5.7  | 5.0  | 4.4  | 1.8  | 1.9  | 1.5                       | 1.1  | 0.6  | 1.6  | 4.3  | 14.6 | 7.2           | 18.8            |  |
| 28-Feb                                       | 18.8                          | 12.8   | Z        | 17.1              | 34.7 | 35.7 | 34.7 | 28.8 | 22.5 | 21.8 | 24.1 | 23.8 | 19.9 | 11.8 | 12.7 | 16.7 | 23.5 | 32.6 | 38.7                      | 39.0 | 38.1 | 37.5 | 27.9 | 28.8 | 26.2          | 39.0            |  |
|  |                               | 15.4   | 15.2     | 13.8              | 12.7 | 15.8 | 16.3 | 15.9 | 16.0 | 15.7 | 12.3 | 11.2 | 10.7 | 9.0  | 8.4  | 8.9  | 11.1 | 11.9 | 15.6                      | 18.6 | 18.5 | 17.3 | 17.2 | 15.3 | 13.6          | Diurnal Average |  |
|  |                               | 45.6   | 41.2     | 44.2              | 38.0 | 40.9 | 40.5 | 42.5 | 37.3 | 31.6 | 28.2 | 29.2 | 28.1 | 27.7 | 28.2 | 27.7 | 31.3 | 33.5 | 34.6                      | 43.4 | 39.0 | 38.1 | 38.1 | 35.8 | 32.9          | Diurnal Maximum |  |

Z - zerospan      C - Calibration      M - Maintenance  
 Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 159 ppb



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Nitrogen Dioxide (NO<sub>2</sub>) - ppb**  
**Buffalo Viewpoint - February 2023**





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Nitrogen Dioxide (NO<sub>2</sub>) - ppb  
Buffalo Viewpoint - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 20                            | 433                    | 70.18    | 70.18               |
| 21 - 40                           | 177                    | 28.69    | 98.87               |
| 41 - 80                           | 7                      | 1.13     | 100.00              |
| 81 - 159                          | 0                      | 0.00     | 100.00              |
| > 159                             | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 617

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Nitrogen Dioxide (NO<sub>2</sub>) - ppb  
Buffalo Viewpoint - February 2023**

| <b>Concentration<br/>Ranges (ppb)</b> | <b>Wind Direction</b> |            |           |            |          |            |           |            |          |            |           |            |          |            |           |            | <b>Totals</b> |
|---------------------------------------|-----------------------|------------|-----------|------------|----------|------------|-----------|------------|----------|------------|-----------|------------|----------|------------|-----------|------------|---------------|
|                                       | <b>N</b>              | <b>NNE</b> | <b>NE</b> | <b>ENE</b> | <b>E</b> | <b>ESE</b> | <b>SE</b> | <b>SSE</b> | <b>S</b> | <b>SSW</b> | <b>SW</b> | <b>WSW</b> | <b>W</b> | <b>WNW</b> | <b>NW</b> | <b>NNW</b> |               |
| 0 - 20                                | 95                    | 50         | 14        | 3          | 7        | 8          | 40        | 70         | 25       | 8          | 5         | 23         | 32       | 20         | 17        | 16         | 433           |
| 21 - 40                               | 39                    | 12         | 7         | 3          | 2        | 4          | 16        | 32         | 8        | 2          | 3         | 1          | 5        | 10         | 17        | 16         | 177           |
| 11 - 80                               | 1                     | 0          | 0         | 0          | 0        | 0          | 0         | 1          | 0        | 0          | 0         | 0          | 0        | 0          | 2         | 3          | 7             |
| 81 - 159                              | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0             |
| > 159                                 | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0             |
| <b>Totals</b>                         | 135                   | 62         | 21        | 6          | 9        | 12         | 56        | 103        | 33       | 10         | 8         | 24         | 37       | 30         | 36        | 35         | 617           |

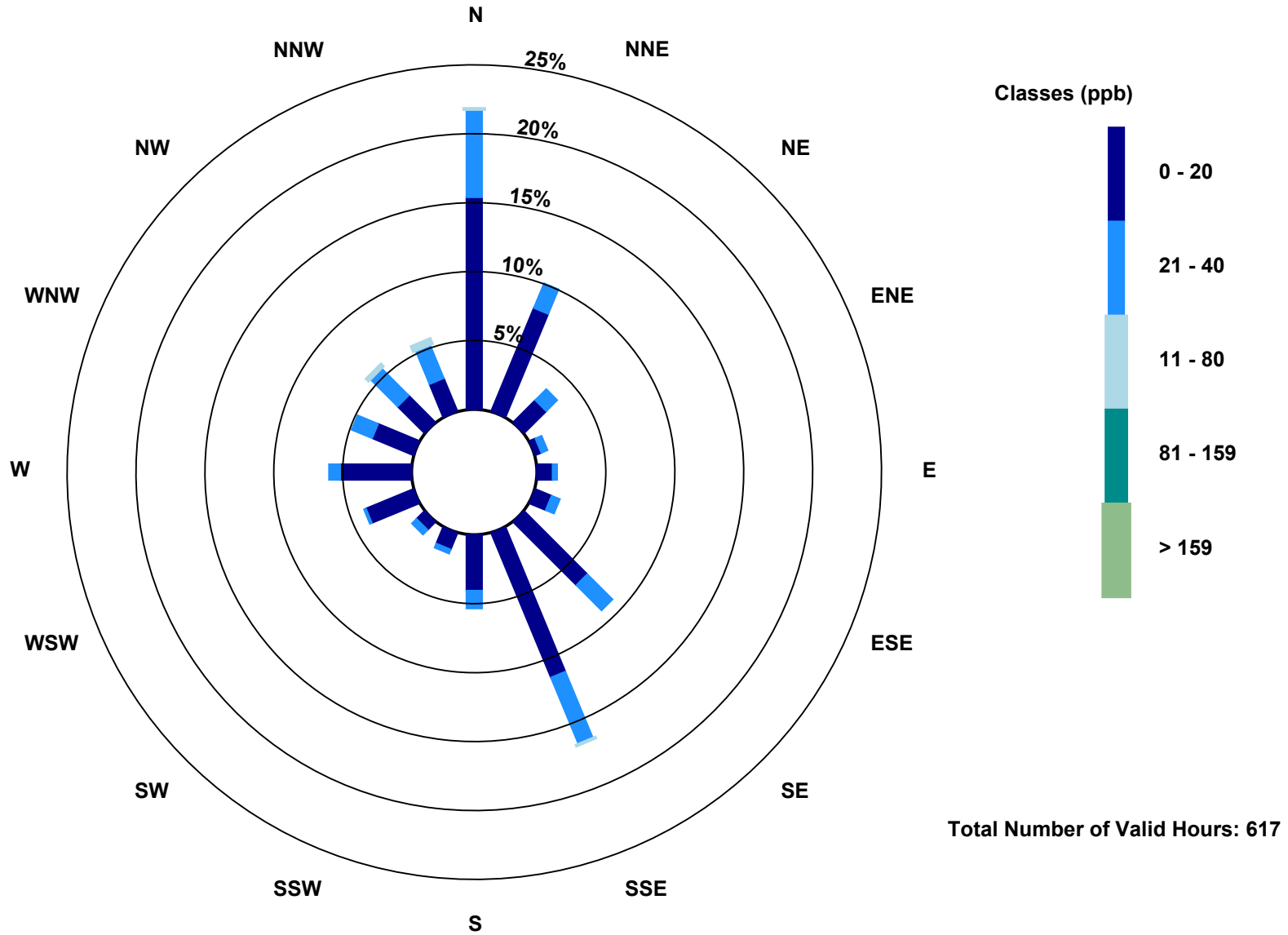
Total Number of Valid Hours: 617

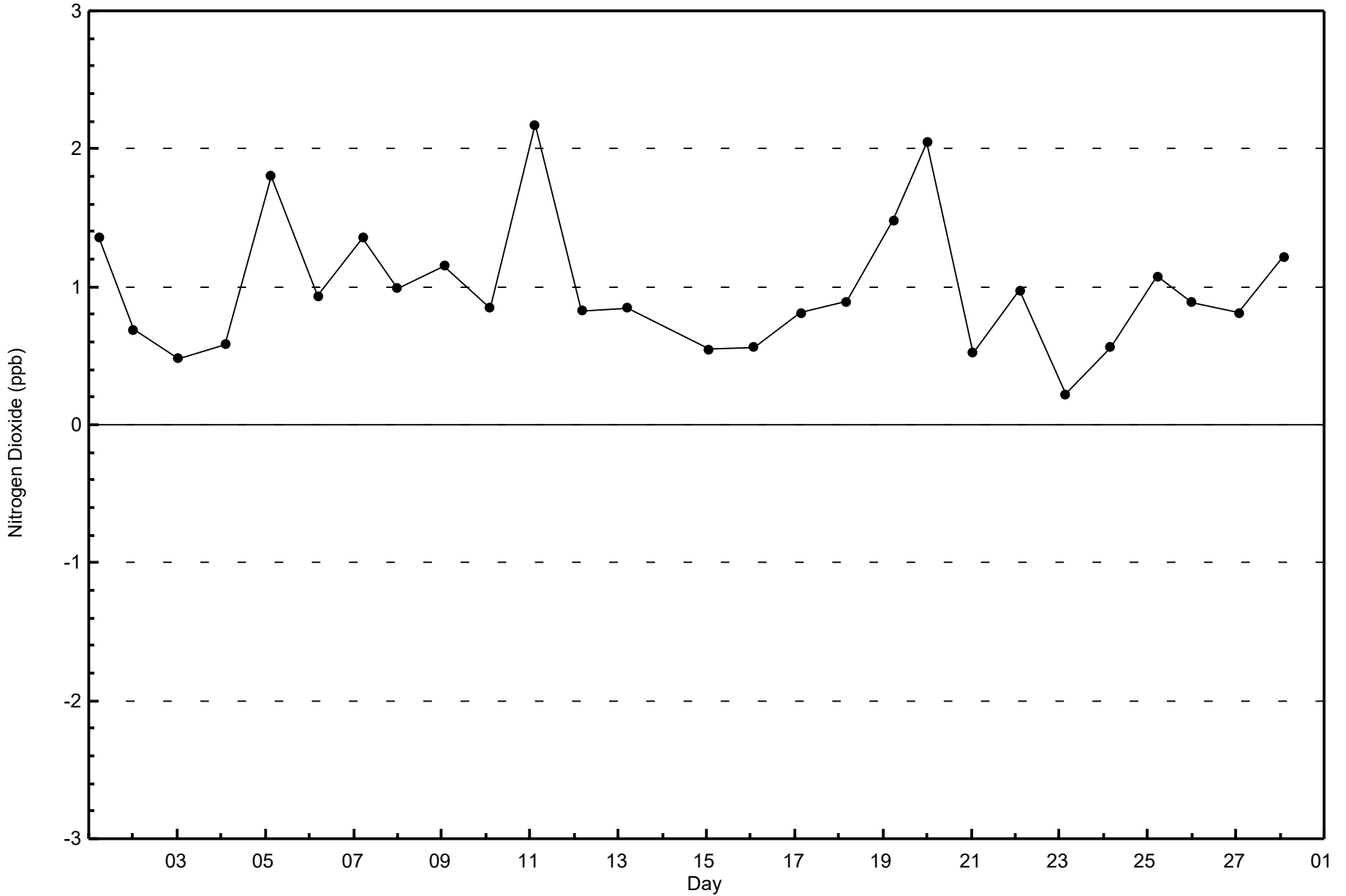
Total Number of Hours: 672

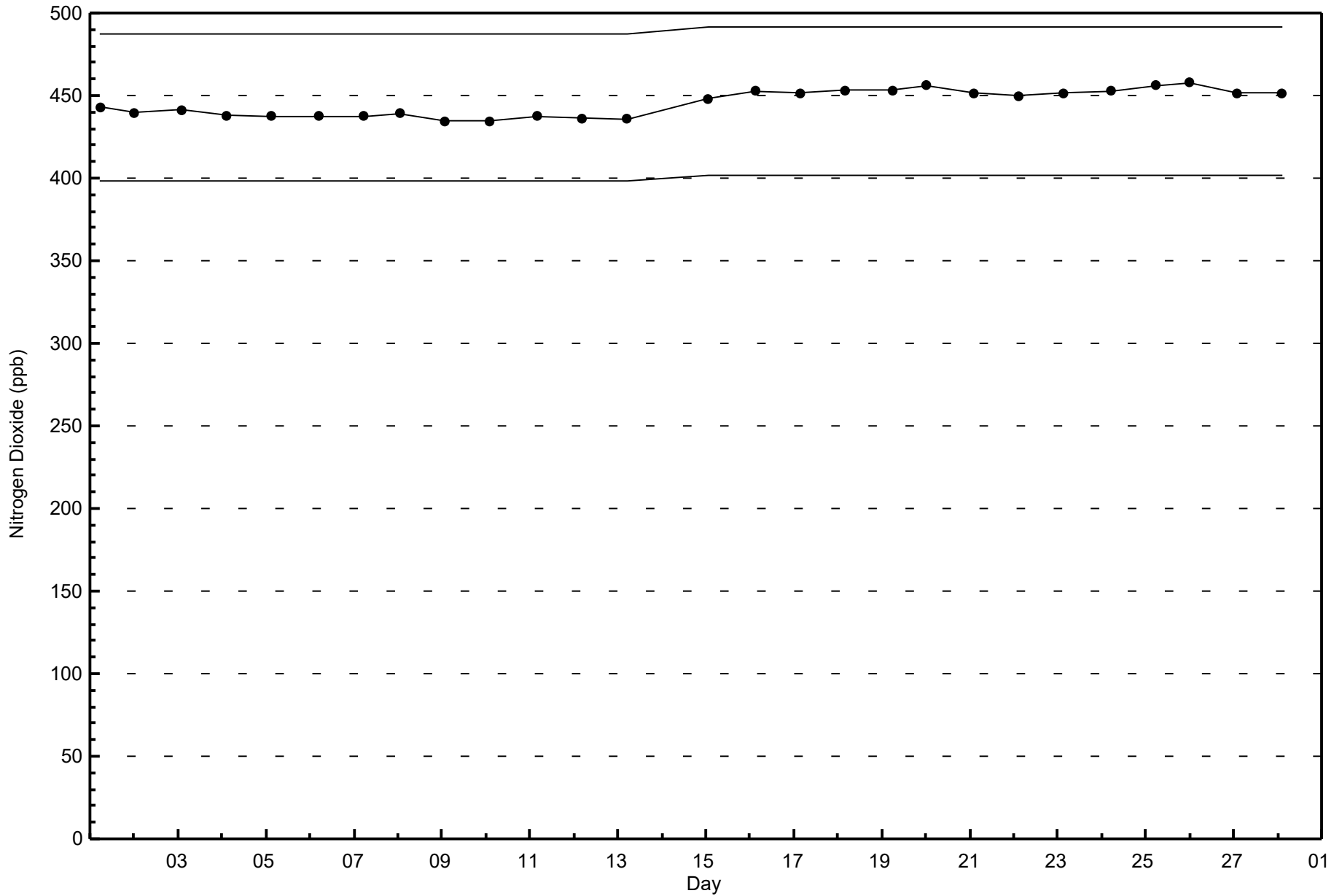


Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Nitrogen Dioxide (NO<sub>2</sub>) - ppb  
Buffalo Viewpoint











Wood Buffalo Environmental Association

Summary of Hour Averages

Nitrogen Oxides (NO<sub>x</sub>) - ppb

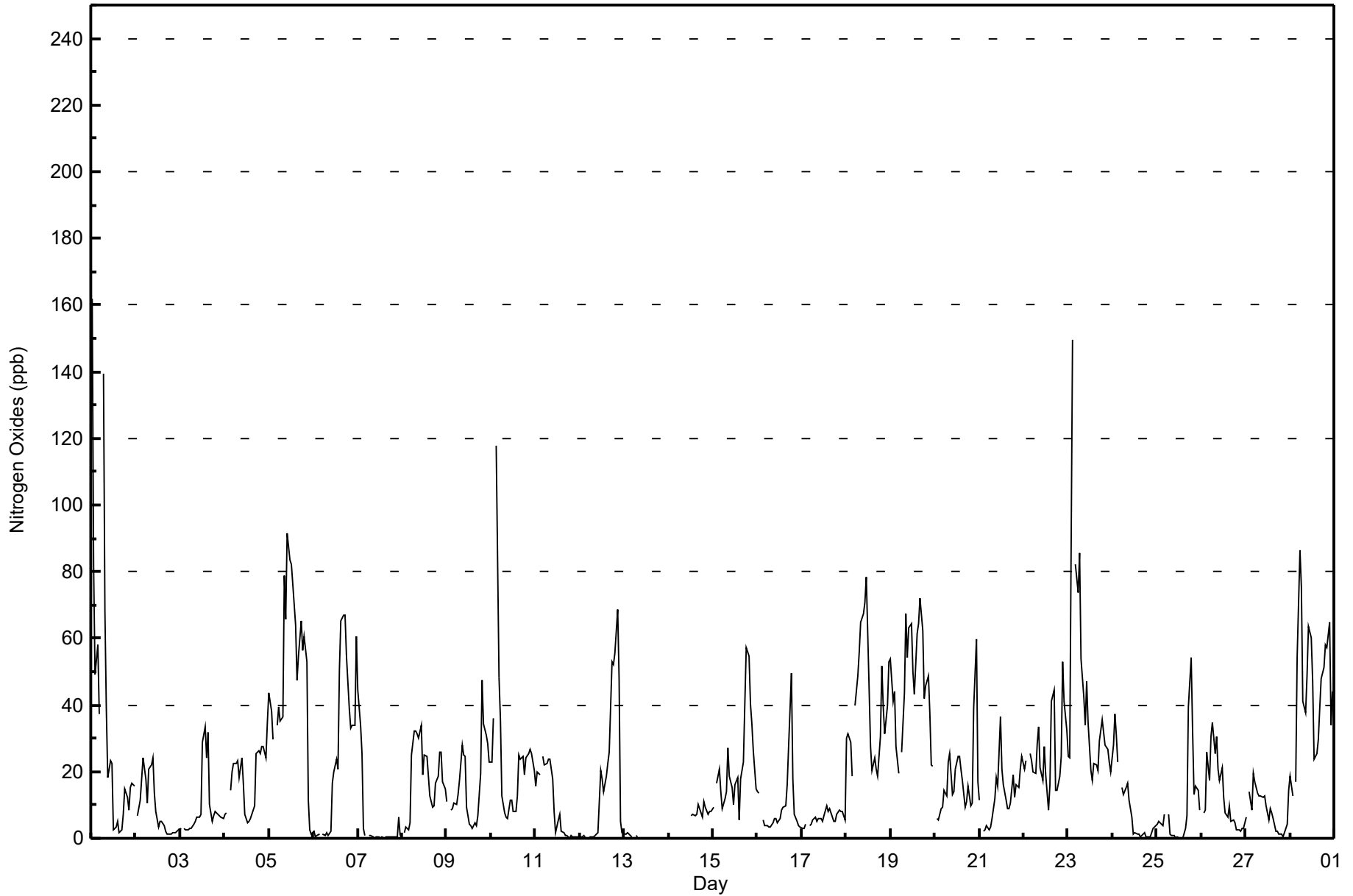
Buffalo Viewpoint - February 2023

| Number of Exceedences (AAAQO):              |                               | 1-hr: 0  | 24-hr: 0 |       |       |                 |       |       |      |      |      |      |      |      |      |      |      |      |                           |      | Hours in Service: | 672  |      |      |               |                 |      |
|---|-------------------------------|--|----------|-------|-------|-----------------|-------|-------|------|------|------|------|------|------|------|------|------|------|---------------------------|------|-------------------|------|------|------|---------------|-----------------|------|
| Maximum Value: 161.7 ppb on Feb 1 01:00     |                               | Maximum Daily Average: 50.1 ppb on Feb 5   |          |       |       |                 |       |       |      |      |      |      |      |      |      |      |      |      | Hours of Data:            | 617  |                   |      |      |      |               |                 |      |
| Minimum Value: 0.0 ppb on Feb 25 13:00      |                               | Minimum Daily Average: 5.3 ppb on Feb 7  |          |       |       |                 |       |       |      |      |      |      |      |      |      |      |      |      | Hours of Missing Data:    | 55   |                   |      |      |      |               |                 |      |
| Maximum Diurnal Average: 24.4 ppb at hour 9 |                               | Minimum Diurnal Average: 15.7 ppb at hour 14   |          |       |       |                 |       |       |      |      |      |      |      |      |      |      |      |      | Hours of Calibration:     | 38   |                   |      |      |      |               |                 |      |
| Monthly Average: 20.64 ppb                  |                               | Percentiles: P <sub>1</sub> = 0.2 P <sub>10</sub> = 1.4 Q <sub>1</sub> = 5.1 Median = 14.7 Q <sub>3</sub> = 27.7 P <sub>90</sub> = 50.7 P <sub>99</sub> = 85.4 |          |       |       |                 |       |       |      |      |      |      |      |      |      |      |      |      | Percent Operational Time: | 97.5 |                   |      |      |      |               |                 |      |
| Day   | Hourly Period Ending At (MST) |  |          |       |       |                 |       |       |      |      |      |      |      |      |      |      |      |      |                           |      |                   |      |      |      | Daily Average | Daily Maximum   |      |
|   | 1                             | 2  | 3        | 4     | 5     | 6               | 7     | 8     | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19                        | 20   | 21                | 22   | 23   | 24   |               |                 |      |
| 1-Feb                                       | 161.7                         | 81.6   | 49.3     | 58.0  | 37.1  | Z               | 139.2 | 68.1  | 38.8 | 18.3 | 23.1 | 22.3 | 2.4  | 3.3  | 5.1  | 1.7  | 2.7  | 7.1  | 14.7                      | 12.2 | 8.3               | 15.4 | 16.4 | 15.9 | 34.9          | 161.7           |      |
| 2-Feb                                       | Z                             | 6.7  | 11.3     | 17.8  | 24.2  | 17.7            | 10.7  | 20.7  | 22.2 | 24.2 | 13.7 | 7.9  | 3.6  | 4.9  | 5.2  | 3.8  | 2.0  | 1.4  | 1.4                       | 1.4  | 1.8               | 1.6  | 1.9  | 2.4  | 9.1           | 24.2            |      |
| 3-Feb                                       | 2.8                           | Z  | 2.8      | 2.5   | 2.7   | 2.9             | 2.8   | 4.1   | 4.9  | 6.4  | 6.3  | 7.2  | 28.7 | 33.5 | 24.1 | 31.6 | 10.1 | 5.1  | 6.8                       | 8.2  | 7.2               | 6.6  | 6.3  | 6.1  | 9.6           | 33.5            |      |
| 4-Feb                                       | 7.3                           | 7.4  | Z        | 14.2  | 19.9  | 22.4            | 22.6  | 23.4  | 18.4 | 24.3 | 16.7 | 7.2  | 4.8  | 5.0  | 6.0  | 8.5  | 9.9  | 25.6 | 26.4                      | 25.4 | 27.6              | 27.5 | 24.4 | 34.6 | 17.8          | 34.6            |      |
| 5-Feb                                       | 43.8                          | 38.1   | 29.8     | Z     | 34.0  | 39.6            | 35.0  | 36.3  | 78.8 | 65.7 | 91.6 | 83.7 | 82.2 | 76.2 | 63.9 | 47.4 | 54.6 | 65.4 | 56.6                      | 60.6 | 53.0              | 11.4 | 2.5  | 1.5  | 50.1          | 91.6            |      |
| 6-Feb                                       | 2.2                           | 0.5  | 0.8      | 1.1   | Z     | 1.1             | 0.9   | 1.8   | 0.9  | 2.2  | 16.7 | 19.7 | 23.6 | 20.6 | 50.2 | 65.2 | 67.0 | 67.1 | 54.5                      | 38.9 | 33.0              | 34.0 | 33.8 | 60.4 | 25.9          | 67.1            |      |
| 7-Feb                                       | 44.4                          | 33.8   | 25.6     | 2.8   | 1.0   | Z               | 1.0   | 0.7   | 0.5  | 0.1  | 0.4  | 0.4  | 0.1  | 0.5  | 0.1  | 0.6  | 0.4  | 0.2  | 0.6                       | 0.5  | 0.5               | 0.6  | 6.4  | 0.8  | 5.3           | 44.4            |      |
| 8-Feb                                       | Z                             | 1.8  | 3.4      | 2.7   | 4.5   | 24.9            | 32.4  | 32.1  | 31.4 | 30.0 | 34.1 | 19.1 | 24.8 | 24.7 | 18.8 | 12.8 | 9.2  | 9.8  | 16.5                      | 18.6 | 26.0              | 25.9 | 16.9 | 14.8 | 18.9          | 34.1            |      |
| 9-Feb                                       | 11.0                          | Z  | 8.7      | 8.9   | 10.7  | 10.2            | 13.3  | 17.2  | 28.1 | 25.1 | 24.6 | 9.2  | 4.3  | 3.8  | 2.8  | 4.5  | 3.9  | 6.6  | 19.6                      | 47.4 | 34.2              | 31.0 | 28.6 | 22.7 | 16.4          | 47.4            |      |
| 10-Feb                                      | 22.9                          | 35.8   | Z        | 117.8 | 48.3  | 35.6            | 12.7  | 7.8   | 6.2  | 6.0  | 11.3 | 11.4 | 8.3  | 8.1  | 12.7 | 25.1 | 23.5 | 24.7 | 19.2                      | 24.2 | 25.5              | 26.5 | 25.4 | 20.5 | 24.3          | 117.8           |      |
| 11-Feb                                      | 15.7                          | 19.8   | 18.9     | Z     | 24.4  | 22.0            | 22.7  | 23.9  | 23.7 | 17.7 | 8.0  | 1.8  | 5.7  | 7.2  | 2.2  | 1.5  | 0.7  | 0.9  | 0.1                       | 0.8  | 0.6               | 0.3  | 0.6  | 0.5  | 9.6           | 24.4            |      |
| 12-Feb                                      | 0.3                           | 0.4  | 0.8      | 0.5   | Z     | 0.6             | 0.6   | 0.4   | 0.9  | 1.2  | 1.7  | 20.5 | 17.7 | 14.1 | 18.5 | 22.3 | 25.7 | 52.9 | 52.3                      | 55.7 | 68.8              | 47.7 | 5.2  | 1.5  | 17.8          | 68.8            |      |
| 13-Feb                                      | 1.1                           | 1.4  | 1.7      | 0.8   | 0.2   | Z               | 0.8   | 0.3   | C    | C    | C    | C    | C    | C    | M    | M    | M    | M    | M                         | M    | M                 | M    | M    | M    | --            | 1.7             |      |
| 14-Feb                                      | M                             | M  | M        | M     | M     | M               | M     | C     | C    | C    | C    | C    | C    | 6.7  | 7.1  | 6.9  | 7.4  | 10.2 | 8.9                       | 6.2  | 11.1              | 9.4  | 7.1  | 8.1  | 7.9           | --              | 11.1 |
| 15-Feb                                      | 9.4                           | Z  | 16.5     | 20.6  | 13.9  | 8.9             | 11.8  | 14.0  | 27.1 | 18.8 | 15.2 | 10.0 | 16.3 | 18.3 | 5.5  | 17.6 | 22.9 | 40.2 | 57.1                      | 54.5 | 40.2              | 34.2 | 26.3 | 14.9 | 22.4          | 57.1            |      |
| 16-Feb                                      | 14.0                          | 13.6   | Z        | 5.6   | 3.8   | 3.8             | 3.3   | 3.5   | 4.8  | 6.0  | 6.1  | 4.5  | 5.9  | 8.4  | 9.3  | 9.9  | 15.9 | 27.6 | 49.5                      | 17.8 | 7.0               | 5.0  | 4.0  | 3.2  | 10.1          | 49.5            |      |
| 17-Feb                                      | 2.9                           | 2.9  | 4.1      | Z     | 4.0   | 4.3             | 5.6   | 6.2   | 5.0  | 5.8  | 5.8  | 4.9  | 6.8  | 9.6  | 8.1  | 9.0  | 7.7  | 5.1  | 5.0                       | 7.4  | 8.7               | 7.9  | 8.0  | 5.7  | 6.1           | 9.6             |      |
| 18-Feb                                      | 30.2                          | 31.2   | 28.6     | 18.6  | Z     | 39.7            | 48.6  | 55.9  | 64.7 | 67.3 | 70.7 | 78.4 | 45.0 | 27.4 | 20.4 | 24.3 | 20.9 | 18.8 | 30.4                      | 51.5 | 39.5              | 31.5 | 39.8 | 52.9 | 40.7          | 78.4            |      |
| 19-Feb                                      | 54.0                          | 41.2   | 44.2     | 27.7  | 19.5  | Z               | 25.7  | 43.7  | 67.5 | 54.0 | 63.1 | 64.5 | 49.9 | 43.2 | 61.6 | 64.3 | 71.9 | 62.3 | 42.0                      | 45.9 | 48.9              | 37.5 | 21.9 | 21.5 | 46.8          | 71.9            |      |
| 20-Feb                                      | Z                             | 6.1  | 5.7      | 8.8   | 9.5   | 14.4            | 12.7  | 22.8  | 25.6 | 13.3 | 13.8 | 20.6 | 24.6 | 24.6 | 20.8 | 17.4 | 9.2  | 11.0 | 15.7                      | 9.8  | 10.5              | 38.8 | 59.9 | 16.9 | 17.9          | 59.9            |      |
| 21-Feb                                      | 11.5                          | Z  | 2.0      | 2.4   | 3.6   | 2.6             | 3.2   | 5.9   | 11.7 | 18.4 | 15.5 | 36.3 | 20.9 | 15.9 | 11.5 | 8.7  | 9.1  | 10.6 | 19.3                      | 12.3 | 16.0              | 15.3 | 20.9 | 24.8 | 13.0          | 36.3            |      |
| 22-Feb                                      | 21.0                          | 23.3   | Z        | 25.3  | 23.4  | 20.1            | 19.3  | 28.5  | 33.3 | 21.2 | 17.2 | 27.7 | 19.1 | 8.6  | 16.1 | 41.0 | 44.3 | 14.6 | 14.3                      | 18.5 | 24.4              | 53.0 | 41.1 | 32.4 | 25.6          | 53.0            |      |
| 23-Feb                                      | 24.7                          | 24.1   | 149.7    | Z     | 82.4  | 73.6            | 85.8  | 53.9  | 42.2 | 33.8 | 47.0 | 34.6 | 20.2 | 17.6 | 22.4 | 22.0 | 20.2 | 29.2 | 35.7                      | 31.7 | 27.9              | 26.8 | 22.9 | 20.0 | 41.2          | 149.7           |      |
| 24-Feb                                      | 28.0                          | 37.2   | 31.0     | 22.7  | Z     | 15.3            | 13.2  | 15.4  | 16.6 | 11.3 | 6.6  | 1.5  | 1.7  | 1.4  | 1.2  | 0.3  | 0.8  | 1.8  | 0.6                       | 0.3  | 0.3               | 1.6  | 2.8  | 3.9  | 9.4           | 37.2            |      |
| 25-Feb                                      | 4.3                           | 5.2  | 4.2      | 3.8   | 7.3   | Z               | 7.0   | 1.4   | 0.9  | 0.7  | 0.2  | 0.3  | 0.0  | 0.0  | 0.2  | 3.0  | 7.0  | 39.3 | 54.4                      | 32.0 | 13.0              | 15.8 | 14.4 | 8.6  | 9.7           | 54.4            |      |
| 26-Feb                                      | Z                             | 7.8  | 8.5      | 26.0  | 17.3  | 30.5            | 34.8  | 25.4  | 30.5 | 20.8 | 17.4 | 21.3 | 12.4 | 7.5  | 6.2  | 9.9  | 4.9  | 5.5  | 4.7                       | 2.6  | 2.5               | 2.2  | 3.0  | 3.0  | 13.3          | 34.8            |      |
| 27-Feb                                      | 6.3                           | Z  | 13.9     | 8.6   | 19.3  | 17.0            | 13.6  | 12.5  | 12.8 | 12.2 | 12.7 | 9.6  | 5.5  | 8.8  | 7.8  | 6.0  | 2.2  | 2.0  | 1.5                       | 1.1  | 0.6               | 1.8  | 4.3  | 14.6 | 8.5           | 19.3            |      |
| 28-Feb                                      | 18.8                          | 12.8   | Z        | 17.1  | 54.3  | 86.3            | 75.5  | 41.2  | 37.7 | 48.8 | 63.8 | 60.3 | 46.9 | 23.7 | 25.2 | 29.5 | 39.2 | 47.9 | 51.4                      | 58.1 | 57.2              | 64.9 | 33.9 | 44.1 | 45.2          | 86.3            |      |
|   |                               | 23.4   | 19.7     | 21.0  | 18.0  | 20.2            | 22.4  | 24.3  | 21.0 | 24.4 | 21.3 | 23.2 | 22.5 | 18.1 | 15.7 | 16.0 | 18.3 | 18.4 | 21.9                      | 24.3 | 24.0              | 21.9 | 21.2 | 17.8 | 16.9          | Diurnal Average |      |
|   |                               | 161.7  | 81.6     | 149.7 | 117.8 | 82.4            | 86.3  | 139.2 | 68.1 | 78.8 | 67.3 | 91.6 | 83.7 | 82.2 | 76.2 | 63.9 | 65.2 | 71.9 | 67.1                      | 57.1 | 60.6              | 68.8 | 64.9 | 59.9 | 60.4          | Diurnal Maximum |      |
| Z - zerspan                                 |                               | C - Calibration  |          |       |       | M - Maintenance |       |       |      |      |      |      |      |      |      |      |      |      |                           |      |                   |      |      |      |               |                 |      |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Nitrogen Oxides (NO<sub>x</sub>) - ppb**  
**Buffalo Viewpoint - February 2023**





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Nitrogen Oxides (NO<sub>x</sub>) - ppb  
Buffalo Viewpoint - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 20                            | 379                    | 61.43    | 61.43               |
| 21 - 40                           | 147                    | 23.82    | 85.25               |
| 41 - 80                           | 80                     | 12.97    | 98.22               |
| 81 - 159                          | 10                     | 1.62     | 99.84               |
| > 159                             | 1                      | 0.16     | 100.00              |

Total Number of Valid Hours: 617

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Nitrogen Oxides (NO<sub>x</sub>) - ppb  
Buffalo Viewpoint - February 2023**

| <b>Concentration<br/>Ranges (ppb)</b> | <b>Wind Direction</b> |            |           |            |          |            |           |            |          |            |           |            |          |            |           |            | <b>Totals</b> |
|---------------------------------------|-----------------------|------------|-----------|------------|----------|------------|-----------|------------|----------|------------|-----------|------------|----------|------------|-----------|------------|---------------|
|                                       | <b>N</b>              | <b>NNE</b> | <b>NE</b> | <b>ENE</b> | <b>E</b> | <b>ESE</b> | <b>SE</b> | <b>SSE</b> | <b>S</b> | <b>SSW</b> | <b>SW</b> | <b>WSW</b> | <b>W</b> | <b>WNW</b> | <b>NW</b> | <b>NNW</b> |               |
| 0 - 20                                | 88                    | 43         | 13        | 3          | 5        | 6          | 35        | 60         | 22       | 8          | 2         | 23         | 31       | 16         | 13        | 11         | 379           |
| 21 - 40                               | 31                    | 11         | 3         | 2          | 4        | 3          | 17        | 34         | 8        | 1          | 5         | 1          | 2        | 6          | 6         | 13         | 147           |
| 11 - 80                               | 14                    | 8          | 5         | 1          | 0        | 2          | 4         | 9          | 3        | 1          | 1         | 0          | 3        | 7          | 14        | 8          | 80            |
| 81 - 159                              | 2                     | 0          | 0         | 0          | 0        | 1          | 0         | 0          | 0        | 0          | 0         | 0          | 1        | 1          | 3         | 2          | 10            |
| > 159                                 | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 1          | 1             |
| <b>Totals</b>                         | 135                   | 62         | 21        | 6          | 9        | 12         | 56        | 103        | 33       | 10         | 8         | 24         | 37       | 30         | 36        | 35         | 617           |

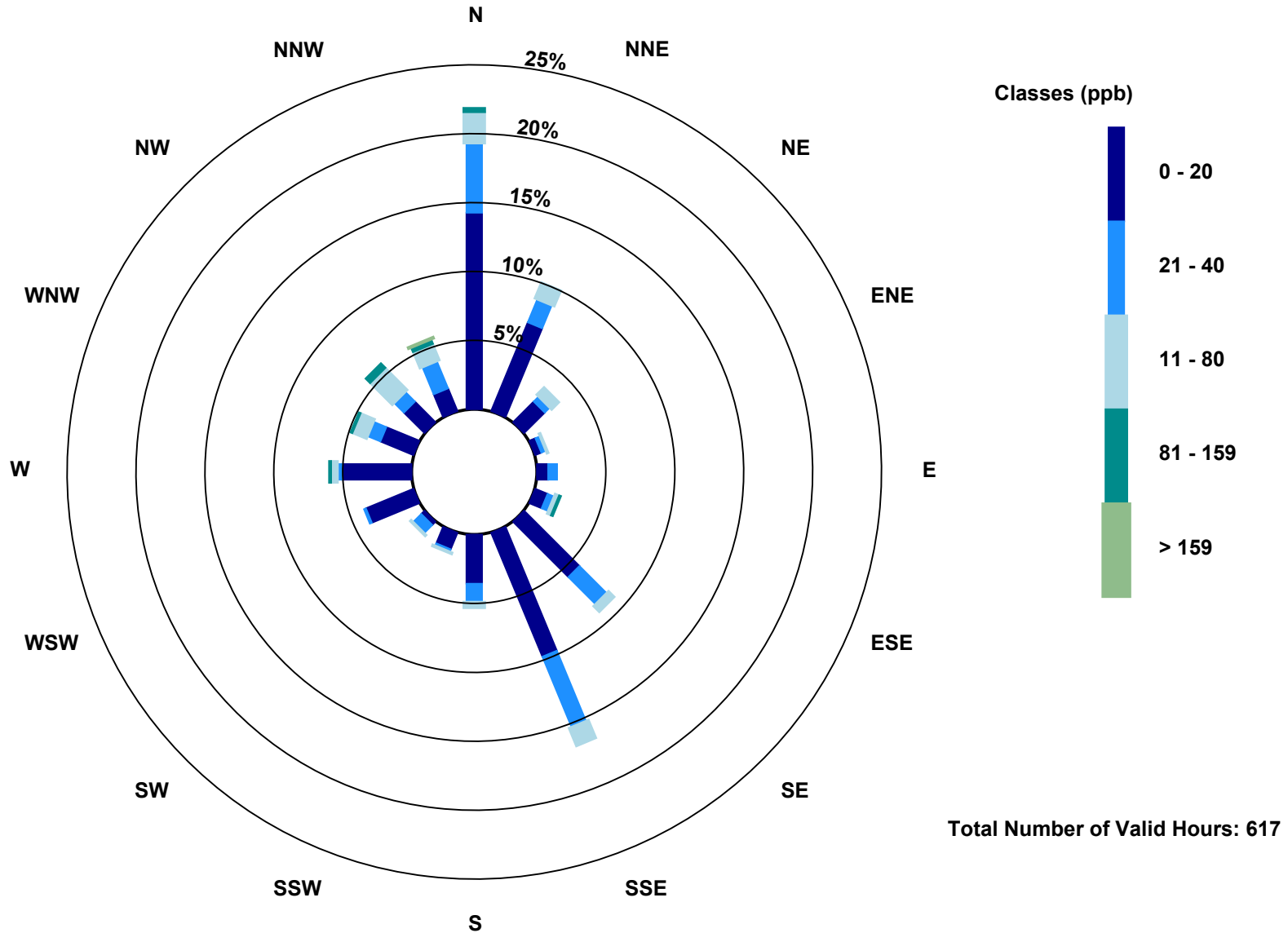
Total Number of Valid Hours: 617

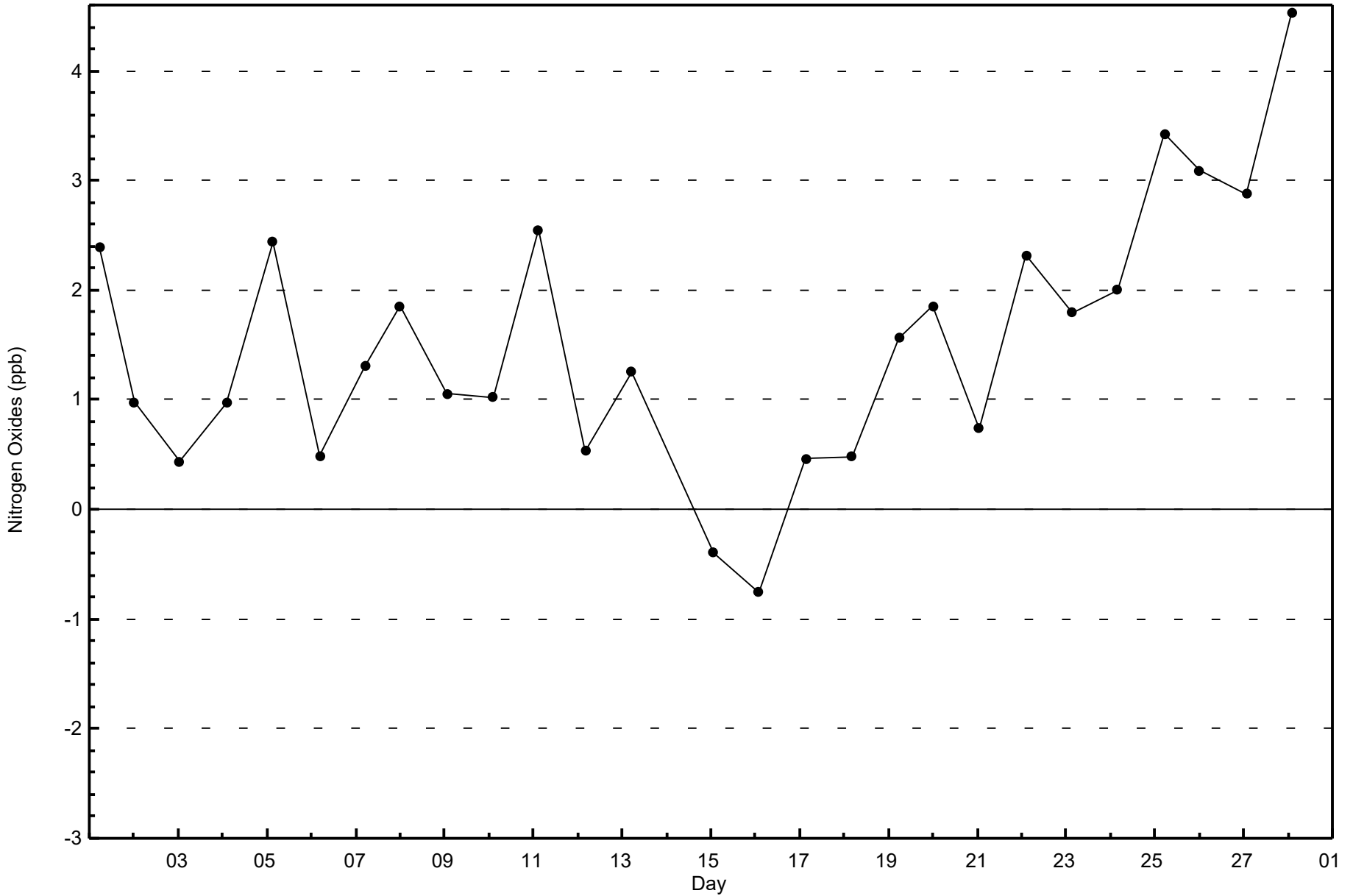
Total Number of Hours: 672



Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Nitrogen Oxides (NO<sub>x</sub>) - ppb  
Buffalo Viewpoint

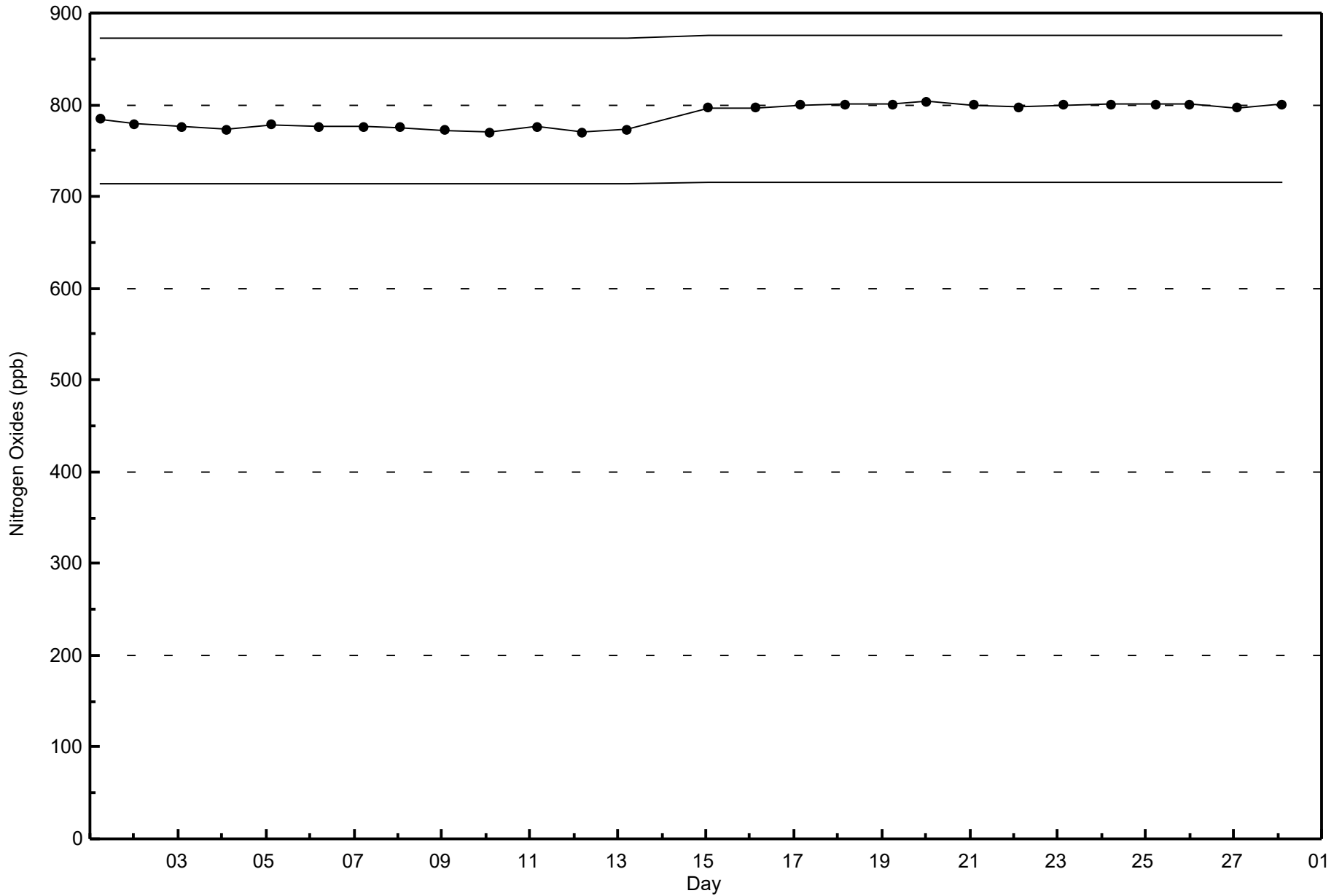






Wood Buffalo Environmental Association  
Span Responses

Nitrogen Oxides (NO<sub>x</sub>) - ppb  
Buffalo Viewpoint - February 2023





|  |  |          |                           |       |
|--|--|----------|---------------------------|-------|
| Number of Exceedences (AAAQO):               | 1-hr: 0  | 24-hr: 0 | Hours in Service:         | 672   |
| Maximum Value: 36.9 ppb on Feb 7 15:00       | Maximum Daily Average: 31.4 ppb on Feb 13  |          | Hours of Data:            | 641   |
| Minimum Value: 0.8 ppb on Feb 18 08:00       | Minimum Daily Average: 5.5 ppb on Feb 5  |          | Hours of Missing Data:    | 31    |
| Maximum Diurnal Average: 24.3 ppb at hour 14 | Minimum Diurnal Average: 14.8 ppb at hour 8  |          | Hours of Calibration:     | 31    |
| Monthly Average: 18.32 ppb                   | Percentiles: P <sub>1</sub> = 1.4 P <sub>10</sub> = 2.8 Q <sub>1</sub> = 9.2 Median = 20.2 Q <sub>3</sub> = 26.5 P <sub>90</sub> = 31.5 P <sub>99</sub> = 36.1 |          | Percent Operational Time: | 100.0 |

| Day    | Hourly Period Ending At (MST) |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Daily Average | Daily Maximum |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
|--------|-------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|---------------|---------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----------------|--|
|        | 1                             | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20   | 21   | 22   | 23   | 24   |               |               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 1-Feb  | 1.5                           | 1.5  | 2.1  | 1.9  | Z    | 3.1  | 1.5  | 1.8  | 6.5  | 21.9 | 21.3 | 23.7 | 33.0 | 32.1 | 31.1 | 32.9 | 32.1 | 27.4 | 20.7 | 22.5 | 25.8 | 19.5 | 18.4 | 16.5 | 17.3          | 33.0          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 2-Feb  | 14.9                          | 20.2 | 16.0 | 9.3  | 7.2  | Z    | 15.1 | 8.1  | 9.1  | 12.8 | 20.4 | 24.8 | 27.7 | 27.4 | 28.2 | 29.4 | 30.3 | 30.9 | 30.9 | 30.9 | 30.9 | 30.7 | 30.3 | 29.7 | 22.4          | 30.9          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 3-Feb  | Z                             | 29.8 | 29.5 | 29.0 | 28.6 | 28.5 | 27.8 | 26.1 | 24.9 | 23.9 | 24.9 | 23.2 | 13.9 | 12.0 | 13.5 | 12.1 | 20.4 | 23.2 | 22.3 | 21.1 | 21.6 | 21.8 | 21.5 | 21.1 | 22.6          | 29.8          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 4-Feb  | 19.7                          | Z    | 17.5 | 13.1 | 8.6  | 7.5  | 7.5  | 7.8  | 12.9 | 11.2 | 17.1 | 23.0 | 24.2 | 23.8 | 22.9 | 21.5 | 19.5 | 7.7  | 7.3  | 6.2  | 4.8  | 4.5  | 7.9  | 4.4  | 13.1          | 24.2          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 5-Feb  | 1.4                           | 2.2  | Z    | 1.8  | 1.7  | 1.7  | 2.2  | 1.7  | 2.0  | 4.8  | 4.3  | 5.4  | 5.8  | 5.7  | 5.9  | 5.6  | 3.2  | 1.9  | 1.8  | 1.9  | 2.2  | 13.5 | 24.3 | 25.0 | 5.5           | 25.0          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 6-Feb  | 24.1                          | 25.0 | 24.9 | Z    | 25.3 | 25.4 | 26.0 | 25.2 | 25.2 | 23.7 | 17.3 | 16.7 | 17.0 | 19.5 | 9.6  | 5.1  | 3.1  | 1.8  | 1.8  | 2.1  | 2.6  | 1.9  | 1.9  | 1.9  | 14.2          | 26.0          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 7-Feb  | 2.5                           | 2.9  | 9.7  | 30.9 | Z    | 32.8 | 34.0 | 35.3 | 35.0 | 34.3 | 35.2 | 36.1 | 36.5 | 36.6 | 36.9 | 36.9 | 36.5 | 36.3 | 35.9 | 36.1 | 36.0 | 34.5 | 26.3 | 26.6 | 30.6          | 36.9          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 8-Feb  | 25.3                          | 26.6 | 24.6 | 24.0 | 23.4 | Z    | 2.5  | 2.7  | 4.3  | 7.4  | 10.8 | 18.3 | 17.4 | 17.4 | 18.3 | 19.8 | 21.0 | 19.2 | 12.9 | 11.2 | 6.8  | 6.0  | 10.5 | 14.1 | 15.0          | 26.6          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 9-Feb  | Z                             | 20.0 | 19.8 | 18.8 | 16.9 | 18.1 | 16.6 | 12.6 | 9.2  | 12.9 | 14.8 | 23.9 | 27.4 | 28.0 | 28.7 | 27.6 | 28.2 | 25.6 | 14.3 | 2.9  | 4.6  | 3.9  | 6.1  | 8.2  | 16.9          | 28.7          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 10-Feb | 8.1                           | Z    | 1.9  | 1.7  | 1.9  | 4.0  | 13.3 | 17.6 | 20.3 | 21.5 | 19.1 | C    | C    | C    | 18.3 | 12.3 | 11.3 | 7.7  | 11.7 | 7.3  | 5.9  | 5.3  | 5.9  | 9.2  | 10.2          | 21.5          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 11-Feb | 12.0                          | 8.3  | Z    | 6.5  | 3.8  | 4.9  | 3.7  | 3.5  | 6.2  | 11.3 | 17.8 | 22.1 | 20.2 | 20.0 | 27.4 | 30.9 | 32.4 | 31.3 | 31.1 | 30.2 | 31.4 | 31.1 | 30.1 | 30.7 | 19.4          | 32.4          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 12-Feb | 31.9                          | 32.3 | 32.0 | Z    | 30.9 | 30.3 | 30.3 | 29.9 | 28.9 | 28.2 | 28.1 | 20.2 | 21.9 | 20.9 | 17.5 | 15.0 | 11.5 | 3.0  | 1.8  | 1.8  | 1.8  | 4.3  | 29.4 | 33.1 | 21.1          | 33.1          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 13-Feb | 33.4                          | 32.6 | 31.2 | 32.9 | Z    | 33.6 | 33.0 | 31.9 | 23.6 | 27.3 | 29.1 | 32.0 | 33.8 | 34.4 | 33.0 | 32.3 | 31.4 | 31.5 | 30.2 | 28.7 | 30.5 | 31.2 | 32.1 | 32.7 | 31.4          | 34.4          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 14-Feb | 32.5                          | 32.0 | 28.0 | 26.7 | 29.3 | Z    | 27.8 | 25.1 | 27.2 | 25.8 | 25.9 | 25.5 | 25.1 | 24.5 | 25.4 | 25.0 | 22.3 | 22.5 | 24.4 | 20.0 | 22.1 | 23.9 | 22.6 | 22.6 | 25.5          | 32.5          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 15-Feb | Z                             | 17.0 | 12.9 | 9.4  | 12.5 | 14.3 | 12.5 | 11.6 | 7.1  | 14.3 | 17.4 | 21.8 | 20.2 | 21.8 | 28.1 | 22.1 | 16.8 | 5.4  | 1.4  | 1.5  | 2.8  | 3.1  | 8.7  | 14.4 | 12.9          | 28.1          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 16-Feb | 14.3                          | Z    | 17.3 | 22.5 | 24.0 | 23.3 | 23.0 | 22.2 | 20.9 | 20.5 | 21.7 | 22.3 | 22.5 | 21.8 | 20.9 | 19.2 | 14.4 | 7.0  | 2.5  | 11.2 | 20.9 | 22.1 | 22.3 | 22.8 | 19.1          | 24.0          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 17-Feb | 22.5                          | 22.0 | Z    | 22.1 | 21.3 | 20.4 | 19.6 | 19.5 | 21.0 | 21.7 | 22.0 | 23.2 | 22.4 | 20.7 | 20.6 | 19.6 | 19.8 | 20.5 | 19.8 | 17.6 | 17.0 | 17.3 | 16.4 | 18.1 | 20.2          | 23.2          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 18-Feb | 2.9                           | 1.6  | 2.9  | Z    | 5.3  | 1.3  | 0.9  | 0.8  | 3.3  | 7.0  | 9.8  | 10.6 | 17.2 | 21.4 | 23.8 | 20.6 | 19.6 | 17.6 | 10.4 | 1.6  | 3.4  | 7.0  | 3.6  | 2.2  | 8.5           | 23.8          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 19-Feb | 1.6                           | 1.5  | 1.3  | 4.1  | Z    | 14.6 | 6.6  | 2.8  | 3.9  | 8.3  | 9.6  | 11.9 | 14.7 | 15.8 | 11.0 | 8.1  | 5.1  | 2.9  | 1.9  | 1.6  | 1.7  | 5.6  | 13.0 | 13.4 | 7.0           | 15.8          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 20-Feb | 22.2                          | 24.4 | 23.7 | 21.7 | 21.4 | Z    | 17.3 | 10.0 | 10.9 | 20.0 | 21.9 | 21.0 | 20.5 | 20.4 | 21.2 | 21.5 | 24.2 | 21.4 | 17.6 | 22.5 | 21.6 | 8.8  | 2.5  | 18.3 | 18.9          | 24.4          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 21-Feb | Z                             | 29.6 | 29.8 | 29.0 | 27.8 | 27.9 | 26.9 | 24.6 | 21.6 | 21.2 | 22.8 | 16.6 | 22.0 | 24.8 | 26.5 | 27.6 | 26.6 | 24.8 | 17.6 | 22.2 | 19.6 | 19.4 | 13.2 | 10.4 | 23.1          | 29.8          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 22-Feb | 10.9                          | Z    | 10.3 | 6.4  | 7.4  | 9.1  | 9.6  | 6.3  | 9.3  | 14.7 | 19.6 | 19.8 | 25.0 | 32.4 | 29.3 | 19.6 | 15.2 | 25.6 | 24.6 | 19.9 | 15.3 | 3.9  | 5.0  | 10.0 | 15.2          | 32.4          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 23-Feb | 11.7                          | 10.4 | Z    | 1.8  | 1.6  | 1.6  | 1.5  | 2.4  | 8.5  | 14.3 | 15.2 | 18.8 | 23.6 | 23.8 | 23.0 | 22.6 | 21.8 | 12.8 | 6.0  | 6.9  | 7.9  | 8.3  | 11.4 | 12.9 | 11.7          | 23.8          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 24-Feb | 6.2                           | 4.1  | 5.2  | Z    | 10.2 | 14.4 | 16.5 | 15.8 | 17.9 | 24.9 | 28.7 | 33.1 | 33.2 | 34.0 | 34.2 | 34.9 | 34.5 | 33.1 | 33.2 | 33.0 | 32.8 | 31.9 | 30.0 | 28.1 | 24.8          | 34.9          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 25-Feb | 26.8                          | 26.0 | 25.5 | 25.8 | Z    | 22.7 | 23.1 | 29.7 | 30.7 | 31.1 | 32.2 | 33.1 | 33.9 | 34.7 | 35.3 | 33.9 | 30.2 | 8.9  | 1.9  | 13.9 | 23.7 | 20.6 | 21.1 | 25.3 | 25.7          | 35.3          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 26-Feb | 24.4                          | 25.8 | 22.9 | 9.7  | 17.1 | Z    | 7.2  | 12.6 | 10.5 | 17.2 | 24.7 | 23.9 | 29.9 | 32.4 | 33.9 | 31.5 | 32.7 | 31.0 | 30.9 | 32.2 | 31.2 | 31.2 | 30.0 | 29.9 | 24.9          | 33.9          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 27-Feb | Z                             | 27.7 | 19.8 | 25.2 | 17.2 | 18.8 | 21.3 | 22.4 | 23.0 | 24.7 | 25.1 | 26.8 | 28.5 | 26.6 | 27.4 | 27.8 | 29.0 | 28.5 | 28.6 | 28.8 | 28.8 | 27.7 | 24.6 | 16.9 | 25.0          | 29.0          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 28-Feb | 13.9                          | Z    | 19.1 | 14.1 | 1.9  | 1.5  | 1.4  | 4.7  | 9.9  | 12.6 | 12.6 | 13.2 | 16.3 | 22.2 | 22.0 | 19.1 | 14.6 | 7.2  | 2.3  | 1.6  | 1.7  | 1.8  | 5.2  | 5.0  | 9.7           | 22.2          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
|        |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 15.9 | 18.4          | 17.8          | 16.2 | 15.0 | 15.6 | 15.3 | 14.8 | 15.5 | 18.6 | 20.3 | 21.9 | 23.5 | 24.3 | 24.1 | 22.7 | 21.7 | 18.4 | 15.9 | 15.6 | 16.3 | 15.7 | 16.9 | 18.0 | Diurnal Average |  |
|        |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 33.4 | 32.6          | 32.0          | 32.9 | 30.9 | 33.6 | 34.0 | 35.3 | 35.0 | 34.3 | 35.2 | 36.1 | 36.5 | 36.6 | 36.9 | 36.9 | 36.5 | 36.3 | 35.9 | 36.1 | 36.0 | 34.5 | 32.1 | 33.1 | Diurnal Maximum |  |

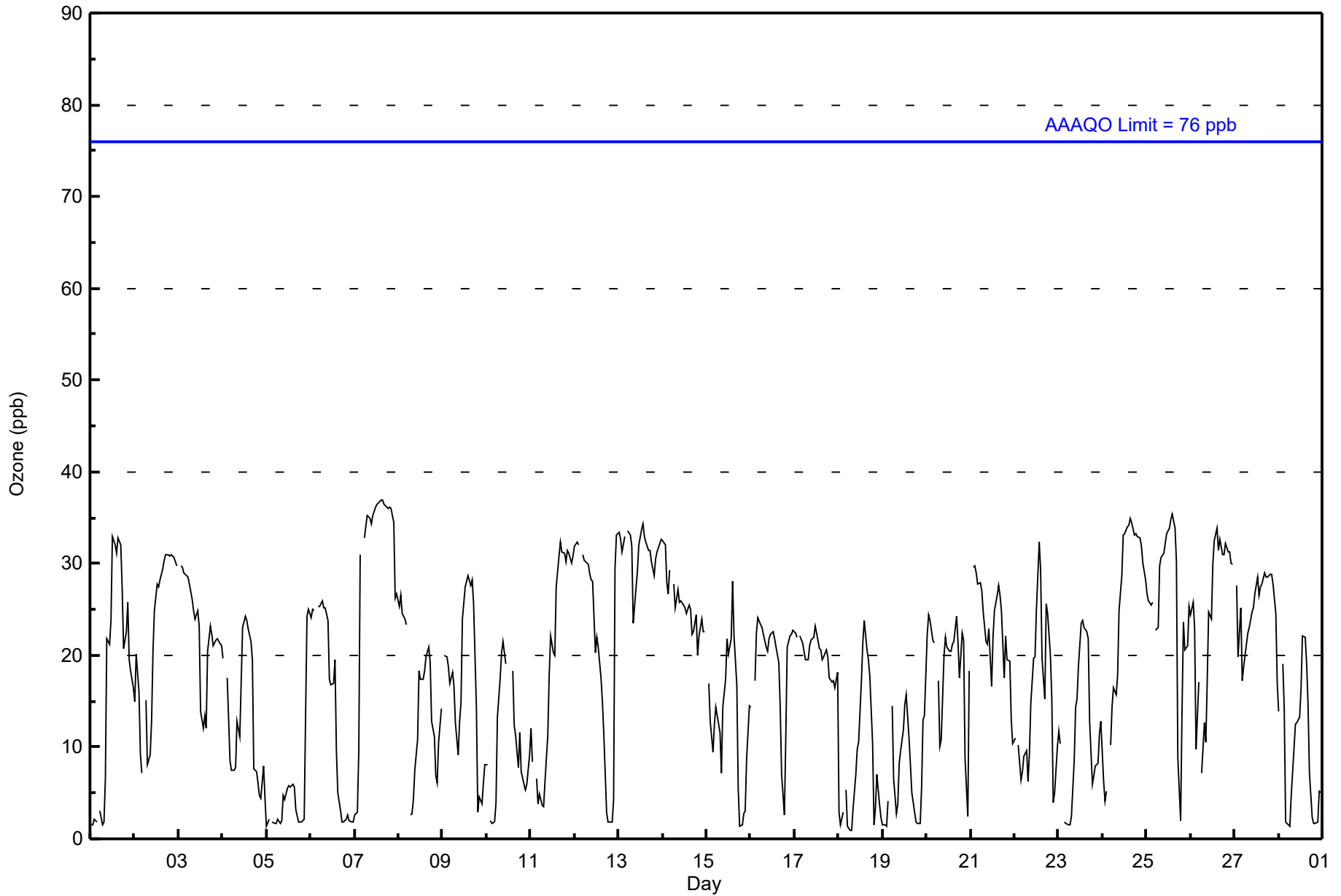
Z - zerospan      C - Calibration  
 Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 76 ppb





Wood Buffalo Environmental Association  
Hourly Averages

Ozone (O<sub>3</sub>) - ppb  
Buffalo Viewpoint - February 2023





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Ozone (O<sub>3</sub>) - ppb**  
**Buffalo Viewpoint - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 20                            | 331                    | 51.64    | 51.64               |
| 21 - 50                           | 310                    | 48.36    | 100.00              |
| 51 - 82                           | 0                      | 0.00     | 100.00              |
| > 83                              | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 641

Total Number of Hours: 672



**Wood Buffalo Environmental Association**  
**Frequency Distribution**

**Ozone (O<sub>3</sub>) - ppb**  
**Buffalo Viewpoint - February 2023**

| <b>Concentration</b><br><b>Ranges (ppb)</b> | <b>Wind Direction</b> |     |    |     |   |     |    |     |    |     |    |     |    |     |    |     | <b>Totals</b> |
|---|-----------------------|-----|----|-----|---|-----|----|-----|----|-----|----|-----|----|-----|----|-----|---------------|
|   | N                     | NNE | NE | ENE | E | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |               |
| 0 - 20                                      | 75                    | 24  | 13 | 4   | 3 | 8   | 37 | 68  | 16 | 4   | 4  | 1   | 8  | 11  | 26 | 29  | 331           |
| 21 - 50                                     | 69                    | 38  | 8  | 2   | 6 | 4   | 18 | 37  | 17 | 5   | 3  | 23  | 28 | 20  | 10 | 6   | 294           |
| 51 - 82                                     | 0                     | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| > 83  | 0                     | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| <b>Totals</b>                               | 144                   | 62  | 21 | 6   | 9 | 12  | 55 | 105 | 33 | 9   | 7  | 24  | 36 | 31  | 36 | 35  | 625           |

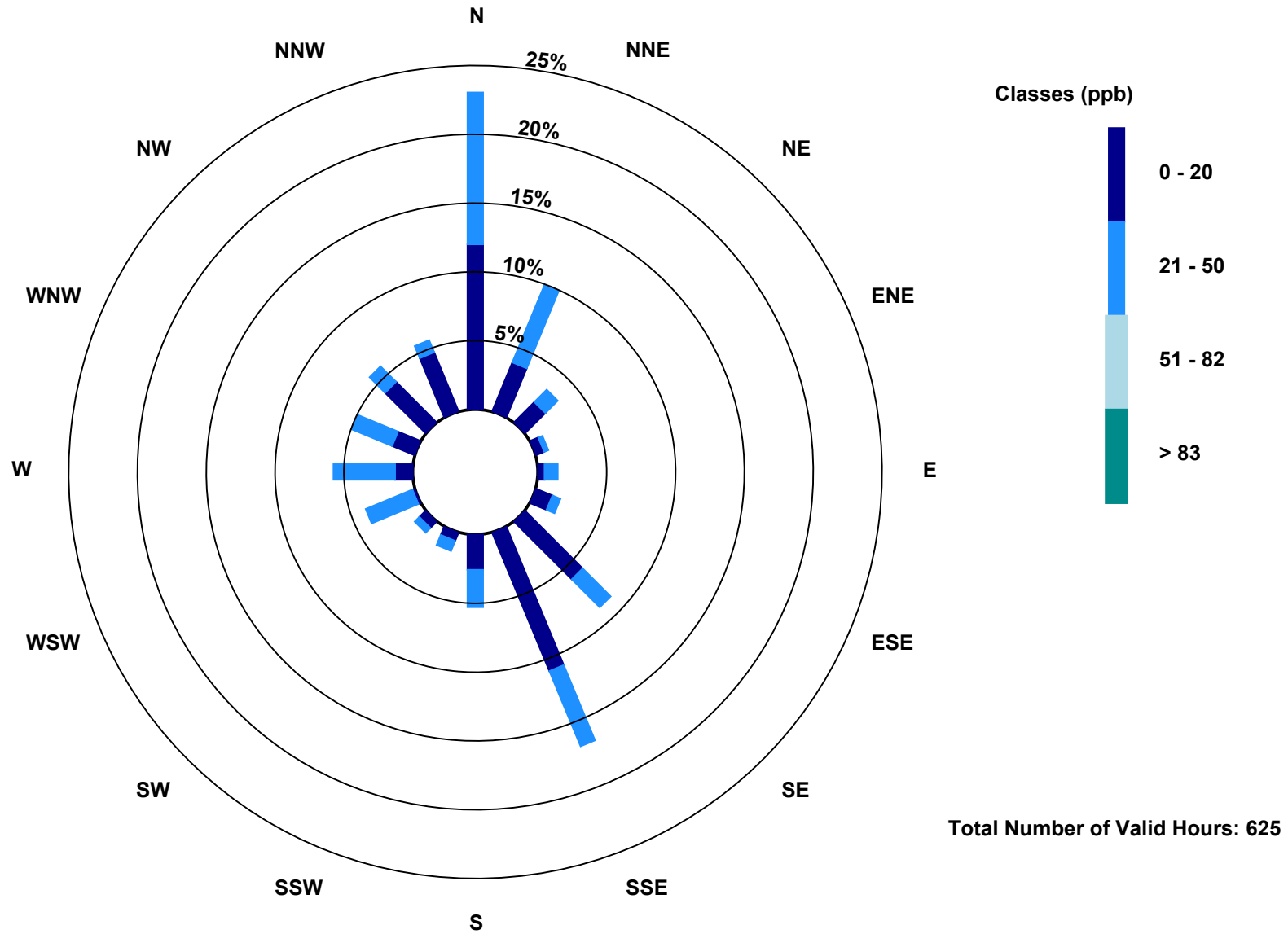
Total Number of Valid Hours: 625

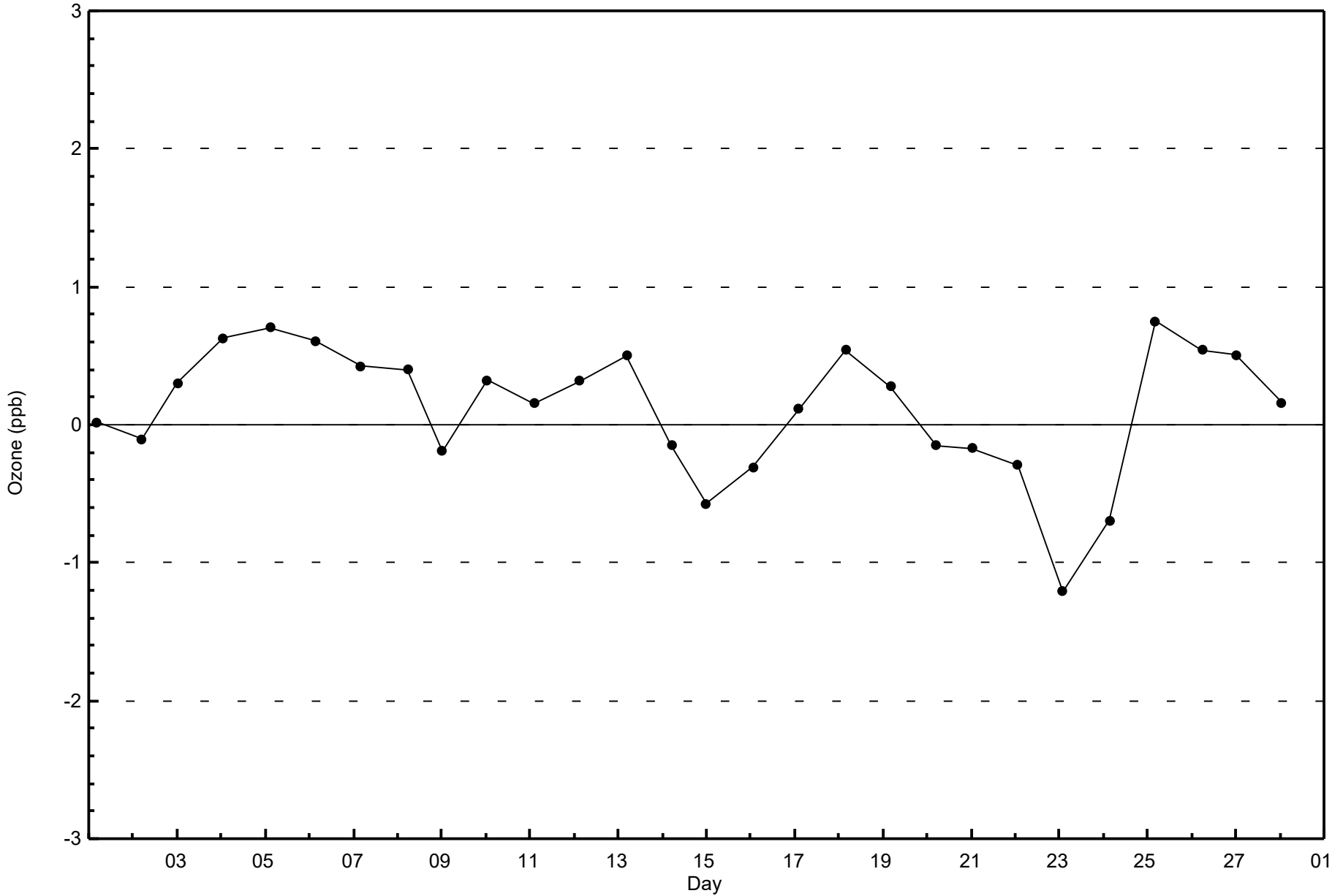
Total Number of Hours: 672

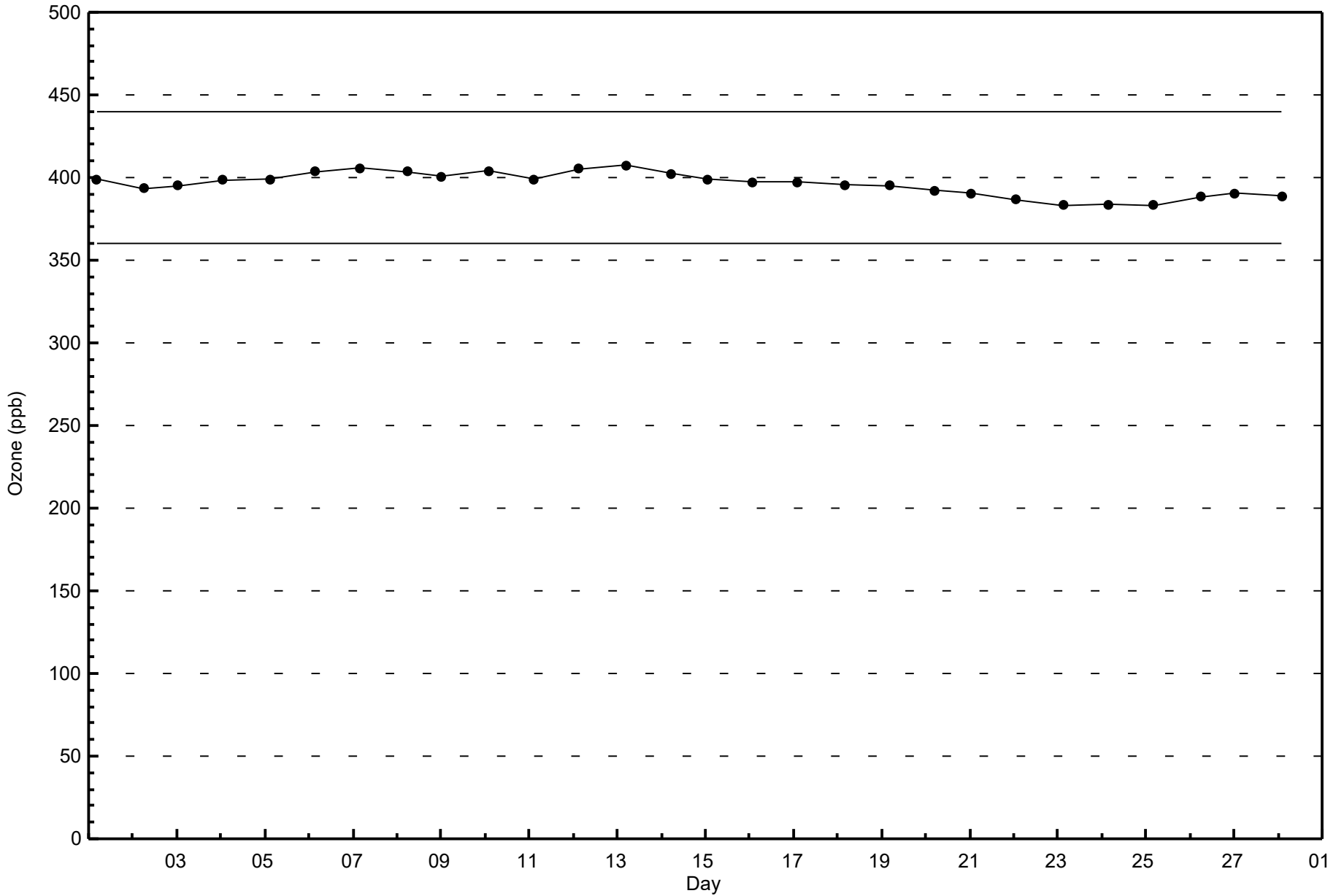


Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Ozone (O<sub>3</sub>) - ppb  
Buffalo Viewpoint









Wood Buffalo Environmental Association

Summary of Hour Averages

Particulate Matter 2.5 (PM<sub>2.5</sub>) - µg/m<sup>3</sup>

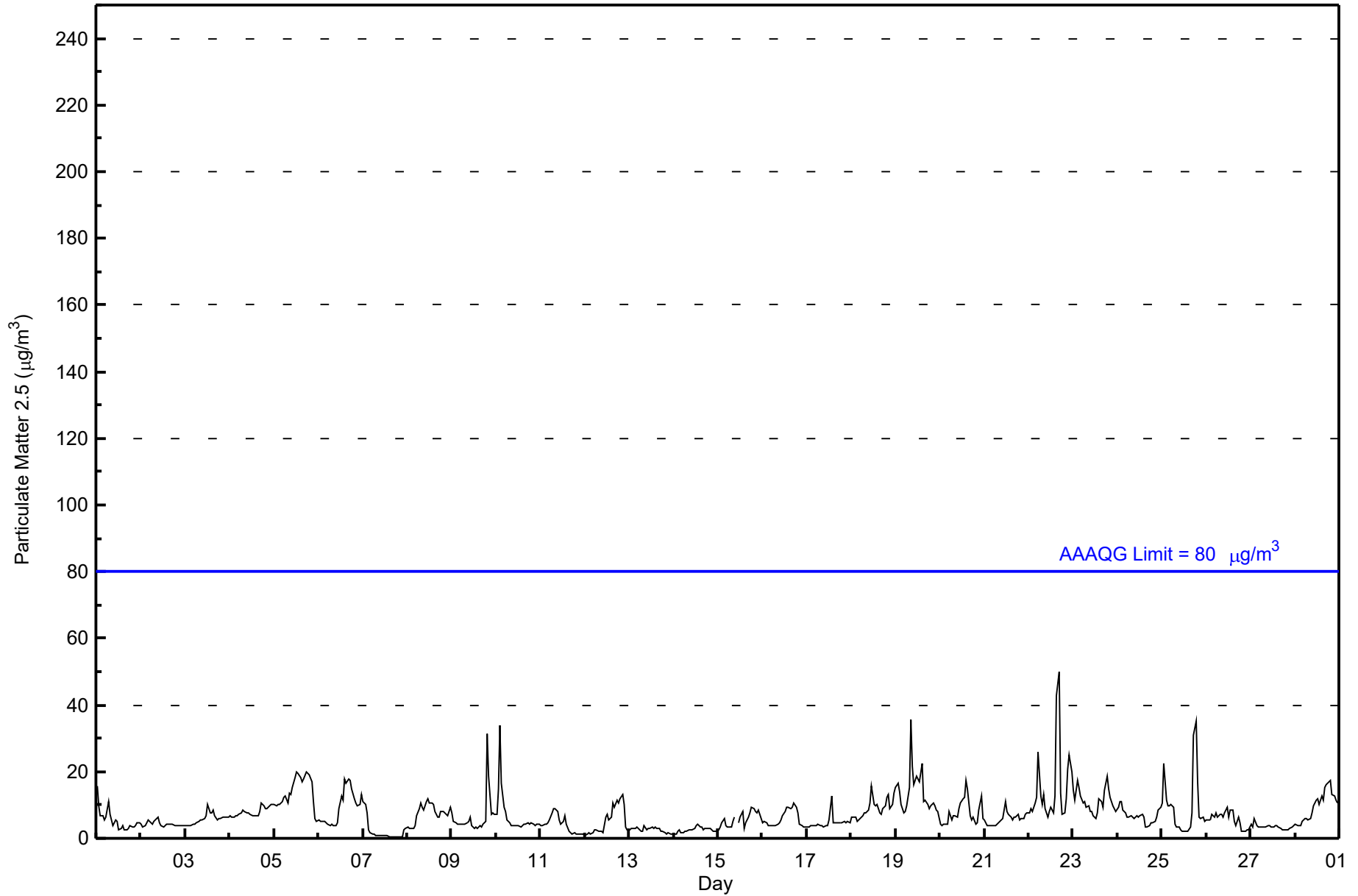
Buffalo Viewpoint - February 2023

| Number of Exceedences (AAAQO):   |                               | 1-hr: 0  | 24-hr: 0 | Hours in Service: 672 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                                 |      | 672  |      |      |      |               |               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
|--|-------------------------------|--|----------|-----------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|---------------------------------|------|------|------|------|------|---------------|---------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----------------|
| Maximum Value: 49.9 µg/m <sup>3</sup> on Feb 22 17:00  |                               | Maximum Daily Average: 15.0 µg/m <sup>3</sup> on Feb 22  |          |                       |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Hours of Data: 671              |      |      |      |      |      |               |               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| Minimum Value: 0.5 µg/m <sup>3</sup> on Feb 7 21:00  |                               | Minimum Daily Average: 2.1 µg/m <sup>3</sup> on Feb 7  |          |                       |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Hours of Missing Data: 1        |      |      |      |      |      |               |               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| Maximum Diurnal Average: 8.5 µg/m <sup>3</sup> at hour 19  |                               | Minimum Diurnal Average: 5.6 µg/m <sup>3</sup> at hour 5   |          |                       |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Hours of Calibration: 1         |      |      |      |      |      |               |               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| Monthly Average: 7.08 µg/m <sup>3</sup>  |                               | Percentiles: P <sub>1</sub> = 0.6 P <sub>10</sub> = 2.4 Q <sub>1</sub> = 3.7 Median = 5.8 Q <sub>3</sub> = 9.1 P <sub>90</sub> = 12.8 P <sub>99</sub> = 27.5 |          |                       |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Percent Operational Time: 100.0 |      |      |      |      |      |               |               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| Day  | Hourly Period Ending At (MST) |  |          |                       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                                 |      |      |      |      |      | Daily Average | Daily Maximum |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
|  | 1                             | 2  | 3        | 4                     | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19                              | 20   | 21   | 22   | 23   | 24   |               |               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 1-Feb  | 15.8                          | 9.9  | 7.0      | 6.8                   | 5.5  | 6.5  | 10.9 | 7.1  | 5.6  | 3.9  | 5.4  | 5.3  | 2.5  | 3.1  | 3.9  | 2.7  | 2.6  | 3.0  | 3.8                             | 3.6  | 3.2  | 3.7  | 4.5  | 4.5  | 5.5           | 15.8          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 2-Feb  | 4.1                           | 3.4  | 3.9      | 4.9                   | 5.5  | 4.7  | 4.3  | 5.0  | 5.8  | 6.5  | 4.7  | 3.9  | 3.4  | 3.8  | 4.0  | 4.4  | 4.2  | 4.1  | 4.0                             | 3.9  | 3.7  | 3.7  | 3.8  | 3.8  | 4.3           | 6.5           |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 3-Feb  | 3.9                           | 3.8  | 3.8      | 3.9                   | 4.1  | 4.3  | 4.5  | 5.0  | 5.4  | 5.7  | 5.9  | 6.6  | 10.0 | 7.7  | 7.8  | 8.5  | 6.8  | 5.6  | 5.7                             | 6.1  | 6.3  | 6.3  | 6.2  | 6.4  | 5.8           | 10.0          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 4-Feb  | 6.7                           | 6.4  | 6.4      | 6.8                   | 7.0  | 7.2  | 7.8  | 8.4  | 8.1  | 7.8  | 7.5  | 7.1  | 6.9  | 6.7  | 6.7  | 6.8  | 8.2  | 10.6 | 9.5                             | 8.9  | 9.4  | 10.1 | 10.0 | 7.9  | 10.6          |               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 5-Feb  | 10.0                          | 9.9  | 10.1     | 10.4                  | 11.1 | 12.4 | 12.7 | 10.5 | 13.5 | 13.0 | 15.2 | 18.3 | 19.7 | 19.6 | 18.4 | 17.1 | 17.8 | 20.0 | 19.5                            | 19.1 | 17.0 | 10.8 | 6.1  | 5.3  | 14.1          | 20.0          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 6-Feb  | 5.4                           | 5.1  | 5.0      | 4.9                   | 4.5  | 4.3  | 4.0  | 4.2  | 3.9  | 3.7  | 4.9  | 8.7  | 12.9 | 11.6 | 17.7 | 16.5 | 17.6 | 17.5 | 14.7                            | 11.7 | 10.5 | 9.7  | 10.2 | 13.0 | 9.3           | 17.7          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 7-Feb  | 11.1                          | 10.0   | 7.5      | 2.4                   | 1.7  | 1.4  | 1.1  | 0.7  | 0.8  | 0.9  | 1.1  | 0.8  | 0.8  | 0.6  | 0.6  | 0.5  | 0.5  | 0.6  | 0.6                             | 0.5  | 0.5  | 0.6  | 2.5  | 3.1  | 2.1           | 11.1          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 8-Feb  | 3.2                           | 2.9  | 3.0      | 3.1                   | 3.8  | 6.9  | 8.7  | 10.5 | 9.5  | 8.3  | 11.2 | 11.9 | 10.5 | 10.4 | 10.2 | 8.0  | 6.3  | 6.2  | 8.2                             | 8.0  | 7.7  | 7.2  | 7.0  | 9.4  | 7.6           | 11.9          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 9-Feb  | 7.6                           | 4.9  | 4.7      | 4.2                   | 4.2  | 4.1  | 4.3  | 4.4  | 4.6  | 5.0  | 6.2  | 3.7  | 2.9  | 3.3  | 3.1  | 3.7  | 3.5  | 4.3  | 5.1                             | 31.2 | 18.5 | 7.1  | 7.5  | 7.4  | 6.5           | 31.2          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 10-Feb   | 7.1                           | 14.8   | 34.0     | 16.7                  | 9.4  | 7.9  | 5.5  | 4.5  | 3.8  | 3.7  | 3.9  | 3.8  | 3.6  | 3.6  | 3.8  | 4.4  | 4.2  | 4.5  | 4.4                             | 4.5  | 4.4  | 4.0  | 4.1  | 4.1  | 6.9           | 34.0          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 11-Feb   | 4.0                           | 4.0  | 4.4      | 4.3                   | 4.7  | 5.3  | 7.8  | 8.7  | 9.0  | 8.2  | 5.5  | 4.1  | 5.1  | 6.9  | 4.2  | 2.1  | 1.9  | 1.5  | 1.6                             | 1.4  | 1.1  | 1.1  | 1.4  | 1.2  | 4.1           | 9.0           |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 12-Feb   | 1.0                           | 1.3  | 1.5      | 1.5                   | 1.8  | 2.4  | 2.4  | 2.3  | 2.1  | 1.9  | 1.8  | 6.2  | 7.3  | 5.6  | 6.4  | 10.6 | 9.5  | 11.2 | 10.8                            | 12.1 | 13.1 | 10.1 | 3.3  | 2.5  | 5.4           | 13.1          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 13-Feb   | 2.6                           | 3.0  | 3.0      | 3.0                   | 3.2  | 3.0  | 2.2  | 2.0  | 3.7  | 2.7  | 2.9  | 3.1  | 3.4  | 3.0  | 3.3  | 3.0  | 3.0  | 2.3  | 2.0                             | 1.8  | 1.4  | 1.5  | 1.4  | 1.3  | 2.6           | 3.7           |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 14-Feb   | 1.4                           | 1.4  | 2.1      | 2.5                   | 1.8  | 1.6  | 2.1  | 2.2  | 2.4  | 2.6  | 2.7  | 2.9  | 3.7  | 4.3  | 3.6  | 3.3  | 3.0  | 2.6  | 2.8                             | 3.0  | 2.9  | 3.2  | 2.0  | 2.3  | 2.3           | 2.6           | 4.3  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 15-Feb   | 2.4                           | 3.2  | 4.8      | 6.0                   | 3.6  | 3.3  | 3.3  | 3.5  | 4.9  | 6.4  | C    | 4.6  | 6.5  | 8.2  | 3.0  | 4.6  | 6.3  | 7.5  | 9.1                             | 8.9  | 8.0  | 7.8  | 8.6  | 6.1  | 5.7           | 9.1           |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 16-Feb   | 4.7                           | 4.9  | 4.6      | 3.9                   | 3.7  | 3.7  | 3.7  | 4.0  | 4.3  | 4.7  | 5.5  | 6.7  | 8.2  | 9.2  | 9.1  | 9.0  | 9.4  | 10.7 | 9.4                             | 7.5  | 4.2  | 3.6  | 3.4  | 3.5  | 5.9           | 10.7          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 17-Feb   | 3.4                           | 3.5  | 3.7      | 3.7                   | 3.7  | 3.7  | 4.0  | 3.9  | 3.7  | 3.6  | 3.8  | 3.6  | 5.5  | 12.7 | 4.8  | 4.7  | 4.6  | 4.8  | 4.5                             | 4.8  | 5.2  | 4.9  | 5.0  | 4.6  | 4.6           | 12.7          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 18-Feb   | 6.5                           | 6.4  | 6.2      | 5.2                   | 5.6  | 6.1  | 6.6  | 7.6  | 7.8  | 8.7  | 10.6 | 15.8 | 10.1 | 9.7  | 10.0 | 7.5  | 7.1  | 9.0  | 9.7                             | 12.2 | 13.2 | 9.0  | 10.0 | 13.7 | 8.9           | 15.8          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 19-Feb   | 15.3                          | 16.4   | 14.0     | 10.1                  | 7.6  | 8.0  | 9.6  | 15.1 | 35.6 | 21.5 | 16.3 | 18.6 | 17.7 | 16.9 | 22.4 | 11.0 | 11.4 | 10.1 | 8.8                             | 9.6  | 10.5 | 9.8  | 8.6  | 8.1  | 13.9          | 35.6          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 20-Feb   | 4.3                           | 3.8  | 4.1      | 4.3                   | 4.4  | 7.9  | 5.5  | 6.8  | 6.9  | 6.6  | 8.8  | 10.7 | 11.8 | 12.4 | 17.3 | 14.9 | 6.7  | 5.5  | 6.2                             | 4.4  | 4.5  | 8.4  | 12.9 | 6.1  | 7.7           | 17.3          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 21-Feb   | 5.7                           | 3.7  | 3.7      | 3.7                   | 3.8  | 3.8  | 3.9  | 4.3  | 4.9  | 5.5  | 6.0  | 11.2 | 8.2  | 7.0  | 6.5  | 5.4  | 6.3  | 6.4  | 7.1                             | 5.6  | 5.8  | 6.1  | 7.3  | 7.6  | 5.8           | 11.2          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 22-Feb   | 7.7                           | 8.9  | 7.9      | 10.5                  | 12.2 | 26.0 | 12.6 | 10.2 | 13.1 | 8.9  | 6.3  | 7.9  | 9.4  | 7.5  | 12.7 | 42.8 | 49.9 | 13.6 | 7.1                             | 7.6  | 11.8 | 20.9 | 24.8 | 20.1 | 15.0          | 49.9          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 23-Feb   | 14.4                          | 11.4   | 17.5     | 15.0                  | 12.7 | 10.7 | 10.9 | 9.4  | 9.5  | 8.1  | 8.0  | 6.6  | 5.8  | 7.4  | 11.9 | 11.1 | 9.3  | 14.6 | 18.5                            | 15.0 | 12.2 | 9.9  | 9.0  | 8.2  | 11.1          | 18.5          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 24-Feb   | 9.3                           | 11.0   | 10.9     | 8.4                   | 7.5  | 6.3  | 6.2  | 6.9  | 6.5  | 5.9  | 6.8  | 6.2  | 6.8  | 7.2  | 6.5  | 3.6  | 3.3  | 3.7  | 4.5                             | 4.5  | 5.0  | 6.4  | 8.3  | 9.4  | 6.7           | 11.0          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 25-Feb   | 10.6                          | 22.5   | 11.4     | 9.9                   | 9.6  | 10.1 | 9.2  | 4.1  | 3.5  | 3.3  | 2.7  | 2.3  | 2.1  | 2.0  | 2.1  | 3.2  | 7.4  | 31.0 | 35.3                            | 16.8 | 6.6  | 6.0  | 6.6  | 4.9  | 9.3           | 35.3          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 26-Feb   | 5.7                           | 5.4  | 5.5      | 7.2                   | 6.5  | 7.6  | 6.5  | 7.4  | 7.1  | 6.4  | 7.7  | 9.3  | 6.2  | 8.4  | 8.6  | 5.1  | 3.7  | 6.2  | 4.5                             | 2.1  | 2.2  | 2.2  | 2.4  | 2.7  | 5.7           | 9.3           |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 27-Feb   | 4.4                           | 3.5  | 5.8      | 4.0                   | 3.6  | 3.5  | 3.4  | 3.4  | 3.6  | 3.7  | 3.7  | 3.5  | 3.5  | 3.7  | 3.6  | 3.5  | 3.0  | 2.7  | 2.4                             | 2.4  | 2.4  | 2.8  | 3.3  | 3.8  | 3.5           | 5.8           |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 28-Feb   | 4.1                           | 3.9  | 3.6      | 3.9                   | 5.0  | 5.9  | 5.8  | 5.4  | 5.8  | 7.8  | 9.6  | 11.4 | 11.9 | 10.3 | 12.8 | 11.2 | 15.2 | 16.1 | 16.9                            | 17.3 | 13.2 | 12.6 | 11.5 | 10.4 | 9.7           | 17.3          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
|  |                               |  |          |                       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                                 |      |      |      |      | 6.5  | 6.8           | 7.1           | 6.1  | 5.6  | 6.4  | 6.0  | 6.0  | 7.0  | 6.2  | 6.5  | 7.3  | 7.4  | 7.6  | 8.0  | 8.2  | 8.3  | 8.4  | 8.5  | 8.4  | 7.3  | 6.7  | 6.9  | 6.6  | Diurnal Average |
|  |                               |  |          |                       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                                 |      |      |      |      | 15.8 | 22.5          | 34.0          | 16.7 | 12.7 | 26.0 | 12.7 | 15.1 | 35.6 | 21.5 | 16.3 | 18.6 | 19.7 | 19.6 | 22.4 | 42.8 | 49.9 | 31.0 | 35.3 | 31.2 | 18.5 | 20.9 | 24.8 | 20.1 | Diurnal Maximum |
| C - Calibration  |                               |  |          |                       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                                 |      |      |      |      |      |               |               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| Alberta Ambient Air Quality Guideline/Objectives: 1-hr 80 µg/m <sup>3</sup> 24-hr 29 µg/m <sup>3</sup> |                               |  |          |                       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                                 |      |      |      |      |      |               |               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Particulate Matter 2.5 (PM<sub>2.5</sub>) -  $\mu\text{g}/\text{m}^3$**   
**Buffalo Viewpoint - February 2023**







**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Particulate Matter 2.5 (PM<sub>2.5</sub>) -  $\mu\text{g}/\text{m}^3$**   
**Buffalo Viewpoint - February 2023**

| <b>Concentration Ranges (<math>\mu\text{g}/\text{m}^3</math>)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---|------------------------|----------|---------------------|
| 0 - 5   | 318                    | 47.39    | 47.39               |
| 6 - 15  | 309                    | 46.05    | 93.44               |
| 16 - 25   | 36                     | 5.37     | 98.81               |
| 26 - 80   | 8                      | 1.19     | 100.00              |
| > 81.0  | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 671

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Particulate Matter 2.5 (PM<sub>2.5</sub>) -  $\mu\text{g}/\text{m}^3$   
Buffalo Viewpoint - February 2023**

| Concentration<br>Ranges ( $\mu\text{g}/\text{m}^3$ ) | Wind Direction |     |    |     |   |     |    |     |    |     |    |     |    |     |    |     | Totals |
|--|----------------|-----|----|-----|---|-----|----|-----|----|-----|----|-----|----|-----|----|-----|--------|
|  | N              | NNE | NE | ENE | E | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |        |
| 0 - 5  | 82             | 27  | 12 | 1   | 3 | 2   | 25 | 49  | 11 | 3   | 2  | 24  | 29 | 14  | 8  | 9   | 301    |
| 6 - 15   | 64             | 36  | 7  | 4   | 6 | 7   | 31 | 54  | 20 | 6   | 4  | 2   | 6  | 13  | 25 | 24  | 309    |
| 16 - 25  | 5              | 2   | 0  | 1   | 0 | 3   | 3  | 5   | 2  | 1   | 2  | 0   | 1  | 4   | 4  | 3   | 36     |
| 26 - 80  | 0              | 1   | 2  | 0   | 0 | 0   | 0  | 3   | 0  | 0   | 0  | 0   | 2  | 0   | 0  | 0   | 8      |
| > 81.0   | 0              | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| <b>Totals</b>  | 151            | 66  | 21 | 6   | 9 | 12  | 59 | 111 | 33 | 10  | 8  | 26  | 38 | 31  | 37 | 36  | 654    |

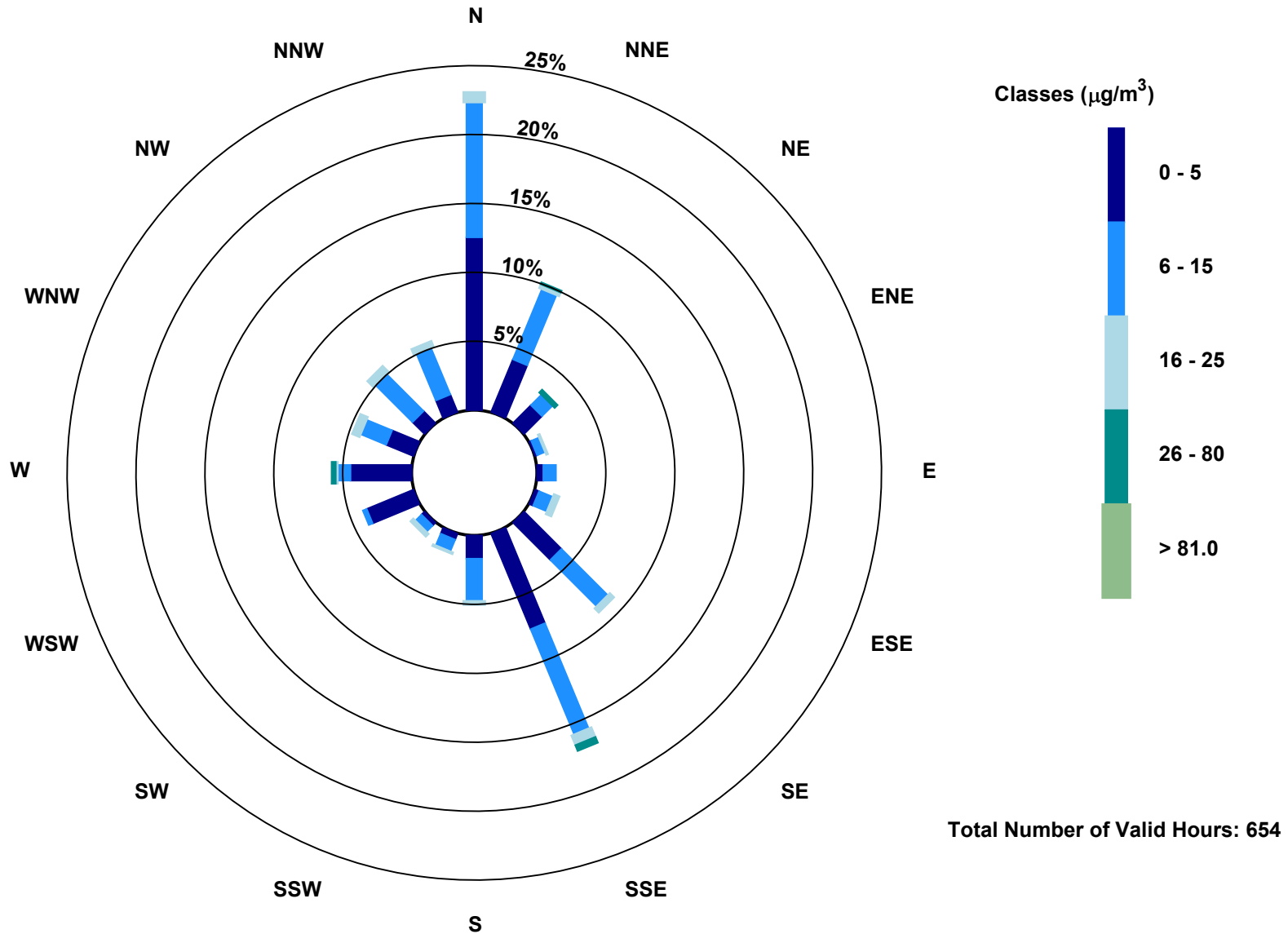
Total Number of Valid Hours: 654

Total Number of Hours: 672



Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Particulate Matter 2.5 (PM<sub>2.5</sub>) -  $\mu\text{g}/\text{m}^3$   
Buffalo Viewpoint

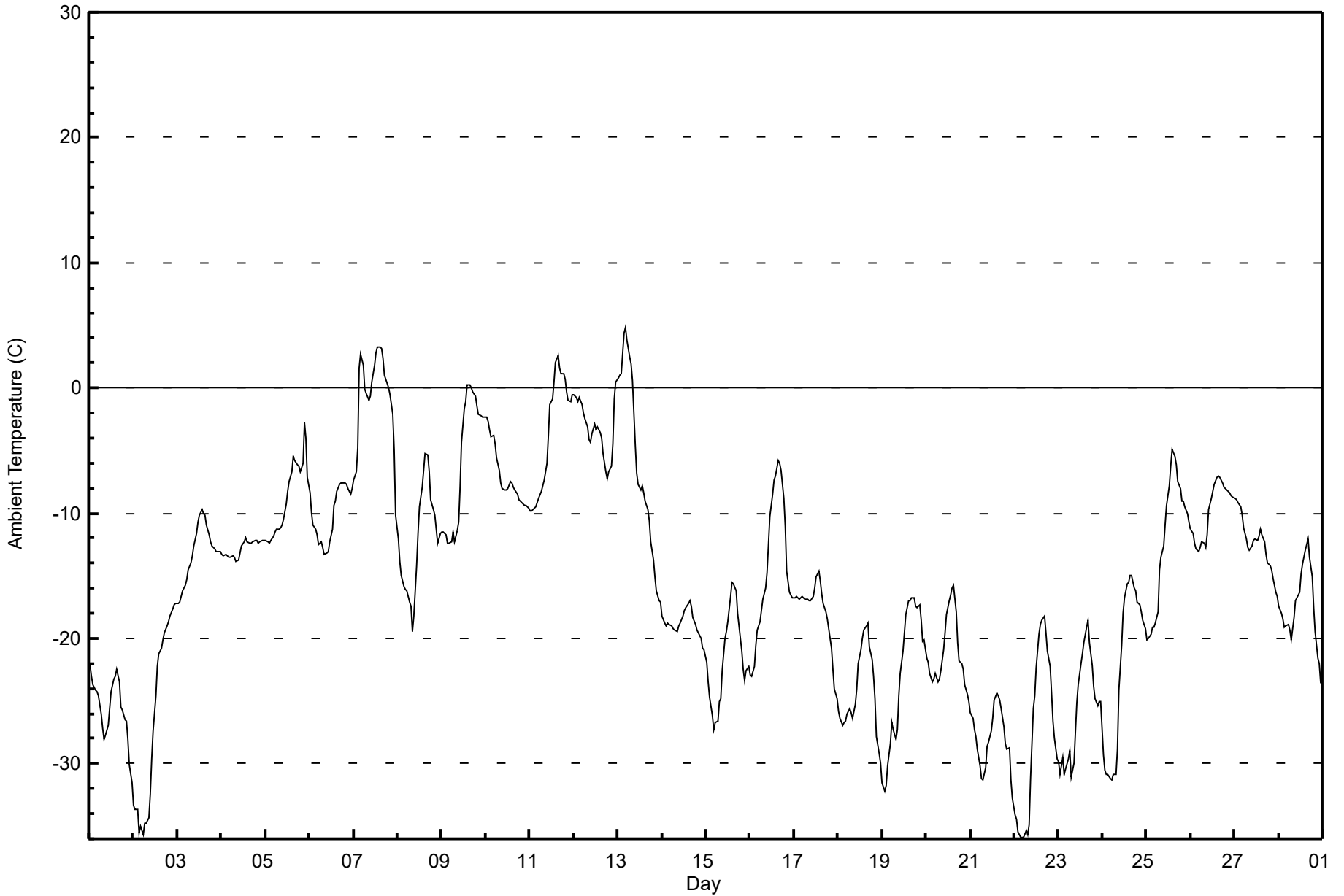




**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

**Ambient Temperature (AT) - C**  
**Buffalo Viewpoint - February 2023**

| Maximum Value: 4.8 C on Feb 13 05:00      Maximum Daily Average: -0.6 C on Feb 7   |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Hours in Service: 672<br>Hours of Data: 672  |       |                 |               |               |
|--|-------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--|-------|-----------------|---------------|---------------|
| Minimum Value: -35.9 C on Feb 22 04:00      Minimum Daily Average: -28.0 C on Feb 21<br>Maximum Diurnal Average: -11.4 C at hour 16      Minimum Diurnal Average: -18.0 C at hour 8<br>Monthly Average: -15.41 C      Percentiles: P <sub>1</sub> = -35.4 P <sub>10</sub> = -27.7 Q <sub>1</sub> = -22.0 Median = -15.5 Q <sub>3</sub> = -8.9 P <sub>90</sub> = -3.2 P <sub>99</sub> = 2.7 |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Hours of Missing Data: 0<br>Hours of Calibration: 0<br>Percent Operational Time: 100.0 |       |                 |               |               |
| Day  | Hourly Period Ending At (MST) |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |  |       |                 | Daily Average | Daily Maximum |
|  | 1                             | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     | 10    | 11    | 12    | 13    | 14    | 15    | 16    | 17    | 18    | 19    | 20    | 21    | 22   | 23    | 24              |               |               |
| 1-Feb  | -22.2                         | -23.0 | -23.7 | -24.1 | -24.2 | -24.6 | -26.1 | -27.1 | -28.0 | -27.7 | -26.9 | -25.6 | -24.2 | -23.3 | -23.0 | -22.4 | -23.5 | -25.5 | -25.8 | -26.5 | -26.6 | -28.0  | -30.1 | -31.6           | -25.6         | -22.2         |
| 2-Feb  | -33.4                         | -33.7 | -33.6 | -35.5 | -35.0 | -35.7 | -34.8 | -34.8 | -34.3 | -32.4 | -29.7 | -27.4 | -24.6 | -22.3 | -21.2 | -20.7 | -20.1 | -19.5 | -19.0 | -18.7 | -18.2 | -17.7  | -17.3 | -17.2           | -26.5         | -17.2         |
| 3-Feb  | -17.2                         | -17.1 | -16.7 | -16.2 | -15.7 | -15.3 | -14.6 | -13.9 | -13.4 | -12.6 | -11.6 | -10.7 | -10.1 | -9.7  | -10.1 | -10.1 | -11.0 | -11.8 | -12.3 | -12.6 | -12.9 | -13.0  | -13.1 | -13.1           | -13.1         | -9.7          |
| 4-Feb  | -13.3                         | -13.4 | -13.3 | -13.4 | -13.5 | -13.5 | -13.4 | -13.6 | -13.8 | -13.7 | -13.2 | -12.6 | -12.3 | -11.9 | -12.2 | -12.4 | -12.4 | -12.3 | -12.2 | -12.2 | -12.4 | -12.2  | -12.2 | -12.2           | -12.8         | -11.9         |
| 5-Feb  | -12.2                         | -12.3 | -12.3 | -12.1 | -11.8 | -11.5 | -11.3 | -11.3 | -11.1 | -10.9 | -10.5 | -9.2  | -8.2  | -7.5  | -6.6  | -5.5  | -5.8  | -6.2  | -6.3  | -6.7  | -6.1  | -2.8   | -4.0  | -7.1            | -8.7          | -2.8          |
| 6-Feb  | -8.4                          | -9.9  | -11.0 | -11.3 | -11.7 | -12.5 | -12.2 | -12.7 | -13.3 | -13.2 | -13.0 | -12.3 | -11.3 | -9.4  | -9.0  | -8.2  | -7.7  | -7.6  | -7.6  | -7.5  | -7.7  | -8.1   | -8.4  | -8.0            | -10.1         | -7.5          |
| 7-Feb  | -7.3                          | -6.7  | -4.8  | 1.6   | 2.7   | 1.8   | -0.1  | -0.5  | -0.9  | -0.6  | 0.5   | 1.8   | 2.8   | 3.2   | 3.3   | 3.1   | 2.3   | 1.1   | 0.3   | 0.0   | -0.5  | -2.1   | -5.0  | -10.2           | -0.6          | 3.3           |
| 8-Feb  | -12.0                         | -13.9 | -15.0 | -15.8 | -16.1 | -16.2 | -17.1 | -17.5 | -19.4 | -18.2 | -14.2 | -11.6 | -9.5  | -7.9  | -6.5  | -5.3  | -5.3  | -6.7  | -8.9  | -9.7  | -10.2 | -11.3  | -12.4 | -11.6           | -12.2         | -5.3          |
| 9-Feb  | -11.5                         | -11.5 | -11.7 | -12.4 | -12.4 | -12.3 | -11.5 | -12.3 | -11.3 | -10.8 | -8.0  | -4.4  | -1.6  | -1.1  | 0.2   | 0.3   | 0.1   | -0.3  | -0.7  | -1.4  | -2.2  | -2.3   | -2.3  | -2.3            | -6.0          | 0.3           |
| 10-Feb   | -2.3                          | -2.6  | -3.3  | -3.9  | -3.7  | -4.5  | -5.6  | -6.6  | -7.6  | -8.1  | -8.2  | -8.2  | -8.0  | -7.5  | -7.6  | -7.9  | -8.1  | -8.4  | -8.9  | -9.0  | -9.3  | -9.4   | -9.4  | -9.6            | -7.0          | -2.3          |
| 11-Feb   | -9.8                          | -9.8  | -9.6  | -9.5  | -9.2  | -8.8  | -8.3  | -7.9  | -7.3  | -6.0  | -3.8  | -1.4  | -0.8  | 0.5   | 2.0   | 2.6   | 1.6   | 1.2   | 1.2   | 0.7   | -0.3  | -1.0   | -1.1  | -0.5            | -3.6          | 2.6           |
| 12-Feb   | -0.6                          | -0.7  | -1.1  | -0.7  | -1.3  | -2.0  | -2.4  | -3.1  | -4.2  | -4.3  | -3.7  | -2.8  | -3.4  | -3.2  | -3.6  | -4.0  | -5.2  | -6.7  | -7.3  | -6.6  | -6.2  | -4.5   | -0.8  | 0.5             | -3.2          | 0.5           |
| 13-Feb   | 0.8                           | 1.1   | 1.1   | 4.3   | 4.8   | 3.8   | 2.5   | 1.9   | 0.6   | -4.5  | -6.8  | -7.7  | -8.2  | -7.9  | -8.4  | -9.0  | -9.7  | -10.6 | -12.3 | -13.7 | -15.1 | -16.2  | -17.0 | -17.1           | -6.0          | 4.8           |
| 14-Feb   | -18.2                         | -18.7 | -19.0 | -18.8 | -18.9 | -19.0 | -19.3 | -19.3 | -19.4 | -19.0 | -18.7 | -18.2 | -17.8 | -17.6 | -17.2 | -17.0 | -17.4 | -18.3 | -18.9 | -19.4 | -19.6 | -20.1  | -20.8 | -21.0           | -18.8         | -17.0         |
| 15-Feb   | -21.9                         | -23.5 | -24.7 | -26.2 | -27.3 | -26.8 | -26.6 | -25.1 | -24.8 | -22.5 | -20.0 | -19.4 | -18.7 | -16.7 | -15.5 | -15.7 | -16.2 | -18.0 | -18.9 | -21.0 | -22.5 | -23.3  | -22.5 | -22.3           | -21.7         | -15.5         |
| 16-Feb   | -22.9                         | -23.0 | -22.2 | -20.5 | -19.4 | -18.7 | -17.8 | -16.9 | -16.0 | -14.7 | -12.5 | -10.3 | -8.4  | -7.4  | -7.0  | -5.8  | -6.0  | -6.6  | -8.8  | -11.1 | -14.7 | -16.3  | -16.6 | -16.7           | -14.2         | -5.8          |
| 17-Feb   | -16.7                         | -16.6 | -16.8 | -16.9 | -16.7 | -16.8 | -16.9 | -16.9 | -17.0 | -17.0 | -16.7 | -16.0 | -15.1 | -14.7 | -15.4 | -16.4 | -17.3 | -17.9 | -18.5 | -19.2 | -20.8 | -22.4  | -24.1 | -24.9           | -17.8         | -14.7         |
| 18-Feb   | -25.8                         | -26.4 | -27.0 | -26.8 | -26.6 | -26.1 | -25.6 | -25.9 | -26.4 | -25.2 | -24.0 | -22.0 | -20.9 | -20.0 | -19.3 | -19.0 | -18.8 | -20.7 | -21.7 | -23.0 | -24.8 | -27.8  | -29.1 | -30.0           | -24.3         | -18.8         |
| 19-Feb   | -31.5                         | -32.2 | -31.7 | -30.2 | -28.4 | -26.8 | -27.3 | -28.1 | -27.3 | -24.6 | -22.8 | -21.0 | -19.5 | -18.1 | -17.0 | -16.9 | -16.7 | -16.8 | -17.5 | -17.5 | -17.4 | -18.6  | -20.2 | -20.2           | -22.8         | -16.7         |
| 20-Feb   | -21.5                         | -21.9 | -22.8 | -23.5 | -23.3 | -22.8 | -23.5 | -23.2 | -22.6 | -20.9 | -19.5 | -18.1 | -16.9 | -16.5 | -16.0 | -15.7 | -17.8 | -20.4 | -21.8 | -22.0 | -22.4 | -23.7  | -24.5 | -25.0           | -21.1         | -15.7         |
| 21-Feb   | -25.9                         | -26.4 | -27.3 | -27.8 | -28.9 | -30.2 | -31.2 | -31.3 | -30.3 | -28.6 | -28.3 | -27.4 | -26.4 | -25.0 | -24.3 | -24.6 | -24.9 | -25.6 | -27.0 | -28.4 | -28.9 | -28.7  | -31.3 | -32.7           | -28.0         | -24.3         |
| 22-Feb   | -34.1                         | -34.4 | -35.5 | -35.9 | -35.9 | -35.8 | -35.4 | -35.6 | -34.8 | -31.2 | -25.6 | -24.6 | -22.4 | -19.6 | -18.9 | -18.5 | -18.2 | -19.6 | -21.0 | -22.2 | -24.4 | -26.6  | -28.0 | -29.6           | -27.8         | -18.2         |
| 23-Feb   | -29.9                         | -30.8 | -29.5 | -30.9 | -30.4 | -29.6 | -29.0 | -31.1 | -29.9 | -27.4 | -25.1 | -23.7 | -22.0 | -21.2 | -20.3 | -19.1 | -18.6 | -20.4 | -22.2 | -23.9 | -24.8 | -25.4  | -25.1 | -25.0           | -25.6         | -18.6         |
| 24-Feb   | -29.3                         | -30.5 | -30.9 | -30.9 | -31.2 | -31.2 | -30.9 | -30.9 | -28.8 | -24.1 | -20.6 | -18.0 | -16.7 | -15.7 | -15.5 | -15.0 | -15.0 | -15.9 | -16.2 | -17.1 | -17.4 | -17.9  | -18.6 | -19.3           | -22.4         | -15.0         |
| 25-Feb   | -20.2                         | -20.0 | -19.7 | -19.2 | -19.2 | -18.7 | -17.8 | -14.6 | -13.5 | -12.1 | -11.0 | -9.3  | -7.8  | -6.3  | -4.9  | -5.5  | -6.1  | -7.5  | -8.1  | -9.0  | -9.0  | -9.5   | -10.1 | -10.7           | -12.1         | -4.9          |
| 26-Feb   | -11.3                         | -11.6 | -12.4 | -12.8 | -13.1 | -12.7 | -12.3 | -12.4 | -12.7 | -11.8 | -9.7  | -8.8  | -8.2  | -7.7  | -7.1  | -7.0  | -7.2  | -7.6  | -7.9  | -8.0  | -8.2  | -8.4   | -8.5  | -8.7            | -9.8          | -7.0          |
| 27-Feb   | -8.8                          | -8.9  | -9.1  | -9.4  | -10.2 | -11.1 | -12.0 | -12.7 | -12.9 | -12.6 | -12.2 | -12.1 | -12.1 | -11.8 | -11.2 | -11.7 | -12.2 | -13.3 | -13.9 | -14.2 | -14.6 | -15.2  | -16.3 | -16.6           | -12.3         | -8.8          |
| 28-Feb   | -17.4                         | -18.0 | -18.4 | -19.1 | -19.1 | -18.8 | -19.4 | -20.1 | -18.3 | -16.9 | -16.8 | -16.3 | -14.9 | -14.1 | -13.0 | -12.5 | -12.0 | -13.5 | -15.1 | -17.5 | -19.5 | -21.6  | -22.1 | -23.5           | -17.4         | -12.0         |
|  |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |  |       | Diurnal Average |               |               |
|  |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |  |       | Diurnal Maximum |               |               |
|  |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |  |       |                 |               |               |





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Ambient Temperature (AT) - C  
Buffalo Viewpoint - February 2023**

| <b>Concentration Ranges (C)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---------------------------------|------------------------|----------|---------------------|
| -50 - -20                       | 199                    | 29.61    | 29.61               |
| -20 - 0                         | 441                    | 65.63    | 95.24               |
| 0 - 10                          | 32                     | 4.76     | 100.00              |
| 10 - 20                         | 0                      | 0.00     | 100.00              |
| > 20                            | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 672

Total Number of Hours: 672



**Wood Buffalo Environmental Association**

**Summary of Hour Averages**

**Relative Humidity (RH) - %**

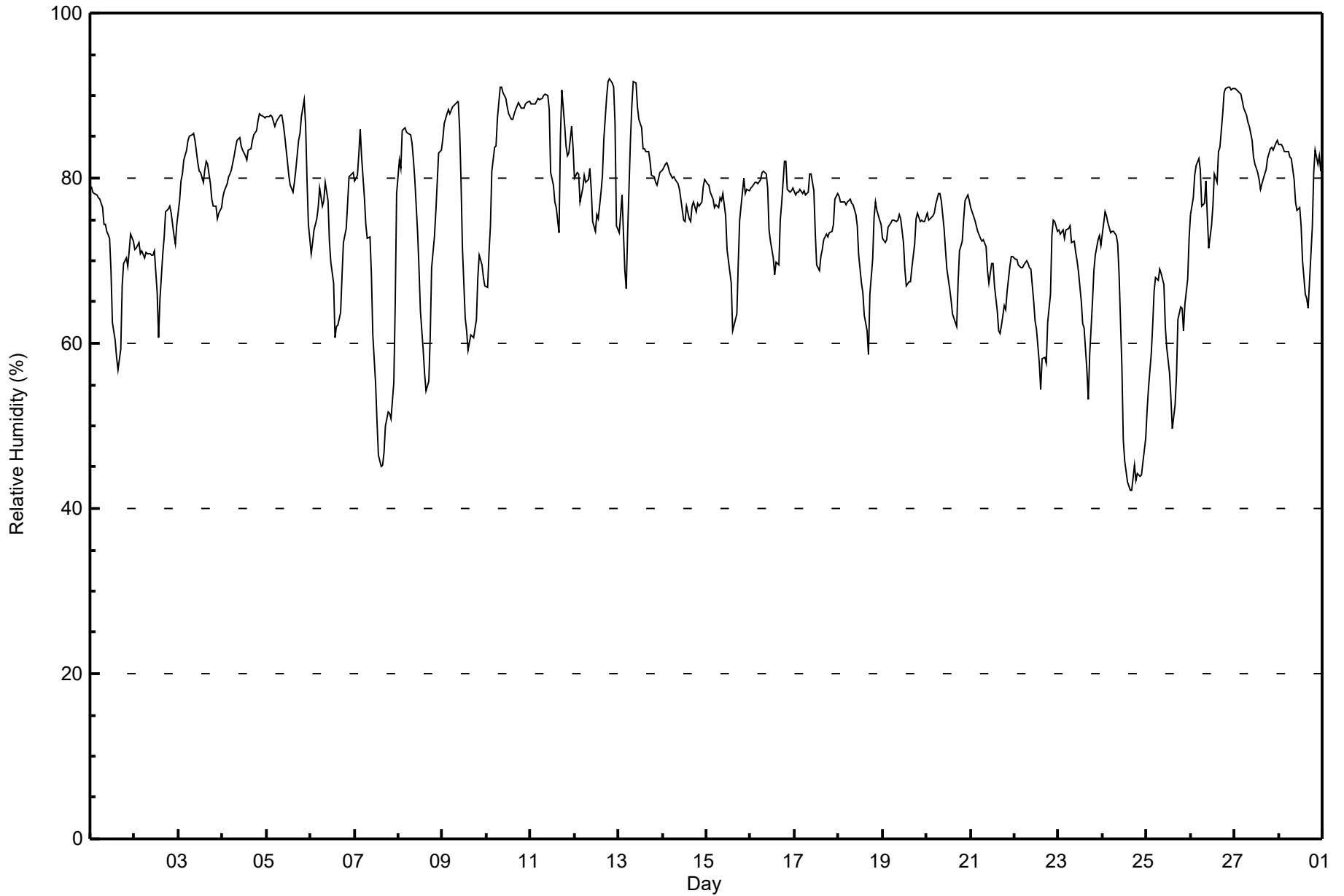
**Buffalo Viewpoint - February 2023**

| Maximum Value: 92.1 % on Feb 12 20:00      Maximum Daily Average: 85.8 % on Feb 10  |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Hours in Service: 672<br>Hours of Data: 672         |      |                 |               |               |
|---|-------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|---|------|-----------------|---------------|---------------|
| Minimum Value: 42.2 % on Feb 24 17:00      Minimum Daily Average: 57.1 % on Feb 24  |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Hours of Missing Data: 0<br>Hours of Calibration: 0 |      |                 |               |               |
| Maximum Diurnal Average: 79.5 % at hour 9      Minimum Diurnal Average: 67.3 % at hour 15   |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Percent Operational Time: 100.0                     |      |                 |               |               |
| Monthly Average: 75.09 %      Percentiles: P <sub>1</sub> = 44.2 P <sub>10</sub> = 62.0 Q <sub>1</sub> = 70.1 Median = 76.5 Q <sub>3</sub> = 81.7 P <sub>90</sub> = 87.4 P <sub>99</sub> = 91.0 |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |   |      |                 |               |               |
| Day   | Hourly Period Ending At (MST) |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |   |      |                 | Daily Average | Daily Maximum |
|   | 1                             | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20   | 21   | 22  | 23   | 24              |               |               |
| 1-Feb   | 78.9                          | 78.3 | 78.2 | 77.9 | 77.6 | 77.5 | 76.5 | 74.5 | 74.3 | 73.5 | 72.8 | 68.8 | 62.6 | 60.3 | 58.4 | 56.7 | 59.4 | 66.9 | 69.6 | 70.3 | 69.3 | 71.2  | 73.2 | 72.3            | 70.8          | 78.9          |
| 2-Feb   | 71.4                          | 71.6 | 72.1 | 70.9 | 71.3 | 70.4 | 71.1 | 70.9 | 70.9 | 70.6 | 70.7 | 71.1 | 66.1 | 60.6 | 65.5 | 70.9 | 72.9 | 75.9 | 76.3 | 76.6 | 75.7 | 73.0  | 72.0 | 74.4            | 71.4          | 76.6          |
| 3-Feb   | 77.4                          | 79.7 | 80.5 | 82.2 | 83.3 | 84.5 | 85.1 | 85.3 | 85.4 | 84.5 | 81.9 | 80.8 | 80.7 | 79.4 | 81.0 | 82.0 | 81.7 | 79.3 | 77.5 | 76.7 | 76.5 | 75.1  | 75.7 | 76.5            | 80.5          | 85.4          |
| 4-Feb   | 77.9                          | 78.5 | 79.4 | 80.2 | 80.5 | 81.0 | 82.7 | 83.8 | 84.5 | 85.0 | 83.9 | 83.4 | 82.7 | 82.3 | 83.4 | 83.6 | 84.7 | 85.3 | 85.7 | 86.9 | 87.8 | 87.6  | 87.5 | 87.3            | 83.6          | 87.8          |
| 5-Feb   | 87.4                          | 87.5 | 87.7 | 87.4 | 86.3 | 86.8 | 87.2 | 87.6 | 87.7 | 86.7 | 85.3 | 82.0 | 80.3 | 79.2 | 78.3 | 79.5 | 81.0 | 84.6 | 85.4 | 87.5 | 89.5 | 86.4  | 79.9 | 74.4            | 84.4          | 89.5          |
| 6-Feb   | 70.9                          | 72.2 | 73.7 | 75.1 | 76.5 | 78.8 | 76.5 | 77.3 | 79.4 | 77.3 | 72.5 | 69.8 | 67.3 | 60.7 | 62.1 | 62.1 | 63.8 | 68.2 | 72.2 | 73.9 | 77.0 | 80.1  | 80.5 | 80.7            | 72.9          | 80.7          |
| 7-Feb   | 79.6                          | 80.4 | 82.8 | 85.9 | 82.6 | 77.6 | 74.5 | 72.7 | 72.9 | 68.3 | 61.1 | 55.1 | 50.6 | 46.4 | 45.2 | 45.3 | 46.9 | 49.9 | 51.7 | 51.5 | 50.9 | 55.3  | 64.7 | 78.1            | 63.7          | 85.9          |
| 8-Feb   | 82.2                          | 81.1 | 85.8 | 86.0 | 85.6 | 85.4 | 85.2 | 84.3 | 82.2 | 79.9 | 73.4 | 68.9 | 63.8 | 59.2 | 56.3 | 54.2 | 55.5 | 60.8 | 69.1 | 72.9 | 76.0 | 79.4  | 83.1 | 83.4            | 74.7          | 86.0          |
| 9-Feb   | 84.8                          | 86.6 | 87.9 | 88.4 | 87.8 | 88.7 | 88.7 | 89.0 | 89.3 | 86.0 | 79.6 | 71.5 | 63.0 | 61.6 | 59.2 | 61.0 | 60.9 | 60.7 | 62.8 | 67.9 | 70.8 | 69.5  | 67.9 | 66.9            | 75.0          | 89.3          |
| 10-Feb  | 66.8                          | 71.1 | 74.3 | 80.9 | 83.7 | 83.9 | 87.4 | 91.0 | 90.9 | 90.3 | 89.7 | 88.7 | 87.7 | 87.2 | 87.2 | 87.9 | 88.3 | 89.1 | 88.8 | 88.6 | 88.5 | 89.0  | 89.2 | 89.4            | 85.8          | 91.0          |
| 11-Feb  | 89.0                          | 89.1 | 89.0 | 89.3 | 89.6 | 89.4 | 89.7 | 89.9 | 90.2 | 90.0 | 88.3 | 80.7 | 79.2 | 77.1 | 76.4 | 73.3 | 85.0 | 90.7 | 86.4 | 83.9 | 82.7 | 83.1  | 86.3 | 83.8            | 85.5          | 90.7          |
| 12-Feb  | 80.1                          | 80.6 | 80.5 | 77.2 | 78.9 | 80.3 | 79.5 | 79.9 | 81.2 | 78.6 | 74.8 | 73.6 | 75.7 | 75.1 | 78.4 | 80.4 | 84.8 | 89.8 | 91.8 | 92.1 | 91.6 | 91.0  | 86.6 | 74.3            | 81.5          | 92.1          |
| 13-Feb  | 73.4                          | 75.6 | 77.9 | 68.8 | 66.7 | 73.4 | 84.6 | 88.8 | 91.7 | 91.6 | 88.7 | 87.1 | 86.1 | 83.5 | 83.6 | 83.2 | 83.2 | 82.0 | 80.4 | 80.2 | 79.5 | 79.2  | 80.6 | 80.9            | 81.3          | 91.7          |
| 14-Feb  | 81.0                          | 81.7 | 81.9 | 81.4 | 80.7 | 80.0 | 80.2 | 79.8 | 79.3 | 78.7 | 77.5 | 75.0 | 74.7 | 76.7 | 75.0 | 74.8 | 76.7 | 77.2 | 76.0 | 76.9 | 76.7 | 77.0  | 79.0 | 79.8            | 78.2          | 81.9          |
| 15-Feb  | 79.4                          | 79.1 | 78.3 | 77.5 | 76.4 | 76.8 | 76.4 | 77.7 | 77.3 | 78.2 | 75.5 | 71.3 | 70.0 | 67.4 | 61.6 | 62.3 | 63.5 | 69.6 | 74.8 | 78.3 | 80.0 | 78.2  | 78.6 | 78.4            | 74.4          | 80.0          |
| 16-Feb  | 78.8                          | 79.0 | 79.5 | 79.4 | 79.3 | 79.9 | 80.6 | 80.8 | 80.6 | 78.8 | 73.8 | 72.4 | 70.3 | 68.4 | 69.9 | 69.4 | 74.9 | 77.0 | 82.0 | 82.1 | 78.7 | 78.3  | 78.5 | 78.8            | 77.1          | 82.1          |
| 17-Feb  | 78.0                          | 78.4 | 78.4 | 78.6 | 78.2 | 78.5 | 77.9 | 78.3 | 80.5 | 80.5 | 78.5 | 73.4 | 69.5 | 68.8 | 70.5 | 71.4 | 72.5 | 73.2 | 72.9 | 73.5 | 73.5 | 74.4  | 77.4 | 78.1            | 75.6          | 80.5          |
| 18-Feb  | 77.7                          | 77.1 | 77.1 | 77.2 | 76.7 | 77.1 | 77.4 | 77.0 | 76.7 | 75.6 | 74.3 | 70.7 | 67.3 | 66.0 | 63.4 | 61.6 | 58.6 | 65.9 | 70.1 | 75.2 | 77.1 | 76.1  | 75.0 | 74.5            | 72.7          | 77.7          |
| 19-Feb  | 72.8                          | 72.2 | 72.6 | 74.1 | 74.6 | 74.9 | 74.9 | 74.7 | 75.0 | 75.7 | 75.2 | 72.2 | 69.0 | 67.0 | 67.5 | 67.5 | 69.1 | 72.0 | 75.1 | 75.8 | 74.8 | 74.8  | 74.8 | 74.8            | 73.0          | 75.8          |
| 20-Feb  | 75.7                          | 74.9 | 75.1 | 75.4 | 75.8 | 76.9 | 78.1 | 78.2 | 77.4 | 73.8 | 71.3 | 68.9 | 66.7 | 65.3 | 63.5 | 63.0 | 62.1 | 67.3 | 71.1 | 72.4 | 75.0 | 77.2  | 77.9 | 77.4            | 72.5          | 78.2          |
| 21-Feb  | 76.5                          | 75.4 | 74.9 | 74.2 | 73.6 | 72.8 | 72.4 | 72.6 | 71.7 | 68.7 | 67.2 | 69.6 | 69.6 | 67.0 | 63.9 | 61.5 | 61.2 | 62.3 | 64.6 | 64.0 | 66.3 | 69.3  | 70.6 | 70.5            | 69.2          | 76.5          |
| 22-Feb  | 70.1                          | 70.1 | 69.5 | 69.2 | 69.2 | 69.5 | 69.9 | 69.6 | 69.2 | 69.1 | 65.0 | 62.6 | 61.8 | 57.6 | 54.4 | 58.2 | 58.3 | 57.5 | 62.6 | 66.0 | 73.0 | 75.0  | 74.7 | 73.6            | 66.5          | 75.0          |
| 23-Feb  | 73.6                          | 73.2 | 73.7 | 72.7 | 73.7 | 74.0 | 74.2 | 72.1 | 72.3 | 71.1 | 70.0 | 68.7 | 65.2 | 62.4 | 61.8 | 56.7 | 53.3 | 58.7 | 65.0 | 68.8 | 70.7 | 72.6  | 73.0 | 71.9            | 68.7          | 74.2          |
| 24-Feb  | 74.5                          | 75.9 | 75.4 | 74.5 | 73.4 | 73.6 | 73.6 | 73.1 | 72.0 | 68.3 | 57.1 | 48.3 | 45.8 | 43.3 | 42.7 | 42.3 | 42.2 | 45.3 | 43.4 | 44.2 | 44.0 | 44.1  | 45.6 | 48.4            | 57.1          | 75.9          |
| 25-Feb  | 51.9                          | 54.6 | 58.8 | 62.2 | 66.3 | 67.9 | 67.5 | 69.1 | 68.5 | 67.2 | 62.0 | 59.5 | 56.4 | 53.3 | 49.7 | 52.6 | 56.1 | 62.9 | 64.4 | 64.3 | 61.6 | 64.7  | 67.8 | 72.7            | 61.7          | 72.7          |
| 26-Feb  | 75.7                          | 77.6 | 80.4 | 81.5 | 82.4 | 81.0 | 76.6 | 76.9 | 79.6 | 75.4 | 71.5 | 74.3 | 76.5 | 80.6 | 79.4 | 83.2 | 83.7 | 87.9 | 90.3 | 90.9 | 91.0 | 91.0  | 90.8 | 90.8            | 82.0          | 91.0          |
| 27-Feb  | 90.8                          | 90.7 | 90.6 | 90.2 | 89.4 | 88.5 | 87.6 | 86.8 | 86.3 | 84.5 | 82.6 | 81.7 | 80.6 | 79.9 | 78.7 | 79.3 | 80.5 | 81.1 | 82.4 | 83.6 | 83.7 | 83.4  | 84.2 | 84.5            | 84.7          | 90.8          |
| 28-Feb  | 84.0                          | 84.1 | 83.8 | 83.3 | 83.3 | 83.3 | 82.5 | 82.4 | 79.8 | 77.1 | 76.0 | 76.4 | 74.3 | 70.0 | 66.0 | 65.4 | 64.3 | 67.5 | 74.1 | 80.6 | 83.4 | 81.7  | 82.8 | 80.8            | 77.8          | 84.1          |
| 77.2 77.7 78.5 78.6 78.7 79.0 79.2 79.4 79.5 78.0 75.0 72.4 70.1 68.1 67.3 67.5 68.7 71.7 73.8 75.2 75.9 76.4 77.1 77.0   |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |   |      | Diurnal Average |               |               |
| 90.8 90.7 90.6 90.2 89.6 89.4 89.7 91.0 91.7 91.6 89.7 88.7 87.7 87.2 87.2 87.9 88.3 90.7 91.8 92.1 91.6 91.0 90.8 90.8   |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |   |      | Diurnal Maximum |               |               |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Relative Humidity (RH) - %**  
**Buffalo Viewpoint - February 2023**







# Wood Buffalo Environmental Association

## Summary of Hour Averages

# Wind Speed (WS) - km/h

## Buffalo Viewpoint - February 2023

|  |   |                                |
|--|---|--------------------------------|
| Maximum Speed: 32 km/h on Feb 13 13:00             | Maximum Daily Speed Average: 15.7 km/h on Feb 7   | Hours in Service: 672          |
| Minimum Speed Value: 0 km/h on Feb 8 08:00         | Minimum Daily Speed Average: 0.4 km/h on Feb 23   | Hours of Data: 655             |
| Maximum Diurnal Speed Average: 3.3 km/h at hour 14 | Minimum Diurnal Speed Average: 0.2 km/h at hour 22  | Hours of Missing Data: 17      |
| Monthly Average Velocity: 1.4 km/h 332.1 deg       | Percentiles: P <sub>1</sub> = 1 P <sub>10</sub> = 3 Q <sub>1</sub> = 5 Median = 7 Q <sub>3</sub> = 10 P <sub>90</sub> = 14 P <sub>99</sub> = 26 | Percent Operational Time: 97.5 |

| Day   | Hourly Period Ending At (MST) |          |                              |               |       |                    |      |       |      |       |               |               |       |       |       |                |       |       |       |       |          |          |        |                 | Daily Average | Daily Maximum |       |
|---|-------------------------------|----------|------------------------------|---------------|-------|--------------------|------|-------|------|-------|---------------|---------------|-------|-------|-------|----------------|-------|-------|-------|-------|----------|----------|--------|-----------------|---------------|---------------|-------|
|   | 1                             | 2        | 3                            | 4             | 5     | 6                  | 7    | 8     | 9    | 10    | 11            | 12            | 13    | 14    | 15    | 16             | 17    | 18    | 19    | 20    | 21       | 22       | 23     | 24              |               |               |       |
| 1-Feb   | NNW5                          | N6       | NW2                          | N5            | N4    | NNW5               | NNW8 | N8    | N7   | N7    | N6            | WNW7          | NW9   | NW11  | NW9   | WNW7           | WNW9  | NW9   | NW10  | NW7   | WNW6     | W3       | SSW4   | SSE5            | NW5.4         | NW11          |       |
| 2-Feb   | SSE8                          | SSE7     | SE9                          | SSE9          | SSE8  | SSE7               | SSE7 | SE8   | SSE7 | SSE7  | SSE7          | SSE8          | SSE9  | SSE9  | SE13  | SE16           | SE17  | SSE16 | SSE17 | SSE16 | SSE15    | SSE14    | SSE13  | SSE13           | SSE10.7       | SSE17         |       |
| 3-Feb   | SSE13                         | SSE12    | SSE10                        | SSE10         | SSE8  | SSE8               | SSE6 | SSE6  | SSE6 | S5    | SSW3          | N5            | NNW4  | NNW8  | N9    | N9             | NNE9  | NNE10 | NNE10 | NNE8  | NNE7     | NNE6     | NNE4   | N4              | ENE2.1        | SSE13         |       |
| 4-Feb   | N7                            | NNE6     | N6                           | N8            | N9    | NNE9               | N6   | N8    | N11  | N8    | N8            | N7            | N7    | N6    | N4    | NW4            | NW3   | N5    | N7    | N7    | NNW6     | NNW5     | NNW5   | N6.5            | N11           |               |       |
| 5-Feb   | N4                            | N4       | N3                           | N2            | SW1   | N3                 | N3   | NNW4  | NNW3 | NW2   | W3            | WNW2          | ESE3  | S4    | SSE5  | WNW1           | N3    | NNW3  | WNW3  | SW2   | W5       | W14WNW22 | NW23   | NW3.5           | NW23          |               |       |
| 6-Feb   | NW18WNW14                     | W12WSW13 | W14                          | W10           | W11   | W8                 | W14  | WNW9  | NE5  | NNE5  | NE5           | ESE7          | ESE7  | ESE4  | SSE3  | ENE2           | NE5   | SSE2  | ENE3  | NNE5  | NW3      | NW4      | WNW3.7 | NW18            |               |               |       |
| 7-Feb   | N5                            | E3       | S5WSW19                      | W22WNW25WNW19 | W19   | W20WSW16WSW21WSW22 | W25  | W24   | W26  | W23   | W22           | W18WSW18WSW21 | W14   | W10   | NNW11 | N14            |       |       |       |       |          |          |        | W15.7           | W26           |               |       |
| 8-Feb   | N13                           | N10      | N4                           | NNW6          | N3    | SW3                | NW1  | NW0   | S4   | S4    | SSE4          | SE6           | SE7   | SE8   | SE8   | SE7            | SE7   | SSE7  | SE9   | SE9   | SE9      | SSE8     | SSE8   | SSE9            | SE3.3         | N13           |       |
| 9-Feb   | SSE10                         | SSE10    | SE10                         | SE13          | SE12  | SE12               | SE8  | SE10  | SE9  | SE8   | SSE6          | SE7           | SE7   | SE8   | SSE6  | SE7            | SE5   | SSE4  | ENE4  | NE5   | SSE4     | SE5      | SSE4   | S3              | SE7.0         | SE13          |       |
| 10-Feb  | SE2                           | NNE6     | NNE8                         | N7            | NNW11 | N15                | N11  | N10   | N12  | N14   | N13           | N13           | N14   | N11   | N14   | N13            | N13   | NNW10 | N10   | N11   | N8       | N6       | N4     | NE3             | N9.6          | N15           |       |
| 11-Feb  | NE3                           | SSE0     | SE1                          | SSE4          | SSE5  | SSE6               | SSE7 | SE8   | SSE6 | SSE5  | S4            | SSW4          | E4    | ESE5  | S7    | SW12WSW14WSW14 | W18   | W16   | WNW17 | W9    | W17WSW19 |          |        | SW5.2           | WSW19         |               |       |
| 12-Feb  | WSW24WSW24                    | W23      | W13WSW12                     | W15           | W14   | W13                | W11  | WNW9  | WNW7 | NNW4  | NNE8          | NNE7          | NNE6  | NNE6  | NNE7  | N7             | NNE8  | NNE5  | NNE2  | SE6   | SSE10    | SSE12    |        | W5.5            | WSW24         |               |       |
| 13-Feb  | SSE12                         | SE9      | SE3WSW14WSW22WSW20WSW21WSW21 | NNW17         | N26   | N26                | N29  | N32   | N30  | N28   | N27           | N24           | N20   | UO    | UO    | UO             | UO    | UO    | UO    | UO    | UO       | UO       |        | NNW12.7         | N32           |               |       |
| 14-Feb  | UO                            | UO       | UO                           | UO            | UO    | UO                 | UO   | UO    | UO   | UO    | UO            | NNE5          | NNE4  | NNE6  | NNE6  | N6             | NNE8  | NNE9  | NNE6  | NNE3  | NE3      | NE4      | SSW1   | WSW1            | ---           | NNE9          |       |
| 15-Feb  | SSE2                          | SE4      | SSE5                         | S6            | S7    | SSE6               | SSE5 | SE7   | S3   | SSW2  | NNW2          | N4            | NNE6  | NNE4  | ESE8  | ESE7           | SE6   | SSE5  | SSE7  | SSE6  | SSE7     | SE7      |        | SE4.1           | ESE9          |               |       |
| 16-Feb  | SSE6                          | SSE7     | SE7                          | SSE7          | SSE8  | SSE7               | SSE6 | SSE5  | S5   | SSE5  | S7            | SSE7          | SSE6  | WSW3  | NW3   | S1             | NNE3  | N9    | N12   | N16   | N15      | N13      | N8     | NNE8            | E1.1          | N16           |       |
| 17-Feb  | NNE5                          | NNE5     | NNE5                         | NNE5          | N3    | N4                 | NE5  | NE6   | NNE6 | NNE7  | NNE7          | N7            | N7    | N8    | N10   | N11            | N12   | N12   | N11   | N11   | N11      | N8       | NNW6   | N7              | NNE7.3        | N12           |       |
| 18-Feb  | N8                            | N7       | N5                           | NNW4          | N5    | N5                 | N6   | NNE5  | NE5  | NNE5  | NNE4          | NNW5          | NW6   | WNW6  | WNW7  | WNW5           | W4    | NNW3  | NNE4  | NE4   | NE2      | S3       | SSE5   | SE6             | N2.8          | N8            |       |
| 19-Feb  | SSE6                          | SSE6     | SSE6                         | SE7           | SE6   | SE4                | E2   | NNE4  | NE5  | NW2   | NNE6          | N4            | N6    | N6    | NW6   | NW7            | NW6   | NNW6  | N6    | NNW6  | N9       | NNW7     | N10    | N13             | N3.0          | N13           |       |
| 20-Feb  | N9                            | N9       | NNE6                         | NE5           | NW3   | NNW0               | SSW3 | SE5   | SE4  | ESE4  | ESE5          | SW4           | N5    | NNE6  | NNE7  | N7             | NNE10 | NNE11 | N8    | N7    | N5       | NNW5     | N7     | N12             | NNE4.3        | N12           |       |
| 21-Feb  | N11                           | N12      | N9                           | N9            | N7    | N7                 | NNW5 | N6    | N7   | N9    | NNW6          | NW5           | N6    | N9    | N10   | N9             | N10   | N10   | N8    | NNE7  | NW4      | WNW4     | SW4    | SSE5            | N6.5          | N12           |       |
| 22-Feb  | SSE6                          | SSW5     | SSE8                         | SSE7          | SSE7  | SSE9               | SSE7 | SSE8  | SSE8 | SSE5  | NW1           | NNE4          | N4    | WNW5  | W5    | W5             | W5    | WNW6  | W4    | NW5   | W3       | SE3      | SSW2   | SW2             | SSW2.3        | SSE9          |       |
| 23-Feb  | WSW3                          | NNW4     | NW5                          | NW5           | NNW7  | NNW7               | NW6  | WNW5  | NW5  | NNW4  | NW4           | NNW4          | N4    | NNE7  | NNE6  | E5             | SE6   | SE7   | SE8   | SSE7  | SSE8     | SE10     | S4     | S6              | N0.4          | SE10          |       |
| 24-Feb  | SSE8                          | SSE8     | SSE10                        | SSE10         | SSE8  | SSE9               | SSE8 | SSE7  | SSE8 | SSE10 | SSE11         | S16           | SSW17 | SSW17 | S16   | S15            | S14   | S11   | S15   | S14   | S14      | S13      | S10    | S10             | S10           | S11.2         | SSW17 |
| 25-Feb  | S8                            | SSE8     | SE6                          | SE7           | SE9   | SSE7               | S7   | W8    | W10  | WSW8  | W15WSW17WSW12 | SW9           | W1    | NE7   | E7    | SSE5           | SSE5  | SE7   | SE8   | SE6   | SE6      | SE6      |        |                 | SSW4.0        | WSW17         |       |
| 26-Feb  | SSE6                          | SSE5     | SSE4                         | SSE3          | S2    | SE3                | ESE5 | ENE4  | NE5  | NNE4  | E6            | E6            | E9    | ENE9  | E8    | E7             | ENE7  | NE7   | NE7   | NNE6  | NE7      | NNE7     | NNE8   |                 | ENE4.5        | ENE9          |       |
| 27-Feb  | NNE7                          | NNE6     | N8                           | N11           | N12   | N12                | N13  | NNW13 | N12  | N15   | N13           | N14           | N16   | N15   | N13   | N10            | NNE11 | NNE10 | N9    | N10   | NNE10    | NNE10    | N9     | N10             | N11.1         | N16           |       |
| 28-Feb  | N10                           | N9       | N8                           | N6            | NNW4  | NW3                | NW4  | WNW4  | NW4  | NW3   | WNW6          | WNW6          | NW6   | WNW6  | NW3   | NNW3           | WNW4  | WNW4  | NW3   | S2    | S5       | SSE7     | SSE8   | SE8             | NW2.4         | N10           |       |
| NNW0.4 ENE0.4 SSE0.6 SW0.9WSW1.7 W1.4 W1.6 W1.5 NW1.8NNW2.0NNW2.3NNW2.7NNW3.1NNW3.3 N2.7 N2.5 N2.3 N2.8 N2.1 N1.8 N1.2NNW0.2 W0.8NNW0.3 |                               |          |                              |               |       |                    |      |       |      |       |               |               |       |       |       |                |       |       |       |       |          |          |        | Diurnal Average |               |               |       |
| WSW24WSW24WSW23WSW19 W22WNW25WSW21WSW21 W20 N26 N26 N29 N32 N30 N28 N27 N24 N20 W18WSW21WNW17 SSE14WNW22 NW23                           |                               |          |                              |               |       |                    |      |       |      |       |               |               |       |       |       |                |       |       |       |       |          |          |        | Diurnal Maximum |               |               |       |

UO - Unstable Operation  
 All monthly, daily, and diurnal averages have been calculated using vector methods



**Wood Buffalo Environmental Association**  
**Summary of Hour Standard Deviations**

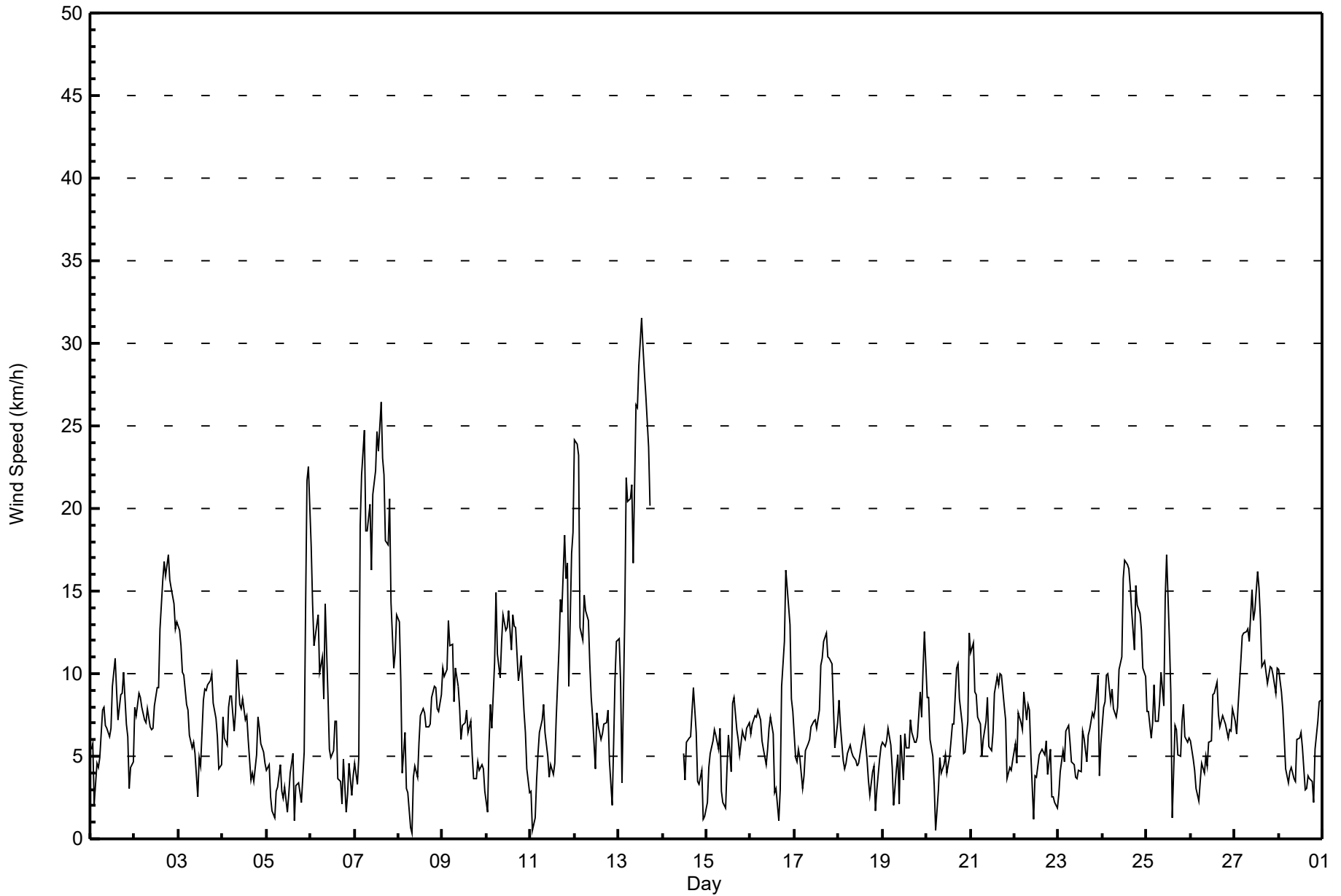
**Wind Speed (WS) - km/h**  
**Buffalo Viewpoint - February 2023**

| Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0<br>Maximum Value: 8 km/h on Feb 11 23:00<br>Minimum Value: 0 km/h on Feb 28 23:00<br>Percentiles: P <sub>1</sub> = 1 P <sub>10</sub> = 1 Q <sub>1</sub> = 1 Median = 2 Q <sub>3</sub> = 3 P <sub>90</sub> = 4 P <sub>99</sub> = 7 |                               |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    | Hours in Service: 672<br>Hours of Data: 655<br>Hours of Missing Data: 17<br>Hours of Calibration: 0<br>Percent Operational Time: 97.5 |    |    |    |    |    |    |    |               |
|---|-------------------------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|---|----|----|----|----|----|----|----|---------------|
| Day   | Hourly Period Ending At (MST) |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |   |    |    |    |    |    |    |    | Daily Maximum |
|   | 1                             | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17  | 18 | 19 | 20 | 21 | 22 | 23 | 24 |               |
| 1-Feb   | 1                             | 2  | 1  | 1  | 1  | 1  | 2  | 2  | 2  | 2  | 2  | 3  | 2  | 3  | 2  | 2  | 2   | 1  | 2  | 1  | 3  | 1  | 1  | 1  | 3             |
| 2-Feb   | 1                             | 1  | 1  | 1  | 1  | 1  | 1  | 2  | 1  | 2  | 2  | 3  | 3  | 3  | 4  | 5  | 6   | 5  | 6  | 5  | 5  | 5  | 4  | 4  | 6             |
| 3-Feb   | 4                             | 4  | 3  | 3  | 2  | 3  | 2  | 2  | 2  | 2  | 1  | 3  | 1  | 3  | 2  | 3  | 2   | 2  | 2  | 3  | 2  | 2  | 2  | 2  | 4             |
| 4-Feb   | 2                             | 2  | 1  | 2  | 2  | 2  | 1  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 1  | 1   | 1  | 2  | 2  | 2  | 1  | 2  | 1  | 2             |
| 5-Feb   | 1                             | 1  | 1  | 1  | 1  | 2  | 1  | 1  | 1  | 2  | 2  | 1  | 1  | 1  | 2  | 2  | 2   | 1  | 1  | 1  | 3  | 4  | 6  | 6  | 6             |
| 6-Feb   | 5                             | 4  | 3  | 4  | 3  | 2  | 3  | 1  | 3  | 4  | 1  | 1  | 2  | 2  | 2  | 1  | 1   | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 5             |
| 7-Feb   | 2                             | 2  | 3  | 7  | 5  | 7  | 5  | 4  | 4  | 4  | 5  | 5  | 7  | 6  | 6  | 6  | 5   | 4  | 5  | 4  | 3  | 3  | 4  | 3  | 7             |
| 8-Feb   | 3                             | 3  | 1  | 1  | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 2  | 2  | 2  | 2  | 2  | 1   | 1  | 2  | 2  | 2  | 2  | 1  | 1  | 3             |
| 9-Feb   | 2                             | 1  | 2  | 1  | 2  | 2  | 3  | 1  | 1  | 2  | 2  | 2  | 2  | 2  | 2  | 1  | 2   | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 3             |
| 10-Feb  | 1                             | 1  | 2  | 1  | 3  | 3  | 3  | 2  | 2  | 2  | 3  | 3  | 3  | 3  | 2  | 3  | 3   | 3  | 3  | 3  | 2  | 1  | 1  | 2  | 3             |
| 11-Feb  | 1                             | 1  | 1  | 1  | 1  | 2  | 2  | 1  | 2  | 1  | 1  | 1  | 1  | 2  | 2  | 4  | 4   | 4  | 4  | 4  | 6  | 2  | 8  | 5  | 8             |
| 12-Feb  | 6                             | 6  | 5  | 4  | 3  | 2  | 3  | 4  | 4  | 2  | 2  | 2  | 1  | 1  | 1  | 1  | 1   | 1  | 1  | 2  | 1  | 3  | 3  | 3  | 6             |
| 13-Feb  | 3                             | 4  | 3  | 5  | 6  | 5  | 5  | 4  | 6  | 6  | 6  | 7  | 7  | 7  | 7  | 7  | 6   | 5  | UO | UO | UO | UO | UO | UO | 7             |
| 14-Feb  | UO                            | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | 1  | 1  | 1  | 1  | 2   | 2  | 2  | 2  | 3  | 2  | 1  | 1  | 3             |
| 15-Feb  | 1                             | 1  | 0  | 1  | 1  | 1  | 1  | 2  | 2  | 1  | 1  | 1  | 1  | 1  | 2  | 2  | 2   | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 2             |
| 16-Feb  | 1                             | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 1  | 2   | 5  | 3  | 4  | 4  | 4  | 2  | 2  | 5             |
| 17-Feb  | 2                             | 1  | 1  | 2  | 1  | 1  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 3  | 3  | 3   | 3  | 3  | 3  | 3  | 2  | 1  | 1  | 3             |
| 18-Feb  | 1                             | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 2  | 2  | 1   | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 2             |
| 19-Feb  | 0                             | 1  | 1  | 1  | 1  | 2  | 1  | 1  | 2  | 2  | 2  | 1  | 2  | 1  | 1  | 2  | 2   | 1  | 1  | 2  | 2  | 1  | 2  | 3  | 3             |
| 20-Feb  | 3                             | 2  | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 2  | 1  | 1  | 1  | 1  | 2  | 2   | 2  | 2  | 2  | 1  | 2  | 1  | 2  | 3             |
| 21-Feb  | 3                             | 4  | 2  | 2  | 2  | 2  | 1  | 1  | 2  | 2  | 2  | 2  | 2  | 3  | 2  | 2  | 3   | 2  | 2  | 2  | 1  | 1  | 1  | 2  | 4             |
| 22-Feb  | 1                             | 1  | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 1   | 1  | 1  | 1  | 1  | 1  | 1  | 2  | 2             |
| 23-Feb  | 1                             | 3  | 1  | 2  | 1  | 1  | 1  | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 2  | 2  | 1   | 1  | 1  | 1  | 1  | 2  | 2  | 1  | 3             |
| 24-Feb  | 1                             | 1  | 1  | 2  | 2  | 1  | 1  | 1  | 2  | 3  | 4  | 5  | 5  | 5  | 5  | 4  | 5   | 4  | 5  | 4  | 4  | 4  | 3  | 3  | 5             |
| 25-Feb  | 2                             | 2  | 1  | 1  | 1  | 1  | 2  | 3  | 3  | 3  | 4  | 4  | 3  | 4  | 2  | 2  | 2   | 1  | 1  | 1  | 2  | 1  | 1  | 1  | 4             |
| 26-Feb  | 1                             | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 2  | 3  | 2  | 2  | 2  | 2  | 2   | 2  | 2  | 2  | 1  | 1  | 2  | 2  | 3             |
| 27-Feb  | 2                             | 1  | 2  | 2  | 3  | 3  | 3  | 3  | 3  | 4  | 3  | 3  | 4  | 3  | 3  | 3  | 3   | 3  | 3  | 3  | 3  | 2  | 3  | 2  | 4             |
| 28-Feb  | 1                             | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1   | 1  | 0  | 2  | 1  | 1  | 0  | 1  | 2             |
| Diurnal Maximum   |                               |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |   |    |    |    |    |    |    | 6  |               |
| UO - Unstable Operation   |                               |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |   |    |    |    |    |    |    |    |               |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Wind Speed (WS) - km/h**  
**Buffalo Viewpoint - February 2023**





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Wind Speed (WS) - km/h**  
**Buffalo Viewpoint - February 2023**

| <b>Wind Speed Ranges (km/h)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---------------------------------|------------------------|----------|---------------------|
| 0 - 5                           | 213                    | 32.52    | 32.52               |
| 6 - 11                          | 323                    | 49.31    | 81.83               |
| 12 - 19                         | 90                     | 13.74    | 95.57               |
| 20 - 28                         | 26                     | 3.97     | 99.54               |
| 29 - 38                         | 3                      | 0.46     | 100.00              |
| > 38                            | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 655

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Wind Speed (WS) - km/h  
Buffalo Viewpoint - February 2023**

| <b>Wind Speed<br/>Ranges (km/h)</b> | <b>Wind Direction</b> |            |           |            |          |            |           |            |           |            |           |            |           |            |           |            | <b>Totals</b> |
|-------------------------------------|-----------------------|------------|-----------|------------|----------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|---------------|
|                                     | <b>N</b>              | <b>NNE</b> | <b>NE</b> | <b>ENE</b> | <b>E</b> | <b>ESE</b> | <b>SE</b> | <b>SSE</b> | <b>S</b>  | <b>SSW</b> | <b>SW</b> | <b>WSW</b> | <b>W</b>  | <b>WNW</b> | <b>NW</b> | <b>NNW</b> |               |
| 0 - 5                               | 28                    | 21         | 15        | 4          | 4        | 6          | 10        | 27         | 15        | 8          | 6         | 3          | 10        | 11         | 24        | 21         | 213           |
| 6 - 11                              | 84                    | 45         | 6         | 2          | 5        | 6          | 43        | 73         | 10        | 0          | 1         | 2          | 7         | 14         | 11        | 14         | 323           |
| 12 - 19                             | 30                    | 0          | 0         | 0          | 0        | 0          | 6         | 11         | 8         | 2          | 1         | 11         | 14        | 4          | 1         | 2          | 90            |
| 20 - 28                             | 6                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0         | 0          | 0         | 10         | 7         | 2          | 1         | 0          | 26            |
| 29 - 38                             | 3                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 3             |
| > 38                                | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0             |
| <b>Totals</b>                       | <b>151</b>            | <b>66</b>  | <b>21</b> | <b>6</b>   | <b>9</b> | <b>12</b>  | <b>59</b> | <b>111</b> | <b>33</b> | <b>10</b>  | <b>8</b>  | <b>26</b>  | <b>38</b> | <b>31</b>  | <b>37</b> | <b>37</b>  | <b>655</b>    |

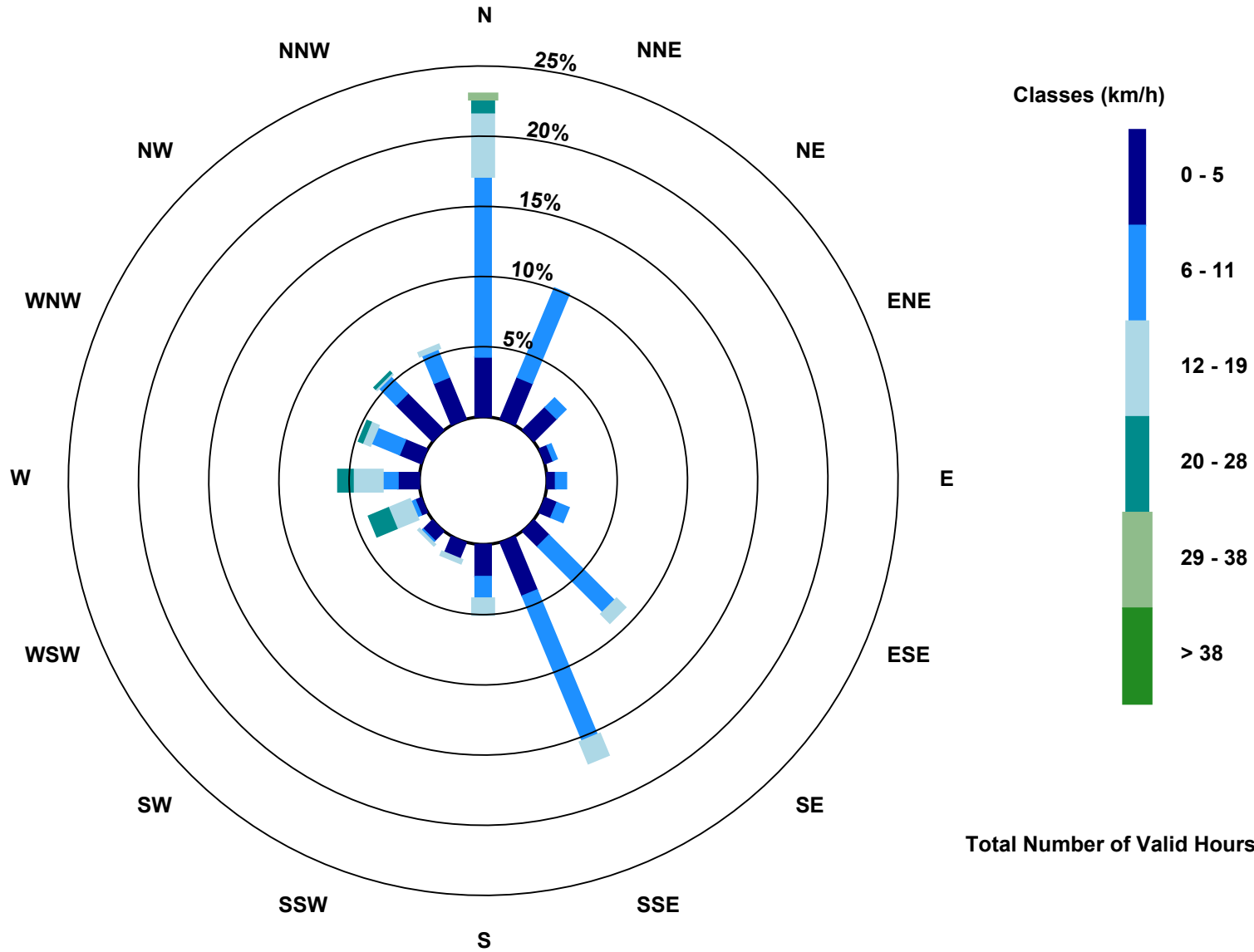
Total Number of Valid Hours: 655

Total Number of Hours: 672



Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Wind Speed (WS) - km/h  
Buffalo Viewpoint





**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

**Wind Direction (WD) - deg**  
**Buffalo Viewpoint - February 2023**

|  |                                |
|--|--------------------------------|
| Direction of Maximum Speed: 354 deg on Feb 13 13:00          | Hours in Service: 672          |
| Direction of Maximum Daily Speed Average: 268.7 deg on Feb 7 | Hours of Data: 655             |
| Direction of Minimum Speed: 313 deg on Feb 8 08:00           | Hours of Missing Data: 17      |
| Direction of Minimum Daily Speed Average: 0.4 deg on Feb 23  | Percent Operational Time: 97.5 |
| Monthly Average Direction: 332.1 deg                         |                                |

| Day             | Hourly Period Ending At (MST) |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |     | Daily Average |
|-----------------|-------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-----|---------------|
|                 | 1                             | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     | 10    | 11    | 12    | 13    | 14    | 15    | 16    | 17    | 18    | 19    | 20    | 21    | 22    | 23    | 24  |               |
| 1-Feb           | 327                           | 356   | 322   | 2     | 358   | 342   | 341   | 353   | 356   | 6     | 351   | 303   | 307   | 316   | 311   | 299   | 297   | 314   | 311   | 304   | 285   | 266   | 212   | 160 | 321.2         |
| 2-Feb           | 161                           | 159   | 145   | 148   | 166   | 158   | 147   | 144   | 148   | 147   | 147   | 163   | 157   | 155   | 145   | 146   | 144   | 148   | 151   | 147   | 148   | 147   | 147   | 147 | 149.7         |
| 3-Feb           | 154                           | 154   | 158   | 158   | 162   | 155   | 158   | 168   | 148   | 170   | 204   | 359   | 337   | 346   | 2     | 3     | 24    | 18    | 28    | 23    | 12    | 26    | 33    | 9   | 77.2          |
| 4-Feb           | 11                            | 17    | 356   | 5     | 8     | 16    | 4     | 351   | 3     | 354   | 349   | 1     | 357   | 357   | 356   | 358   | 311   | 318   | 360   | 353   | 357   | 331   | 343   | 331 | 356.5         |
| 5-Feb           | 350                           | 5     | 2     | 350   | 224   | 4     | 355   | 331   | 328   | 319   | 269   | 291   | 106   | 170   | 160   | 291   | 359   | 333   | 292   | 220   | 265   | 275   | 301   | 307 | 305.0         |
| 6-Feb           | 306                           | 286   | 268   | 257   | 265   | 281   | 271   | 259   | 265   | 299   | 37    | 33    | 45    | 117   | 113   | 122   | 162   | 67    | 47    | 148   | 58    | 20    | 310   | 314 | 287.7         |
| 7-Feb           | 356                           | 94    | 187   | 253   | 261   | 284   | 288   | 271   | 261   | 257   | 257   | 256   | 262   | 270   | 264   | 274   | 270   | 260   | 252   | 257   | 259   | 279   | 343   | 2   | 268.7         |
| 8-Feb           | 350                           | 357   | 356   | 344   | 9     | 221   | 324   | 313   | 178   | 179   | 153   | 127   | 143   | 125   | 124   | 132   | 142   | 160   | 142   | 142   | 139   | 149   | 160   | 152 | 134.1         |
| 9-Feb           | 147                           | 148   | 141   | 128   | 133   | 128   | 134   | 137   | 136   | 145   | 161   | 135   | 138   | 144   | 147   | 131   | 140   | 148   | 62    | 56    | 166   | 146   | 150   | 180 | 137.9         |
| 10-Feb          | 135                           | 33    | 16    | 354   | 348   | 354   | 357   | 355   | 354   | 354   | 353   | 350   | 351   | 350   | 354   | 351   | 354   | 347   | 349   | 0     | 352   | 359   | 355   | 36  | 355.3         |
| 11-Feb          | 41                            | 157   | 145   | 148   | 163   | 162   | 156   | 139   | 155   | 168   | 174   | 195   | 90    | 118   | 186   | 230   | 248   | 254   | 269   | 281   | 298   | 260   | 259   | 245 | 234.0         |
| 12-Feb          | 253                           | 253   | 259   | 261   | 255   | 263   | 267   | 268   | 275   | 288   | 287   | 334   | 24    | 22    | 26    | 33    | 25    | 1     | 20    | 13    | 12    | 142   | 151   | 158 | 274.6         |
| 13-Feb          | 151                           | 136   | 130   | 240   | 251   | 253   | 258   | 257   | 328   | 4     | 359   | 355   | 354   | 359   | 349   | 351   | 355   | 7     | UO    | UO    | UO    | UO    | UO    | UO  | 333.7         |
| 14-Feb          | UO                            | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | 24    | 27    | 20    | 29    | 9     | 21    | 21    | 25    | 19    | 47    | 41    | 202   | 258 | -             |
| 15-Feb          | 153                           | 140   | 152   | 174   | 177   | 158   | 159   | 142   | 175   | 210   | 344   | 8     | 29    | 33    | 118   | 118   | 121   | 127   | 153   | 151   | 154   | 163   | 166   | 145 | 141.5         |
| 16-Feb          | 155                           | 151   | 142   | 158   | 160   | 163   | 167   | 167   | 169   | 166   | 177   | 164   | 164   | 245   | 312   | 172   | 29    | 7     | 357   | 359   | 5     | 2     | 357   | 14  | 80.7          |
| 17-Feb          | 24                            | 23    | 29    | 21    | 350   | 8     | 48    | 43    | 26    | 26    | 22    | 11    | 7     | 358   | 8     | 11    | 9     | 6     | 4     | 8     | 8     | 2     | 345   | 7   | 12.1          |
| 18-Feb          | 7                             | 9     | 359   | 335   | 0     | 353   | 4     | 29    | 34    | 26    | 17    | 340   | 305   | 293   | 283   | 288   | 271   | 327   | 18    | 51    | 35    | 184   | 157   | 143 | 352.7         |
| 19-Feb          | 165                           | 164   | 153   | 146   | 143   | 127   | 93    | 14    | 43    | 312   | 22    | 353   | 11    | 360   | 319   | 316   | 325   | 342   | 354   | 338   | 353   | 346   | 357   | 355 | 2.3           |
| 20-Feb          | 353                           | 4     | 15    | 46    | 325   | 333   | 207   | 133   | 145   | 115   | 121   | 214   | 1     | 13    | 18    | 1     | 13    | 14    | 8     | 11    | 359   | 333   | 354   | 360 | 11.7          |
| 21-Feb          | 3                             | 4     | 5     | 8     | 7     | 11    | 343   | 354   | 357   | 3     | 343   | 326   | 10    | 6     | 9     | 5     | 0     | 359   | 10    | 20    | 313   | 289   | 214   | 167 | 359.6         |
| 22-Feb          | 160                           | 199   | 150   | 158   | 158   | 152   | 149   | 148   | 159   | 164   | 321   | 12    | 357   | 287   | 279   | 261   | 269   | 286   | 269   | 305   | 260   | 141   | 213   | 218 | 192.8         |
| 23-Feb          | 251                           | 328   | 316   | 326   | 339   | 327   | 309   | 292   | 305   | 327   | 307   | 346   | 2     | 17    | 19    | 92    | 141   | 141   | 143   | 152   | 154   | 141   | 189   | 177 | 348.9         |
| 24-Feb          | 151                           | 158   | 156   | 155   | 156   | 150   | 157   | 162   | 154   | 149   | 158   | 184   | 193   | 195   | 190   | 185   | 177   | 178   | 190   | 188   | 186   | 189   | 184   | 187 | 175.9         |
| 25-Feb          | 180                           | 164   | 144   | 137   | 132   | 153   | 189   | 263   | 267   | 248   | 262   | 258   | 246   | 226   | 268   | 44    | 86    | 150   | 161   | 140   | 130   | 146   | 135   | 144 | 191.3         |
| 26-Feb          | 157                           | 152   | 165   | 147   | 169   | 132   | 119   | 69    | 34    | 30    | 101   | 90    | 90    | 49    | 69    | 83    | 97    | 58    | 52    | 39    | 27    | 37    | 32    | 22  | 72.9          |
| 27-Feb          | 26                            | 17    | 7     | 1     | 349   | 350   | 349   | 347   | 353   | 352   | 352   | 357   | 353   | 359   | 353   | 356   | 30    | 12    | 4     | 11    | 14    | 15    | 355   | 349 | 359.7         |
| 28-Feb          | 358                           | 358   | 358   | 353   | 337   | 308   | 309   | 299   | 304   | 306   | 293   | 290   | 307   | 289   | 323   | 345   | 296   | 301   | 307   | 182   | 173   | 155   | 149   | 143 | 315.8         |
| 337.8           | 56.4                          | 147.0 | 219.0 | 246.0 | 267.0 | 272.3 | 276.8 | 309.5 | 339.0 | 328.8 | 326.6 | 345.8 | 346.1 | 351.3 | 352.8 | 357.6 | 355.1 | 351.9 | 357.5 | 349.8 | 342.5 | 276.3 | 337.4 |     |               |
| Diurnal Average |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |     |               |

UO - Unstable Operation  
 All monthly, daily, and diurnal averages have been calculated using vector methods



**Wood Buffalo Environmental Association**  
**Summary of Hour Standard Deviations**

**Wind Direction (WD) - deg**  
**Buffalo Viewpoint - February 2023**

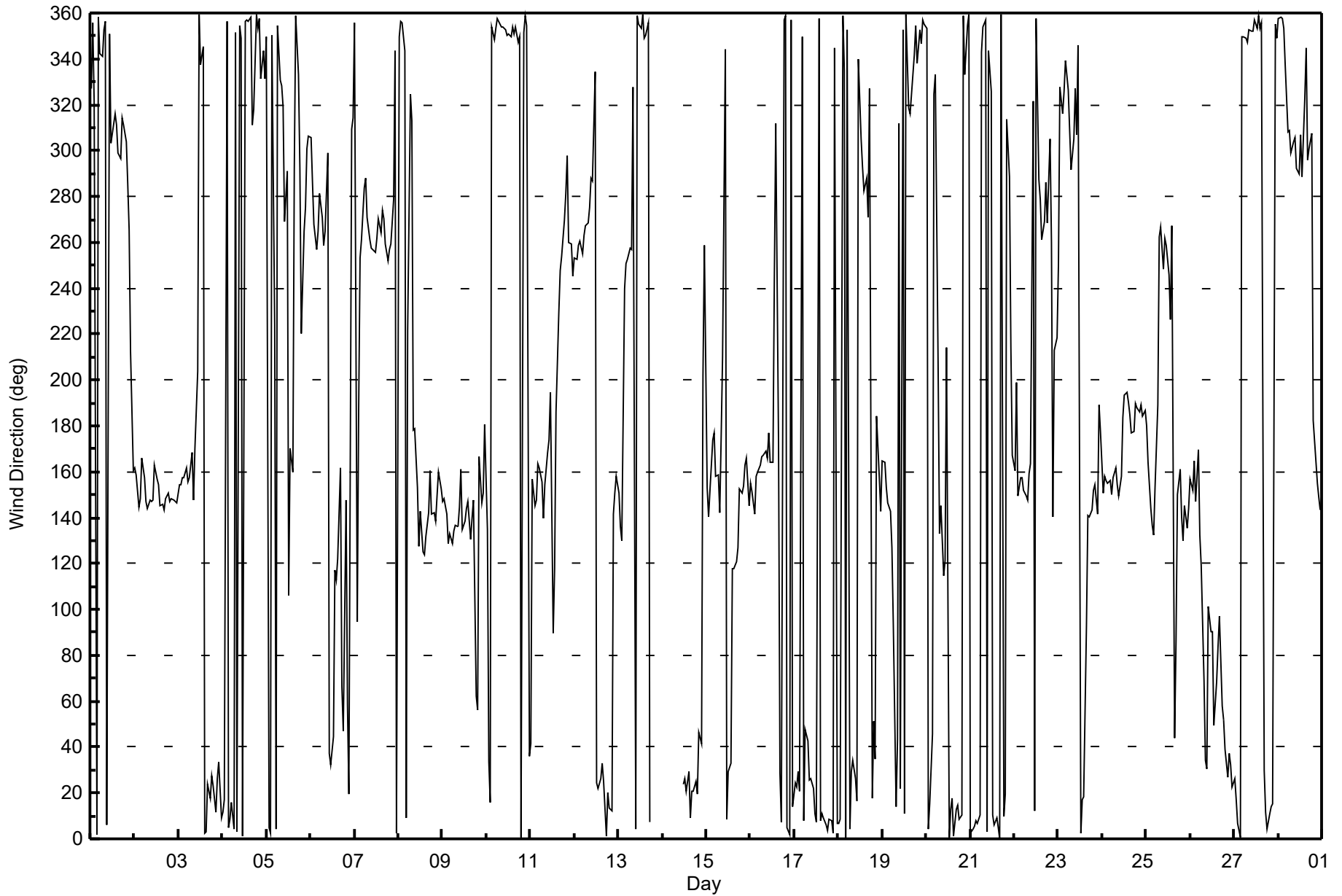
| Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0<br>Maximum Value: 92 deg on Feb 8 08:00<br>Minimum Value: 5 deg on Feb 9 04:00<br>Percentiles: P <sub>1</sub> = 8 P <sub>10</sub> = 12 Q <sub>1</sub> = 15 Median = 20 Q <sub>3</sub> = 27 P <sub>90</sub> = 42 P <sub>99</sub> = 78 |                               |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    | Hours in Service: 672<br>Hours of Data: 655<br>Hours of Missing Data: 17<br>Hours of Calibration: 0<br>Percent Operational Time: 97.5 |    |    |    |    |    |    |    |               |
|--|-------------------------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|---|----|----|----|----|----|----|----|---------------|
| Day  | Hourly Period Ending At (MST) |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |   |    |    |    |    |    |    |    | Daily Maximum |
|  | 1                             | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17  | 18 | 19 | 20 | 21 | 22 | 23 | 24 |               |
| 1-Feb  | 17                            | 14 | 48 | 13 | 10 | 18 | 20 | 18 | 20 | 18 | 22 | 27 | 20 | 19 | 20 | 21 | 17  | 9  | 14 | 12 | 31 | 44 | 21 | 25 | 48            |
| 2-Feb  | 16                            | 12 | 14 | 12 | 9  | 11 | 17 | 16 | 19 | 19 | 26 | 26 | 29 | 30 | 29 | 28 | 29  | 29 | 27 | 30 | 28 | 27 | 27 | 27 | 30            |
| 3-Feb  | 29                            | 27 | 29 | 28 | 29 | 33 | 30 | 26 | 25 | 23 | 33 | 62 | 37 | 29 | 18 | 20 | 21  | 19 | 18 | 25 | 21 | 21 | 30 | 48 | 62            |
| 4-Feb  | 17                            | 18 | 15 | 16 | 15 | 16 | 19 | 18 | 15 | 16 | 20 | 17 | 20 | 17 | 17 | 30 | 23  | 28 | 28 | 17 | 18 | 19 | 23 | 18 | 30            |
| 5-Feb  | 21                            | 20 | 33 | 51 | 68 | 43 | 31 | 25 | 42 | 66 | 64 | 76 | 67 | 43 | 51 | 77 | 45  | 37 | 42 | 63 | 46 | 15 | 24 | 21 | 77            |
| 6-Feb  | 20                            | 19 | 22 | 14 | 12 | 16 | 17 | 12 | 10 | 43 | 24 | 18 | 29 | 26 | 22 | 35 | 38  | 54 | 20 | 63 | 56 | 8  | 54 | 26 | 63            |
| 7-Feb  | 43                            | 54 | 48 | 15 | 12 | 22 | 20 | 15 | 12 | 14 | 14 | 14 | 15 | 16 | 13 | 16 | 15  | 12 | 13 | 11 | 15 | 30 | 35 | 20 | 54            |
| 8-Feb  | 19                            | 16 | 20 | 9  | 47 | 61 | 88 | 92 | 23 | 14 | 24 | 25 | 27 | 21 | 22 | 20 | 18  | 15 | 13 | 12 | 12 | 13 | 10 | 11 | 92            |
| 9-Feb  | 11                            | 14 | 12 | 5  | 7  | 7  | 18 | 9  | 11 | 20 | 24 | 21 | 28 | 28 | 23 | 18 | 22  | 32 | 41 | 23 | 17 | 17 | 24 | 51 | 51            |
| 10-Feb   | 76                            | 14 | 12 | 13 | 17 | 19 | 18 | 18 | 16 | 16 | 17 | 17 | 17 | 18 | 17 | 18 | 18  | 18 | 20 | 19 | 17 | 19 | 24 | 58 | 76            |
| 11-Feb   | 19                            | 75 | 58 | 20 | 19 | 17 | 19 | 11 | 20 | 35 | 35 | 40 | 51 | 29 | 25 | 21 | 16  | 14 | 14 | 19 | 19 | 12 | 16 | 16 | 75            |
| 12-Feb   | 14                            | 13 | 10 | 15 | 15 | 12 | 13 | 15 | 18 | 17 | 21 | 37 | 13 | 11 | 12 | 9  | 9   | 20 | 10 | 28 | 86 | 47 | 26 | 28 | 86            |
| 13-Feb   | 24                            | 22 | 78 | 20 | 15 | 14 | 12 | 12 | 42 | 22 | 23 | 21 | 21 | 20 | 21 | 20 | 20  | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 78            |
| 14-Feb   | UO                            | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | 28 | 49 | 19 | 22 | 20  | 21 | 20 | 23 | 31 | 26 | 35 | 81 | 81            |
| 15-Feb   | 54                            | 26 | 12 | 13 | 10 | 13 | 20 | 17 | 42 | 37 | 63 | 27 | 13 | 50 | 21 | 18 | 16  | 12 | 10 | 8  | 9  | 9  | 15 | 15 | 63            |
| 16-Feb   | 18                            | 22 | 20 | 25 | 25 | 25 | 33 | 29 | 32 | 27 | 28 | 28 | 29 | 77 | 55 | 79 | 56  | 20 | 19 | 18 | 24 | 22 | 21 | 21 | 79            |
| 17-Feb   | 22                            | 22 | 22 | 21 | 19 | 26 | 26 | 23 | 26 | 20 | 19 | 18 | 18 | 20 | 20 | 18 | 21  | 20 | 19 | 19 | 18 | 15 | 17 | 12 | 26            |
| 18-Feb   | 13                            | 12 | 15 | 23 | 15 | 19 | 20 | 16 | 15 | 13 | 19 | 35 | 29 | 23 | 24 | 30 | 27  | 34 | 9  | 13 | 57 | 25 | 10 | 10 | 57            |
| 19-Feb   | 9                             | 15 | 14 | 14 | 15 | 25 | 36 | 15 | 38 | 78 | 28 | 42 | 18 | 28 | 28 | 19 | 18  | 14 | 8  | 18 | 13 | 13 | 15 | 20 | 78            |
| 20-Feb   | 17                            | 18 | 21 | 19 | 37 | 73 | 29 | 19 | 28 | 21 | 28 | 38 | 31 | 15 | 16 | 15 | 17  | 15 | 15 | 9  | 20 | 17 | 12 | 15 | 73            |
| 21-Feb   | 17                            | 17 | 17 | 16 | 19 | 19 | 11 | 14 | 17 | 16 | 39 | 33 | 21 | 19 | 19 | 18 | 17  | 16 | 15 | 14 | 29 | 15 | 37 | 37 | 39            |
| 22-Feb   | 14                            | 27 | 9  | 15 | 15 | 7  | 10 | 8  | 11 | 20 | 76 | 27 | 45 | 29 | 29 | 27 | 21  | 11 | 32 | 22 | 46 | 70 | 43 | 59 | 76            |
| 23-Feb   | 38                            | 16 | 8  | 12 | 12 | 14 | 13 | 18 | 18 | 26 | 27 | 28 | 24 | 12 | 16 | 49 | 23  | 19 | 14 | 14 | 13 | 10 | 40 | 15 | 49            |
| 24-Feb   | 11                            | 12 | 12 | 13 | 15 | 11 | 11 | 12 | 19 | 24 | 27 | 25 | 23 | 23 | 24 | 24 | 29  | 27 | 22 | 24 | 24 | 21 | 25 | 21 | 29            |
| 25-Feb   | 19                            | 19 | 17 | 15 | 9  | 20 | 24 | 34 | 20 | 23 | 13 | 12 | 21 | 28 | 83 | 17 | 24  | 33 | 23 | 14 | 14 | 23 | 20 | 18 | 83            |
| 26-Feb   | 18                            | 17 | 19 | 32 | 51 | 24 | 19 | 39 | 16 | 20 | 32 | 41 | 29 | 18 | 19 | 21 | 24  | 17 | 19 | 19 | 17 | 20 | 22 | 19 | 51            |
| 27-Feb   | 18                            | 20 | 18 | 20 | 19 | 21 | 20 | 19 | 19 | 20 | 20 | 20 | 21 | 18 | 20 | 18 | 22  | 20 | 20 | 20 | 18 | 18 | 14 | 16 | 22            |
| 28-Feb   | 14                            | 13 | 13 | 14 | 11 | 19 | 18 | 17 | 20 | 35 | 21 | 20 | 23 | 25 | 51 | 27 | 18  | 13 | 22 | 65 | 16 | 13 | 7  | 13 | 65            |
| 76 75 78 51 68 73 88 92 42 78 76 76 67 77 83 79 56 54 42 65 86 70 81 59  |                               |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |   |    |    |    |    |    |    |    |               |
| Diurnal Maximum  |                               |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |   |    |    |    |    |    |    |    |               |
| UO - Unstable Operation  |                               |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |   |    |    |    |    |    |    |    |               |





**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Wind Direction (WD) - deg**  
**Buffalo Viewpoint - February 2023**





## WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY  
MONITORING PROGRAM  
MONTHLY REPORT

**AMS05  
MANNIX  
FEBRUARY 2023**

Operations, Data Collection,  
QA/QC, Data Validation and Reporting by:  
Wood Buffalo Environmental Association  
Fort McMurray, Alberta

March 31, 2023

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - MANNIX (AMS05)  
FEBRUARY 2023

MONTHLY SUMMARY

| Parameter                               | Hours of Data | Hours of Calibration | Hours without Data | Operational Time | Maximum 1-Hour Value | 1-Hour Exceedances | Maximum 24-Hour Value | 24-Hour Exceedances |
|---|---------------|----------------------|--------------------|------------------|----------------------|--------------------|-----------------------|---------------------|
| SO2 (ppb) Average                       | 641           | 31                   | 31                 | 100              | 62.5                 | 0                  | 13.3                  | 0                   |
| H2S (ppb) Average                       | 639           | 33                   | 33                 | 100              | 5                    | 0                  | 1.9                   | 0                   |
| THC (ppm) Average                       | 641           | 31                   | 31                 | 100              | 5.1                  | -                  | 3.1                   | -                   |
| NMHC(ppm) Average                       | 641           | 31                   | 31                 | 100              | 0.721                | -                  | 0.172                 | -                   |
| CH4(ppm) Average                        | 641           | 31                   | 31                 | 100              | 4.8                  | -                  | 3                     | -                   |
| Temperature 2 m (C) Average             | 672           | 0                    | 0                  | 100              | 4.3                  | -                  | -0.7                  | -                   |
| Temperature 20 m (C) Average            | 672           | 0                    | 0                  | 100              | 5                    | -                  | -0.2                  | -                   |
| Temperature 45 m (C) Average            | 672           | 0                    | 0                  | 100              | 5                    | -                  | 0                     | -                   |
| Temperature 75 m (C) Average            | 672           | 0                    | 0                  | 100              | 4.8                  | -                  | 0                     | -                   |
| Temperature 90 m (C) Average            | 672           | 0                    | 0                  | 100              | 4.7                  | -                  | 0                     | -                   |
| Relative Humidity 2 m (%) Average       | 672           | 0                    | 0                  | 100              | 92                   | -                  | 84                    | -                   |
| Relative Humidity 20 m (%) Average      | 672           | 0                    | 0                  | 100              | 96                   | -                  | 88                    | -                   |
| Relative Humidity 45 m (%) Average      | 672           | 0                    | 0                  | 100              | 93                   | -                  | 85                    | -                   |
| Relative Humidity 75 m (%) Average      | 672           | 0                    | 0                  | 100              | 94                   | -                  | 87                    | -                   |
| Relative Humidity 90 m (%) Average      | 672           | 0                    | 0                  | 100              | 99                   | -                  | 89                    | -                   |
| Wind Speed 20 m (km/h) Average          | 672           | 0                    | 0                  | 100              | 34                   | -                  | 22                    | -                   |
| Wind Speed 45 m (km/h) Average          | 668           | 0                    | 4                  | 99.4             | 39                   | -                  | 28                    | -                   |
| Wind Speed 75 m (km/h) Average          | 666           | 0                    | 6                  | 99.11            | 42                   | -                  | 31                    | -                   |
| Wind Speed 90 m (km/h) Average          | 669           | 0                    | 3                  | 99.55            | 43                   | -                  | 33                    | -                   |
| Wind Direction 20 m (deg) Average       | 672           | 0                    | 0                  | 100              | -                    | -                  | -                     | -                   |
| Wind Direction 45 m (deg) Average       | 668           | 0                    | 4                  | 99.4             | -                    | -                  | -                     | -                   |
| Wind Direction 75 m (deg) Average       | 666           | 0                    | 6                  | 99.11            | -                    | -                  | -                     | -                   |
| Wind Direction 90 m (deg) Average       | 669           | 0                    | 3                  | 99.55            | -                    | -                  | -                     | -                   |
| Vertical Wind Speed 20 m (km/h) Average | 672           | 0                    | 0                  | 100              | 1.3                  | -                  | 0.7                   | -                   |
| Vertical Wind Speed 45 m (km/h) Average | 668           | 0                    | 4                  | 99.4             | 1.5                  | -                  | 0.5                   | -                   |
| Vertical Wind Speed 75 m (km/h) Average | 666           | 0                    | 6                  | 99.11            | 1.4                  | -                  | 0.4                   | -                   |
| Vertical Wind Speed 90 m (km/h) Average | 669           | 0                    | 3                  | 99.55            | 8.9                  | -                  | 0.6                   | -                   |

Note : Operational time includes periods of data collection and instrument calibration

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - MANNIX (AMS05)  
 FEBRUARY 2023

MONTHLY SUMMARY FOR AIR QUALITY/ METEOROLOGICAL MONITORING MEASUREMENTS

| Parameter                               | Number | Mean   | StnDev | Total | Percentile |       |       |        |      |      |       |
|---|--------|--------|--------|-------|------------|-------|-------|--------|------|------|-------|
|   |        |        |        |       | Min        | P10   | Q1    | Median | Q3   | P90  | Max   |
| SO2 (ppb) Average                       | 641    | 3.94   | 6.8    | -     | 0          | 0.3   | 0.5   | 1      | 4.6  | 10.8 | 62.5  |
| H2S (ppb) Average                       | 639    | 0.68   | 0.7    | -     | 0          | 0.1   | 0.2   | 0.4    | 0.8  | 1.4  | 5     |
| THC (ppm) Average                       | 641    | 2.32   | 0.4    | -     | 2          | 2     | 2.1   | 2.2    | 2.4  | 2.8  | 5.1   |
| NMHC(ppm) Average                       | 641    | 0.059  | 0.093  | -     | 0          | 0     | 0     | 0      | 0.1  | 0.2  | 0.721 |
| CH4(ppm) Average                        | 641    | 2.26   | 0.4    | -     | 2          | 2     | 2.1   | 2.1    | 2.3  | 2.7  | 4.8   |
| Temperature 2 m (C) Average             | 672    | -14.92 | 8.8    | -     | -34.1      | -27.1 | -21.3 | -15.3  | -8.8 | -2.5 | 4.3   |
| Temperature 20 m (C) Average            | 672    | -14.67 | 8.6    | -     | -32.8      | -26.1 | -20.8 | -15.3  | -8.7 | -1.7 | 5     |
| Temperature 45 m (C) Average            | 672    | -14.5  | 8.5    | -     | -30.8      | -25.7 | -20.6 | -15.2  | -8.5 | -1.4 | 5     |
| Temperature 75 m (C) Average            | 672    | -14.4  | 8.5    | -     | -30.6      | -25.5 | -20.6 | -14.9  | -8.7 | -1.5 | 4.8   |
| Temperature 90 m (C) Average            | 672    | -14.38 | 8.4    | -     | -30.7      | -25.5 | -20.7 | -15    | -8.7 | -1.4 | 4.7   |
| Relative Humidity 2 m (%) Average       | 672    | 73.8   | 9      | -     | 44         | 62    | 69    | 75     | 79   | 85   | 92    |
| Relative Humidity 20 m (%) Average      | 672    | 74     | 11     | -     | 43         | 59    | 68    | 75     | 81   | 88   | 96    |
| Relative Humidity 45 m (%) Average      | 672    | 73.5   | 11     | -     | 42         | 58    | 67    | 75     | 81   | 87   | 93    |
| Relative Humidity 75 m (%) Average      | 672    | 74     | 11     | -     | 43         | 58    | 68    | 76     | 82   | 88   | 94    |
| Relative Humidity 90 m (%) Average      | 672    | 74.6   | 12     | -     | 43         | 58    | 68    | 76     | 82   | 89   | 99    |
| Wind Speed 20 m (km/h) Average          | 672    | 9.8    | 6      | -     | 0          | 3     | 6     | 8      | 12   | 19   | 34    |
| Wind Speed 45 m (km/h) Average          | 668    | 13.2   | 8      | -     | 0          | 4     | 7     | 12     | 18   | 25   | 39    |
| Wind Speed 75 m (km/h) Average          | 666    | 15     | 9      | -     | 1          | 5     | 8     | 14     | 20   | 29   | 42    |
| Wind Speed 90 m (km/h) Average          | 669    | 15.8   | 9      | -     | 0          | 5     | 9     | 14     | 21   | 29   | 43    |
| Wind Direction 20 m (deg) Average       | 672    | -      | -      | -     | -          | -     | -     | -      | -    | -    | -     |
| Wind Direction 45 m (deg) Average       | 668    | -      | -      | -     | -          | -     | -     | -      | -    | -    | -     |
| Wind Direction 75 m (deg) Average       | 666    | -      | -      | -     | -          | -     | -     | -      | -    | -    | -     |
| Wind Direction 90 m (deg) Average       | 669    | -      | -      | -     | -          | -     | -     | -      | -    | -    | -     |
| Vertical Wind Speed 20 m (km/h) Average | 672    | 0.07   | 0.4    | -     | -1.5       | -0.4  | -0.2  | 0      | 0.3  | 0.6  | 1.3   |
| Vertical Wind Speed 45 m (km/h) Average | 668    | -0.02  | 0.4    | -     | -1.4       | -0.5  | -0.3  | -0.1   | 0.3  | 0.6  | 1.5   |
| Vertical Wind Speed 75 m (km/h) Average | 666    | 0.14   | 0.3    | -     | -0.9       | -0.2  | 0     | 0.1    | 0.3  | 0.5  | 1.4   |
| Vertical Wind Speed 90 m (km/h) Average | 669    | 0.11   | 0.5    | -     | -1.2       | -0.4  | -0.1  | 0.1    | 0.3  | 0.6  | 8.9   |

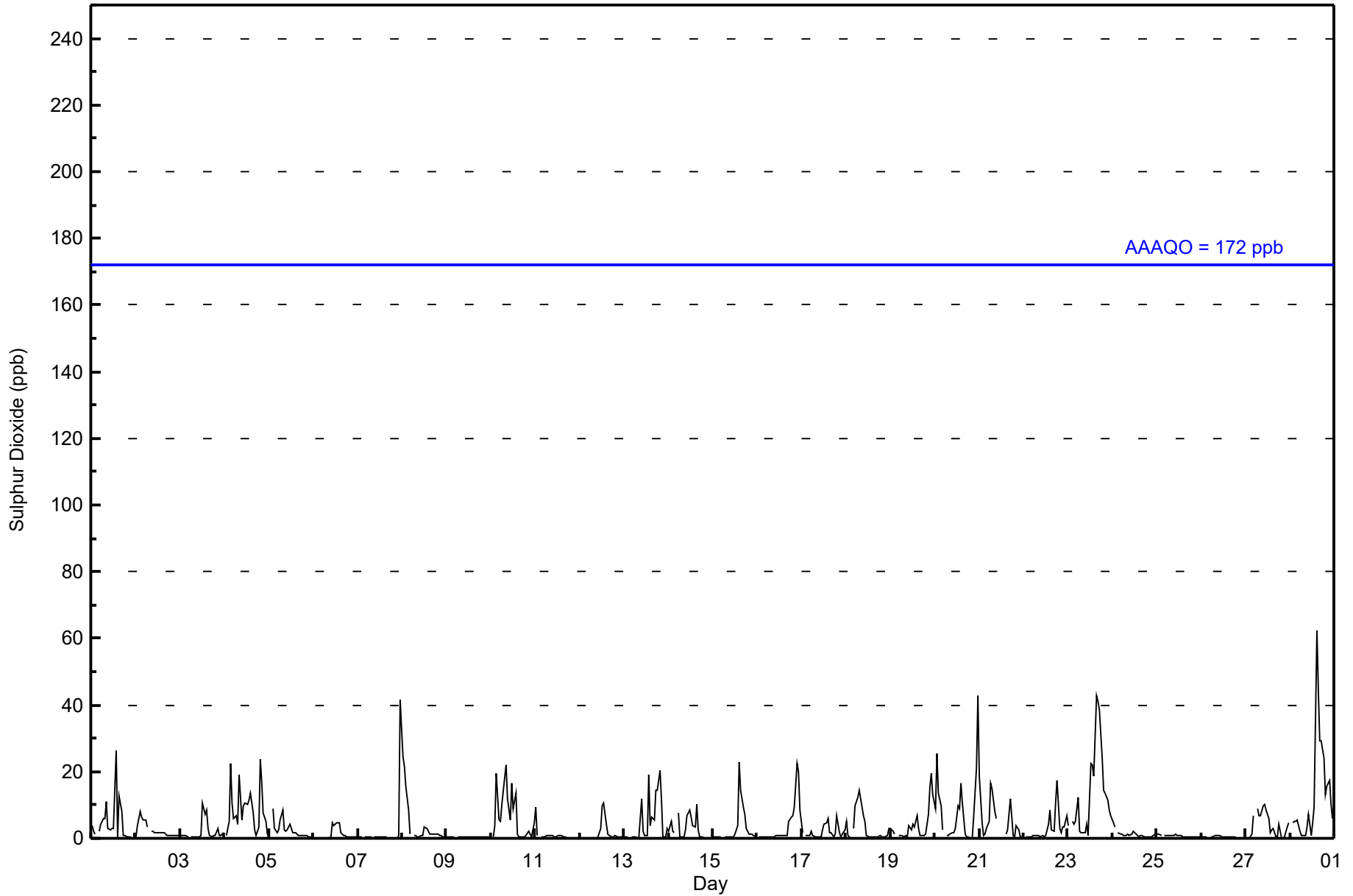
WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - MANNIX (AMS05)  
FEBRUARY 2023

OPERATIONAL NOTES

| Parameter  | Period<br>Start   | Period<br>End     | Duration<br>(Hours) | Notes   |
|--|-------------------|-------------------|---------------------|---|
| Wind Speed, Wind Direction, Vertical Wind Speed at 45m | 13 Feb 2023 10:00 | 13 Feb 2023 13:00 | 4                   | Flat line in sensor output signal - Sensor frozen |
| Wind Speed, Wind Direction, Vertical Wind Speed at 75m | 13 Feb 2023 10:00 | 13 Feb 2023 15:00 | 6                   | Flat line in sensor output signal - Sensor frozen |
| Wind Speed, Wind Direction, Vertical Wind Speed at 90m | 13 Feb 2023 10:00 | 13 Feb 2023 12:00 | 3                   | Flat line in sensor output signal - Sensor frozen |



| Number of Exceedences (AAAQO):  |                               | 1-hr: 0  | 24-hr: 0 | Hours in Service: 672 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |       |      | 672  |      |      |      |               |               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
|---|-------------------------------|--|----------|-----------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-------|------|------|------|------|------|---------------|---------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----------------|--|
| Maximum Value: 62.5 ppb on Feb 28 15:00                                   |                               | Maximum Daily Average: 13.3 ppb on Feb 23  |          |                       |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 641   |      |      |      |      |      |               |               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| Minimum Value: 0.0 ppb on Feb 6 06:00                                     |                               | Minimum Daily Average: 0.4 ppb on Feb 9  |          |                       |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 31    |      |      |      |      |      |               |               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| Maximum Diurnal Average: 7.0 ppb at hour 15                               |                               | Minimum Diurnal Average: 2.3 ppb at hour 5   |          |                       |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 31    |      |      |      |      |      |               |               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| Monthly Average: 3.94 ppb   |                               | Percentiles: P <sub>1</sub> = 0.1 P <sub>10</sub> = 0.3 Q <sub>1</sub> = 0.5 Median = 1.0 Q <sub>3</sub> = 4.6 P <sub>90</sub> = 10.8 P <sub>99</sub> = 34.8 |          |                       |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 100.0 |      |      |      |      |      |               |               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| Day   | Hourly Period Ending At (MST) |  |          |                       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |       |      |      |      |      |      | Daily Average | Daily Maximum |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
|   | 1                             | 2  | 3        | 4                     | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19    | 20   | 21   | 22   | 23   | 24   |               |               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 1-Feb   | 3.9                           | 2.1  | 1.3      | Z                     | 1.9  | 4.4  | 6.1  | 5.9  | 11.2 | 3.1  | 2.6  | 3.0  | 2.9  | 26.1 | 0.5  | 12.8 | 8.2  | 0.8  | 0.8   | 0.4  | 0.4  | 0.2  | 0.2  | 0.2  | 4.3           | 26.1          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 2-Feb   | 0.3                           | 3.8  | 8.2      | 6.4                   | 5.4  | 5.4  | 3.3  | Z    | 2.3  | 2.0  | 1.7  | 1.9  | 1.7  | 1.7  | 1.9  | 1.7  | 1.3  | 1.0  | 0.8   | 0.7  | 0.7  | 0.8  | 0.8  | 0.8  | 2.4           | 8.2           |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 3-Feb   | 0.7                           | 0.7  | 0.7      | 0.7                   | 0.6  | Z    | 0.5  | 0.5  | 0.5  | 0.5  | 0.5  | 0.6  | 10.4 | 7.2  | 8.6  | 3.0  | 1.0  | 0.6  | 0.7   | 0.8  | 3.1  | 0.9  | 0.8  | 1.7  | 2.0           | 10.4          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 4-Feb   | Z                             | 0.8  | 4.9      | 22.5                  | 10.4 | 5.8  | 6.7  | 4.4  | 18.9 | 5.6  | 9.6  | 10.6 | 10.2 | 11.3 | 13.7 | 7.5  | 2.4  | 0.8  | 3.4   | 23.8 | 17.1 | 7.8  | 5.0  | 1.3  | 8.9           | 23.8          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 5-Feb   | 0.8                           | Z  | 9.1      | 3.0                   | 1.8  | 2.4  | 5.3  | 8.3  | 2.6  | 1.9  | 2.4  | 4.3  | 3.1  | 1.8  | 1.5  | 1.2  | 1.0  | 0.8  | 0.8   | 0.7  | 0.8  | 0.5  | 0.4  | 0.4  | 2.4           | 9.1           |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 6-Feb   | 0.1                           | 0.1  | Z        | 0.1                   | 0.0  | 0.0  | 0.0  | 0.1  | 0.0  | 0.6  | 4.7  | 4.0  | 4.8  | 4.5  | 4.8  | 1.6  | 0.9  | 0.8  | 0.5   | 0.4  | 0.4  | 0.4  | 0.4  | 0.4  | 1.3           | 4.8           |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 7-Feb   | 0.4                           | 0.4  | 0.5      | Z                     | 0.5  | 0.4  | 0.3  | 0.2  | 0.2  | 0.3  | 0.5  | 0.5  | 0.4  | 0.3  | 0.3  | 0.2  | 0.2  | 0.1  | 0.2   | 0.1  | 0.1  | 0.1  | 0.7  | 41.6 | 2.1           | 41.6          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 8-Feb   | 24.7                          | 21.4   | 15.5     | 8.4                   | 1.3  | Z    | 0.7  | 0.9  | 0.6  | 0.6  | 1.0  | 0.9  | 3.3  | 2.9  | 2.1  | 1.5  | 1.2  | 1.1  | 1.3   | 1.3  | 0.9  | 0.7  | 0.5  | 0.4  | 4.1           | 24.7          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 9-Feb   | 0.4                           | 0.3  | 0.3      | 0.3                   | 0.3  | Z    | 0.5  | 0.4  | 0.4  | 0.4  | 0.5  | 0.5  | 0.5  | 0.5  | 0.6  | 0.5  | 0.4  | 0.4  | 0.4   | 0.3  | 0.4  | 0.3  | 0.5  | 0.4  | 0.4           | 0.6           |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 10-Feb  | Z                             | 0.6  | 3.7      | 19.3                  | 5.5  | 5.1  | 10.4 | 18.0 | 22.1 | 11.7 | 5.5  | 16.6 | 9.0  | 13.5 | 1.1  | 0.6  | 0.4  | 0.3  | 0.2   | 0.7  | 2.0  | 1.3  | 0.4  | 4.7  | 6.6           | 22.1          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 11-Feb  | 9.1                           | 0.7  | Z        | 0.4                   | 0.5  | 0.6  | 1.0  | 1.0  | 0.8  | 1.0  | 0.6  | 0.6  | 0.7  | 0.7  | 0.7  | 0.5  | 0.2  | 0.2  | 0.1   | 0.1  | 0.1  | 0.1  | 0.0  | 0.1  | 0.9           | 9.1           |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 12-Feb  | 0.1                           | 0.1  | Z        | 0.2                   | 0.1  | 0.1  | 0.1  | 0.1  | 0.1  | 0.2  | 0.2  | 3.1  | 9.7  | 10.5 | 4.2  | 1.3  | 0.8  | 0.6  | 0.5   | 0.7  | 0.5  | 0.4  | 0.4  | 0.5  | 1.5           | 10.5          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 13-Feb  | 0.5                           | 0.4  | 0.4      | Z                     | 0.4  | 0.3  | 0.2  | 0.1  | 0.5  | 11.8 | 2.3  | 0.7  | 1.0  | 19.3 | 3.7  | 6.5  | 5.3  | 14.5 | 14.6  | 20.2 | 11.4 | 0.6  | 0.4  | 3.0  | 5.1           | 20.2          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 14-Feb  | 2.0                           | 5.2  | 2.2      | 1.5                   | Z    | 7.8  | 0.3  | 0.3  | 0.3  | 2.5  | 6.6  | 8.3  | 6.2  | 3.8  | 3.6  | 10.1 | 2.5  | 0.4  | 0.6   | 0.2  | 0.1  | 0.1  | 0.1  | 0.1  | 2.8           | 10.1          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 15-Feb  | 0.2                           | 0.3  | 0.3      | 0.3                   | 0.3  | Z    | 0.3  | 0.4  | 0.4  | 0.3  | 0.3  | 0.4  | 1.3  | 3.8  | 23.0 | 14.2 | 9.4  | 7.4  | 3.1   | 1.3  | 1.1  | 1.1  | 0.8  | 0.6  | 3.1           | 23.0          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 16-Feb  | Z                             | 0.4  | 0.4      | 0.4                   | 0.5  | 0.5  | 0.5  | 0.5  | 0.6  | 0.8  | 0.8  | 0.9  | 1.0  | 1.0  | 0.9  | 0.8  | 5.3  | 6.2  | 6.8   | 9.3  | 22.3 | 20.0 | 8.4  | 3.9  | 22.3          |               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 17-Feb  | 1.5                           | Z  | 0.9      | 0.8                   | 0.8  | 2.1  | 0.9  | 0.6  | 0.5  | 0.5  | 0.5  | 2.7  | 4.2  | 4.8  | 6.0  | 1.7  | 1.8  | 0.5  | 1.2   | 6.9  | 1.5  | 0.2  | 1.3  | 2.5  | 1.9           | 6.9           |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 18-Feb  | 5.1                           | 0.9  | 0.2      | Z                     | 3.0  | 9.8  | 12.2 | 14.3 | 12.0 | 7.0  | 4.9  | 0.8  | 0.5  | 0.3  | 0.4  | 0.3  | 0.5  | 0.3  | 1.0   | 0.6  | 0.4  | 0.5  | 1.0  | 3.0  | 3.4           | 14.3          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 19-Feb  | 2.8                           | 1.9  | 1.2      | Z                     | 1.0  | 0.9  | 0.8  | 0.5  | 0.7  | 0.5  | 3.8  | 2.6  | 4.2  | 3.5  | 6.6  | 2.8  | 0.9  | 0.7  | 0.9   | 1.1  | 7.2  | 15.2 | 19.4 | 13.2 | 4.0           | 19.4          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 20-Feb  | 8.9                           | 25.5   | 13.5     | 9.8                   | 2.6  | Z    | 0.9  | 0.8  | 1.2  | 1.8  | 1.7  | 3.1  | 9.7  | 8.7  | 16.6 | 10.8 | 1.2  | 0.6  | 0.3   | 0.2  | 0.2  | 6.5  | 21.1 | 42.6 | 8.2           | 42.6          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 21-Feb  | 18.5                          | 4.6  | 0.8      | 1.4                   | 2.9  | 5.1  | 16.6 | 15.0 | 7.9  | 6.0  | Z    | C    | C    | C    | 1.4  | 2.7  | 7.1  | 11.9 | 0.6   | 0.4  | 3.7  | 2.8  | 0.5  | 0.4  | 5.5           | 18.5          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 22-Feb  | Z                             | 0.4  | 0.4      | 0.5                   | 0.6  | 0.6  | 0.9  | 0.8  | 0.8  | 0.6  | 0.7  | 0.6  | 1.0  | 4.2  | 8.5  | 2.7  | 2.0  | 10.8 | 17.4  | 2.9  | 1.6  | 3.6  | 3.5  | 6.9  | 3.1           | 17.4          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 23-Feb  | 3.7                           | Z  | 5.2      | 4.1                   | 5.0  | 12.2 | 2.3  | 1.8  | 1.6  | 1.7  | 4.2  | 0.7  | 22.6 | 21.8 | 18.4 | 42.6 | 41.3 | 38.5 | 24.3  | 14.6 | 13.4 | 11.3 | 8.5  | 6.7  | 13.3          | 42.6          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 24-Feb  | 4.8                           | 3.5  | Z        | 1.6                   | 1.2  | 1.1  | 1.0  | 1.0  | 1.1  | 1.0  | 1.4  | 2.0  | 1.7  | 0.7  | 0.5  | 0.7  | 0.8  | 0.6  | 0.5   | 0.4  | 0.4  | 0.5  | 0.7  | 1.2  | 1.2           | 4.8           |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 25-Feb  | 1.2                           | 1.1  | 0.9      | Z                     | 0.8  | 0.8  | 0.8  | 0.7  | 0.8  | 0.9  | 1.2  | 1.0  | 0.7  | 0.7  | 0.6  | 0.6  | 0.5  | 0.6  | 0.6   | 0.5  | 0.5  | 0.4  | 0.4  | 0.6  | 0.7           | 1.2           |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 26-Feb  | 0.6                           | 0.6  | 0.5      | 0.3                   | Z    | 0.4  | 0.5  | 0.7  | 0.7  | 0.7  | 0.8  | 0.6  | 0.6  | 0.6  | 0.6  | 0.4  | 0.4  | 0.3  | 0.2   | 0.2  | 0.1  | 0.2  | 0.2  | 0.2  | 0.4           | 0.8           |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 27-Feb  | 0.2                           | 0.2  | 0.2      | 1.1                   | 6.7  | Z    | 8.8  | 6.9  | 6.6  | 9.9  | 10.4 | 8.6  | 5.8  | 1.9  | 2.6  | 2.9  | 0.3  | 0.4  | 4.1   | 0.1  | 0.1  | 0.6  | 3.4  | 4.6  | 3.7           | 10.4          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 28-Feb  | Z                             | 4.7  | 4.9      | 5.0                   | 5.4  | 2.2  | 1.0  | 0.8  | 0.7  | 3.2  | 7.4  | 1.0  | 4.8  | 9.2  | 62.5 | 44.6 | 29.0 | 29.3 | 24.0  | 13.2 | 15.9 | 17.6 | 10.2 | 6.0  | 13.1          | 62.5          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
|   |                               |  |          |                       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |       |      |      |      |      | 3.9  | 3.2           | 3.2           | 4.0  | 2.3  | 3.1  | 3.0  | 3.1  | 3.4  | 2.7  | 2.8  | 3.0  | 4.5  | 6.1  | 7.0  | 6.3  | 4.3  | 4.6  | 3.9  | 3.6  | 3.3  | 3.5  | 3.6  | 5.4  | Diurnal Average |  |
|   |                               |  |          |                       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |       |      |      |      |      | 24.7 | 25.5          | 15.5          | 22.5 | 10.4 | 12.2 | 16.6 | 18.0 | 22.1 | 11.8 | 10.4 | 16.6 | 22.6 | 26.1 | 62.5 | 44.6 | 41.3 | 38.5 | 24.3 | 23.8 | 17.1 | 22.3 | 21.1 | 42.6 | Diurnal Maximum |  |
| Z - zerospan C - Calibration  |                               |  |          |                       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |       |      |      |      |      |      |               |               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 172 ppb 24-hr 48 ppb |                               |  |          |                       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |       |      |      |      |      |      |               |               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Sulphur Dioxide (SO<sub>2</sub>) - ppb**  
**Mannix - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 10                            | 573                    | 89.39    | 89.39               |
| 11 - 20                           | 45                     | 7.02     | 96.41               |
| 21 - 60                           | 22                     | 3.43     | 99.84               |
| 61 - 110                          | 1                      | 0.16     | 100.00              |
| 111 - 172                         | 0                      | 0.00     | 100.00              |
| > 172                             | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 641

Total Number of Hours: 672





**Wood Buffalo Environmental Association  
Frequency Distribution**

**Sulphur Dioxide (SO<sub>2</sub>) - ppb  
Mannix - February 2023**

| <b>Concentration<br/>Ranges (ppb)</b> | <b>Wind Direction</b> |     |    |     |   |     |    |     |    |     |    |     |    |     |    |     | <b>Totals</b> |
|---------------------------------------|-----------------------|-----|----|-----|---|-----|----|-----|----|-----|----|-----|----|-----|----|-----|---------------|
|                                       | N                     | NNE | NE | ENE | E | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |               |
| 0 - 10                                | 53                    | 52  | 13 | 10  | 7 | 9   | 63 | 119 | 36 | 7   | 6  | 17  | 50 | 30  | 49 | 52  | 573           |
| 11 - 20                               | 14                    | 5   | 1  | 0   | 1 | 0   | 1  | 1   | 3  | 0   | 2  | 0   | 0  | 2   | 2  | 13  | 45            |
| 21 - 60                               | 7                     | 0   | 0  | 0   | 0 | 0   | 2  | 3   | 0  | 0   | 0  | 0   | 4  | 1   | 2  | 3   | 22            |
| 61 - 110                              | 0                     | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 1  | 0   | 0  | 0   | 1             |
| 111 - 172                             | 0                     | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| > 172                                 | 0                     | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| <b>Totals</b>                         | 74                    | 57  | 14 | 10  | 8 | 9   | 66 | 123 | 39 | 7   | 8  | 17  | 55 | 33  | 53 | 68  | 641           |

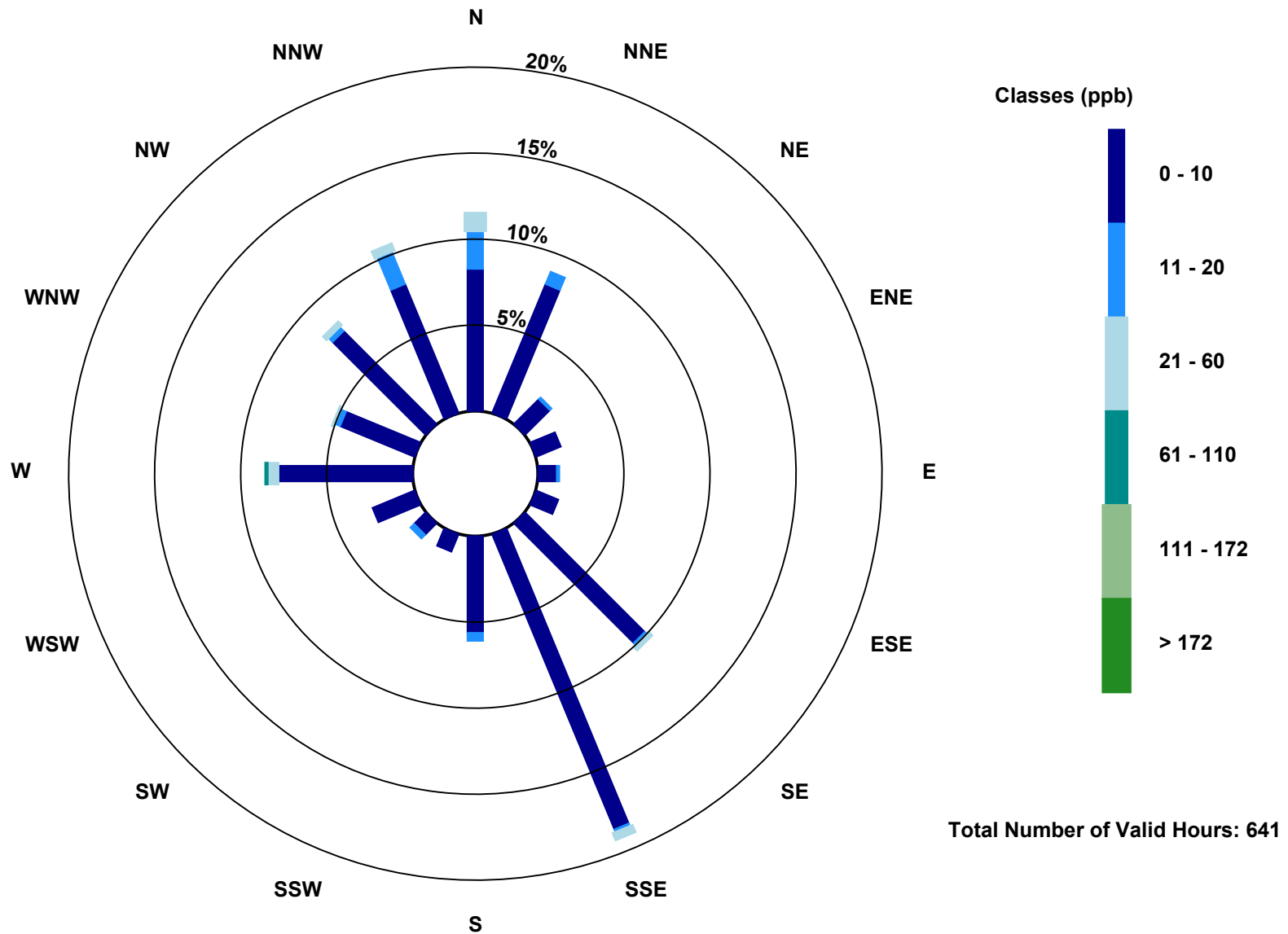
Total Number of Valid Hours: 641

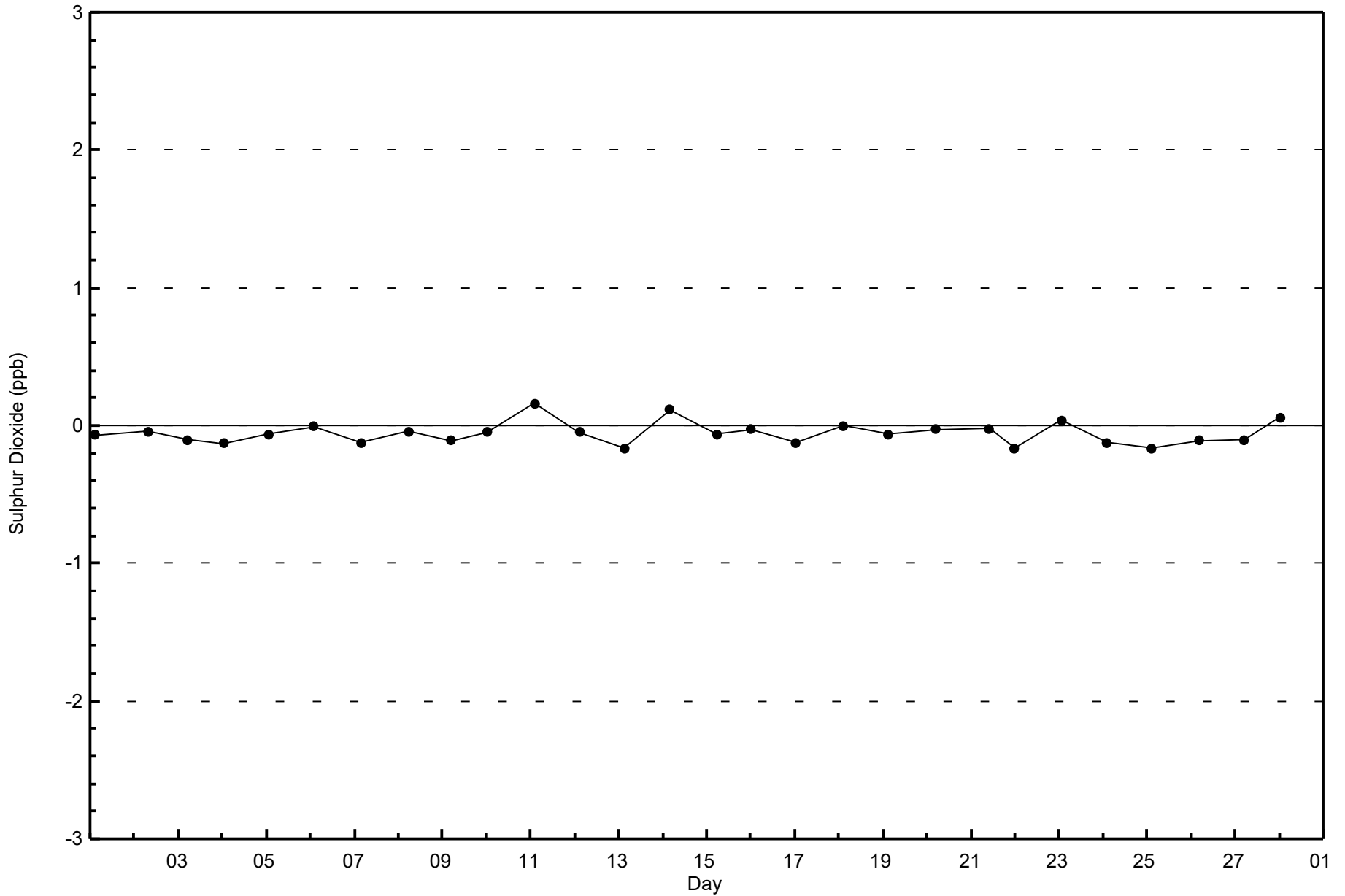
Total Number of Hours: 672

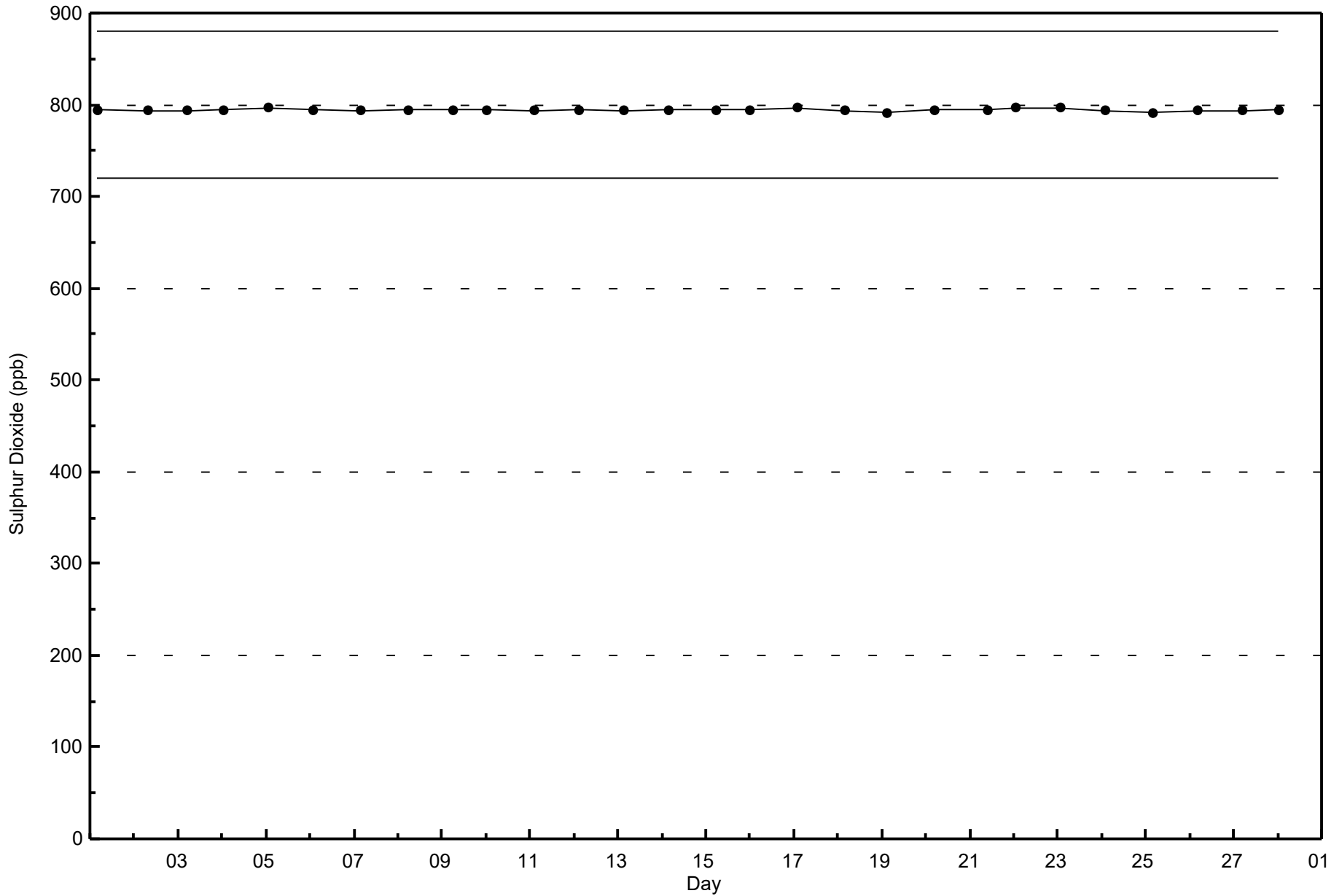


Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Sulphur Dioxide (SO<sub>2</sub>) - ppb  
Mannix



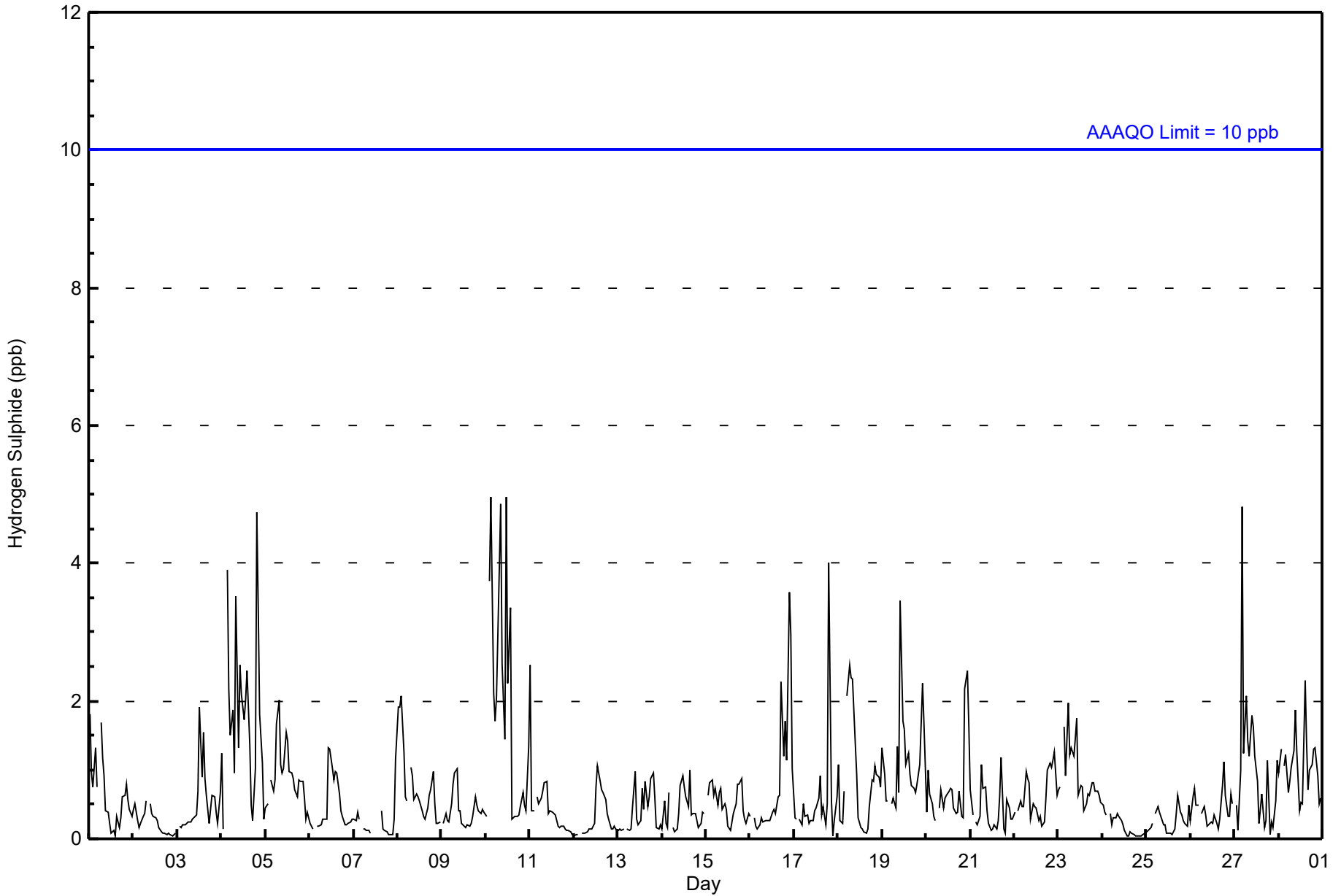






| Number of Exceedences (AAAQO):             |                               | 1-hr: 0  | 24-hr: 0 | Hours in Service: 672 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                          |     | Daily Average                   |     | Daily Maximum |                 |               |                 |     |
|--|-------------------------------|--|----------|-----------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------------------------|-----|---------------------------------|-----|---------------|-----------------|---------------|-----------------|-----|
| Maximum Value: 5.0 ppb on Feb 10 04:00     |                               | Maximum Daily Average: 1.9 ppb on Feb 10   |          |                       |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Hours of Data: 639       |     | Hours of Missing Data: 33       |     |               |                 |               |                 |     |
| Minimum Value: 0.0 ppb on Feb 24 14:00     |                               | Minimum Daily Average: 0.2 ppb on Feb 24   |          |                       |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Hours of Calibration: 33 |     | Percent Operational Time: 100.0 |     |               |                 |               |                 |     |
| Maximum Diurnal Average: 1.0 ppb at hour 9 |                               | Minimum Diurnal Average: 0.4 ppb at hour 17  |          |                       |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                          |     |                                 |     |               |                 |               |                 |     |
| Monthly Average: 0.68 ppb                  |                               | Percentiles: P <sub>1</sub> = 0.0 P <sub>10</sub> = 0.1 Q <sub>1</sub> = 0.2 Median = 0.4 Q <sub>3</sub> = 0.8 P <sub>90</sub> = 1.4 P <sub>99</sub> = 3.9 |          |                       |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                          |     |                                 |     |               |                 |               |                 |     |
| Day  | Hourly Period Ending At (MST) |  |          |                       |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                          |     |                                 |     |               |                 | Daily Average | Daily Maximum   |     |
|  | 1                             | 2  | 3        | 4                     | 5   | 6   | 7   | 8   | 9   | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19                       | 20  | 21                              | 22  | 23            | 24              |               |                 |     |
| 1-Feb                                      | 1.8                           | 1.0  | 0.8      | 1.3                   | 0.7 | Z   | 1.7 | 1.2 | 0.9 | 0.4 | 0.4 | 0.2 | 0.1 | 0.1 | 0.1 | 0.3 | 0.2 | 0.3 | 0.6                      | 0.6 | 0.8                             | 0.6 | 0.4           | 0.3             | 0.6           | 1.8             |     |
| 2-Feb                                      | 0.4                           | 0.5  | 0.3      | 0.2                   | 0.2 | 0.3 | 0.4 | 0.6 | Z   | 0.5 | 0.4 | 0.3 | 0.3 | 0.3 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1                      | 0.1 | 0.1                             | 0.1 | 0.1           | 0.1             | 0.1           | 0.2             | 0.6 |
| 3-Feb                                      | Z                             | 0.2  | 0.2      | 0.2                   | 0.2 | 0.2 | 0.2 | 0.3 | 0.3 | 0.3 | 0.3 | 0.7 | 1.9 | 0.9 | 1.5 | 0.9 | 0.6 | 0.2 | 0.4                      | 0.6 | 0.6                             | 0.4 | 0.2           | 0.7             | 0.5           | 1.9             |     |
| 4-Feb                                      | 1.3                           | 0.1  | Z        | 3.9                   | 2.2 | 1.5 | 1.9 | 1.0 | 3.5 | 1.3 | 2.5 | 2.1 | 1.7 | 2.0 | 2.4 | 1.4 | 0.5 | 0.3 | 1.0                      | 4.7 | 3.4                             | 1.8 | 1.1           | 0.3             | 1.8           | 4.7             |     |
| 5-Feb                                      | 0.5                           | 0.5  | Z        | 0.9                   | 0.7 | 0.9 | 1.7 | 2.0 | 1.1 | 0.9 | 1.0 | 1.6 | 1.4 | 1.0 | 1.0 | 0.9 | 0.7 | 0.6 | 0.9                      | 0.8 | 0.8                             | 0.6 | 0.3           | 0.4             | 0.9           | 2.0             |     |
| 6-Feb                                      | 0.2                           | 0.2  | 0.1      | Z                     | 0.2 | 0.2 | 0.2 | 0.3 | 0.3 | 0.3 | 1.3 | 1.3 | 1.0 | 0.9 | 1.0 | 0.9 | 0.6 | 0.4 | 0.3                      | 0.2 | 0.2                             | 0.2 | 0.3           | 0.3             | 0.5           | 1.3             |     |
| 7-Feb                                      | 0.3                           | 0.3  | 0.4      | 0.3                   | Z   | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | C   | C   | C   | C   | C   | 0.4 | 0.1 | 0.1 | 0.1                      | 0.1 | 0.1                             | 0.1 | 0.3           | 1.2             | 0.2           | 1.2             |     |
| 8-Feb                                      | 1.9                           | 1.9  | 2.1      | 1.3                   | 0.6 | 0.6 | Z   | 1.0 | 0.9 | 0.6 | 0.6 | 0.6 | 0.5 | 0.4 | 0.3 | 0.3 | 0.4 | 0.6 | 0.7                      | 1.0 | 0.5                             | 0.2 | 0.2           | 0.2             | 0.8           | 2.1             |     |
| 9-Feb                                      | Z                             | 0.2  | 0.4      | 0.3                   | 0.3 | 0.5 | 0.8 | 1.0 | 1.0 | 0.4 | 0.4 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.3 | 0.6                      | 0.5 | 0.4                             | 0.4 | 0.4           | 0.4             | 0.4           | 1.0             |     |
| 10-Feb                                     | 0.3                           | Z  | 3.7      | 5.0                   | 2.1 | 1.7 | 2.1 | 3.9 | 4.9 | 2.6 | 1.4 | 5.0 | 2.2 | 3.4 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3                      | 0.5 | 0.7                             | 0.5 | 0.4           | 1.4             | 1.9           | 5.0             |     |
| 11-Feb                                     | 2.5                           | 0.4  | 0.4      | Z                     | 0.6 | 0.5 | 0.6 | 0.7 | 0.8 | 0.8 | 0.4 | 0.4 | 0.4 | 0.4 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2                      | 0.1 | 0.1                             | 0.1 | 0.1           | 0.1             | 0.5           | 2.5             |     |
| 12-Feb                                     | 0.0                           | 0.1  | 0.1      | Z                     | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.8 | 1.1 | 0.8 | 0.7 | 0.7 | 0.6 | 0.4                      | 0.3 | 0.1                             | 0.1 | 0.2           | 0.1             | 0.3           | 1.1             |     |
| 13-Feb                                     | 0.1                           | 0.1  | 0.1      | 0.2                   | Z   | 0.1 | 0.1 | 0.1 | 0.5 | 1.0 | 0.3 | 0.2 | 0.3 | 0.7 | 0.4 | 0.8 | 0.5 | 0.6 | 0.9                      | 1.0 | 0.6                             | 0.2 | 0.1           | 0.2             | 0.4           | 1.0             |     |
| 14-Feb                                     | 0.1                           | 0.6  | 0.2      | 0.2                   | 0.7 | Z   | 0.2 | 0.1 | 0.1 | 0.4 | 0.8 | 0.9 | 0.8 | 0.6 | 0.5 | 1.0 | 0.3 | 0.4 | 0.4                      | 0.3 | 0.2                             | 0.2 | 0.4           | 0.4             | 0.4           | 1.0             |     |
| 15-Feb                                     | Z                             | 0.6  | 0.8      | 0.9                   | 0.6 | 0.7 | 0.5 | 0.7 | 0.7 | 0.4 | 0.5 | 0.4 | 0.2 | 0.1 | 0.2 | 0.4 | 0.5 | 0.8 | 0.8                      | 0.9 | 0.4                             | 0.3 | 0.2           | 0.4             | 0.5           | 0.9             |     |
| 16-Feb                                     | 0.3                           | Z  | 0.3      | 0.2                   | 0.2 | 0.2 | 0.3 | 0.2 | 0.3 | 0.3 | 0.3 | 0.3 | 0.4 | 0.4 | 0.4 | 0.6 | 0.6 | 2.3 | 1.2                      | 1.7 | 1.1                             | 3.6 | 3.0           | 1.0             | 0.8           | 3.6             |     |
| 17-Feb                                     | 0.3                           | 0.3  | Z        | 0.3                   | 0.2 | 0.5 | 0.3 | 0.3 | 0.2 | 0.3 | 0.3 | 0.4 | 0.4 | 0.6 | 0.9 | 0.3 | 0.5 | 0.2 | 0.5                      | 4.0 | 0.5                             | 0.0 | 0.3           | 0.6             | 0.5           | 4.0             |     |
| 18-Feb                                     | 1.1                           | 0.3  | 0.2      | 0.7                   | Z   | 2.1 | 2.5 | 2.3 | 2.3 | 1.4 | 0.9 | 0.3 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.5 | 0.8                      | 0.8 | 1.1                             | 0.9 | 0.9           | 0.8             | 0.9           | 2.5             |     |
| 19-Feb                                     | 1.3                           | 0.9  | 0.6      | 0.5                   | Z   | 0.5 | 0.6 | 0.5 | 1.4 | 0.7 | 3.5 | 1.7 | 1.6 | 1.1 | 1.2 | 0.9 | 0.8 | 0.7 | 0.7                      | 0.8 | 1.1                             | 1.7 | 2.3           | 1.7             | 1.2           | 3.5             |     |
| 20-Feb                                     | 0.4                           | 1.0  | 0.7      | 0.5                   | 0.3 | 0.3 | Z   | 0.4 | 0.7 | 0.4 | 0.6 | 0.6 | 0.7 | 0.7 | 0.7 | 0.5 | 0.4 | 0.4 | 0.7                      | 0.3 | 0.3                             | 2.2 | 2.4           | 1.7             | 0.7           | 2.4             |     |
| 21-Feb                                     | 0.7                           | 0.3  | Z        | 0.2                   | 0.2 | 0.3 | 1.1 | 0.7 | 0.8 | 0.4 | 0.2 | 0.1 | 0.1 | 0.2 | 0.1 | 0.3 | 0.6 | 1.2 | 0.1                      | 0.1 | 0.6                             | 0.4 | 0.3           | 0.3             | 0.4           | 1.2             |     |
| 22-Feb                                     | 0.4                           | Z  | 0.4      | 0.5                   | 0.5 | 0.5 | 1.0 | 0.9 | 0.8 | 0.3 | 0.5 | 0.5 | 0.5 | 0.3 | 0.3 | 0.2 | 0.2 | 0.6 | 1.0                      | 1.1 | 1.0                             | 1.1 | 1.3           | 0.6             | 0.6           | 1.3             |     |
| 23-Feb                                     | 0.7                           | 0.8  | Z        | 1.6                   | 0.9 | 2.0 | 1.2 | 1.3 | 1.2 | 1.5 | 1.8 | 0.6 | 0.8 | 0.8 | 0.4 | 0.5 | 0.6 | 0.6 | 0.8                      | 0.8 | 0.7                             | 0.7 | 0.6           | 0.5             | 0.9           | 2.0             |     |
| 24-Feb                                     | 0.5                           | 0.4  | 0.3      | Z                     | 0.4 | 0.2 | 0.3 | 0.3 | 0.4 | 0.3 | 0.3 | 0.2 | 0.1 | 0.0 | 0.0 | 0.1 | 0.1 | 0.1 | 0.0                      | 0.0 | 0.0                             | 0.0 | 0.1           | 0.1             | 0.2           | 0.5             |     |
| 25-Feb                                     | 0.1                           | 0.1  | 0.2      | 0.2                   | Z   | 0.4 | 0.5 | 0.4 | 0.3 | 0.2 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.4 | 0.6 | 0.4                      | 0.3 | 0.3                             | 0.2 | 0.2           | 0.5             | 0.3           | 0.6             |     |
| 26-Feb                                     | 0.3                           | 0.6  | 0.7      | 0.5                   | 0.5 | Z   | 0.4 | 0.5 | 0.3 | 0.2 | 0.2 | 0.3 | 0.2 | 0.3 | 0.2 | 0.1 | 0.3 | 0.8 | 1.1                      | 0.6 | 0.3                             | 0.3 | 0.7           | 0.5             | 0.4           | 1.1             |     |
| 27-Feb                                     | Z                             | 0.5  | 0.1      | 1.0                   | 4.8 | 1.2 | 2.1 | 1.4 | 1.2 | 1.8 | 1.6 | 1.2 | 0.8 | 0.2 | 0.4 | 0.6 | 0.2 | 0.3 | 1.1                      | 0.1 | 0.3                             | 0.2 | 0.5           | 1.1             | 1.0           | 4.8             |     |
| 28-Feb                                     | 1.0                           | 1.3  | Z        | 1.1                   | 1.2 | 0.7 | 0.8 | 1.0 | 1.3 | 1.9 | 1.3 | 0.4 | 0.5 | 0.5 | 2.3 | 1.4 | 0.7 | 1.0 | 1.1                      | 1.3 | 1.3                             | 0.9 | 0.5           | 0.6             | 1.0           | 2.3             |     |
|  |                               |  |          |                       |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                          |     |                                 |     |               | Diurnal Average |               | Diurnal Maximum |     |
|  |                               |  |          |                       |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                          |     |                                 |     |               | 0.7             |               | 2.5             |     |
|  |                               |  |          |                       |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                          |     |                                 |     |               | 0.5             |               | 1.9             |     |
|  |                               |  |          |                       |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                          |     |                                 |     |               | 0.6             |               | 3.7             |     |
|  |                               |  |          |                       |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                          |     |                                 |     |               | 0.9             |               | 5.0             |     |
|  |                               |  |          |                       |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                          |     |                                 |     |               | 0.8             |               | 4.8             |     |
|  |                               |  |          |                       |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                          |     |                                 |     |               | 0.7             |               | 2.1             |     |
|  |                               |  |          |                       |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                          |     |                                 |     |               | 0.8             |               | 2.5             |     |
|  |                               |  |          |                       |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                          |     |                                 |     |               | 0.8             |               | 3.9             |     |
|  |                               |  |          |                       |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                          |     |                                 |     |               | 1.0             |               | 4.9             |     |
|  |                               |  |          |                       |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                          |     |                                 |     |               | 0.7             |               | 2.6             |     |
|  |                               |  |          |                       |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                          |     |                                 |     |               | 0.8             |               | 3.5             |     |
|  |                               |  |          |                       |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                          |     |                                 |     |               | 0.8             |               | 5.0             |     |
|  |                               |  |          |                       |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                          |     |                                 |     |               | 0.7             |               | 2.2             |     |
|  |                               |  |          |                       |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                          |     |                                 |     |               | 0.6             |               | 3.4             |     |
|  |                               |  |          |                       |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                          |     |                                 |     |               | 0.6             |               | 2.4             |     |
|  |                               |  |          |                       |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                          |     |                                 |     |               | 0.5             |               | 1.4             |     |
|  |                               |  |          |                       |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                          |     |                                 |     |               | 0.4             |               | 0.8             |     |
|  |                               |  |          |                       |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                          |     |                                 |     |               | 0.5             |               | 2.3             |     |
|  |                               |  |          |                       |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                          |     |                                 |     |               | 0.6             |               | 4.7             |     |
|  |                               |  |          |                       |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                          |     |                                 |     |               | 0.8             |               | 3.4             |     |
|  |                               |  |          |                       |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                          |     |                                 |     |               | 0.6             |               | 3.6             |     |
|  |                               |  |          |                       |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                          |     |                                 |     |               | 0.6             |               | 3.0             |     |
|  |                               |  |          |                       |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                          |     |                                 |     |               | 0.6             |               | 1.7             |     |

Z - zerospan      C - Calibration  
 Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 10 ppb    24-hr 3 ppb





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Hydrogen Sulphide (H<sub>2</sub>S) - ppb  
Mannix - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 2                             | 620                    | 97.03    | 97.03               |
| 3 - 4                             | 14                     | 2.19     | 99.22               |
| 5 - 7                             | 5                      | 0.78     | 100.00              |
| 8 - 11                            | 0                      | 0.00     | 100.00              |
| > 11                              | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 639

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Hydrogen Sulphide (H<sub>2</sub>S) - ppb  
Mannix - February 2023**

| Concentration<br>Ranges (ppb) | Wind Direction |     |    |     |   |     |    |     |    |     |    |     |    |     |    |     | Totals |
|-------------------------------|----------------|-----|----|-----|---|-----|----|-----|----|-----|----|-----|----|-----|----|-----|--------|
|                               | N              | NNE | NE | ENE | E | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |        |
| 0 - 2                         | 66             | 54  | 15 | 8   | 8 | 9   | 64 | 126 | 39 | 7   | 8  | 19  | 47 | 35  | 55 | 60  | 620    |
| 3 - 4                         | 6              | 0   | 0  | 1   | 0 | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 1   | 1  | 5   | 14     |
| 5 - 7                         | 2              | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 3   | 5      |
| 8 - 11                        | 0              | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| > 11                          | 0              | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| <b>Totals</b>                 | 74             | 54  | 15 | 9   | 8 | 9   | 64 | 126 | 39 | 7   | 8  | 19  | 47 | 36  | 56 | 68  | 639    |

Total Number of Valid Hours: 639

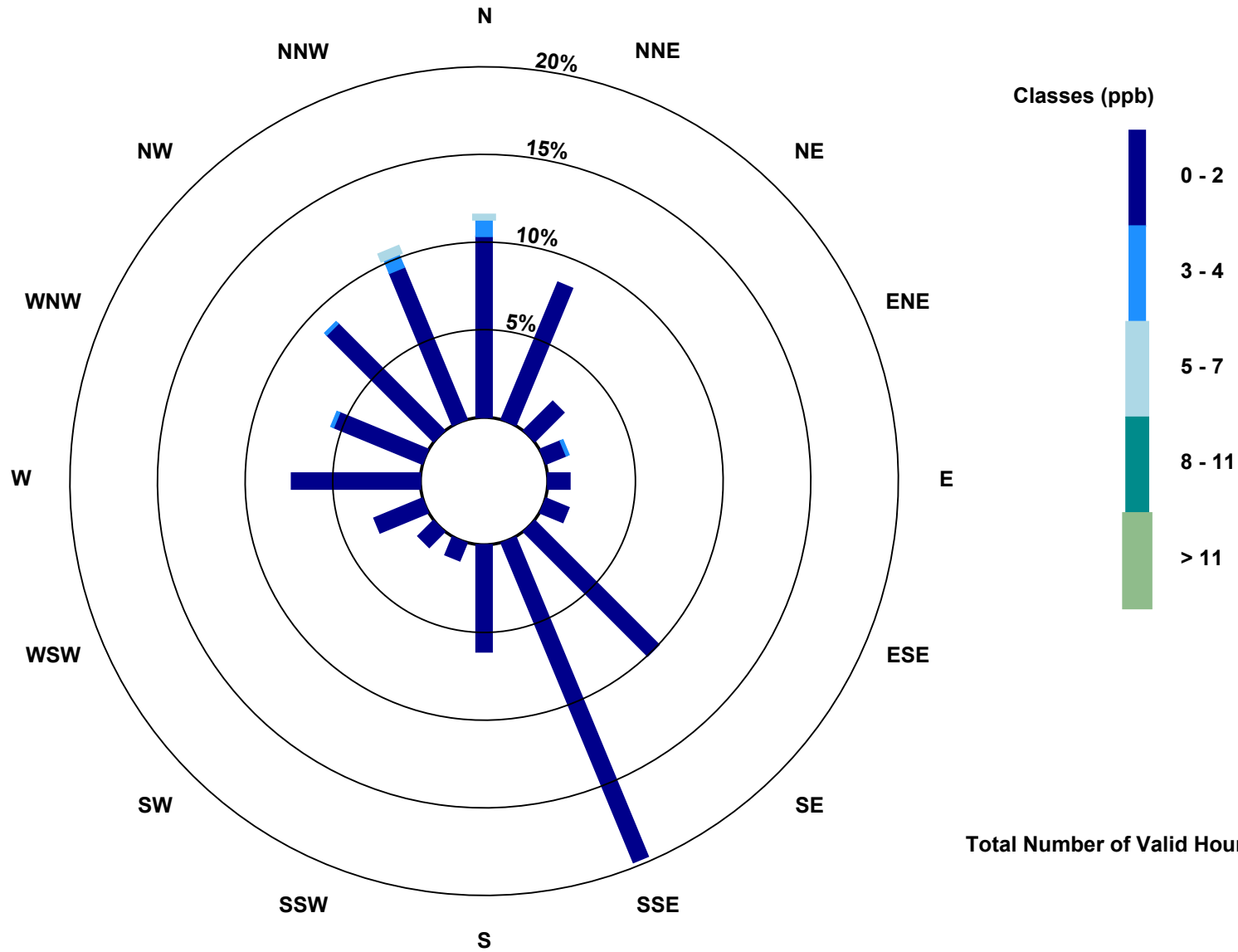
Total Number of Hours: 672



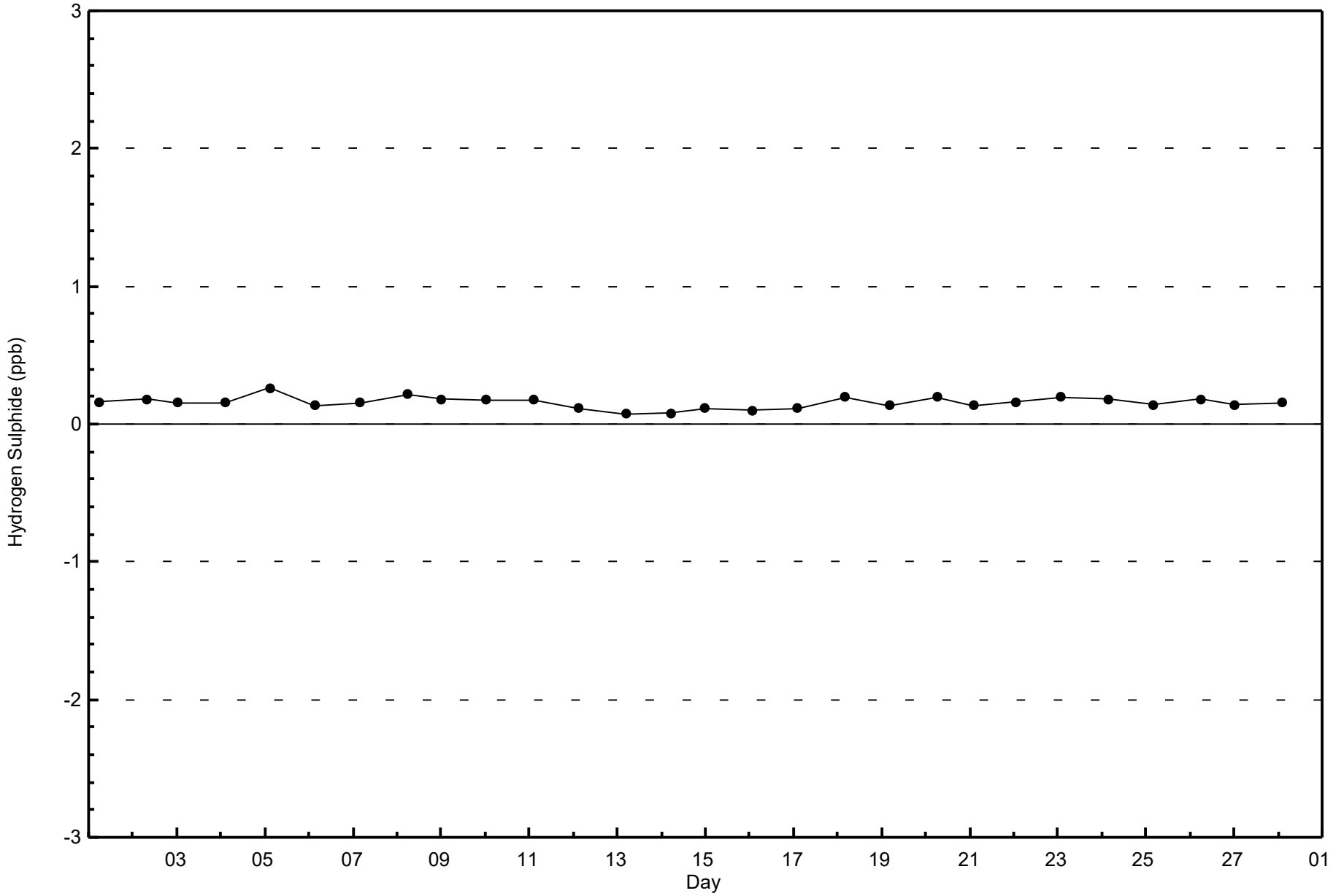


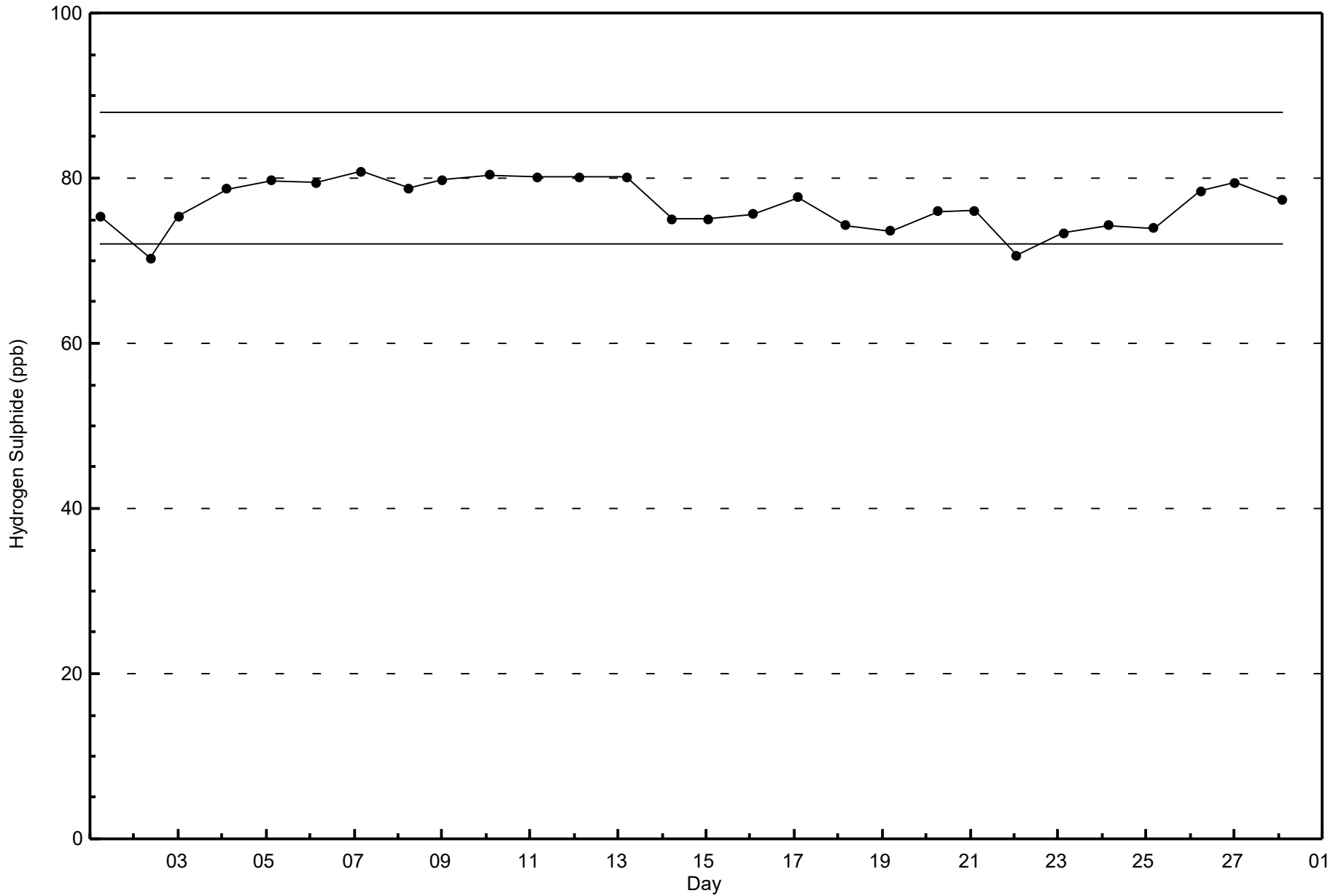
Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Hydrogen Sulphide (H<sub>2</sub>S) - ppb  
Mannix



Total Number of Valid Hours: 639







Wood Buffalo Environmental Association

Summary of Hour Averages

Total Hydrocarbons (THC) - ppm

Mannix - February 2023

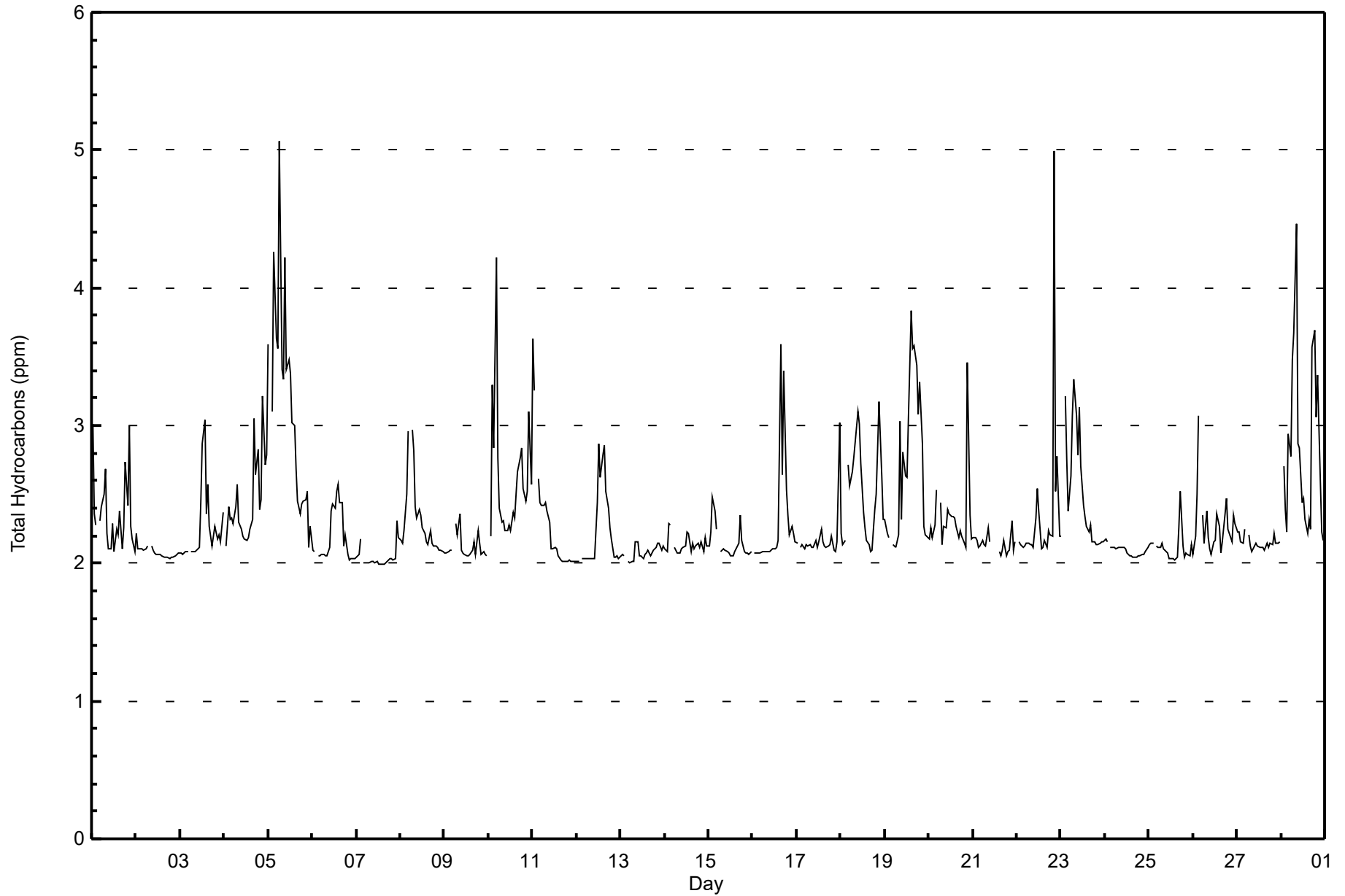
| Maximum Value: 5.1 ppm on Feb 5 07:00      |                               | Maximum Daily Average: 3.1 ppm on Feb 5  |     | Hours in Service: 672           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |               |               |     |
|--|-------------------------------|--|-----|---------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----------------|---------------|---------------|-----|
| Minimum Value: 2.0 ppm on Feb 7 16:00      |                               | Minimum Daily Average: 2.0 ppm on Feb 7  |     | Hours of Data: 641              |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |               |               |     |
| Maximum Diurnal Average: 2.4 ppm at hour 7 |                               | Minimum Diurnal Average: 2.2 ppm at hour 2   |     | Hours of Missing Data: 31       |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |               |               |     |
| Monthly Average: 2.32 ppm                  |                               | Percentiles: P <sub>1</sub> = 2.0 P <sub>10</sub> = 2.0 Q <sub>1</sub> = 2.1 Median = 2.2 Q <sub>3</sub> = 2.4 P <sub>90</sub> = 2.8 P <sub>99</sub> = 3.8 |     | Hours of Calibration: 31        |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |               |               |     |
|  |                               |  |     | Percent Operational Time: 100.0 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |               |               |     |
| Day  | Hourly Period Ending At (MST) |  |     |                                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 | Daily Average | Daily Maximum |     |
|  | 1                             | 2  | 3   | 4                               | 5   | 6   | 7   | 8   | 9   | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19  | 20  | 21  | 22  | 23  | 24              |               |               |     |
| 1-Feb                                      | 3.0                           | 2.4  | 2.3 | Z                               | 2.3 | 2.4 | 2.5 | 2.7 | 2.2 | 2.1 | 2.1 | 2.3 | 2.1 | 2.2 | 2.2 | 2.4 | 2.1 | 2.3 | 2.7 | 2.4 | 3.0 | 2.3 | 2.2 | 2.1             | 2.4           | 3.0           |     |
| 2-Feb                                      | 2.2                           | 2.1  | 2.1 | 2.1                             | 2.1 | 2.1 | 2.1 | Z   | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1 | 2.1 | 2.1             | 2.1           | 2.1           | 2.2 |
| 3-Feb                                      | 2.1                           | 2.1  | 2.1 | 2.1                             | 2.1 | Z   | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.4 | 2.9 | 3.0 | 2.4 | 2.6 | 2.3 | 2.1 | 2.2 | 2.3 | 2.2 | 2.2 | 2.2 | 2.4             | 2.3           | 3.0           |     |
| 4-Feb                                      | Z                             | 2.1  | 2.4 | 2.3                             | 2.3 | 2.3 | 2.4 | 2.6 | 2.3 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.3 | 3.0 | 3.0 | 2.6 | 2.8 | 2.4 | 2.5 | 3.2 | 2.7 | 2.8             | 2.5           | 3.2           |     |
| 5-Feb                                      | 3.6                           | Z  | 3.1 | 4.3                             | 3.6 | 3.6 | 5.1 | 3.4 | 3.3 | 4.2 | 3.4 | 3.5 | 3.4 | 3.0 | 3.0 | 2.7 | 2.4 | 2.4 | 2.4 | 2.5 | 2.5 | 2.5 | 2.1 | 2.3             | 3.1           | 5.1           |     |
| 6-Feb                                      | 2.1                           | 2.1  | Z   | 2.1                             | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.4 | 2.4 | 2.4 | 2.5 | 2.6 | 2.4 | 2.4 | 2.1 | 2.2 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0             | 2.2           | 2.6           |     |
| 7-Feb                                      | 2.0                           | 2.1  | 2.2 | Z                               | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.3 | 2.2             | 2.0           | 2.3           |     |
| 8-Feb                                      | 2.2                           | 2.1  | 2.2 | 2.5                             | 3.0 | Z   | 3.0 | 2.8 | 2.4 | 2.3 | 2.4 | 2.3 | 2.3 | 2.2 | 2.2 | 2.1 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1             | 2.1           | 2.3           | 3.0 |
| 9-Feb                                      | 2.1                           | 2.1  | 2.1 | 2.1                             | 2.1 | Z   | 2.3 | 2.2 | 2.4 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.1 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1             | 2.1           | 2.1           | 2.4 |
| 10-Feb                                     | Z                             | 2.2  | 3.3 | 2.8                             | 4.2 | 2.8 | 2.4 | 2.3 | 2.3 | 2.2 | 2.2 | 2.3 | 2.2 | 2.4 | 2.3 | 2.5 | 2.7 | 2.8 | 2.8 | 2.5 | 2.5 | 2.5 | 3.1 | 2.6             | 2.6           | 4.2           |     |
| 11-Feb                                     | 3.6                           | 3.3  | Z   | 2.6                             | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.3 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0             | 2.3           | 3.6           |     |
| 12-Feb                                     | 2.0                           | 2.0  | Z   | 2.0                             | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.4 | 2.9 | 2.6 | 2.8 | 2.9 | 2.5 | 2.4 | 2.3 | 2.2 | 2.0 | 2.0 | 2.1 | 2.0             | 2.2           | 2.9           |     |
| 13-Feb                                     | 2.1                           | 2.1  | 2.1 | Z                               | 2.0 | 2.0 | 2.0 | 2.0 | 2.2 | 2.2 | 2.1 | 2.1 | 2.0 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.1 | 2.1 | 2.1             | 2.1           | 2.2           |     |
| 14-Feb                                     | 2.1                           | 2.1  | 2.3 | 2.3                             | Z   | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.1 | 2.2 | 2.1             | 2.1           | 2.3           |     |
| 15-Feb                                     | 2.1                           | 2.2  | 2.5 | 2.4                             | 2.3 | Z   | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.3 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1             | 2.1           | 2.5           |     |
| 16-Feb                                     | Z                             | 2.1  | 2.1 | 2.1                             | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 3.6 | 2.6 | 3.4 | 2.5 | 2.4 | 2.2 | 2.3 | 2.2 | 2.2             | 2.3           | 3.6           |     |
| 17-Feb                                     | 2.1                           | Z  | 2.1 | 2.1                             | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.1 | 2.2 | 2.3 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.1 | 2.1 | 2.2 | 3.0             | 2.2           | 3.0           |     |
| 18-Feb                                     | 2.2                           | 2.1  | 2.2 | Z                               | 2.7 | 2.6 | 2.7 | 2.8 | 2.9 | 3.1 | 3.0 | 2.7 | 2.4 | 2.3 | 2.2 | 2.1 | 2.1 | 2.1 | 2.4 | 2.5 | 2.8 | 3.2 | 2.6 | 2.3             | 2.5           | 3.2           |     |
| 19-Feb                                     | 2.3                           | 2.2  | 2.2 | Z                               | 2.1 | 2.1 | 2.1 | 2.2 | 3.0 | 2.3 | 2.8 | 2.6 | 2.6 | 3.1 | 3.8 | 3.6 | 3.6 | 3.4 | 3.1 | 3.3 | 2.9 | 2.3 | 2.2 | 2.2             | 2.7           | 3.8           |     |
| 20-Feb                                     | 2.2                           | 2.3  | 2.2 | 2.3                             | 2.5 | Z   | 2.4 | 2.1 | 2.3 | 2.3 | 2.4 | 2.4 | 2.3 | 2.3 | 2.3 | 2.3 | 2.2 | 2.2 | 2.2 | 2.1 | 2.1 | 3.5 | 2.3 | 2.2             | 2.3           | 3.5           |     |
| 21-Feb                                     | 2.2                           | 2.2  | 2.2 | 2.1                             | 2.1 | 2.2 | 2.1 | 2.1 | 2.3 | 2.2 | Z   | C   | C   | C   | 2.1 | 2.1 | 2.1 | 2.2 | 2.1 | 2.1 | 2.1 | 2.3 | 2.1 | 2.2             | 2.1           | 2.3           |     |
| 22-Feb                                     | Z                             | 2.2  | 2.1 | 2.1                             | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.3 | 2.5 | 2.4 | 2.1 | 2.1 | 2.2 | 2.1 | 2.2 | 2.2 | 2.2 | 2.2 | 5.0 | 2.5 | 2.8             | 2.2           | 5.0           |     |
| 23-Feb                                     | 2.2                           | Z  | 3.2 | 2.8                             | 2.4 | 2.6 | 3.1 | 3.3 | 3.1 | 2.8 | 3.1 | 2.7 | 2.4 | 2.3 | 2.3 | 2.2 | 2.3 | 2.2 | 2.2 | 2.1 | 2.1 | 2.1 | 2.2 | 2.2             | 2.5           | 3.3           |     |
| 24-Feb                                     | 2.2                           | 2.2  | Z   | 2.1                             | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1             | 2.1           | 2.2           |     |
| 25-Feb                                     | 2.1                           | 2.1  | 2.1 | Z                               | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.3 | 2.5 | 2.1 | 2.0 | 2.1 | 2.1 | 2.1             | 2.1           | 2.5           |     |
| 26-Feb                                     | 2.1                           | 2.2  | 2.5 | 3.1                             | Z   | 2.3 | 2.1 | 2.4 | 2.2 | 2.1 | 2.1 | 2.2 | 2.2 | 2.4 | 2.3 | 2.1 | 2.2 | 2.4 | 2.5 | 2.2 | 2.2 | 2.2 | 2.4 | 2.3             | 2.3           | 3.1           |     |
| 27-Feb                                     | 2.2                           | 2.2  | 2.2 | 2.1                             | 2.3 | Z   | 2.2 | 2.1 | 2.1 | 2.1 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.1 | 2.1 | 2.2             | 2.2           | 2.3           |     |
| 28-Feb                                     | Z                             | 2.7  | 2.4 | 2.2                             | 2.9 | 2.8 | 3.5 | 3.7 | 4.5 | 2.9 | 2.8 | 2.4 | 2.5 | 2.3 | 2.2 | 2.3 | 2.2 | 3.6 | 3.7 | 3.1 | 3.4 | 2.6 | 2.2 | 2.2             | 2.8           | 4.5           |     |
|  |                               |  |     |                                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Diurnal Average |               |               |     |
|  |                               |  |     |                                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Diurnal Maximum |               |               |     |
|  |                               |  |     |                                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | 2.3 3.6         |               |               |     |
|  |                               |  |     |                                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | 2.2 3.3         |               |               |     |
|  |                               |  |     |                                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | 2.3 4.3         |               |               |     |
|  |                               |  |     |                                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | 2.4 4.2         |               |               |     |
|  |                               |  |     |                                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | 2.4 3.6         |               |               |     |
|  |                               |  |     |                                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | 2.3 5.1         |               |               |     |
|  |                               |  |     |                                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | 2.4 3.7         |               |               |     |
|  |                               |  |     |                                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | 2.4 4.5         |               |               |     |
|  |                               |  |     |                                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | 2.3 4.2         |               |               |     |
|  |                               |  |     |                                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | 2.3 3.4         |               |               |     |
|  |                               |  |     |                                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | 2.3 3.5         |               |               |     |
|  |                               |  |     |                                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | 2.3 3.4         |               |               |     |
|  |                               |  |     |                                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | 2.3 3.1         |               |               |     |
|  |                               |  |     |                                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | 2.3 3.8         |               |               |     |
|  |                               |  |     |                                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | 2.3 3.6         |               |               |     |
|  |                               |  |     |                                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | 2.3 3.6         |               |               |     |
|  |                               |  |     |                                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | 2.4 3.6         |               |               |     |
|  |                               |  |     |                                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | 2.3 3.7         |               |               |     |
|  |                               |  |     |                                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | 2.3 3.3         |               |               |     |
|  |                               |  |     |                                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | 2.4 5.0         |               |               |     |
|  |                               |  |     |                                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | 2.3 3.5         |               |               |     |
|  |                               |  |     |                                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | 2.2 3.1         |               |               |     |
|  |                               |  |     |                                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | 2.2 3.0         |               |               |     |

Z - zerospan C - Calibration



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Total Hydrocarbons (THC) - ppm**  
**Mannix - February 2023**





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Total Hydrocarbons (THC) - ppm**  
**Mannix - February 2023**

| <b>Concentration Ranges (ppm)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 2.0                           | 65                     | 10.14    | 10.14               |
| 2.1 - 3.0                         | 532                    | 83.00    | 93.14               |
| 3.1 - 10.0                        | 44                     | 6.86     | 100.00              |
| > 10.0                            | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 641

Total Number of Hours: 672



**Wood Buffalo Environmental Association**  
**Frequency Distribution**

**Total Hydrocarbons (THC) - ppm**  
**Mannix - February 2023**

| Concentration<br>Ranges (ppm) | Wind Direction |     |    |     |   |     |    |     |    |     |    |     |    |     |    |     | Totals |
|-------------------------------|----------------|-----|----|-----|---|-----|----|-----|----|-----|----|-----|----|-----|----|-----|--------|
|                               | N              | NNE | NE | ENE | E | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |        |
| 0 - 2.0                       | 0              | 0   | 0  | 0   | 0 | 0   | 11 | 7   | 2  | 0   | 1  | 13  | 27 | 3   | 0  | 1   | 65     |
| 2.1 - 3.0                     | 72             | 56  | 12 | 9   | 7 | 8   | 55 | 114 | 36 | 7   | 6  | 3   | 24 | 24  | 37 | 62  | 532    |
| 3.1 - 10.0                    | 2              | 1   | 2  | 1   | 1 | 1   | 0  | 2   | 1  | 0   | 1  | 1   | 4  | 6   | 16 | 5   | 44     |
| > 10.0                        | 0              | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| <b>Totals</b>                 | 74             | 57  | 14 | 10  | 8 | 9   | 66 | 123 | 39 | 7   | 8  | 17  | 55 | 33  | 53 | 68  | 641    |

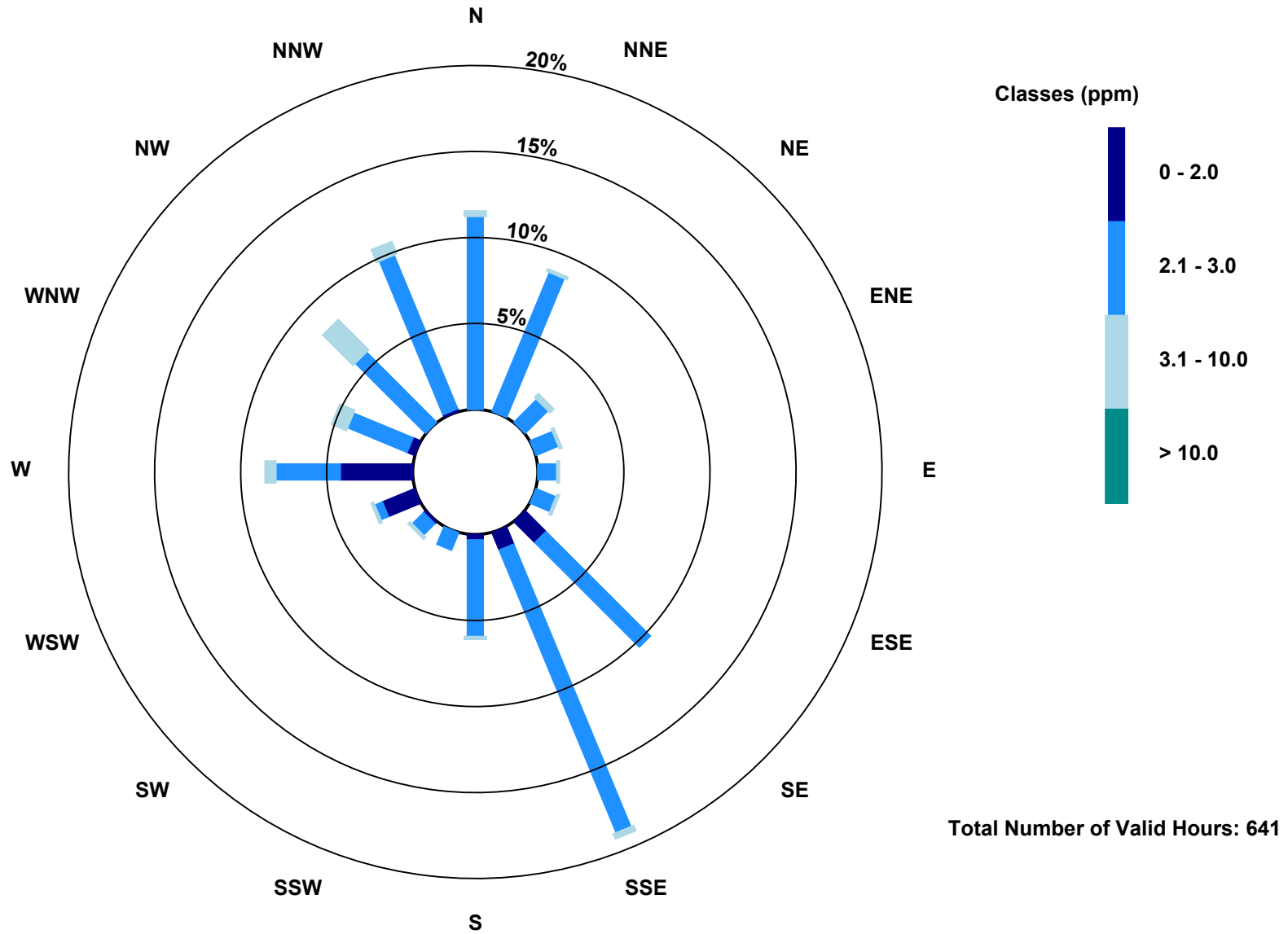
Total Number of Valid Hours: 641

Total Number of Hours: 672

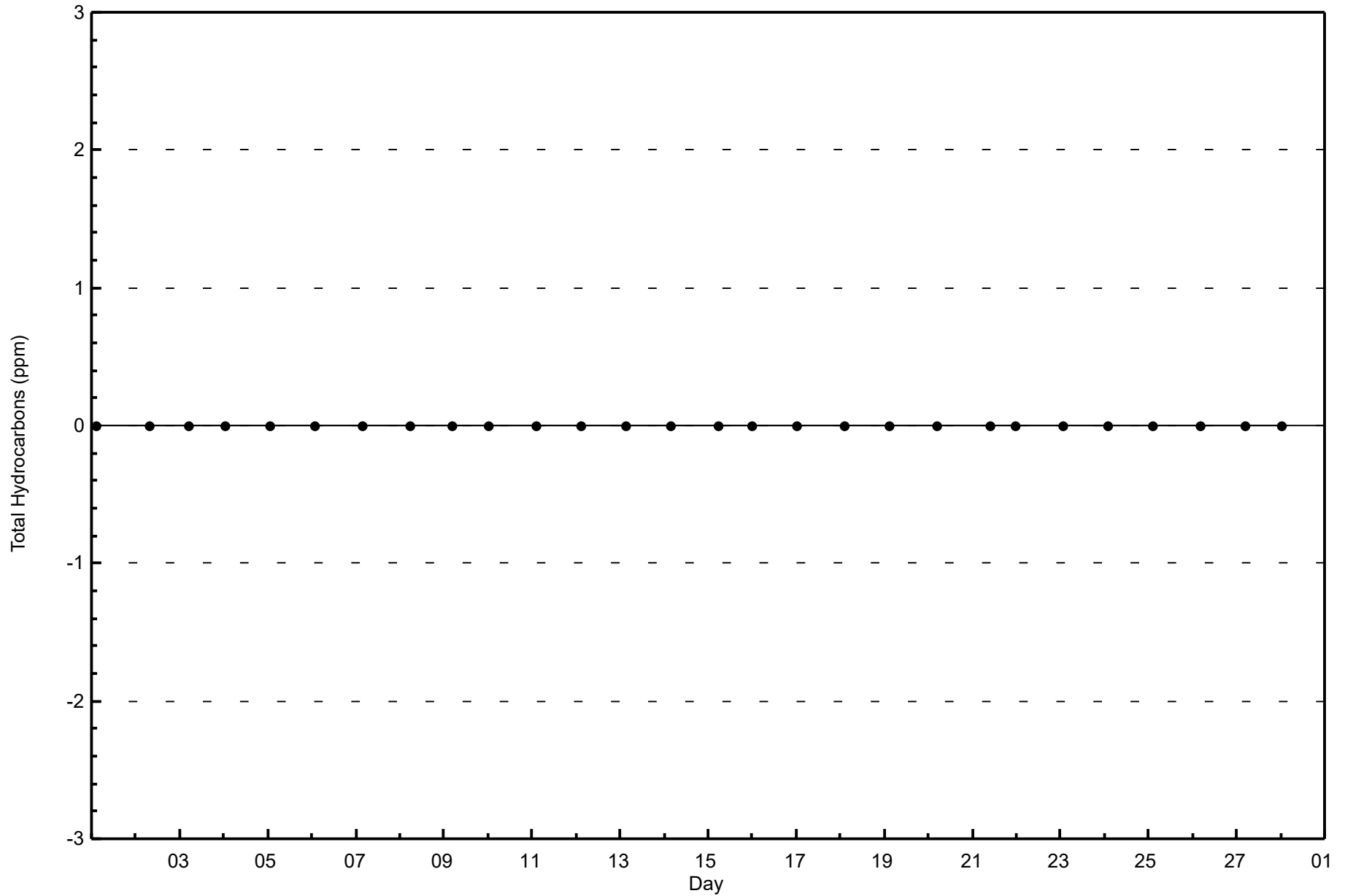


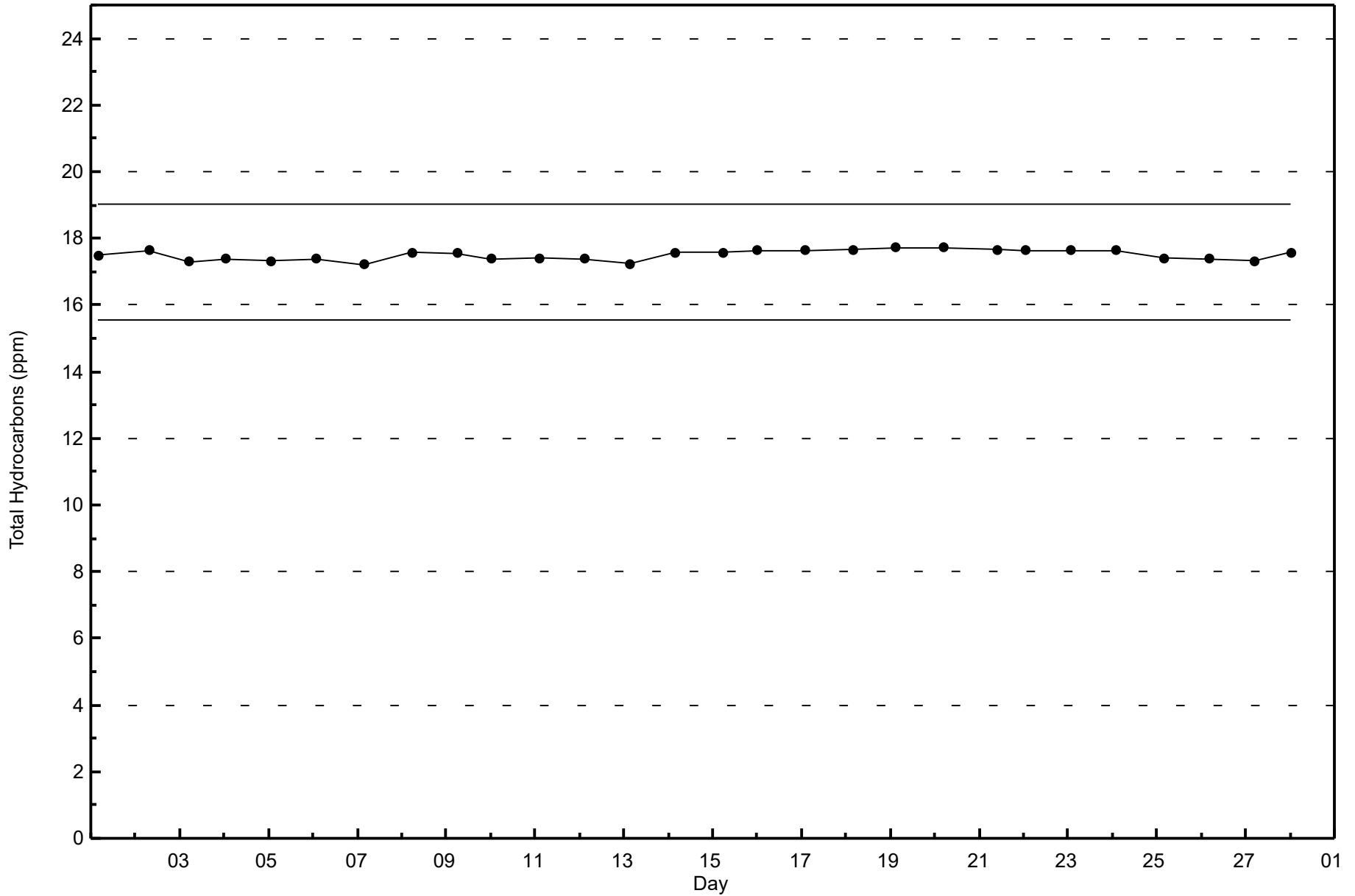
Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Total Hydrocarbons (THC) - ppm  
Mannix







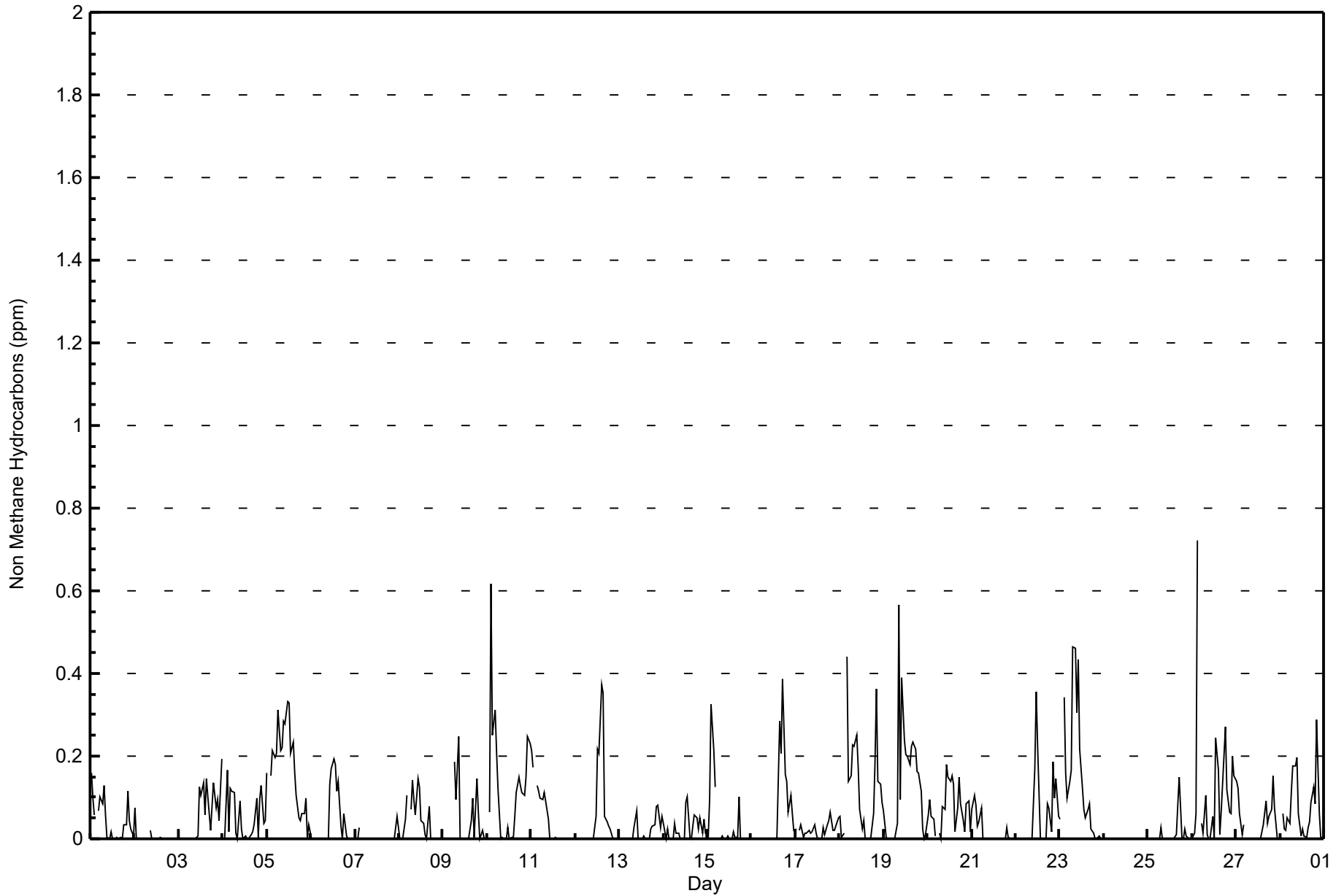




Summary of Hour Averages

Mannix - February 2023

| Maximum Value: 0.721 ppm on Feb 26 04:00  |                               | Maximum Daily Average: 0.172 ppm on Feb 5  |       | Hours in Service: 672           |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |               |               |       |
|---|-------------------------------|--|-------|---------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-----------------|---------------|---------------|-------|
| Minimum Value: 0.000 ppm on Feb 1 11:00   |                               | Minimum Daily Average: 0.000 ppm on Feb 24   |       | Hours of Data: 641              |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |               |               |       |
| Maximum Diurnal Average: 0.086 ppm at hour 4  |                               | Minimum Diurnal Average: 0.034 ppm at hour 2   |       | Hours of Missing Data: 31       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |               |               |       |
| Monthly Average: 0.059 ppm  |                               | Percentiles: P <sub>1</sub> = 0.0 P <sub>10</sub> = 0.0 Q <sub>1</sub> = 0.0 Median = 0.0 Q <sub>3</sub> = 0.1 P <sub>90</sub> = 0.2 P <sub>99</sub> = 0.4 |       | Hours of Calibration: 31        |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |               |               |       |
|   |                               |  |       | Percent Operational Time: 100.0 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |               |               |       |
| Day   | Hourly Period Ending At (MST) |  |       |                                 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 | Daily Average | Daily Maximum |       |
|   | 1                             | 2  | 3     | 4                               | 5     | 6     | 7     | 8     | 9     | 10    | 11    | 12    | 13    | 14    | 15    | 16    | 17    | 18    | 19    | 20    | 21    | 22    | 23    | 24              |               |               |       |
| 1-Feb   | 0.158                         | 0.099  | 0.059 | Z                               | 0.068 | 0.102 | 0.085 | 0.128 | 0.056 | 0.005 | 0.000 | 0.018 | 0.000 | 0.000 | 0.003 | 0.001 | 0.003 | 0.000 | 0.034 | 0.033 | 0.115 | 0.044 | 0.024 | 0.006           | 0.045         | 0.158         |       |
| 2-Feb   | 0.076                         | 0.000  | 0.000 | 0.000                           | 0.000 | 0.000 | 0.001 | Z     | 0.019 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.003 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000           | 0.004         | 0.076         |       |
| 3-Feb   | 0.000                         | 0.000  | 0.000 | 0.000                           | 0.000 | Z     | 0.000 | 0.000 | 0.000 | 0.000 | 0.008 | 0.126 | 0.104 | 0.137 | 0.058 | 0.147 | 0.101 | 0.019 | 0.078 | 0.136 | 0.073 | 0.097 | 0.044 | 0.194           | 0.057         | 0.194         |       |
| 4-Feb   | Z                             | 0.000  | 0.165 | 0.018                           | 0.123 | 0.116 | 0.112 | 0.013 | 0.000 | 0.091 | 0.023 | 0.000 | 0.007 | 0.000 | 0.000 | 0.009 | 0.018 | 0.034 | 0.100 | 0.002 | 0.096 | 0.128 | 0.036 | 0.044           | 0.049         | 0.165         |       |
| 5-Feb   | 0.159                         | Z  | 0.153 | 0.213                           | 0.196 | 0.207 | 0.312 | 0.214 | 0.220 | 0.285 | 0.279 | 0.332 | 0.330 | 0.206 | 0.236 | 0.160 | 0.104 | 0.051 | 0.045 | 0.059 | 0.062 | 0.098 | 0.000 | 0.032           | 0.172         | 0.332         |       |
| 6-Feb   | 0.000                         | 0.000  | Z     | 0.000                           | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.001 | 0.134 | 0.169 | 0.192 | 0.181 | 0.115 | 0.141 | 0.031 | 0.000 | 0.063 | 0.006 | 0.000 | 0.000 | 0.000 | 0.000           | 0.045         | 0.192         |       |
| 7-Feb   | 0.000                         | 0.001  | 0.028 | Z                               | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.028 | 0.055 | 0.005           | 0.055         |               |       |
| 8-Feb   | 0.000                         | 0.000  | 0.000 | 0.046                           | 0.104 | Z     | 0.070 | 0.144 | 0.096 | 0.059 | 0.147 | 0.127 | 0.045 | 0.036 | 0.011 | 0.001 | 0.079 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000           | 0.042         | 0.147         |       |
| 9-Feb   | 0.000                         | 0.000  | 0.000 | 0.000                           | 0.000 | Z     | 0.185 | 0.096 | 0.248 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.002 | 0.044 | 0.099 | 0.005 | 0.146 | 0.065 | 0.000 | 0.021 | 0.004 | 0.000           | 0.040         | 0.248         |       |
| 10-Feb  | Z                             | 0.065  | 0.617 | 0.252                           | 0.310 | 0.209 | 0.121 | 0.002 | 0.003 | 0.000 | 0.000 | 0.026 | 0.000 | 0.002 | 0.002 | 0.054 | 0.111 | 0.151 | 0.129 | 0.112 | 0.105 | 0.149 | 0.248 | 0.231           | 0.126         | 0.617         |       |
| 11-Feb  | 0.212                         | 0.173  | Z     | 0.130                           | 0.117 | 0.097 | 0.096 | 0.111 | 0.091 | 0.047 | 0.000 | 0.000 | 0.000 | 0.002 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000           | 0.047         | 0.212         |       |
| 12-Feb  | 0.000                         | 0.000  | Z     | 0.000                           | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.054 | 0.216 | 0.207 | 0.373 | 0.354 | 0.053 | 0.041 | 0.032 | 0.024 | 0.000 | 0.000 | 0.001 | 0.000           | 0.059         | 0.373         |       |
| 13-Feb  | 0.000                         | 0.000  | 0.000 | Z                               | 0.000 | 0.000 | 0.000 | 0.000 | 0.028 | 0.068 | 0.000 | 0.000 | 0.006 | 0.000 | 0.000 | 0.000 | 0.000 | 0.023 | 0.030 | 0.034 | 0.079 | 0.082 | 0.027 | 0.055           | 0.019         | 0.082         |       |
| 14-Feb  | 0.038                         | 0.000  | 0.023 | 0.000                           | Z     | 0.001 | 0.036 | 0.012 | 0.013 | 0.001 | 0.000 | 0.001 | 0.087 | 0.100 | 0.003 | 0.000 | 0.029 | 0.056 | 0.050 | 0.024 | 0.051 | 0.014 | 0.048 | 0.013           | 0.026         | 0.100         |       |
| 15-Feb  | 0.003                         | 0.096  | 0.327 | 0.213                           | 0.125 | Z     | 0.000 | 0.000 | 0.007 | 0.000 | 0.000 | 0.005 | 0.000 | 0.000 | 0.016 | 0.005 | 0.003 | 0.103 | 0.001 | 0.000 | 0.000 | 0.000 | 0.000 | 0.003           | 0.039         | 0.327         |       |
| 16-Feb  | Z                             | 0.000  | 0.000 | 0.000                           | 0.000 | 0.000 | 0.001 | 0.000 | 0.000 | 0.000 | 0.000 | 0.001 | 0.000 | 0.000 | 0.003 | 0.283 | 0.206 | 0.386 | 0.156 | 0.138 | 0.065 | 0.106 | 0.060 | 0.019           | 0.062         | 0.386         |       |
| 17-Feb  | 0.024                         | Z  | 0.021 | 0.033                           | 0.002 | 0.013 | 0.013 | 0.021 | 0.015 | 0.016 | 0.035 | 0.013 | 0.001 | 0.000 | 0.000 | 0.027 | 0.011 | 0.034 | 0.045 | 0.065 | 0.019 | 0.019 | 0.030 | 0.051           | 0.022         | 0.065         |       |
| 18-Feb  | 0.055                         | 0.005  | 0.013 | Z                               | 0.442 | 0.139 | 0.154 | 0.228 | 0.223 | 0.251 | 0.173 | 0.071 | 0.025 | 0.045 | 0.000 | 0.000 | 0.000 | 0.003 | 0.061 | 0.188 | 0.363 | 0.138 | 0.131 | 0.087           | 0.121         | 0.442         |       |
| 19-Feb  | 0.069                         | 0.004  | 0.001 | Z                               | 0.000 | 0.000 | 0.000 | 0.039 | 0.567 | 0.094 | 0.389 | 0.236 | 0.204 | 0.201 | 0.179 | 0.223 | 0.234 | 0.217 | 0.161 | 0.158 | 0.114 | 0.024 | 0.000 | 0.012           | 0.136         | 0.567         |       |
| 20-Feb  | 0.058                         | 0.095  | 0.054 | 0.048                           | 0.005 | Z     | 0.013 | 0.000 | 0.079 | 0.072 | 0.179 | 0.148 | 0.138 | 0.151 | 0.132 | 0.016 | 0.074 | 0.150 | 0.084 | 0.043 | 0.017 | 0.083 | 0.090 | 0.016           | 0.076         | 0.179         |       |
| 21-Feb  | 0.071                         | 0.105  | 0.082 | 0.031                           | 0.041 | 0.075 | 0.001 | 0.001 | 0.000 | 0.000 | Z     | C     | C     | C     | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.028 | 0.002 | 0.000 | 0.000 | 0.000           | 0.022         | 0.105         |       |
| 22-Feb  | Z                             | 0.000  | 0.000 | 0.000                           | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.169 | 0.357 | 0.225 | 0.000 | 0.000 | 0.000 | 0.001 | 0.086 | 0.075 | 0.017 | 0.185 | 0.097 | 0.147 | 0.055           | 0.061         | 0.357         |       |
| 23-Feb  | 0.049                         | Z  | 0.341 | 0.161                           | 0.099 | 0.138 | 0.165 | 0.463 | 0.460 | 0.304 | 0.433 | 0.218 | 0.123 | 0.072 | 0.051 | 0.073 | 0.084 | 0.022 | 0.012 | 0.000 | 0.000 | 0.007 | 0.000 | 0.000           | 0.142         | 0.463         |       |
| 24-Feb  | 0.001                         | 0.000  | Z     | 0.000                           | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000           | 0.000         | 0.001         | 0.001 |
| 25-Feb  | 0.000                         | 0.000  | 0.000 | Z                               | 0.000 | 0.000 | 0.000 | 0.000 | 0.026 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.009 | 0.082 | 0.149 | 0.000 | 0.000 | 0.023 | 0.005 | 0.000 | 0.000           | 0.013         | 0.149         |       |
| 26-Feb  | 0.000                         | 0.015  | 0.061 | 0.721                           | Z     | 0.036 | 0.015 | 0.104 | 0.009 | 0.000 | 0.000 | 0.053 | 0.004 | 0.243 | 0.165 | 0.011 | 0.067 | 0.203 | 0.271 | 0.119 | 0.066 | 0.060 | 0.200 | 0.153           | 0.112         | 0.721         |       |
| 27-Feb  | 0.138                         | 0.122  | 0.062 | 0.009                           | 0.034 | Z     | 0.000 | 0.001 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.018 | 0.033 | 0.091 | 0.036 | 0.053 | 0.071 | 0.151 | 0.073 | 0.001 | 0.000           | 0.039         | 0.151         |       |
| 28-Feb  | Z                             | 0.063  | 0.025 | 0.022                           | 0.051 | 0.037 | 0.112 | 0.175 | 0.175 | 0.196 | 0.062 | 0.006 | 0.025 | 0.008 | 0.003 | 0.028 | 0.041 | 0.087 | 0.127 | 0.083 | 0.288 | 0.062 | 0.005 | 0.002           | 0.073         | 0.288         |       |
|   |                               |  |       |                                 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Diurnal Average |               |               |       |
|   |                               |  |       |                                 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Diurnal Maximum |               |               |       |
| 0.048 0.034 0.085 0.086 0.066 0.053 0.053 0.066 0.082 0.053 0.075 0.073 0.064 0.059 0.049 0.058 0.054 0.066 0.063 0.050 0.067 0.047 0.040 0.037 |                               |  |       |                                 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |               |               |       |
| 0.212 0.173 0.617 0.721 0.442 0.209 0.312 0.463 0.567 0.304 0.433 0.357 0.330 0.243 0.373 0.354 0.234 0.386 0.271 0.188 0.363 0.149 0.248 0.231 |                               |  |       |                                 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |               |               |       |
| Z - zerospan C - Calibration  |                               |  |       |                                 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |               |               |       |





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Non Methane Hydrocarbons (NMHC) - ppm**  
**Mannix - February 2023**

| <b>Concentration Ranges (ppm)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 0.005                         | 297                    | 46.33    | 46.33               |
| 0.006 - 0.05                      | 128                    | 19.97    | 66.30               |
| 0.06 - 0.1                        | 128                    | 19.97    | 86.27               |
| > 0.1                             | 88                     | 13.73    | 100.00              |

Total Number of Valid Hours: 641

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Non Methane Hydrocarbons (NMHC) - ppm  
Mannix - February 2023**

| <b>Concentration<br/>Ranges (ppm)</b> | <b>Wind Direction</b> |            |           |            |          |            |           |            |           |            |           |            |           |            |           |            | <b>Totals</b> |
|---------------------------------------|-----------------------|------------|-----------|------------|----------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|---------------|
|                                       | <b>N</b>              | <b>NNE</b> | <b>NE</b> | <b>ENE</b> | <b>E</b> | <b>ESE</b> | <b>SE</b> | <b>SSE</b> | <b>S</b>  | <b>SSW</b> | <b>SW</b> | <b>WSW</b> | <b>W</b>  | <b>WNW</b> | <b>NW</b> | <b>NNW</b> |               |
| 0 - 0.005                             | 13                    | 1          | 0         | 0          | 1        | 0          | 39        | 87         | 30        | 6          | 1         | 15         | 42        | 12         | 9         | 41         | 297           |
| 0.006 - 0.05                          | 25                    | 28         | 1         | 1          | 0        | 2          | 16        | 12         | 3         | 0          | 2         | 1          | 4         | 9          | 17        | 7          | 128           |
| 0.06 - 0.1                            | 25                    | 23         | 5         | 2          | 2        | 4          | 8         | 18         | 5         | 0          | 4         | 0          | 3         | 6          | 11        | 12         | 128           |
| > 0.1                                 | 11                    | 5          | 8         | 7          | 5        | 3          | 3         | 6          | 1         | 1          | 1         | 1          | 6         | 6          | 16        | 8          | 88            |
| <b>Totals</b>                         | <b>74</b>             | <b>57</b>  | <b>14</b> | <b>10</b>  | <b>8</b> | <b>9</b>   | <b>66</b> | <b>123</b> | <b>39</b> | <b>7</b>   | <b>8</b>  | <b>17</b>  | <b>55</b> | <b>33</b>  | <b>53</b> | <b>68</b>  | <b>641</b>    |

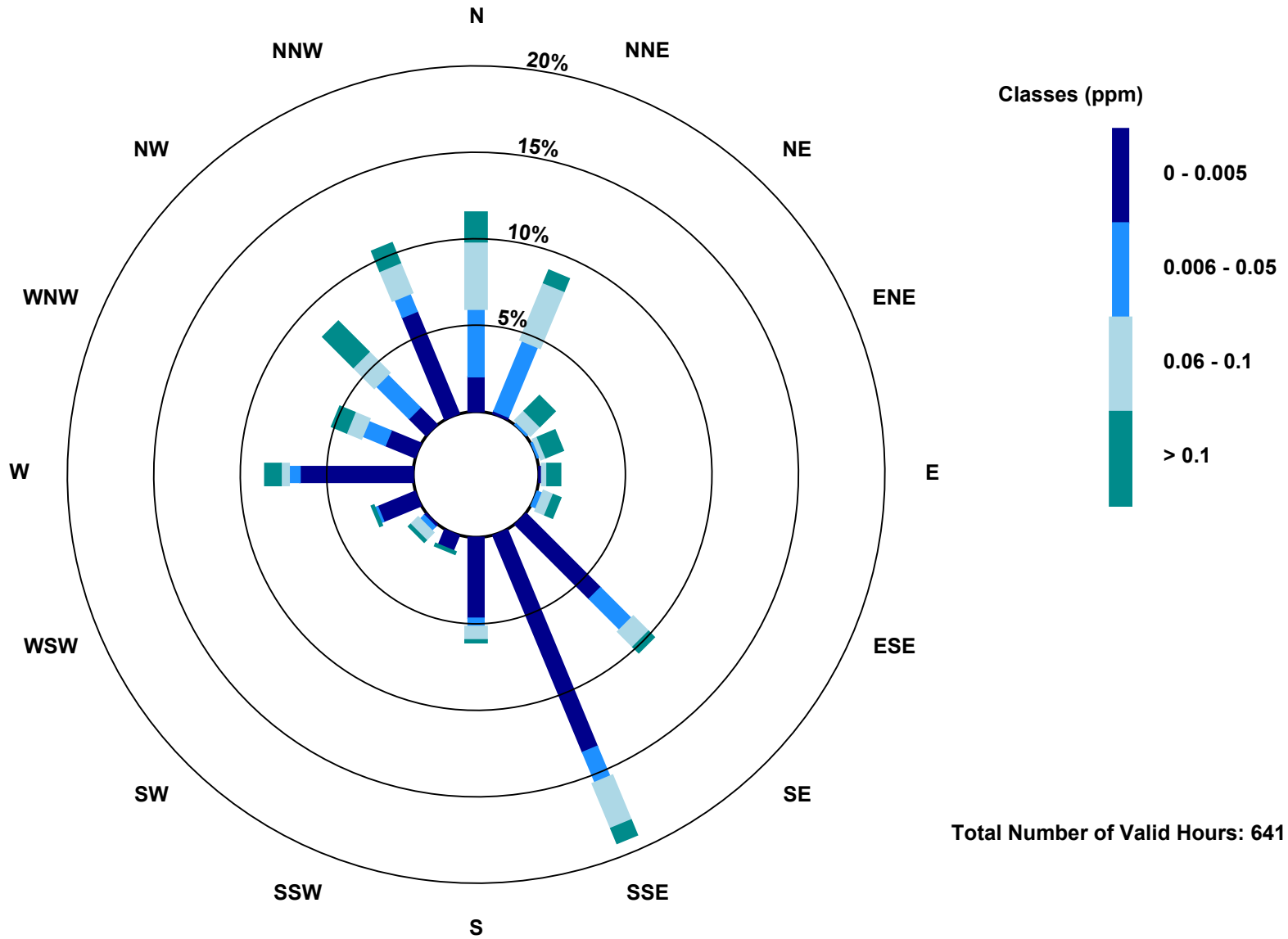
Total Number of Valid Hours: 641

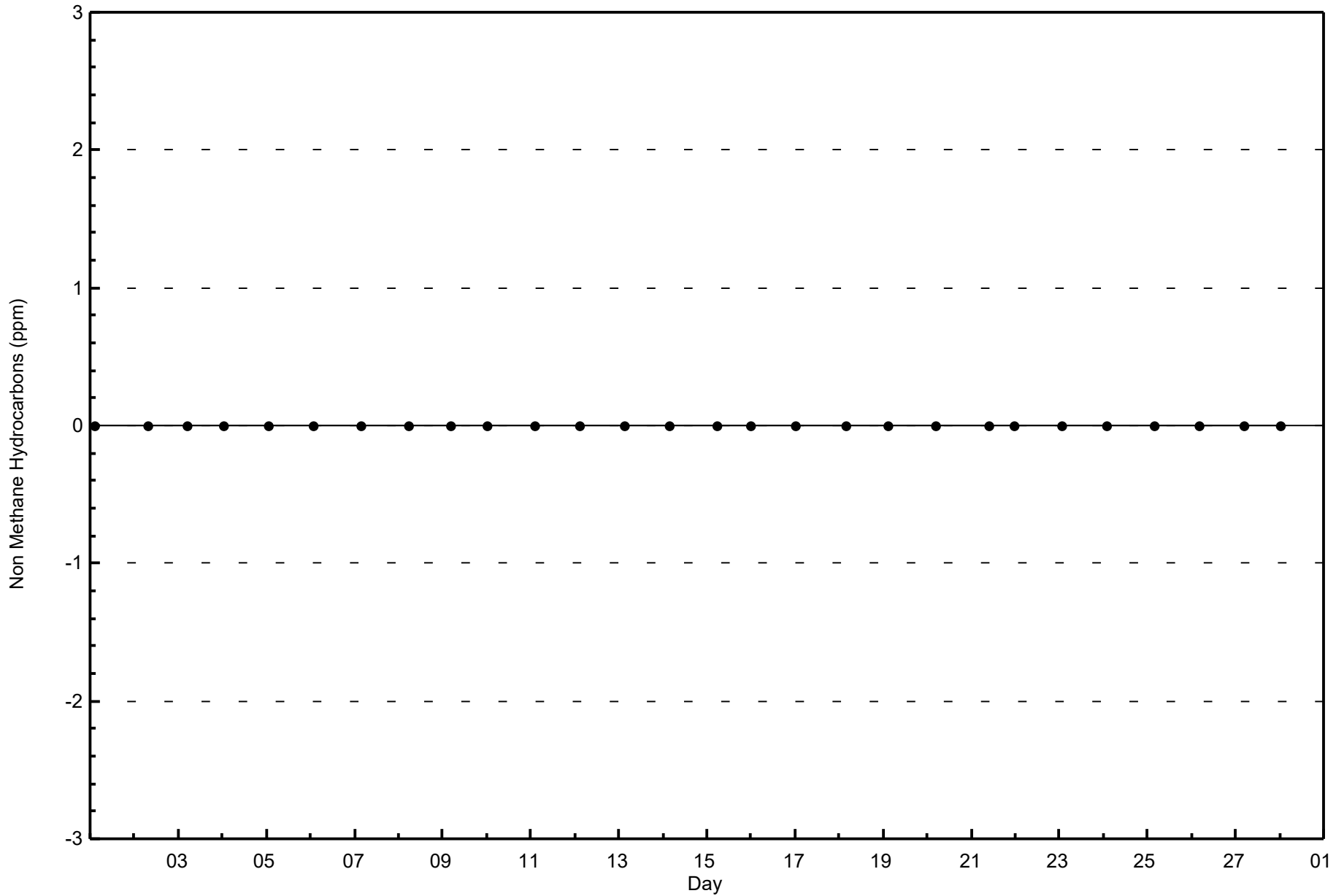
Total Number of Hours: 672



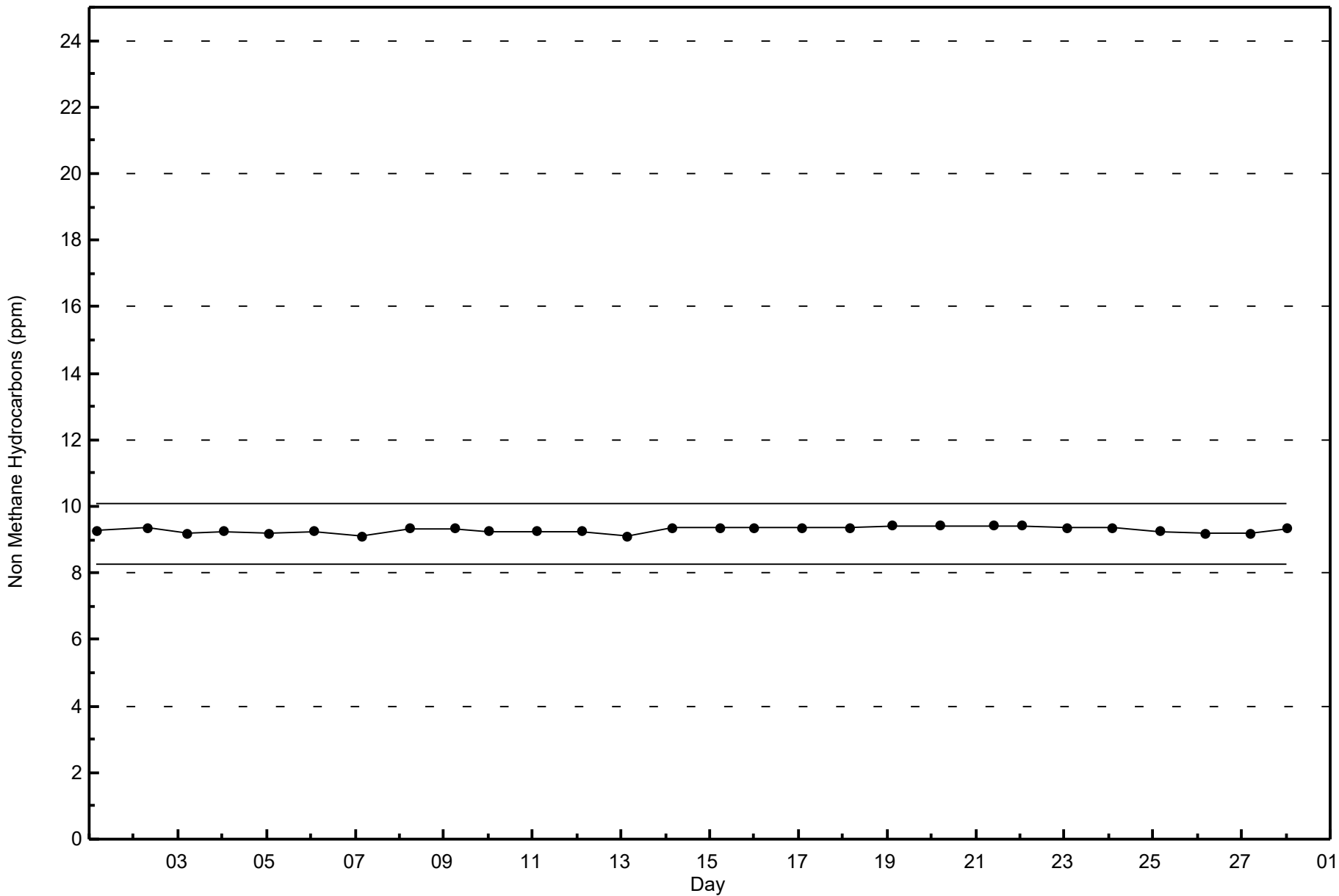
Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Non Methane Hydrocarbons (NMHC) - ppm  
Mannix











# Wood Buffalo Environmental Association

## Summary of Hour Averages

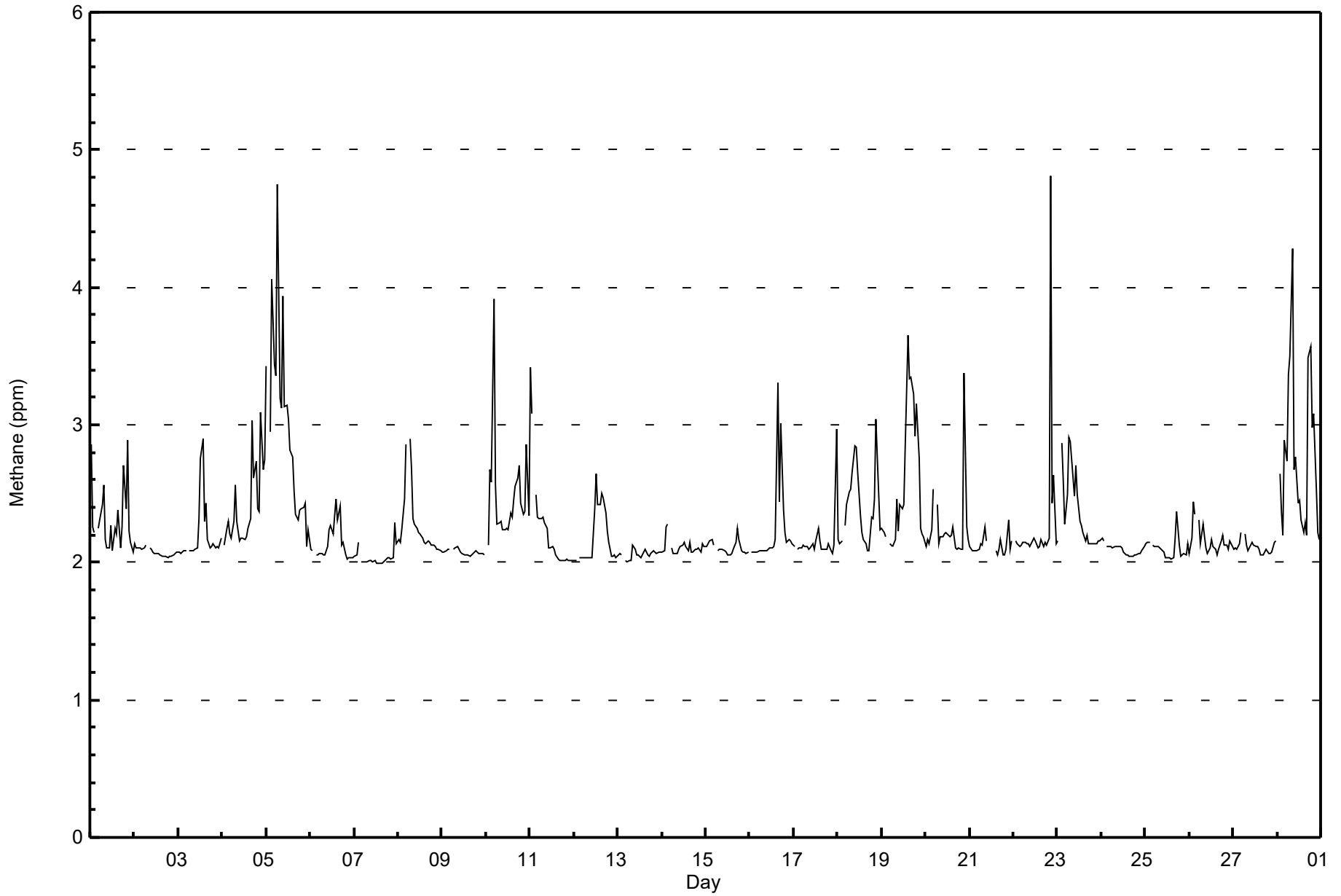
# Methane (CH<sub>4</sub>) - ppm Mannix - February 2023

| Number of Exceedences (AAAQO):             |                               | 1-hr: 0  | 24-hr: 0 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                           |       | Hours in Service: | 672 |     |                 |               |               |     |
|--|-------------------------------|--|----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---------------------------|-------|-------------------|-----|-----|-----------------|---------------|---------------|-----|
| Maximum Value: 4.8 ppm on Feb 22 21:00     |                               | Maximum Daily Average: 3.0 ppm on Feb 5  |          |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Hours of Data:            | 641   |                   |     |     |                 |               |               |     |
| Minimum Value: 2.0 ppm on Feb 7 16:00      |                               | Minimum Daily Average: 2.0 ppm on Feb 7  |          |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Hours of Missing Data:    | 31    |                   |     |     |                 |               |               |     |
| Maximum Diurnal Average: 2.4 ppm at hour 7 |                               | Minimum Diurnal Average: 2.2 ppm at hour 2   |          |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Hours of Calibration:     | 31    |                   |     |     |                 |               |               |     |
| Monthly Average: 2.26 ppm                  |                               | Percentiles: P <sub>1</sub> = 2.0 P <sub>10</sub> = 2.0 Q <sub>1</sub> = 2.1 Median = 2.1 Q <sub>3</sub> = 2.3 P <sub>90</sub> = 2.7 P <sub>99</sub> = 3.6 |          |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Percent Operational Time: | 100.0 |                   |     |     |                 |               |               |     |
| Day  | Hourly Period Ending At (MST) |  |          |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                           |       |                   |     |     |                 | Daily Average | Daily Maximum |     |
|  | 1                             | 2  | 3        | 4   | 5   | 6   | 7   | 8   | 9   | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19                        | 20    | 21                | 22  | 23  | 24              |               |               |     |
| 1-Feb                                      | 2.9                           | 2.3  | 2.2      | Z   | 2.2 | 2.3 | 2.4 | 2.6 | 2.2 | 2.1 | 2.1 | 2.3 | 2.1 | 2.2 | 2.2 | 2.4 | 2.1 | 2.3 | 2.7                       | 2.4   | 2.9               | 2.2 | 2.1 | 2.1             | 2.3           | 2.9           |     |
| 2-Feb                                      | 2.1                           | 2.1  | 2.1      | 2.1 | 2.1 | 2.1 | 2.1 | Z   | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0                       | 2.0   | 2.0               | 2.1 | 2.1 | 2.1             | 2.1           | 2.1           | 2.1 |
| 3-Feb                                      | 2.1                           | 2.1  | 2.1      | 2.1 | 2.1 | Z   | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.3 | 2.8 | 2.9 | 2.3 | 2.4 | 2.2 | 2.1 | 2.1                       | 2.1   | 2.1               | 2.1 | 2.1 | 2.1             | 2.2           | 2.2           | 2.9 |
| 4-Feb                                      | Z                             | 2.1  | 2.2      | 2.3 | 2.2 | 2.2 | 2.3 | 2.6 | 2.3 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.3 | 2.3 | 3.0 | 2.6 | 2.7                       | 2.4   | 2.4               | 3.1 | 2.7 | 2.7             | 2.4           | 3.1           |     |
| 5-Feb                                      | 3.4                           | Z  | 2.9      | 4.1 | 3.4 | 3.4 | 4.8 | 3.2 | 3.1 | 3.9 | 3.1 | 3.1 | 3.0 | 2.8 | 2.8 | 2.5 | 2.3 | 2.3 | 2.4                       | 2.4   | 2.4               | 2.4 | 2.1 | 2.2             | 3.0           | 4.8           |     |
| 6-Feb                                      | 2.1                           | 2.1  | Z        | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.3 | 2.2 | 2.3 | 2.5 | 2.3 | 2.4 | 2.1 | 2.1                       | 2.1   | 2.0               | 2.0 | 2.0 | 2.0             | 2.1           | 2.5           |     |
| 7-Feb                                      | 2.0                           | 2.1  | 2.1      | Z   | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0                       | 2.0   | 2.0               | 2.0 | 2.3 | 2.1             | 2.0           | 2.3           |     |
| 8-Feb                                      | 2.2                           | 2.1  | 2.2      | 2.5 | 2.9 | Z   | 2.9 | 2.7 | 2.3 | 2.3 | 2.2 | 2.2 | 2.2 | 2.2 | 2.1 | 2.1 | 2.2 | 2.1 | 2.1                       | 2.1   | 2.1               | 2.1 | 2.1 | 2.1             | 2.1           | 2.3           | 2.9 |
| 9-Feb                                      | 2.1                           | 2.1  | 2.1      | 2.1 | 2.1 | Z   | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.0 | 2.1 | 2.1 | 2.1                       | 2.1   | 2.1               | 2.1 | 2.1 | 2.1             | 2.1           | 2.1           | 2.1 |
| 10-Feb                                     | Z                             | 2.1  | 2.7      | 2.6 | 3.9 | 2.6 | 2.3 | 2.3 | 2.3 | 2.2 | 2.2 | 2.2 | 2.2 | 2.4 | 2.3 | 2.4 | 2.6 | 2.6 | 2.7                       | 2.4   | 2.3               | 2.4 | 2.9 | 2.3             | 2.5           | 3.9           |     |
| 11-Feb                                     | 3.4                           | 3.1  | Z        | 2.5 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0                       | 2.0   | 2.0               | 2.0 | 2.0 | 2.0             | 2.0           | 2.2           | 3.4 |
| 12-Feb                                     | 2.0                           | 2.0  | Z        | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.4 | 2.6 | 2.4 | 2.4 | 2.5 | 2.5 | 2.4 | 2.2                       | 2.1   | 2.0               | 2.0 | 2.1 | 2.0             | 2.2           | 2.6           |     |
| 13-Feb                                     | 2.1                           | 2.1  | 2.1      | Z   | 2.0 | 2.0 | 2.0 | 2.0 | 2.1 | 2.1 | 2.1 | 2.1 | 2.0 | 2.1 | 2.1 | 2.1 | 2.1 | 2.0 | 2.1                       | 2.1   | 2.1               | 2.1 | 2.1 | 2.1             | 2.1           | 2.1           | 2.1 |
| 14-Feb                                     | 2.1                           | 2.1  | 2.3      | 2.3 | Z   | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1                       | 2.1   | 2.1               | 2.1 | 2.1 | 2.1             | 2.1           | 2.1           | 2.3 |
| 15-Feb                                     | 2.1                           | 2.1  | 2.2      | 2.2 | 2.1 | Z   | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2                       | 2.2   | 2.1               | 2.1 | 2.1 | 2.1             | 2.1           | 2.1           | 2.2 |
| 16-Feb                                     | Z                             | 2.1  | 2.1      | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 3.3 | 2.4 | 3.0 | 2.4                       | 2.2   | 2.1               | 2.2 | 2.2 | 2.1             | 2.2           | 3.3           |     |
| 17-Feb                                     | 2.1                           | Z  | 2.1      | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.3 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1                       | 2.1   | 2.1               | 2.1 | 2.1 | 3.0             | 2.2           | 3.0           |     |
| 18-Feb                                     | 2.2                           | 2.1  | 2.2      | Z   | 2.3 | 2.4 | 2.5 | 2.5 | 2.7 | 2.8 | 2.8 | 2.7 | 2.3 | 2.2 | 2.2 | 2.1 | 2.1 | 2.1 | 2.3                       | 2.3   | 2.5               | 3.0 | 2.5 | 2.2             | 2.4           | 3.0           |     |
| 19-Feb                                     | 2.2                           | 2.2  | 2.2      | Z   | 2.1 | 2.1 | 2.1 | 2.2 | 2.5 | 2.2 | 2.4 | 2.4 | 2.4 | 2.9 | 3.7 | 3.3 | 3.3 | 3.2 | 2.9                       | 3.2   | 2.8               | 2.2 | 2.2 | 2.2             | 2.6           | 3.7           |     |
| 20-Feb                                     | 2.1                           | 2.2  | 2.1      | 2.2 | 2.5 | Z   | 2.4 | 2.1 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.3 | 2.1 | 2.1 | 2.1                       | 2.1   | 2.1               | 3.4 | 2.3 | 2.2             | 2.2           | 3.4           |     |
| 21-Feb                                     | 2.1                           | 2.1  | 2.1      | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.3 | 2.2 | Z   | C   | C   | C   | 2.1 | 2.1 | 2.1 | 2.2 | 2.1                       | 2.1   | 2.1               | 2.3 | 2.1 | 2.2             | 2.1           | 2.3           |     |
| 22-Feb                                     | Z                             | 2.2  | 2.1      | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | 2.2 | 2.1 | 2.1 | 2.2 | 2.1 | 2.1 | 2.1                       | 2.2   | 4.8               | 2.4 | 2.6 | 2.1             | 2.3           | 4.8           |     |
| 23-Feb                                     | 2.2                           | Z  | 2.9      | 2.6 | 2.3 | 2.5 | 2.9 | 2.9 | 2.6 | 2.5 | 2.7 | 2.5 | 2.3 | 2.3 | 2.2 | 2.2 | 2.2 | 2.1 | 2.1                       | 2.1   | 2.1               | 2.1 | 2.2 | 2.2             | 2.4           | 2.9           |     |
| 24-Feb                                     | 2.2                           | 2.2  | Z        | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0                       | 2.1   | 2.1               | 2.1 | 2.1 | 2.1             | 2.1           | 2.2           | 2.2 |
| 25-Feb                                     | 2.1                           | 2.1  | 2.1      | Z   | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.2 | 2.4                       | 2.1   | 2.0               | 2.1 | 2.1 | 2.1             | 2.1           | 2.1           | 2.4 |
| 26-Feb                                     | 2.1                           | 2.2  | 2.4      | 2.4 | Z   | 2.3 | 2.1 | 2.3 | 2.2 | 2.1 | 2.1 | 2.1 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.2                       | 2.1   | 2.1               | 2.1 | 2.2 | 2.1             | 2.2           | 2.4           | 2.4 |
| 27-Feb                                     | 2.1                           | 2.1  | 2.1      | 2.1 | 2.2 | Z   | 2.2 | 2.1 | 2.1 | 2.1 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1                       | 2.1   | 2.1               | 2.1 | 2.1 | 2.1             | 2.2           | 2.1           | 2.2 |
| 28-Feb                                     | Z                             | 2.6  | 2.4      | 2.2 | 2.9 | 2.7 | 3.4 | 3.5 | 4.3 | 2.7 | 2.8 | 2.4 | 2.4 | 2.3 | 2.2 | 2.3 | 2.2 | 3.5 | 3.6                       | 3.0   | 3.1               | 2.5 | 2.2 | 2.2             | 2.8           | 4.3           |     |
|  |                               |  |          |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                           |       |                   |     |     | Diurnal Average |               |               |     |
|  |                               |  |          |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                           |       |                   |     |     | Diurnal Maximum |               |               |     |
| Z - zerospan      C - Calibration          |                               |  |          |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                           |       |                   |     |     |                 |               |               |     |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Methane (CH<sub>4</sub>) - ppm**  
**Mannix - February 2023**





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Methane (CH<sub>4</sub>) - ppm**  
**Mannix - February 2023**

| <b>Concentration Ranges (ppm)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 2.0                           | 67                     | 10.45    | 10.45               |
| 2.1 - 3.0                         | 546                    | 85.18    | 95.63               |
| 3.1 - 10.0                        | 28                     | 4.37     | 100.00              |
| > 10.0                            | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 641

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Methane (CH<sub>4</sub>) - ppm  
Mannix - February 2023**

| Concentration<br>Ranges (ppm) | Wind Direction |     |    |     |   |     |    |     |    |     |    |     |    |     |    |     | Totals |
|-------------------------------|----------------|-----|----|-----|---|-----|----|-----|----|-----|----|-----|----|-----|----|-----|--------|
|                               | N              | NNE | NE | ENE | E | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |        |
| 0 - 2.0                       | 1              | 0   | 0  | 0   | 0 | 0   | 11 | 8   | 2  | 0   | 1  | 13  | 27 | 3   | 0  | 1   | 67     |
| 2.1 - 3.0                     | 73             | 57  | 14 | 9   | 8 | 9   | 55 | 115 | 36 | 7   | 7  | 3   | 24 | 25  | 40 | 64  | 546    |
| 3.1 - 10.0                    | 0              | 0   | 0  | 1   | 0 | 0   | 0  | 0   | 1  | 0   | 0  | 1   | 4  | 5   | 13 | 3   | 28     |
| > 10.0                        | 0              | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| <b>Totals</b>                 | 74             | 57  | 14 | 10  | 8 | 9   | 66 | 123 | 39 | 7   | 8  | 17  | 55 | 33  | 53 | 68  | 641    |

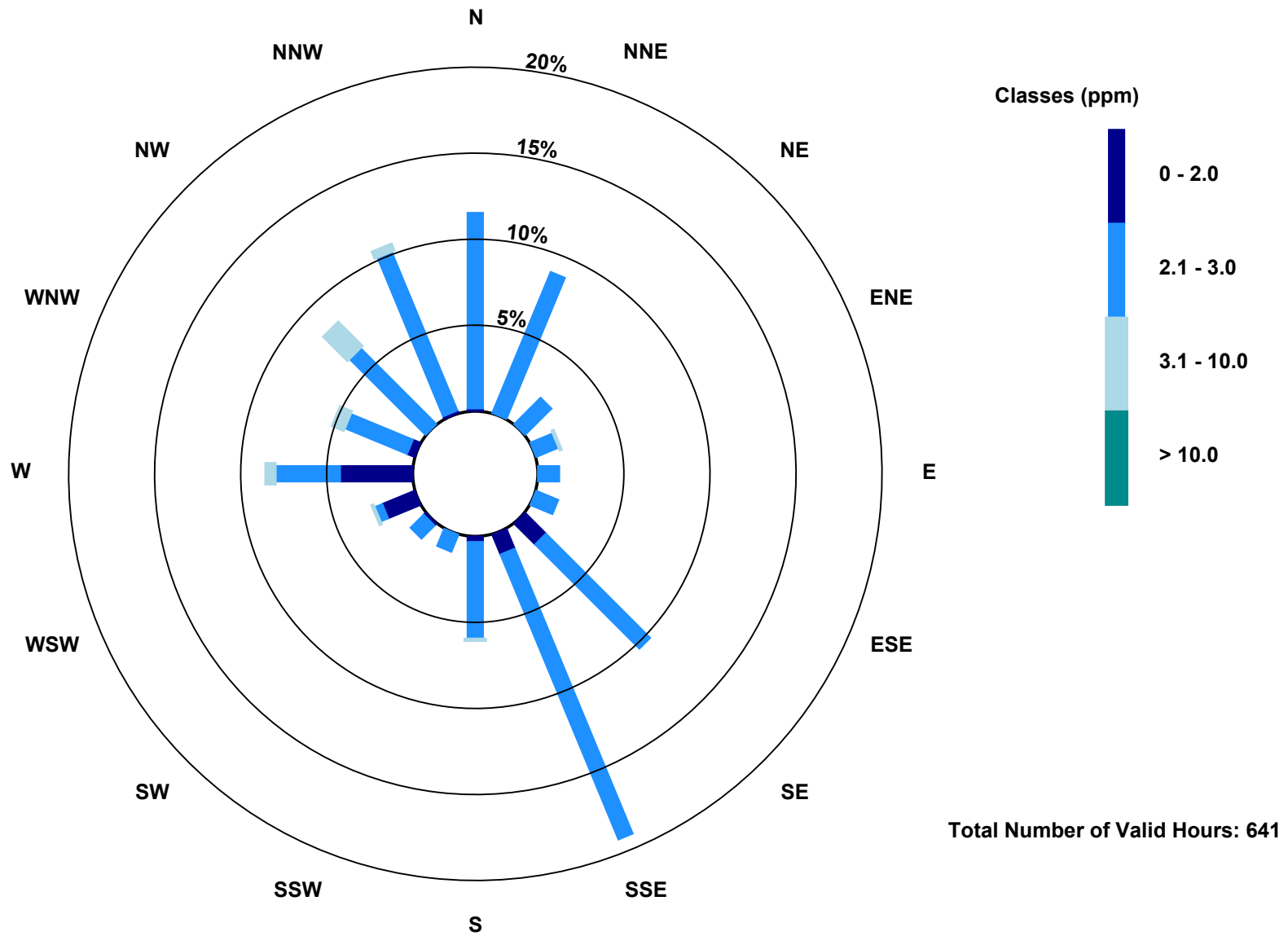
Total Number of Valid Hours: 641

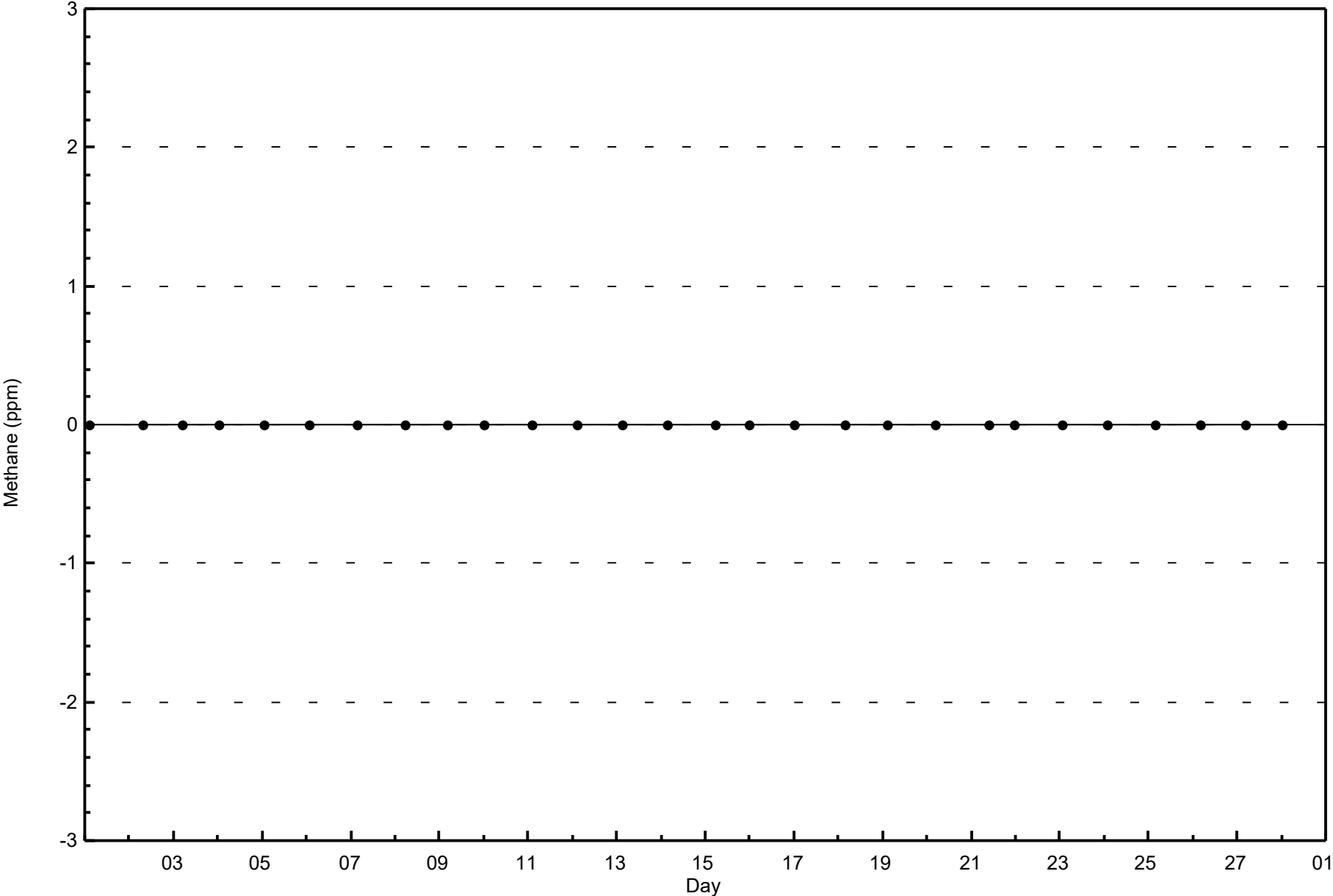
Total Number of Hours: 672

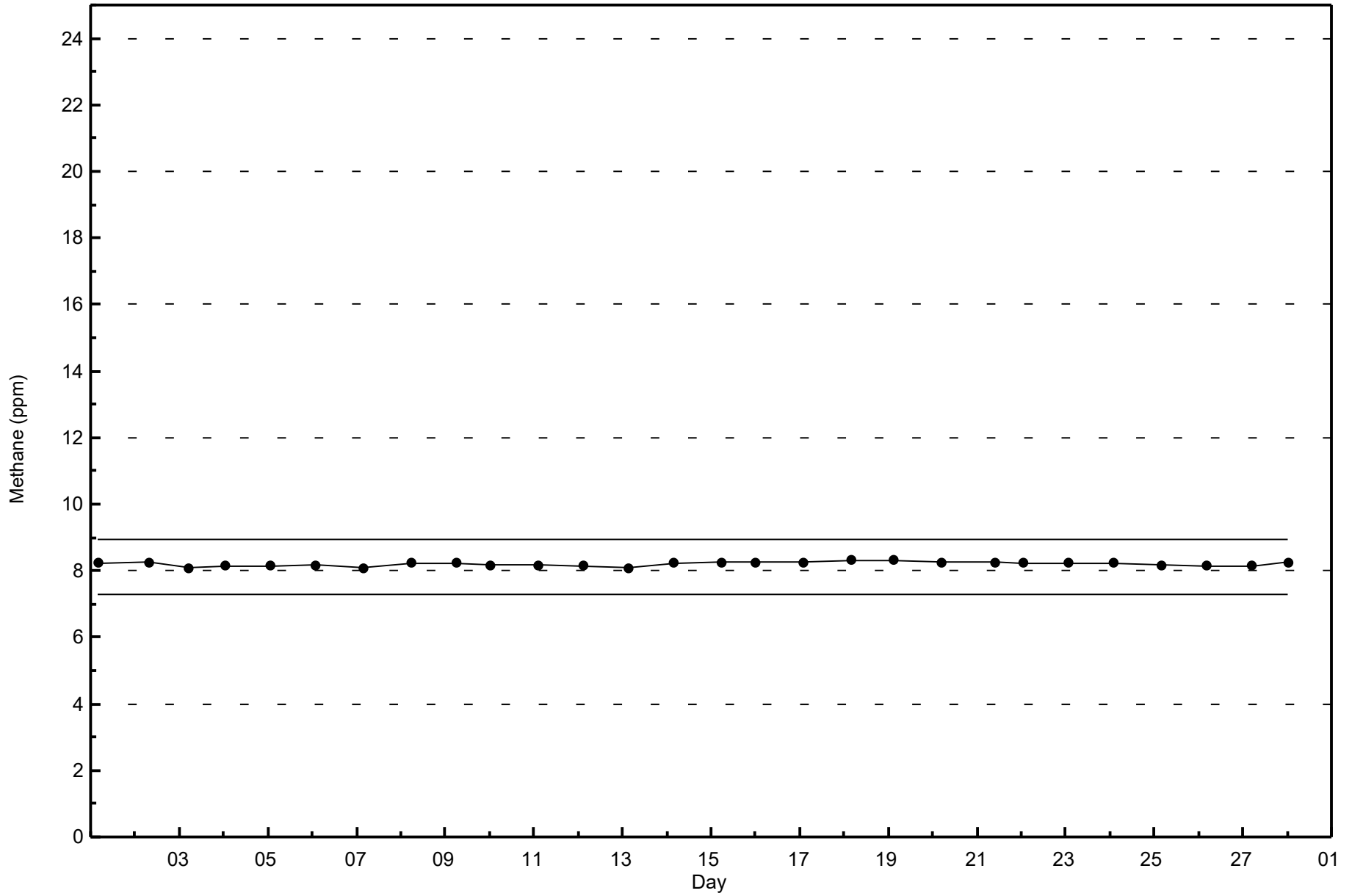


Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Methane (CH<sub>4</sub>) - ppm  
Mannix



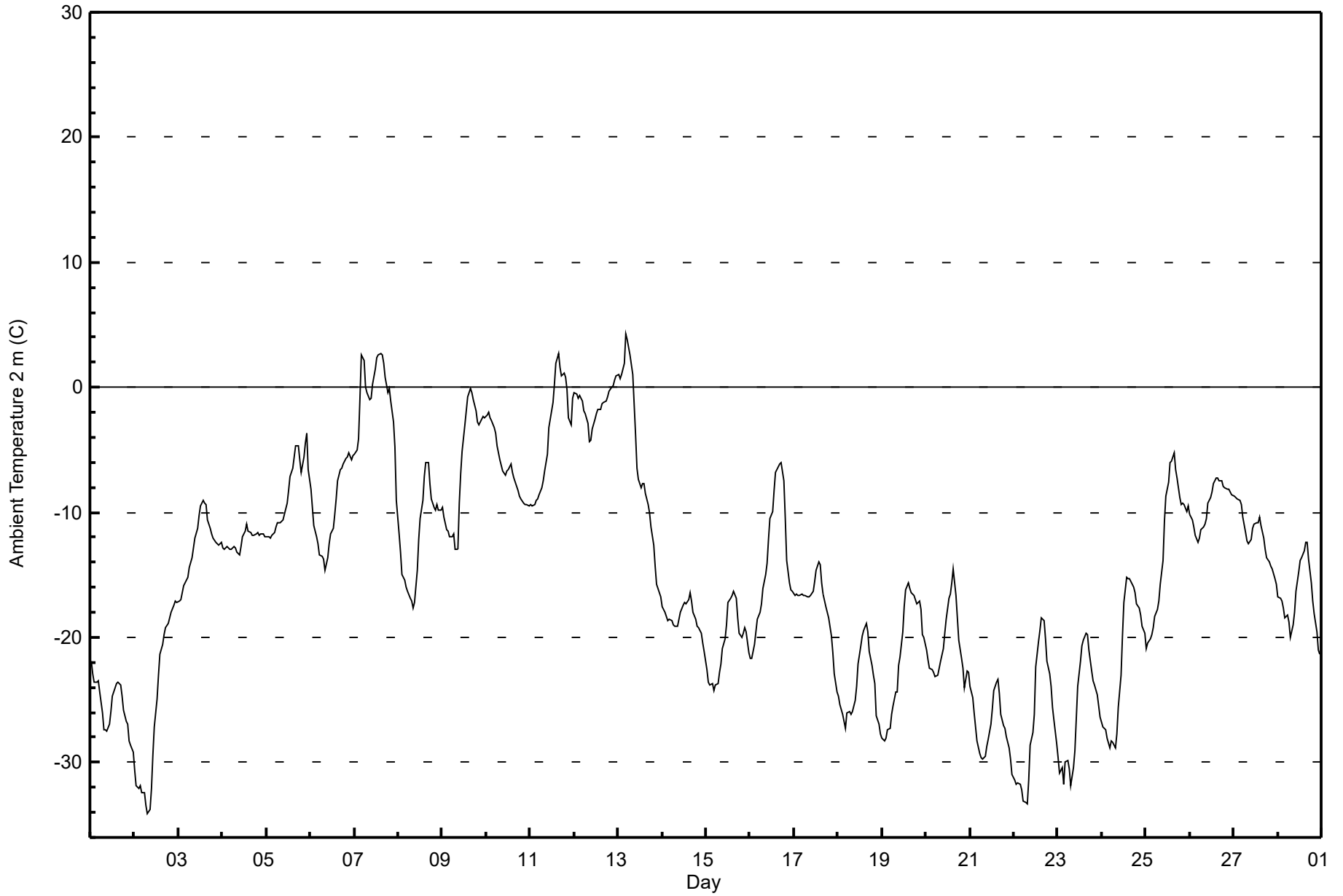








| Maximum Value: 4.3 C on Feb 13 05:00      Maximum Daily Average: -0.7 C on Feb 7  |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Hours in Service:         | 672   |       |               |               |
|---|-------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------------------------|-------|-------|---------------|---------------|
| Minimum Value: -34.1 C on Feb 2 08:00      Minimum Daily Average: -27.1 C on Feb 21   |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Hours of Data:            | 672   |       |               |               |
| Maximum Diurnal Average: -11.2 C at hour 16      Minimum Diurnal Average: -17.5 C at hour 8   |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Hours of Missing Data:    | 0     |       |               |               |
| Monthly Average: -14.92 C      Percentiles: P <sub>1</sub> = -32.4 P <sub>10</sub> = -27.1 Q <sub>1</sub> = -21.3 Median = -15.3 Q <sub>3</sub> = -8.8 P <sub>90</sub> = -2.5 P <sub>99</sub> = 2.6 |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Hours of Calibration:     | 0     |       |               |               |
|   |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Percent Operational Time: | 100.0 |       |               |               |
| Day   | Hourly Period Ending At (MST) |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                           |       |       | Daily Average | Daily Maximum |
|   | 1                             | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     | 10    | 11    | 12    | 13    | 14    | 15    | 16    | 17    | 18    | 19    | 20    | 21    | 22                        | 23    | 24    |               |               |
| 1-Feb   | -22.0                         | -22.9 | -23.6 | -23.6 | -23.5 | -24.4 | -26.1 | -27.4 | -27.4 | -27.5 | -27.0 | -25.9 | -24.7 | -24.0 | -23.7 | -23.6 | -23.8 | -24.7 | -25.8 | -26.7 | -27.0 | -28.2                     | -28.6 | -29.2 | -25.5         | -22.0         |
| 2-Feb   | -30.6                         | -31.9 | -32.1 | -31.9 | -32.4 | -32.4 | -33.5 | -34.1 | -33.8 | -32.1 | -29.4 | -27.1 | -24.9 | -23.1 | -21.3 | -20.5 | -19.8 | -19.3 | -18.9 | -18.5 | -18.0 | -17.5                     | -17.1 | -17.2 | -25.7         | -17.1         |
| 3-Feb   | -17.1                         | -17.0 | -16.4 | -15.9 | -15.4 | -15.2 | -14.4 | -13.6 | -12.9 | -12.1 | -11.3 | -10.3 | -9.4  | -9.1  | -9.2  | -9.4  | -10.6 | -11.3 | -11.8 | -12.1 | -12.3 | -12.5                     | -12.6 | -12.4 | -12.7         | -9.1          |
| 4-Feb   | -12.8                         | -12.9 | -12.8 | -12.8 | -12.9 | -12.9 | -12.7 | -12.8 | -13.2 | -13.4 | -12.7 | -11.9 | -11.5 | -11.0 | -11.5 | -11.6 | -11.8 | -11.9 | -11.7 | -11.6 | -11.8 | -11.8                     | -11.8 | -11.9 | -12.2         | -11.0         |
| 5-Feb   | -12.0                         | -12.0 | -12.0 | -11.8 | -11.6 | -11.2 | -10.8 | -10.8 | -10.8 | -10.6 | -10.2 | -9.2  | -8.3  | -7.1  | -6.4  | -5.6  | -4.7  | -4.7  | -5.8  | -6.8  | -5.6  | -4.5                      | -3.7  | -6.5  | -8.4          | -3.7          |
| 6-Feb   | -8.1                          | -9.6  | -11.0 | -11.9 | -12.5 | -13.4 | -13.5 | -13.8 | -14.6 | -13.6 | -12.5 | -11.7 | -11.3 | -10.2 | -9.0  | -7.5  | -6.6  | -6.5  | -6.1  | -5.7  | -5.5  | -5.3                      | -5.8  | -5.4  | -9.6          | -5.3          |
| 7-Feb   | -5.3                          | -5.1  | -4.1  | -0.9  | 2.6   | 2.1   | 0.0   | -0.5  | -1.0  | -0.9  | 0.3   | 1.5   | 2.3   | 2.6   | 2.7   | 2.6   | 1.9   | 0.8   | -0.5  | -0.1  | -1.1  | -2.7                      | -4.8  | -9.0  | -0.7          | 2.7           |
| 8-Feb   | -11.7                         | -13.2 | -14.9 | -15.4 | -16.0 | -16.3 | -16.9 | -17.1 | -17.6 | -17.2 | -14.7 | -12.2 | -10.5 | -9.1  | -7.2  | -6.0  | -6.0  | -7.7  | -8.9  | -9.6  | -9.8  | -9.4                      | -9.8  | -9.9  | -12.0         | -6.0          |
| 9-Feb   | -9.6                          | -10.3 | -11.4 | -11.5 | -12.0 | -11.9 | -11.8 | -13.0 | -13.0 | -9.3  | -6.9  | -5.2  | -3.0  | -1.9  | -0.8  | -0.1  | -0.4  | -1.0  | -1.8  | -2.8  | -3.0  | -2.5                      | -2.4  | -2.4  | -6.2          | -0.1          |
| 10-Feb  | -2.2                          | -2.0  | -2.4  | -2.6  | -3.2  | -3.7  | -4.7  | -5.8  | -6.3  | -6.7  | -7.0  | -6.7  | -6.6  | -6.1  | -6.8  | -7.2  | -7.6  | -8.2  | -8.8  | -8.9  | -9.2  | -9.3                      | -9.3  | -9.5  | -6.3          | -2.0          |
| 11-Feb  | -9.4                          | -9.5  | -9.4  | -9.1  | -8.9  | -8.5  | -8.0  | -7.5  | -6.7  | -5.3  | -3.3  | -2.6  | -1.2  | 0.3   | 1.9   | 2.7   | 1.6   | 1.0   | 1.1   | 0.8   | -0.2  | -2.5                      | -3.0  | -0.9  | -3.6          | 2.7           |
| 12-Feb  | -0.5                          | -0.5  | -0.9  | -0.6  | -1.1  | -1.9  | -2.1  | -2.9  | -4.3  | -4.2  | -3.3  | -2.6  | -2.1  | -1.8  | -1.8  | -1.3  | -1.2  | -1.1  | -0.8  | -0.3  | 0.0   | 0.1                       | 0.6   | 1.0   | -1.4          | 1.0           |
| 13-Feb  | 1.1                           | 0.7   | 1.1   | 2.0   | 4.3   | 3.8   | 2.6   | 1.8   | 1.0   | -3.8  | -6.5  | -7.3  | -8.0  | -7.7  | -7.7  | -8.5  | -9.4  | -10.0 | -11.2 | -12.6 | -14.3 | -15.7                     | -16.5 | -16.8 | -5.7          | 4.3           |
| 14-Feb  | -17.5                         | -18.0 | -18.4 | -18.7 | -18.6 | -18.7 | -19.0 | -19.1 | -19.1 | -18.5 | -18.0 | -17.4 | -17.2 | -17.3 | -17.0 | -16.4 | -17.1 | -18.0 | -18.5 | -19.2 | -19.3 | -19.7                     | -20.5 | -21.1 | -18.4         | -16.4         |
| 15-Feb  | -22.6                         | -23.5 | -23.8 | -23.7 | -24.3 | -23.9 | -23.7 | -22.8 | -22.1 | -20.9 | -20.1 | -19.0 | -17.2 | -16.8 | -16.6 | -16.3 | -16.9 | -18.4 | -19.7 | -20.0 | -19.7 | -19.3                     | -19.6 | -21.2 | -20.5         | -16.3         |
| 16-Feb  | -21.7                         | -21.6 | -20.5 | -19.6 | -18.6 | -18.0 | -17.4 | -16.0 | -15.0 | -14.1 | -12.2 | -10.5 | -10.0 | -8.3  | -6.8  | -6.3  | -6.2  | -6.0  | -7.5  | -10.5 | -13.8 | -15.6                     | -16.2 | -16.3 | -13.7         | -6.0          |
| 17-Feb  | -16.6                         | -16.6 | -16.6 | -16.6 | -16.6 | -16.6 | -16.7 | -16.8 | -16.8 | -16.7 | -16.3 | -15.5 | -14.7 | -13.9 | -14.2 | -15.6 | -16.5 | -17.5 | -18.0 | -18.5 | -19.8 | -21.3                     | -22.9 | -24.4 | -17.3         | -13.9         |
| 18-Feb  | -24.7                         | -25.3 | -26.1 | -26.7 | -27.2 | -26.1 | -25.9 | -26.2 | -26.0 | -25.0 | -23.9 | -22.1 | -20.6 | -19.9 | -19.5 | -18.9 | -19.5 | -21.2 | -22.2 | -23.0 | -23.7 | -26.3                     | -26.9 | -27.8 | -23.9         | -18.9         |
| 19-Feb  | -28.0                         | -28.3 | -28.1 | -27.4 | -27.3 | -26.1 | -25.5 | -24.3 | -24.4 | -22.3 | -21.5 | -19.5 | -17.6 | -16.2 | -15.6 | -16.0 | -16.4 | -16.7 | -17.0 | -17.4 | -17.1 | -17.8                     | -19.8 | -20.0 | -21.3         | -15.6         |
| 20-Feb  | -21.0                         | -21.8 | -22.4 | -22.6 | -22.8 | -23.1 | -23.0 | -22.5 | -21.9 | -20.8 | -19.7 | -18.5 | -16.9 | -16.5 | -15.7 | -14.6 | -16.7 | -18.5 | -20.2 | -21.7 | -22.5 | -24.1                     | -22.7 | -22.8 | -20.5         | -14.6         |
| 21-Feb  | -23.9                         | -24.8 | -26.0 | -27.1 | -28.3 | -29.2 | -29.6 | -29.8 | -29.5 | -28.7 | -28.1 | -27.0 | -25.7 | -24.2 | -23.6 | -23.4 | -24.5 | -26.1 | -27.1 | -27.3 | -28.0 | -28.8                     | -29.8 | -31.0 | -27.1         | -23.4         |
| 22-Feb  | -31.5                         | -31.7 | -31.7 | -31.7 | -32.2 | -33.0 | -33.2 | -33.3 | -31.5 | -28.7 | -27.6 | -26.1 | -22.3 | -20.3 | -19.5 | -18.5 | -18.6 | -20.1 | -21.9 | -22.9 | -23.9 | -25.6                     | -26.6 | -28.5 | -26.7         | -18.5         |
| 23-Feb  | -29.7                         | -30.8 | -30.4 | -31.7 | -30.0 | -29.8 | -30.5 | -31.9 | -30.4 | -29.1 | -26.5 | -23.9 | -21.9 | -20.7 | -20.2 | -19.6 | -19.8 | -21.0 | -22.7 | -23.4 | -23.8 | -24.6                     | -25.5 | -26.3 | -26.0         | -19.6         |
| 24-Feb  | -27.2                         | -27.3 | -27.4 | -28.0 | -28.8 | -28.3 | -28.3 | -28.8 | -27.8 | -25.6 | -23.1 | -19.9 | -17.2 | -15.2 | -15.3 | -15.4 | -15.5 | -16.0 | -16.4 | -17.3 | -17.7 | -18.2                     | -19.1 | -19.7 | -21.8         | -15.2         |
| 25-Feb  | -20.9                         | -20.5 | -20.2 | -19.8 | -19.3 | -18.4 | -17.7 | -17.1 | -15.7 | -13.8 | -10.7 | -8.7  | -7.6  | -6.1  | -6.0  | -5.2  | -6.6  | -7.3  | -8.8  | -9.4  | -9.2  | -9.4                      | -10.0 | -9.5  | -12.4         | -5.2          |
| 26-Feb  | -10.2                         | -10.6 | -11.2 | -11.8 | -12.4 | -12.0 | -11.3 | -11.1 | -11.0 | -10.5 | -9.3  | -8.9  | -8.4  | -7.7  | -7.3  | -7.2  | -7.5  | -7.5  | -8.0  | -8.0  | -8.1  | -8.2                      | -8.4  | -8.6  | -9.4          | -7.2          |
| 27-Feb  | -8.7                          | -8.8  | -9.0  | -9.0  | -9.4  | -10.4 | -11.6 | -12.3 | -12.5 | -12.2 | -11.3 | -11.0 | -10.8 | -10.8 | -10.3 | -11.0 | -12.0 | -12.9 | -13.7 | -14.0 | -14.3 | -14.6                     | -15.3 | -15.7 | -11.7         | -8.7          |
| 28-Feb  | -16.7                         | -16.9 | -17.1 | -17.6 | -18.4 | -18.3 | -18.8 | -20.0 | -19.0 | -18.0 | -16.3 | -14.7 | -13.8 | -13.6 | -13.1 | -12.3 | -12.4 | -13.8 | -15.6 | -17.1 | -18.1 | -19.6                     | -21.0 | -21.3 | -16.8         | -12.3         |
|   |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Diurnal Average           |       |       |               |               |
|   |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Diurnal Maximum           |       |       |               |               |
|   |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                           |       |       |               |               |





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Ambient Temperature 2 m (AT2m) - C  
Mannix - February 2023**

| <b>Concentration Ranges (C)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---------------------------------|------------------------|----------|---------------------|
| -50 - -20                       | 192                    | 28.57    | 28.57               |
| -20 - 0                         | 449                    | 66.82    | 95.39               |
| 0 - 10                          | 31                     | 4.61     | 100.00              |
| 10 - 20                         | 0                      | 0.00     | 100.00              |
| > 20                            | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 672

Total Number of Hours: 672

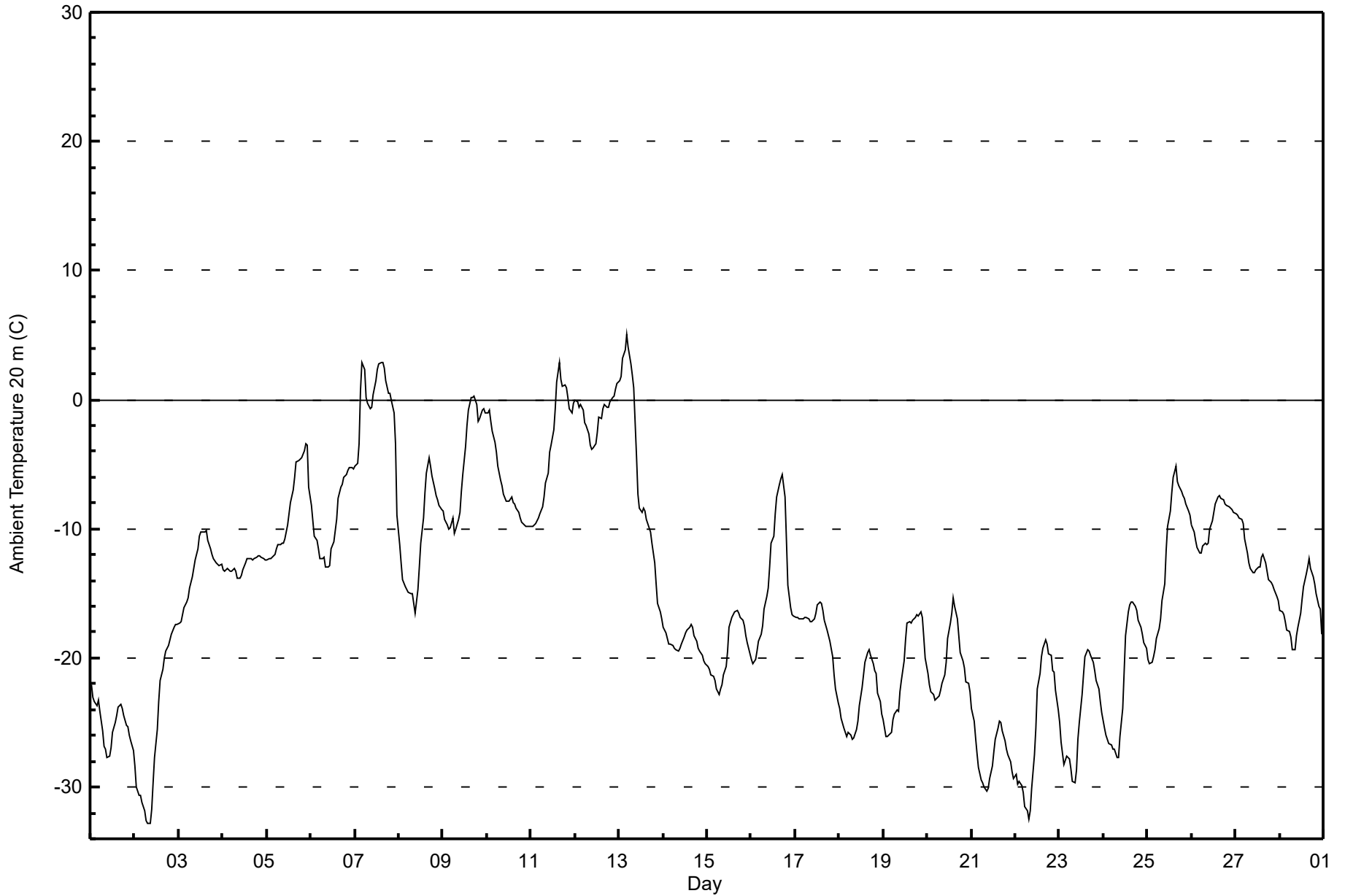


| Maximum Value: 5.0 C on Feb 13 05:00      Maximum Daily Average: -0.2 C on Feb 7  |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Hours in Service:         | 672           |               |
|---|-------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------------------------|---------------|---------------|
| Minimum Value: -32.8 C on Feb 2 08:00      Minimum Daily Average: -27.5 C on Feb 21   |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Hours of Data:            | 672           |               |
| Maximum Diurnal Average: -11.6 C at hour 16      Minimum Diurnal Average: -17.1 C at hour 9   |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Hours of Missing Data:    | 0             |               |
| Monthly Average: -14.67 C      Percentiles: P <sub>1</sub> = -31.8 P <sub>10</sub> = -26.1 Q <sub>1</sub> = -20.8 Median = -15.3 Q <sub>3</sub> = -8.7 P <sub>90</sub> = -1.7 P <sub>99</sub> = 2.9 |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Hours of Calibration:     | 0             |               |
|   |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Percent Operational Time: | 100.0         |               |
| Day   | Hourly Period Ending At (MST) |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                           | Daily Average | Daily Maximum |
|   | 1                             | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     | 10    | 11    | 12    | 13    | 14    | 15    | 16    | 17    | 18    | 19    | 20    | 21    | 22    | 23    | 24                        |               |               |
| 1-Feb   | -22.0                         | -23.0 | -23.3 | -23.7 | -23.3 | -24.1 | -25.6 | -26.8 | -27.1 | -27.8 | -27.7 | -26.9 | -25.7 | -25.0 | -24.4 | -23.9 | -23.6 | -23.9 | -24.5 | -25.3 | -25.3 | -25.9 | -26.4 | -27.1                     | -25.1         | -22.0         |
| 2-Feb   | -28.4                         | -30.0 | -30.7 | -30.6 | -31.2 | -31.8 | -32.6 | -32.8 | -32.8 | -31.8 | -29.7 | -27.7 | -25.6 | -23.4 | -21.7 | -20.9 | -20.0 | -19.4 | -19.0 | -18.6 | -18.2 | -17.7 | -17.4 | -17.4                     | -25.4         | -17.4         |
| 3-Feb   | -17.3                         | -17.2 | -16.6 | -16.1 | -15.6 | -15.4 | -14.6 | -13.8 | -13.1 | -12.5 | -11.6 | -10.6 | -10.3 | -10.2 | -10.2 | -10.1 | -10.9 | -11.6 | -12.0 | -12.3 | -12.6 | -12.7 | -12.9 | -12.7                     | -13.0         | -10.1         |
| 4-Feb   | -13.2                         | -13.2 | -13.1 | -13.2 | -13.3 | -13.2 | -13.1 | -13.3 | -13.8 | -13.8 | -13.6 | -13.1 | -12.6 | -12.3 | -12.4 | -12.3 | -12.5 | -12.4 | -12.2 | -12.1 | -12.1 | -12.2 | -12.3 | -12.4                     | -12.8         | -12.1         |
| 5-Feb   | -12.4                         | -12.3 | -12.3 | -12.2 | -12.0 | -11.5 | -11.2 | -11.2 | -11.1 | -11.1 | -10.8 | -9.7  | -8.8  | -7.9  | -7.0  | -6.0  | -4.8  | -4.7  | -4.6  | -4.5  | -3.9  | -3.4  | -3.5  | -6.7                      | -8.5          | -3.4          |
| 6-Feb   | -8.2                          | -9.4  | -10.5 | -10.9 | -11.5 | -12.3 | -12.3 | -12.2 | -13.0 | -12.9 | -12.8 | -11.6 | -11.0 | -10.1 | -9.2  | -7.7  | -6.7  | -6.6  | -6.1  | -5.7  | -5.5  | -5.2  | -5.3  | -5.4                      | -9.3          | -5.2          |
| 7-Feb   | -5.1                          | -4.9  | -3.4  | 0.7   | 2.9   | 2.3   | 0.2   | -0.2  | -0.7  | -0.6  | 0.4   | 1.5   | 2.3   | 2.7   | 2.9   | 2.9   | 2.5   | 1.5   | 0.5   | 0.5   | -0.1  | -1.0  | -3.4  | -8.9                      | -0.2          | 2.9           |
| 8-Feb   | -11.2                         | -12.6 | -13.9 | -14.5 | -14.7 | -14.9 | -15.1 | -15.1 | -15.7 | -16.6 | -14.6 | -13.0 | -11.1 | -9.1  | -7.2  | -5.7  | -4.5  | -5.1  | -5.9  | -6.9  | -7.4  | -7.7  | -8.1  | -8.5                      | -10.8         | -4.5          |
| 9-Feb   | -8.6                          | -9.3  | -9.7  | -10.0 | -9.9  | -9.2  | -10.3 | -10.1 | -9.3  | -8.7  | -7.1  | -5.8  | -3.6  | -2.0  | -0.9  | 0.1   | 0.1   | 0.3   | -0.4  | -1.7  | -1.5  | -0.8  | -0.7  | -1.0                      | -5.0          | 0.3           |
| 10-Feb  | -1.0                          | -0.8  | -1.7  | -2.5  | -3.3  | -4.0  | -5.2  | -6.3  | -6.7  | -7.4  | -7.9  | -7.8  | -7.9  | -7.5  | -8.0  | -8.1  | -8.4  | -8.7  | -9.2  | -9.5  | -9.7  | -9.8  | -9.8  | -9.8                      | -6.7          | -0.8          |
| 11-Feb  | -9.8                          | -9.8  | -9.6  | -9.4  | -9.2  | -8.8  | -8.3  | -7.6  | -6.4  | -5.7  | -4.1  | -3.5  | -2.3  | -0.7  | 1.4   | 2.8   | 1.6   | 1.0   | 1.2   | 0.9   | 0.1   | -0.7  | -1.0  | -0.3                      | -3.7          | 2.8           |
| 12-Feb  | 0.0                           | -0.2  | -0.5  | -0.3  | -0.9  | -1.8  | -2.0  | -2.6  | -3.5  | -3.8  | -3.7  | -3.4  | -2.6  | -1.3  | -1.4  | -0.7  | -0.4  | -0.6  | -0.6  | -0.1  | 0.2   | 0.3   | 0.8   | 1.3                       | -1.2          | 1.3           |
| 13-Feb  | 1.4                           | 1.8   | 3.2   | 3.9   | 5.0   | 4.1   | 2.7   | 1.9   | 0.9   | -4.4  | -7.4  | -8.4  | -8.7  | -8.3  | -8.6  | -9.2  | -9.9  | -10.3 | -11.2 | -12.6 | -14.3 | -15.7 | -16.5 | -16.9                     | -5.7          | 5.0           |
| 14-Feb  | -17.6                         | -18.1 | -18.5 | -19.0 | -18.9 | -19.0 | -19.3 | -19.4 | -19.5 | -19.2 | -18.9 | -18.4 | -18.1 | -17.9 | -17.6 | -17.4 | -17.6 | -18.2 | -18.7 | -19.2 | -19.4 | -19.8 | -20.2 | -20.5                     | -18.8         | -17.4         |
| 15-Feb  | -20.7                         | -20.9 | -21.3 | -21.4 | -21.8 | -22.4 | -22.8 | -22.3 | -22.1 | -21.3 | -20.7 | -19.4 | -17.6 | -16.9 | -16.7 | -16.4 | -16.3 | -16.5 | -16.8 | -17.1 | -17.5 | -18.3 | -18.9 | -19.7                     | -19.4         | -16.3         |
| 16-Feb  | -20.1                         | -20.5 | -20.1 | -19.5 | -18.7 | -18.2 | -17.5 | -16.2 | -15.3 | -14.6 | -13.0 | -11.2 | -10.6 | -8.9  | -7.5  | -6.6  | -6.1  | -5.8  | -7.6  | -10.8 | -14.3 | -16.1 | -16.7 | -16.8                     | -13.9         | -5.8          |
| 17-Feb  | -16.9                         | -16.9 | -16.9 | -16.9 | -16.9 | -16.9 | -16.9 | -17.0 | -17.2 | -17.2 | -17.0 | -16.5 | -15.9 | -15.7 | -15.7 | -16.3 | -17.1 | -17.8 | -18.3 | -18.7 | -19.9 | -21.3 | -22.4 | -23.5                     | -17.7         | -15.7         |
| 18-Feb  | -23.9                         | -24.7 | -25.4 | -25.7 | -26.1 | -25.8 | -26.0 | -26.3 | -26.2 | -25.5 | -24.9 | -23.7 | -22.3 | -21.3 | -20.3 | -19.5 | -19.4 | -19.8 | -20.4 | -21.0 | -21.2 | -22.7 | -23.4 | -24.3                     | -23.3         | -19.4         |
| 19-Feb  | -24.8                         | -26.1 | -26.1 | -25.9 | -25.7 | -24.8 | -24.4 | -24.0 | -24.2 | -22.7 | -21.7 | -20.2 | -18.6 | -17.3 | -17.2 | -17.3 | -17.0 | -16.8 | -16.7 | -16.7 | -16.4 | -16.9 | -18.4 | -20.0                     | -20.8         | -16.4         |
| 20-Feb  | -21.2                         | -22.1 | -22.7 | -22.9 | -23.2 | -23.2 | -22.9 | -22.5 | -22.0 | -21.3 | -20.3 | -18.5 | -17.3 | -16.5 | -15.3 | -16.0 | -16.9 | -18.3 | -19.6 | -20.2 | -20.8 | -21.8 | -21.9 | -22.6                     | -20.4         | -15.3         |
| 21-Feb  | -23.9                         | -24.9 | -26.2 | -27.4 | -28.5 | -29.4 | -29.7 | -30.0 | -30.3 | -30.0 | -29.3 | -28.4 | -27.3 | -26.3 | -25.4 | -24.9 | -25.0 | -25.6 | -26.4 | -27.1 | -27.5 | -28.1 | -28.8 | -29.3                     | -27.5         | -23.9         |
| 22-Feb  | -29.1                         | -29.8 | -29.5 | -29.8 | -30.4 | -31.5 | -31.8 | -32.4 | -31.9 | -30.1 | -27.4 | -25.4 | -22.4 | -21.2 | -19.9 | -19.2 | -18.6 | -19.0 | -19.7 | -19.8 | -20.9 | -21.1 | -22.5 | -24.0                     | -25.3         | -18.6         |
| 23-Feb  | -25.0                         | -26.6 | -28.3 | -27.9 | -27.6 | -27.8 | -28.5 | -29.5 | -29.7 | -28.7 | -26.3 | -24.9 | -22.9 | -21.3 | -19.9 | -19.4 | -19.5 | -19.8 | -20.4 | -21.0 | -21.7 | -22.4 | -23.4 | -24.3                     | -24.4         | -19.4         |
| 24-Feb  | -25.4                         | -25.9 | -26.3 | -26.6 | -26.7 | -27.0 | -27.0 | -27.7 | -27.7 | -26.1 | -23.9 | -21.1 | -18.3 | -16.4 | -15.9 | -15.6 | -15.7 | -16.0 | -16.3 | -17.0 | -17.6 | -18.1 | -18.9 | -19.3                     | -21.5         | -15.6         |
| 25-Feb  | -20.2                         | -20.4 | -20.3 | -19.9 | -19.4 | -18.5 | -17.7 | -17.0 | -15.6 | -14.2 | -11.7 | -9.8  | -8.6  | -7.3  | -6.0  | -5.1  | -6.4  | -6.6  | -7.1  | -7.5  | -7.7  | -8.1  | -8.6  | -8.9                      | -12.2         | -5.1          |
| 26-Feb  | -9.7                          | -10.2 | -10.9 | -11.4 | -11.9 | -11.9 | -11.3 | -11.1 | -11.2 | -11.1 | -10.0 | -9.3  | -8.7  | -8.0  | -7.5  | -7.5  | -7.7  | -7.7  | -8.1  | -8.2  | -8.3  | -8.4  | -8.6  | -8.8                      | -9.5          | -7.5          |
| 27-Feb  | -8.8                          | -8.9  | -9.2  | -9.2  | -9.6  | -10.7 | -11.9 | -12.6 | -13.1 | -13.4 | -13.4 | -13.2 | -13.0 | -12.9 | -12.2 | -11.9 | -12.6 | -13.3 | -13.9 | -14.2 | -14.4 | -14.7 | -15.2 | -15.6                     | -12.4         | -8.8          |
| 28-Feb  | -16.3                         | -16.5 | -16.7 | -17.2 | -17.8 | -18.0 | -18.4 | -19.3 | -19.3 | -18.2 | -17.7 | -16.5 | -15.4 | -14.5 | -13.5 | -13.0 | -12.4 | -13.1 | -13.7 | -14.3 | -15.0 | -15.9 | -16.2 | -18.1                     | -16.1         | -12.4         |
|   |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Diurnal Average           |               |               |
|   |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Diurnal Maximum           |               |               |
|   |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                           |               |               |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Ambient Temperature 20 m (AT20m) - C**  
**Mannix - February 2023**





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Ambient Temperature 20 m (AT20m) - C  
Mannix - February 2023**

| <b>Concentration Ranges (C)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---------------------------------|------------------------|----------|---------------------|
| -50 - -20                       | 186                    | 27.68    | 27.68               |
| -20 - 0                         | 449                    | 66.82    | 94.49               |
| 0 - 10                          | 37                     | 5.51     | 100.00              |
| 10 - 20                         | 0                      | 0.00     | 100.00              |
| > 20                            | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 672

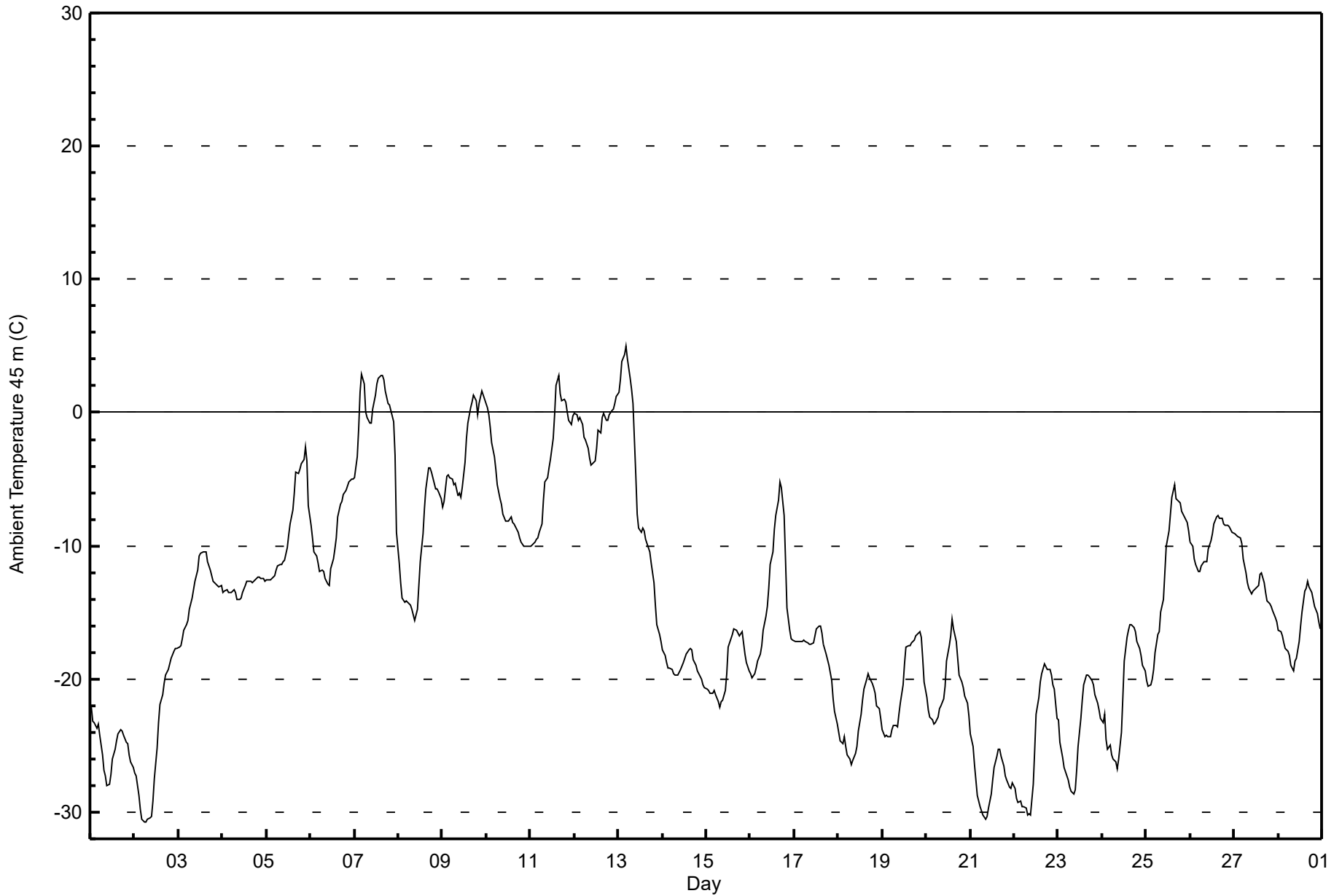
Total Number of Hours: 672



Summary of Hour Averages

Mannix - February 2023

| Maximum Value: 5.0 C on Feb 13 05:00      Maximum Daily Average: 0.0 C on Feb 7   |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Hours in Service:         | 672   |                 |               |               |
|---|-------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------------------------|-------|-----------------|---------------|---------------|
| Minimum Value: -30.8 C on Feb 2 06:00      Minimum Daily Average: -27.6 C on Feb 21   |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Hours of Data:            | 672   |                 |               |               |
| Maximum Diurnal Average: -11.7 C at hour 17      Minimum Diurnal Average: -16.7 C at hour 10  |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Hours of Missing Data:    | 0     |                 |               |               |
| Monthly Average: -14.50 C      Percentiles: P <sub>1</sub> = -30.3 P <sub>10</sub> = -25.7 Q <sub>1</sub> = -20.6 Median = -15.2 Q <sub>3</sub> = -8.5 P <sub>90</sub> = -1.4 P <sub>99</sub> = 2.8 |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Hours of Calibration:     | 0     |                 |               |               |
|   |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Percent Operational Time: | 100.0 |                 |               |               |
| Day   | Hourly Period Ending At (MST) |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                           |       |                 | Daily Average | Daily Maximum |
|   | 1                             | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     | 10    | 11    | 12    | 13    | 14    | 15    | 16    | 17    | 18    | 19    | 20    | 21    | 22                        | 23    | 24              |               |               |
| 1-Feb   | -22.1                         | -23.2 | -23.3 | -23.7 | -23.4 | -24.2 | -25.7 | -26.8 | -27.2 | -28.0 | -27.9 | -27.2 | -26.0 | -25.3 | -24.7 | -24.1 | -23.8 | -23.9 | -24.2 | -24.7 | -24.9 | -25.7                     | -26.2 | -26.6           | -25.1         | -22.1         |
| 2-Feb   | -27.1                         | -27.3 | -28.8 | -29.8 | -30.5 | -30.8 | -30.7 | -30.5 | -30.4 | -30.3 | -29.2 | -27.5 | -25.2 | -23.3 | -21.9 | -21.1 | -20.3 | -19.7 | -19.3 | -18.9 | -18.4 | -17.9                     | -17.7 | -17.7           | -24.8         | -17.7         |
| 3-Feb   | -17.6                         | -17.5 | -16.9 | -16.4 | -15.9 | -15.6 | -14.8 | -13.9 | -13.3 | -12.6 | -11.8 | -10.8 | -10.5 | -10.5 | -10.4 | -11.2 | -11.8 | -12.2 | -12.6 | -12.9 | -13.0 | -13.1                     | -12.9 | -13.3           | -10.4         | -10.4         |
| 4-Feb   | -13.5                         | -13.4 | -13.3 | -13.5 | -13.5 | -13.5 | -13.3 | -13.5 | -14.0 | -14.0 | -13.9 | -13.5 | -13.0 | -12.7 | -12.7 | -12.7 | -12.6 | -12.4 | -12.4 | -12.3 | -12.5 | -12.5                     | -12.6 | -13.1           | -12.3         | -12.3         |
| 5-Feb   | -12.6                         | -12.6 | -12.6 | -12.4 | -12.2 | -11.8 | -11.5 | -11.5 | -11.4 | -11.2 | -11.0 | -11.0 | -9.2  | -8.4  | -7.3  | -6.0  | -4.5  | -4.6  | -4.2  | -3.8  | -3.5  | -2.6                      | -3.6  | -7.0            | -8.6          | -2.6          |
| 6-Feb   | -8.5                          | -9.5  | -10.5 | -10.7 | -11.3 | -11.9 | -11.9 | -11.9 | -12.4 | -12.8 | -13.0 | -11.7 | -11.0 | -10.3 | -9.4  | -7.9  | -6.9  | -6.7  | -6.1  | -5.9  | -5.5  | -5.2                      | -5.0  | -5.0            | -9.2          | -5.0          |
| 7-Feb   | -4.9                          | -3.3  | -1.2  | 1.5   | 2.9   | 2.2   | 0.0   | -0.3  | -0.8  | -0.7  | 0.3   | 1.3   | 2.2   | 2.6   | 2.8   | 2.8   | 2.4   | 1.6   | 0.7   | 0.6   | 0.1   | -0.7                      | -3.2  | -9.0            | 0.0           | 2.9           |
| 8-Feb   | -11.3                         | -12.8 | -13.9 | -14.3 | -14.1 | -14.2 | -14.4 | -14.7 | -15.2 | -15.6 | -14.7 | -13.0 | -11.2 | -9.0  | -7.2  | -5.7  | -4.2  | -4.1  | -4.5  | -5.3  | -5.7  | -5.7                      | -5.9  | -6.5            | -10.1         | -4.1          |
| 9-Feb   | -7.1                          | -6.7  | -4.8  | -4.6  | -4.9  | -5.0  | -5.4  | -5.3  | -6.2  | -6.1  | -6.4  | -5.6  | -3.7  | -2.0  | -0.8  | 0.4   | 0.8   | 1.4   | 0.9   | -0.1  | 0.7   | 1.6                       | 1.3   | 1.0             | -2.8          | 1.6           |
| 10-Feb  | 0.4                           | -0.1  | -1.1  | -2.2  | -3.3  | -4.3  | -5.4  | -6.5  | -6.9  | -7.6  | -8.1  | -8.1  | -8.1  | -7.8  | -8.2  | -8.4  | -8.6  | -8.9  | -9.4  | -9.7  | -10.0 | -10.0                     | -10.0 | -10.0           | -6.8          | 0.4           |
| 11-Feb  | -10.1                         | -9.9  | -9.7  | -9.6  | -9.4  | -9.0  | -8.4  | -6.6  | -5.2  | -4.9  | -4.2  | -3.5  | -1.9  | -0.1  | 2.0   | 2.8   | 1.4   | 0.9   | 1.0   | 0.8   | 0.1   | -0.6                      | -0.8  | -0.3            | -3.5          | 2.8           |
| 12-Feb  | 0.0                           | -0.2  | -0.6  | -0.3  | -0.9  | -1.8  | -2.1  | -2.7  | -3.4  | -3.9  | -3.9  | -3.6  | -2.7  | -1.4  | -1.5  | -0.3  | -0.1  | -0.6  | -0.6  | -0.2  | 0.1   | 0.3                       | 0.6   | 1.2             | -1.2          | 1.2           |
| 13-Feb  | 1.5                           | 2.5   | 3.8   | 4.4   | 5.0   | 4.0   | 2.6   | 1.8   | 0.7   | -4.7  | -7.6  | -8.7  | -9.0  | -8.6  | -8.9  | -9.5  | -10.1 | -10.5 | -11.3 | -12.8 | -14.5 | -16.0                     | -16.7 | -17.1           | -5.8          | 5.0           |
| 14-Feb  | -17.8                         | -18.3 | -18.8 | -19.2 | -19.2 | -19.3 | -19.6 | -19.7 | -19.7 | -19.5 | -19.3 | -18.7 | -18.4 | -18.2 | -17.9 | -17.7 | -17.8 | -18.5 | -19.0 | -19.4 | -19.6 | -20.1                     | -20.4 | -20.6           | -19.0         | -17.7         |
| 15-Feb  | -20.7                         | -20.9 | -21.1 | -21.0 | -20.8 | -21.1 | -21.7 | -22.1 | -21.7 | -21.6 | -20.9 | -19.6 | -17.6 | -17.0 | -16.6 | -16.3 | -16.3 | -16.6 | -16.7 | -16.4 | -17.3 | -18.2                     | -18.8 | -19.4           | -19.2         | -16.3         |
| 16-Feb  | -19.6                         | -19.9 | -19.6 | -19.2 | -18.6 | -18.1 | -17.5 | -16.3 | -15.3 | -14.6 | -13.2 | -11.4 | -10.4 | -8.8  | -7.7  | -6.6  | -5.2  | -5.6  | -7.7  | -11.1 | -14.6 | -16.4                     | -16.9 | -17.1           | -13.8         | -5.2          |
| 17-Feb  | -17.1                         | -17.1 | -17.2 | -17.2 | -17.2 | -17.1 | -17.2 | -17.2 | -17.4 | -17.4 | -17.3 | -16.8 | -16.2 | -16.0 | -16.1 | -16.6 | -17.4 | -18.1 | -18.5 | -19.0 | -20.1 | -21.5                     | -22.4 | -23.4           | -18.0         | -16.0         |
| 18-Feb  | -24.0                         | -24.7 | -24.8 | -24.4 | -25.1 | -25.7 | -26.0 | -26.4 | -26.1 | -25.6 | -25.1 | -23.9 | -22.6 | -21.6 | -20.8 | -20.0 | -19.6 | -19.9 | -20.3 | -20.7 | -21.0 | -22.0                     | -22.2 | -23.0           | -23.1         | -19.6         |
| 19-Feb  | -23.8                         | -24.4 | -24.2 | -24.3 | -24.3 | -23.9 | -23.5 | -23.5 | -23.6 | -22.6 | -21.8 | -20.4 | -18.9 | -17.6 | -17.5 | -17.5 | -17.3 | -17.1 | -16.8 | -16.7 | -16.4 | -16.8                     | -18.5 | -20.2           | -20.5         | -16.4         |
| 20-Feb  | -21.4                         | -22.3 | -22.9 | -23.0 | -23.4 | -23.3 | -22.9 | -22.2 | -22.0 | -21.5 | -20.5 | -18.7 | -17.5 | -16.8 | -15.5 | -16.3 | -17.2 | -18.5 | -19.7 | -20.2 | -20.6 | -21.3                     | -21.8 | -22.8           | -20.5         | -15.5         |
| 21-Feb  | -24.1                         | -25.1 | -26.4 | -27.6 | -28.7 | -29.6 | -29.9 | -30.2 | -30.5 | -30.3 | -29.7 | -28.7 | -27.6 | -26.6 | -25.8 | -25.3 | -25.3 | -25.8 | -26.6 | -27.3 | -27.6 | -28.1                     | -28.2 | -27.8           | -27.6         | -24.1         |
| 22-Feb  | -28.2                         | -28.9 | -29.2 | -29.2 | -29.6 | -29.6 | -29.7 | -30.2 | -30.1 | -30.3 | -27.9 | -25.4 | -22.7 | -21.4 | -20.2 | -19.6 | -18.9 | -19.0 | -19.3 | -19.3 | -19.7 | -20.4                     | -20.8 | -23.0           | -24.7         | -18.9         |
| 23-Feb  | -23.1                         | -24.8 | -25.9 | -26.6 | -27.0 | -27.6 | -28.1 | -28.4 | -28.6 | -28.3 | -26.8 | -25.1 | -22.9 | -21.6 | -20.4 | -19.7 | -19.7 | -19.9 | -20.1 | -20.4 | -21.2 | -21.8                     | -22.4 | -22.9           | -23.9         | -19.7         |
| 24-Feb  | -23.2                         | -22.7 | -24.6 | -25.3 | -25.0 | -25.7 | -26.0 | -26.2 | -26.7 | -26.0 | -24.1 | -21.4 | -18.6 | -16.9 | -16.3 | -15.9 | -15.9 | -16.1 | -16.4 | -17.2 | -17.7 | -18.3                     | -18.9 | -19.4           | -21.0         | -15.9         |
| 25-Feb  | -20.1                         | -20.6 | -20.4 | -20.0 | -19.3 | -18.0 | -16.7 | -16.4 | -14.9 | -14.1 | -12.0 | -10.1 | -8.9  | -7.6  | -6.4  | -5.4  | -6.5  | -6.6  | -6.8  | -7.4  | -7.6  | -7.8                      | -8.2  | -8.9            | -12.1         | -5.4          |
| 26-Feb  | -9.7                          | -10.1 | -11.0 | -11.4 | -11.9 | -12.0 | -11.5 | -11.2 | -11.2 | -11.2 | -10.2 | -9.6  | -9.1  | -8.3  | -7.8  | -7.7  | -7.9  | -8.0  | -8.3  | -8.4  | -8.5  | -8.5                      | -8.8  | -9.0            | -9.6          | -7.7          |
| 27-Feb  | -9.1                          | -9.1  | -9.3  | -9.4  | -9.8  | -10.9 | -12.0 | -12.8 | -13.2 | -13.6 | -13.5 | -13.3 | -13.0 | -12.9 | -12.2 | -12.0 | -12.8 | -13.5 | -14.1 | -14.4 | -14.6 | -14.9                     | -15.4 | -15.8           | -12.6         | -9.1          |
| 28-Feb  | -16.3                         | -16.4 | -16.7 | -17.2 | -17.7 | -17.9 | -18.3 | -19.0 | -19.3 | -18.7 | -18.5 | -17.2 | -16.0 | -15.0 | -13.4 | -13.2 | -12.6 | -13.1 | -13.5 | -14.0 | -14.5 | -15.1                     | -15.7 | -16.3           | -16.1         | -12.6         |
|   |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                           |       | Diurnal Average |               |               |
|   |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                           |       | Diurnal Maximum |               |               |
|   |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                           |       |                 |               |               |







**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Ambient Temperature 45 m (AT45m) - C  
Mannix - February 2023**

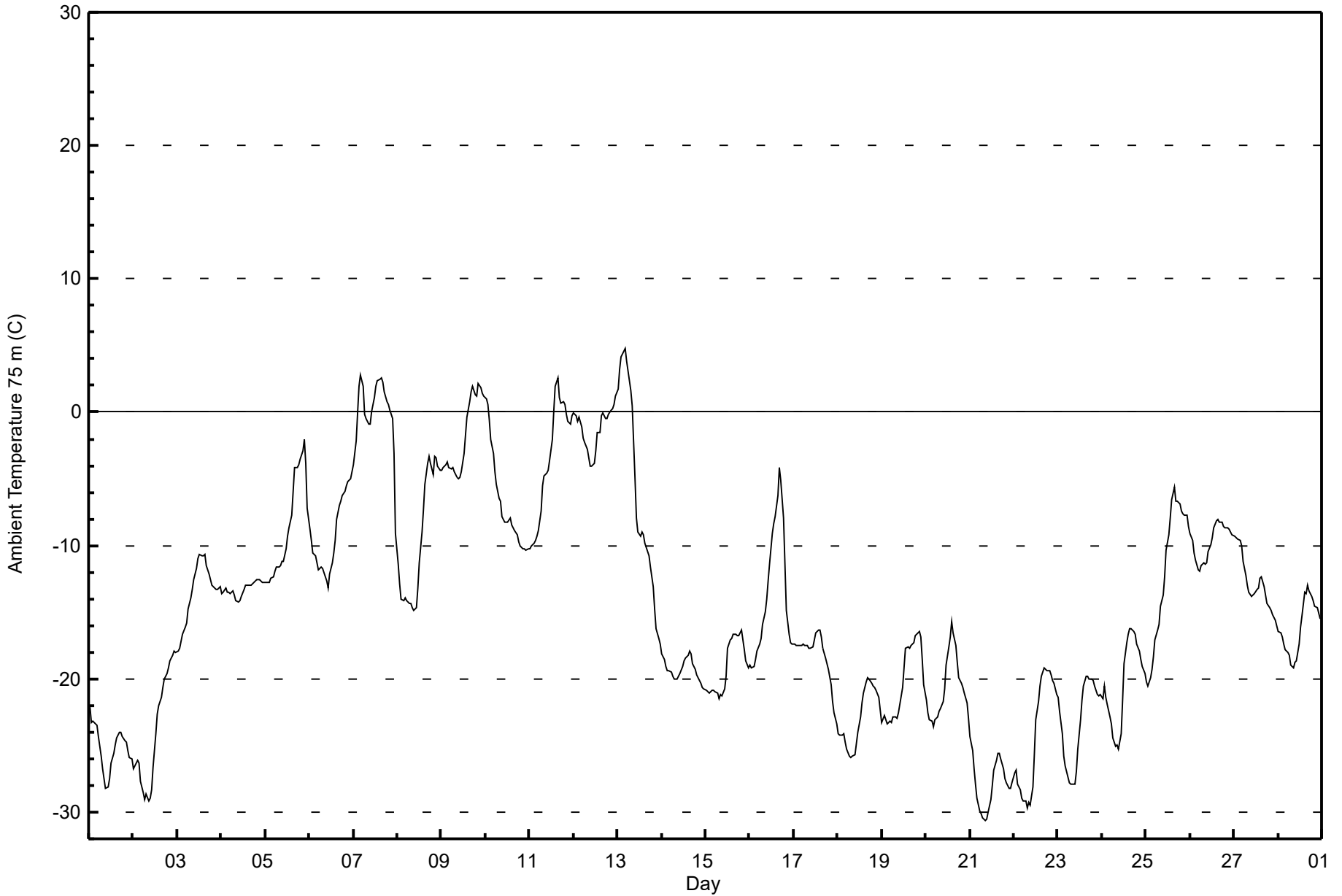
| <b>Concentration Ranges (C)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---------------------------------|------------------------|----------|---------------------|
| -50 - -20                       | 188                    | 27.98    | 27.98               |
| -20 - 0                         | 440                    | 65.48    | 93.45               |
| 0 - 10                          | 44                     | 6.55     | 100.00              |
| 10 - 20                         | 0                      | 0.00     | 100.00              |
| > 20                            | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 672

Total Number of Hours: 672



| Maximum Value: 4.8 C on Feb 13 05:00      Maximum Daily Average: 0.0 C on Feb 7   |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Hours in Service:         | 672   |       |               |               |
|---|-------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------------------------|-------|-------|---------------|---------------|
| Minimum Value: -30.6 C on Feb 21 09:00      Minimum Daily Average: -27.8 C on Feb 21  |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Hours of Data:            | 672   |       |               |               |
| Maximum Diurnal Average: -11.9 C at hour 17      Minimum Diurnal Average: -16.6 C at hour 10  |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Hours of Missing Data:    | 0     |       |               |               |
| Monthly Average: -14.40 C      Percentiles: P <sub>1</sub> = -29.5 P <sub>10</sub> = -25.5 Q <sub>1</sub> = -20.6 Median = -14.9 Q <sub>3</sub> = -8.7 P <sub>90</sub> = -1.5 P <sub>99</sub> = 2.6 |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Hours of Calibration:     | 0     |       |               |               |
|   |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Percent Operational Time: | 100.0 |       |               |               |
| Day   | Hourly Period Ending At (MST) |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                           |       |       | Daily Average | Daily Maximum |
|   | 1                             | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     | 10    | 11    | 12    | 13    | 14    | 15    | 16    | 17    | 18    | 19    | 20    | 21    | 22                        | 23    | 24    |               |               |
| 1-Feb   | -22.1                         | -23.3 | -23.2 | -23.4 | -23.5 | -24.4 | -25.8 | -26.8 | -27.4 | -28.2 | -28.1 | -27.5 | -26.3 | -25.6 | -25.0 | -24.4 | -24.0 | -24.1 | -24.3 | -24.7 | -24.7 | -25.4                     | -25.9 | -26.0 | -25.2         | -22.1         |
| 2-Feb   | -26.8                         | -26.6 | -26.1 | -26.3 | -27.7 | -28.6 | -29.1 | -28.6 | -29.1 | -29.0 | -28.3 | -26.6 | -24.2 | -22.7 | -22.1 | -21.4 | -20.6 | -20.0 | -19.6 | -19.2 | -18.7 | -18.2                     | -18.0 | -18.0 | -24.0         | -18.0         |
| 3-Feb   | -17.9                         | -17.7 | -17.2 | -16.6 | -16.1 | -15.8 | -14.7 | -13.9 | -13.2 | -12.6 | -11.8 | -10.9 | -10.7 | -10.7 | -10.8 | -10.7 | -11.5 | -12.1 | -12.6 | -12.9 | -13.2 | -13.3                     | -13.3 | -13.1 | -13.5         | -10.7         |
| 4-Feb   | -13.6                         | -13.5 | -13.2 | -13.6 | -13.5 | -13.6 | -13.4 | -13.7 | -14.2 | -14.2 | -14.1 | -13.8 | -13.3 | -13.0 | -13.0 | -13.0 | -13.0 | -12.8 | -12.7 | -12.6 | -12.5 | -12.6                     | -12.7 | -12.8 | -13.3         | -12.5         |
| 5-Feb   | -12.8                         | -12.8 | -12.8 | -12.5 | -12.4 | -11.9 | -11.6 | -11.6 | -11.5 | -11.2 | -11.2 | -10.8 | -9.3  | -8.7  | -7.7  | -6.0  | -4.1  | -4.2  | -4.0  | -3.6  | -2.9  | -2.0                      | -3.8  | -7.2  | -8.6          | -2.0          |
| 6-Feb   | -8.7                          | -9.7  | -10.5 | -10.8 | -11.3 | -11.8 | -11.6 | -11.8 | -12.0 | -12.6 | -13.2 | -12.1 | -11.3 | -10.5 | -9.6  | -8.0  | -7.0  | -6.7  | -6.2  | -5.9  | -5.6  | -5.2                      | -5.0  | -4.5  | -9.2          | -4.5          |
| 7-Feb   | -3.9                          | -2.1  | -0.1  | 2.0   | 2.7   | 2.0   | -0.2  | -0.5  | -0.9  | -0.9  | 0.0   | 1.1   | 1.9   | 2.3   | 2.5   | 2.6   | 2.2   | 1.5   | 0.8   | 0.5   | 0.1   | -0.5                      | -3.1  | -9.1  | 0.0           | 2.7           |
| 8-Feb   | -11.4                         | -12.9 | -14.0 | -14.1 | -14.0 | -14.1 | -14.4 | -14.4 | -14.7 | -14.8 | -14.6 | -13.2 | -11.3 | -9.0  | -7.3  | -5.4  | -3.8  | -3.3  | -3.8  | -4.7  | -3.3  | -3.4                      | -4.0  | -4.4  | -9.6          | -3.3          |
| 9-Feb   | -4.3                          | -4.2  | -3.9  | -3.7  | -4.2  | -4.3  | -4.1  | -4.5  | -4.9  | -5.0  | -4.9  | -4.4  | -3.1  | -1.7  | -0.4  | 0.8   | 1.5   | 1.9   | 1.3   | 1.3   | 2.1   | 1.8                       | 1.4   | 1.2   | -1.8          | 2.1           |
| 10-Feb  | 1.0                           | 0.6   | -0.6  | -2.0  | -3.2  | -4.4  | -5.4  | -6.5  | -6.7  | -7.8  | -8.3  | -8.3  | -8.3  | -8.0  | -8.5  | -8.6  | -8.8  | -9.2  | -9.7  | -10.0 | -10.2 | -10.3                     | -10.3 | -10.3 | -6.8          | 1.0           |
| 11-Feb  | -10.3                         | -10.1 | -9.8  | -9.6  | -9.3  | -8.9  | -7.4  | -5.5  | -4.8  | -4.6  | -4.4  | -3.6  | -2.1  | 0.1   | 1.9   | 2.6   | 1.1   | 0.7   | 0.8   | 0.6   | -0.1  | -0.6                      | -0.9  | -0.3  | -3.5          | 2.6           |
| 12-Feb  | -0.1                          | -0.3  | -0.6  | -0.4  | -1.1  | -2.0  | -2.2  | -2.8  | -3.5  | -4.1  | -4.0  | -3.8  | -2.9  | -1.6  | -1.5  | -0.3  | 0.0   | -0.5  | -0.5  | -0.2  | 0.2   | 0.3                       | 0.6   | 1.2   | -1.2          | 1.2           |
| 13-Feb  | 1.7                           | 3.2   | 4.2   | 4.5   | 4.8   | 3.8   | 2.4   | 1.6   | 0.4   | -5.0  | -7.9  | -9.0  | -9.3  | -8.9  | -9.2  | -9.8  | -10.4 | -10.8 | -11.6 | -13.0 | -14.7 | -16.2                     | -17.0 | -17.4 | -6.0          | 4.8           |
| 14-Feb  | -18.1                         | -18.5 | -19.0 | -19.4 | -19.4 | -19.5 | -19.9 | -20.0 | -20.0 | -19.8 | -19.6 | -19.1 | -18.6 | -18.4 | -18.2 | -18.0 | -18.2 | -18.8 | -19.3 | -19.7 | -19.9 | -20.4                     | -20.7 | -20.8 | -19.3         | -18.0         |
| 15-Feb  | -20.9                         | -21.0 | -21.1 | -20.9 | -20.9 | -21.1 | -21.5 | -21.2 | -21.3 | -20.7 | -19.8 | -17.7 | -17.1 | -16.9 | -16.6 | -16.6 | -16.8 | -16.8 | -16.8 | -16.4 | -17.0 | -17.8                     | -18.7 | -19.2 | -19.1         | -16.4         |
| 16-Feb  | -19.0                         | -19.2 | -19.1 | -18.5 | -18.0 | -17.4 | -16.9 | -15.9 | -14.9 | -14.0 | -12.7 | -11.4 | -9.1  | -8.3  | -7.9  | -6.2  | -4.2  | -5.1  | -7.9  | -11.4 | -14.9 | -16.7                     | -17.2 | -17.4 | -13.5         | -4.2          |
| 17-Feb  | -17.4                         | -17.5 | -17.5 | -17.5 | -17.5 | -17.4 | -17.5 | -17.5 | -17.7 | -17.7 | -17.6 | -17.1 | -16.5 | -16.3 | -16.4 | -16.9 | -17.7 | -18.4 | -18.8 | -19.3 | -20.4 | -21.7                     | -22.5 | -23.4 | -18.3         | -16.3         |
| 18-Feb  | -24.1                         | -24.3 | -24.3 | -24.1 | -24.7 | -25.3 | -25.8 | -26.0 | -25.8 | -25.7 | -24.8 | -24.0 | -22.8 | -21.8 | -21.1 | -20.2 | -19.9 | -20.0 | -20.4 | -20.5 | -20.6 | -20.9                     | -21.4 | -22.3 | -22.9         | -19.9         |
| 19-Feb  | -23.3                         | -22.7 | -23.0 | -23.3 | -23.2 | -23.3 | -22.9 | -22.8 | -22.9 | -22.6 | -21.9 | -20.6 | -19.2 | -17.8 | -17.6 | -17.7 | -17.5 | -17.2 | -16.8 | -16.7 | -16.5 | -16.9                     | -18.6 | -20.5 | -20.2         | -16.5         |
| 20-Feb  | -21.6                         | -22.5 | -23.0 | -23.2 | -23.6 | -23.1 | -22.8 | -22.5 | -22.2 | -21.7 | -20.7 | -19.0 | -17.6 | -16.9 | -15.7 | -16.5 | -17.5 | -18.7 | -19.9 | -20.3 | -20.6 | -21.1                     | -21.8 | -22.9 | -20.6         | -15.7         |
| 21-Feb  | -24.3                         | -25.4 | -26.7 | -27.9 | -29.0 | -29.9 | -30.1 | -30.4 | -30.6 | -30.5 | -30.0 | -29.0 | -28.0 | -26.9 | -26.1 | -25.6 | -25.6 | -26.0 | -26.8 | -27.5 | -27.8 | -28.2                     | -28.2 | -27.8 | -27.8         | -24.3         |
| 22-Feb  | -27.0                         | -26.9 | -27.9 | -28.4 | -29.0 | -29.2 | -29.1 | -29.7 | -29.3 | -29.5 | -28.2 | -25.7 | -23.1 | -21.7 | -20.5 | -19.8 | -19.2 | -19.3 | -19.4 | -19.4 | -19.7 | -20.1                     | -20.3 | -21.2 | -24.3         | -19.2         |
| 23-Feb  | -21.4                         | -22.4 | -24.2 | -25.8 | -26.5 | -27.3 | -27.8 | -27.9 | -27.9 | -27.9 | -27.0 | -25.3 | -23.1 | -21.6 | -20.5 | -19.8 | -19.8 | -20.0 | -20.1 | -20.2 | -20.5 | -21.2                     | -21.3 | -21.2 | -23.3         | -19.8         |
| 24-Feb  | -21.5                         | -20.6 | -21.4 | -21.9 | -22.8 | -23.4 | -24.4 | -25.0 | -25.0 | -25.3 | -24.1 | -21.6 | -18.9 | -17.3 | -16.6 | -16.2 | -16.2 | -16.4 | -16.7 | -17.4 | -18.0 | -18.5                     | -19.1 | -19.6 | -20.3         | -16.2         |
| 25-Feb  | -20.3                         | -20.5 | -19.9 | -19.3 | -18.4 | -17.1 | -16.3 | -15.9 | -14.6 | -13.7 | -12.3 | -10.4 | -9.2  | -7.9  | -6.6  | -5.6  | -6.7  | -6.7  | -6.8  | -7.4  | -7.6  | -7.7                      | -7.7  | -8.6  | -12.0         | -5.6          |
| 26-Feb  | -9.1                          | -9.6  | -10.6 | -11.1 | -11.8 | -11.9 | -11.5 | -11.3 | -11.4 | -11.3 | -10.5 | -9.9  | -9.4  | -8.7  | -8.1  | -8.0  | -8.2  | -8.2  | -8.6  | -8.7  | -8.7  | -8.8                      | -9.0  | -9.2  | -9.7          | -8.0          |
| 27-Feb  | -9.3                          | -9.4  | -9.6  | -9.6  | -10.0 | -11.2 | -12.3 | -13.0 | -13.5 | -13.9 | -13.8 | -13.6 | -13.3 | -13.2 | -12.5 | -12.3 | -13.1 | -13.8 | -14.4 | -14.7 | -14.9 | -15.1                     | -15.6 | -16.0 | -12.8         | -9.3          |
| 28-Feb  | -16.4                         | -16.6 | -16.9 | -17.4 | -17.8 | -18.0 | -18.3 | -18.9 | -19.2 | -18.7 | -18.6 | -17.4 | -16.2 | -15.2 | -13.5 | -13.6 | -13.0 | -13.4 | -13.8 | -14.1 | -14.5 | -14.7                     | -15.1 | -15.5 | -16.1         | -13.0         |
|   |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Diurnal Average           |       |       |               |               |
|   |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Diurnal Maximum           |       |       |               |               |
|   |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                           |       |       |               |               |





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Ambient Temperature 75 m (AT75m) - C  
Mannix - February 2023**

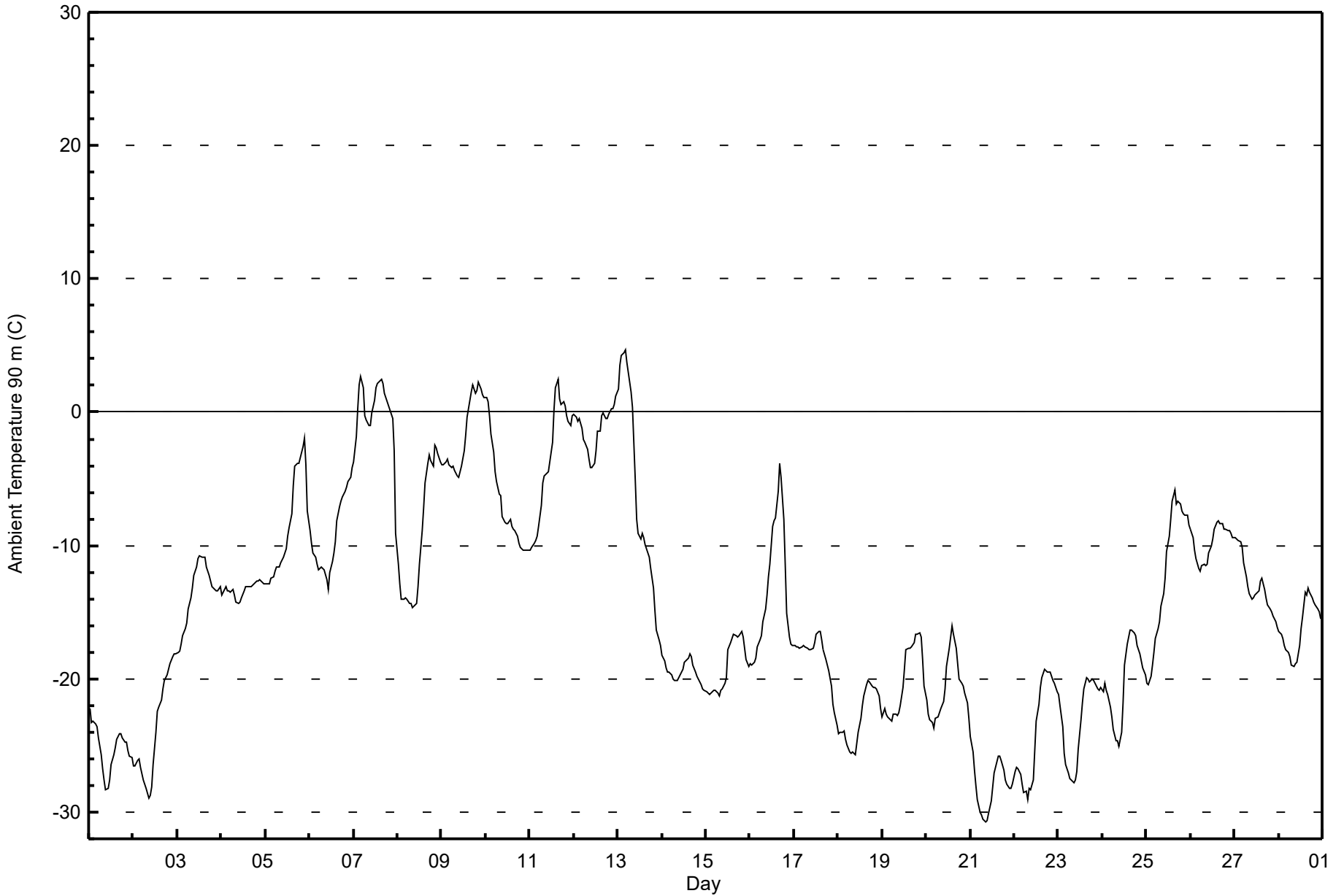
| <b>Concentration Ranges (C)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---------------------------------|------------------------|----------|---------------------|
| -50 - -20                       | 190                    | 28.27    | 28.27               |
| -20 - 0                         | 437                    | 65.03    | 93.30               |
| 0 - 10                          | 45                     | 6.70     | 100.00              |
| 10 - 20                         | 0                      | 0.00     | 100.00              |
| > 20                            | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 672

Total Number of Hours: 672



| Maximum Value: 4.7 C on Feb 13 05:00      Maximum Daily Average: 0.0 C on Feb 7   |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Hours in Service:         | 672           |               |
|---|-------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------------------------|---------------|---------------|
| Minimum Value: -30.7 C on Feb 21 09:00      Minimum Daily Average: -28.0 C on Feb 21  |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Hours of Data:            | 672           |               |
| Maximum Diurnal Average: -11.9 C at hour 17      Minimum Diurnal Average: -16.5 C at hour 10  |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Hours of Missing Data:    | 0             |               |
| Monthly Average: -14.38 C      Percentiles: P <sub>1</sub> = -29.1 P <sub>10</sub> = -25.5 Q <sub>1</sub> = -20.7 Median = -15.0 Q <sub>3</sub> = -8.7 P <sub>90</sub> = -1.4 P <sub>99</sub> = 2.5 |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Hours of Calibration:     | 0             |               |
|   |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Percent Operational Time: | 100.0         |               |
| Day   | Hourly Period Ending At (MST) |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                           | Daily Average | Daily Maximum |
|   | 1                             | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     | 10    | 11    | 12    | 13    | 14    | 15    | 16    | 17    | 18    | 19    | 20    | 21    | 22    | 23    | 24                        |               |               |
| 1-Feb   | -22.2                         | -23.2 | -23.2 | -23.4 | -23.6 | -24.4 | -25.7 | -26.8 | -27.6 | -28.4 | -27.6 | -26.5 | -25.7 | -25.1 | -24.5 | -24.1 | -24.2 | -24.4 | -24.7 | -24.8 | -25.4 | -25.8 | -25.9 | -25.2                     | -22.2         |               |
| 2-Feb   | -26.6                         | -26.6 | -26.1 | -26.0 | -26.6 | -27.6 | -27.9 | -28.2 | -28.9 | -28.7 | -28.2 | -26.4 | -24.0 | -22.5 | -22.1 | -21.6 | -20.8 | -20.1 | -19.7 | -19.3 | -18.8 | -18.4 | -18.1 | -23.8                     | -18.1         |               |
| 3-Feb   | -18.0                         | -17.9 | -17.3 | -16.7 | -16.2 | -15.9 | -14.7 | -13.9 | -13.2 | -12.2 | -11.6 | -11.0 | -10.7 | -10.9 | -10.9 | -10.9 | -11.6 | -12.3 | -12.7 | -13.1 | -13.3 | -13.4 | -13.4 | -13.5                     | -10.7         |               |
| 4-Feb   | -13.7                         | -13.5 | -13.1 | -13.4 | -13.4 | -13.5 | -13.3 | -13.7 | -14.2 | -14.4 | -14.2 | -13.9 | -13.4 | -13.1 | -13.1 | -13.1 | -12.9 | -12.8 | -12.6 | -12.6 | -12.5 | -12.8 | -12.9 | -13.3                     | -12.5         |               |
| 5-Feb   | -12.9                         | -12.9 | -12.9 | -12.5 | -12.3 | -11.9 | -11.6 | -11.6 | -11.3 | -11.1 | -10.9 | -10.9 | -9.3  | -8.7  | -7.7  | -5.5  | -4.0  | -3.8  | -3.8  | -3.4  | -2.6  | -1.9  | -3.9  | -7.4                      | -1.9          |               |
| 6-Feb   | -8.9                          | -9.8  | -10.6 | -10.9 | -11.4 | -11.8 | -11.6 | -11.8 | -11.9 | -12.5 | -13.3 | -12.1 | -11.2 | -10.6 | -9.7  | -8.1  | -7.1  | -6.6  | -6.3  | -5.9  | -5.6  | -5.2  | -4.9  | -4.2                      | -9.2          | -4.2          |
| 7-Feb   | -3.7                          | -1.8  | 0.2   | 2.1   | 2.7   | 1.8   | -0.3  | -0.6  | -1.0  | -1.0  | 0.9   | 1.8   | 2.2   | 2.4   | 2.5   | 2.1   | 1.4   | 0.8   | 0.5   | 0.1   | -0.4  | -2.9  | -9.1  | 0.0                       | 2.7           |               |
| 8-Feb   | -11.4                         | -12.9 | -14.0 | -14.0 | -13.9 | -14.1 | -14.4 | -14.4 | -14.6 | -14.5 | -14.4 | -13.1 | -11.4 | -8.9  | -7.2  | -5.3  | -3.8  | -3.2  | -3.7  | -4.1  | -2.5  | -2.6  | -3.1  | -3.7                      | -9.4          | -2.5          |
| 9-Feb   | -4.0                          | -3.9  | -3.7  | -3.5  | -4.0  | -4.1  | -4.1  | -4.3  | -4.8  | -4.9  | -4.5  | -4.1  | -2.9  | -1.7  | -0.3  | 0.9   | 1.5   | 2.0   | 1.4   | 1.6   | 2.2   | 1.7   | 1.3   | 1.2                       | -1.7          | 2.2           |
| 10-Feb  | 1.1                           | 0.8   | -0.3  | -1.7  | -3.0  | -4.5  | -5.2  | -6.2  | -6.2  | -7.8  | -8.3  | -8.4  | -8.4  | -8.1  | -8.5  | -8.7  | -8.9  | -9.3  | -9.8  | -10.1 | -10.3 | -10.4 | -10.4 | -10.3                     | -6.8          | 1.1           |
| 11-Feb  | -10.3                         | -10.1 | -9.8  | -9.6  | -9.3  | -8.6  | -6.9  | -5.4  | -4.8  | -4.6  | -4.5  | -3.8  | -2.3  | 0.2   | 1.8   | 2.5   | 1.0   | 0.6   | 0.7   | 0.5   | -0.2  | -0.7  | -0.9  | -0.3                      | -3.5          | 2.5           |
| 12-Feb  | -0.1                          | -0.3  | -0.7  | -0.4  | -1.2  | -2.0  | -2.3  | -2.8  | -3.5  | -4.1  | -4.1  | -3.9  | -2.9  | -1.4  | -1.4  | -0.3  | 0.0   | -0.5  | -0.4  | -0.1  | 0.2   | 0.3   | 0.6   | 1.3                       | -1.3          | 1.3           |
| 13-Feb  | 1.8                           | 3.5   | 4.3   | 4.5   | 4.7   | 3.7   | 2.2   | 1.5   | 0.3   | -5.1  | -8.1  | -9.1  | -9.5  | -9.1  | -9.4  | -10.0 | -10.6 | -10.9 | -11.7 | -13.2 | -14.9 | -16.4 | -17.1 | -17.5                     | -6.1          | 4.7           |
| 14-Feb  | -18.3                         | -18.6 | -19.1 | -19.5 | -19.5 | -19.7 | -20.0 | -20.1 | -20.1 | -19.9 | -19.7 | -19.3 | -18.8 | -18.6 | -18.4 | -18.1 | -18.3 | -19.0 | -19.4 | -19.8 | -20.0 | -20.5 | -20.8 | -20.9                     | -19.4         | -18.1         |
| 15-Feb  | -21.0                         | -21.1 | -21.1 | -20.9 | -20.8 | -20.9 | -21.0 | -21.3 | -20.8 | -20.7 | -20.3 | -19.9 | -17.9 | -17.3 | -17.0 | -16.7 | -16.7 | -16.8 | -16.8 | -16.5 | -16.9 | -17.7 | -18.6 | -19.1                     | -19.1         | -16.5         |
| 16-Feb  | -18.8                         | -19.0 | -18.8 | -18.4 | -17.6 | -17.1 | -16.8 | -15.7 | -14.8 | -13.7 | -12.3 | -11.4 | -8.5  | -8.2  | -7.9  | -5.9  | -3.8  | -4.8  | -8.0  | -11.5 | -15.0 | -16.8 | -17.4 | -17.5                     | -13.3         | -3.8          |
| 17-Feb  | -17.5                         | -17.6 | -17.7 | -17.7 | -17.6 | -17.5 | -17.6 | -17.7 | -17.9 | -17.9 | -17.7 | -17.2 | -16.7 | -16.4 | -16.5 | -17.0 | -17.8 | -18.6 | -19.0 | -19.4 | -20.5 | -21.9 | -22.6 | -23.5                     | -18.4         | -16.4         |
| 18-Feb  | -24.1                         | -24.0 | -24.0 | -23.9 | -24.6 | -25.0 | -25.5 | -25.6 | -25.5 | -25.7 | -24.8 | -24.1 | -22.9 | -22.0 | -21.2 | -20.4 | -20.1 | -20.2 | -20.6 | -20.6 | -20.6 | -20.7 | -21.3 | -22.2                     | -22.9         | -20.1         |
| 19-Feb  | -22.9                         | -22.2 | -22.7 | -22.8 | -23.0 | -23.1 | -22.7 | -22.7 | -22.7 | -22.6 | -22.0 | -20.7 | -19.3 | -17.8 | -17.7 | -17.7 | -17.6 | -17.3 | -16.7 | -16.7 | -16.5 | -16.9 | -18.6 | -20.6                     | -20.1         | -16.5         |
| 20-Feb  | -21.6                         | -22.6 | -23.1 | -23.3 | -23.7 | -22.9 | -22.9 | -22.6 | -22.3 | -21.7 | -20.8 | -19.1 | -17.7 | -16.9 | -16.0 | -16.7 | -17.7 | -18.9 | -20.1 | -20.4 | -20.6 | -21.1 | -21.9 | -23.0                     | -20.7         | -16.0         |
| 21-Feb  | -24.4                         | -25.5 | -26.8 | -28.0 | -29.1 | -30.0 | -30.2 | -30.5 | -30.7 | -30.6 | -30.1 | -29.2 | -28.1 | -27.0 | -26.2 | -25.8 | -25.8 | -26.2 | -26.9 | -27.6 | -27.9 | -28.3 | -28.2 | -27.9                     | -28.0         | -24.4         |
| 22-Feb  | -27.0                         | -26.7 | -26.8 | -27.1 | -27.9 | -28.6 | -28.4 | -29.1 | -28.2 | -28.4 | -27.5 | -25.3 | -23.1 | -21.9 | -20.6 | -20.0 | -19.3 | -19.4 | -19.5 | -19.5 | -19.8 | -20.1 | -20.4 | -21.0                     | -24.0         | -19.3         |
| 23-Feb  | -21.2                         | -22.0 | -23.6 | -25.6 | -26.4 | -27.1 | -27.4 | -27.6 | -27.8 | -27.6 | -27.0 | -25.3 | -23.1 | -21.8 | -20.7 | -19.9 | -20.1 | -20.2 | -20.0 | -20.1 | -20.3 | -20.8 | -20.8 | -20.7                     | -23.2         | -19.9         |
| 24-Feb  | -21.0                         | -20.3 | -20.9 | -21.2 | -22.1 | -22.8 | -23.8 | -24.7 | -24.6 | -25.1 | -24.0 | -21.8 | -19.0 | -17.4 | -16.8 | -16.4 | -16.4 | -16.5 | -16.8 | -17.5 | -18.1 | -18.6 | -19.2 | -19.7                     | -20.2         | -16.4         |
| 25-Feb  | -20.4                         | -20.5 | -19.8 | -18.9 | -18.1 | -16.9 | -16.3 | -15.7 | -14.5 | -13.6 | -12.4 | -10.5 | -9.3  | -8.1  | -6.7  | -5.8  | -6.9  | -6.7  | -6.9  | -7.4  | -7.7  | -7.7  | -7.8  | -8.4                      | -12.0         | -5.8          |
| 26-Feb  | -8.8                          | -9.4  | -10.3 | -10.9 | -11.7 | -11.9 | -11.5 | -11.4 | -11.5 | -11.4 | -10.6 | -10.1 | -9.5  | -8.8  | -8.3  | -8.1  | -8.3  | -8.4  | -8.7  | -8.8  | -8.9  | -8.9  | -9.1  | -9.4                      | -9.8          | -8.1          |
| 27-Feb  | -9.4                          | -9.5  | -9.7  | -9.7  | -10.2 | -11.3 | -12.4 | -13.1 | -13.6 | -14.0 | -13.9 | -13.7 | -13.5 | -13.4 | -12.6 | -12.5 | -13.3 | -13.9 | -14.5 | -14.8 | -15.0 | -15.3 | -15.7 | -16.1                     | -13.0         | -9.4          |
| 28-Feb  | -16.5                         | -16.6 | -17.0 | -17.5 | -17.8 | -18.1 | -18.3 | -18.9 | -19.1 | -18.9 | -18.7 | -17.5 | -16.3 | -15.4 | -13.5 | -13.7 | -13.2 | -13.5 | -13.9 | -14.3 | -14.5 | -14.8 | -15.0 | -15.5                     | -16.2         | -13.2         |
|   |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Diurnal Average           |               |               |
|   |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Diurnal Maximum           |               |               |
|   |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                           |               |               |





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Ambient Temperature 90 m (AT90m) - C  
Mannix - February 2023**

| <b>Concentration Ranges (C)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---------------------------------|------------------------|----------|---------------------|
| -50 - -20                       | 195                    | 29.02    | 29.02               |
| -20 - 0                         | 432                    | 64.29    | 93.30               |
| 0 - 10                          | 45                     | 6.70     | 100.00              |
| 10 - 20                         | 0                      | 0.00     | 100.00              |
| > 20                            | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 672

Total Number of Hours: 672



**Wood Buffalo Environmental Association**

**Summary of Hour Averages**

**Relative Humidity (RH) - %**

**Mannix - February 2023**

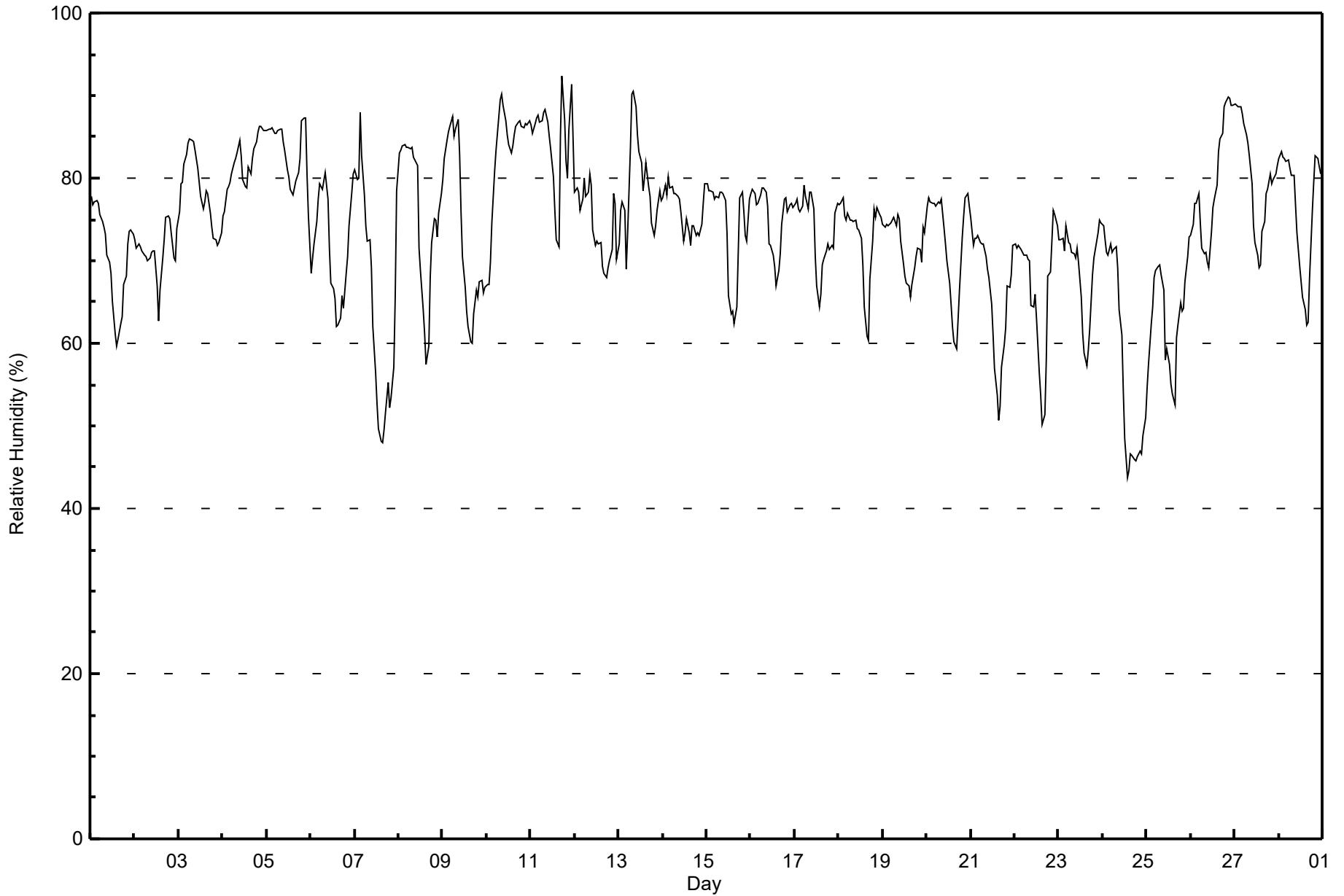
| Maximum Value: 92 % on Feb 11 18:00       |                               |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    | Maximum Daily Average: 84.5 % on Feb 11   |    |    |    |    |    | Hours in Service: 672    |               |               |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |                 |  |                 |  |
|---|-------------------------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|---|----|----|----|----|----|--------------------------|---------------|---------------|--|------|--|------|--|------|--|------|--|------|--|------|--|------|--|------|--|------|--|------|--|------|--|------|--|------|--|------|--|------|--|------|--|------|--|------|--|------|--|-----------------|--|-----------------|--|
| Minimum Value: 44 % on Feb 24 14:00       |                               |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    | Minimum Daily Average: 57.7 % on Feb 24   |    |    |    |    |    | Hours of Data: 672       |               |               |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |                 |  |                 |  |
| Maximum Diurnal Average: 78.3 % at hour 9 |                               |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    | Minimum Diurnal Average: 65.7 % at hour 16  |    |    |    |    |    | Hours of Missing Data: 0 |               |               |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |                 |  |                 |  |
| Monthly Average: 73.8 %                   |                               |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    | Percentiles: P <sub>1</sub> = 47 P <sub>10</sub> = 62 Q <sub>1</sub> = 69 Median = 75 Q <sub>3</sub> = 79 P <sub>90</sub> = 85 P <sub>99</sub> = 90 |    |    |    |    |    | Hours of Calibration: 0  |               |               |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |                 |  |                 |  |
|   |                               |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    | Percent Operational Time: 100.0   |    |    |    |    |    |                          |               |               |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |                 |  |                 |  |
| Day                                       | Hourly Period Ending At (MST) |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |   |    |    |    |    |    |                          | Daily Average | Daily Maximum |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |                 |  |                 |  |
|   | 1                             | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18  | 19 | 20 | 21 | 22 | 23 | 24                       |               |               |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |                 |  |                 |  |
| 1-Feb                                     | 78                            | 77 | 77 | 77 | 77 | 76 | 75 | 74 | 73 | 71 | 70 | 68 | 65 | 61 | 60 | 60 | 62 | 63  | 67 | 68 | 72 | 73 | 74 | 73                       | 70.5          | 78            |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |                 |  |                 |  |
| 2-Feb                                     | 73                            | 72 | 72 | 72 | 71 | 71 | 70 | 70 | 70 | 71 | 71 | 71 | 67 | 63 | 66 | 70 | 73 | 75  | 75 | 75 | 73 | 70 | 70 | 74                       | 71.1          | 75            |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |                 |  |                 |  |
| 3-Feb                                     | 76                            | 79 | 79 | 82 | 83 | 84 | 85 | 85 | 84 | 83 | 81 | 80 | 78 | 76 | 77 | 78 | 78 | 76  | 74 | 73 | 73 | 72 | 72 | 73                       | 78.4          | 85            |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |                 |  |                 |  |
| 4-Feb                                     | 75                            | 76 | 79 | 79 | 80 | 80 | 82 | 82 | 83 | 85 | 83 | 80 | 79 | 79 | 81 | 80 | 82 | 84  | 84 | 86 | 86 | 86 | 86 | 86                       | 81.8          | 86            |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |                 |  |                 |  |
| 5-Feb                                     | 86                            | 86 | 86 | 86 | 85 | 85 | 86 | 86 | 86 | 84 | 83 | 81 | 80 | 79 | 78 | 79 | 80 | 81  | 82 | 87 | 87 | 87 | 80 | 75                       | 83.2          | 87            |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |                 |  |                 |  |
| 6-Feb                                     | 69                            | 70 | 72 | 75 | 78 | 79 | 79 | 80 | 81 | 77 | 72 | 67 | 67 | 65 | 62 | 62 | 63 | 66  | 64 | 69 | 71 | 74 | 78 | 81                       | 71.6          | 81            |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |                 |  |                 |  |
| 7-Feb                                     | 81                            | 80 | 80 | 88 | 83 | 78 | 74 | 72 | 73 | 69 | 62 | 56 | 53 | 50 | 48 | 48 | 49 | 51  | 55 | 52 | 53 | 57 | 66 | 78                       | 64.9          | 88            |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |                 |  |                 |  |
| 8-Feb                                     | 83                            | 83 | 84 | 84 | 84 | 84 | 84 | 84 | 83 | 82 | 81 | 71 | 69 | 64 | 61 | 57 | 60 | 68  | 72 | 75 | 75 | 73 | 76 | 78                       | 75.6          | 84            |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |                 |  |                 |  |
| 9-Feb                                     | 80                            | 82 | 85 | 86 | 86 | 88 | 85 | 86 | 87 | 83 | 76 | 70 | 67 | 64 | 62 | 60 | 60 | 64  | 66 | 66 | 67 | 68 | 66 | 67                       | 73.8          | 88            |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |                 |  |                 |  |
| 10-Feb                                    | 67                            | 67 | 70 | 75 | 81 | 83 | 86 | 89 | 90 | 89 | 87 | 85 | 84 | 83 | 84 | 85 | 86 | 87  | 87 | 86 | 86 | 87 | 86 | 87                       | 83.2          | 90            |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |                 |  |                 |  |
| 11-Feb                                    | 86                            | 85 | 87 | 87 | 88 | 87 | 87 | 88 | 88 | 87 | 85 | 84 | 80 | 76 | 73 | 72 | 85 | 92  | 87 | 82 | 80 | 86 | 91 | 85                       | 84.5          | 92            |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |                 |  |                 |  |
| 12-Feb                                    | 78                            | 79 | 78 | 76 | 78 | 80 | 78 | 78 | 80 | 79 | 74 | 72 | 72 | 72 | 72 | 69 | 68 | 68  | 69 | 70 | 71 | 78 | 77 | 70                       | 74.5          | 80            |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |                 |  |                 |  |
| 13-Feb                                    | 72                            | 76 | 77 | 76 | 69 | 73 | 84 | 90 | 90 | 89 | 85 | 83 | 82 | 78 | 80 | 82 | 79 | 78  | 75 | 73 | 74 | 76 | 78 | 77                       | 79.1          | 90            |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |                 |  |                 |  |
| 14-Feb                                    | 78                            | 79 | 78 | 80 | 79 | 79 | 78 | 78 | 78 | 77 | 76 | 72 | 73 | 75 | 73 | 72 | 74 | 74  | 73 | 73 | 73 | 74 | 77 | 79                       | 76.0          | 80            |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |                 |  |                 |  |
| 15-Feb                                    | 79                            | 78 | 78 | 78 | 77 | 78 | 78 | 78 | 78 | 78 | 77 | 73 | 66 | 64 | 64 | 62 | 64 | 71  | 78 | 78 | 76 | 73 | 72 | 77                       | 74.1          | 79            |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |                 |  |                 |  |
| 16-Feb                                    | 78                            | 79 | 78 | 77 | 77 | 78 | 79 | 79 | 78 | 77 | 72 | 72 | 71 | 69 | 67 | 69 | 71 | 74  | 78 | 78 | 76 | 77 | 77 | 76                       | 75.2          | 79            |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |                 |  |                 |  |
| 17-Feb                                    | 77                            | 78 | 76 | 76 | 77 | 79 | 78 | 76 | 78 | 78 | 76 | 71 | 67 | 64 | 66 | 69 | 70 | 71  | 72 | 71 | 72 | 71 | 76 | 77                       | 73.6          | 79            |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |                 |  |                 |  |
| 18-Feb                                    | 77                            | 77 | 78 | 75 | 75 | 76 | 75 | 75 | 75 | 75 | 74 | 74 | 73 | 69 | 64 | 61 | 60 | 68  | 72 | 76 | 75 | 77 | 76 | 75                       | 73.0          | 78            |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |                 |  |                 |  |
| 19-Feb                                    | 74                            | 74 | 74 | 74 | 75 | 75 | 75 | 74 | 76 | 75 | 72 | 70 | 68 | 67 | 67 | 66 | 67 | 69  | 71 | 72 | 71 | 70 | 74 | 73                       | 71.8          | 76            |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |                 |  |                 |  |
| 20-Feb                                    | 77                            | 78 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 74 | 72 | 70 | 67 | 65 | 62 | 60 | 59 | 63  | 66 | 73 | 75 | 78 | 78 | 77                       | 72.2          | 78            |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |                 |  |                 |  |
| 21-Feb                                    | 75                            | 72 | 73 | 73 | 73 | 72 | 72 | 72 | 71 | 69 | 68 | 65 | 61 | 57 | 54 | 51 | 52 | 57  | 60 | 62 | 67 | 67 | 68 | 72                       | 65.9          | 75            |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |                 |  |                 |  |
| 22-Feb                                    | 72                            | 72 | 72 | 71 | 71 | 71 | 71 | 70 | 70 | 65 | 64 | 66 | 63 | 57 | 54 | 50 | 51 | 58  | 68 | 69 | 72 | 76 | 76 | 74                       | 66.8          | 76            |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |                 |  |                 |  |
| 23-Feb                                    | 73                            | 73 | 73 | 71 | 74 | 72 | 72 | 71 | 71 | 70 | 72 | 70 | 66 | 61 | 59 | 57 | 59 | 62  | 68 | 70 | 71 | 73 | 75 | 75                       | 69.1          | 75            |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |                 |  |                 |  |
| 24-Feb                                    | 74                            | 73 | 71 | 71 | 72 | 71 | 71 | 72 | 69 | 64 | 61 | 54 | 48 | 44 | 44 | 47 | 46 | 46  | 46 | 46 | 47 | 47 | 49 | 51                       | 57.7          | 74            |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |                 |  |                 |  |
| 25-Feb                                    | 55                            | 58 | 62 | 64 | 68 | 69 | 69 | 69 | 68 | 66 | 58 | 59 | 57 | 55 | 54 | 52 | 61 | 62  | 65 | 64 | 64 | 67 | 70 | 73                       | 63.0          | 73            |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |                 |  |                 |  |
| 26-Feb                                    | 73                            | 74 | 77 | 77 | 78 | 75 | 72 | 71 | 71 | 70 | 69 | 74 | 76 | 77 | 79 | 83 | 85 | 85  | 89 | 89 | 90 | 90 | 89 | 89                       | 79.2          | 90            |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |                 |  |                 |  |
| 27-Feb                                    | 89                            | 89 | 89 | 89 | 88 | 87 | 85 | 84 | 83 | 79 | 74 | 72 | 71 | 69 | 69 | 74 | 75 | 78  | 79 | 80 | 79 | 80 | 81 | 82                       | 80.1          | 89            |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |                 |  |                 |  |
| 28-Feb                                    | 82                            | 83 | 83 | 82 | 82 | 82 | 81 | 80 | 80 | 77 | 73 | 69 | 68 | 66 | 64 | 62 | 63 | 68  | 76 | 79 | 83 | 82 | 81 | 81                       | 76.2          | 83            |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |      |  |                 |  |                 |  |
| 76.3                                      |                               |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    | 76.7  |    |    |    |    |    | 77.3                     |               | 77.8          |  | 78.0 |  | 78.1 |  | 78.3 |  | 78.3 |  | 76.6 |  | 73.9 |  | 71.4 |  | 69.2 |  | 66.8 |  | 65.9 |  | 65.7 |  | 67.3 |  | 70.0 |  | 72.1 |  | 72.9 |  | 73.6 |  | 74.6 |  | 75.7 |  | 76.3 |  | Diurnal Average |  |                 |  |
| 89  |                               |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    | 89  |    |    |    |    |    | 89                       |               | 89            |  | 88   |  | 88   |  | 87   |  | 90   |  | 90   |  | 89   |  | 87   |  | 85   |  | 84   |  | 83   |  | 84   |  | 85   |  | 86   |  | 92   |  | 89   |  | 89   |  | 90   |  | 90   |  | 91   |  | 89              |  | Diurnal Maximum |  |





**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Relative Humidity (RH) - %**  
**Mannix - February 2023**





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Relative Humidity (RH) - %  
Mannix - February 2023**

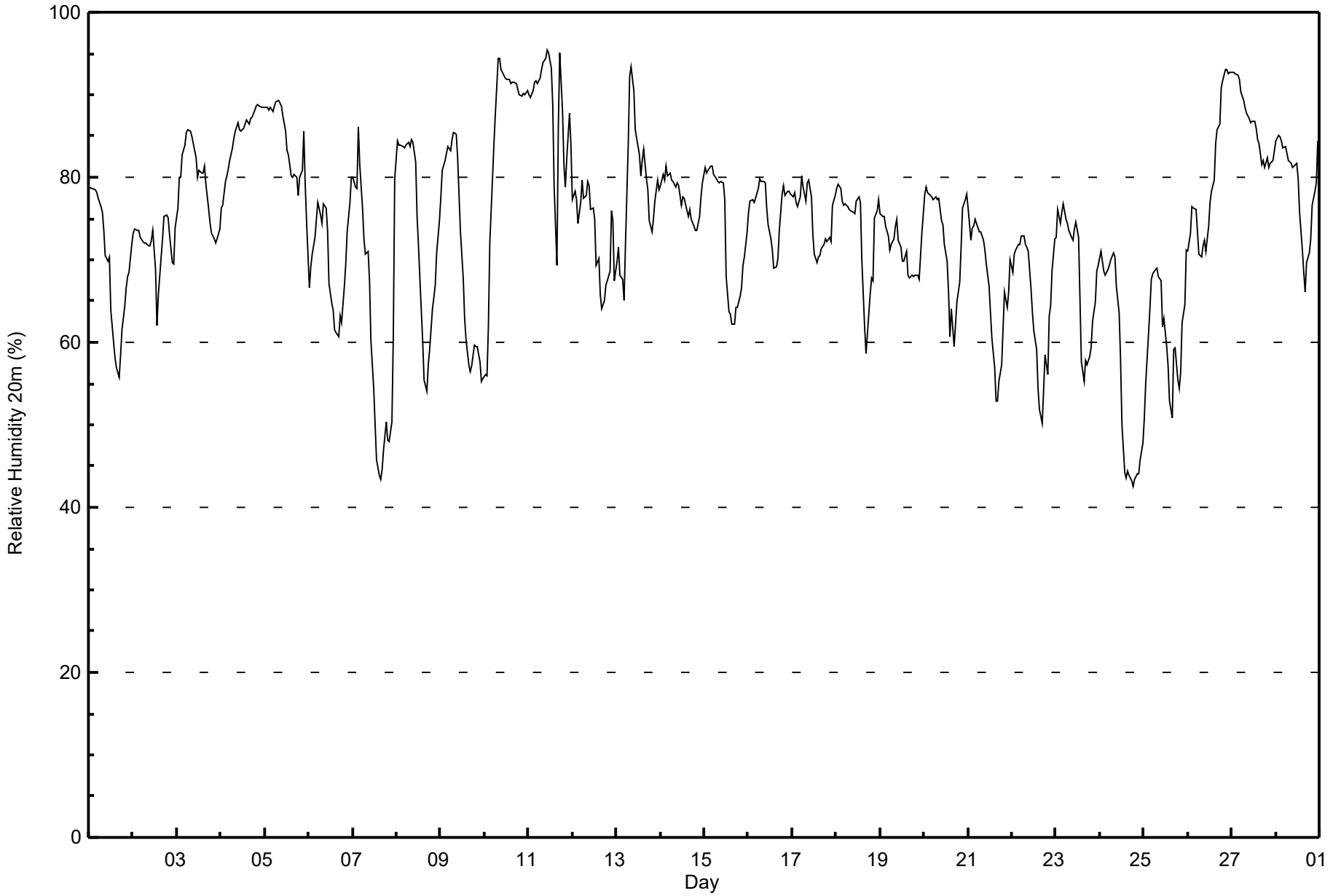
| <b>Concentration Ranges (%)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---------------------------------|------------------------|----------|---------------------|
| 0 - 20                          | 0                      | 0.00     | 0.00                |
| 20 - 40                         | 0                      | 0.00     | 0.00                |
| 40 - 60                         | 50                     | 7.44     | 7.44                |
| 60 - 80                         | 469                    | 69.79    | 77.23               |
| 80 - 100                        | 153                    | 22.77    | 100.00              |

Total Number of Valid Hours: 672

Total Number of Hours: 672



| Maximum Value: 96 % on Feb 11 11:00       |                               |    |    |    |    |    |    |    |    |    |    |    |    | Maximum Daily Average: 88.4 % on Feb 11   |    |    |    |    |    |    |    |    |    |    |               |               |  | Hours in Service: 672           |  |
|---|-------------------------------|----|----|----|----|----|----|----|----|----|----|----|----|---|----|----|----|----|----|----|----|----|----|----|---------------|---------------|--|---------------------------------|--|
| Minimum Value: 43 % on Feb 24 19:00       |                               |    |    |    |    |    |    |    |    |    |    |    |    | Minimum Daily Average: 56.3 % on Feb 24   |    |    |    |    |    |    |    |    |    |    |               |               |  | Hours of Data: 672              |  |
| Maximum Diurnal Average: 79.4 % at hour 9 |                               |    |    |    |    |    |    |    |    |    |    |    |    | Minimum Diurnal Average: 66.6 % at hour 16  |    |    |    |    |    |    |    |    |    |    |               |               |  | Hours of Missing Data: 0        |  |
| Monthly Average: 74.0 %                   |                               |    |    |    |    |    |    |    |    |    |    |    |    | Percentiles: P <sub>1</sub> = 44 P <sub>10</sub> = 59 Q <sub>1</sub> = 68 Median = 75 Q <sub>3</sub> = 81 P <sub>90</sub> = 88 P <sub>99</sub> = 94 |    |    |    |    |    |    |    |    |    |    |               |               |  | Hours of Calibration: 0         |  |
|   |                               |    |    |    |    |    |    |    |    |    |    |    |    |   |    |    |    |    |    |    |    |    |    |    |               |               |  | Percent Operational Time: 100.0 |  |
| Day                                       | Hourly Period Ending At (MST) |    |    |    |    |    |    |    |    |    |    |    |    |   |    |    |    |    |    |    |    |    |    |    | Daily Average | Daily Maximum |  |                                 |  |
|   | 1                             | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 | 14  | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |               |               |  |                                 |  |
| 1-Feb                                     | 79                            | 79 | 79 | 78 | 78 | 77 | 76 | 76 | 74 | 70 | 70 | 70 | 64 | 60  | 58 | 57 | 56 | 58 | 61 | 64 | 67 | 68 | 68 | 72 | 69.2          | 79            |  |                                 |  |
| 2-Feb                                     | 73                            | 74 | 74 | 74 | 73 | 72 | 72 | 72 | 72 | 72 | 72 | 74 | 69 | 62  | 66 | 70 | 73 | 75 | 75 | 75 | 73 | 70 | 69 | 74 | 71.8          | 75            |  |                                 |  |
| 3-Feb                                     | 76                            | 80 | 80 | 83 | 84 | 85 | 86 | 86 | 85 | 84 | 82 | 80 | 81 | 80  | 80 | 81 | 79 | 76 | 74 | 73 | 73 | 72 | 73 | 74 | 79.5          | 86            |  |                                 |  |
| 4-Feb                                     | 76                            | 77 | 79 | 80 | 81 | 82 | 83 | 85 | 86 | 87 | 86 | 86 | 86 | 86  | 87 | 86 | 87 | 87 | 88 | 89 | 89 | 89 | 88 | 88 | 85.0          | 89            |  |                                 |  |
| 5-Feb                                     | 88                            | 88 | 88 | 88 | 88 | 89 | 89 | 89 | 89 | 89 | 88 | 86 | 83 | 83  | 80 | 80 | 80 | 80 | 78 | 80 | 81 | 86 | 79 | 74 | 84.3          | 89            |  |                                 |  |
| 6-Feb                                     | 67                            | 69 | 71 | 73 | 75 | 77 | 75 | 74 | 77 | 76 | 73 | 67 | 65 | 64  | 62 | 61 | 61 | 63 | 62 | 67 | 70 | 73 | 77 | 80 | 70.0          | 80            |  |                                 |  |
| 7-Feb                                     | 80                            | 79 | 79 | 86 | 82 | 76 | 73 | 71 | 71 | 67 | 60 | 54 | 50 | 46  | 44 | 43 | 45 | 47 | 50 | 48 | 48 | 50 | 61 | 80 | 62.1          | 86            |  |                                 |  |
| 8-Feb                                     | 84                            | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 85 | 84 | 82 | 75 | 72 | 64  | 60 | 55 | 54 | 57 | 59 | 64 | 65 | 67 | 71 | 75 | 73.4          | 85            |  |                                 |  |
| 9-Feb                                     | 78                            | 81 | 82 | 83 | 84 | 83 | 85 | 85 | 85 | 82 | 78 | 73 | 68 | 63  | 60 | 57 | 56 | 57 | 60 | 59 | 59 | 58 | 55 | 56 | 70.3          | 85            |  |                                 |  |
| 10-Feb                                    | 56                            | 56 | 62 | 72 | 80 | 84 | 88 | 94 | 94 | 93 | 92 | 92 | 92 | 92  | 91 | 91 | 92 | 91 | 91 | 90 | 90 | 90 | 91 | 91 | 85.6          | 94            |  |                                 |  |
| 11-Feb                                    | 90                            | 90 | 91 | 91 | 92 | 91 | 92 | 93 | 94 | 94 | 96 | 95 | 93 | 89  | 79 | 69 | 86 | 95 | 88 | 82 | 79 | 82 | 88 | 84 | 88.4          | 96            |  |                                 |  |
| 12-Feb                                    | 77                            | 78 | 77 | 74 | 77 | 80 | 77 | 78 | 80 | 79 | 76 | 76 | 75 | 69  | 70 | 66 | 64 | 65 | 67 | 67 | 69 | 76 | 75 | 68 | 73.4          | 80            |  |                                 |  |
| 13-Feb                                    | 70                            | 71 | 68 | 68 | 65 | 72 | 84 | 92 | 93 | 90 | 86 | 85 | 83 | 80  | 82 | 83 | 80 | 78 | 75 | 73 | 75 | 77 | 80 | 78 | 78.7          | 93            |  |                                 |  |
| 14-Feb                                    | 79                            | 80 | 80 | 81 | 80 | 80 | 80 | 80 | 79 | 79 | 79 | 77 | 78 | 77  | 76 | 75 | 76 | 75 | 74 | 73 | 74 | 75 | 78 | 79 | 77.7          | 81            |  |                                 |  |
| 15-Feb                                    | 81                            | 81 | 81 | 81 | 81 | 80 | 80 | 79 | 79 | 80 | 79 | 77 | 68 | 64  | 63 | 62 | 62 | 64 | 64 | 66 | 67 | 69 | 70 | 73 | 73.1          | 81            |  |                                 |  |
| 16-Feb                                    | 76                            | 77 | 77 | 77 | 77 | 79 | 80 | 80 | 79 | 79 | 76 | 74 | 73 | 71  | 69 | 69 | 70 | 74 | 78 | 79 | 78 | 78 | 78 | 78 | 76.1          | 80            |  |                                 |  |
| 17-Feb                                    | 78                            | 78 | 77 | 76 | 78 | 80 | 79 | 77 | 79 | 80 | 78 | 73 | 71 | 70  | 70 | 71 | 72 | 73 | 72 | 73 | 72 | 77 | 78 | 78 | 75.0          | 80            |  |                                 |  |
| 18-Feb                                    | 79                            | 79 | 79 | 77 | 77 | 77 | 76 | 76 | 76 | 76 | 76 | 77 | 78 | 77  | 70 | 62 | 59 | 61 | 66 | 68 | 68 | 75 | 76 | 77 | 73.3          | 79            |  |                                 |  |
| 19-Feb                                    | 76                            | 75 | 75 | 74 | 73 | 71 | 72 | 73 | 74 | 75 | 72 | 72 | 70 | 70  | 71 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 71 | 73 | 71.3          | 76            |  |                                 |  |
| 20-Feb                                    | 78                            | 79 | 78 | 78 | 78 | 77 | 78 | 77 | 77 | 75 | 74 | 72 | 70 | 66  | 61 | 64 | 59 | 62 | 65 | 67 | 72 | 76 | 77 | 78 | 72.4          | 79            |  |                                 |  |
| 21-Feb                                    | 76                            | 72 | 74 | 74 | 75 | 74 | 73 | 73 | 72 | 71 | 69 | 67 | 64 | 61  | 57 | 53 | 53 | 55 | 57 | 62 | 66 | 64 | 66 | 70 | 66.7          | 76            |  |                                 |  |
| 22-Feb                                    | 68                            | 71 | 71 | 72 | 72 | 73 | 73 | 72 | 72 | 71 | 66 | 63 | 61 | 59  | 54 | 52 | 50 | 54 | 58 | 56 | 63 | 64 | 69 | 72 | 64.9          | 73            |  |                                 |  |
| 23-Feb                                    | 73                            | 76 | 74 | 76 | 77 | 75 | 74 | 74 | 73 | 72 | 74 | 75 | 73 | 65  | 58 | 55 | 58 | 57 | 58 | 59 | 62 | 65 | 69 | 69 | 68.4          | 77            |  |                                 |  |
| 24-Feb                                    | 71                            | 70 | 69 | 68 | 69 | 69 | 70 | 71 | 70 | 67 | 64 | 58 | 50 | 44  | 44 | 44 | 43 | 43 | 43 | 43 | 44 | 44 | 46 | 48 | 56.3          | 71            |  |                                 |  |
| 25-Feb                                    | 51                            | 55 | 61 | 64 | 68 | 68 | 69 | 69 | 68 | 67 | 62 | 63 | 60 | 57  | 53 | 51 | 59 | 59 | 55 | 54 | 57 | 62 | 65 | 71 | 61.2          | 71            |  |                                 |  |
| 26-Feb                                    | 71                            | 73 | 76 | 76 | 76 | 73 | 71 | 70 | 72 | 72 | 71 | 74 | 77 | 78  | 80 | 84 | 86 | 86 | 91 | 92 | 93 | 93 | 92 | 93 | 80.1          | 93            |  |                                 |  |
| 27-Feb                                    | 93                            | 93 | 93 | 92 | 92 | 90 | 89 | 88 | 88 | 87 | 87 | 87 | 87 | 86  | 85 | 84 | 81 | 82 | 81 | 82 | 81 | 82 | 82 | 83 | 86.5          | 93            |  |                                 |  |
| 28-Feb                                    | 84                            | 85 | 85 | 84 | 84 | 84 | 83 | 82 | 82 | 81 | 81 | 82 | 80 | 76  | 71 | 69 | 66 | 70 | 71 | 72 | 77 | 78 | 79 | 84 | 78.7          | 85            |  |                                 |  |
|   |                               |    |    |    |    |    |    |    |    |    |    |    |    |   |    |    |    |    |    |    |    |    |    |    |               |               |  | Diurnal Average                 |  |
| 76.0                                      |                               |    |    |    |    |    |    |    |    |    |    |    |    | 76.8  |    |    |    |    |    |    |    |    |    |    |               |               |  | 77.2                            |  |
| 93  |                               |    |    |    |    |    |    |    |    |    |    |    |    | 93  |    |    |    |    |    |    |    |    |    |    |               |               |  | 93                              |  |
| 78.1                                      |                               |    |    |    |    |    |    |    |    |    |    |    |    | 78.4  |    |    |    |    |    |    |    |    |    |    |               |               |  | 78.7                            |  |
| 92  |                               |    |    |    |    |    |    |    |    |    |    |    |    | 91  |    |    |    |    |    |    |    |    |    |    |               |               |  | 92                              |  |
| 79.0                                      |                               |    |    |    |    |    |    |    |    |    |    |    |    | 79.3  |    |    |    |    |    |    |    |    |    |    |               |               |  | 79.4                            |  |
| 92  |                               |    |    |    |    |    |    |    |    |    |    |    |    | 94  |    |    |    |    |    |    |    |    |    |    |               |               |  | 94                              |  |
| 79.4                                      |                               |    |    |    |    |    |    |    |    |    |    |    |    | 78.6  |    |    |    |    |    |    |    |    |    |    |               |               |  | 76.8                            |  |
| 94  |                               |    |    |    |    |    |    |    |    |    |    |    |    | 96  |    |    |    |    |    |    |    |    |    |    |               |               |  | 95                              |  |
| 75.1                                      |                               |    |    |    |    |    |    |    |    |    |    |    |    | 72.7  |    |    |    |    |    |    |    |    |    |    |               |               |  | 70.0                            |  |
| 93  |                               |    |    |    |    |    |    |    |    |    |    |    |    | 92  |    |    |    |    |    |    |    |    |    |    |               |               |  | 91                              |  |
| 67.9                                      |                               |    |    |    |    |    |    |    |    |    |    |    |    | 66.6  |    |    |    |    |    |    |    |    |    |    |               |               |  | 67.0                            |  |
| 91  |                               |    |    |    |    |    |    |    |    |    |    |    |    | 91  |    |    |    |    |    |    |    |    |    |    |               |               |  | 92                              |  |
| 68.4                                      |                               |    |    |    |    |    |    |    |    |    |    |    |    | 69.0  |    |    |    |    |    |    |    |    |    |    |               |               |  | 69.6                            |  |
| 91  |                               |    |    |    |    |    |    |    |    |    |    |    |    | 92  |    |    |    |    |    |    |    |    |    |    |               |               |  | 93                              |  |
| 70.6                                      |                               |    |    |    |    |    |    |    |    |    |    |    |    | 72.3  |    |    |    |    |    |    |    |    |    |    |               |               |  | 73.9                            |  |
| 93  |                               |    |    |    |    |    |    |    |    |    |    |    |    | 92  |    |    |    |    |    |    |    |    |    |    |               |               |  | 93                              |  |
| 75.7                                      |                               |    |    |    |    |    |    |    |    |    |    |    |    |   |    |    |    |    |    |    |    |    |    |    |               |               |  | Diurnal Maximum                 |  |
| 93  |                               |    |    |    |    |    |    |    |    |    |    |    |    |   |    |    |    |    |    |    |    |    |    |    |               |               |  |                                 |  |





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Relative Humidity 20m (RH20m) - %**  
**Mannix - February 2023**

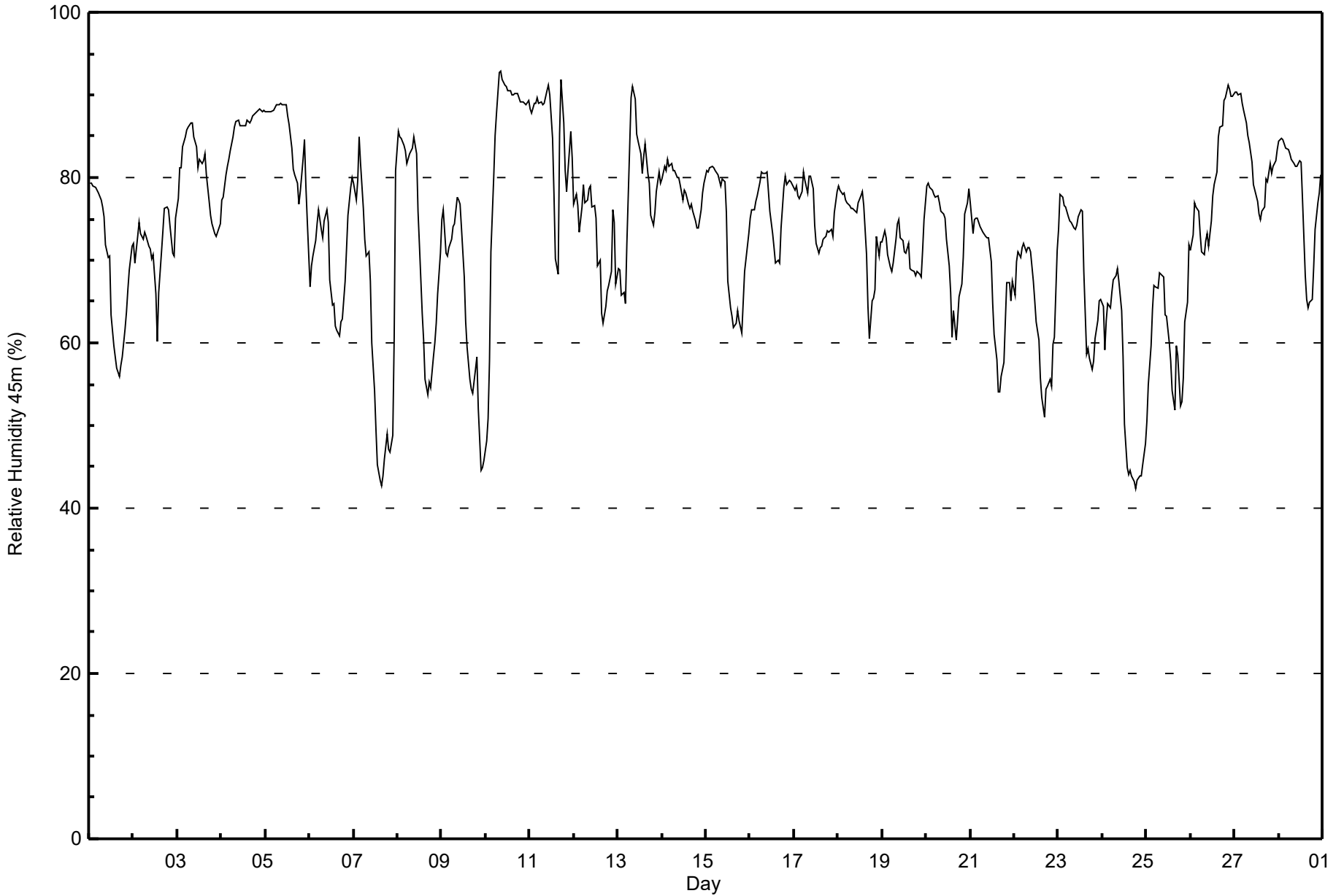
| <b>Concentration Ranges (%)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---------------------------------|------------------------|----------|---------------------|
| 0 - 20                          | 0                      | 0.00     | 0.00                |
| 20 - 40                         | 0                      | 0.00     | 0.00                |
| 40 - 60                         | 75                     | 11.16    | 11.16               |
| 60 - 80                         | 415                    | 61.76    | 72.92               |
| 80 - 100                        | 182                    | 27.08    | 100.00              |

Total Number of Valid Hours: 672

Total Number of Hours: 672



| Maximum Value: 93 % on Feb 10 09:00       |                               |    |    |    |    |    |    |    |    |    |    |    |    | Maximum Daily Average: 85.4 % on Feb 4  |    |    |    |    |    |    |    |    |    |      |               |               |  | Hours in Service: 672           |  |
|---|-------------------------------|----|----|----|----|----|----|----|----|----|----|----|----|---|----|----|----|----|----|----|----|----|----|------|---------------|---------------|--|---------------------------------|--|
| Minimum Value: 42 % on Feb 24 19:00       |                               |    |    |    |    |    |    |    |    |    |    |    |    | Minimum Daily Average: 54.7 % on Feb 24   |    |    |    |    |    |    |    |    |    |      |               |               |  | Hours of Data: 672              |  |
| Maximum Diurnal Average: 78.8 % at hour 9 |                               |    |    |    |    |    |    |    |    |    |    |    |    | Minimum Diurnal Average: 66.8 % at hour 16  |    |    |    |    |    |    |    |    |    |      |               |               |  | Hours of Missing Data: 0        |  |
| Monthly Average: 73.5 %                   |                               |    |    |    |    |    |    |    |    |    |    |    |    | Percentiles: P <sub>1</sub> = 44 P <sub>10</sub> = 58 Q <sub>1</sub> = 67 Median = 75 Q <sub>3</sub> = 81 P <sub>90</sub> = 87 P <sub>99</sub> = 91 |    |    |    |    |    |    |    |    |    |      |               |               |  | Hours of Calibration: 0         |  |
|   |                               |    |    |    |    |    |    |    |    |    |    |    |    |   |    |    |    |    |    |    |    |    |    |      |               |               |  | Percent Operational Time: 100.0 |  |
| Day                                       | Hourly Period Ending At (MST) |    |    |    |    |    |    |    |    |    |    |    |    |   |    |    |    |    |    |    |    |    |    |      | Daily Average | Daily Maximum |  |                                 |  |
|   | 1                             | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 | 14  | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24   |               |               |  |                                 |  |
| 1-Feb                                     | 79                            | 79 | 79 | 79 | 79 | 78 | 77 | 76 | 75 | 72 | 70 | 71 | 63 | 60  | 58 | 57 | 56 | 57 | 58 | 62 | 64 | 66 | 69 | 72   | 69.0          | 79            |  |                                 |  |
| 2-Feb                                     | 72                            | 70 | 73 | 75 | 73 | 73 | 73 | 73 | 72 | 71 | 70 | 71 | 66 | 60  | 66 | 71 | 74 | 76 | 76 | 76 | 74 | 71 | 71 | 75   | 71.7          | 76            |  |                                 |  |
| 3-Feb                                     | 77                            | 81 | 81 | 84 | 85 | 86 | 86 | 87 | 87 | 85 | 84 | 81 | 82 | 82  | 82 | 83 | 80 | 77 | 75 | 74 | 73 | 73 | 74 | 80.6 | 87            |               |  |                                 |  |
| 4-Feb                                     | 77                            | 78 | 80 | 81 | 82 | 83 | 85 | 86 | 87 | 87 | 86 | 86 | 86 | 86  | 87 | 87 | 87 | 88 | 88 | 88 | 88 | 88 | 88 | 88   | 85.4          | 88            |  |                                 |  |
| 5-Feb                                     | 88                            | 88 | 88 | 88 | 88 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 88 | 87  | 84 | 81 | 80 | 79 | 77 | 78 | 82 | 85 | 79 | 75   | 84.8          | 89            |  |                                 |  |
| 6-Feb                                     | 67                            | 69 | 70 | 72 | 74 | 76 | 74 | 73 | 75 | 76 | 75 | 68 | 65 | 65  | 62 | 61 | 61 | 63 | 63 | 67 | 71 | 75 | 79 | 80   | 70.1          | 80            |  |                                 |  |
| 7-Feb                                     | 79                            | 77 | 80 | 85 | 82 | 76 | 73 | 71 | 71 | 68 | 60 | 54 | 50 | 45  | 43 | 43 | 44 | 46 | 49 | 47 | 47 | 49 | 61 | 81   | 61.6          | 85            |  |                                 |  |
| 8-Feb                                     | 86                            | 85 | 85 | 84 | 83 | 82 | 83 | 83 | 84 | 85 | 83 | 76 | 72 | 64  | 60 | 56 | 54 | 55 | 55 | 58 | 60 | 62 | 66 | 71   | 72.1          | 86            |  |                                 |  |
| 9-Feb                                     | 75                            | 76 | 71 | 70 | 71 | 73 | 74 | 74 | 78 | 77 | 77 | 74 | 68 | 63  | 59 | 56 | 54 | 54 | 57 | 58 | 52 | 45 | 45 | 46   | 64.4          | 78            |  |                                 |  |
| 10-Feb                                    | 48                            | 51 | 58 | 71 | 80 | 85 | 88 | 93 | 93 | 92 | 91 | 91 | 91 | 90  | 90 | 90 | 90 | 90 | 90 | 89 | 89 | 89 | 89 | 89   | 84.0          | 93            |  |                                 |  |
| 11-Feb                                    | 88                            | 88 | 89 | 89 | 90 | 89 | 89 | 89 | 89 | 90 | 91 | 90 | 85 | 78  | 70 | 68 | 85 | 92 | 87 | 81 | 78 | 81 | 86 | 82   | 85.2          | 92            |  |                                 |  |
| 12-Feb                                    | 77                            | 78 | 77 | 73 | 76 | 79 | 77 | 77 | 79 | 79 | 76 | 77 | 75 | 69  | 70 | 64 | 62 | 64 | 66 | 67 | 69 | 76 | 75 | 67   | 72.9          | 79            |  |                                 |  |
| 13-Feb                                    | 69                            | 69 | 66 | 66 | 65 | 72 | 84 | 90 | 91 | 89 | 85 | 84 | 83 | 80  | 83 | 84 | 80 | 79 | 75 | 74 | 76 | 78 | 81 | 79   | 78.5          | 91            |  |                                 |  |
| 14-Feb                                    | 80                            | 81 | 81 | 82 | 81 | 82 | 81 | 81 | 80 | 80 | 79 | 77 | 79 | 78  | 77 | 76 | 77 | 76 | 75 | 74 | 74 | 76 | 78 | 79   | 78.5          | 82            |  |                                 |  |
| 15-Feb                                    | 81                            | 81 | 81 | 81 | 81 | 81 | 80 | 80 | 79 | 80 | 79 | 76 | 67 | 64  | 63 | 62 | 62 | 64 | 63 | 61 | 65 | 69 | 70 | 73   | 72.7          | 81            |  |                                 |  |
| 16-Feb                                    | 75                            | 76 | 76 | 77 | 78 | 79 | 81 | 80 | 80 | 81 | 78 | 76 | 73 | 72  | 70 | 70 | 70 | 74 | 79 | 80 | 79 | 80 | 79 | 79   | 76.8          | 81            |  |                                 |  |
| 17-Feb                                    | 79                            | 79 | 78 | 77 | 78 | 81 | 80 | 78 | 80 | 80 | 79 | 74 | 72 | 71  | 71 | 72 | 73 | 73 | 74 | 73 | 74 | 73 | 76 | 78   | 75.9          | 81            |  |                                 |  |
| 18-Feb                                    | 79                            | 78 | 78 | 78 | 77 | 77 | 77 | 76 | 76 | 76 | 76 | 77 | 78 | 78  | 77 | 71 | 64 | 61 | 65 | 66 | 67 | 73 | 71 | 72   | 73.6          | 79            |  |                                 |  |
| 19-Feb                                    | 72                            | 74 | 73 | 71 | 69 | 69 | 70 | 73 | 74 | 75 | 73 | 72 | 71 | 71  | 72 | 69 | 69 | 69 | 68 | 69 | 68 | 68 | 71 | 75   | 71.0          | 75            |  |                                 |  |
| 20-Feb                                    | 79                            | 79 | 79 | 79 | 78 | 78 | 78 | 77 | 76 | 76 | 75 | 73 | 69 | 66  | 61 | 64 | 60 | 63 | 66 | 67 | 70 | 76 | 77 | 79   | 72.6          | 79            |  |                                 |  |
| 21-Feb                                    | 77                            | 73 | 75 | 75 | 75 | 74 | 74 | 73 | 73 | 73 | 73 | 70 | 65 | 61  | 58 | 54 | 54 | 56 | 58 | 63 | 67 | 67 | 65 | 67   | 67.5          | 77            |  |                                 |  |
| 22-Feb                                    | 66                            | 70 | 71 | 70 | 72 | 72 | 71 | 72 | 72 | 71 | 67 | 65 | 63 | 60  | 56 | 53 | 51 | 54 | 55 | 56 | 55 | 60 | 61 | 71   | 63.9          | 72            |  |                                 |  |
| 23-Feb                                    | 74                            | 78 | 78 | 77 | 76 | 75 | 75 | 75 | 74 | 74 | 74 | 75 | 76 | 76  | 69 | 59 | 59 | 58 | 57 | 58 | 61 | 63 | 65 | 65   | 69.5          | 78            |  |                                 |  |
| 24-Feb                                    | 64                            | 59 | 63 | 65 | 64 | 66 | 68 | 68 | 69 | 67 | 64 | 58 | 50 | 45  | 44 | 45 | 44 | 43 | 42 | 43 | 44 | 44 | 45 | 48   | 54.7          | 69            |  |                                 |  |
| 25-Feb                                    | 51                            | 55 | 60 | 64 | 67 | 67 | 67 | 68 | 68 | 68 | 63 | 63 | 60 | 58  | 54 | 52 | 60 | 58 | 52 | 53 | 56 | 62 | 65 | 72   | 61.0          | 72            |  |                                 |  |
| 26-Feb                                    | 71                            | 73 | 77 | 76 | 76 | 73 | 71 | 71 | 72 | 73 | 72 | 75 | 78 | 79  | 81 | 85 | 86 | 86 | 89 | 90 | 91 | 91 | 90 | 90   | 79.8          | 91            |  |                                 |  |
| 27-Feb                                    | 90                            | 90 | 90 | 90 | 89 | 88 | 87 | 85 | 84 | 82 | 79 | 79 | 77 | 76  | 75 | 76 | 76 | 80 | 79 | 82 | 81 | 81 | 82 | 83   | 82.6          | 90            |  |                                 |  |
| 28-Feb                                    | 84                            | 85 | 85 | 84 | 83 | 83 | 83 | 82 | 82 | 81 | 81 | 82 | 82 | 77  | 68 | 65 | 64 | 65 | 65 | 69 | 74 | 77 | 78 | 80   | 77.6          | 85            |  |                                 |  |
| 75.2                                      |                               |    |    |    |    |    |    |    |    |    |    |    |    | 75.7  |    |    |    |    |    |    |    |    |    |      |               |               |  | Diurnal Average                 |  |
| 90  |                               |    |    |    |    |    |    |    |    |    |    |    |    | 90  |    |    |    |    |    |    |    |    |    |      |               |               |  | Diurnal Maximum                 |  |





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Relative Humidity 45m (RH45m) - %**  
**Mannix - February 2023**

| <b>Concentration Ranges (%)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---------------------------------|------------------------|----------|---------------------|
| 0 - 20                          | 0                      | 0.00     | 0.00                |
| 20 - 40                         | 0                      | 0.00     | 0.00                |
| 40 - 60                         | 80                     | 11.90    | 11.90               |
| 60 - 80                         | 408                    | 60.71    | 72.62               |
| 80 - 100                        | 184                    | 27.38    | 100.00              |

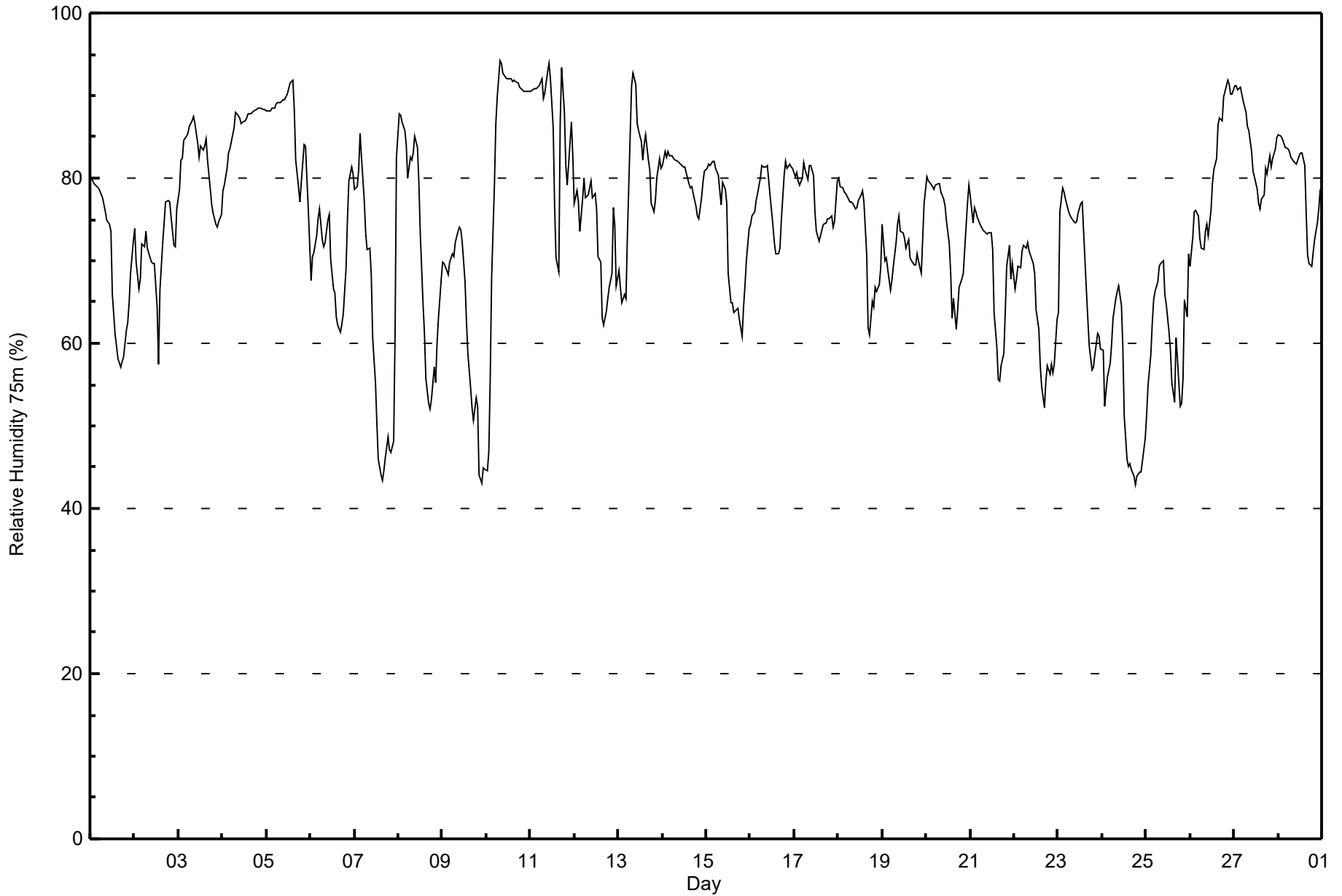
Total Number of Valid Hours: 672

Total Number of Hours: 672





| Maximum Value: 94 % on Feb 10 08:00        |                               |      |      |      |      |      |      |      |      |      |      |      |      | Maximum Daily Average: 86.6 % on Feb 11   |      |      |      |      |      |      |      |      |      |      |                 |               |  | Hours in Service: 672           |  |
|--|-------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|---|------|------|------|------|------|------|------|------|------|------|-----------------|---------------|--|---------------------------------|--|
| Minimum Value: 43 % on Feb 24 19:00        |                               |      |      |      |      |      |      |      |      |      |      |      |      | Minimum Daily Average: 53.0 % on Feb 24   |      |      |      |      |      |      |      |      |      |      |                 |               |  | Hours of Data: 672              |  |
| Maximum Diurnal Average: 79.1 % at hour 10 |                               |      |      |      |      |      |      |      |      |      |      |      |      | Minimum Diurnal Average: 68.3 % at hour 17  |      |      |      |      |      |      |      |      |      |      |                 |               |  | Hours of Missing Data: 0        |  |
| Monthly Average: 74.0 %                    |                               |      |      |      |      |      |      |      |      |      |      |      |      | Percentiles: P <sub>1</sub> = 44 P <sub>10</sub> = 58 Q <sub>1</sub> = 68 Median = 76 Q <sub>3</sub> = 82 P <sub>90</sub> = 88 P <sub>99</sub> = 92 |      |      |      |      |      |      |      |      |      |      |                 |               |  | Hours of Calibration: 0         |  |
|  |                               |      |      |      |      |      |      |      |      |      |      |      |      |   |      |      |      |      |      |      |      |      |      |      |                 |               |  | Percent Operational Time: 100.0 |  |
| Day  | Hourly Period Ending At (MST) |      |      |      |      |      |      |      |      |      |      |      |      |   |      |      |      |      |      |      |      |      |      |      | Daily Average   | Daily Maximum |  |                                 |  |
|  | 1                             | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14  | 15   | 16   | 17   | 18   | 19   | 20   | 21   | 22   | 23   | 24   |                 |               |  |                                 |  |
| 1-Feb                                      | 80                            | 80   | 79   | 79   | 79   | 78   | 78   | 77   | 76   | 75   | 74   | 74   | 66   | 61  | 60   | 58   | 57   | 58   | 58   | 61   | 63   | 65   | 68   | 72   | 69.8            | 80            |  |                                 |  |
| 2-Feb                                      | 74                            | 70   | 67   | 68   | 72   | 72   | 74   | 72   | 70   | 70   | 70   | 70   | 64   | 58  | 66   | 72   | 75   | 77   | 77   | 77   | 75   | 72   | 72   | 76   | 71.2            | 77            |  |                                 |  |
| 3-Feb                                      | 79                            | 82   | 82   | 85   | 85   | 85   | 86   | 87   | 87   | 87   | 84   | 83   | 84   | 83  | 84   | 85   | 82   | 79   | 77   | 76   | 74   | 74   | 75   | 76   | 81.7            | 87            |  |                                 |  |
| 4-Feb                                      | 79                            | 79   | 81   | 83   | 83   | 84   | 86   | 88   | 88   | 87   | 87   | 87   | 87   | 87  | 88   | 88   | 88   | 88   | 88   | 88   | 88   | 88   | 88   | 88   | 86.2            | 88            |  |                                 |  |
| 5-Feb                                      | 88                            | 88   | 88   | 89   | 88   | 89   | 89   | 89   | 89   | 90   | 89   | 90   | 91   | 92  | 92   | 88   | 82   | 79   | 77   | 79   | 84   | 84   | 80   | 76   | 86.3            | 92            |  |                                 |  |
| 6-Feb                                      | 68                            | 71   | 71   | 73   | 75   | 76   | 73   | 72   | 72   | 75   | 76   | 70   | 67   | 66  | 63   | 62   | 61   | 62   | 64   | 69   | 75   | 80   | 81   | 81   | 70.9            | 81            |  |                                 |  |
| 7-Feb                                      | 79                            | 79   | 81   | 85   | 83   | 77   | 73   | 71   | 72   | 68   | 61   | 55   | 50   | 46  | 44   | 43   | 44   | 46   | 49   | 47   | 47   | 48   | 61   | 83   | 62.2            | 85            |  |                                 |  |
| 8-Feb                                      | 88                            | 88   | 87   | 86   | 84   | 80   | 82   | 82   | 83   | 85   | 84   | 80   | 73   | 65  | 61   | 56   | 53   | 52   | 53   | 57   | 55   | 60   | 63   | 68   | 71.9            | 88            |  |                                 |  |
| 9-Feb                                      | 70                            | 70   | 69   | 68   | 70   | 71   | 70   | 72   | 74   | 74   | 74   | 72   | 68   | 63  | 59   | 55   | 52   | 51   | 53   | 52   | 44   | 43   | 45   | 45   | 61.8            | 74            |  |                                 |  |
| 10-Feb                                     | 45                            | 47   | 56   | 68   | 79   | 87   | 90   | 94   | 94   | 93   | 92   | 92   | 92   | 92  | 92   | 92   | 92   | 92   | 91   | 91   | 91   | 91   | 90   | 91   | 84.6            | 94            |  |                                 |  |
| 11-Feb                                     | 91                            | 91   | 91   | 91   | 91   | 91   | 92   | 90   | 90   | 93   | 94   | 92   | 86   | 77  | 70   | 69   | 87   | 93   | 88   | 82   | 79   | 82   | 87   | 83   | 86.6            | 94            |  |                                 |  |
| 12-Feb                                     | 77                            | 78   | 77   | 74   | 77   | 80   | 78   | 78   | 79   | 80   | 78   | 78   | 76   | 70  | 70   | 63   | 62   | 64   | 65   | 67   | 69   | 76   | 74   | 67   | 73.2            | 80            |  |                                 |  |
| 13-Feb                                     | 69                            | 67   | 65   | 66   | 65   | 73   | 85   | 91   | 93   | 91   | 87   | 86   | 84   | 82  | 84   | 85   | 82   | 81   | 77   | 76   | 77   | 80   | 82   | 81   | 79.6            | 93            |  |                                 |  |
| 14-Feb                                     | 81                            | 83   | 83   | 83   | 83   | 83   | 82   | 82   | 82   | 82   | 82   | 81   | 81   | 81  | 79   | 79   | 78   | 77   | 75   | 75   | 78   | 79   | 81   | 81   | 80.4            | 83            |  |                                 |  |
| 15-Feb                                     | 81                            | 82   | 82   | 82   | 82   | 81   | 80   | 79   | 77   | 79   | 79   | 77   | 69   | 65  | 65   | 64   | 64   | 64   | 63   | 61   | 64   | 67   | 70   | 74   | 72.9            | 82            |  |                                 |  |
| 16-Feb                                     | 74                            | 75   | 76   | 77   | 78   | 80   | 81   | 81   | 81   | 82   | 80   | 78   | 74   | 72  | 71   | 71   | 71   | 75   | 80   | 82   | 81   | 82   | 81   | 81   | 77.8            | 82            |  |                                 |  |
| 17-Feb                                     | 80                            | 81   | 80   | 79   | 80   | 82   | 81   | 80   | 82   | 82   | 80   | 76   | 74   | 72  | 73   | 74   | 74   | 75   | 75   | 75   | 75   | 74   | 75   | 80   | 77.4            | 82            |  |                                 |  |
| 18-Feb                                     | 80                            | 79   | 79   | 78   | 78   | 78   | 77   | 77   | 77   | 76   | 76   | 77   | 78   | 78  | 77   | 71   | 62   | 61   | 65   | 64   | 67   | 66   | 67   | 69   | 73.3            | 80            |  |                                 |  |
| 19-Feb                                     | 74                            | 70   | 70   | 69   | 66   | 68   | 69   | 72   | 74   | 75   | 74   | 73   | 73   | 72  | 73   | 70   | 70   | 69   | 70   | 71   | 69   | 69   | 73   | 77   | 71.3            | 77            |  |                                 |  |
| 20-Feb                                     | 80                            | 80   | 79   | 79   | 79   | 79   | 79   | 79   | 78   | 77   | 77   | 75   | 72   | 69  | 63   | 65   | 62   | 64   | 67   | 68   | 68   | 71   | 77   | 79   | 73.6            | 80            |  |                                 |  |
| 21-Feb                                     | 78                            | 75   | 76   | 76   | 75   | 74   | 74   | 74   | 73   | 73   | 73   | 73   | 71   | 64  | 59   | 56   | 55   | 57   | 59   | 64   | 69   | 72   | 68   | 70   | 69.1            | 78            |  |                                 |  |
| 22-Feb                                     | 67                            | 68   | 69   | 69   | 71   | 72   | 72   | 72   | 71   | 71   | 70   | 68   | 64   | 62  | 57   | 55   | 52   | 55   | 57   | 56   | 57   | 56   | 57   | 63   | 63.9            | 72            |  |                                 |  |
| 23-Feb                                     | 64                            | 76   | 79   | 78   | 77   | 76   | 76   | 75   | 75   | 75   | 76   | 77   | 77   | 73  | 66   | 63   | 60   | 57   | 57   | 57   | 59   | 61   | 61   | 59   | 69.6            | 79            |  |                                 |  |
| 24-Feb                                     | 59                            | 52   | 54   | 56   | 58   | 60   | 63   | 65   | 66   | 67   | 65   | 60   | 51   | 46  | 45   | 45   | 44   | 43   | 44   | 44   | 44   | 44   | 46   | 48   | 53.0            | 67            |  |                                 |  |
| 25-Feb                                     | 51                            | 55   | 59   | 62   | 65   | 66   | 68   | 69   | 70   | 70   | 66   | 65   | 61   | 59  | 55   | 53   | 61   | 58   | 52   | 53   | 56   | 65   | 63   | 71   | 61.4            | 71            |  |                                 |  |
| 26-Feb                                     | 69                            | 73   | 76   | 76   | 75   | 73   | 71   | 71   | 74   | 74   | 73   | 76   | 79   | 81  | 82   | 86   | 87   | 87   | 90   | 90   | 92   | 91   | 90   | 90   | 80.4            | 92            |  |                                 |  |
| 27-Feb                                     | 91                            | 91   | 91   | 91   | 90   | 89   | 88   | 86   | 86   | 83   | 81   | 80   | 79   | 77  | 76   | 78   | 78   | 81   | 80   | 83   | 81   | 82   | 83   | 85   | 83.8            | 91            |  |                                 |  |
| 28-Feb                                     | 85                            | 85   | 85   | 84   | 84   | 84   | 83   | 83   | 82   | 82   | 82   | 83   | 83   | 83  | 81   | 76   | 71   | 70   | 69   | 71   | 73   | 75   | 76   | 79   | 79.5            | 85            |  |                                 |  |
|  | 75.0                          | 75.5 | 76.1 | 77.0 | 77.7 | 78.2 | 78.6 | 78.9 | 79.1 | 79.1 | 77.8 | 76.6 | 74.1 | 71.4  | 70.2 | 68.7 | 68.3 | 68.6 | 68.7 | 69.2 | 69.8 | 71.3 | 72.7 | 74.7 | Diurnal Average |               |  |                                 |  |
|  | 91                            | 91   | 91   | 91   | 91   | 91   | 92   | 94   | 94   | 93   | 94   | 92   | 92   | 92  | 92   | 92   | 92   | 93   | 91   | 91   | 92   | 91   | 90   | 91   | Diurnal Maximum |               |  |                                 |  |





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Relative Humidity 75m (RH75m) - %**  
**Mannix - February 2023**

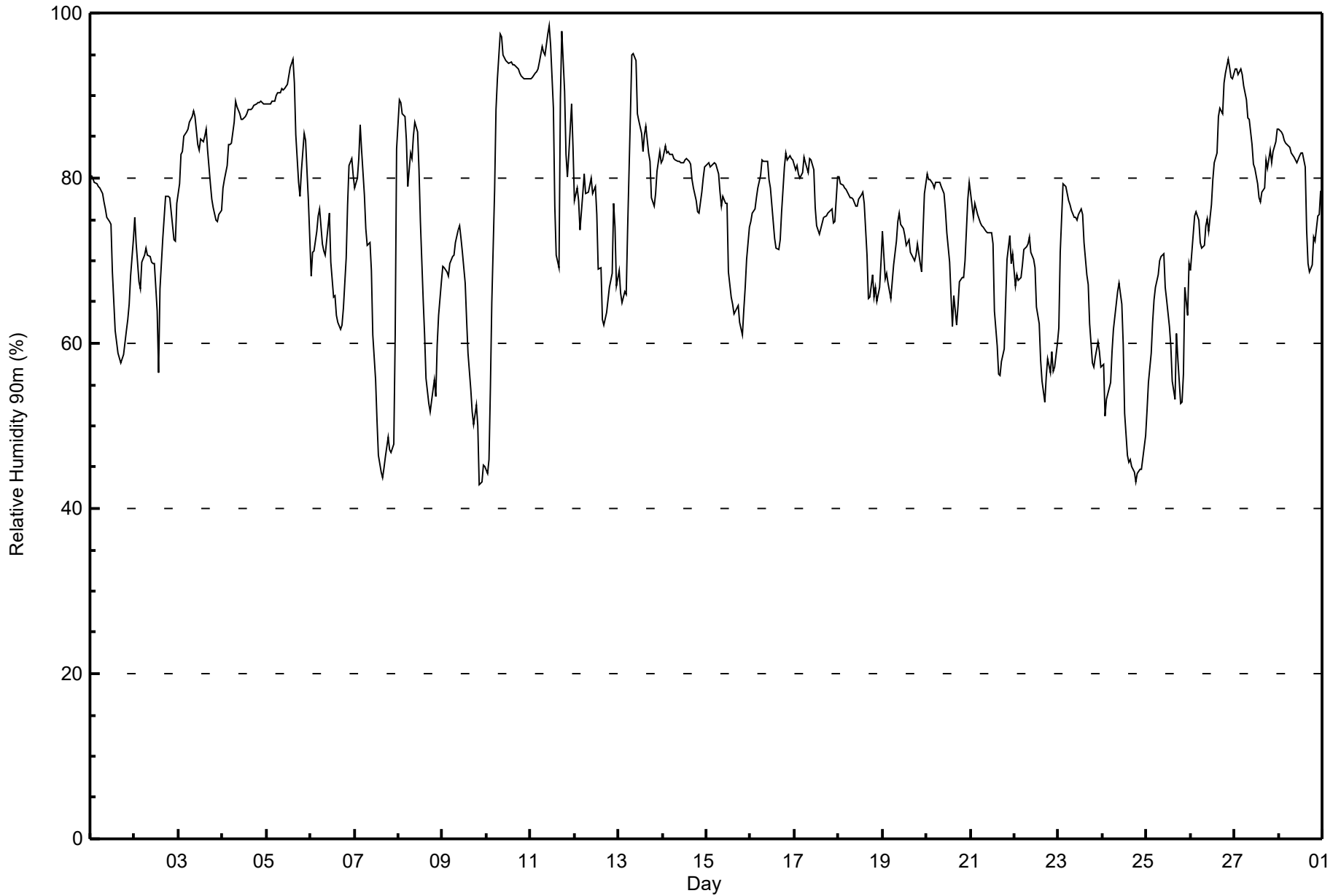
| <b>Concentration Ranges (%)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---------------------------------|------------------------|----------|---------------------|
| 0 - 20                          | 0                      | 0.00     | 0.00                |
| 20 - 40                         | 0                      | 0.00     | 0.00                |
| 40 - 60                         | 83                     | 12.35    | 12.35               |
| 60 - 80                         | 375                    | 55.80    | 68.15               |
| 80 - 100                        | 214                    | 31.85    | 100.00              |

Total Number of Valid Hours: 672

Total Number of Hours: 672



| Maximum Value: 99 % on Feb 11 11:00       |                               |    |    |    |    |    |    |    |    |    |    |    |    | Maximum Daily Average: 89.0 % on Feb 11   |    |    |    |    |    |    |    |    |    |    |               |               |  | Hours in Service: 672           |  |
|---|-------------------------------|----|----|----|----|----|----|----|----|----|----|----|----|---|----|----|----|----|----|----|----|----|----|----|---------------|---------------|--|---------------------------------|--|
| Minimum Value: 43 % on Feb 9 21:00        |                               |    |    |    |    |    |    |    |    |    |    |    |    | Minimum Daily Average: 52.7 % on Feb 24   |    |    |    |    |    |    |    |    |    |    |               |               |  | Hours of Data: 672              |  |
| Maximum Diurnal Average: 79.9 % at hour 9 |                               |    |    |    |    |    |    |    |    |    |    |    |    | Minimum Diurnal Average: 69.3 % at hour 17  |    |    |    |    |    |    |    |    |    |    |               |               |  | Hours of Missing Data: 0        |  |
| Monthly Average: 74.6 %                   |                               |    |    |    |    |    |    |    |    |    |    |    |    | Percentiles: P <sub>1</sub> = 44 P <sub>10</sub> = 58 Q <sub>1</sub> = 68 Median = 76 Q <sub>3</sub> = 82 P <sub>90</sub> = 89 P <sub>99</sub> = 95 |    |    |    |    |    |    |    |    |    |    |               |               |  | Hours of Calibration: 0         |  |
|   |                               |    |    |    |    |    |    |    |    |    |    |    |    |   |    |    |    |    |    |    |    |    |    |    |               |               |  | Percent Operational Time: 100.0 |  |
| Day                                       | Hourly Period Ending At (MST) |    |    |    |    |    |    |    |    |    |    |    |    |   |    |    |    |    |    |    |    |    |    |    | Daily Average | Daily Maximum |  |                                 |  |
|   | 1                             | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 | 14  | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |               |               |  |                                 |  |
| 1-Feb                                     | 80                            | 80 | 79 | 79 | 79 | 79 | 78 | 77 | 76 | 75 | 75 | 74 | 69 | 62  | 60 | 59 | 58 | 58 | 59 | 62 | 63 | 65 | 68 | 73 | 70.2          | 80            |  |                                 |  |
| 2-Feb                                     | 75                            | 72 | 67 | 67 | 70 | 71 | 72 | 71 | 71 | 70 | 70 | 70 | 64 | 56  | 67 | 73 | 75 | 78 | 78 | 78 | 76 | 73 | 72 | 77 | 71.2          | 78            |  |                                 |  |
| 3-Feb                                     | 79                            | 83 | 83 | 85 | 86 | 86 | 87 | 87 | 88 | 87 | 84 | 83 | 85 | 84  | 85 | 86 | 83 | 79 | 78 | 77 | 75 | 75 | 76 | 76 | 82.4          | 88            |  |                                 |  |
| 4-Feb                                     | 79                            | 80 | 82 | 84 | 84 | 84 | 87 | 89 | 89 | 88 | 87 | 87 | 88 | 88  | 88 | 88 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 86.8          | 89            |  |                                 |  |
| 5-Feb                                     | 89                            | 89 | 89 | 89 | 89 | 90 | 90 | 90 | 91 | 91 | 91 | 91 | 92 | 93  | 94 | 92 | 85 | 80 | 78 | 81 | 85 | 85 | 81 | 77 | 87.6          | 94            |  |                                 |  |
| 6-Feb                                     | 68                            | 71 | 71 | 74 | 75 | 76 | 72 | 71 | 71 | 74 | 76 | 70 | 66 | 66  | 63 | 63 | 62 | 62 | 64 | 70 | 77 | 82 | 82 | 80 | 71.1          | 82            |  |                                 |  |
| 7-Feb                                     | 79                            | 80 | 82 | 86 | 83 | 78 | 74 | 72 | 72 | 69 | 61 | 56 | 51 | 46  | 44 | 44 | 45 | 46 | 49 | 47 | 47 | 48 | 61 | 84 | 62.7          | 86            |  |                                 |  |
| 8-Feb                                     | 89                            | 89 | 88 | 87 | 85 | 79 | 83 | 82 | 85 | 87 | 86 | 81 | 75 | 65  | 61 | 56 | 53 | 52 | 53 | 56 | 54 | 60 | 63 | 67 | 72.3          | 89            |  |                                 |  |
| 9-Feb                                     | 69                            | 69 | 69 | 68 | 70 | 70 | 71 | 72 | 74 | 74 | 73 | 71 | 67 | 63  | 59 | 54 | 52 | 50 | 53 | 50 | 43 | 43 | 45 | 45 | 61.4          | 74            |  |                                 |  |
| 10-Feb                                    | 44                            | 46 | 55 | 65 | 78 | 88 | 92 | 97 | 97 | 95 | 94 | 94 | 94 | 94  | 94 | 94 | 94 | 93 | 93 | 92 | 92 | 92 | 92 | 92 | 85.9          | 97            |  |                                 |  |
| 11-Feb                                    | 92                            | 92 | 93 | 93 | 93 | 94 | 96 | 95 | 95 | 98 | 99 | 96 | 88 | 77  | 71 | 69 | 90 | 98 | 90 | 83 | 80 | 83 | 89 | 84 | 89.0          | 99            |  |                                 |  |
| 12-Feb                                    | 77                            | 79 | 77 | 74 | 78 | 81 | 78 | 78 | 79 | 80 | 78 | 79 | 76 | 69  | 69 | 63 | 62 | 64 | 65 | 67 | 68 | 77 | 74 | 67 | 73.3          | 81            |  |                                 |  |
| 13-Feb                                    | 69                            | 66 | 65 | 66 | 66 | 74 | 88 | 95 | 95 | 94 | 88 | 87 | 85 | 83  | 85 | 86 | 83 | 82 | 78 | 77 | 78 | 81 | 83 | 82 | 80.7          | 95            |  |                                 |  |
| 14-Feb                                    | 82                            | 84 | 83 | 83 | 83 | 83 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82  | 82 | 82 | 80 | 79 | 77 | 76 | 76 | 78 | 80 | 81 | 81.1          | 84            |  |                                 |  |
| 15-Feb                                    | 82                            | 82 | 81 | 82 | 82 | 82 | 81 | 78 | 77 | 78 | 77 | 77 | 69 | 66  | 65 | 64 | 64 | 65 | 63 | 61 | 64 | 67 | 70 | 74 | 72.8          | 82            |  |                                 |  |
| 16-Feb                                    | 75                            | 76 | 76 | 78 | 79 | 80 | 82 | 82 | 82 | 82 | 80 | 79 | 75 | 73  | 72 | 71 | 73 | 76 | 81 | 83 | 82 | 83 | 82 | 82 | 78.5          | 83            |  |                                 |  |
| 17-Feb                                    | 81                            | 81 | 80 | 80 | 81 | 83 | 82 | 81 | 82 | 82 | 81 | 77 | 74 | 73  | 74 | 75 | 75 | 75 | 76 | 76 | 76 | 75 | 75 | 80 | 78.1          | 83            |  |                                 |  |
| 18-Feb                                    | 80                            | 79 | 79 | 79 | 79 | 78 | 78 | 78 | 77 | 77 | 77 | 77 | 78 | 78  | 77 | 71 | 65 | 66 | 68 | 66 | 67 | 65 | 67 | 70 | 74.0          | 80            |  |                                 |  |
| 19-Feb                                    | 74                            | 68 | 69 | 67 | 65 | 67 | 70 | 72 | 75 | 76 | 74 | 74 | 73 | 72  | 73 | 71 | 71 | 70 | 71 | 72 | 70 | 69 | 74 | 78 | 71.4          | 78            |  |                                 |  |
| 20-Feb                                    | 81                            | 80 | 80 | 79 | 79 | 80 | 79 | 80 | 79 | 78 | 76 | 73 | 70 | 66  | 62 | 66 | 62 | 65 | 67 | 68 | 68 | 70 | 77 | 80 | 73.5          | 81            |  |                                 |  |
| 21-Feb                                    | 78                            | 75 | 77 | 76 | 76 | 75 | 74 | 74 | 74 | 73 | 73 | 73 | 72 | 64  | 60 | 56 | 56 | 58 | 59 | 65 | 70 | 73 | 70 | 71 | 69.7          | 78            |  |                                 |  |
| 22-Feb                                    | 67                            | 68 | 68 | 68 | 69 | 71 | 72 | 72 | 73 | 71 | 70 | 69 | 64 | 62  | 58 | 55 | 53 | 56 | 58 | 56 | 59 | 57 | 57 | 60 | 63.9          | 73            |  |                                 |  |
| 23-Feb                                    | 62                            | 71 | 79 | 79 | 79 | 77 | 77 | 76 | 75 | 75 | 76 | 76 | 76 | 72  | 68 | 67 | 62 | 58 | 57 | 58 | 60 | 59 | 57 | 57 | 69.7          | 79            |  |                                 |  |
| 24-Feb                                    | 57                            | 51 | 53 | 54 | 55 | 59 | 62 | 65 | 66 | 67 | 65 | 60 | 51 | 46  | 46 | 46 | 45 | 44 | 43 | 44 | 45 | 45 | 46 | 49 | 52.7          | 67            |  |                                 |  |
| 25-Feb                                    | 52                            | 55 | 59 | 62 | 65 | 67 | 68 | 70 | 71 | 71 | 67 | 65 | 62 | 60  | 55 | 53 | 61 | 58 | 53 | 53 | 56 | 67 | 63 | 70 | 61.8          | 71            |  |                                 |  |
| 26-Feb                                    | 69                            | 73 | 75 | 76 | 75 | 72 | 72 | 72 | 74 | 75 | 74 | 77 | 80 | 82  | 83 | 87 | 89 | 88 | 92 | 93 | 94 | 93 | 92 | 92 | 81.2          | 94            |  |                                 |  |
| 27-Feb                                    | 93                            | 93 | 93 | 93 | 92 | 91 | 90 | 87 | 87 | 84 | 82 | 81 | 79 | 78  | 77 | 78 | 79 | 82 | 81 | 83 | 82 | 83 | 84 | 86 | 85.0          | 93            |  |                                 |  |
| 28-Feb                                    | 86                            | 86 | 85 | 85 | 84 | 84 | 84 | 83 | 83 | 82 | 82 | 83 | 83 | 83  | 81 | 74 | 70 | 69 | 69 | 73 | 72 | 75 | 76 | 79 | 79.6          | 86            |  |                                 |  |
| 75.3                                      |                               |    |    |    |    |    |    |    |    |    |    |    |    | 75.7  |    |    |    |    |    |    |    |    |    |    |               |               |  | Diurnal Average                 |  |
| 93  |                               |    |    |    |    |    |    |    |    |    |    |    |    | 93  |    |    |    |    |    |    |    |    |    |    |               |               |  | Diurnal Maximum                 |  |





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Relative Humidity 90m (RH90m) - %  
Mannix - February 2023**

| <b>Concentration Ranges (%)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---------------------------------|------------------------|----------|---------------------|
| 0 - 20                          | 0                      | 0.00     | 0.00                |
| 20 - 40                         | 0                      | 0.00     | 0.00                |
| 40 - 60                         | 85                     | 12.65    | 12.65               |
| 60 - 80                         | 359                    | 53.42    | 66.07               |
| 80 - 100                        | 228                    | 33.93    | 100.00              |

Total Number of Valid Hours: 672

Total Number of Hours: 672



| Maximum Speed: 34 km/h on Feb 7 16:00      Maximum Daily Speed Average: 18.4 km/h on Feb 7   |                               | Hours in Service: 672<br>Hours of Data: 672<br>Hours of Missing Data: 0<br>Percent Operational Time: 100.0 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |                 |               |
|--|-------------------------------|--|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-----------------|-----------------|---------------|
| Minimum Speed Value: 0 km/h on Feb 20 14:00      Minimum Daily Speed Average: 0.5 km/h on Feb 19<br>Maximum Diurnal Speed Average: 2.3 km/h at hour 14      Minimum Diurnal Speed Average: 0.2 km/h at hour 1<br>Monthly Average Velocity: 0.7 km/h 285.5 deg      Percentiles: P <sub>1</sub> = 1 P <sub>10</sub> = 3 Q <sub>1</sub> = 6 Median = 8 Q <sub>3</sub> = 12 P <sub>90</sub> = 19 P <sub>99</sub> = 28 |                               |  |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |                 |               |
| Day  | Hourly Period Ending At (MST) |  |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 | Daily Average   | Daily Maximum |
|  | 1                             | 2  | 3     | 4     | 5     | 6     | 7     | 8     | 9     | 10    | 11    | 12    | 13    | 14    | 15    | 16    | 17    | 18    | 19    | 20    | 21    | 22    | 23    | 24              |                 |               |
| 1-Feb  | NNW6                          | N9   | NW3   | N5    | N10   | N9    | N10   | N9    | N14   | N12   | NNW11 | WNW11 | NW12  | NW11  | NW9   | NNW6  | NNW5  | WNW5  | WNW7  | WNW11 | WNW8  | WNW3  | WSW3  | SE1             | NNW6.9          | NNE14         |
| 2-Feb  | SSE6                          | SSE10  | SSE9  | SE10  | SSE12 | SSE12 | SSE11 | SSE11 | SSE10 | SSE11 | SSE11 | SSE10 | SSE12 | SE15  | SE22  | SE28  | SE25  | SE24  | SE25  | SE26  | SE27  | SE26  | SE23  | SE25            | SE16.5          | SE28          |
| 3-Feb  | SE22                          | SE20   | SE18  | SE15  | SE13  | SSE12 | SE11  | SSE11 | SSE9  | S8    | S2    | N3    | NW6   | NW10  | N9    | NNW7  | NNE10 | NNE10 | NNE10 | NNE10 | N8    | NNE7  | NNE6  | N4              | ESE3.7          | SE22          |
| 4-Feb  | N8                            | N7   | NNW5  | N6    | N7    | N8    | NNW5  | NW5   | NNW7  | N7    | NNW7  | NNW7  | NNW6  | NNW7  | NNW6  | NW4   | NW6   | NW5   | NNW5  | NNW6  | NNW6  | NW7   | NW6   | NW6             | NNW5.9          | N8            |
| 5-Feb  | NW5                           | NW4  | NW3   | WNW3  | WSW3  | NNW2  | WNW4  | NW5   | NNW2  | W4    | W5    | W0    | SE4   | SSW5  | SE5   | SSE6  | SSE6  | SSE9  | SSE8  | SW4   | SW2   | W16   | WNW26 | WNW27           | W3.7            | WNW27         |
| 6-Feb  | WNW25                         | W26  | W19   | W13   | W14   | W10   | W12   | W11   | W12   | WNW9  | NNE5  | ENE3  | E5    | ESE6  | ESE6  | E6    | SE10  | S3    | SE6   | SSE10 | SE8   | SSE9  | SSE11 | SSE8            | WSW4.2          | W26           |
| 7-Feb  | SSE6                          | SSE8   | SE5   | WSW14 | W24   | W31   | WNW25 | W22   | W21   | W21   | W20   | W24   | W27   | W31   | W32   | W34   | W28   | W21   | WSW17 | W24   | W17   | W15   | NW11  | N13             | W18.4           | W34           |
| 8-Feb  | NNW13                         | NNW10  | NNW7  | NNW9  | NNW7  | WNW4  | N3    | NE4   | WNW1  | SW6   | SSE4  | SSE8  | SSE9  | SE6   | SE8   | SSE8  | SE6   | SSE9  | S8    | SSE8  | SE12  | SSE13 | SE12  | SE13            | SSE3.0          | SE13          |
| 9-Feb  | SSE13                         | SSE12  | SSE12 | SSE12 | SSE13 | SSE14 | SSE13 | SSE10 | SSE12 | SSE13 | SSE14 | SSE15 | SSE15 | SSE17 | SSE12 | SSE11 | SE8   | SE7   | ESE3  | SSE4  | S6    | S8    | SSE9  | SSE10           | SSE10.8         | SSE17         |
| 10-Feb   | SSE9                          | ENE2   | N5    | N8    | NW7   | NNW10 | N10   | NNW6  | N7    | NNW6  | NNW7  | NNW7  | NNW9  | NW9   | NW13  | NW13  | NW10  | NW11  | NW12  | NNW10 | NW9   | NNW6  | NW6   | N4              | NNW7.1          | NW13          |
| 11-Feb   | WNW4                          | W2   | WSW1  | S4    | SSE7  | SSE10 | SSE9  | SSE6  | S6    | S6    | S5    | SSE10 | SE9   | SSE8  | S9    | SW16  | WSW20 | WSW15 | W20   | W23   | WNW18 | W8    | WSW10 | WSW20           | SW6.8           | W23           |
| 12-Feb   | WSW22                         | WSW24  | W24   | W20   | W17   | WSW15 | W17   | W15   | W12   | W8    | WNW8  | WNW5  | NE4   | E4    | E6    | SE7   | SE12  | SE14  | SE12  | SE16  | SE16  | SE14  | SE21  | SE19            | SW5.7           | WSW24         |
| 13-Feb   | SSE17                         | SSE15  | S14   | SSW10 | WSW23 | WSW24 | WSW24 | W22   | NW18  | N26   | NNW27 | NNW30 | NNW31 | N27   | NNW26 | NNW26 | NNW29 | N25   | N22   | N18   | NNE25 | NNE23 | NNE20 | NNE18           | NNW13.2         | NNW31         |
| 14-Feb   | NNE17                         | N13  | N10   | NNW8  | N8    | N9    | NNE12 | NNE10 | NNE7  | N5    | NNW4  | NNW4  | WNW2  | NNE4  | NNE5  | NNW6  | NNE9  | NNE9  | NNE8  | N6    | NNE6  | NNE5  | ENE1  | SW1             | N6.6            | NNE17         |
| 15-Feb   | W1                            | SSE2   | ESE3  | SSE6  | S7    | S6    | SSW5  | SSE3  | SSE7  | SSE7  | SSE6  | SE4   | SE5   | SE6   | SE6   | SE8   | SE6   | SE6   | SE8   | SE8   | SE10  | SE10  | SSE10 | SSE11           | SSE6.1          | SSE11         |
| 16-Feb   | SSE11                         | SSE10  | SSE10 | SSE12 | SSE14 | SSE12 | SSE12 | SSE11 | S6    | S6    | SSE8  | SSE11 | SSE7  | W1    | ENE1  | WNW0  | N9    | N15   | N20   | N15   | N13   | N9    | N8    | SE3.0           | N20             |               |
| 17-Feb   | NNE6                          | NNE7   | NNE8  | NNE8  | N5    | NNE3  | NE5   | NNE7  | N8    | NNE7  | N6    | N6    | NNW6  | NW10  | NNW10 | N12   | N12   | NNE15 | N13   | N14   | N14   | NNE13 | N8    | NW7             | N8.2            | NNE15         |
| 18-Feb   | N10                           | N9   | N8    | N8    | N5    | NNW6  | N6    | N6    | NNE5  | WNW2  | NW6   | NW8   | NW9   | NW8   | WNW7  | WNW5  | W5    | WNW3  | N4    | NE5   | NE3   | SSE3  | SSE4  | SSE7            | NNW3.9          | N10           |
| 19-Feb   | SSE10                         | SSE9   | SSE11 | SSE12 | SSE10 | SSE10 | SSE9  | SE6   | ENE1  | SSE5  | ENE2  | NW2   | N3    | NNW3  | NW6   | NW10  | NW11  | NW9   | NNW5  | NW6   | NNW8  | N12   | NNW11 | N10             | NW0.5           | N12           |
| 20-Feb   | N12                           | N7   | N9    | NW6   | NW6   | NW4   | W4    | W2    | S2    | SSE3  | SSE3  | SE2   | S1    | NE0   | NNE2  | NW8   | NNE12 | NNE10 | NE3   | NNE4  | NNE8  | NNW5  | N13   | N16             | N4.4            | N16           |
| 21-Feb   | NNE19                         | NNE22  | NNE16 | N12   | NNE13 | NNE10 | N6    | N8    | NNW10 | NNW10 | NW8   | WNW11 | WNW13 | NW15  | NW14  | NNW14 | NNW9  | NNW7  | N9    | NNE11 | N5    | WNW6  | WSW7  | WSW7            | NNW9.1          | NNE22         |
| 22-Feb   | WSW5                          | SSW4   | S5    | SSW5  | S6    | S8    | S8    | S8    | S5    | SSW2  | SE2   | E2    | W2    | W6    | W5    | WNW5  | W5    | WNW6  | WNW7  | NW8   | WNW4  | NE2   | ENE1  | W4              | SW2.7           | S8            |
| 23-Feb   | SE1                           | NE2  | NNE4  | NNW4  | N11   | NNW5  | NW4   | E1    | NE1   | NE2   | SW1   | W4    | W3    | W3    | SW2   | SE4   | SSE8  | SSE9  | SSE9  | S9    | S8    | SSE7  | SSE9  | SSE12           | SSE1.8          | SSE12         |
| 24-Feb   | SSE11                         | SSE12  | SSE11 | SSE11 | SSE14 | SSE15 | SSE16 | SSE15 | SSE17 | SSE18 | SSE19 | SSE13 | SSE16 | S19   | S20   | SSE22 | SSE24 | S20   | S20   | S16   | S15   | S15   | S13   | S13             | SSE15.6         | SSE24         |
| 25-Feb   | S12                           | S12  | SSE10 | SSE8  | SSE10 | SSE10 | SSE9  | SSE8  | SSE5  | SSE6  | SSW3  | W13   | WSW11 | WSW13 | S2    | SE4   | ESE6  | SE6   | S9    | SSE7  | SE7   | SE6   | SSE11 | SE12            | S6.3            | W13           |
| 26-Feb   | SE10                          | SE7  | SE6   | ESE5  | SSE7  | SE5   | SE10  | ESE6  | SSE6  | SSE5  | SE7   | ESE9  | E10   | ENE11 | ENE9  | ESE9  | E11   | ENE12 | NE11  | NE8   | NNE7  | NNE9  | NE9   | NNE9            | E6.2            | ENE12         |
| 27-Feb   | NNE8                          | NNE8   | NNE11 | N8    | NNW12 | NNW14 | NNW15 | NNW15 | N12   | NNW15 | NNW13 | NNW12 | NNW14 | NW15  | NNW11 | NNE11 | NNE13 | N13   | NNE16 | NNE15 | NNE16 | N14   | NNW10 | N10             | N11.9           | NNE16         |
| 28-Feb   | NNW7                          | NNW8   | NNW7  | N7    | NW4   | NW5   | NW3   | NW3   | NW3   | N1    | NW7   | WNW5  | WNW4  | WNW4  | W3    | W5    | W3    | NW3   | WNW4  | NE1   | S1    | SW4   | S5    | SE8             | NW2.7           | NNW8          |
| ESE0.2 SE0.4 ESE0.3 SW0.8WSW2.1WSW2.1WSW1.9WSW1.6 W1.0 W0.7WNW1.4WNW1.9WNW2.0WNW2.3WNW1.5WNW1.3 NO.6NNE1.0 N1.2 N1.4NNE1.8 NE0.8 SSE0.5 SE0.6<br>WNW25 W26 W24 W20 W24 W31WNW25 W22 W21 N26 NNW27 NNW30 NNW31 W31 W32 W34 NNW29 N25 SE25 SE26 SE27 SE26WNW26WNW27  |                               |  |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Diurnal Average | Diurnal Maximum |               |
| All monthly, daily, and diurnal averages have been calculated using vector methods   |                               |  |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |                 |               |



**Wood Buffalo Environmental Association**  
**Summary of Hour Standard Deviations**

**Wind Speed 20 m (WS20m) - km/h**  
**Mannix - February 2023**

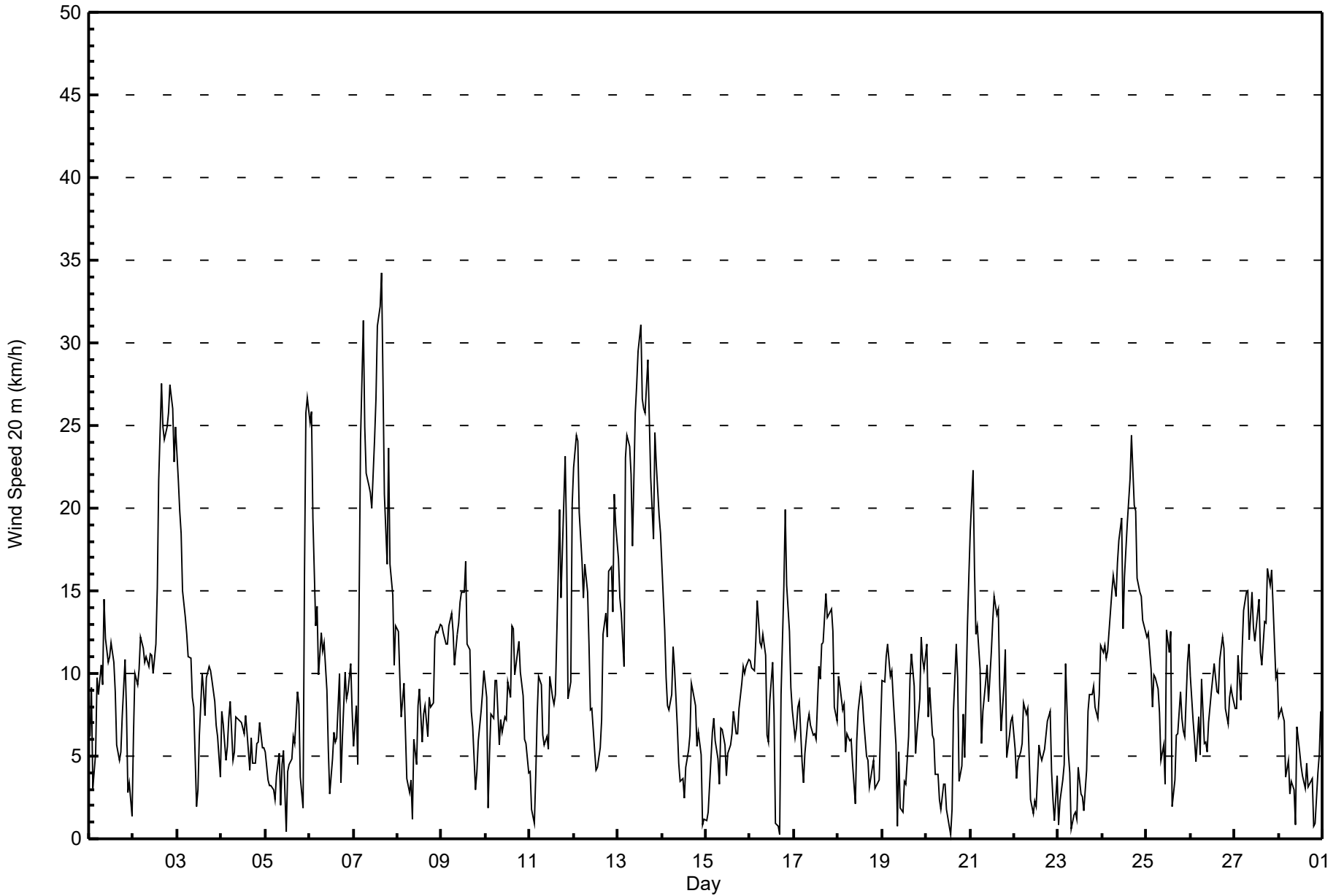
| Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0<br>Maximum Value: 9 km/h on Feb 13 12:00   |                               |   |   |   |   |   |   |   |   |    |    |    |    | Hours in Service: 672<br>Hours of Data: 672<br>Hours of Missing Data: 0<br>Hours of Calibration: 0<br>Percent Operational Time: 100.0 |    |    |    |    |    |    |    |    |    |               |    |
|--|-------------------------------|---|---|---|---|---|---|---|---|----|----|----|----|---|----|----|----|----|----|----|----|----|----|---------------|----|
| Minimum Value: 1 km/h on Feb 15 20:00  |                               |   |   |   |   |   |   |   |   |    |    |    |    |   |    |    |    |    |    |    |    |    |    |               |    |
| Percentiles: P <sub>1</sub> = 1 P <sub>10</sub> = 1 Q <sub>1</sub> = 2 Median = 2 Q <sub>3</sub> = 3 P <sub>90</sub> = 5 P <sub>99</sub> = 8 |                               |   |   |   |   |   |   |   |   |    |    |    |    |   |    |    |    |    |    |    |    |    |    |               |    |
| Day  | Hourly Period Ending At (MST) |   |   |   |   |   |   |   |   |    |    |    |    |   |    |    |    |    |    |    |    |    |    | Daily Maximum |    |
|  | 1                             | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14  | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |               | 24 |
| 1-Feb  | 3                             | 2 | 2 | 2 | 4 | 3 | 3 | 2 | 4 | 4  | 3  | 3  | 3  | 3   | 2  | 2  | 2  | 2  | 1  | 2  | 2  | 2  | 1  | 4             |    |
| 2-Feb  | 2                             | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 2  | 2  | 2  | 2  | 4   | 6  | 7  | 7  | 7  | 6  | 6  | 6  | 6  | 6  | 6             | 7  |
| 3-Feb  | 5                             | 5 | 5 | 4 | 3 | 3 | 2 | 3 | 2 | 3  | 1  | 3  | 2  | 2   | 3  | 2  | 3  | 3  | 3  | 2  | 3  | 2  | 2  | 3             | 5  |
| 4-Feb  | 2                             | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2  | 2  | 2  | 2  | 2   | 2  | 2  | 2  | 1  | 2  | 2  | 2  | 2  | 2  | 1             | 2  |
| 5-Feb  | 2                             | 2 | 1 | 1 | 1 | 2 | 2 | 3 | 2 | 2  | 5  | 1  | 2  | 2   | 3  | 5  | 3  | 2  | 1  | 1  | 2  | 2  | 5  | 6             | 6  |
| 6-Feb  | 8                             | 6 | 6 | 4 | 3 | 4 | 2 | 1 | 3 | 3  | 2  | 1  | 2  | 2   | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2             | 8  |
| 7-Feb  | 2                             | 4 | 2 | 8 | 4 | 7 | 5 | 4 | 4 | 4  | 5  | 6  | 7  | 6   | 7  | 6  | 6  | 5  | 4  | 4  | 2  | 2  | 3  | 4             | 8  |
| 8-Feb  | 4                             | 4 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 2  | 2  | 2  | 2  | 2   | 2  | 2  | 2  | 1  | 1  | 2  | 3  | 2  | 2  | 2             | 4  |
| 9-Feb  | 3                             | 2 | 1 | 2 | 1 | 1 | 3 | 3 | 2 | 2  | 3  | 3  | 3  | 3   | 2  | 2  | 2  | 2  | 1  | 1  | 1  | 1  | 3  | 1             | 3  |
| 10-Feb   | 2                             | 2 | 2 | 2 | 3 | 3 | 3 | 2 | 2 | 2  | 2  | 2  | 3  | 3   | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 2  | 2  | 1             | 3  |
| 11-Feb   | 1                             | 1 | 1 | 2 | 2 | 3 | 2 | 2 | 1 | 2  | 2  | 2  | 2  | 2   | 2  | 5  | 6  | 3  | 4  | 4  | 4  | 2  | 3  | 5             | 6  |
| 12-Feb   | 5                             | 5 | 4 | 4 | 3 | 3 | 3 | 2 | 2 | 2  | 2  | 2  | 2  | 2   | 2  | 3  | 3  | 4  | 4  | 5  | 4  | 4  | 5  | 5             | 5  |
| 13-Feb   | 5                             | 2 | 4 | 4 | 6 | 6 | 6 | 4 | 6 | 7  | 8  | 9  | 9  | 8   | 8  | 7  | 8  | 8  | 6  | 5  | 6  | 6  | 6  | 6             | 9  |
| 14-Feb   | 6                             | 4 | 6 | 2 | 3 | 3 | 3 | 2 | 2 | 1  | 1  | 1  | 1  | 2   | 2  | 2  | 2  | 2  | 3  | 2  | 2  | 2  | 2  | 1             | 6  |
| 15-Feb   | 1                             | 1 | 1 | 3 | 1 | 1 | 1 | 2 | 3 | 2  | 1  | 1  | 2  | 2   | 2  | 2  | 2  | 2  | 1  | 1  | 2  | 2  | 3  | 1             | 3  |
| 16-Feb   | 2                             | 3 | 2 | 2 | 3 | 3 | 2 | 3 | 3 | 2  | 2  | 3  | 2  | 2   | 2  | 1  | 1  | 5  | 4  | 5  | 5  | 4  | 3  | 3             | 5  |
| 17-Feb   | 2                             | 2 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 2  | 2  | 2  | 3  | 3   | 3  | 3  | 3  | 3  | 4  | 3  | 3  | 3  | 3  | 2             | 4  |
| 18-Feb   | 2                             | 4 | 2 | 1 | 2 | 2 | 2 | 3 | 3 | 1  | 2  | 2  | 2  | 2   | 2  | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 2             | 4  |
| 19-Feb   | 1                             | 1 | 2 | 1 | 1 | 2 | 1 | 4 | 1 | 2  | 2  | 1  | 2  | 2   | 2  | 2  | 2  | 2  | 2  | 2  | 4  | 3  | 3  | 3             | 4  |
| 20-Feb   | 2                             | 3 | 3 | 2 | 2 | 1 | 1 | 1 | 1 | 1  | 1  | 1  | 1  | 1   | 2  | 2  | 3  | 3  | 3  | 2  | 1  | 2  | 4  | 5             | 5  |
| 21-Feb   | 5                             | 6 | 5 | 4 | 4 | 4 | 2 | 3 | 3 | 3  | 3  | 2  | 3  | 3   | 4  | 4  | 3  | 2  | 2  | 2  | 4  | 1  | 2  | 1             | 6  |
| 22-Feb   | 1                             | 1 | 1 | 2 | 2 | 1 | 1 | 1 | 2 | 1  | 1  | 1  | 2  | 2   | 1  | 2  | 1  | 1  | 1  | 1  | 2  | 1  | 1  | 2             | 2  |
| 23-Feb   | 1                             | 2 | 2 | 2 | 3 | 2 | 2 | 1 | 1 | 1  | 1  | 1  | 1  | 1   | 1  | 1  | 2  | 2  | 1  | 2  | 2  | 1  | 2  | 3             | 3  |
| 24-Feb   | 2                             | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 3  | 5  | 3  | 5  | 7   | 7  | 5  | 6  | 5  | 7  | 5  | 4  | 4  | 4  | 4             | 7  |
| 25-Feb   | 3                             | 3 | 3 | 2 | 2 | 2 | 2 | 3 | 1 | 1  | 2  | 4  | 3  | 3   | 2  | 2  | 2  | 3  | 2  | 1  | 2  | 3  | 2  | 3             | 4  |
| 26-Feb   | 3                             | 3 | 2 | 2 | 3 | 2 | 4 | 2 | 2 | 1  | 3  | 3  | 3  | 2   | 2  | 3  | 3  | 2  | 3  | 2  | 2  | 2  | 2  | 2             | 4  |
| 27-Feb   | 2                             | 2 | 2 | 2 | 3 | 4 | 4 | 4 | 4 | 4  | 4  | 3  | 4  | 4   | 4  | 3  | 4  | 3  | 4  | 4  | 5  | 4  | 3  | 4             | 5  |
| 28-Feb   | 2                             | 2 | 2 | 3 | 1 | 1 | 1 | 2 | 1 | 1  | 1  | 1  | 2  | 1   | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 2  | 1  | 4             | 4  |
|  |                               |   |   |   |   |   |   |   |   |    |    |    |    | 8 6 6 8 6 7 6 4 6 7 8 9 9 8 8 7 8 8 7 6 6 6 6 6 6   |    |    |    |    |    |    |    |    |    |               |    |
| Diurnal Maximum  |                               |   |   |   |   |   |   |   |   |    |    |    |    |   |    |    |    |    |    |    |    |    |    |               |    |





**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Wind Speed 20 m (WS20m) - km/h**  
**Mannix - February 2023**





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Wind Speed 20 m (WS20m) - km/h**  
**Mannix - February 2023**

| <b>Wind Speed Ranges (km/h)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---------------------------------|------------------------|----------|---------------------|
| 0 - 5                           | 166                    | 24.70    | 24.70               |
| 6 - 11                          | 306                    | 45.54    | 70.24               |
| 12 - 19                         | 136                    | 20.24    | 90.48               |
| 20 - 28                         | 57                     | 8.48     | 98.96               |
| 29 - 38                         | 7                      | 1.04     | 100.00              |
| > 38                            | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 672

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Wind Speed 20 m (WS20m) - km/h  
Mannix - February 2023**

| <b>Wind Speed<br/>Ranges (km/h)</b> | <b>Wind Direction</b> |            |           |            |          |            |           |            |           |            |           |            |           |            |           |            | <b>Totals</b> |
|-------------------------------------|-----------------------|------------|-----------|------------|----------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|---------------|
|                                     | <b>N</b>              | <b>NNE</b> | <b>NE</b> | <b>ENE</b> | <b>E</b> | <b>ESE</b> | <b>SE</b> | <b>SSE</b> | <b>S</b>  | <b>SSW</b> | <b>SW</b> | <b>WSW</b> | <b>W</b>  | <b>WNW</b> | <b>NW</b> | <b>NNW</b> |               |
| 0 - 5                               | 13                    | 9          | 12        | 7          | 4        | 3          | 11        | 12         | 10        | 7          | 6         | 4          | 19        | 19         | 17        | 13         | 166           |
| 6 - 11                              | 42                    | 30         | 3         | 2          | 4        | 6          | 29        | 78         | 18        | 1          | 1         | 4          | 5         | 11         | 32        | 40         | 306           |
| 12 - 19                             | 18                    | 15         | 0         | 1          | 0        | 0          | 13        | 40         | 9         | 0          | 1         | 5          | 13        | 2          | 8         | 11         | 136           |
| 20 - 28                             | 5                     | 4          | 0         | 0          | 0        | 0          | 13        | 2          | 3         | 0          | 0         | 7          | 16        | 4          | 0         | 3          | 57            |
| 29 - 38                             | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 4         | 0          | 0         | 3          | 7             |
| > 38                                | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0             |
| <b>Totals</b>                       | <b>78</b>             | <b>58</b>  | <b>15</b> | <b>10</b>  | <b>8</b> | <b>9</b>   | <b>66</b> | <b>132</b> | <b>40</b> | <b>8</b>   | <b>8</b>  | <b>20</b>  | <b>57</b> | <b>36</b>  | <b>57</b> | <b>70</b>  | <b>672</b>    |

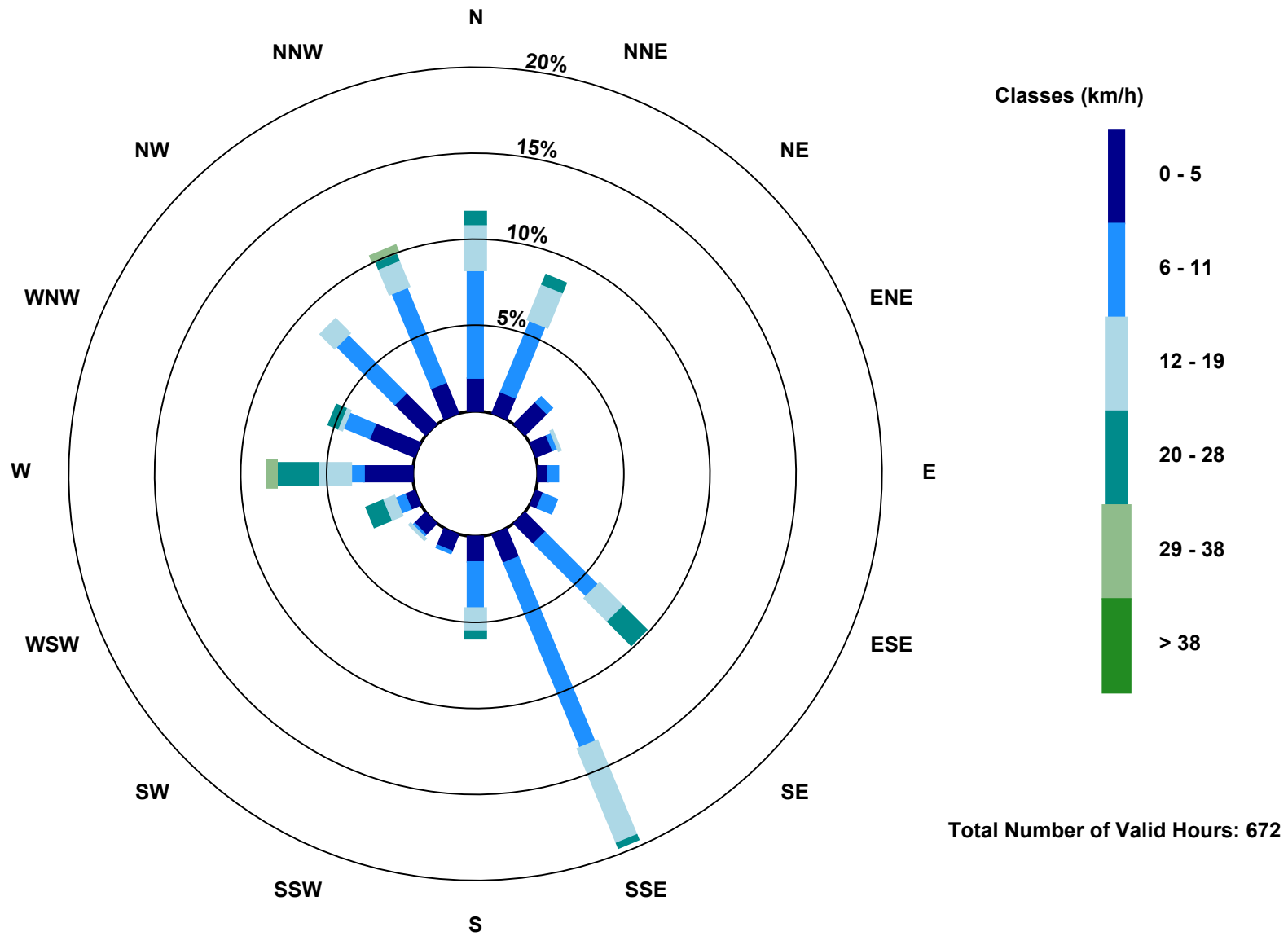
Total Number of Valid Hours: 672

Total Number of Hours: 672



Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Wind Speed 20 m (WS20m) - km/h  
Mannix





|   |  |                                |
|---|--|--------------------------------|
| Maximum Speed: 39 km/h on Feb 7 16:00             | Maximum Daily Speed Average: 23.9 km/h on Feb 24   | Hours in Service: 672          |
| Minimum Speed Value: 0 km/h on Feb 20 14:00       | Minimum Daily Speed Average: 1.8 km/h on Feb 23  | Hours of Data: 668             |
| Maximum Diurnal Speed Average: 2.6 km/h at hour 7 | Minimum Diurnal Speed Average: 0.5 km/h at hour 4  | Hours of Missing Data: 4       |
| Monthly Average Velocity: 0.5 km/h 238.6 deg      | Percentiles: P <sub>1</sub> = 1 P <sub>10</sub> = 4 Q <sub>1</sub> = 7 Median = 12 Q <sub>3</sub> = 18 P <sub>90</sub> = 25 P <sub>99</sub> = 34 | Percent Operational Time: 99.4 |

| Day   | Hourly Period Ending At (MST) |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 | Daily Average | Daily Maximum |
|---|-------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-----------------|---------------|---------------|
|   | 1                             | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     | 10    | 11    | 12    | 13    | 14    | 15    | 16    | 17    | 18    | 19    | 20    | 21    | 22    | 23    | 24              |               |               |
| 1-Feb   | NNW10                         | N12   | N4    | N8    | N14   | N13   | NNW16 | N14   | N19   | N16   | NNW14 | WNW13 | WNW15 | NW13  | NW11  | NW8   | NNW7  | NW8   | NW12  | NW15  | NW13  | NW7   | WNW5  | W2              | NNW10.0       | N19           |
| 2-Feb   | SSE7                          | SSE14 | SSE17 | SE18  | SSE22 | SSE22 | SSE20 | SSE23 | SE20  | SE20  | SE17  | SSE14 | SSE18 | SE23  | SE28  | SE34  | SE30  | SE30  | SE31  | SE32  | SE34  | SE32  | SE28  | SE30            | SE23.1        | SE34          |
| 3-Feb   | SE27                          | SE25  | SE23  | SE19  | SE17  | SE16  | SE15  | SE15  | SSE12 | SSE11 | S2    | NNW4  | NW7   | NW12  | N11   | NNW10 | NNE13 | NNE13 | NNE12 | NNE12 | N10   | NNE9  | NNE7  | N5              | ESE5.1        | SE27          |
| 4-Feb   | N11                           | NNE8  | N7    | N9    | N11   | N12   | NNW7  | NW7   | NNW11 | N10   | NNW9  | NNW8  | NNW7  | NNW9  | NNW8  | NW5   | WNW7  | WNW5  | NNW6  | NNW7  | N8    | NW8   | NW7   | NW7             | NNW7.5        | N12           |
| 5-Feb   | NW6                           | NW5   | NW4   | NW3   | W3    | NNW3  | NW4   | WNW6  | NNW3  | W4    | W6    | WSW0  | SE4   | SSW6  | SE6   | SSE11 | SSE11 | SSE15 | SSE9  | SW6   | W7    | W25   | W32   | WNW34           | W4.9          | WNW34         |
| 6-Feb   | WNW31                         | W30   | W25   | WSW19 | W20   | W17   | W20   | W17   | W19   | WNW13 | NNE6  | ENE3  | E5    | ESE7  | ESE7  | E8    | SE14  | SSE6  | ESE8  | SE14  | SE12  | SE14  | SSE16 | SSE13           | WSW5.8        | WNW31         |
| 7-Feb   | SSE10                         | SE12  | S8    | WSW24 | W29   | W38   | W31   | W27   | W26   | WSW25 | WSW24 | WSW29 | WSW31 | W36   | WSW38 | W39   | W33   | WSW28 | WSW24 | W29   | W22   | W21   | WNW15 | N18             | W22.8         | W39           |
| 8-Feb   | NNW18                         | N15   | N12   | NNW14 | NNW10 | NNW5  | N5    | NNE6  | NNE4  | S6    | SSE6  | SE10  | SSE10 | SE7   | SE9   | SE10  | SE11  | SSE14 | SSE16 | SSE17 | SE20  | SE20  | SE23  | SE24            | SE5.2         | SE24          |
| 9-Feb   | SSE25                         | SSE25 | SSE18 | SSE16 | SSE15 | S16   | S17   | S18   | S18   | SSE19 | SSE22 | SSE22 | SSE20 | SSE24 | SSE17 | SSE18 | SE14  | SE13  | SE10  | SE11  | SSE15 | S15   | SSE11 | SSE17           | SSE16.9       | SSE25         |
| 10-Feb  | SSE18                         | SE6   | N6    | N12   | NNW10 | NNW14 | N14   | N9    | N10   | NNW10 | NNW10 | NNW9  | NNW12 | NNW11 | NW16  | NW16  | NW13  | NW14  | NW15  | NW13  | NW11  | NNW8  | NW7   | N5              | NNW8.8        | SSE18         |
| 11-Feb  | WNW5                          | W2    | WSW2  | S4    | SSE9  | SSE13 | SSE13 | SSW7  | S10   | SSW10 | S8    | SE12  | SE10  | SSE11 | S15   | SW22  | WSW25 | WSW20 | W24   | W28   | WNW24 | W13   | WSW14 | WSW28           | SW9.7         | W28           |
| 12-Feb  | WSW29                         | WSW32 | W29   | W25   | WSW22 | WSW20 | WSW22 | W19   | W16   | W10   | WNW10 | WNW6  | NNE4  | E4    | ESE6  | SE12  | SE16  | SE19  | SE16  | SE21  | SE23  | SE18  | SE27  | SE26            | SSW7.4        | WSW32         |
| 13-Feb  | SSE24                         | SSE23 | S22   | SSW17 | WSW30 | WSW31 | WSW30 | WSW28 | NW22  | UO    | UO    | UO    | UO    | N35   | NNW35 | NNW34 | NNW38 | N33   | N29   | N24   | N32   | NNE29 | N25   | N24             | NNW13.1       | NNW38         |
| 14-Feb  | N22                           | NNW18 | N14   | NNW10 | N10   | N11   | NNE14 | N12   | NNE8  | N5    | NNW4  | NNW4  | WNW2  | NNE5  | NNE6  | NNW8  | N11   | NNE11 | NNE10 | N7    | NNE8  | NNE7  | NE2   | SW1             | N8.3          | N22           |
| 15-Feb  | WSW1                          | SE2   | ESE4  | SE9   | SSE12 | SSE14 | SSE11 | SSE7  | SSE12 | S9    | SSE7  | SSE4  | SE5   | SE6   | SE7   | SE8   | SE7   | SE8   | SE11  | SSE16 | SE16  | SE16  | SE15  | SE14            | SE8.8         | SE16          |
| 16-Feb  | SE17                          | SE18  | SE18  | SE19  | SE21  | SE18  | SE16  | SE18  | SE17  | SSE11 | SSE10 | SSE11 | SSE16 | SSE10 | W1    | WNW2  | W6    | NNW12 | N22   | N26   | N20   | N16   | NNW13 | N10             | ESE5.1        | N26           |
| 17-Feb  | NNE7                          | NNE8  | NNE10 | NNE10 | N6    | NNE4  | NE6   | NNE8  | N9    | NNE8  | N7    | N7    | NNW7  | NW12  | NNW12 | N14   | N16   | N19   | N17   | N18   | N18   | NNE16 | N12   | NNW8            | N10.4         | N19           |
| 18-Feb  | N14                           | N13   | N13   | N14   | NNW9  | NNW10 | N9    | N8    | NNW6  | NW2   | NW6   | NW9   | NW11  | NW10  | WNW9  | W6    | WSW5  | WNW3  | N6    | NE8   | ENE4  | SE4   | SE8   | SSE12           | NNW5.2        | N14           |
| 19-Feb  | SSE14                         | SE17  | SE19  | SE19  | SE19  | SE17  | SE14  | SE10  | ESE3  | SSE8  | ESE3  | NNW2  | N4    | NNW3  | NW7   | NW11  | NW13  | NW13  | NNW8  | NNW9  | N14   | N18   | N16   | N13             | ENE1.8        | SE19          |
| 20-Feb  | N15                           | N11   | N13   | NNW8  | NW7   | NW5   | W5    | W3    | SSE3  | SE3   | SE3   | SE2   | S1    | E0    | NNE2  | NW9   | NNE14 | NNE13 | NNE6  | NNE7  | N11   | N10   | N19   | N22             | N6.5          | N22           |
| 21-Feb  | N25                           | NNE29 | N21   | N17   | N17   | NNE14 | N9    | N11   | NNW13 | NNW14 | NW11  | WNW13 | WNW15 | NW17  | NW17  | NNW18 | NNW12 | N9    | N12   | N15   | N7    | WNW6  | WSW8  | W9              | NNW12.1       | NNE29         |
| 22-Feb  | WSW11                         | W8    | SW5   | SW4   | SSW3  | SW6   | SW8   | SW6   | SW6   | SSW5  | SSW3  | SSW1  | W3    | W6    | W6    | WNW5  | WSW6  | W8    | W10   | NW10  | NNW6  | NNE5  | NE5   | SW0             | WSW4.0        | WSW11         |
| 23-Feb  | N1                            | N5    | N8    | N14   | N19   | NNW10 | NNW8  | NW5   | NW5   | NNW5  | WSW3  | W4    | W2    | W2    | SSW2  | SE4   | SE8   | SE10  | SSE13 | SSE17 | SSE16 | SSE14 | SSE18 | SSE20           | SE1.8         | SSE20         |
| 24-Feb  | SSE21                         | SSE20 | SSE21 | SSE21 | SSE25 | SSE26 | SSE27 | SSE27 | SSE27 | SSE24 | SSE24 | SSE16 | SSE21 | S29   | S28   | SSE27 | SSE30 | SSE27 | S30   | S24   | S23   | S22   | S22   | S20             | SSE23.9       | SSE30         |
| 25-Feb  | S19                           | S18   | SSE14 | SSE11 | SSE14 | SSE13 | SSW11 | SSW7  | SSW3  | SSW5  | SSW5  | W15   | WSW13 | WSW14 | S3    | SSE4  | E8    | SE8   | S16   | S11   | SE10  | SE11  | SSE17 | SE16            | S8.7          | S19           |
| 26-Feb  | SE14                          | ESE9  | ESE7  | ESE7  | SE10  | SE7   | ESE11 | ESE7  | SE7   | SE5   | SE8   | ESE10 | E11   | ENE12 | ENE10 | E11   | ENE13 | NE15  | NE14  | NE11  | NNE9  | NNE11 | NE12  | NNE11           | E8.0          | NE15          |
| 27-Feb  | NNE11                         | NNE10 | NNE14 | N12   | NNW15 | NNW18 | NNW20 | NNW21 | NNW17 | NNW19 | NNW16 | NNW16 | NNW17 | NW19  | NNW14 | NNE13 | NNE16 | N17   | N20   | NNE20 | NNE21 | N19   | NNW14 | N14             | N15.6         | NNE21         |
| 28-Feb  | NNW11                         | N13   | N12   | N11   | N6    | NNW6  | NNW5  | NW5   | NNW5  | NNW2  | NW8   | WNW6  | WNW5  | WNW4  | WSW3  | WSW5  | WSW3  | WNW3  | WNW3  | NW1   | ESE2  | SSE3  | SSE7  | SE11            | NNW3.1        | N13           |
| SE1.1 SE1.3 SE0.8 SW0.5 SW1.9 SW2.0WSW2.0WSW2.0WSW1.6SSW1.7 SW1.0WSW2.0WSW1.9 W2.4NNW1.7 W1.4NNE0.6 NNE1.2 NNE1.2 NNE1.5 NE2.3 ENE1.5 SE1.4 SE1.7 |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Diurnal Average |               |               |
| WNW31 WSW32 W29 W25 WSW30 W38 W31 WSW28 SSE27 WSW25 WSW24 WSW29 WSW31 W36 WSW38 W39 NNW38 N33 SE31 SE32 SE34 SE32 W32 WNW34                       |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Diurnal Maximum |               |               |

UO - Unstable Operation

All monthly, daily, and diurnal averages have been calculated using vector methods



**Wood Buffalo Environmental Association**  
**Summary of Hour Standard Deviations**

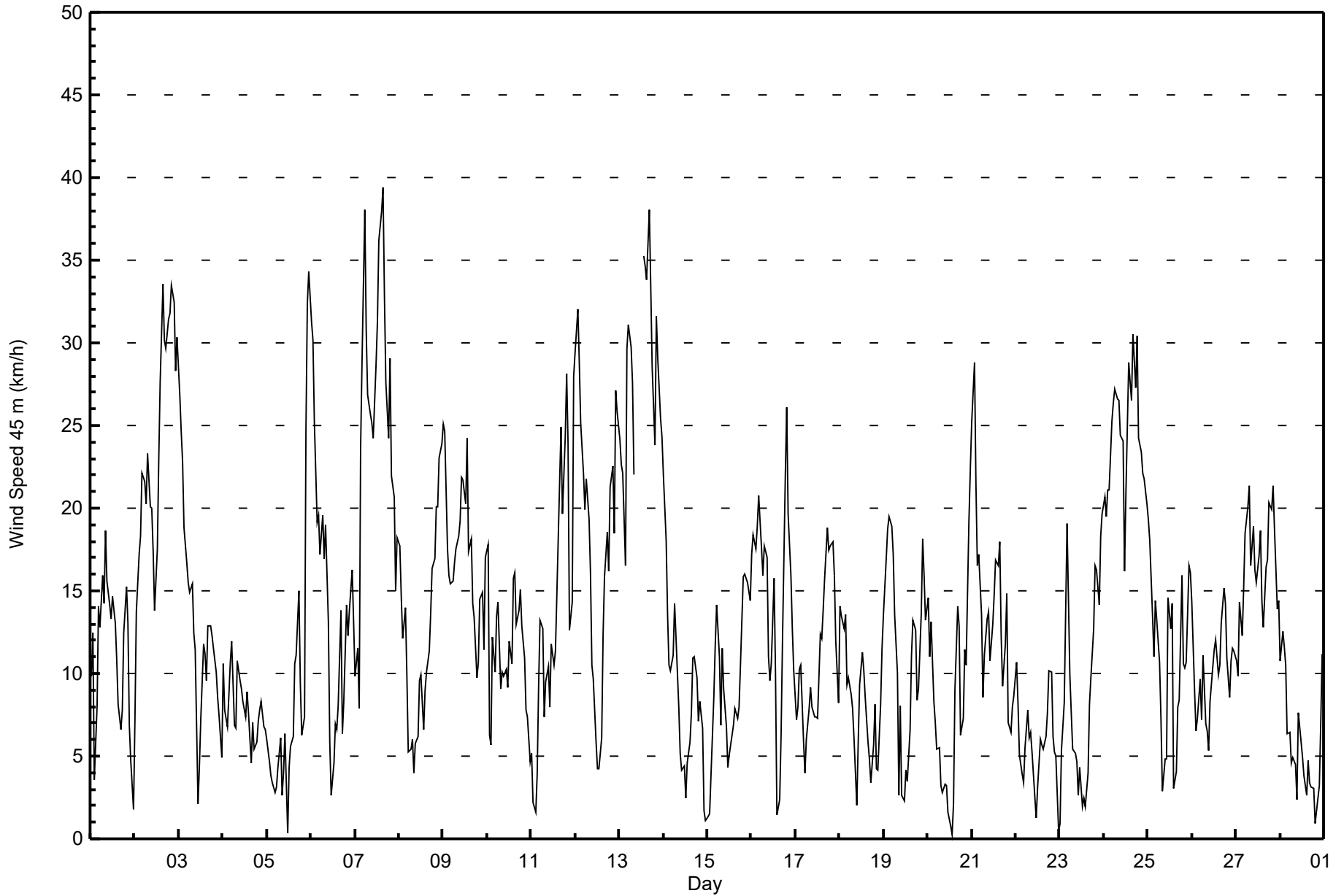
**Wind Speed 45 m (WS45m) - km/h**  
**Mannix - February 2023**

| Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0<br>Maximum Value: 9 km/h on Feb 13 15:00<br>Minimum Value: 0 km/h on Feb 18 18:00<br>Percentiles: P <sub>1</sub> = 1 P <sub>10</sub> = 1 Q <sub>1</sub> = 2 Median = 2 Q <sub>3</sub> = 3 P <sub>90</sub> = 5 P <sub>99</sub> = 7 |                               |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    | Hours in Service: 672<br>Hours of Data: 668<br>Hours of Missing Data: 4<br>Hours of Calibration: 0<br>Percent Operational Time: 99.4 |    |    |    |    |    |    |    |               |  |  |
|---|-------------------------------|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|--|----|----|----|----|----|----|----|---------------|--|--|
| Day   | Hourly Period Ending At (MST) |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |  |    |    |    |    |    |    |    | Daily Maximum |  |  |
|   | 1                             | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17   | 18 | 19 | 20 | 21 | 22 | 23 | 24 |               |  |  |
| 1-Feb   | 4                             | 2 | 2 | 2 | 4 | 3 | 3 | 3 | 4 | 5  | 3  | 3  | 3  | 3  | 2  | 2  | 1  | 2  | 3  | 2  | 1  | 3  | 1  | 1  | 5             |  |  |
| 2-Feb   | 3                             | 3 | 2 | 3 | 2 | 2 | 1 | 1 | 4 | 3  | 3  | 3  | 2  | 5  | 5  | 6  | 6  | 7  | 6  | 6  | 6  | 6  | 6  | 5  | 7             |  |  |
| 3-Feb   | 5                             | 5 | 5 | 3 | 3 | 4 | 2 | 3 | 2 | 4  | 2  | 3  | 2  | 2  | 3  | 2  | 3  | 3  | 2  | 2  | 3  | 2  | 1  | 3  | 5             |  |  |
| 4-Feb   | 2                             | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 2 | 2  | 2  | 2  | 2  | 2  | 1  | 1  | 2  | 1  | 2  | 1  | 2  | 2  | 1  | 1  | 2             |  |  |
| 5-Feb   | 1                             | 2 | 1 | 1 | 1 | 2 | 2 | 3 | 2 | 2  | 5  | 1  | 2  | 2  | 3  | 6  | 2  | 2  | 2  | 1  | 3  | 2  | 5  | 5  | 6             |  |  |
| 6-Feb   | 8                             | 6 | 6 | 4 | 3 | 3 | 2 | 1 | 3 | 3  | 2  | 1  | 2  | 2  | 3  | 2  | 3  | 3  | 3  | 2  | 2  | 2  | 1  | 2  | 8             |  |  |
| 7-Feb   | 2                             | 3 | 2 | 7 | 4 | 7 | 5 | 4 | 4 | 4  | 5  | 6  | 7  | 6  | 7  | 6  | 5  | 4  | 4  | 4  | 3  | 2  | 3  | 3  | 7             |  |  |
| 8-Feb   | 3                             | 4 | 2 | 2 | 3 | 3 | 1 | 1 | 1 | 3  | 2  | 3  | 2  | 2  | 2  | 2  | 3  | 1  | 1  | 2  | 2  | 1  | 2  | 2  | 4             |  |  |
| 9-Feb   | 2                             | 2 | 2 | 1 | 2 | 2 | 2 | 2 | 2 | 2  | 3  | 3  | 3  | 3  | 2  | 1  | 2  | 3  | 2  | 2  | 2  | 2  | 2  | 1  | 3             |  |  |
| 10-Feb  | 2                             | 4 | 3 | 2 | 3 | 2 | 3 | 2 | 2 | 2  | 2  | 2  | 2  | 3  | 3  | 3  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 1  | 4             |  |  |
| 11-Feb  | 1                             | 1 | 1 | 1 | 1 | 3 | 2 | 3 | 1 | 1  | 2  | 2  | 2  | 2  | 2  | 5  | 6  | 3  | 4  | 4  | 4  | 2  | 3  | 5  | 6             |  |  |
| 12-Feb  | 5                             | 5 | 4 | 3 | 3 | 3 | 3 | 3 | 2 | 2  | 2  | 2  | 2  | 2  | 2  | 4  | 2  | 4  | 4  | 5  | 4  | 3  | 5  | 4  | 5             |  |  |
| 13-Feb  | 5                             | 2 | 4 | 6 | 6 | 6 | 6 | 5 | 6 | UO | UO | UO | UO | 8  | 9  | 7  | 8  | 8  | 6  | 5  | 7  | 6  | 6  | 6  | 9             |  |  |
| 14-Feb  | 7                             | 4 | 7 | 2 | 3 | 3 | 3 | 2 | 2 | 1  | 1  | 1  | 1  | 2  | 2  | 2  | 2  | 2  | 3  | 2  | 2  | 2  | 2  | 1  | 7             |  |  |
| 15-Feb  | 1                             | 1 | 1 | 2 | 1 | 1 | 2 | 2 | 4 | 2  | 1  | 1  | 2  | 2  | 2  | 2  | 1  | 2  | 2  | 1  | 2  | 3  | 3  | 2  | 4             |  |  |
| 16-Feb  | 2                             | 3 | 2 | 2 | 3 | 3 | 2 | 3 | 4 | 2  | 3  | 3  | 2  | 2  | 2  | 2  | 2  | 6  | 4  | 5  | 5  | 3  | 3  | 3  | 6             |  |  |
| 17-Feb  | 3                             | 2 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 2  | 1  | 2  | 3  | 2  | 2  | 2  | 3  | 3  | 4  | 2  | 3  | 2  | 4  | 2  | 4             |  |  |
| 18-Feb  | 3                             | 4 | 3 | 1 | 2 | 1 | 2 | 3 | 2 | 1  | 2  | 1  | 2  | 2  | 2  | 2  | 1  | 0  | 2  | 1  | 1  | 2  | 1  | 1  | 4             |  |  |
| 19-Feb  | 2                             | 1 | 2 | 1 | 2 | 3 | 2 | 3 | 2 | 3  | 2  | 1  | 2  | 2  | 1  | 2  | 2  | 2  | 2  | 2  | 4  | 4  | 3  | 3  | 4             |  |  |
| 20-Feb  | 2                             | 3 | 3 | 3 | 2 | 2 | 1 | 1 | 1 | 1  | 1  | 1  | 1  | 1  | 2  | 2  | 2  | 3  | 4  | 2  | 2  | 3  | 5  | 5  | 5             |  |  |
| 21-Feb  | 5                             | 6 | 5 | 4 | 4 | 4 | 2 | 3 | 3 | 3  | 3  | 2  | 3  | 3  | 3  | 4  | 3  | 2  | 2  | 2  | 5  | 1  | 2  | 1  | 6             |  |  |
| 22-Feb  | 2                             | 3 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2  | 1  | 1  | 2  | 2  | 1  | 2  | 1  | 1  | 0  | 1  | 1  | 2  | 1  | 1  | 3             |  |  |
| 23-Feb  | 1                             | 4 | 3 | 4 | 2 | 4 | 1 | 2 | 2 | 2  | 1  | 1  | 1  | 1  | 1  | 2  | 2  | 1  | 2  | 1  | 1  | 2  | 2  | 2  | 4             |  |  |
| 24-Feb  | 2                             | 1 | 2 | 2 | 2 | 2 | 1 | 2 | 2 | 2  | 5  | 3  | 6  | 5  | 6  | 5  | 5  | 4  | 6  | 4  | 4  | 3  | 3  | 3  | 6             |  |  |
| 25-Feb  | 2                             | 2 | 2 | 1 | 2 | 1 | 2 | 3 | 1 | 2  | 2  | 4  | 3  | 4  | 2  | 3  | 2  | 4  | 2  | 2  | 4  | 2  | 3  | 4  | 4             |  |  |
| 26-Feb  | 3                             | 3 | 2 | 2 | 3 | 3 | 4 | 2 | 3 | 1  | 3  | 4  | 3  | 2  | 2  | 3  | 3  | 3  | 3  | 2  | 2  | 1  | 2  | 2  | 4             |  |  |
| 27-Feb  | 2                             | 2 | 2 | 2 | 2 | 3 | 4 | 4 | 4 | 4  | 3  | 3  | 3  | 4  | 4  | 3  | 3  | 3  | 4  | 4  | 5  | 4  | 3  | 4  | 5             |  |  |
| 28-Feb  | 2                             | 2 | 2 | 3 | 2 | 2 | 1 | 1 | 2 | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 0  | 1  | 1  | 3  | 3             |  |  |
|   |                               |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    | Diurnal Maximum  |    |    |    |    |    |    |    |               |  |  |
| UO - Unstable Operation   |                               |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |  |    |    |    |    |    |    |    |               |  |  |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Wind Speed 45 m (WS45m) - km/h**  
**Mannix - February 2023**





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Wind Speed 45 m (WS45m) - km/h**  
**Mannix - February 2023**

| <b>Wind Speed Ranges (km/h)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---------------------------------|------------------------|----------|---------------------|
| 0 - 5                           | 107                    | 16.02    | 16.02               |
| 6 - 11                          | 221                    | 33.08    | 49.10               |
| 12 - 19                         | 208                    | 31.14    | 80.24               |
| 20 - 28                         | 92                     | 13.77    | 94.01               |
| 29 - 38                         | 39                     | 5.84     | 99.85               |
| > 38                            | 1                      | 0.15     | 100.00              |

Total Number of Valid Hours: 668

Total Number of Hours: 672





**Wood Buffalo Environmental Association  
Frequency Distribution**

**Wind Speed 45 m (WS45m) - km/h  
Mannix - February 2023**

| <b>Wind Speed<br/>Ranges (km/h)</b> | <b>Wind Direction</b> |     |    |     |   |     |     |     |    |     |    |     |    |     |    |     | <b>Totals</b> |
|-------------------------------------|-----------------------|-----|----|-----|---|-----|-----|-----|----|-----|----|-----|----|-----|----|-----|---------------|
|                                     | N                     | NNE | NE | ENE | E | ESE | SE  | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |               |
| 0 - 5                               | 8                     | 6   | 2  | 2   | 3 | 4   | 9   | 4   | 4  | 8   | 4  | 8   | 10 | 12  | 11 | 12  | 107           |
| 6 - 11                              | 34                    | 24  | 3  | 1   | 4 | 10  | 29  | 23  | 6  | 4   | 5  | 4   | 10 | 7   | 22 | 35  | 221           |
| 12 - 19                             | 45                    | 12  | 3  | 2   | 0 | 0   | 39  | 40  | 9  | 1   | 0  | 4   | 7  | 6   | 17 | 23  | 208           |
| 20 - 28                             | 10                    | 3   | 0  | 0   | 0 | 0   | 17  | 27  | 7  | 0   | 1  | 13  | 10 | 1   | 1  | 2   | 92            |
| 29 - 38                             | 4                     | 2   | 0  | 0   | 0 | 0   | 8   | 1   | 2  | 0   | 0  | 8   | 9  | 2   | 0  | 3   | 39            |
| > 38                                | 0                     | 0   | 0  | 0   | 0 | 0   | 0   | 0   | 0  | 0   | 0  | 0   | 1  | 0   | 0  | 0   | 1             |
| <b>Totals</b>                       | 101                   | 47  | 8  | 5   | 7 | 14  | 102 | 95  | 28 | 13  | 10 | 37  | 47 | 28  | 51 | 75  | 668           |

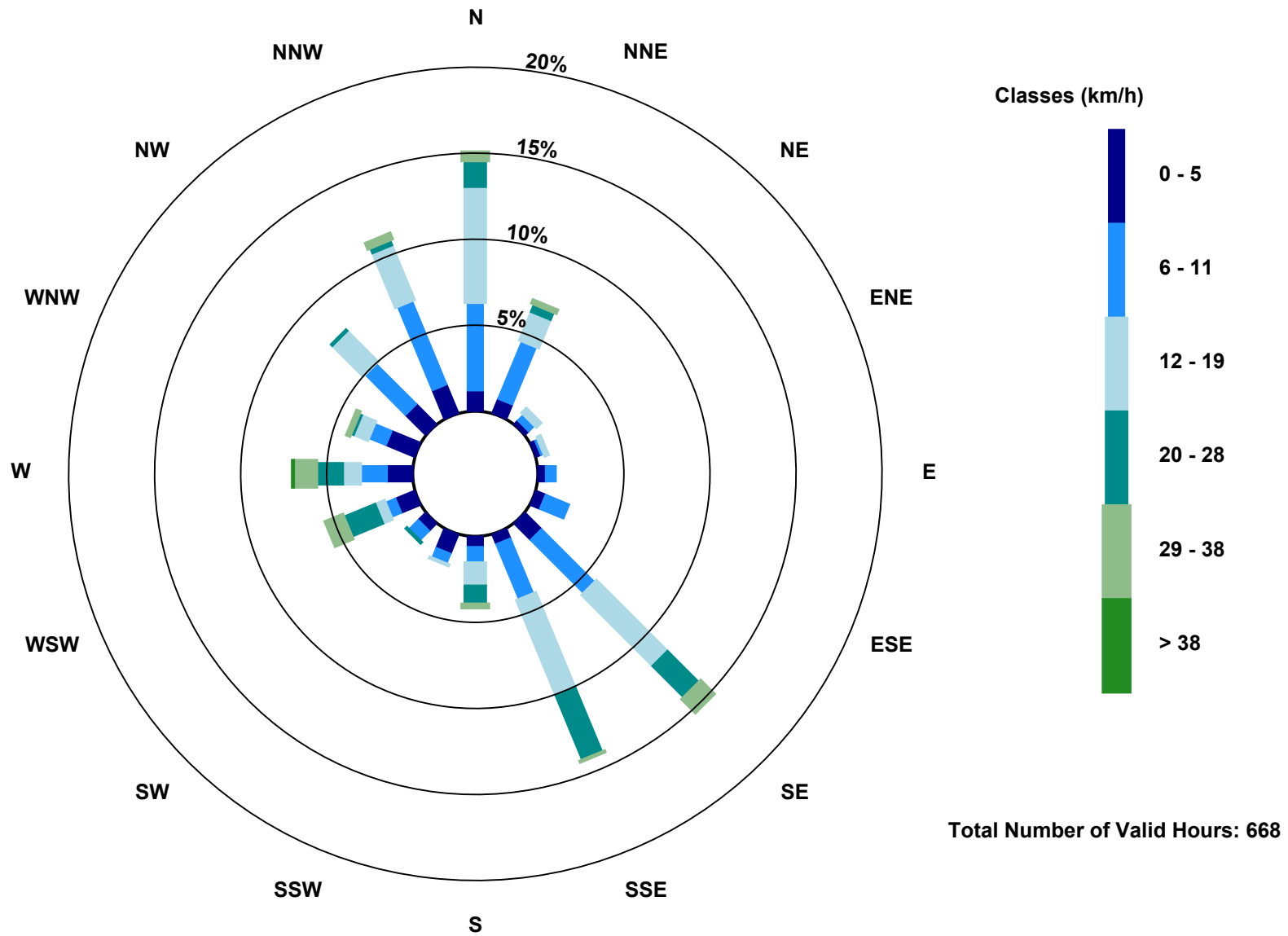
Total Number of Valid Hours: 668

Total Number of Hours: 672



Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Wind Speed 45 m (WS45m) - km/h  
Mannix





|   |  |                                |
|---|--|--------------------------------|
| Maximum Speed: 42 km/h on Feb 13 17:00            | Maximum Daily Speed Average: 26.5 km/h on Feb 7  | Hours in Service: 672          |
| Minimum Speed Value: 1 km/h on Feb 5 12:00        | Minimum Daily Speed Average: 1.4 km/h on Feb 23  | Hours of Data: 666             |
| Maximum Diurnal Speed Average: 3.2 km/h at hour 8 | Minimum Diurnal Speed Average: 0.4 km/h at hour 17   | Hours of Missing Data: 6       |
| Monthly Average Velocity: 0.7 km/h 252.5 deg      | Percentiles: P <sub>1</sub> = 2 P <sub>10</sub> = 5 Q <sub>1</sub> = 8 Median = 14 Q <sub>3</sub> = 20 P <sub>90</sub> = 29 P <sub>99</sub> = 37 | Percent Operational Time: 99.1 |

| Day    | Hourly Period Ending At (MST) |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Daily Average | Daily Maximum |
|--------|-------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------------|---------------|
|        | 1                             | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     | 10    | 11    | 12    | 13    | 14    | 15    | 16    | 17    | 18    | 19    | 20    | 21    | 22    | 23    | 24    |               |               |
| 1-Feb  | N14                           | NNE15 | NE6   | N10   | N17   | N15   | N21   | N18   | N21   | N17   | NNW16 | WNW14 | WNW15 | NW14  | NW11  | NW9   | NW8   | NW10  | NW14  | NW18  | NW17  | NW11  | WNW9  | NW6   | NNW12.0       | N21           |
| 2-Feb  | SSE4                          | S10   | S18   | SSE18 | SSE23 | SSE28 | SE24  | SSE23 | SE21  | SE26  | SE25  | SE20  | SE23  | SE30  | SE30  | SE35  | SE32  | SE32  | SE35  | SE34  | SE36  | SE34  | SE30  | SE31  | SE25.4        | SE36          |
| 3-Feb  | SE29                          | SE28  | SE26  | SE22  | SE20  | SSE19 | SE20  | SSE20 | SSE18 | SSE15 | SW3   | NW6   | NW8   | NNW12 | N12   | N10   | NNE14 | NNE14 | NNE14 | NNE13 | NNE11 | NNE10 | NNE8  | NNE5  | ESE6.3        | SE29          |
| 4-Feb  | N12                           | NNE8  | NNE8  | N11   | N13   | N14   | N8    | NNW8  | N13   | N11   | NNW10 | NNW8  | NNW7  | NNW9  | NNW8  | NNW4  | NW7   | NW5   | N7    | N8    | N9    | NNW8  | NNW7  | NW6   | N8.2          | N19           |
| 5-Feb  | NW6                           | NNW5  | NNW3  | N3    | W2    | N3    | NW4   | NW6   | NNW3  | NW2   | W6    | SE1   | SE5   | S7    | SSE8  | NNE17 | S17   | SSE23 | S11   | WSW8  | W15   | W31   | WNW35 | WNW37 | WSW5.3        | WNW37         |
| 6-Feb  | WNW34                         | W33   | W30   | W23   | W24   | W23   | W26   | W22   | W26   | WNW18 | N7    | ENE2  | ESE3  | ESE6  | ESE6  | ESE7  | SE15  | SSE10 | SE9   | SE18  | SE16  | SE18  | SE19  | SSE18 | WSW7.3        | WNW34         |
| 7-Feb  | SSE11                         | S6    | SW11  | WSW31 | W33   | W41   | W34   | W30   | W29   | W28   | WSW27 | WSW31 | WSW34 | W39   | WSW41 | W42   | W36   | WSW32 | WSW31 | W34   | W26   | W26   | NW18  | N22   | W26.5         | W42           |
| 8-Feb  | N22                           | N17   | N16   | N14   | N9    | N7    | N7    | NNE9  | NNE6  | SSE2  | SSE8  | SSE12 | SSE11 | SE8   | SE9   | SE14  | SE13  | SSE17 | SE18  | SSE21 | SSE21 | SSE18 | SSE29 | SSE29 | SE6.2         | SSE29         |
| 9-Feb  | SSE25                         | SSE20 | SSW15 | SSW13 | SSW14 | SSW15 | SSW16 | SSW17 | SSW14 | S12   | SSE17 | SSE21 | SSE25 | SSE30 | SSE20 | SSE21 | SSE21 | SE17  | SE13  | SE18  | S21   | SSW13 | S10   | SSE14 | S16.5         | SSE30         |
| 10-Feb | SSE18                         | SSE12 | N6    | NNE15 | N12   | N16   | N17   | N13   | N13   | N13   | N13   | N11   | NNW13 | NNW11 | NNW17 | NW18  | NNW15 | NW15  | NW16  | NNW14 | NW11  | NNW9  | NW8   | N5    | NNW9.9        | SSE18         |
| 11-Feb | WNW5                          | WSW4  | W3    | SSW3  | S12   | SSE17 | S15   | WSW11 | SW10  | SW12  | SSW10 | SSE13 | SE12  | S14   | SSW18 | SW25  | WSW28 | WSW24 | W27   | W30   | WNW27 | W16   | WSW19 | WSW35 | SW12.4        | WSW35         |
| 12-Feb | WSW36                         | WSW38 | W33   | W29   | WSW25 | W24   | W25   | W23   | W19   | W13   | W11   | WNW6  | NE4   | E3    | SE7   | SE16  | SE14  | SE17  | SE14  | SE22  | SE25  | SE22  | SE30  | SE32  | SW9.3         | WSW38         |
| 13-Feb | SSE29                         | S28   | SSW27 | SW22  | WSW34 | WSW36 | WSW34 | WSW31 | NW24  | UO    | UO    | UO    | UO    | UO    | UO    | NNW39 | N42   | N37   | N32   | N27   | NNE36 | NNE33 | N29   | N27   | NW12.3        | N42           |
| 14-Feb | N26                           | N22   | N16   | NNW12 | N12   | N12   | NNE16 | NNE13 | NNE8  | N5    | NNW4  | NNW4  | NW2   | NNE4  | NNE6  | NNW8  | NNE12 | NNE12 | NNE11 | NNE8  | NNE10 | NNE8  | NE3   | SW1   | N9.4          | N26           |
| 15-Feb | SW2                           | SSE2  | SE4   | SSE9  | SSE11 | SSE14 | S16   | SSE13 | S16   | S14   | S9    | S6    | SSE5  | SSE6  | SE5   | SE6   | SE6   | SE9   | SE12  | SSE18 | SE19  | SE20  | SE20  | SE18  | SSE10.4       | SE20          |
| 16-Feb | SE21                          | SE23  | SE21  | SE21  | SE23  | SE24  | SE18  | SE22  | SE22  | SE17  | SE14  | SSE13 | SSE21 | SSE13 | WSW3  | W8    | W15   | NNW16 | N24   | N29   | N22   | N17   | N14   | N12   | ESE7.0        | N29           |
| 17-Feb | NNE8                          | NNE8  | NNE11 | NNE11 | N6    | NNE4  | NE6   | NNE8  | NNE10 | NNE8  | NNE7  | N8    | NNW8  | NW12  | NNW13 | N14   | N17   | NNE21 | N19   | N19   | NNE20 | NNE18 | NNE14 | N8    | N11.2         | NNE21         |
| 18-Feb | N17                           | NNE18 | NNE17 | NNE14 | N12   | N12   | N12   | N12   | NNW8  | N3    | NNW4  | NNW9  | NNW11 | NW10  | NW9   | WNW6  | WSW5  | WNW2  | NNE5  | ENE8  | E3    | SE7   | SE11  | SSE13 | N5.7          | NNE18         |
| 19-Feb | SE13                          | SE17  | SE17  | SE22  | SE22  | SE15  | SE16  | SE8   | ESE4  | SE11  | SE4   | NNE3  | NNE4  | N3    | NW5   | NW10  | NW14  | NNW15 | NNW11 | NNW10 | N17   | N22   | N20   | N16   | ENE3.5        | SE22          |
| 20-Feb | N16                           | N13   | N16   | NNW10 | NW7   | N6    | W3    | WNW2  | SE3   | SE3   | ESE3  | SE2   | SW1   | E1    | NNE2  | NNW9  | NNE16 | NNE16 | NNE9  | NNE11 | NNE14 | NNE14 | N23   | N27   | N8.1          | N27           |
| 21-Feb | NNE30                         | NNE33 | NNE25 | N19   | NNE20 | NNE16 | N11   | N13   | NNW15 | N16   | NNW12 | WNW13 | NW15  | NNW18 | NW17  | NNW20 | NNW14 | N10   | NNE14 | NNE18 | N8    | NNW6  | W8    | WSW9  | N13.9         | NNE33         |
| 22-Feb | W11                           | WNW13 | W8    | W10   | W6    | WSW9  | WSW9  | W9    | WSW12 | WSW9  | WSW4  | W5    | W4    | W6    | W6    | WNW6  | WSW6  | W7    | W10   | NW9   | N5    | NNE7  | NE8   | NNE5  | W6.0          | WNW13         |
| 23-Feb | NNE5                          | N7    | N14   | NNE22 | NNE25 | N14   | N9    | NNW8  | NNW10 | NNW9  | WNW4  | W5    | WNW2  | WNW2  | SSW2  | SSE3  | SE8   | SE10  | SSE14 | SSE20 | S23   | SSE22 | SSE26 | S16   | ESE1.4        | SSE26         |
| 24-Feb | SSE14                         | S14   | S19   | S22   | S24   | S26   | S29   | S30   | S31   | SSE31 | SSE25 | SSE19 | S24   | S32   | S30   | SSE29 | SSE33 | S31   | S35   | S29   | S28   | S26   | S27   | S25   | S26.1         | S35           |
| 25-Feb | S23                           | S21   | S15   | S12   | S12   | SSW10 | SW13  | SW7   | WSW8  | WSW9  | SW7   | W15   | WSW14 | WSW15 | S3    | S4    | ESE6  | SSE9  | SSW19 | S13   | SSE11 | SSE11 | SSE18 | SE16  | SSW9.7        | S23           |
| 26-Feb | SE19                          | SE10  | ESE6  | ESE7  | SE10  | SE8   | ESE9  | ESE6  | ESE5  | SE4   | SE8   | ESE9  | E11   | ENE13 | ENE10 | E9    | ENE14 | ENE17 | ENE17 | NE13  | NE9   | NE11  | NE13  | NE13  | E8.5          | SE19          |
| 27-Feb | NNE14                         | NNE12 | NNE16 | N14   | N17   | NNW22 | NNW24 | NNW25 | N19   | NNW21 | NNW18 | NNW16 | NNW18 | NNW20 | N16   | NNE14 | NNE19 | NNE18 | NNE22 | NNE23 | NNE26 | N22   | NNW17 | N17   | N17.9         | NNE26         |
| 28-Feb | N13                           | N15   | N14   | N13   | N9    | N8    | N7    | NNW6  | N8    | N4    | NW7   | WNW5  | NW5   | WNW3  | WSW2  | WSW5  | SW3   | W3    | W3    | W1    | S1    | SE3   | SSE9  | SSE12 | NNW3.5        | N15           |

|       |       |        |       |        |        |        |       |      |       |       |        |       |       |       |      |      |       |       |       |       |        |       |       |                 |
|-------|-------|--------|-------|--------|--------|--------|-------|------|-------|-------|--------|-------|-------|-------|------|------|-------|-------|-------|-------|--------|-------|-------|-----------------|
| E0.6  | S0.4  | NNW0.6 | W1.1  | WSW2.0 | WSW3.0 | WSW3.1 | W3.2  | W2.6 | SW1.9 | SW1.6 | WSW2.0 | SW1.8 | SW2.5 | SW1.4 | W1.5 | N0.4 | NE1.1 | NE1.4 | NE1.6 | NE1.9 | ENE1.5 | SE1.6 | SE1.5 | Diurnal Average |
| WSW36 | WSW38 | W33    | WSW31 | WSW34  | W41    | WSW34  | WSW31 | S31  | SSE31 | WSW27 | WSW31  | WSW34 | W39   | WSW41 | W42  | N42  | N37   | S35   | SE34  | SE36  | SE34   | WNW35 | WNW37 | Diurnal Maximum |

UO - Unstable Operation  
 All monthly, daily, and diurnal averages have been calculated using vector methods



**Wood Buffalo Environmental Association**  
**Summary of Hour Standard Deviations**

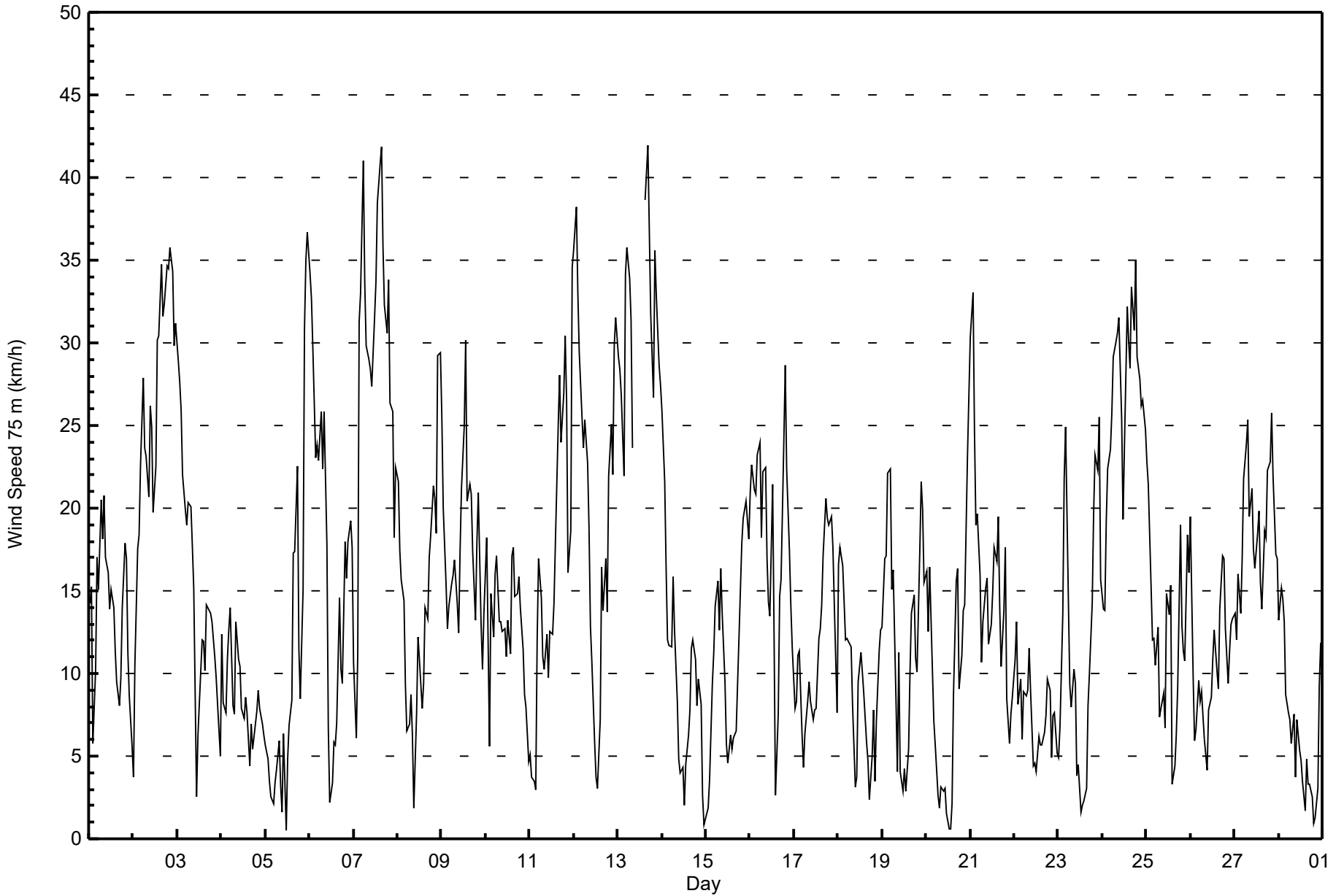
**Wind Speed 75 m (WS75m) - km/h**  
**Mannix - February 2023**

| Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0<br>Maximum Value: 8 km/h on Feb 13 18:00<br>Minimum Value: 0 km/h on Feb 18 18:00<br>Percentiles: P <sub>1</sub> = 1 P <sub>10</sub> = 1 Q <sub>1</sub> = 2 Median = 2 Q <sub>3</sub> = 3 P <sub>90</sub> = 5 P <sub>99</sub> = 7 |                               |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    | Hours in Service: 672<br>Hours of Data: 666<br>Hours of Missing Data: 6<br>Hours of Calibration: 0<br>Percent Operational Time: 99.1 |    |    |    |    |    |    |    |               |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
|---|-------------------------------|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|--|----|----|----|----|----|----|----|---------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|--|
| Day   | Hourly Period Ending At (MST) |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |  |    |    |    |    |    |    |    | Daily Maximum |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
|   | 1                             | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17   | 18 | 19 | 20 | 21 | 22 | 23 | 24 |               |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| 1-Feb   | 4                             | 3 | 3 | 2 | 3 | 4 | 4 | 5 | 4 | 5  | 4  | 2  | 3  | 3  | 3  | 2  | 2  | 2  | 2  | 2  | 1  | 4  | 2  | 1  | 5             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| 2-Feb   | 2                             | 2 | 1 | 2 | 2 | 2 | 2 | 2 | 3 | 3  | 2  | 3  | 3  | 5  | 6  | 8  | 8  | 8  | 7  | 7  | 7  | 6  | 7  | 7  | 8             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| 3-Feb   | 6                             | 5 | 5 | 4 | 3 | 3 | 2 | 3 | 2 | 4  | 2  | 2  | 2  | 2  | 3  | 2  | 3  | 3  | 2  | 2  | 3  | 3  | 2  | 3  | 6             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| 4-Feb   | 1                             | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 2 | 2  | 2  | 1  | 2  | 2  | 1  | 1  | 2  | 1  | 2  | 1  | 2  | 2  | 1  | 1  | 2             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| 5-Feb   | 1                             | 1 | 1 | 1 | 1 | 2 | 1 | 3 | 3 | 1  | 5  | 1  | 3  | 3  | 4  | 6  | 2  | 2  | 3  | 2  | 4  | 2  | 5  | 5  | 6             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| 6-Feb   | 8                             | 6 | 6 | 5 | 3 | 3 | 2 | 1 | 2 | 5  | 3  | 2  | 2  | 2  | 3  | 3  | 4  | 3  | 5  | 2  | 4  | 3  | 2  | 2  | 8             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| 7-Feb   | 5                             | 2 | 4 | 6 | 4 | 6 | 5 | 4 | 4 | 4  | 5  | 7  | 6  | 6  | 7  | 7  | 5  | 4  | 4  | 4  | 3  | 2  | 4  | 3  | 7             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| 8-Feb   | 3                             | 3 | 2 | 1 | 2 | 3 | 1 | 1 | 1 | 2  | 1  | 4  | 2  | 2  | 3  | 3  | 3  | 1  | 2  | 2  | 3  | 4  | 2  | 1  | 4             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| 9-Feb   | 3                             | 2 | 2 | 3 | 2 | 2 | 1 | 2 | 3 | 2  | 2  | 3  | 2  | 2  | 3  | 1  | 1  | 3  | 2  | 2  | 2  | 4  | 2  | 2  | 4             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| 10-Feb  | 2                             | 5 | 5 | 2 | 3 | 2 | 2 | 2 | 2 | 2  | 2  | 2  | 2  | 3  | 2  | 3  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 1  | 5             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| 11-Feb  | 1                             | 1 | 2 | 1 | 2 | 2 | 2 | 4 | 3 | 3  | 3  | 2  | 2  | 2  | 3  | 6  | 5  | 3  | 4  | 4  | 4  | 2  | 4  | 5  | 6             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| 12-Feb  | 5                             | 5 | 4 | 3 | 3 | 3 | 3 | 3 | 2 | 2  | 2  | 1  | 1  | 2  | 4  | 3  | 4  | 6  | 6  | 7  | 6  | 5  | 8  | 4  | 8             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| 13-Feb  | 6                             | 3 | 4 | 6 | 6 | 6 | 5 | 5 | 5 | UO | UO | UO | UO | UO | UO | 7  | 7  | 8  | 6  | 5  | 6  | 6  | 5  | 6  | 8             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| 14-Feb  | 7                             | 4 | 7 | 2 | 3 | 3 | 3 | 2 | 2 | 1  | 1  | 1  | 1  | 2  | 2  | 1  | 2  | 2  | 3  | 3  | 2  | 2  | 3  | 1  | 7             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| 15-Feb  | 1                             | 1 | 2 | 2 | 1 | 2 | 1 | 2 | 2 | 2  | 1  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 1  | 2  | 2  | 3  | 3             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| 16-Feb  | 2                             | 3 | 2 | 4 | 2 | 4 | 5 | 2 | 4 | 3  | 4  | 2  | 2  | 4  | 2  | 3  | 3  | 6  | 3  | 4  | 5  | 3  | 3  | 3  | 6             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| 17-Feb  | 3                             | 2 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 2  | 1  | 2  | 2  | 2  | 2  | 2  | 3  | 3  | 3  | 2  | 3  | 2  | 3  | 3  | 3             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| 18-Feb  | 2                             | 4 | 3 | 1 | 2 | 1 | 2 | 4 | 3 | 2  | 2  | 1  | 2  | 2  | 1  | 2  | 1  | 0  | 1  | 1  | 2  | 2  | 2  | 1  | 4             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| 19-Feb  | 2                             | 3 | 3 | 3 | 4 | 6 | 4 | 3 | 2 | 3  | 3  | 1  | 2  | 2  | 1  | 3  | 2  | 2  | 2  | 3  | 4  | 4  | 2  | 3  | 6             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| 20-Feb  | 3                             | 2 | 3 | 3 | 2 | 2 | 2 | 1 | 1 | 1  | 2  | 1  | 1  | 1  | 2  | 2  | 2  | 3  | 5  | 3  | 2  | 2  | 5  | 4  | 5             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| 21-Feb  | 5                             | 6 | 5 | 4 | 4 | 4 | 3 | 3 | 4 | 3  | 3  | 2  | 3  | 3  | 3  | 4  | 3  | 2  | 3  | 2  | 5  | 1  | 2  | 1  | 6             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| 22-Feb  | 3                             | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 2 | 2  | 2  | 1  | 2  | 2  | 1  | 2  | 1  | 1  | 1  | 1  | 2  | 1  | 1  | 1  | 3             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| 23-Feb  | 1                             | 3 | 5 | 2 | 2 | 4 | 1 | 1 | 2 | 2  | 1  | 1  | 1  | 1  | 2  | 2  | 2  | 2  | 1  | 3  | 1  | 1  | 2  | 5  | 5             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| 24-Feb  | 4                             | 1 | 3 | 2 | 1 | 2 | 1 | 1 | 2 | 2  | 3  | 3  | 6  | 5  | 5  | 5  | 5  | 4  | 6  | 4  | 4  | 3  | 2  | 3  | 6             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| 25-Feb  | 2                             | 2 | 2 | 1 | 2 | 2 | 2 | 3 | 3 | 2  | 2  | 3  | 3  | 4  | 2  | 3  | 2  | 6  | 2  | 3  | 2  | 5  | 1  | 4  | 6             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| 26-Feb  | 2                             | 5 | 3 | 2 | 4 | 4 | 4 | 2 | 3 | 2  | 3  | 3  | 3  | 2  | 3  | 3  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 1  | 5             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| 27-Feb  | 2                             | 2 | 2 | 2 | 2 | 3 | 3 | 4 | 4 | 4  | 4  | 3  | 4  | 4  | 4  | 2  | 3  | 3  | 3  | 4  | 5  | 4  | 4  | 5  | 5             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| 28-Feb  | 2                             | 2 | 2 | 3 | 2 | 2 | 2 | 1 | 2 | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 2  | 1  | 3  | 3             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
|   |                               |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    | 8  | 6  | 7  | 6  | 6  | 6  | 5  | 5  | 5             | 5 | 5 | 7 | 6 | 6 | 7 | 8 | 8 | 8 | 7 | 7 | 7 | 6 | 8 | 7 |  |
| Diurnal Maximum   |                               |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |  |    |    |    |    |    |    |    |               |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| UO - Unstable Operation   |                               |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |  |    |    |    |    |    |    |    |               |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Wind Speed 75 m (WS75m) - km/h**  
**Mannix - February 2023**





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Wind Speed 75 m (WS75m) - km/h**  
**Mannix - February 2023**

| <b>Wind Speed Ranges (km/h)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---------------------------------|------------------------|----------|---------------------|
| 0 - 5                           | 88                     | 13.21    | 13.21               |
| 6 - 11                          | 181                    | 27.18    | 40.39               |
| 12 - 19                         | 217                    | 32.58    | 72.97               |
| 20 - 28                         | 110                    | 16.52    | 89.49               |
| 29 - 38                         | 64                     | 9.61     | 99.10               |
| > 38                            | 6                      | 0.90     | 100.00              |

Total Number of Valid Hours: 666

Total Number of Hours: 672



**Wood Buffalo Environmental Association**  
**Frequency Distribution**

**Wind Speed 75 m (WS75m) - km/h**  
**Mannix - February 2023**

| Wind Speed<br>Ranges (km/h) | Wind Direction |     |    |     |   |     |    |     |    |     |    |     |    |     |    |     | Totals |
|-----------------------------|----------------|-----|----|-----|---|-----|----|-----|----|-----|----|-----|----|-----|----|-----|--------|
|                             | N              | NNE | NE | ENE | E | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |        |
| 0 - 5                       | 7              | 10  | 2  | 1   | 3 | 4   | 10 | 5   | 3  | 2   | 5  | 6   | 9  | 8   | 6  | 7   | 88     |
| 6 - 11                      | 27             | 24  | 5  | 2   | 2 | 9   | 17 | 12  | 7  | 2   | 4  | 9   | 13 | 4   | 19 | 25  | 181    |
| 12 - 19                     | 54             | 28  | 3  | 4   | 0 | 0   | 28 | 29  | 12 | 12  | 2  | 4   | 6  | 5   | 12 | 18  | 217    |
| 20 - 28                     | 15             | 9   | 0  | 0   | 0 | 0   | 26 | 20  | 12 | 1   | 2  | 4   | 13 | 1   | 1  | 6   | 110    |
| 29 - 38                     | 4              | 4   | 0  | 0   | 0 | 0   | 14 | 8   | 7  | 0   | 0  | 12  | 12 | 3   | 0  | 0   | 64     |
| > 38                        | 1              | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0  | 1   | 3  | 0   | 0  | 1   | 6      |
| <b>Totals</b>               | 108            | 75  | 10 | 7   | 5 | 13  | 95 | 74  | 41 | 17  | 13 | 36  | 56 | 21  | 38 | 57  | 666    |

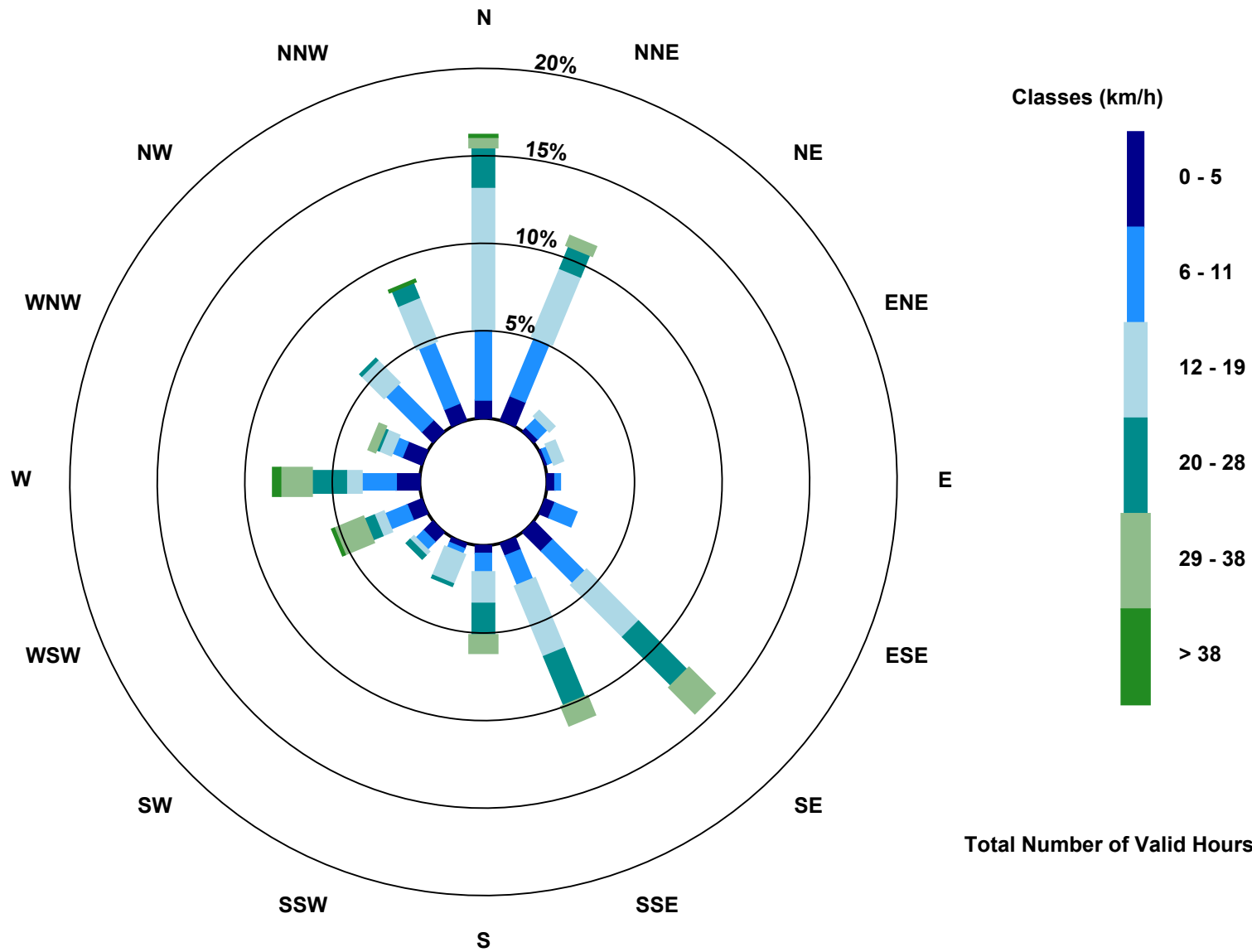
Total Number of Valid Hours: 666

Total Number of Hours: 672



Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Wind Speed 75 m (WS75m) - km/h  
Mannix



Total Number of Valid Hours: 666





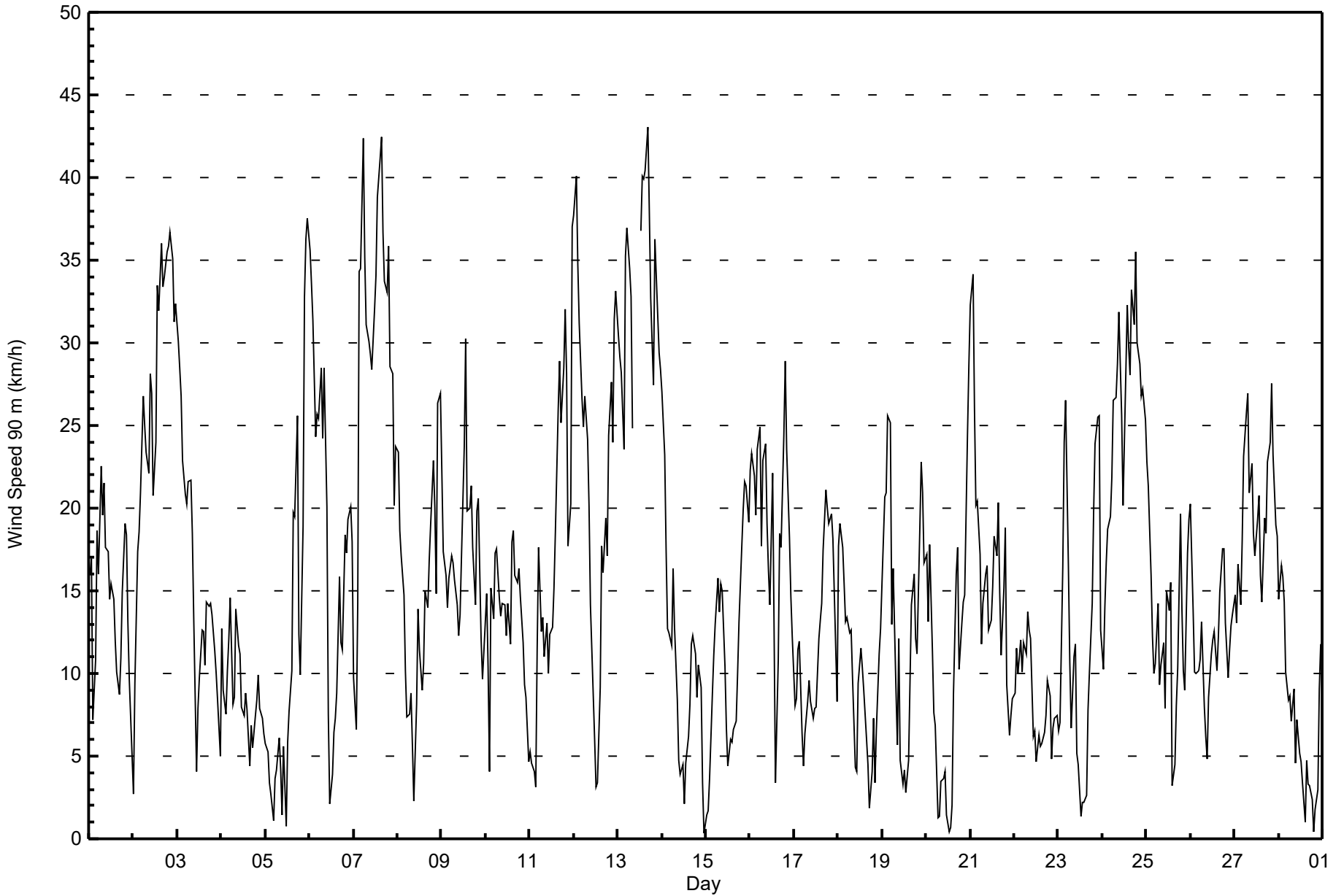
| Maximum Speed: 43 km/h on Feb 13 17:00  |                               | Maximum Daily Speed Average: 28.1 km/h on Feb 7  |       | Hours in Service: 672          |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |               |               |
|---|-------------------------------|--|-------|--------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-----------------|---------------|---------------|
| Minimum Speed Value: 0 km/h on Feb 15 00:00   |                               | Minimum Daily Speed Average: 1.3 km/h on Feb 23  |       | Hours of Data: 669             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |               |               |
| Maximum Diurnal Speed Average: 3.8 km/h at hour 8   |                               | Minimum Diurnal Speed Average: 0.4 km/h at hour 17   |       | Hours of Missing Data: 3       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |               |               |
| Monthly Average Velocity: 1.1 km/h 287.5 deg  |                               | Percentiles: P <sub>1</sub> = 1 P <sub>10</sub> = 5 Q <sub>1</sub> = 9 Median = 14 Q <sub>3</sub> = 21 P <sub>90</sub> = 29 P <sub>99</sub> = 40 |       | Percent Operational Time: 99.6 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |               |               |
| Day   | Hourly Period Ending At (MST) |  |       |                                |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 | Daily Average | Daily Maximum |
|   | 1                             | 2  | 3     | 4                              | 5     | 6     | 7     | 8     | 9     | 10    | 11    | 12    | 13    | 14    | 15    | 16    | 17    | 18    | 19    | 20    | 21    | 22    | 23    | 24              |               |               |
| 1-Feb   | N16                           | NNE17  | NE7   | N11                            | N19   | N16   | N23   | N20   | N22   | N18   | NNW17 | WNW14 | WNW15 | NW14  | NW12  | NW10  | NW9   | NW11  | NW15  | NW19  | NW18  | NW13  | NW10  | NW5             | NNW13.0       | N23           |
| 2-Feb   | SE3                           | S9   | S17   | SSE19                          | SSE21 | SSE27 | SE25  | SSE23 | SE22  | SE28  | SE27  | SE21  | SE24  | SE33  | SE32  | SE36  | SE33  | SE34  | SE35  | SE36  | SE37  | SE35  | SE31  | SE32            | SE26.2        | SE37          |
| 3-Feb   | SE30                          | SE28   | SE27  | SE23                           | SE21  | SSE20 | SSE22 | SSE22 | SSE18 | S13   | WSW4  | NW8   | NW10  | NNW13 | N13   | N10   | NNE14 | NNE14 | NNE14 | NNE14 | NNE11 | NNE10 | NE8   | NE5             | ESE6.2        | SE30          |
| 4-Feb   | N13                           | NE9  | NNE8  | N10                            | N12   | NNE15 | NNE8  | N9    | N14   | N12   | NNW11 | NNW8  | NNW7  | NNW9  | NNW8  | NNW4  | NW7   | NW6   | N7    | N8    | N10   | NNW8  | NNW7  | NW6             | N8.4          | NNE15         |
| 5-Feb   | NW6                           | NNW5   | NNW3  | NNE3                           | NW1   | NNE4  | NNW4  | NW6   | N4    | N1    | W6    | SE1   | SE6   | S8    | SSE10 | SSE20 | S19   | SSE26 | S12   | WSW10 | W19   | W33   | WNW36 | WNW38           | WSW5.4        | WNW38         |
| 6-Feb   | WNW36                         | W34  | W31   | W24                            | W26   | W25   | W28   | W24   | W28   | WNW20 | N8    | NE2   | ESE4  | ESE6  | ESE7  | ESE9  | SE16  | SSE12 | SE11  | SE18  | SE17  | SE19  | SE20  | SSE18           | WSW7.5        | WNW36         |
| 7-Feb   | S10                           | SW7  | WSW14 | WSW34                          | W35   | W42   | W35   | W31   | W30   | W29   | WSW28 | WSW32 | WSW34 | W39   | WSW41 | W42   | W37   | W34   | WSW33 | W36   | W29   | W28   | NW20  | N24             | W28.1         | W42           |
| 8-Feb   | N23                           | N19  | N17   | N15                            | N10   | N7    | N8    | NNE9  | NNE6  | SE2   | SSE8  | SSE14 | SSE11 | SE9   | SE11  | SE15  | SE14  | SSE17 | SE19  | SSE23 | S20   | S15   | SSE26 | SSE27           | SE5.7         | SSE27         |
| 9-Feb   | S22                           | S17  | SSW16 | SW14                           | SW16  | SW17  | SW17  | SW16  | SW14  | SSW12 | S14   | SSE17 | SSE24 | SSE30 | S20   | SSE20 | SSE21 | SSE18 | SE14  | SSE20 | S21   | SSW12 | SSW10 | S11             | S15.4         | SSE30         |
| 10-Feb  | SSE15                         | S10  | N4    | NNE15                          | N13   | N17   | N18   | N15   | N13   | N14   | N14   | N12   | N14   | NNW12 | NNW18 | NW19  | NNW16 | NW16  | NW16  | NNW15 | NW12  | NNW9  | NW9   | N5              | NNW10.6       | NW19          |
| 11-Feb  | WNW5                          | WSW5   | W4    | SW3                            | S11   | S18   | SSW13 | WSW13 | SW11  | SW13  | SSW10 | SSE12 | SSE13 | S15   | SSW19 | SW26  | WSW29 | WSW25 | W28   | W32   | WNW28 | W18   | WSW20 | WSW37           | WSW13.6       | WSW37         |
| 12-Feb  | WSW38                         | WSW40  | W35   | W31                            | W27   | W25   | W27   | W24   | W20   | W14   | W11   | WNW6  | NE3   | E3    | SE9   | SE18  | SE16  | SE19  | ESE17 | SE24  | SE28  | SE24  | SE31  | SE33            | SW9.6         | WSW40         |
| 13-Feb  | SSE30                         | S29  | SSW28 | SW24                           | WSW35 | WSW37 | WSW35 | WSW33 | NW25  | UO    | UO    | UO    | N37   | N40   | NNW40 | NNW40 | NNW43 | N38   | N33   | N27   | N36   | NNE34 | N29   | N28             | NNW16.4       | NNW43         |
| 14-Feb  | N27                           | N23  | N17   | NNW13                          | N12   | N12   | NNE16 | N13   | NNE8  | N5    | NNW4  | NNW4  | NNW2  | N5    | NNE6  | NNW8  | N12   | NNE12 | NNE11 | N9    | NNE10 | NNE9  | NE3   | SSW0            | N9.9          | N27           |
| 15-Feb  | SSW1                          | SSE2   | SE4   | SSE9                           | S11   | S13   | S16   | S14   | S15   | S15   | S10   | S7    | SSE4  | SSE6  | SE6   | SE7   | SE10  | SE13  | SSE18 | SE10  | SE22  | SE21  | SE19  | SE19            | SSE10.6       | SE22          |
| 16-Feb  | SE22                          | SE23   | SE22  | SE20                           | SE24  | SE25  | SE18  | SE23  | SE24  | SE19  | SE16  | SSE14 | SSE22 | SSE13 | WSW3  | W11   | W18   | NW18  | N24   | N29   | N24   | N18   | N15   | N12             | ESE7.1        | N29           |
| 17-Feb  | NNE8                          | NNE8   | NNE11 | NNE12                          | N6    | N4    | NE6   | NNE8  | NNE10 | NNE8  | NNE7  | N8    | NNW8  | NW12  | NNW13 | N14   | N17   | N21   | N20   | N19   | NNE20 | NNE18 | NNE15 | N8              | N11.5         | NNE21         |
| 18-Feb  | N18                           | NNE19  | NNE18 | NNE15                          | N13   | N13   | N12   | N13   | NNW10 | N4    | N4    | NNW9  | NNW12 | NW10  | NW9   | WNW6  | W5    | WNW2  | NNE4  | ENE7  | ESE3  | SSE7  | SE11  | SSE13           | N6.1          | NNE19         |
| 19-Feb  | SE15                          | SE21   | SE21  | SE26                           | SE25  | SE13  | SE16  | ESE9  | ESE6  | SE12  | SE5   | NNE3  | NNE4  | N3    | NW5   | NW10  | NW14  | NNW16 | N12   | N11   | N19   | N23   | N21   | N17             | ENE4.6        | SE26          |
| 20-Feb  | N17                           | N13  | N18   | N11                            | NNW8  | N7    | WNW1  | NNW1  | SE3   | SE4   | E4    | SE1   | WNW0  | E1    | N2    | NNW9  | NNE16 | NNE18 | NNE10 | NNE13 | NNE14 | NNE15 | N24   | N29             | N8.9          | N29           |
| 21-Feb  | N32                           | NNE34  | N26   | N20                            | N20   | NNE17 | N12   | N14   | NNW16 | N17   | NNW13 | WNW13 | NW15  | NNW18 | NW17  | NNW20 | NNW15 | N11   | N15   | N19   | N9    | NNW6  | NNW7  | WSW8            | N14.9         | NNE34         |
| 22-Feb  | W9                            | WNW12  | WNW10 | WNW12                          | WNW10 | W12   | W11   | W14   | W13   | W12   | W6    | W7    | WNW5  | W6    | W6    | WNW6  | WSW6  | W7    | W10   | NW9   | N5    | NNE7  | NE7   | NNE7            | WNW7.1        | W14           |
| 23-Feb  | NNE7                          | N7   | N16   | NNE24                          | NNE27 | N17   | N11   | N7    | NNW11 | NNW12 | WNW5  | W4    | WNW1  | NW2   | SSW2  | SE3   | SE8   | SE10  | SSE14 | SSE20 | SSE24 | SSE25 | SSE26 | SSW13           | E1.3          | NNE27         |
| 24-Feb  | S10                           | SSW14  | S17   | S19                            | S19   | S22   | S27   | S29   | S32   | SSE26 | SSE20 | S24   | S32   | S30   | SSE28 | SSE33 | S31   | S36   | S30   | S29   | S27   | S27   | S25   | S25             | S25.2         | S36           |
| 25-Feb  | S23                           | SSW21  | SSW16 | SSW12                          | SSW10 | SW11  | SW14  | WSW9  | W11   | WSW12 | SW8   | W15   | WSW14 | WSW16 | S3    | S5    | ESE8  | SSE10 | SSW20 | SSW14 | SSE10 | SSE9  | SSE17 | SE19            | SSW9.9        | S23           |
| 26-Feb  | SE20                          | SE14   | ESE10 | ESE10                          | ESE10 | SE11  | ESE13 | ESE8  | ESE6  | ESE5  | SE9   | ESE11 | E12   | ENE13 | ENE10 | E12   | ENE15 | ENE18 | NE18  | NE13  | NE10  | NE11  | NE13  | NE14            | E9.8          | SE20          |
| 27-Feb  | NNE15                         | NNE13  | NNE17 | N14                            | N18   | NNW23 | NNW26 | NNW27 | N21   | NNW23 | NNW18 | NNW17 | NNW19 | NNW21 | N16   | NNE14 | NNE19 | N18   | N23   | NNE24 | NNE28 | N23   | NNW19 | N18             | N18.9         | NNE28         |
| 28-Feb  | N15                           | N17  | N16   | N14                            | N10   | N8    | N9    | N7    | N9    | N5    | NNW7  | NW5   | NW5   | WNW3  | W1    | WSW5  | WSW3  | W3    | W2    | WSW0  | S2    | SE3   | S9    | SSE12           | NNW4.0        | N17           |
| NNE0.6WNW0.5 NW1.3WNW1.7 W2.3 W3.3 W3.5 W3.8WNW3.3WSW2.2WSW1.6WSW2.0 W1.4 W2.1WNW1.6 W1.6 N0.4 NE1.0NNE1.4NNE1.7 NE1.7 NE1.5 ESE1.0 SE0.9 |                               |  |       |                                |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Diurnal Average |               |               |
| WSW38WSW40 W35WSW34WSW35 W42 W35WSW33 W30 S32WSW28WSW32 N37 N40WSW41 W42NNW43 N38 S36 W36 SE37 SE35WNW36WNW38                             |                               |  |       |                                |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Diurnal Maximum |               |               |
| UO - Unstable Operation   |                               |  |       |                                |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |               |               |
| All monthly, daily, and diurnal averages have been calculated using vector methods  |                               |  |       |                                |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |               |               |



**Wood Buffalo Environmental Association**  
**Summary of Hour Standard Deviations**

**Wind Speed 90 m (WS90m) - km/h**  
**Mannix - February 2023**

| Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0<br>Maximum Value: 8 km/h on Feb 13 18:00<br>Minimum Value: 1 km/h on Feb 18 20:00<br>Percentiles: P <sub>1</sub> = 1 P <sub>10</sub> = 1 Q <sub>1</sub> = 2 Median = 2 Q <sub>3</sub> = 3 P <sub>90</sub> = 5 P <sub>99</sub> = 7 |                               |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    | Hours in Service: 672<br>Hours of Data: 669<br>Hours of Missing Data: 3<br>Hours of Calibration: 0<br>Percent Operational Time: 99.6 |    |    |    |    |    |    |    |               |
|---|-------------------------------|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|--|----|----|----|----|----|----|----|---------------|
| Day   | Hourly Period Ending At (MST) |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |  |    |    |    |    |    |    |    | Daily Maximum |
|   | 1                             | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17   | 18 | 19 | 20 | 21 | 22 | 23 | 24 |               |
| 1-Feb   | 3                             | 3 | 3 | 3 | 3 | 4 | 3 | 5 | 4 | 5  | 4  | 2  | 3  | 3  | 3  | 2  | 2  | 2  | 2  | 2  | 1  | 4  | 1  | 2  | 5             |
| 2-Feb   | 2                             | 2 | 1 | 2 | 1 | 3 | 3 | 2 | 2 | 2  | 1  | 2  | 3  | 4  | 5  | 6  | 6  | 6  | 6  | 5  | 5  | 5  | 5  | 5  | 6             |
| 3-Feb   | 4                             | 4 | 5 | 3 | 2 | 3 | 2 | 3 | 2 | 4  | 3  | 2  | 2  | 3  | 2  | 3  | 3  | 2  | 2  | 3  | 3  | 1  | 2  | 5  |               |
| 4-Feb   | 1                             | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 2 | 3  | 2  | 1  | 2  | 2  | 1  | 1  | 2  | 1  | 2  | 1  | 2  | 2  | 1  | 1  | 3             |
| 5-Feb   | 1                             | 1 | 1 | 2 | 1 | 2 | 1 | 3 | 3 | 2  | 5  | 1  | 3  | 3  | 5  | 6  | 2  | 2  | 2  | 2  | 5  | 2  | 5  | 5  | 6             |
| 6-Feb   | 8                             | 6 | 6 | 5 | 3 | 2 | 3 | 1 | 2 | 6  | 4  | 2  | 2  | 2  | 3  | 2  | 4  | 2  | 4  | 2  | 3  | 3  | 3  | 2  | 8             |
| 7-Feb   | 4                             | 3 | 6 | 5 | 4 | 6 | 5 | 4 | 4 | 5  | 5  | 7  | 6  | 6  | 6  | 7  | 5  | 4  | 4  | 4  | 3  | 2  | 4  | 3  | 7             |
| 8-Feb   | 3                             | 3 | 2 | 2 | 1 | 2 | 1 | 1 | 1 | 2  | 2  | 3  | 2  | 2  | 3  | 2  | 3  | 1  | 1  | 3  | 4  | 3  | 2  | 2  | 4             |
| 9-Feb   | 3                             | 2 | 3 | 3 | 2 | 3 | 2 | 2 | 3 | 2  | 2  | 2  | 2  | 2  | 3  | 2  | 1  | 2  | 2  | 2  | 3  | 3  | 2  | 2  | 3             |
| 10-Feb  | 2                             | 5 | 5 | 1 | 2 | 2 | 2 | 2 | 2 | 2  | 2  | 2  | 2  | 3  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 1  | 5             |
| 11-Feb  | 1                             | 1 | 2 | 1 | 3 | 2 | 2 | 3 | 3 | 3  | 3  | 2  | 2  | 3  | 3  | 6  | 5  | 3  | 4  | 4  | 5  | 2  | 4  | 5  | 6             |
| 12-Feb  | 5                             | 5 | 4 | 3 | 3 | 3 | 3 | 3 | 2 | 2  | 2  | 1  | 1  | 2  | 4  | 2  | 3  | 5  | 4  | 6  | 4  | 4  | 6  | 4  | 6             |
| 13-Feb  | 6                             | 3 | 4 | 6 | 6 | 6 | 5 | 5 | 5 | UO | UO | UO | 6  | 6  | 7  | 6  | 6  | 8  | 6  | 6  | 6  | 5  | 5  | 5  | 8             |
| 14-Feb  | 7                             | 4 | 7 | 2 | 3 | 3 | 3 | 2 | 3 | 1  | 1  | 2  | 1  | 2  | 2  | 2  | 2  | 3  | 3  | 3  | 2  | 2  | 4  | 1  | 7             |
| 15-Feb  | 1                             | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 2 | 2  | 1  | 2  | 2  | 2  | 2  | 2  | 2  | 1  | 1  | 2  | 1  | 2  | 3  | 3  | 3             |
| 16-Feb  | 2                             | 4 | 1 | 4 | 3 | 5 | 6 | 2 | 4 | 3  | 4  | 2  | 3  | 6  | 2  | 4  | 2  | 5  | 3  | 3  | 5  | 3  | 3  | 3  | 6             |
| 17-Feb  | 4                             | 2 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 2  | 1  | 2  | 2  | 2  | 2  | 2  | 3  | 2  | 3  | 2  | 2  | 2  | 3  | 2  | 4             |
| 18-Feb  | 2                             | 3 | 2 | 1 | 1 | 1 | 2 | 4 | 3 | 2  | 2  | 1  | 2  | 2  | 1  | 2  | 1  | 1  | 1  | 1  | 2  | 1  | 1  | 1  | 4             |
| 19-Feb  | 1                             | 2 | 3 | 3 | 3 | 4 | 4 | 2 | 1 | 3  | 3  | 1  | 2  | 2  | 1  | 3  | 2  | 2  | 2  | 3  | 4  | 3  | 2  | 3  | 4             |
| 20-Feb  | 3                             | 2 | 3 | 4 | 1 | 2 | 1 | 1 | 1 | 1  | 2  | 1  | 1  | 1  | 2  | 2  | 2  | 2  | 5  | 2  | 1  | 2  | 5  | 4  | 5             |
| 21-Feb  | 5                             | 6 | 5 | 4 | 4 | 4 | 3 | 3 | 4 | 3  | 3  | 2  | 3  | 3  | 3  | 4  | 3  | 2  | 3  | 2  | 5  | 2  | 1  | 1  | 6             |
| 22-Feb  | 2                             | 2 | 2 | 2 | 3 | 1 | 2 | 2 | 2 | 1  | 2  | 1  | 2  | 2  | 1  | 2  | 1  | 1  | 1  | 1  | 2  | 1  | 1  | 1  | 3             |
| 23-Feb  | 2                             | 4 | 5 | 2 | 2 | 4 | 2 | 2 | 1 | 1  | 1  | 1  | 1  | 1  | 2  | 2  | 2  | 2  | 1  | 3  | 1  | 1  | 2  | 4  | 5             |
| 24-Feb  | 3                             | 1 | 2 | 1 | 2 | 3 | 1 | 2 | 2 | 2  | 3  | 3  | 6  | 4  | 5  | 4  | 4  | 6  | 4  | 4  | 4  | 3  | 2  | 3  | 6             |
| 25-Feb  | 2                             | 2 | 2 | 1 | 2 | 3 | 2 | 4 | 3 | 2  | 2  | 3  | 3  | 4  | 2  | 3  | 2  | 6  | 2  | 3  | 2  | 5  | 1  | 3  | 6             |
| 26-Feb  | 2                             | 4 | 3 | 2 | 3 | 4 | 4 | 2 | 2 | 2  | 3  | 4  | 3  | 2  | 2  | 4  | 2  | 2  | 2  | 2  | 1  | 2  | 2  | 1  | 4             |
| 27-Feb  | 2                             | 2 | 2 | 2 | 2 | 3 | 3 | 4 | 4 | 3  | 4  | 3  | 3  | 4  | 4  | 3  | 3  | 3  | 3  | 4  | 4  | 4  | 4  | 5  | 5             |
| 28-Feb  | 2                             | 2 | 2 | 3 | 2 | 1 | 1 | 1 | 2 | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 2  | 1  | 3  | 3             |
|   |                               |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    | Diurnal Maximum  |    |    |    |    |    |    |    |               |
| UO - Unstable Operation   |                               |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |  |    |    |    |    |    |    |    |               |





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Wind Speed 90 m (WS90m) - km/h**  
**Mannix - February 2023**

| <b>Wind Speed Ranges (km/h)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---------------------------------|------------------------|----------|---------------------|
| 0 - 5                           | 81                     | 12.11    | 12.11               |
| 6 - 11                          | 167                    | 24.96    | 37.07               |
| 12 - 19                         | 224                    | 33.48    | 70.55               |
| 20 - 28                         | 123                    | 18.39    | 88.94               |
| 29 - 38                         | 65                     | 9.72     | 98.65               |
| > 38                            | 9                      | 1.35     | 100.00              |

Total Number of Valid Hours: 669

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Wind Speed 90 m (WS90m) - km/h  
Mannix - February 2023**

| <b>Wind Speed<br/>Ranges (km/h)</b> | <b>Wind Direction</b> |            |           |            |          |            |           |            |           |            |           |            |           |            |           |            | <b>Totals</b> |
|-------------------------------------|-----------------------|------------|-----------|------------|----------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|---------------|
|                                     | <b>N</b>              | <b>NNE</b> | <b>NE</b> | <b>ENE</b> | <b>E</b> | <b>ESE</b> | <b>SE</b> | <b>SSE</b> | <b>S</b>  | <b>SSW</b> | <b>SW</b> | <b>WSW</b> | <b>W</b>  | <b>WNW</b> | <b>NW</b> | <b>NNW</b> |               |
| 0 - 5                               | 11                    | 6          | 4         | 0          | 3        | 3          | 10        | 2          | 3         | 3          | 1         | 6          | 6         | 9          | 5         | 9          | 81            |
| 6 - 11                              | 27                    | 23         | 6         | 2          | 0        | 13         | 13        | 9          | 11        | 3          | 4         | 4          | 10        | 8          | 16        | 18         | 167           |
| 12 - 19                             | 58                    | 27         | 4         | 3          | 2        | 2          | 22        | 18         | 17        | 10         | 8         | 5          | 9         | 5          | 15        | 19         | 224           |
| 20 - 28                             | 21                    | 6          | 0         | 0          | 0        | 0          | 30        | 24         | 11        | 3          | 2         | 3          | 13        | 2          | 2         | 6          | 123           |
| 29 - 38                             | 8                     | 2          | 0         | 0          | 0        | 0          | 14        | 3          | 9         | 0          | 0         | 11         | 15        | 3          | 0         | 0          | 65            |
| > 38                                | 1                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0         | 0          | 0         | 2          | 3         | 0          | 0         | 3          | 9             |
| <b>Totals</b>                       | <b>126</b>            | <b>64</b>  | <b>14</b> | <b>5</b>   | <b>5</b> | <b>18</b>  | <b>89</b> | <b>56</b>  | <b>51</b> | <b>19</b>  | <b>15</b> | <b>31</b>  | <b>56</b> | <b>27</b>  | <b>38</b> | <b>55</b>  | <b>669</b>    |

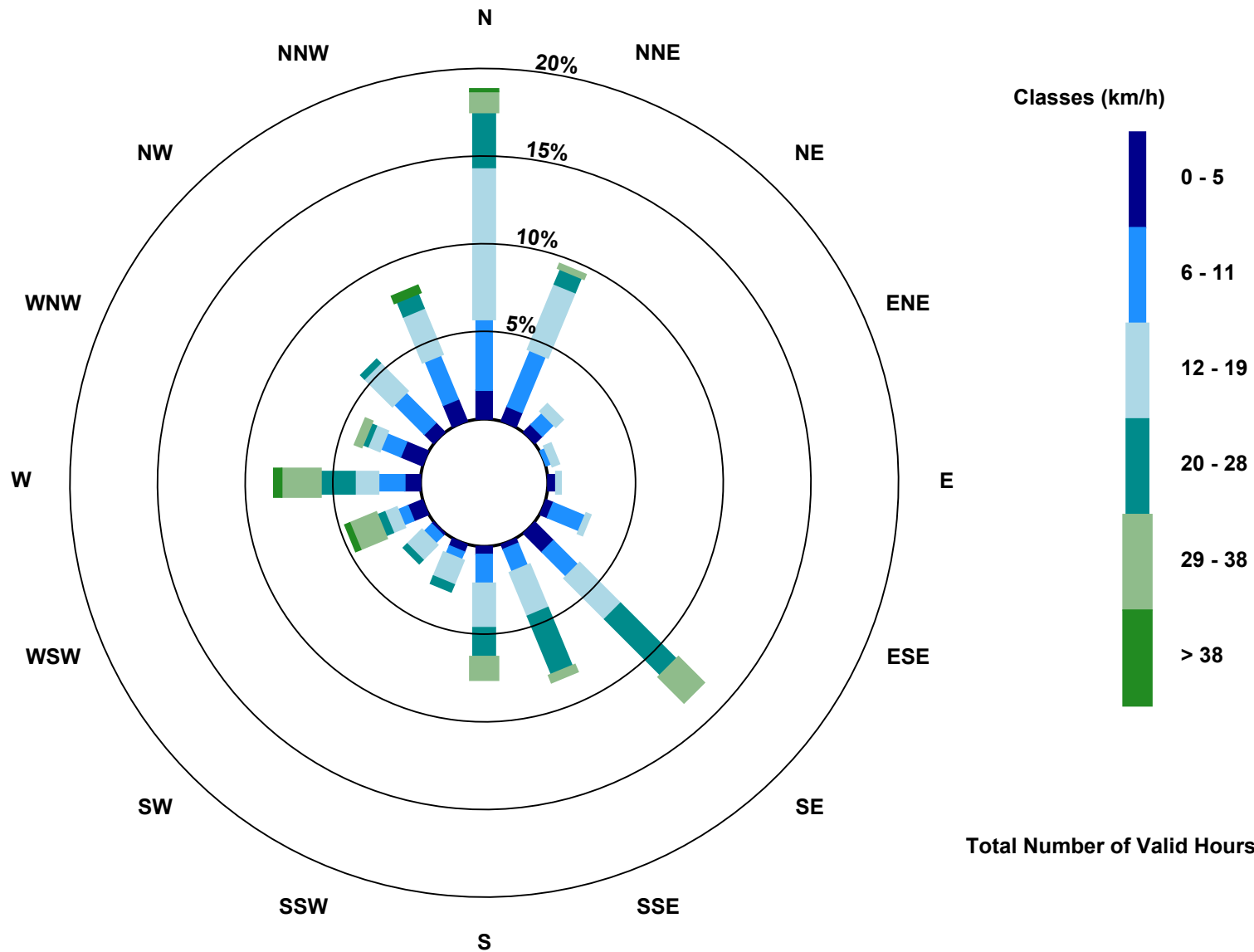
Total Number of Valid Hours: 669

Total Number of Hours: 672



Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Wind Speed 90 m (WS90m) - km/h  
Mannix





|  |                                 |
|--|---------------------------------|
| Direction of Maximum Speed: 271 deg on Feb 7 16:00           | Hours in Service: 672           |
| Direction of Maximum Daily Speed Average: 266.9 deg on Feb 7 | Hours of Data: 672              |
| Direction of Minimum Speed: 40 deg on Feb 20 14:00           | Hours of Missing Data: 0        |
| Direction of Minimum Daily Speed Average: 0.5 deg on Feb 19  | Percent Operational Time: 100.0 |
| Monthly Average Direction: 285.5 deg                         |                                 |

| Day             | Hourly Period Ending At (MST) |       |       |       |       |       |       |       |       |       |       |       |       |       |       |     |      |     |       |      |      |       |       |     | Daily Average |
|-----------------|-------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-----|------|-----|-------|------|------|-------|-------|-----|---------------|
|                 | 1                             | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     | 10    | 11    | 12    | 13    | 14    | 15    | 16  | 17   | 18  | 19    | 20   | 21   | 22    | 23    | 24  |               |
| 1-Feb           | 331                           | 5     | 326   | 350   | 3     | 354   | 352   | 355   | 11    | 6     | 346   | 303   | 304   | 318   | 318   | 330 | 342  | 295 | 298   | 295  | 302  | 291   | 255   | 131 | 332.9         |
| 2-Feb           | 157                           | 157   | 152   | 144   | 156   | 156   | 148   | 157   | 156   | 154   | 153   | 162   | 158   | 146   | 137   | 137 | 137  | 139 | 139   | 139  | 136  | 136   | 137   | 137 | 143.5         |
| 3-Feb           | 139                           | 140   | 141   | 142   | 146   | 149   | 146   | 153   | 155   | 169   | 177   | 358   | 306   | 323   | 352   | 345 | 30   | 13  | 24    | 32   | 9    | 23    | 16    | 6   | 106.1         |
| 4-Feb           | 359                           | 7     | 346   | 352   | 359   | 1     | 341   | 325   | 342   | 3     | 338   | 328   | 339   | 335   | 331   | 316 | 307  | 304 | 341   | 330  | 347  | 311   | 324   | 307 | 338.1         |
| 5-Feb           | 313                           | 323   | 307   | 297   | 254   | 334   | 302   | 304   | 341   | 271   | 277   | 266   | 146   | 193   | 140   | 165 | 151  | 161 | 166   | 229  | 226  | 273   | 283   | 297 | 266.8         |
| 6-Feb           | 289                           | 269   | 273   | 261   | 267   | 280   | 280   | 264   | 263   | 300   | 24    | 78    | 101   | 107   | 110   | 96  | 143  | 179 | 124   | 152  | 146  | 153   | 162   | 158 | 244.3         |
| 7-Feb           | 157                           | 147   | 130   | 254   | 266   | 278   | 283   | 269   | 264   | 263   | 262   | 259   | 263   | 265   | 262   | 271 | 267  | 260 | 253   | 265  | 270  | 279   | 304   | 2   | 266.9         |
| 8-Feb           | 344                           | 347   | 341   | 328   | 331   | 295   | 10    | 43    | 282   | 222   | 158   | 148   | 157   | 138   | 139   | 153 | 141  | 163 | 172   | 152  | 146  | 147   | 145   | 145 | 146.6         |
| 9-Feb           | 148                           | 148   | 153   | 148   | 149   | 157   | 156   | 155   | 158   | 158   | 160   | 155   | 154   | 154   | 153   | 153 | 141  | 146 | 122   | 158  | 185  | 175   | 156   | 161 | 154.4         |
| 10-Feb          | 164                           | 69    | 8     | 352   | 322   | 340   | 354   | 348   | 354   | 345   | 339   | 339   | 335   | 323   | 320   | 317 | 320  | 315 | 313   | 328  | 326  | 342   | 322   | 354 | 332.3         |
| 11-Feb          | 303                           | 279   | 242   | 180   | 167   | 159   | 165   | 165   | 170   | 174   | 177   | 148   | 146   | 149   | 183   | 228 | 243  | 248 | 270   | 279  | 289  | 266   | 249   | 253 | 228.5         |
| 12-Feb          | 258                           | 257   | 273   | 266   | 259   | 257   | 260   | 263   | 263   | 262   | 287   | 291   | 40    | 89    | 98    | 125 | 132  | 135 | 132   | 134  | 134  | 140   | 136   | 144 | 215.5         |
| 13-Feb          | 154                           | 160   | 183   | 203   | 247   | 252   | 255   | 261   | 315   | 8     | 346   | 348   | 346   | 356   | 343   | 339 | 347  | 1   | 7     | 10   | 16   | 18    | 12    | 12  | 340.1         |
| 14-Feb          | 13                            | 349   | 3     | 336   | 351   | 2     | 17    | 13    | 22    | 354   | 345   | 343   | 283   | 23    | 24    | 336 | 13   | 27  | 24    | 9    | 15   | 17    | 58    | 223 | 5.7           |
| 15-Feb          | 261                           | 147   | 108   | 148   | 174   | 181   | 194   | 164   | 158   | 168   | 159   | 139   | 139   | 144   | 133   | 134 | 135  | 140 | 146   | 158  | 144  | 143   | 153   | 149 | 150.9         |
| 16-Feb          | 157                           | 160   | 155   | 154   | 157   | 155   | 153   | 155   | 160   | 180   | 187   | 162   | 153   | 157   | 263   | 69  | 287  | 353 | 6     | 11   | 3    | 1     | 350   | 2   | 128.2         |
| 17-Feb          | 26                            | 22    | 19    | 16    | 359   | 20    | 55    | 31    | 11    | 20    | 7     | 5     | 343   | 314   | 341   | 7   | 3    | 12  | 8     | 6    | 11   | 13    | 4     | 323 | 6.4           |
| 18-Feb          | 357                           | 357   | 5     | 1     | 354   | 347   | 7     | 11    | 13    | 288   | 304   | 317   | 316   | 306   | 300   | 282 | 263  | 294 | 1     | 34   | 47   | 157   | 157   | 151 | 339.6         |
| 19-Feb          | 158                           | 157   | 154   | 162   | 162   | 150   | 157   | 141   | 76    | 163   | 77    | 313   | 2     | 334   | 317   | 312 | 313  | 319 | 328   | 317  | 347  | 355   | 348   | 349 | 322.7         |
| 20-Feb          | 9                             | 357   | 357   | 322   | 309   | 311   | 262   | 261   | 171   | 154   | 148   | 129   | 174   | 40    | 30    | 320 | 16   | 24  | 46    | 14   | 12   | 342   | 3     | 2   | 358.0         |
| 21-Feb          | 15                            | 17    | 16    | 10    | 13    | 21    | 350   | 352   | 332   | 338   | 318   | 295   | 301   | 319   | 320   | 337 | 340  | 345 | 359   | 17   | 354  | 288   | 252   | 257 | 344.5         |
| 22-Feb          | 240                           | 213   | 191   | 192   | 171   | 175   | 172   | 171   | 182   | 199   | 133   | 100   | 273   | 273   | 274   | 284 | 259  | 282 | 285   | 305  | 303  | 36    | 76    | 264 | 230.2         |
| 23-Feb          | 125                           | 40    | 20    | 341   | 2     | 341   | 318   | 96    | 36    | 55    | 230   | 266   | 272   | 278   | 214   | 141 | 149  | 148 | 157   | 170  | 171  | 153   | 157   | 159 | 156.3         |
| 24-Feb          | 151                           | 150   | 148   | 150   | 155   | 155   | 158   | 156   | 156   | 153   | 160   | 149   | 167   | 189   | 174   | 161 | 161  | 171 | 187   | 181  | 180  | 179   | 179   | 183 | 165.7         |
| 25-Feb          | 177                           | 171   | 161   | 150   | 155   | 162   | 164   | 152   | 151   | 163   | 194   | 273   | 255   | 245   | 184   | 145 | 107  | 129 | 188   | 167  | 146  | 145   | 152   | 136 | 170.4         |
| 26-Feb          | 136                           | 132   | 127   | 115   | 153   | 135   | 126   | 111   | 149   | 166   | 138   | 116   | 90    | 74    | 78    | 103 | 80   | 59  | 55    | 42   | 23   | 28    | 42    | 32  | 91.1          |
| 27-Feb          | 29                            | 26    | 13    | 2     | 347   | 342   | 338   | 345   | 349   | 345   | 339   | 340   | 328   | 326   | 348   | 17  | 18   | 11  | 12    | 15   | 23   | 11    | 345   | 354 | 356.8         |
| 28-Feb          | 337                           | 346   | 347   | 354   | 323   | 315   | 324   | 304   | 317   | 10    | 316   | 301   | 302   | 288   | 267   | 265 | 268  | 305 | 303   | 55   | 181  | 224   | 190   | 145 | 309.4         |
| 122.4           | 138.4                         | 109.3 | 233.6 | 236.8 | 242.9 | 239.7 | 241.3 | 266.1 | 267.6 | 291.3 | 290.7 | 286.9 | 287.7 | 303.5 | 287.8 | 9.5 | 15.3 | 5.8 | 357.5 | 30.4 | 39.7 | 148.6 | 139.3 |     |               |
| Diurnal Average |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |     |      |     |       |      |      |       |       |     |               |

All monthly, daily, and diurnal averages have been calculated using vector methods

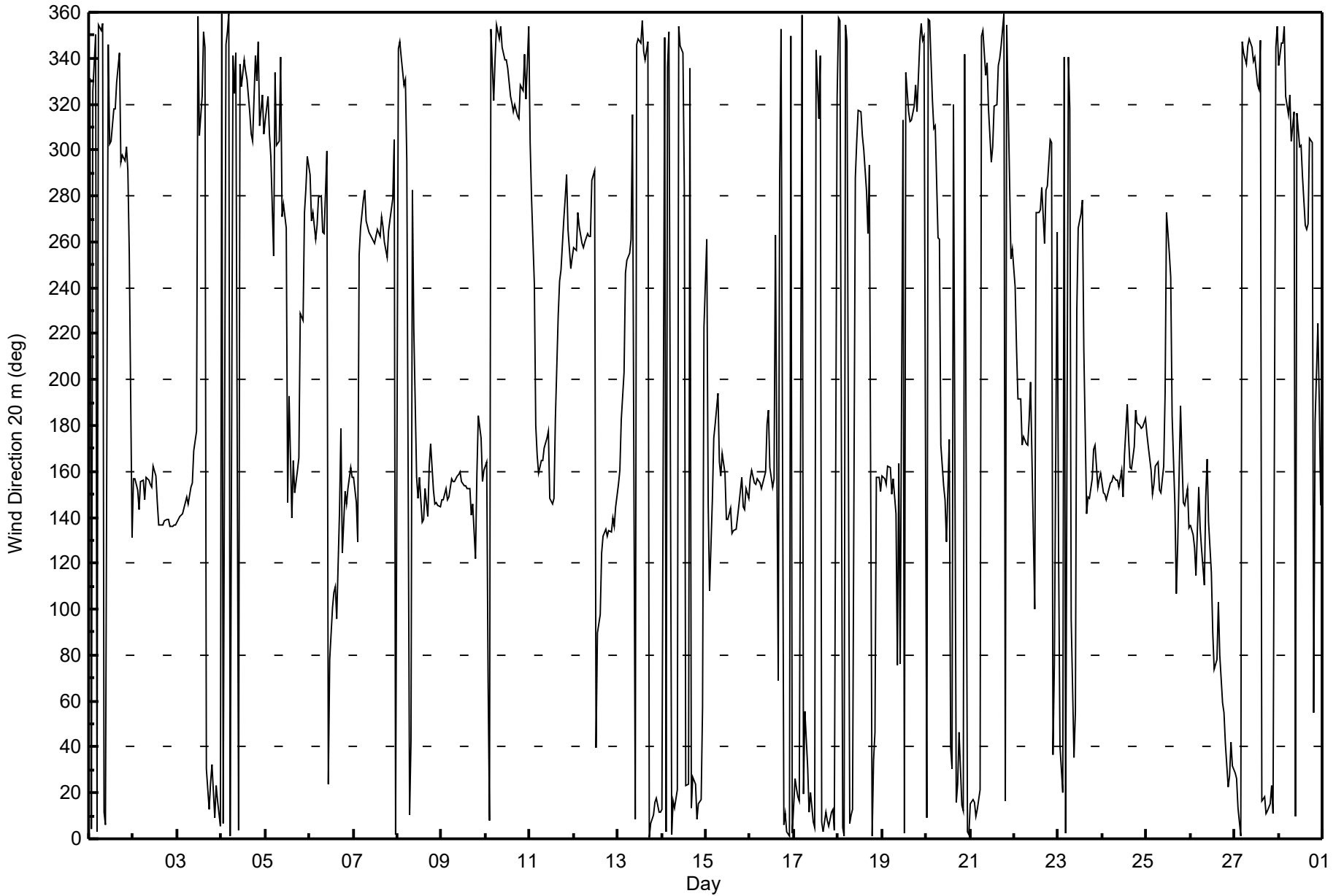


**Wood Buffalo Environmental Association**  
**Summary of Hour Standard Deviations**

**Wind Direction 20 m (WD20m) - deg**  
**Mannix - February 2023**

| Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0<br>Maximum Value: 106 deg on Feb 5 12:00<br>Minimum Value: 5 deg on Feb 15 20:00<br>Percentiles: P <sub>1</sub> = 6 P <sub>10</sub> = 8 Q <sub>1</sub> = 10 Median = 14 Q <sub>3</sub> = 20 P <sub>90</sub> = 35 P <sub>99</sub> = 84 |                               |    |    |    |    |    |    |    |    |    |    |     |    |    |    |    | Hours in Service: 672<br>Hours of Data: 672<br>Hours of Missing Data: 0<br>Hours of Calibration: 0<br>Percent Operational Time: 100.0 |    |    |    |    |    |    |    |               |
|---|-------------------------------|----|----|----|----|----|----|----|----|----|----|-----|----|----|----|----|---|----|----|----|----|----|----|----|---------------|
| Day   | Hourly Period Ending At (MST) |    |    |    |    |    |    |    |    |    |    |     |    |    |    |    |   |    |    |    |    |    |    |    | Daily Maximum |
|   | 1                             | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12  | 13 | 14 | 15 | 16 | 17  | 18 | 19 | 20 | 21 | 22 | 23 | 24 |               |
| 1-Feb   | 32                            | 10 | 39 | 25 | 16 | 14 | 13 | 13 | 10 | 15 | 15 | 12  | 16 | 14 | 13 | 20 | 24  | 13 | 12 | 14 | 10 | 71 | 32 | 40 | 71            |
| 2-Feb   | 29                            | 6  | 10 | 9  | 7  | 7  | 7  | 13 | 17 | 15 | 12 | 10  | 8  | 9  | 8  | 8  | 8   | 9  | 9  | 8  | 8  | 8  | 8  | 8  | 29            |
| 3-Feb   | 9                             | 9  | 9  | 9  | 10 | 10 | 8  | 9  | 9  | 11 | 40 | 67  | 30 | 20 | 13 | 17 | 15  | 9  | 13 | 19 | 13 | 14 | 12 | 47 | 67            |
| 4-Feb   | 14                            | 8  | 15 | 14 | 10 | 10 | 25 | 15 | 12 | 17 | 16 | 17  | 21 | 14 | 15 | 22 | 11  | 21 | 19 | 13 | 24 | 12 | 20 | 13 | 25            |
| 5-Feb   | 15                            | 24 | 34 | 34 | 35 | 45 | 40 | 33 | 59 | 28 | 83 | 106 | 31 | 37 | 41 | 58 | 19  | 11 | 10 | 30 | 55 | 11 | 13 | 11 | 106           |
| 6-Feb   | 11                            | 7  | 10 | 9  | 9  | 15 | 7  | 7  | 6  | 30 | 26 | 37  | 18 | 25 | 25 | 25 | 10  | 45 | 20 | 8  | 12 | 9  | 11 | 15 | 45            |
| 7-Feb   | 21                            | 21 | 26 | 28 | 9  | 14 | 9  | 9  | 8  | 8  | 11 | 11  | 11 | 11 | 10 | 8  | 9   | 9  | 10 | 7  | 8  | 8  | 32 | 17 | 32            |
| 8-Feb   | 11                            | 12 | 12 | 9  | 9  | 35 | 39 | 12 | 74 | 13 | 20 | 14  | 9  | 18 | 15 | 10 | 17  | 10 | 12 | 10 | 7  | 6  | 6  | 7  | 74            |
| 9-Feb   | 8                             | 7  | 6  | 7  | 5  | 6  | 11 | 10 | 5  | 7  | 7  | 7   | 8  | 8  | 7  | 7  | 8   | 15 | 43 | 24 | 13 | 14 | 16 | 5  | 43            |
| 10-Feb  | 11                            | 68 | 22 | 10 | 12 | 14 | 14 | 16 | 14 | 17 | 16 | 14  | 12 | 17 | 10 | 10 | 12  | 10 | 9  | 14 | 14 | 22 | 19 | 28 | 68            |
| 11-Feb  | 14                            | 31 | 89 | 23 | 9  | 8  | 9  | 15 | 20 | 12 | 27 | 8   | 10 | 14 | 15 | 15 | 9   | 10 | 10 | 8  | 10 | 16 | 18 | 10 | 89            |
| 12-Feb  | 10                            | 10 | 8  | 9  | 9  | 9  | 9  | 7  | 7  | 10 | 12 | 17  | 34 | 20 | 14 | 13 | 7   | 9  | 11 | 10 | 8  | 14 | 8  | 11 | 34            |
| 13-Feb  | 10                            | 10 | 15 | 32 | 12 | 10 | 10 | 9  | 40 | 14 | 12 | 12  | 14 | 14 | 11 | 13 | 16  | 13 | 12 | 11 | 12 | 12 | 13 | 40 | 40            |
| 14-Feb  | 18                            | 16 | 27 | 14 | 18 | 18 | 11 | 10 | 18 | 18 | 26 | 31  | 40 | 32 | 25 | 25 | 12  | 14 | 18 | 22 | 15 | 17 | 83 | 56 | 83            |
| 15-Feb  | 49                            | 41 | 22 | 16 | 9  | 16 | 19 | 26 | 23 | 17 | 14 | 27  | 24 | 21 | 12 | 9  | 11  | 10 | 6  | 5  | 9  | 9  | 9  | 6  | 49            |
| 16-Feb  | 16                            | 19 | 9  | 9  | 7  | 10 | 9  | 10 | 17 | 17 | 21 | 17  | 9  | 11 | 77 | 88 | 101   | 18 | 12 | 12 | 14 | 15 | 16 | 23 | 101           |
| 17-Feb  | 17                            | 15 | 15 | 14 | 16 | 39 | 25 | 18 | 19 | 20 | 15 | 21  | 33 | 11 | 20 | 15 | 13  | 10 | 12 | 10 | 9  | 9  | 23 | 19 | 39            |
| 18-Feb  | 9                             | 11 | 10 | 9  | 13 | 15 | 18 | 12 | 17 | 60 | 21 | 12  | 13 | 16 | 14 | 27 | 15  | 12 | 26 | 9  | 25 | 15 | 30 | 13 | 60            |
| 19-Feb  | 9                             | 10 | 8  | 7  | 7  | 9  | 8  | 34 | 80 | 28 | 59 | 80  | 37 | 46 | 13 | 9  | 9   | 16 | 16 | 13 | 17 | 11 | 12 | 15 | 80            |
| 20-Feb  | 10                            | 16 | 12 | 31 | 16 | 34 | 16 | 25 | 66 | 21 | 28 | 37  | 84 | 95 | 71 | 16 | 17  | 13 | 68 | 21 | 7  | 29 | 10 | 12 | 95            |
| 21-Feb  | 12                            | 11 | 12 | 15 | 13 | 15 | 20 | 21 | 16 | 14 | 20 | 15  | 12 | 16 | 14 | 14 | 16  | 17 | 14 | 10 | 43 | 9  | 22 | 8  | 43            |
| 22-Feb  | 11                            | 24 | 17 | 16 | 21 | 6  | 7  | 6  | 20 | 35 | 65 | 30  | 84 | 26 | 19 | 35 | 17  | 9  | 10 | 16 | 33 | 14 | 65 | 27 | 84            |
| 23-Feb  | 73                            | 64 | 32 | 41 | 9  | 23 | 32 | 69 | 53 | 43 | 68 | 15  | 33 | 39 | 67 | 23 | 16  | 8  | 9  | 7  | 8  | 8  | 10 | 6  | 73            |
| 24-Feb  | 7                             | 6  | 8  | 6  | 5  | 6  | 5  | 6  | 6  | 6  | 8  | 11  | 20 | 16 | 16 | 9  | 9   | 11 | 14 | 14 | 13 | 11 | 12 | 12 | 20            |
| 25-Feb  | 12                            | 10 | 7  | 9  | 8  | 8  | 12 | 23 | 15 | 9  | 45 | 12  | 15 | 14 | 71 | 57 | 16  | 28 | 13 | 11 | 16 | 16 | 7  | 8  | 71            |
| 26-Feb  | 9                             | 11 | 10 | 12 | 16 | 19 | 15 | 16 | 16 | 11 | 18 | 17  | 19 | 12 | 15 | 12 | 20  | 13 | 11 | 12 | 14 | 17 | 12 | 11 | 20            |
| 27-Feb  | 11                            | 11 | 8  | 11 | 11 | 11 | 11 | 13 | 14 | 12 | 14 | 14  | 14 | 13 | 25 | 16 | 14  | 11 | 10 | 11 | 12 | 12 | 17 | 16 | 25            |
| 28-Feb  | 12                            | 12 | 14 | 20 | 26 | 15 | 42 | 38 | 23 | 93 | 11 | 21  | 27 | 31 | 25 | 20 | 23  | 15 | 8  | 69 | 60 | 18 | 23 | 12 | 93            |
|   |                               |    |    |    |    |    |    |    |    |    |    |     |    |    |    |    | 73 68 89 41 35 45 42 69 80 93 83 106 84 95 77 88 101 45 68 69 60 71 83 56   |    |    |    |    |    |    |    |               |
| Diurnal Maximum   |                               |    |    |    |    |    |    |    |    |    |    |     |    |    |    |    |   |    |    |    |    |    |    |    |               |







Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Direction 45 m (WD45m) - deg

Mannix - February 2023

|   |                                |
|---|--------------------------------|
| Direction of Maximum Speed: 265 deg on Feb 7 16:00            | Hours in Service: 672          |
| Direction of Maximum Daily Speed Average: 163.7 deg on Feb 24 | Hours of Data: 668             |
| Direction of Minimum Speed: 89 deg on Feb 20 14:00            | Hours of Missing Data: 4       |
| Direction of Minimum Daily Speed Average: 1.8 deg on Feb 23   | Percent Operational Time: 99.4 |
| Monthly Average Direction: 238.6 deg                          |                                |

| Day   | Hourly Period Ending At (MST) |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Daily Average |
|---|-------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---------------|
|   | 1                             | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19  | 20  | 21  | 22  | 23  | 24  |               |
| 1-Feb   | 345                           | 3   | 6   | 353 | 4   | 352 | 348 | 352 | 6   | 2   | 342 | 297 | 298 | 315 | 316 | 320 | 328 | 304 | 304 | 306 | 306 | 304 | 284 | 263 | 331.9         |
| 2-Feb   | 158                           | 164 | 158 | 141 | 153 | 160 | 156 | 161 | 146 | 137 | 137 | 154 | 148 | 137 | 132 | 133 | 133 | 135 | 136 | 135 | 132 | 132 | 131 | 131 | 140.7         |
| 3-Feb   | 134                           | 136 | 136 | 137 | 141 | 145 | 139 | 146 | 148 | 162 | 182 | 337 | 308 | 322 | 349 | 344 | 26  | 12  | 21  | 27  | 8   | 22  | 20  | 11  | 102.1         |
| 4-Feb   | 358                           | 14  | 352 | 353 | 358 | 360 | 347 | 326 | 344 | 1   | 337 | 327 | 338 | 333 | 328 | 316 | 303 | 302 | 345 | 335 | 350 | 311 | 324 | 304 | 339.5         |
| 5-Feb   | 312                           | 325 | 311 | 305 | 260 | 341 | 307 | 303 | 335 | 277 | 273 | 242 | 132 | 192 | 143 | 165 | 158 | 158 | 167 | 234 | 262 | 274 | 279 | 292 | 261.0         |
| 6-Feb   | 285                           | 266 | 269 | 258 | 264 | 273 | 275 | 264 | 263 | 291 | 17  | 71  | 98  | 104 | 104 | 100 | 133 | 158 | 121 | 145 | 136 | 142 | 150 | 150 | 238.7         |
| 7-Feb   | 147                           | 143 | 170 | 252 | 260 | 273 | 278 | 264 | 259 | 258 | 256 | 253 | 256 | 259 | 256 | 265 | 262 | 256 | 249 | 260 | 265 | 275 | 301 | 358 | 261.2         |
| 8-Feb   | 346                           | 349 | 351 | 337 | 345 | 330 | 350 | 21  | 32  | 189 | 166 | 145 | 152 | 134 | 133 | 141 | 129 | 148 | 156 | 153 | 141 | 136 | 138 | 140 | 127.5         |
| 9-Feb   | 149                           | 151 | 167 | 161 | 166 | 170 | 174 | 178 | 169 | 163 | 159 | 152 | 150 | 150 | 150 | 150 | 141 | 134 | 126 | 135 | 157 | 178 | 167 | 155 | 156.9         |
| 10-Feb  | 159                           | 143 | 8   | 358 | 329 | 340 | 353 | 350 | 351 | 344 | 342 | 343 | 337 | 327 | 320 | 316 | 320 | 314 | 312 | 325 | 321 | 336 | 316 | 352 | 332.7         |
| 11-Feb  | 299                           | 268 | 245 | 180 | 162 | 157 | 161 | 196 | 190 | 195 | 185 | 144 | 139 | 156 | 187 | 223 | 239 | 245 | 265 | 273 | 284 | 264 | 247 | 248 | 226.2         |
| 12-Feb  | 253                           | 252 | 266 | 260 | 256 | 256 | 257 | 260 | 262 | 259 | 282 | 295 | 32  | 85  | 106 | 128 | 125 | 126 | 125 | 128 | 129 | 135 | 131 | 140 | 209.1         |
| 13-Feb  | 152                           | 165 | 187 | 210 | 243 | 248 | 251 | 256 | 312 | UO  | UO  | UO  | UO  | 354 | 339 | 336 | 344 | 357 | 4   | 5   | 10  | 13  | 7   | 8   | 327.8         |
| 14-Feb  | 8                             | 346 | 357 | 337 | 350 | 360 | 14  | 11  | 18  | 349 | 340 | 335 | 292 | 14  | 19  | 333 | 9   | 21  | 20  | 8   | 13  | 17  | 52  | 216 | 2.2           |
| 15-Feb  | 251                           | 141 | 107 | 141 | 157 | 163 | 168 | 162 | 163 | 169 | 166 | 153 | 138 | 144 | 125 | 127 | 129 | 134 | 140 | 147 | 137 | 134 | 141 | 137 | 146.2         |
| 16-Feb  | 140                           | 145 | 144 | 140 | 146 | 143 | 142 | 146 | 146 | 152 | 164 | 159 | 154 | 159 | 259 | 295 | 259 | 339 | 3   | 6   | 0   | 358 | 347 | 359 | 122.3         |
| 17-Feb  | 23                            | 20  | 17  | 15  | 3   | 12  | 48  | 26  | 9   | 18  | 4   | 2   | 340 | 313 | 340 | 3   | 1   | 9   | 6   | 2   | 9   | 12  | 5   | 334 | 4.4           |
| 18-Feb  | 355                           | 1   | 10  | 1   | 348 | 341 | 358 | 359 | 347 | 320 | 312 | 317 | 316 | 305 | 298 | 280 | 256 | 289 | 8   | 45  | 61  | 127 | 142 | 147 | 345.9         |
| 19-Feb  | 153                           | 142 | 134 | 139 | 137 | 132 | 136 | 133 | 113 | 149 | 119 | 338 | 5   | 338 | 311 | 310 | 311 | 318 | 330 | 328 | 349 | 358 | 351 | 350 | 77.4          |
| 20-Feb  | 6                             | 354 | 356 | 332 | 312 | 318 | 269 | 264 | 163 | 141 | 130 | 126 | 178 | 89  | 22  | 320 | 14  | 20  | 29  | 21  | 8   | 3   | 0   | 358 | 358.1         |
| 21-Feb  | 9                             | 12  | 11  | 7   | 9   | 15  | 352 | 351 | 334 | 341 | 318 | 290 | 299 | 318 | 318 | 334 | 336 | 349 | 4   | 11  | 354 | 301 | 258 | 259 | 344.2         |
| 22-Feb  | 252                           | 266 | 224 | 229 | 196 | 219 | 227 | 225 | 220 | 208 | 202 | 204 | 260 | 267 | 273 | 282 | 249 | 273 | 281 | 308 | 341 | 25  | 51  | 226 | 258.1         |
| 23-Feb  | 351                           | 1   | 8   | 8   | 5   | 347 | 339 | 325 | 325 | 337 | 252 | 263 | 274 | 281 | 208 | 139 | 142 | 138 | 149 | 164 | 168 | 160 | 157 | 158 | 140.3         |
| 24-Feb  | 151                           | 157 | 153 | 155 | 156 | 155 | 156 | 156 | 155 | 158 | 149 | 167 | 182 | 170 | 158 | 157 | 166 | 182 | 177 | 176 | 175 | 176 | 180 | 180 | 163.7         |
| 25-Feb  | 178                           | 170 | 164 | 150 | 153 | 167 | 193 | 164 | 194 | 204 | 266 | 249 | 240 | 182 | 155 | 100 | 134 | 191 | 173 | 145 | 143 | 148 | 128 | 128 | 172.5         |
| 26-Feb  | 130                           | 121 | 118 | 106 | 136 | 126 | 118 | 110 | 125 | 143 | 131 | 108 | 82  | 66  | 72  | 97  | 72  | 54  | 51  | 37  | 25  | 30  | 39  | 28  | 83.8          |
| 27-Feb  | 23                            | 25  | 12  | 358 | 346 | 338 | 334 | 342 | 346 | 340 | 335 | 336 | 327 | 325 | 345 | 12  | 14  | 8   | 10  | 12  | 17  | 8   | 342 | 350 | 353.2         |
| 28-Feb  | 347                           | 351 | 351 | 354 | 354 | 334 | 343 | 326 | 342 | 345 | 316 | 298 | 303 | 284 | 255 | 250 | 243 | 282 | 286 | 306 | 107 | 154 | 165 | 139 | 327.9         |
| 133.9 143.5 130.7 225.6 220.6 236.2 239.9 239.7 255.8 211.3 232.1 247.0 240.3 277.9 293.4 275.3 27.3 32.8 22.3 18.8 42.5 58.1 124.0 129.5 |                               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |               |
| Diurnal Average   |                               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |               |

UO - Unstable Operation

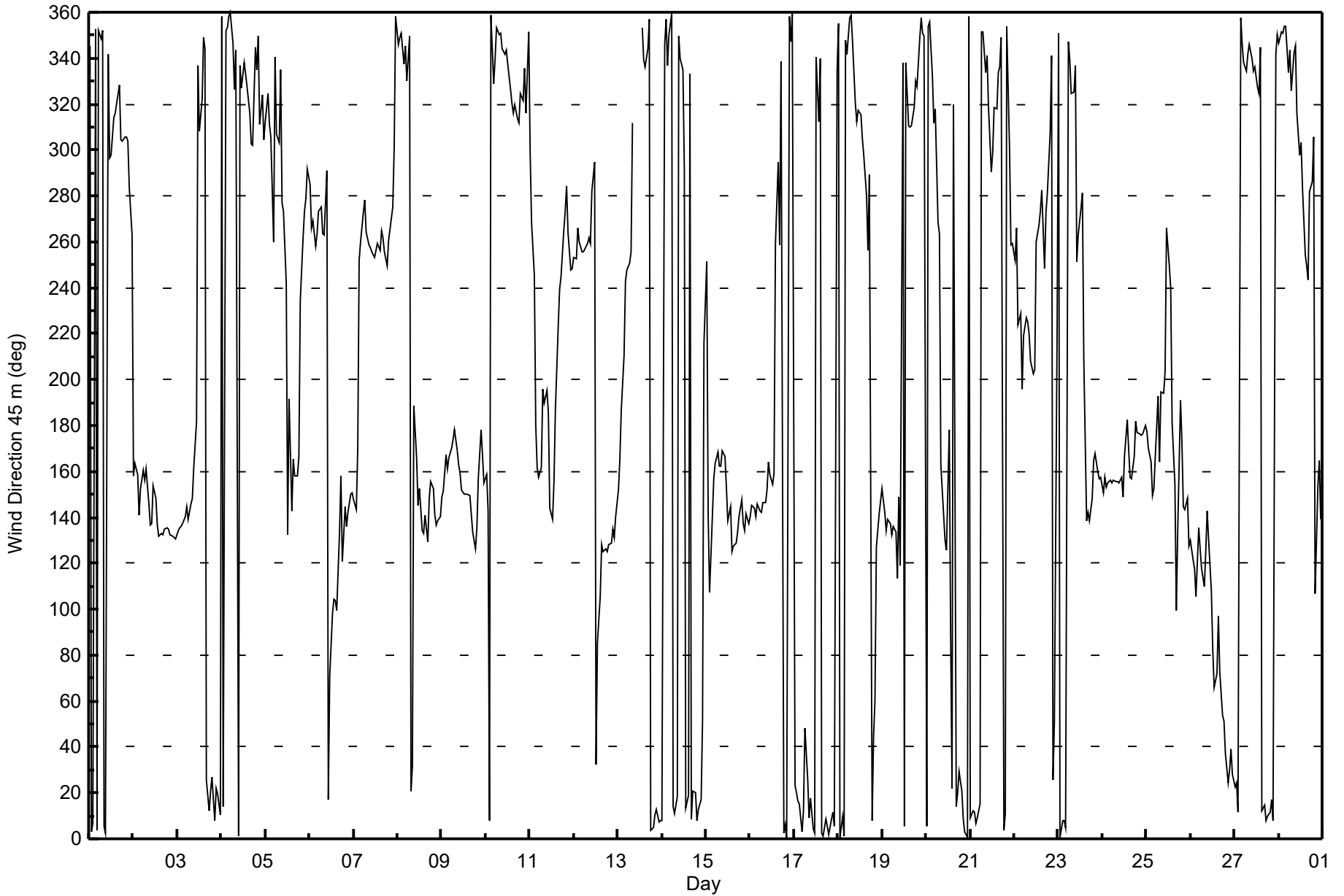
All monthly, daily, and diurnal averages have been calculated using vector methods



**Wood Buffalo Environmental Association**  
**Summary of Hour Standard Deviations**

**Wind Direction 45 m (WD45m) - deg**  
**Mannix - February 2023**

| Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0<br>Maximum Value: 100 deg on Feb 20 13:00<br>Minimum Value: 2 deg on Feb 24 05:00<br>Percentiles: P <sub>1</sub> = 3 P <sub>10</sub> = 6 Q <sub>1</sub> = 7 Median = 10 Q <sub>3</sub> = 15 P <sub>90</sub> = 30 P <sub>99</sub> = 76 |                               |    |    |    |    |    |    |    |    |    |    |    |     |    |    |    | Hours in Service: 672<br>Hours of Data: 668<br>Hours of Missing Data: 4<br>Hours of Calibration: 0<br>Percent Operational Time: 99.4 |    |    |    |    |    |    |    |               |  |  |
|---|-------------------------------|----|----|----|----|----|----|----|----|----|----|----|-----|----|----|----|--|----|----|----|----|----|----|----|---------------|--|--|
| Day   | Hourly Period Ending At (MST) |    |    |    |    |    |    |    |    |    |    |    |     |    |    |    |  |    |    |    |    |    |    |    | Daily Maximum |  |  |
|   | 1                             | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13  | 14 | 15 | 16 | 17   | 18 | 19 | 20 | 21 | 22 | 23 | 24 |               |  |  |
| 1-Feb   | 23                            | 8  | 47 | 19 | 9  | 10 | 9  | 10 | 7  | 10 | 12 | 11 | 13  | 11 | 10 | 16 | 20   | 18 | 8  | 7  | 4  | 34 | 17 | 68 | 68            |  |  |
| 2-Feb   | 29                            | 6  | 7  | 6  | 5  | 6  | 6  | 9  | 12 | 9  | 8  | 11 | 8   | 6  | 6  | 7  | 7  | 8  | 7  | 7  | 7  | 6  | 7  | 6  | 29            |  |  |
| 3-Feb   | 8                             | 7  | 7  | 7  | 8  | 8  | 6  | 8  | 7  | 10 | 65 | 34 | 29  | 18 | 12 | 14 | 10   | 7  | 9  | 15 | 11 | 10 | 10 | 44 | 65            |  |  |
| 4-Feb   | 11                            | 7  | 10 | 8  | 5  | 5  | 21 | 11 | 9  | 12 | 12 | 12 | 16  | 10 | 11 | 21 | 7  | 16 | 11 | 9  | 20 | 10 | 18 | 14 | 21            |  |  |
| 5-Feb   | 15                            | 19 | 34 | 36 | 31 | 41 | 33 | 37 | 56 | 48 | 73 | 95 | 36  | 28 | 32 | 31 | 12   | 6  | 13 | 11 | 14 | 8  | 11 | 9  | 95            |  |  |
| 6-Feb   | 9                             | 6  | 9  | 6  | 7  | 7  | 6  | 4  | 3  | 31 | 28 | 40 | 26  | 23 | 21 | 19 | 8  | 29 | 18 | 6  | 9  | 7  | 7  | 7  | 40            |  |  |
| 7-Feb   | 13                            | 11 | 39 | 9  | 7  | 13 | 8  | 8  | 8  | 6  | 9  | 10 | 10  | 9  | 8  | 7  | 7  | 6  | 7  | 6  | 6  | 6  | 31 | 12 | 39            |  |  |
| 8-Feb   | 8                             | 7  | 8  | 6  | 5  | 30 | 28 | 7  | 15 | 40 | 20 | 12 | 10  | 13 | 13 | 8  | 7  | 14 | 10 | 4  | 5  | 4  | 3  | 4  | 40            |  |  |
| 9-Feb   | 3                             | 3  | 7  | 7  | 7  | 12 | 8  | 5  | 9  | 4  | 4  | 4  | 7   | 6  | 4  | 4  | 6  | 6  | 4  | 5  | 9  | 5  | 11 | 4  | 12            |  |  |
| 10-Feb  | 4                             | 41 | 33 | 6  | 10 | 11 | 8  | 10 | 9  | 12 | 11 | 11 | 9   | 15 | 8  | 8  | 10   | 8  | 6  | 12 | 10 | 19 | 17 | 29 | 41            |  |  |
| 11-Feb  | 12                            | 26 | 80 | 28 | 6  | 6  | 5  | 25 | 23 | 14 | 23 | 7  | 8   | 16 | 10 | 13 | 8  | 7  | 8  | 6  | 8  | 14 | 14 | 7  | 80            |  |  |
| 12-Feb  | 8                             | 7  | 7  | 7  | 6  | 6  | 6  | 6  | 4  | 6  | 9  | 12 | 29  | 25 | 18 | 7  | 4  | 6  | 8  | 9  | 5  | 11 | 6  | 10 | 29            |  |  |
| 13-Feb  | 6                             | 8  | 13 | 22 | 10 | 9  | 8  | 7  | 40 | UO | UO | UO | UO  | 12 | 11 | 9  | 10   | 13 | 10 | 10 | 8  | 9  | 8  | 10 | 40            |  |  |
| 14-Feb  | 16                            | 13 | 26 | 10 | 14 | 15 | 8  | 13 | 16 | 21 | 22 | 36 | 29  | 19 | 22 | 10 | 11   | 14 | 17 | 11 | 15 | 80 | 53 | 80 |               |  |  |
| 15-Feb  | 42                            | 42 | 20 | 10 | 5  | 6  | 9  | 11 | 12 | 13 | 14 | 27 | 25  | 21 | 11 | 8  | 9  | 8  | 5  | 3  | 5  | 7  | 6  | 5  | 42            |  |  |
| 16-Feb  | 10                            | 12 | 6  | 5  | 4  | 8  | 10 | 7  | 10 | 10 | 17 | 13 | 6   | 12 | 70 | 51 | 11   | 20 | 8  | 9  | 11 | 11 | 11 | 20 | 70            |  |  |
| 17-Feb  | 12                            | 11 | 11 | 10 | 15 | 30 | 22 | 13 | 15 | 15 | 12 | 13 | 27  | 8  | 18 | 13 | 10   | 7  | 8  | 6  | 6  | 6  | 13 | 16 | 30            |  |  |
| 18-Feb  | 6                             | 8  | 9  | 6  | 9  | 9  | 14 | 18 | 16 | 47 | 24 | 10 | 9   | 12 | 11 | 24 | 12   | 12 | 22 | 6  | 12 | 13 | 12 | 6  | 47            |  |  |
| 19-Feb  | 6                             | 6  | 5  | 6  | 5  | 5  | 6  | 7  | 40 | 28 | 66 | 57 | 29  | 48 | 13 | 7  | 8  | 13 | 11 | 9  | 14 | 6  | 9  | 13 | 66            |  |  |
| 20-Feb  | 7                             | 9  | 8  | 28 | 18 | 18 | 11 | 18 | 67 | 16 | 30 | 51 | 100 | 89 | 77 | 14 | 14   | 9  | 39 | 13 | 5  | 6  | 6  | 9  | 100           |  |  |
| 21-Feb  | 9                             | 8  | 8  | 10 | 10 | 12 | 14 | 16 | 12 | 11 | 17 | 12 | 10  | 15 | 11 | 11 | 13   | 14 | 10 | 7  | 35 | 14 | 24 | 9  | 35            |  |  |
| 22-Feb  | 10                            | 10 | 22 | 16 | 21 | 14 | 9  | 10 | 8  | 19 | 45 | 68 | 43  | 23 | 14 | 32 | 11   | 7  | 9  | 13 | 15 | 14 | 11 | 75 | 75            |  |  |
| 23-Feb  | 56                            | 53 | 10 | 8  | 6  | 9  | 6  | 8  | 12 | 14 | 33 | 13 | 45  | 47 | 60 | 21 | 14   | 7  | 6  | 2  | 3  | 4  | 3  | 3  | 60            |  |  |
| 24-Feb  | 5                             | 3  | 4  | 3  | 2  | 2  | 3  | 2  | 3  | 4  | 5  | 9  | 17  | 9  | 11 | 7  | 7  | 7  | 7  | 8  | 8  | 6  | 6  | 7  | 17            |  |  |
| 25-Feb  | 6                             | 5  | 7  | 8  | 6  | 15 | 15 | 26 | 45 | 27 | 31 | 9  | 12  | 11 | 63 | 55 | 13   | 28 | 9  | 12 | 11 | 9  | 6  | 5  | 63            |  |  |
| 26-Feb  | 6                             | 7  | 8  | 10 | 13 | 13 | 12 | 12 | 12 | 16 | 13 | 14 | 18  | 10 | 13 | 10 | 18   | 10 | 8  | 8  | 10 | 14 | 10 | 9  | 18            |  |  |
| 27-Feb  | 8                             | 9  | 6  | 7  | 8  | 8  | 8  | 8  | 10 | 9  | 10 | 10 | 11  | 10 | 22 | 12 | 10   | 8  | 8  | 8  | 9  | 9  | 14 | 13 | 22            |  |  |
| 28-Feb  | 9                             | 7  | 9  | 9  | 15 | 14 | 15 | 23 | 21 | 54 | 9  | 14 | 18  | 25 | 35 | 16 | 17   | 13 | 13 | 96 | 25 | 26 | 8  | 6  | 96            |  |  |
|   |                               |    |    |    |    |    |    |    |    |    |    |    |     |    |    |    | 56 53 80 36 31 41 33 37 67 54 73 95 100 89 77 55 20 29 39 96 35 34 80 75   |    |    |    |    |    |    |    |               |  |  |
|   |                               |    |    |    |    |    |    |    |    |    |    |    |     |    |    |    | Diurnal Maximum  |    |    |    |    |    |    |    |               |  |  |
| UO - Unstable Operation   |                               |    |    |    |    |    |    |    |    |    |    |    |     |    |    |    |  |    |    |    |    |    |    |    |               |  |  |





Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Direction 75 m (WD75m) - deg

Mannix - February 2023

|  |  |                           |      |
|--|--|---------------------------|------|
| Direction of Maximum Speed: 349 deg on Feb 13 17:00          |  | Hours in Service:         | 672  |
| Direction of Maximum Daily Speed Average: 263.8 deg on Feb 7 |  | Hours of Data:            | 666  |
| Direction of Minimum Speed: 143 deg on Feb 5 12:00           |  | Hours of Missing Data:    | 6    |
| Direction of Minimum Daily Speed Average: 1.4 deg on Feb 23  |  | Percent Operational Time: | 99.1 |
| Monthly Average Direction: 252.5 deg                         |  |                           |      |

| Day   | Hourly Period Ending At (MST) |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Daily Average |
|---|-------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---------------|
|   | 1                             | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19  | 20  | 21  | 22  | 23  | 24  |               |
| 1-Feb   | 357                           | 13  | 44  | 8   | 10  | 356 | 353 | 358 | 7   | 6   | 346 | 300 | 299 | 319 | 321 | 318 | 317 | 314 | 313 | 313 | 309 | 308 | 299 | 310 | 337.6         |
| 2-Feb   | 156                           | 171 | 178 | 161 | 164 | 166 | 145 | 149 | 138 | 136 | 136 | 145 | 137 | 136 | 135 | 136 | 137 | 138 | 140 | 138 | 137 | 137 | 136 | 135 | 142.5         |
| 3-Feb   | 138                           | 139 | 139 | 141 | 143 | 148 | 145 | 149 | 154 | 168 | 233 | 321 | 312 | 328 | 356 | 351 | 29  | 19  | 27  | 31  | 14  | 30  | 32  | 30  | 111.4         |
| 4-Feb   | 5                             | 32  | 21  | 3   | 8   | 10  | 8   | 348 | 354 | 6   | 346 | 340 | 347 | 339 | 333 | 329 | 309 | 314 | 0   | 352 | 3   | 327 | 334 | 312 | 352.7         |
| 5-Feb   | 321                           | 340 | 327 | 2   | 276 | 11  | 322 | 313 | 346 | 316 | 280 | 143 | 132 | 189 | 156 | 168 | 169 | 164 | 175 | 247 | 267 | 278 | 282 | 295 | 255.7         |
| 6-Feb   | 288                           | 269 | 272 | 261 | 266 | 273 | 278 | 270 | 268 | 291 | 9   | 62  | 110 | 112 | 107 | 107 | 134 | 150 | 129 | 143 | 136 | 139 | 146 | 154 | 242.9         |
| 7-Feb   | 163                           | 182 | 224 | 255 | 261 | 275 | 280 | 266 | 261 | 259 | 257 | 254 | 257 | 261 | 258 | 266 | 264 | 258 | 253 | 262 | 267 | 277 | 308 | 4   | 263.8         |
| 8-Feb   | 356                           | 359 | 0   | 353 | 2   | 359 | 359 | 19  | 28  | 166 | 168 | 149 | 157 | 141 | 137 | 140 | 134 | 147 | 146 | 150 | 158 | 156 | 156 | 156 | 129.5         |
| 9-Feb   | 164                           | 168 | 197 | 198 | 201 | 202 | 208 | 207 | 203 | 191 | 166 | 156 | 153 | 154 | 162 | 157 | 150 | 144 | 140 | 143 | 170 | 197 | 185 | 165 | 170.8         |
| 10-Feb  | 167                           | 161 | 9   | 14  | 351 | 350 | 3   | 1   | 2   | 350 | 352 | 353 | 348 | 340 | 329 | 324 | 328 | 321 | 318 | 330 | 325 | 338 | 317 | 356 | 342.4         |
| 11-Feb  | 291                           | 246 | 264 | 199 | 170 | 167 | 184 | 241 | 217 | 216 | 196 | 150 | 145 | 178 | 193 | 225 | 241 | 247 | 267 | 276 | 287 | 268 | 251 | 250 | 232.5         |
| 12-Feb  | 254                           | 254 | 266 | 261 | 258 | 260 | 261 | 263 | 266 | 263 | 281 | 300 | 38  | 93  | 126 | 137 | 131 | 130 | 128 | 134 | 134 | 142 | 136 | 145 | 216.4         |
| 13-Feb  | 161                           | 179 | 198 | 220 | 245 | 248 | 252 | 257 | 315 | UO  | UO  | UO  | UO  | UO  | UO  | 342 | 349 | 360 | 5   | 7   | 12  | 15  | 11  | 11  | 319.3         |
| 14-Feb  | 10                            | 351 | 0   | 345 | 357 | 7   | 17  | 14  | 20  | 352 | 346 | 344 | 319 | 16  | 23  | 342 | 12  | 21  | 25  | 13  | 17  | 23  | 54  | 221 | 6.9           |
| 15-Feb  | 222                           | 153 | 128 | 154 | 164 | 168 | 169 | 167 | 169 | 177 | 176 | 173 | 155 | 148 | 128 | 130 | 134 | 139 | 142 | 149 | 139 | 135 | 138 | 136 | 151.8         |
| 16-Feb  | 136                           | 139 | 138 | 134 | 138 | 136 | 137 | 141 | 140 | 137 | 145 | 155 | 153 | 165 | 245 | 268 | 265 | 330 | 6   | 9   | 4   | 2   | 353 | 3   | 120.1         |
| 17-Feb  | 28                            | 26  | 23  | 20  | 10  | 14  | 48  | 27  | 17  | 23  | 13  | 10  | 346 | 322 | 348 | 6   | 6   | 13  | 10  | 7   | 15  | 19  | 16  | 353 | 10.8          |
| 18-Feb  | 0                             | 18  | 26  | 24  | 5   | 353 | 360 | 358 | 344 | 357 | 335 | 331 | 327 | 311 | 304 | 288 | 258 | 282 | 19  | 60  | 93  | 142 | 144 | 151 | 2.0           |
| 19-Feb  | 137                           | 133 | 133 | 135 | 134 | 132 | 133 | 130 | 118 | 142 | 137 | 15  | 21  | 357 | 317 | 316 | 319 | 328 | 346 | 348 | 358 | 3   | 359 | 356 | 66.0          |
| 20-Feb  | 6                             | 358 | 0   | 347 | 324 | 355 | 275 | 294 | 142 | 135 | 109 | 131 | 216 | 85  | 24  | 327 | 19  | 24  | 29  | 28  | 22  | 14  | 5   | 3   | 8.1           |
| 21-Feb  | 12                            | 14  | 13  | 9   | 12  | 16  | 358 | 358 | 345 | 351 | 328 | 296 | 305 | 327 | 325 | 338 | 341 | 359 | 12  | 13  | 2   | 331 | 278 | 258 | 351.7         |
| 22-Feb  | 264                           | 289 | 278 | 267 | 268 | 256 | 257 | 262 | 258 | 249 | 243 | 267 | 271 | 268 | 276 | 284 | 250 | 274 | 279 | 316 | 3   | 25  | 37  | 22  | 278.4         |
| 23-Feb  | 14                            | 355 | 3   | 15  | 12  | 1   | 357 | 345 | 335 | 338 | 288 | 270 | 288 | 300 | 197 | 147 | 146 | 142 | 153 | 164 | 169 | 167 | 164 | 179 | 112.9         |
| 24-Feb  | 168                           | 187 | 175 | 175 | 174 | 171 | 172 | 171 | 172 | 166 | 164 | 158 | 172 | 184 | 172 | 160 | 160 | 169 | 184 | 180 | 180 | 179 | 181 | 185 | 173.1         |
| 25-Feb  | 185                           | 183 | 191 | 182 | 176 | 204 | 225 | 219 | 253 | 247 | 224 | 265 | 249 | 241 | 188 | 171 | 106 | 152 | 199 | 191 | 159 | 153 | 155 | 132 | 193.4         |
| 26-Feb  | 140                           | 131 | 121 | 108 | 130 | 128 | 119 | 115 | 122 | 127 | 133 | 110 | 83  | 69  | 75  | 96  | 74  | 59  | 57  | 44  | 34  | 44  | 48  | 35  | 85.5          |
| 27-Feb  | 28                            | 32  | 18  | 3   | 352 | 344 | 340 | 346 | 351 | 343 | 338 | 340 | 333 | 331 | 351 | 16  | 17  | 12  | 13  | 15  | 18  | 11  | 346 | 355 | 358.0         |
| 28-Feb  | 359                           | 359 | 358 | 1   | 4   | 349 | 352 | 347 | 358 | 353 | 326 | 303 | 307 | 283 | 257 | 239 | 235 | 270 | 274 | 273 | 170 | 142 | 168 | 153 | 342.1         |
| 96.6 179.7 296.5 280.7 249.9 253.6 258.3 263.7 280.3 233.4 234.1 241.1 225.1 233.2 231.4 261.5 357.9 51.0 35.8 41.8 50.4 57.4 128.0 133.4 |                               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |               |
| Diurnal Average   |                               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |               |

UO - Unstable Operation  
 All monthly, daily, and diurnal averages have been calculated using vector methods



**Wood Buffalo Environmental Association**  
**Summary of Hour Standard Deviations**

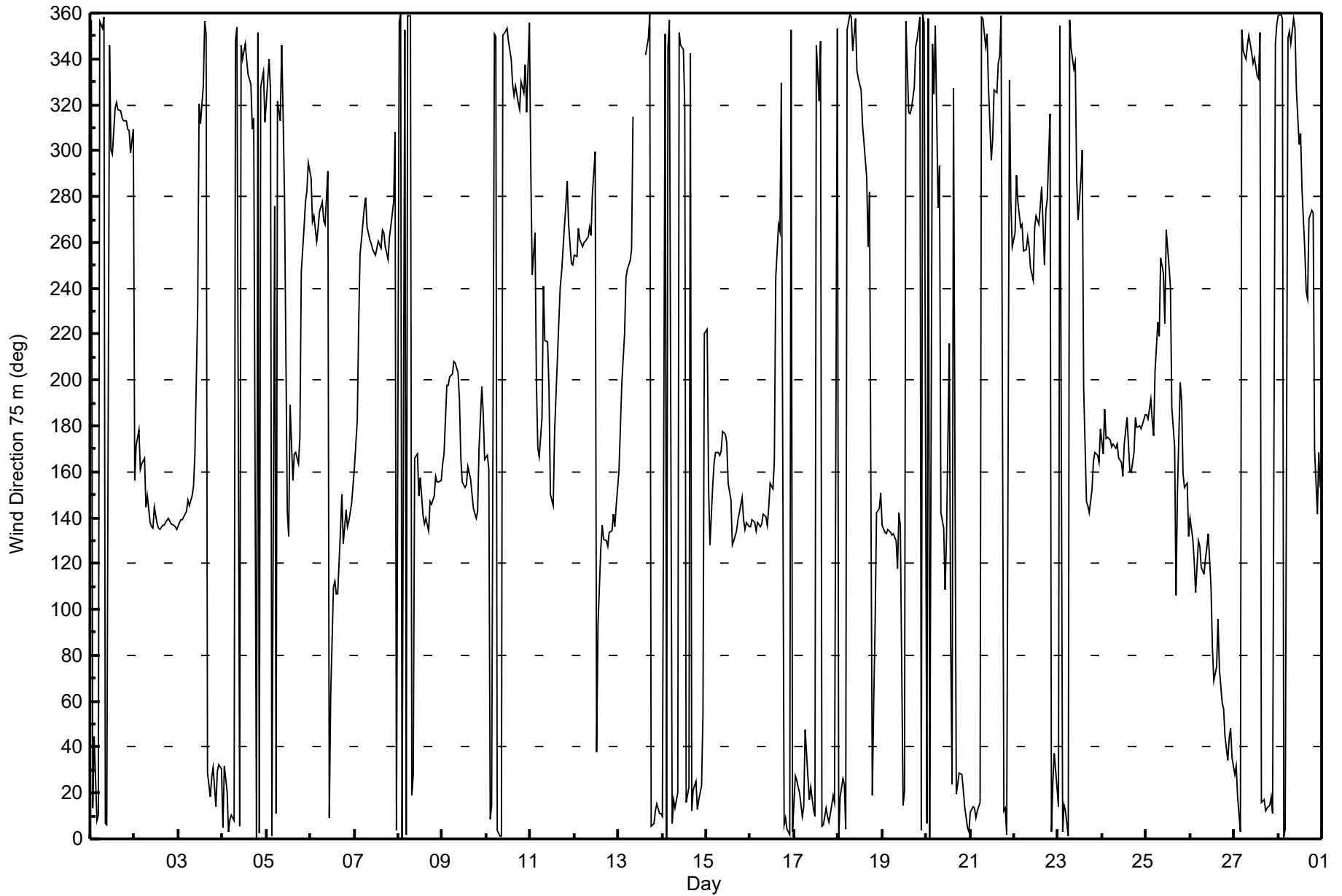
**Wind Direction 75 m (WD75m) - deg**  
**Mannix - February 2023**

|   |                                |
|---|--------------------------------|
| Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0   | Hours in Service: 672          |
| Maximum Value: 108 deg on Feb 20 13:00  | Hours of Data: 666             |
| Minimum Value: 1 deg on Feb 23 21:00  | Hours of Missing Data: 6       |
| Percentiles: P <sub>1</sub> = 3 P <sub>10</sub> = 5 Q <sub>1</sub> = 6 Median = 9 Q <sub>3</sub> = 14 P <sub>90</sub> = 27 P <sub>99</sub> = 69 | Hours of Calibration: 0        |
|   | Percent Operational Time: 99.1 |

| Day    | Hourly Period Ending At (MST) |    |    |    |    |    |    |    |    |    |    |    |     |    |    |    |    |    |    |    |    |    |    |    | Daily Maximum |
|--------|-------------------------------|----|----|----|----|----|----|----|----|----|----|----|-----|----|----|----|----|----|----|----|----|----|----|----|---------------|
|        | 1                             | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13  | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |               |
| 1-Feb  | 10                            | 9  | 23 | 7  | 7  | 9  | 6  | 8  | 7  | 7  | 12 | 13 | 12  | 11 | 11 | 13 | 16 | 15 | 6  | 5  | 5  | 12 | 7  | 13 | 23            |
| 2-Feb  | 61                            | 7  | 6  | 4  | 6  | 4  | 7  | 7  | 4  | 4  | 3  | 8  | 5   | 3  | 4  | 6  | 7  | 7  | 6  | 6  | 5  | 5  | 5  | 5  | 61            |
| 3-Feb  | 6                             | 5  | 5  | 6  | 7  | 6  | 4  | 6  | 5  | 8  | 60 | 22 | 27  | 16 | 11 | 14 | 8  | 6  | 7  | 12 | 11 | 9  | 9  | 44 | 60            |
| 4-Feb  | 9                             | 10 | 9  | 5  | 5  | 5  | 18 | 9  | 6  | 11 | 9  | 11 | 14  | 10 | 10 | 23 | 7  | 20 | 7  | 7  | 17 | 12 | 18 | 19 | 23            |
| 5-Feb  | 15                            | 21 | 40 | 54 | 35 | 35 | 32 | 41 | 55 | 70 | 82 | 96 | 36  | 23 | 25 | 17 | 6  | 4  | 7  | 23 | 8  | 8  | 12 | 10 | 96            |
| 6-Feb  | 8                             | 5  | 9  | 7  | 6  | 5  | 5  | 3  | 2  | 31 | 29 | 56 | 29  | 24 | 19 | 17 | 8  | 11 | 16 | 4  | 6  | 5  | 6  | 6  | 56            |
| 7-Feb  | 27                            | 33 | 38 | 6  | 7  | 13 | 8  | 8  | 7  | 6  | 8  | 9  | 10  | 9  | 8  | 7  | 7  | 6  | 6  | 6  | 6  | 6  | 32 | 8  | 38            |
| 8-Feb  | 7                             | 5  | 5  | 4  | 5  | 21 | 12 | 6  | 9  | 67 | 12 | 11 | 11  | 10 | 12 | 6  | 6  | 5  | 8  | 3  | 11 | 6  | 3  | 3  | 67            |
| 9-Feb  | 4                             | 7  | 10 | 11 | 10 | 12 | 7  | 7  | 10 | 13 | 6  | 5  | 4   | 6  | 6  | 3  | 4  | 6  | 4  | 5  | 11 | 7  | 12 | 6  | 13            |
| 10-Feb | 5                             | 13 | 67 | 6  | 8  | 10 | 4  | 7  | 9  | 9  | 8  | 8  | 8   | 14 | 7  | 6  | 9  | 8  | 6  | 10 | 9  | 17 | 14 | 31 | 67            |
| 11-Feb | 16                            | 12 | 35 | 32 | 3  | 6  | 13 | 18 | 22 | 15 | 19 | 10 | 7   | 14 | 8  | 12 | 7  | 6  | 8  | 6  | 8  | 13 | 11 | 6  | 35            |
| 12-Feb | 7                             | 6  | 7  | 6  | 5  | 5  | 6  | 5  | 4  | 5  | 10 | 8  | 38  | 29 | 19 | 4  | 7  | 8  | 10 | 8  | 4  | 11 | 6  | 8  | 38            |
| 13-Feb | 6                             | 10 | 13 | 15 | 9  | 7  | 7  | 7  | 41 | UO | UO | UO | UO  | UO | UO | 7  | 8  | 11 | 9  | 9  | 6  | 7  | 6  | 8  | 41            |
| 14-Feb | 13                            | 11 | 23 | 10 | 11 | 12 | 6  | 8  | 12 | 18 | 20 | 23 | 48  | 23 | 14 | 16 | 10 | 9  | 11 | 14 | 11 | 12 | 72 | 69 | 72            |
| 15-Feb | 55                            | 33 | 20 | 8  | 5  | 7  | 6  | 7  | 9  | 7  | 12 | 18 | 26  | 16 | 14 | 10 | 11 | 6  | 3  | 3  | 4  | 3  | 4  | 3  | 55            |
| 16-Feb | 4                             | 8  | 4  | 3  | 3  | 4  | 7  | 4  | 6  | 5  | 13 | 10 | 6   | 7  | 62 | 27 | 6  | 27 | 5  | 8  | 8  | 9  | 9  | 16 | 62            |
| 17-Feb | 9                             | 9  | 9  | 8  | 16 | 24 | 21 | 9  | 14 | 12 | 11 | 12 | 23  | 9  | 16 | 10 | 9  | 5  | 7  | 5  | 7  | 5  | 8  | 9  | 24            |
| 18-Feb | 5                             | 6  | 9  | 6  | 9  | 7  | 9  | 11 | 16 | 39 | 33 | 9  | 10  | 13 | 10 | 21 | 11 | 27 | 20 | 7  | 31 | 8  | 8  | 5  | 39            |
| 19-Feb | 5                             | 3  | 4  | 3  | 3  | 5  | 5  | 6  | 20 | 17 | 35 | 38 | 28  | 55 | 20 | 9  | 9  | 13 | 9  | 9  | 10 | 4  | 7  | 10 | 55            |
| 20-Feb | 6                             | 5  | 6  | 22 | 23 | 24 | 50 | 43 | 43 | 22 | 26 | 49 | 108 | 83 | 92 | 13 | 13 | 7  | 24 | 9  | 4  | 5  | 5  | 7  | 108           |
| 21-Feb | 8                             | 6  | 7  | 9  | 8  | 11 | 11 | 12 | 10 | 9  | 16 | 12 | 11  | 15 | 11 | 9  | 12 | 12 | 9  | 6  | 25 | 16 | 26 | 8  | 26            |
| 22-Feb | 12                            | 5  | 17 | 9  | 16 | 7  | 12 | 5  | 5  | 8  | 24 | 21 | 39  | 22 | 14 | 29 | 10 | 7  | 12 | 16 | 14 | 7  | 6  | 11 | 39            |
| 23-Feb | 9                             | 13 | 6  | 4  | 4  | 6  | 6  | 7  | 6  | 5  | 24 | 12 | 56  | 60 | 56 | 30 | 11 | 6  | 3  | 3  | 1  | 2  | 2  | 9  | 60            |
| 24-Feb | 9                             | 7  | 7  | 5  | 4  | 2  | 2  | 2  | 3  | 3  | 4  | 8  | 14  | 7  | 10 | 7  | 6  | 7  | 6  | 7  | 6  | 5  | 4  | 5  | 14            |
| 25-Feb | 4                             | 3  | 14 | 12 | 10 | 17 | 10 | 30 | 22 | 15 | 20 | 9  | 11  | 10 | 56 | 51 | 14 | 28 | 7  | 11 | 8  | 7  | 7  | 6  | 56            |
| 26-Feb | 5                             | 12 | 14 | 13 | 10 | 13 | 14 | 14 | 16 | 17 | 14 | 15 | 17  | 8  | 12 | 12 | 15 | 8  | 7  | 8  | 8  | 13 | 9  | 9  | 17            |
| 27-Feb | 6                             | 7  | 5  | 6  | 6  | 7  | 6  | 6  | 8  | 7  | 8  | 9  | 9   | 9  | 19 | 11 | 8  | 7  | 7  | 7  | 7  | 9  | 12 | 11 | 19            |
| 28-Feb | 7                             | 5  | 6  | 6  | 7  | 7  | 7  | 14 | 13 | 52 | 11 | 12 | 18  | 25 | 59 | 13 | 16 | 13 | 21 | 54 | 38 | 17 | 10 | 5  | 59            |
|        | 61                            | 33 | 67 | 54 | 35 | 35 | 50 | 43 | 55 | 70 | 82 | 96 | 108 | 83 | 92 | 51 | 16 | 28 | 24 | 54 | 38 | 17 | 72 | 69 |               |

Diurnal Maximum

UO - Unstable Operation





**Wood Buffalo Environmental Association**  
**Summary of Hour Standard Deviations**

**Wind Direction 90 m (WD90m) - deg**  
**Mannix - February 2023**

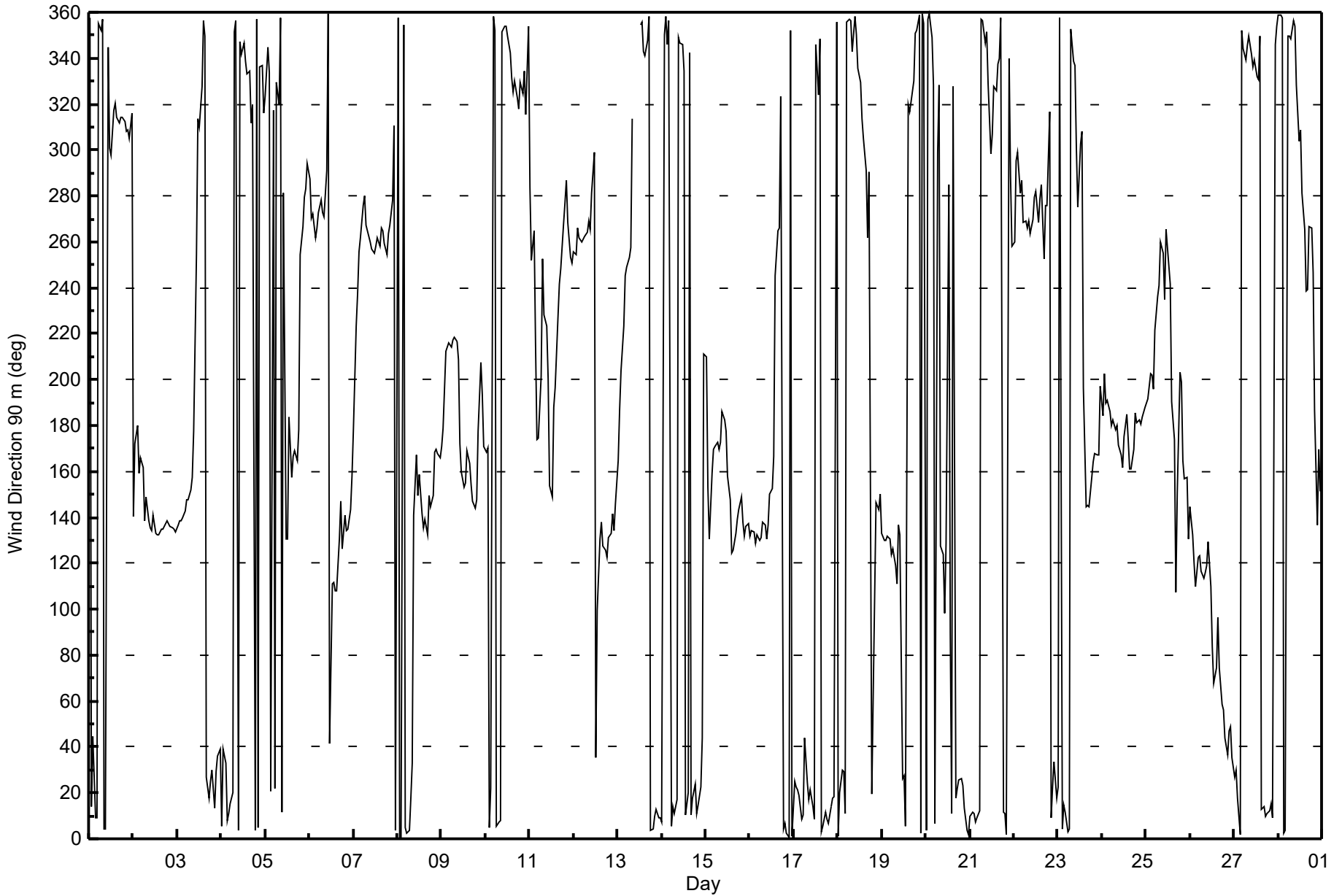
|   |                                |
|---|--------------------------------|
| Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0   | Hours in Service: 672          |
| Maximum Value: 93 deg on Feb 20 13:00   | Hours of Data: 669             |
| Minimum Value: 2 deg on Feb 19 05:00  | Hours of Missing Data: 3       |
| Percentiles: P <sub>1</sub> = 2 P <sub>10</sub> = 4 Q <sub>1</sub> = 6 Median = 8 Q <sub>3</sub> = 13 P <sub>90</sub> = 24 P <sub>99</sub> = 81 | Hours of Calibration: 0        |
|   | Percent Operational Time: 99.6 |

| Day    | Hourly Period Ending At (MST) |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    | Daily Maximum |
|--------|-------------------------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|---------------|
|        | 1                             | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |               |
| 1-Feb  | 7                             | 8  | 14 | 5  | 6  | 8  | 5  | 7  | 6  | 6  | 11 | 13 | 11 | 10 | 9  | 11 | 13 | 13 | 6  | 4  | 5  | 7  | 5  | 16 | 16            |
| 2-Feb  | 68                            | 5  | 5  | 4  | 7  | 10 | 7  | 6  | 5  | 4  | 3  | 5  | 4  | 2  | 4  | 6  | 6  | 6  | 6  | 6  | 5  | 5  | 5  | 5  | 68            |
| 3-Feb  | 6                             | 5  | 5  | 5  | 6  | 5  | 3  | 5  | 5  | 11 | 43 | 19 | 23 | 15 | 10 | 13 | 7  | 6  | 7  | 11 | 10 | 9  | 11 | 45 | 45            |
| 4-Feb  | 9                             | 11 | 10 | 6  | 6  | 7  | 16 | 9  | 5  | 9  | 9  | 10 | 14 | 10 | 11 | 25 | 7  | 17 | 6  | 7  | 14 | 13 | 17 | 21 | 25            |
| 5-Feb  | 16                            | 21 | 41 | 46 | 60 | 34 | 30 | 41 | 36 | 74 | 82 | 92 | 33 | 22 | 24 | 15 | 6  | 4  | 6  | 25 | 8  | 8  | 11 | 9  | 92            |
| 6-Feb  | 7                             | 5  | 9  | 7  | 6  | 5  | 4  | 3  | 3  | 29 | 22 | 78 | 28 | 23 | 14 | 12 | 7  | 8  | 13 | 3  | 5  | 5  | 6  | 7  | 78            |
| 7-Feb  | 36                            | 35 | 29 | 5  | 7  | 13 | 7  | 7  | 7  | 6  | 8  | 8  | 9  | 9  | 7  | 7  | 6  | 6  | 6  | 6  | 6  | 5  | 31 | 7  | 36            |
| 8-Feb  | 6                             | 4  | 5  | 5  | 5  | 18 | 9  | 7  | 16 | 55 | 7  | 9  | 11 | 9  | 10 | 5  | 7  | 4  | 6  | 3  | 11 | 9  | 2  | 3  | 55            |
| 9-Feb  | 5                             | 10 | 9  | 9  | 9  | 8  | 5  | 8  | 8  | 12 | 11 | 5  | 3  | 7  | 6  | 4  | 5  | 6  | 3  | 7  | 10 | 8  | 12 | 7  | 12            |
| 10-Feb | 6                             | 9  | 81 | 10 | 8  | 8  | 3  | 7  | 11 | 6  | 6  | 7  | 7  | 13 | 7  | 6  | 8  | 8  | 5  | 9  | 8  | 16 | 13 | 31 | 81            |
| 11-Feb | 17                            | 8  | 23 | 22 | 4  | 8  | 15 | 15 | 20 | 15 | 18 | 10 | 8  | 12 | 8  | 12 | 6  | 6  | 8  | 6  | 7  | 12 | 11 | 5  | 23            |
| 12-Feb | 6                             | 6  | 6  | 6  | 5  | 5  | 6  | 5  | 4  | 4  | 10 | 11 | 46 | 27 | 16 | 4  | 5  | 5  | 6  | 8  | 4  | 12 | 6  | 8  | 46            |
| 13-Feb | 7                             | 11 | 12 | 14 | 9  | 7  | 7  | 6  | 41 | UO | UO | UO | 10 | 10 | 8  | 6  | 8  | 10 | 8  | 8  | 6  | 7  | 6  | 7  | 41            |
| 14-Feb | 12                            | 10 | 21 | 10 | 10 | 11 | 6  | 8  | 12 | 18 | 19 | 21 | 47 | 19 | 13 | 14 | 9  | 8  | 10 | 11 | 9  | 12 | 69 | 88 | 88            |
| 15-Feb | 68                            | 29 | 10 | 10 | 5  | 10 | 5  | 6  | 6  | 5  | 12 | 15 | 27 | 16 | 14 | 10 | 11 | 5  | 3  | 3  | 4  | 3  | 4  | 3  | 68            |
| 16-Feb | 3                             | 7  | 4  | 4  | 3  | 4  | 8  | 4  | 5  | 4  | 11 | 10 | 7  | 8  | 59 | 21 | 4  | 28 | 5  | 7  | 7  | 9  | 9  | 15 | 59            |
| 17-Feb | 9                             | 9  | 8  | 7  | 16 | 21 | 22 | 9  | 14 | 12 | 10 | 12 | 20 | 10 | 14 | 10 | 8  | 5  | 6  | 5  | 7  | 5  | 7  | 8  | 22            |
| 18-Feb | 5                             | 4  | 6  | 4  | 10 | 7  | 9  | 6  | 10 | 30 | 29 | 9  | 10 | 12 | 10 | 18 | 12 | 35 | 21 | 9  | 33 | 11 | 6  | 7  | 35            |
| 19-Feb | 3                             | 2  | 3  | 3  | 2  | 5  | 5  | 5  | 11 | 15 | 30 | 36 | 30 | 55 | 21 | 10 | 10 | 13 | 7  | 8  | 8  | 4  | 6  | 9  | 55            |
| 20-Feb | 5                             | 5  | 5  | 19 | 22 | 22 | 69 | 60 | 38 | 20 | 18 | 56 | 93 | 76 | 86 | 12 | 12 | 6  | 20 | 7  | 3  | 5  | 5  | 7  | 93            |
| 21-Feb | 7                             | 5  | 6  | 8  | 8  | 9  | 10 | 10 | 10 | 9  | 14 | 12 | 11 | 14 | 10 | 8  | 11 | 11 | 8  | 4  | 17 | 14 | 27 | 6  | 27            |
| 22-Feb | 11                            | 10 | 11 | 8  | 12 | 4  | 9  | 4  | 6  | 8  | 19 | 14 | 37 | 21 | 15 | 26 | 10 | 7  | 11 | 19 | 13 | 8  | 5  | 9  | 37            |
| 23-Feb | 8                             | 17 | 5  | 3  | 4  | 4  | 4  | 10 | 4  | 4  | 24 | 16 | 59 | 52 | 51 | 36 | 11 | 7  | 2  | 3  | 2  | 2  | 6  | 11 | 59            |
| 24-Feb | 14                            | 7  | 8  | 6  | 5  | 4  | 2  | 3  | 4  | 3  | 4  | 7  | 13 | 7  | 10 | 7  | 6  | 7  | 6  | 6  | 6  | 5  | 4  | 5  | 14            |
| 25-Feb | 4                             | 4  | 13 | 11 | 14 | 13 | 9  | 22 | 9  | 9  | 16 | 9  | 11 | 9  | 55 | 48 | 9  | 28 | 6  | 11 | 9  | 10 | 6  | 4  | 55            |
| 26-Feb | 7                             | 11 | 7  | 7  | 7  | 9  | 9  | 10 | 13 | 13 | 14 | 12 | 18 | 9  | 11 | 11 | 15 | 7  | 7  | 8  | 8  | 13 | 10 | 8  | 18            |
| 27-Feb | 6                             | 7  | 5  | 6  | 6  | 6  | 5  | 6  | 8  | 6  | 8  | 8  | 9  | 8  | 18 | 10 | 6  | 6  | 6  | 6  | 6  | 8  | 11 | 10 | 18            |
| 28-Feb | 6                             | 5  | 5  | 6  | 6  | 6  | 6  | 10 | 11 | 29 | 10 | 12 | 15 | 24 | 83 | 13 | 16 | 11 | 31 | 91 | 34 | 15 | 8  | 5  | 91            |
|        | 68                            | 35 | 81 | 46 | 60 | 34 | 69 | 60 | 41 | 74 | 82 | 92 | 93 | 76 | 86 | 48 | 16 | 35 | 31 | 91 | 34 | 16 | 69 | 88 |               |

Diurnal Maximum

UO - Unstable Operation







| Maximum Value: 1.3 km/h on Feb 24 17:00      Maximum Daily Average: 0.7 km/h on Feb 2  |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Hours in Service: 672<br>Hours of Data: 672  |      |                 |               |               |
|--|-------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|--|------|-----------------|---------------|---------------|
| Minimum Value: -1.5 km/h on Feb 13 12:00      Minimum Daily Average: -0.6 km/h on Feb 13<br>Maximum Diurnal Average: 0.1 km/h at hour 8      Minimum Diurnal Average: 0.0 km/h at hour 19<br>Monthly Average: 0.07 km/h      Percentiles: $P_1 = -1.0$ $P_{10} = -0.4$ $Q_1 = -0.2$ Median = 0.0 $Q_3 = 0.3$ $P_{90} = 0.6$ $P_{99} = 1.0$ |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Hours of Missing Data: 0<br>Hours of Calibration: 0<br>Percent Operational Time: 100.0 |      |                 |               |               |
| Day  | Hourly Period Ending At (MST) |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |      |                 | Daily Average | Daily Maximum |
|  | 1                             | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20   | 21   | 22   | 23   | 24              |               |               |
| 1-Feb  | -0.2                          | -0.4 | -0.1 | -0.2 | -0.5 | -0.3 | -0.4 | -0.3 | -0.7 | -0.5 | -0.4 | -0.2 | 0.0  | -0.4 | -0.2 | -0.1 | -0.1 | 0.1  | -0.1 | -0.2 | -0.2 | 0.0  | 0.0  | 0.1             | -0.2          | 0.1           |
| 2-Feb  | 0.3                           | 0.5  | 0.4  | 0.5  | 0.7  | 0.7  | 0.6  | 0.6  | 0.5  | 0.6  | 0.4  | 0.4  | 0.4  | 0.6  | 0.7  | 0.8  | 0.8  | 1.0  | 1.0  | 1.0  | 0.7  | 0.9  | 1.0  | 0.9             | 0.7           | 1.0           |
| 3-Feb  | 0.9                           | 0.8  | 0.8  | 0.7  | 0.7  | 0.6  | 0.7  | 0.6  | 0.5  | 0.3  | 0.3  | 0.1  | 0.0  | -0.3 | -0.4 | -0.2 | 0.2  | -0.3 | -0.1 | -0.2 | -0.3 | 0.2  | 0.0  | 0.0             | 0.2           | 0.9           |
| 4-Feb  | -0.2                          | -0.3 | -0.2 | -0.1 | -0.3 | -0.3 | -0.1 | -0.1 | -0.1 | -0.3 | -0.2 | -0.1 | -0.2 | -0.1 | -0.2 | 0.0  | -0.1 | 0.0  | -0.1 | -0.2 | -0.2 | 0.0  | 0.0  | 0.0             | -0.1          | 0.0           |
| 5-Feb  | -0.1                          | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.1  | 0.1  | 0.0  | 0.2  | 0.2  | 0.2  | 0.1  | 0.6  | 0.4  | 0.4  | 0.5  | 0.3  | 0.0  | 0.1  | -0.2   | -0.1 | -0.5            | 0.1           | 0.6           |
| 6-Feb  | -0.4                          | -0.1 | 0.0  | 0.0  | 0.0  | 0.0  | -0.2 | -0.1 | -0.1 | -0.1 | -0.1 | 0.1  | 0.0  | 0.3  | 0.3  | 0.3  | 0.4  | 0.1  | 0.3  | 0.4  | 0.4  | 0.4  | 0.4  | 0.4             | 0.1           | 0.4           |
| 7-Feb  | 0.2                           | 0.5  | 0.3  | 0.0  | -0.2 | -0.4 | -0.4 | -0.1 | -0.2 | -0.1 | 0.0  | 0.0  | -0.2 | -0.4 | -0.3 | -0.2 | -0.1 | -0.2 | -0.2 | -0.2 | -0.1 | -0.1   | -0.3 | -0.5            | -0.1          | 0.5           |
| 8-Feb  | -0.3                          | -0.3 | -0.2 | -0.4 | -0.3 | -0.1 | 0.0  | 0.0  | 0.0  | -0.2 | 0.3  | 0.4  | 0.3  | 0.4  | 0.4  | 0.4  | 0.4  | 0.3  | 0.1  | 0.4  | 0.5  | 0.5  | 0.5  | 0.5             | 0.2           | 0.5           |
| 9-Feb  | 0.6                           | 0.4  | 0.2  | 0.3  | 0.3  | 0.3  | 0.2  | 0.4  | 0.5  | 0.4  | 0.7  | 0.8  | 0.9  | 1.0  | 0.8  | 0.7  | 0.5  | 0.3  | 0.3  | 0.2  | 0.1  | 0.2  | 0.3  | 0.5             | 0.5           | 1.0           |
| 10-Feb   | 0.5                           | 0.1  | -0.1 | -0.3 | -0.2 | -0.2 | -0.3 | 0.0  | -0.3 | -0.2 | -0.1 | -0.2 | -0.4 | 0.0  | -0.4 | -0.4 | -0.2 | -0.3 | -0.3 | -0.3 | -0.2 | -0.2   | -0.1 | -0.1            | -0.2          | 0.5           |
| 11-Feb   | 0.0                           | 0.1  | 0.1  | 0.1  | 0.4  | 0.7  | 0.6  | 0.1  | 0.0  | 0.1  | 0.2  | 0.6  | 0.8  | 0.8  | 0.2  | 0.0  | -0.2 | -0.2 | -0.1 | -0.1 | -0.3 | 0.0  | 0.0  | -0.3            | 0.2           | 0.8           |
| 12-Feb   | -0.2                          | -0.1 | -0.2 | -0.2 | -0.1 | -0.1 | -0.1 | 0.0  | 0.0  | 0.0  | -0.1 | 0.0  | 0.0  | 0.1  | 0.3  | 0.6  | 0.6  | 0.8  | 0.6  | 0.9  | 0.9  | 0.7  | 0.9  | 0.9             | 0.3           | 0.9           |
| 13-Feb   | 1.0                           | 0.8  | 0.4  | 0.2  | -0.2 | -0.3 | -0.2 | 0.0  | -0.6 | -0.9 | -1.2 | -1.5 | -1.4 | -0.9 | -1.1 | -1.1 | -1.3 | -1.1 | -0.9 | -0.7 | -1.0 | -0.8   | -0.9 | -0.6            | -0.6          | 1.0           |
| 14-Feb   | -0.3                          | -0.3 | -0.1 | -0.2 | -0.3 | -0.2 | -0.3 | -0.3 | -0.1 | 0.0  | 0.1  | 0.3  | 0.3  | 0.1  | 0.1  | 0.0  | -0.3 | 0.1  | -0.1 | -0.1 | -0.1 | -0.1   | 0.1  | 0.0             | -0.1          | 0.3           |
| 15-Feb   | 0.0                           | 0.1  | 0.2  | 0.4  | 0.3  | 0.1  | 0.0  | 0.1  | 0.4  | 0.3  | 0.3  | 0.3  | 0.5  | 0.4  | 0.5  | 0.3  | 0.4  | 0.6  | 0.5  | 0.5  | 0.6  | 0.6  | 0.6  | 0.6             | 0.4           | 0.6           |
| 16-Feb   | 0.5                           | 0.4  | 0.5  | 0.4  | 0.6  | 0.7  | 0.5  | 0.7  | 0.6  | 0.1  | 0.2  | 0.3  | 0.5  | 0.2  | 0.2  | 0.2  | 0.1  | -0.3 | -0.6 | -0.7 | -0.7 | -0.4   | -0.1 | -0.1            | 0.2           | 0.7           |
| 17-Feb   | -0.1                          | 0.1  | 0.0  | -0.1 | -0.1 | 0.1  | 0.4  | 0.1  | -0.1 | 0.0  | -0.1 | -0.1 | 0.0  | -0.1 | 0.0  | -0.5 | -0.3 | -0.5 | -0.3 | -0.6 | -0.5 | -0.5   | -0.3 | -0.2            | -0.1          | 0.4           |
| 18-Feb   | -0.5                          | -0.5 | -0.3 | -0.3 | -0.2 | -0.2 | -0.2 | -0.1 | -0.1 | 0.1  | -0.1 | -0.2 | -0.3 | -0.2 | 0.0  | 0.0  | 0.0  | 0.0  | -0.1 | 0.0  | 0.0  | 0.2  | 0.2  | 0.5             | -0.1          | 0.5           |
| 19-Feb   | 0.6                           | 0.6  | 0.6  | 0.5  | 0.4  | 0.4  | 0.5  | 0.5  | 0.2  | 0.3  | 0.1  | 0.0  | 0.2  | 0.2  | -0.1 | -0.2 | -0.3 | -0.2 | -0.1 | -0.2 | -0.3 | -0.5   | -0.4 | -0.5            | 0.1           | 0.6           |
| 20-Feb   | -0.4                          | -0.3 | -0.4 | -0.1 | -0.2 | 0.0  | -0.1 | -0.1 | 0.1  | 0.2  | 0.2  | 0.2  | 0.6  | 0.0  | 0.3  | 0.0  | -0.3 | -0.2 | 0.1  | -0.1 | -0.2 | -0.2   | -0.6 | -0.6            | -0.1          | 0.6           |
| 21-Feb   | -0.6                          | -0.8 | -0.4 | -0.1 | -0.3 | -0.1 | 0.0  | -0.1 | -0.3 | -0.4 | 0.0  | -0.2 | -0.4 | -0.8 | -0.3 | -0.3 | -0.1 | -0.3 | -0.5 | -0.4 | -0.2 | -0.1   | 0.1  | 0.1             | -0.3          | 0.1           |
| 22-Feb   | 0.0                           | 0.0  | 0.1  | 0.0  | 0.1  | 0.1  | 0.0  | 0.1  | 0.1  | 0.6  | 0.3  | 0.1  | 0.0  | 0.0  | -0.2 | -0.1 | 0.0  | 0.0  | -0.1 | -0.2 | -0.1 | 0.0  | 0.1  | 0.0             | 0.0           | 0.6           |
| 23-Feb   | 0.1                           | 0.0  | -0.1 | -0.2 | -0.6 | -0.2 | -0.1 | 0.1  | 0.0  | 0.0  | 0.2  | -0.5 | -0.1 | 0.3  | 0.4  | 0.2  | 0.4  | 0.6  | 0.5  | 0.3  | 0.2  | 0.3  | 0.4  | 0.6             | 0.1           | 0.6           |
| 24-Feb   | 0.4                           | 0.3  | 0.3  | 0.6  | 0.8  | 0.9  | 0.9  | 0.9  | 0.9  | 0.9  | 0.9  | 0.9  | 0.6  | 0.3  | 0.7  | 1.1  | 1.3  | 0.6  | 0.2  | 0.2  | 0.4  | 0.3  | 0.4  | 0.2             | 0.6           | 1.3           |
| 25-Feb   | 0.3                           | 0.4  | 0.6  | 0.2  | 0.5  | 0.4  | 0.2  | 0.2  | 0.2  | 0.1  | 0.5  | 0.0  | 0.0  | 0.0  | 0.3  | 0.2  | 0.3  | 0.2  | 0.1  | 0.2  | 0.4  | 0.4  | 0.7  | 0.6             | 0.3           | 0.7           |
| 26-Feb   | 0.8                           | 0.6  | 0.5  | 0.4  | 0.4  | 0.5  | 0.9  | 0.5  | 0.5  | 0.1  | 0.5  | 0.9  | 0.3  | 0.2  | 0.3  | 0.3  | 0.5  | 0.0  | 0.2  | 0.0  | -0.1 | -0.1   | 0.0  | 0.0             | 0.3           | 0.9           |
| 27-Feb   | 0.0                           | 0.0  | -0.3 | -0.2 | -0.6 | -0.6 | -0.6 | -0.5 | -0.4 | -0.8 | -0.2 | -0.2 | -0.3 | -0.3 | -0.3 | 0.0  | -0.2 | -0.4 | -0.8 | -0.4 | -0.4 | -0.6   | -0.3 | -0.4            | -0.4          | 0.0           |
| 28-Feb   | -0.1                          | -0.2 | -0.2 | -0.3 | -0.2 | -0.2 | 0.0  | 0.0  | 0.1  | 0.2  | -0.2 | 0.0  | 0.0  | 0.2  | -0.1 | -0.1 | 0.0  | -0.1 | -0.1 | 0.0  | 0.1  | 0.0  | 0.1  | 0.4             | 0.0           | 0.4           |
|  |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |      | Diurnal Average |               |               |
|  |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |      | Diurnal Maximum |               |               |
|  |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |      |                 |               |               |



| Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0<br>Maximum Value: 4.3 km/h on Feb 13 13:00<br><br>Minimum Value: 0.1 km/h on Feb 15 01:00<br><br>Percentiles: $P_1 = 0.2$ $P_{10} = 0.4$ $Q_1 = 0.7$ Median = 1.0 $Q_3 = 1.4$ $P_{90} = 2.1$ $P_{99} = 3.4$ |                               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Hours in Service: 672<br>Hours of Data: 672<br>Hours of Missing Data: 0<br>Hours of Calibration: 0<br>Percent Operational Time: 100.0 |               |
|---|-------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---|---------------|
| Day   | Hourly Period Ending At (MST) |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |   | Daily Maximum |
|   | 1                             | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19  | 20  | 21  | 22  | 23  | 24  |               |
| 1-Feb   | 1.2                           | 1.1 | 0.4 | 0.6 | 1.3 | 1.2 | 1.5 | 1.2 | 1.6 | 1.5 | 1.5 | 1.2 | 1.5 | 1.3 | 1.2 | 1.0 | 0.6 | 0.5 | 0.7 | 0.5 | 0.4 | 0.3 | 0.1 | 0.2   | 1.6           |
| 2-Feb   | 0.4                           | 0.4 | 0.7 | 0.9 | 0.9 | 0.9 | 0.8 | 0.8 | 0.9 | 1.2 | 1.0 | 0.9 | 1.0 | 1.8 | 2.4 | 3.0 | 2.7 | 2.9 | 2.9 | 2.8 | 2.8 | 2.7 | 2.6 | 2.5   | 3.0           |
| 3-Feb   | 2.3                           | 2.2 | 2.3 | 1.7 | 1.5 | 1.2 | 1.2 | 1.1 | 0.8 | 0.9 | 0.7 | 0.8 | 0.8 | 1.1 | 1.4 | 1.1 | 1.5 | 1.2 | 1.3 | 1.2 | 1.0 | 1.0 | 0.8 | 0.7   | 2.3           |
| 4-Feb   | 1.0                           | 0.7 | 0.6 | 0.8 | 0.9 | 1.1 | 0.7 | 0.7 | 1.0 | 1.1 | 1.1 | 1.0 | 0.9 | 1.0 | 0.9 | 0.6 | 0.6 | 0.6 | 0.7 | 0.7 | 0.8 | 0.7 | 0.7 | 0.5   | 1.1           |
| 5-Feb   | 0.5                           | 0.5 | 0.4 | 0.4 | 0.5 | 0.5 | 0.6 | 0.7 | 0.6 | 0.4 | 0.8 | 0.8 | 0.6 | 0.8 | 0.9 | 0.9 | 0.7 | 0.8 | 0.5 | 0.2 | 0.3 | 1.0 | 2.2 | 2.6   | 2.6           |
| 6-Feb   | 2.5                           | 1.7 | 1.5 | 1.1 | 1.0 | 1.0 | 0.9 | 0.6 | 0.6 | 0.9 | 0.9 | 0.8 | 0.7 | 1.0 | 0.9 | 1.1 | 1.1 | 0.6 | 0.9 | 0.9 | 0.8 | 0.8 | 0.7 | 0.7   | 2.5           |
| 7-Feb   | 0.7                           | 0.8 | 0.6 | 2.0 | 2.0 | 2.8 | 2.2 | 1.9 | 1.9 | 1.8 | 2.2 | 2.6 | 2.6 | 2.8 | 3.0 | 2.6 | 2.2 | 1.9 | 1.9 | 1.9 | 1.1 | 0.7 | 1.3 | 1.7   | 3.0           |
| 8-Feb   | 1.6                           | 1.3 | 0.8 | 0.9 | 0.5 | 0.4 | 0.2 | 0.2 | 0.2 | 0.4 | 0.7 | 1.0 | 0.9 | 0.8 | 0.9 | 0.7 | 0.7 | 0.4 | 0.4 | 0.5 | 0.8 | 0.9 | 1.0 | 1.1   | 1.6           |
| 9-Feb   | 1.4                           | 1.1 | 0.6 | 0.9 | 0.7 | 0.5 | 0.8 | 0.6 | 0.5 | 0.7 | 1.1 | 1.2 | 1.4 | 1.6 | 1.0 | 0.9 | 0.8 | 0.6 | 0.4 | 0.4 | 0.4 | 0.4 | 0.5 | 0.4   | 1.6           |
| 10-Feb  | 0.5                           | 0.5 | 0.6 | 0.7 | 0.7 | 1.4 | 1.6 | 1.0 | 1.2 | 1.2 | 1.2 | 1.1 | 1.3 | 1.1 | 1.5 | 1.4 | 1.3 | 1.2 | 1.2 | 1.3 | 1.0 | 0.8 | 0.7 | 0.4   | 1.6           |
| 11-Feb  | 0.4                           | 0.3 | 0.2 | 0.4 | 0.7 | 0.9 | 0.9 | 0.5 | 0.5 | 0.6 | 0.8 | 1.0 | 1.1 | 0.9 | 1.2 | 1.9 | 2.2 | 1.7 | 1.7 | 1.8 | 1.6 | 0.5 | 1.2 | 2.5   | 2.5           |
| 12-Feb  | 2.6                           | 2.9 | 2.0 | 1.5 | 1.6 | 1.6 | 1.6 | 1.1 | 0.8 | 0.4 | 0.6 | 0.8 | 0.9 | 0.7 | 0.6 | 0.8 | 1.1 | 1.6 | 1.6 | 1.8 | 1.8 | 1.4 | 2.2 | 2.0   | 2.9           |
| 13-Feb  | 1.6                           | 1.1 | 1.4 | 1.5 | 2.8 | 2.8 | 2.7 | 2.3 | 2.5 | 3.5 | 4.0 | 4.0 | 4.3 | 3.8 | 3.7 | 3.2 | 3.7 | 3.4 | 2.9 | 2.4 | 2.9 | 2.9 | 2.4 | 2.4   | 4.3           |
| 14-Feb  | 2.4                           | 2.1 | 1.7 | 1.0 | 1.1 | 1.2 | 1.5 | 1.2 | 1.1 | 0.8 | 0.9 | 1.1 | 0.9 | 1.0 | 1.1 | 1.0 | 1.1 | 1.2 | 1.2 | 0.8 | 1.0 | 0.9 | 0.6 | 0.1   | 2.4           |
| 15-Feb  | 0.1                           | 0.1 | 0.3 | 0.4 | 0.3 | 0.3 | 0.4 | 0.4 | 0.7 | 0.8 | 0.8 | 0.9 | 1.2 | 1.2 | 1.1 | 1.0 | 0.8 | 0.7 | 0.4 | 0.3 | 1.0 | 1.1 | 0.9 | 0.6   | 1.2           |
| 16-Feb  | 0.9                           | 1.0 | 0.9 | 1.2 | 1.2 | 1.1 | 1.1 | 1.2 | 1.4 | 1.0 | 1.1 | 1.0 | 1.0 | 0.8 | 0.7 | 0.5 | 0.2 | 1.1 | 2.0 | 2.4 | 2.1 | 1.7 | 1.4 | 1.3   | 2.4           |
| 17-Feb  | 0.9                           | 1.0 | 1.1 | 1.3 | 0.7 | 0.7 | 1.0 | 1.1 | 1.0 | 1.1 | 1.1 | 1.3 | 1.3 | 1.2 | 1.4 | 1.3 | 1.7 | 1.8 | 1.7 | 1.6 | 1.6 | 1.4 | 0.8 | 0.4   | 1.8           |
| 18-Feb  | 1.1                           | 0.9 | 0.7 | 0.5 | 0.4 | 0.7 | 0.7 | 0.6 | 0.5 | 0.7 | 0.8 | 1.0 | 1.2 | 1.2 | 1.1 | 0.9 | 0.5 | 0.2 | 0.2 | 0.3 | 0.2 | 0.2 | 0.3 | 0.4   | 1.2           |
| 19-Feb  | 0.4                           | 0.6 | 0.7 | 0.6 | 0.5 | 0.9 | 0.6 | 0.7 | 0.3 | 0.9 | 0.8 | 0.9 | 1.1 | 1.1 | 0.8 | 0.9 | 0.9 | 1.0 | 0.7 | 0.6 | 1.2 | 1.4 | 1.3 | 1.3   | 1.4           |
| 20-Feb  | 1.3                           | 1.1 | 1.4 | 1.0 | 0.6 | 0.5 | 0.5 | 0.3 | 0.4 | 0.5 | 0.7 | 0.8 | 1.0 | 0.9 | 1.2 | 1.0 | 1.4 | 1.3 | 1.0 | 0.6 | 0.4 | 0.4 | 1.7 | 2.4   | 2.4           |
| 21-Feb  | 2.5                           | 2.7 | 2.2 | 1.9 | 1.8 | 1.7 | 1.0 | 1.3 | 1.5 | 1.5 | 1.4 | 1.4 | 1.5 | 1.8 | 1.8 | 2.1 | 1.6 | 0.9 | 1.0 | 1.2 | 0.7 | 0.3 | 0.3 | 0.2   | 2.7           |
| 22-Feb  | 0.3                           | 0.2 | 0.2 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.7 | 0.9 | 0.7 | 0.6 | 1.1 | 1.2 | 1.1 | 0.9 | 0.5 | 0.3 | 0.3 | 0.2 | 0.2 | 0.1 | 0.2 | 0.2   | 1.2           |
| 23-Feb  | 0.2                           | 0.2 | 0.3 | 0.5 | 1.1 | 0.6 | 0.4 | 0.2 | 0.1 | 0.3 | 0.8 | 0.8 | 1.0 | 1.0 | 1.2 | 0.9 | 0.7 | 0.7 | 0.4 | 0.6 | 0.6 | 0.4 | 0.6 | 0.5   | 1.2           |
| 24-Feb  | 0.7                           | 0.8 | 1.1 | 0.8 | 0.8 | 1.1 | 1.0 | 1.0 | 1.2 | 1.4 | 1.6 | 1.6 | 2.3 | 3.1 | 2.5 | 1.9 | 2.2 | 2.1 | 3.0 | 2.3 | 2.2 | 1.9 | 1.8 | 1.7   | 3.1           |
| 25-Feb  | 1.3                           | 1.2 | 0.8 | 0.8 | 0.9 | 0.8 | 0.6 | 0.6 | 0.4 | 0.5 | 1.0 | 1.1 | 1.4 | 1.7 | 1.2 | 1.1 | 1.0 | 0.8 | 0.9 | 0.4 | 0.6 | 0.6 | 0.7 | 1.3   | 1.7           |
| 26-Feb  | 1.1                           | 1.0 | 0.8 | 0.7 | 0.8 | 0.8 | 1.6 | 1.0 | 0.9 | 0.6 | 1.2 | 1.6 | 1.4 | 1.4 | 1.1 | 1.2 | 1.4 | 1.4 | 1.5 | 1.1 | 0.8 | 1.0 | 1.1 | 1.1   | 1.6           |
| 27-Feb  | 1.0                           | 0.9 | 1.1 | 1.1 | 1.4 | 1.8 | 2.0 | 2.3 | 1.8 | 2.1 | 1.9 | 1.8 | 1.9 | 2.0 | 2.0 | 1.7 | 1.9 | 1.6 | 1.9 | 2.0 | 2.3 | 2.0 | 1.5 | 1.6   | 2.3           |
| 28-Feb  | 0.8                           | 1.0 | 1.0 | 1.0 | 0.4 | 0.4 | 0.5 | 0.4 | 0.5 | 0.6 | 0.9 | 1.0 | 1.2 | 1.2 | 1.1 | 0.9 | 0.7 | 0.3 | 0.2 | 0.1 | 0.2 | 0.2 | 0.2 | 0.5   | 1.2           |
| Diurnal Maximum   |                               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |   |               |



Summary of Hour Averages

Mannix - February 2023

| Maximum Value: 1.5 km/h on Feb 26 12:00     |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Maximum Daily Average: 0.5 km/h on Feb 2   |               |               |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |      |      |     |     |     |     | Hours in Service: 672    |  |
|---|-------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|--|---------------|---------------|------|------|------|------|------|------|------|-----|-----|-----|-----|-----|-----|-----|-----|------|------|-----|-----|-----|-----|--------------------------|--|
| Minimum Value: -1.4 km/h on Feb 13 16:00    |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Minimum Daily Average: -0.6 km/h on Feb 7  |               |               |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |      |      |     |     |     |     | Hours of Data: 668       |  |
| Maximum Diurnal Average: 0.1 km/h at hour 1 |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Minimum Diurnal Average: -0.1 km/h at hour 10  |               |               |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |      |      |     |     |     |     | Hours of Missing Data: 4 |  |
| Monthly Average: -0.02 km/h                 |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Percentiles: P <sub>1</sub> = -1.0 P <sub>10</sub> = -0.5 Q <sub>1</sub> = -0.3 Median = -0.1 Q <sub>3</sub> = 0.3 P <sub>90</sub> = 0.6 P <sub>99</sub> = 0.9 |               |               |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |      |      |     |     |     |     | Hours of Calibration: 0  |  |
|   |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Percent Operational Time: 99.4   |               |               |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |      |      |     |     |     |     |                          |  |
| Day   | Hourly Period Ending At (MST) |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  | Daily Average | Daily Maximum |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |      |      |     |     |     |     |                          |  |
|   | 1                             | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20   | 21   | 22   | 23   | 24   |               |               |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |      |      |     |     |     |     |                          |  |
| 1-Feb                                       | -0.2                          | -0.4 | 0.0  | -0.3 | -0.4 | -0.2 | -0.3 | -0.4 | -0.4 | -0.6 | -0.5 | -0.2 | 0.1  | -0.5 | -0.3 | -0.3 | -0.3 | -0.1 | -0.3 | -0.5 | -0.5 | -0.3 | -0.2 | -0.1   | -0.3          | 0.1           |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |      |      |     |     |     |     |                          |  |
| 2-Feb                                       | 0.2                           | 0.3  | 0.3  | 0.6  | 0.8  | 0.6  | 0.6  | 0.5  | 0.7  | 0.8  | 0.4  | 0.2  | 0.2  | 0.7  | 0.4  | 0.4  | 0.6  | 0.9  | 0.7  | 0.7  | 0.4  | 0.5  | 0.6  | 0.4  | 0.5           | 0.9           |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |      |      |     |     |     |     |                          |  |
| 3-Feb                                       | 0.9                           | 0.8  | 0.7  | 0.5  | 0.5  | 0.4  | 0.5  | 0.5  | 0.4  | 0.3  | 0.1  | 0.0  | -0.1 | -0.4 | -0.5 | -0.2 | 0.5  | 0.0  | 0.2  | 0.0  | -0.2 | 0.2  | 0.1  | 0.0  | 0.2           | 0.9           |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |      |      |     |     |     |     |                          |  |
| 4-Feb                                       | -0.2                          | -0.2 | -0.1 | -0.1 | -0.3 | -0.3 | -0.2 | -0.3 | -0.3 | -0.2 | -0.2 | 0.0  | -0.1 | 0.3  | -0.3 | -0.2 | -0.2 | -0.1 | -0.1 | -0.2 | -0.3 | -0.1 | -0.1 | -0.2   | -0.2          | 0.3           |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |      |      |     |     |     |     |                          |  |
| 5-Feb                                       | 0.0                           | -0.1 | -0.1 | -0.1 | -0.1 | -0.2 | 0.0  | -0.1 | 0.0  | -0.2 | 0.1  | 0.1  | 0.0  | -0.2 | 0.4  | 0.1  | 0.2  | 0.3  | 0.0  | -0.3 | -0.3 | -0.8 | -0.5 | -0.7   | -0.1          | 0.4           |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |      |      |     |     |     |     |                          |  |
| 6-Feb                                       | -0.8                          | -0.7 | -0.6 | -0.5 | -0.4 | -0.3 | -0.6 | -0.6 | -0.6 | -0.5 | 0.0  | 0.1  | -0.2 | 0.3  | 0.5  | 0.5  | 0.4  | 0.0  | 0.0  | 0.3  | 0.2  | 0.3  | 0.4  | 0.4  | -0.1          | 0.5           |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |      |      |     |     |     |     |                          |  |
| 7-Feb                                       | 0.1                           | 0.5  | 0.0  | -0.9 | -0.7 | -1.0 | -0.8 | -0.6 | -0.7 | -0.7 | -0.6 | -0.6 | -0.6 | -1.1 | -1.0 | -0.6 | -0.8 | -0.9 | -1.0 | -0.8 | -0.7 | -0.6 | -0.5 | -0.4   | -0.6          | 0.5           |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |      |      |     |     |     |     |                          |  |
| 8-Feb                                       | -0.3                          | -0.4 | -0.2 | -0.4 | -0.2 | -0.1 | -0.2 | -0.1 | 0.0  | -0.2 | -0.1 | 0.2  | 0.1  | 0.3  | 0.3  | 0.2  | 0.5  | 0.3  | 0.2  | 0.5  | 0.5  | 0.5  | 0.7  | 0.9  | 0.1           | 0.9           |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |      |      |     |     |     |     |                          |  |
| 9-Feb                                       | 0.8                           | 0.4  | -0.3 | 0.2  | 0.0  | -0.2 | -0.2 | 0.1  | 0.1  | 0.2  | 0.5  | 0.7  | 0.6  | 0.9  | 0.7  | 0.7  | 0.5  | 0.5  | 0.3  | 0.3  | 0.3  | 0.1  | 0.1  | 0.4  | 0.3           | 0.9           |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |      |      |     |     |     |     |                          |  |
| 10-Feb                                      | 0.5                           | 0.2  | -0.1 | -0.4 | -0.4 | -0.4 | -0.1 | -0.2 | -0.3 | -0.3 | -0.2 | -0.1 | -0.4 | 0.0  | -0.3 | -0.4 | -0.2 | -0.5 | -0.4 | -0.5 | -0.1 | -0.3 | -0.2 | -0.2   | -0.2          | 0.5           |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |      |      |     |     |     |     |                          |  |
| 11-Feb                                      | -0.1                          | -0.1 | -0.1 | 0.0  | 0.1  | 0.5  | 0.5  | -0.1 | -0.2 | -0.2 | 0.1  | 0.4  | 0.7  | 0.6  | 0.1  | -0.6 | -1.1 | -0.8 | -0.6 | -0.6 | -0.7 | -0.4 | -0.4 | -0.9   | -0.2          | 0.7           |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |      |      |     |     |     |     |                          |  |
| 12-Feb                                      | -0.9                          | -0.9 | -0.7 | -0.7 | -0.6 | -0.7 | -0.7 | -0.5 | -0.3 | -0.3 | -0.3 | -0.3 | -0.1 | 0.0  | 0.3  | 0.8  | 0.7  | 0.7  | 0.7  | 0.7  | 0.8  | 0.7  | 0.7  | 0.8  | 0.0           | 0.8           |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |      |      |     |     |     |     |                          |  |
| 13-Feb                                      | 1.0                           | 0.4  | -0.2 | -0.5 | -1.0 | -1.0 | -0.9 | -0.7 | -0.8 | UO   | UO   | UO   | UO   | -0.2 | -1.1 | -1.4 | -1.2 | -0.7 | -0.2 | -0.1 | -0.4 | -0.3 | -0.6 | -0.2   | -0.5          | 1.0           |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |      |      |     |     |     |     |                          |  |
| 14-Feb                                      | 0.0                           | -0.1 | -0.1 | -0.6 | -0.2 | -0.1 | -0.1 | -0.2 | -0.1 | -0.1 | 0.0  | 0.4  | 0.4  | 0.4  | 0.1  | -0.2 | 0.5  | 0.2  | -0.2 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0           | 0.5           |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |      |      |     |     |     |     |                          |  |
| 15-Feb                                      | -0.1                          | 0.0  | 0.1  | 0.3  | 0.3  | 0.2  | 0.0  | -0.1 | 0.2  | 0.2  | 0.2  | -0.1 | 0.3  | 0.1  | 0.1  | 0.3  | 0.6  | 0.4  | 0.5  | 0.5  | 0.5  | 0.5  | 0.5  | 0.5  | 0.2           | 0.6           |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |      |      |     |     |     |     |                          |  |
| 16-Feb                                      | 0.4                           | 0.5  | 0.5  | 0.3  | 0.4  | 0.6  | 0.4  | 0.5  | 0.5  | 0.1  | 0.0  | 0.0  | 0.3  | 0.1  | 0.0  | -0.1 | -0.2 | -0.4 | -0.4 | -0.2 | -0.2 | -0.3 | -0.2 | -0.1   | 0.1           | 0.6           |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |      |      |     |     |     |     |                          |  |
| 17-Feb                                      | 0.1                           | 0.3  | 0.2  | 0.0  | -0.1 | 0.1  | 0.6  | 0.6  | 0.1  | 0.1  | -0.2 | -0.1 | 0.0  | -0.2 | 0.0  | -0.4 | -0.2 | -0.2 | -0.2 | -0.5 | -0.3 | -0.2 | -0.3 | -0.2   | 0.0           | 0.6           |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |      |      |     |     |     |     |                          |  |
| 18-Feb                                      | -0.4                          | -0.4 | -0.1 | -0.3 | -0.2 | -0.3 | -0.4 | -0.3 | -0.2 | 0.2  | -0.2 | -0.2 | -0.3 | -0.4 | -0.2 | -0.2 | -0.2 | -0.2 | -0.1 | 0.1  | 0.1  | 0.1  | 0.3  | 0.5  | -0.1          | 0.5           |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |      |      |     |     |     |     |                          |  |
| 19-Feb                                      | 0.5                           | 0.9  | 0.9  | 0.6  | 0.6  | 0.5  | 0.7  | 0.7  | 0.2  | 0.2  | 0.1  | -0.2 | 0.0  | 0.2  | -0.3 | -0.3 | -0.5 | -0.3 | -0.3 | -0.4 | -0.4 | -0.4 | -0.5 | -0.6   | 0.1           | 0.9           |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |      |      |     |     |     |     |                          |  |
| 20-Feb                                      | -0.3                          | -0.2 | -0.3 | -0.3 | -0.3 | -0.2 | -0.3 | -0.2 | 0.0  | 0.0  | 0.1  | 0.1  | 0.8  | 0.0  | 0.7  | 0.0  | 0.0  | 0.1  | -0.1 | -0.1 | -0.1 | -0.1 | -0.5 | -0.5   | -0.1          | 0.8           |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |      |      |     |     |     |     |                          |  |
| 21-Feb                                      | -0.4                          | -0.5 | 0.0  | 0.1  | 0.1  | 0.3  | 0.0  | -0.1 | -0.5 | -0.8 | -0.1 | -0.2 | -0.7 | -1.0 | -0.4 | -0.4 | -0.2 | -0.5 | -0.6 | -0.4 | -0.3 | -0.3 | -0.1 | -0.1   | -0.3          | 0.3           |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |      |      |     |     |     |     |                          |  |
| 22-Feb                                      | -0.2                          | -0.3 | -0.2 | -0.1 | 0.0  | -0.2 | -0.2 | -0.2 | -0.2 | 0.0  | 0.3  | -0.1 | 0.0  | -0.2 | -0.4 | -0.2 | -0.2 | -0.1 | -0.2 | -0.3 | -0.1 | -0.1 | 0.0  | 0.0  | -0.1          | 0.3           |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |      |      |     |     |     |     |                          |  |
| 23-Feb                                      | 0.0                           | -0.1 | -0.2 | -0.3 | -0.5 | -0.4 | -0.3 | -0.2 | -0.3 | -0.2 | 0.1  | -0.6 | -0.2 | 0.2  | 0.7  | 0.0  | 0.1  | 0.6  | 0.4  | 0.1  | 0.0  | 0.2  | 0.3  | 0.3  | 0.0           | 0.7           |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |      |      |     |     |     |     |                          |  |
| 24-Feb                                      | 0.4                           | 0.0  | 0.2  | 0.6  | 0.8  | 0.9  | 0.8  | 0.8  | 0.8  | 0.8  | 0.7  | 0.9  | 0.5  | 0.3  | 0.8  | 1.1  | 1.0  | 0.4  | -0.1 | 0.3  | 0.2  | 0.2  | 0.3  | 0.1  | 0.5           | 1.1           |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |      |      |     |     |     |     |                          |  |
| 25-Feb                                      | 0.1                           | 0.1  | 0.2  | 0.1  | 0.3  | 0.0  | -0.3 | -0.1 | -0.1 | -0.2 | 0.2  | -0.3 | 0.0  | -0.3 | 0.2  | 0.3  | 0.7  | 0.2  | -0.2 | 0.1  | 0.5  | 0.5  | 0.6  | 0.6  | 0.1           | 0.7           |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |      |      |     |     |     |     |                          |  |
| 26-Feb                                      | 0.8                           | 0.6  | 0.5  | 0.5  | 0.4  | 0.4  | 0.8  | 0.7  | 0.6  | 0.2  | 0.4  | 1.5  | 0.4  | 0.6  | 0.5  | 0.0  | 0.6  | 0.4  | 0.5  | -0.1 | 0.0  | 0.1  | 0.2  | 0.1  | 0.4           | 1.5           |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |      |      |     |     |     |     |                          |  |
| 27-Feb                                      | 0.1                           | 0.3  | -0.1 | -0.3 | -0.7 | -0.6 | -0.8 | -0.8 | -0.5 | -1.1 | -0.2 | -0.1 | -0.1 | -0.5 | 0.1  | 0.4  | 0.1  | -0.2 | -0.5 | -0.2 | 0.1  | -0.2 | -0.3 | -0.5   | -0.3          | 0.4           |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |      |      |     |     |     |     |                          |  |
| 28-Feb                                      | 0.0                           | -0.3 | -0.3 | -0.3 | -0.3 | -0.4 | -0.1 | -0.1 | -0.1 | 0.1  | -0.4 | -0.1 | -0.2 | 0.3  | -0.3 | -0.3 | -0.1 | -0.1 | -0.1 | 0.0  | 0.0  | 0.1  | 0.1  | 0.4  | -0.1          | 0.4           |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |      |      |     |     |     |     |                          |  |
|   |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 0.1  | 0.0           | 0.0           | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | 0.0 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | -0.1 | -0.1 | 0.0 | 0.0 | 0.0 | 0.0 | Diurnal Average          |  |
|   |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 1.0  | 0.9           | 0.9           | 0.6  | 0.8  | 0.9  | 0.8  | 0.8  | 0.8  | 0.8  | 0.7 | 1.5 | 0.8 | 0.9 | 0.8 | 1.1 | 1.0 | 0.9 | 0.7  | 0.7  | 0.8 | 0.7 | 0.7 | 0.9 | Diurnal Maximum          |  |
| UO - Unstable Operation                     |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |               |               |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |      |      |     |     |     |     |                          |  |



**Wood Buffalo Environmental Association**  
**Summary of Hour Standard Deviations**

**Vertical Wind Speed 45 m (VW45m) - km/h**  
**Mannix - February 2023**

| Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0  |                               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Hours in Service: 672    |     |     |     |     |               |
|--|-------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------------------------|-----|-----|-----|-----|---------------|
| Maximum Value: 4.1 km/h on Feb 13 15:00  |                               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Hours of Data: 668       |     |     |     |     |               |
| Minimum Value: 0.1 km/h on Feb 15 01:00  |                               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Hours of Missing Data: 4 |     |     |     |     |               |
| Percentiles: P <sub>1</sub> = 0.1 P <sub>10</sub> = 0.3 Q <sub>1</sub> = 0.6 Median = 1.0 Q <sub>3</sub> = 1.5 P <sub>90</sub> = 2.3 P <sub>99</sub> = 3.4 |                               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Hours of Calibration: 0  |     |     |     |     |               |
| Percent Operational Time: 99.4   |                               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                          |     |     |     |     |               |
| Day  | Hourly Period Ending At (MST) |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                          |     |     |     |     | Daily Maximum |
|  | 1                             | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19  | 20                       | 21  | 22  | 23  | 24  |               |
| 1-Feb  | 1.5                           | 1.0 | 0.4 | 0.6 | 1.4 | 1.2 | 1.5 | 1.2 | 1.7 | 1.3 | 1.6 | 1.4 | 1.8 | 1.6 | 1.5 | 1.2 | 0.8 | 0.6 | 0.6 | 0.4                      | 0.4 | 0.4 | 0.3 | 0.2 | 1.8           |
| 2-Feb  | 0.3                           | 0.4 | 0.5 | 0.9 | 0.7 | 0.8 | 0.4 | 0.6 | 1.0 | 1.1 | 1.2 | 1.0 | 1.0 | 2.0 | 2.6 | 3.5 | 3.3 | 3.4 | 3.3 | 3.3                      | 3.0 | 2.9 | 2.8 | 2.8 | 3.5           |
| 3-Feb  | 2.8                           | 2.6 | 2.5 | 2.1 | 1.7 | 1.4 | 1.3 | 1.1 | 0.8 | 0.8 | 0.6 | 0.7 | 0.8 | 1.4 | 1.3 | 1.1 | 1.5 | 1.1 | 1.5 | 1.2                      | 1.0 | 1.3 | 0.9 | 0.8 | 2.8           |
| 4-Feb  | 0.8                           | 0.5 | 0.5 | 0.7 | 0.7 | 0.7 | 0.6 | 0.6 | 1.0 | 1.1 | 1.2 | 1.2 | 1.1 | 1.3 | 0.9 | 0.6 | 0.6 | 0.6 | 0.7 | 0.6                      | 0.7 | 0.6 | 0.7 | 0.5 | 1.3           |
| 5-Feb  | 0.5                           | 0.4 | 0.3 | 0.3 | 0.4 | 0.5 | 0.6 | 0.6 | 0.6 | 0.6 | 0.3 | 0.7 | 0.8 | 0.7 | 0.7 | 0.9 | 0.9 | 0.5 | 0.9 | 0.4                      | 0.4 | 0.6 | 0.6 | 2.4 | 2.6           |
| 6-Feb  | 2.7                           | 1.8 | 1.5 | 1.2 | 1.3 | 1.1 | 0.9 | 0.6 | 0.6 | 0.9 | 1.1 | 0.9 | 0.7 | 1.2 | 1.1 | 1.2 | 1.3 | 0.7 | 1.2 | 0.9                      | 0.9 | 1.0 | 0.6 | 0.7 | 2.7           |
| 7-Feb  | 0.7                           | 1.1 | 1.0 | 2.3 | 2.4 | 3.2 | 2.5 | 2.5 | 2.4 | 2.2 | 2.7 | 3.1 | 3.3 | 3.3 | 3.5 | 3.2 | 2.7 | 2.1 | 1.9 | 2.1                      | 1.5 | 0.8 | 1.4 | 1.7 | 3.5           |
| 8-Feb  | 1.6                           | 1.2 | 1.0 | 0.7 | 0.3 | 0.3 | 0.2 | 0.3 | 0.2 | 0.2 | 0.7 | 1.2 | 1.0 | 1.0 | 1.1 | 0.7 | 0.9 | 0.3 | 0.3 | 0.4                      | 0.5 | 0.6 | 0.7 | 0.8 | 1.6           |
| 9-Feb  | 1.0                           | 0.8 | 0.9 | 0.9 | 0.8 | 0.8 | 0.6 | 0.4 | 0.4 | 0.7 | 0.9 | 1.0 | 1.3 | 1.5 | 0.9 | 0.7 | 0.7 | 0.6 | 0.5 | 0.4                      | 0.4 | 0.4 | 0.7 | 0.5 | 1.5           |
| 10-Feb   | 0.4                           | 0.5 | 0.5 | 0.5 | 0.7 | 1.4 | 1.3 | 1.1 | 1.0 | 1.3 | 1.2 | 1.2 | 1.4 | 1.3 | 1.7 | 1.7 | 1.5 | 1.3 | 1.3 | 1.4                      | 1.2 | 0.8 | 0.7 | 0.4 | 1.7           |
| 11-Feb   | 0.3                           | 0.2 | 0.1 | 0.2 | 0.6 | 0.8 | 0.8 | 0.6 | 0.7 | 0.4 | 1.0 | 1.1 | 1.4 | 1.1 | 1.4 | 2.2 | 2.3 | 1.8 | 2.1 | 2.0                      | 1.9 | 0.7 | 1.7 | 2.7 | 2.7           |
| 12-Feb   | 2.9                           | 3.1 | 2.4 | 1.6 | 1.6 | 1.5 | 1.6 | 1.3 | 0.6 | 0.4 | 0.6 | 0.6 | 0.9 | 0.7 | 1.0 | 1.0 | 0.7 | 1.4 | 1.5 | 1.8                      | 1.6 | 1.6 | 2.2 | 2.1 | 3.1           |
| 13-Feb   | 1.6                           | 1.2 | 1.6 | 2.0 | 3.2 | 3.3 | 2.9 | 2.6 | 2.4 | UO  | UO  | UO  | UO  | 4.1 | 4.1 | 3.7 | 3.9 | 3.6 | 3.0 | 2.6                      | 3.0 | 3.1 | 2.5 | 2.3 | 4.1           |
| 14-Feb   | 2.9                           | 2.3 | 1.8 | 1.2 | 1.4 | 1.3 | 1.7 | 1.2 | 1.3 | 0.8 | 0.9 | 1.3 | 1.1 | 1.3 | 1.5 | 1.2 | 1.2 | 1.5 | 1.4 | 0.9                      | 1.2 | 1.3 | 0.8 | 0.2 | 2.9           |
| 15-Feb   | 0.1                           | 0.2 | 0.3 | 0.4 | 0.2 | 0.2 | 0.4 | 0.5 | 0.7 | 1.0 | 0.7 | 0.8 | 1.5 | 1.5 | 1.4 | 1.2 | 1.2 | 1.0 | 0.5 | 0.2                      | 1.0 | 1.2 | 1.1 | 0.5 | 1.5           |
| 16-Feb   | 0.9                           | 1.0 | 0.8 | 1.0 | 1.0 | 1.3 | 1.0 | 1.3 | 1.6 | 1.0 | 0.9 | 0.9 | 0.9 | 0.8 | 0.7 | 0.5 | 0.4 | 1.2 | 1.5 | 1.9                      | 2.1 | 1.8 | 1.5 | 1.5 | 2.1           |
| 17-Feb   | 1.2                           | 1.3 | 1.3 | 1.4 | 1.0 | 0.9 | 1.3 | 1.4 | 1.2 | 1.3 | 1.2 | 1.4 | 1.6 | 1.4 | 1.6 | 1.3 | 1.6 | 1.6 | 1.6 | 1.4                      | 1.2 | 1.2 | 0.7 | 0.5 | 1.6           |
| 18-Feb   | 0.9                           | 0.8 | 0.6 | 0.3 | 0.3 | 0.6 | 0.7 | 0.7 | 0.5 | 0.7 | 0.7 | 1.0 | 1.3 | 1.4 | 1.2 | 1.0 | 0.5 | 0.2 | 0.3 | 0.3                      | 0.2 | 0.2 | 0.3 | 0.4 | 1.4           |
| 19-Feb   | 0.3                           | 0.5 | 0.6 | 0.4 | 0.6 | 0.9 | 0.8 | 1.0 | 0.5 | 1.1 | 1.0 | 0.8 | 1.2 | 1.3 | 0.7 | 0.8 | 1.0 | 1.1 | 0.8 | 0.7                      | 1.2 | 1.3 | 1.4 | 1.5 | 1.5           |
| 20-Feb   | 1.4                           | 0.9 | 1.3 | 1.1 | 0.7 | 0.4 | 0.3 | 0.3 | 0.3 | 0.5 | 0.9 | 1.0 | 1.2 | 1.2 | 1.4 | 1.2 | 1.6 | 1.6 | 1.2 | 0.9                      | 0.4 | 0.5 | 1.7 | 2.6 | 2.6           |
| 21-Feb   | 2.4                           | 2.8 | 2.4 | 2.1 | 1.9 | 1.8 | 1.3 | 1.6 | 1.7 | 1.7 | 1.7 | 1.8 | 1.8 | 2.0 | 2.1 | 2.3 | 1.9 | 1.1 | 1.3 | 1.3                      | 0.8 | 0.4 | 0.3 | 0.2 | 2.8           |
| 22-Feb   | 0.3                           | 0.3 | 0.3 | 0.3 | 0.3 | 0.2 | 0.2 | 0.3 | 0.3 | 0.9 | 1.1 | 0.6 | 1.5 | 1.4 | 1.2 | 1.2 | 0.7 | 0.2 | 0.1 | 0.2                      | 0.3 | 0.2 | 0.2 | 0.1 | 1.5           |
| 23-Feb   | 0.1                           | 0.2 | 0.5 | 0.8 | 0.9 | 0.7 | 0.3 | 0.2 | 0.2 | 0.3 | 0.8 | 0.7 | 0.9 | 1.1 | 1.5 | 1.0 | 1.1 | 1.2 | 0.3 | 0.4                      | 0.4 | 0.4 | 0.5 | 0.7 | 1.5           |
| 24-Feb   | 0.4                           | 0.5 | 0.6 | 0.6 | 0.6 | 0.7 | 0.8 | 0.7 | 1.0 | 1.4 | 1.5 | 1.9 | 2.6 | 2.8 | 2.4 | 2.3 | 2.5 | 2.1 | 2.8 | 2.3                      | 2.3 | 1.7 | 1.6 | 1.7 | 2.8           |
| 25-Feb   | 1.1                           | 0.9 | 0.6 | 0.7 | 0.8 | 0.7 | 0.8 | 0.7 | 0.6 | 0.6 | 1.3 | 1.3 | 1.9 | 2.3 | 1.8 | 1.6 | 1.1 | 1.0 | 0.5 | 0.4                      | 0.7 | 0.7 | 0.6 | 1.1 | 2.3           |
| 26-Feb   | 1.2                           | 1.0 | 0.9 | 0.9 | 1.1 | 1.2 | 1.8 | 1.2 | 1.2 | 0.8 | 1.6 | 2.1 | 1.6 | 1.6 | 1.3 | 1.2 | 1.5 | 1.4 | 1.4 | 1.1                      | 0.8 | 0.9 | 1.0 | 1.1 | 2.1           |
| 27-Feb   | 1.3                           | 1.2 | 1.0 | 0.9 | 1.6 | 1.9 | 2.1 | 2.4 | 2.1 | 2.2 | 2.4 | 2.3 | 2.2 | 2.3 | 2.4 | 2.0 | 2.0 | 1.4 | 1.7 | 2.1                      | 2.7 | 2.3 | 1.6 | 1.7 | 2.7           |
| 28-Feb   | 1.1                           | 1.1 | 1.2 | 1.1 | 0.5 | 0.4 | 0.4 | 0.3 | 0.4 | 0.6 | 0.8 | 1.1 | 1.2 | 1.4 | 1.1 | 0.9 | 0.7 | 0.3 | 0.1 | 0.1                      | 0.1 | 0.1 | 0.1 | 0.4 | 1.4           |
| Diurnal Maximum  |                               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                          |     |     |     |     |               |
| UO - Unstable Operation  |                               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                          |     |     |     |     |               |



| Maximum Value: 1.4 km/h on Feb 26 12:00      |                               | Maximum Daily Average: 0.4 km/h on Feb 24  |      | Hours in Service: 672          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |               |               |
|--|-------------------------------|--|------|--------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----------------|---------------|---------------|
| Minimum Value: -0.9 km/h on Feb 13 16:00     |                               | Minimum Daily Average: -0.1 km/h on Feb 13   |      | Hours of Data: 666             |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |               |               |
| Maximum Diurnal Average: 0.3 km/h at hour 12 |                               | Minimum Diurnal Average: 0.1 km/h at hour 5  |      | Hours of Missing Data: 6       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |               |               |
| Monthly Average: 0.14 km/h                   |                               | Percentiles: P <sub>1</sub> = -0.6 P <sub>10</sub> = -0.2 Q <sub>1</sub> = 0.0 Median = 0.1 Q <sub>3</sub> = 0.3 P <sub>90</sub> = 0.5 P <sub>99</sub> = 1.0 |      | Hours of Calibration: 0        |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |               |               |
|  |                               |  |      | Percent Operational Time: 99.1 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |               |               |
| Day  | Hourly Period Ending At (MST) |  |      |                                |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 | Daily Average | Daily Maximum |
|  | 1                             | 2  | 3    | 4                              | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20   | 21   | 22   | 23   | 24              |               |               |
| 1-Feb  | 0.1                           | -0.1   | 0.2  | 0.0                            | -0.2 | 0.0  | 0.4  | 0.1  | -0.2 | -0.4 | 0.0  | 0.3  | 1.0  | 0.1  | 0.1  | -0.1 | 0.0  | 0.3  | 0.1  | 0.0  | 0.0  | 0.1  | 0.2  | 0.1             | 0.1           | 1.0           |
| 2-Feb  | 0.2                           | 0.4  | 0.4  | 0.7                            | 0.6  | 0.7  | 0.3  | 0.4  | 0.1  | 0.0  | -0.2 | 0.0  | -0.2 | -0.4 | -0.5 | -0.8 | -0.3 | -0.4 | -0.4 | -0.5 | -0.8 | -0.6 | -0.5 | -0.6            | -0.1          | 0.7           |
| 3-Feb  | -0.2                          | -0.3   | -0.2 | -0.2                           | -0.1 | 0.0  | 0.0  | 0.3  | 0.4  | 0.5  | 0.2  | 0.3  | 0.2  | 0.0  | -0.2 | 0.2  | 0.6  | 0.2  | 0.4  | 0.1  | 0.0  | 0.3  | 0.2  | 0.1             | 0.1           | 0.6           |
| 4-Feb  | 0.1                           | -0.1   | 0.4  | 0.3                            | 0.2  | -0.1 | 0.2  | 0.1  | 0.1  | 0.1  | 0.2  | 0.4  | 0.4  | 0.6  | 0.1  | 0.1  | 0.1  | 0.2  | 0.2  | 0.1  | 0.1  | 0.2  | 0.1  | 0.1             | 0.2           | 0.6           |
| 5-Feb  | 0.2                           | 0.1  | 0.1  | 0.2                            | 0.1  | 0.0  | 0.2  | 0.3  | 0.1  | 0.2  | 0.4  | 0.2  | 0.2  | -0.1 | 0.4  | 0.2  | 0.3  | 0.4  | 0.2  | 0.0  | 0.1  | 0.1  | 0.5  | 0.6             | 0.2           | 0.6           |
| 6-Feb  | 0.3                           | 0.2  | 0.3  | 0.2                            | 0.5  | 0.5  | 0.1  | 0.0  | 0.0  | 0.0  | 0.1  | 0.2  | -0.1 | 0.2  | 0.6  | 0.6  | -0.2 | 0.2  | -0.1 | 0.0  | -0.2 | -0.2 | 0.1  | 0.5             | 0.2           | 0.6           |
| 7-Feb  | 0.3                           | 0.3  | 0.1  | 0.0                            | 0.1  | 0.5  | 0.4  | 0.3  | 0.1  | 0.1  | 0.1  | 0.4  | 0.4  | 0.2  | 0.3  | 0.5  | 0.1  | 0.0  | -0.1 | 0.2  | 0.1  | 0.1  | 0.1  | 0.0             | 0.2           | 0.5           |
| 8-Feb  | 0.3                           | 0.0  | 0.0  | 0.1                            | 0.0  | 0.2  | 0.1  | 0.1  | 0.2  | 0.2  | 0.3  | 0.1  | 0.2  | 0.2  | 0.1  | -0.1 | 0.1  | 0.2  | 0.1  | 0.5  | 0.3  | 0.5  | 0.7  | 1.1             | 0.2           | 1.1           |
| 9-Feb  | 0.8                           | 0.3  | -0.2 | 0.1                            | -0.1 | -0.3 | -0.2 | -0.1 | -0.1 | 0.0  | 0.4  | 0.7  | 0.5  | 0.7  | 0.7  | 1.0  | 0.4  | 0.1  | -0.1 | 0.0  | 0.4  | 0.0  | 0.2  | 0.4             | 0.2           | 1.0           |
| 10-Feb                                       | 0.6                           | 0.4  | 0.2  | 0.0                            | 0.0  | 0.1  | 0.5  | 0.0  | 0.0  | 0.0  | 0.2  | 0.1  | 0.1  | 0.3  | 0.0  | 0.0  | 0.1  | -0.1 | 0.1  | 0.0  | 0.1  | 0.0  | 0.1  | 0.0             | 0.1           | 0.6           |
| 11-Feb                                       | 0.2                           | 0.1  | 0.1  | 0.1                            | 0.1  | 0.4  | 0.4  | 0.0  | 0.0  | -0.1 | 0.3  | 0.2  | 0.4  | 0.5  | 0.1  | -0.2 | -0.4 | -0.3 | 0.3  | 0.5  | 0.2  | 0.0  | 0.0  | 0.0             | 0.1           | 0.5           |
| 12-Feb                                       | 0.1                           | 0.2  | 0.2  | 0.0                            | 0.0  | -0.1 | -0.1 | 0.1  | 0.1  | 0.0  | 0.2  | 0.1  | 0.0  | 0.0  | 0.2  | 0.2  | 0.0  | 0.0  | 0.0  | -0.1 | -0.1 | 0.1  | -0.4 | 0.2             | 0.0           | 0.2           |
| 13-Feb                                       | 0.7                           | 0.3  | -0.2 | -0.2                           | -0.1 | 0.0  | -0.1 | 0.3  | 0.2  | UO   | UO   | UO   | UO   | UO   | UO   | -0.9 | -0.7 | -0.2 | 0.3  | 0.5  | -0.3 | -0.4 | -0.7 | 0.0             | -0.1          | 0.7           |
| 14-Feb                                       | 0.2                           | 0.7  | 0.1  | -0.3                           | 0.1  | 0.2  | 0.0  | -0.1 | 0.1  | 0.2  | 0.1  | 0.8  | 0.5  | 0.5  | 0.4  | 0.3  | 0.1  | 0.6  | 0.3  | 0.2  | 0.2  | 0.1  | 0.1  | 0.1             | 0.2           | 0.8           |
| 15-Feb                                       | 0.1                           | 0.2  | 0.2  | 0.4                            | 0.4  | 0.4  | 0.4  | 0.3  | 0.5  | 0.5  | 0.4  | 0.1  | 0.4  | 0.1  | -0.2 | -0.3 | 0.1  | 0.2  | 0.1  | 0.2  | 0.1  | -0.1 | -0.1 | -0.1            | 0.2           | 0.5           |
| 16-Feb                                       | -0.3                          | 0.0  | -0.1 | -0.4                           | -0.3 | -0.1 | -0.1 | -0.1 | -0.1 | -0.3 | -0.1 | 0.1  | 0.5  | 0.2  | 0.1  | 0.1  | 0.1  | 0.1  | 0.2  | 0.2  | 0.4  | 0.1  | 0.3  | 0.2             | 0.0           | 0.5           |
| 17-Feb                                       | 0.3                           | 0.4  | 0.3  | 0.1                            | 0.1  | 0.3  | 0.7  | 0.7  | 0.4  | 0.3  | 0.0  | -0.2 | 0.0  | 0.0  | 0.2  | 0.0  | 0.1  | 0.3  | 0.1  | -0.3 | -0.1 | 0.1  | 0.0  | 0.1             | 0.2           | 0.7           |
| 18-Feb                                       | -0.2                          | 0.1  | 0.3  | 0.1                            | 0.2  | 0.0  | -0.2 | -0.2 | 0.0  | 0.3  | 0.1  | 0.1  | 0.2  | -0.1 | 0.0  | 0.1  | 0.0  | 0.1  | 0.2  | 0.2  | 0.1  | 0.1  | 0.2  | 0.4             | 0.1           | 0.4           |
| 19-Feb                                       | 0.0                           | 0.0  | -0.1 | -0.2                           | -0.1 | -0.2 | 0.1  | 0.1  | 0.0  | 0.2  | 0.3  | 0.0  | 0.2  | 0.4  | 0.0  | 0.2  | -0.1 | 0.2  | 0.1  | 0.0  | 0.1  | -0.2 | -0.1 | -0.4            | 0.0           | 0.4           |
| 20-Feb                                       | -0.1                          | 0.2  | 0.1  | -0.1                           | -0.1 | 0.2  | 0.1  | 0.1  | 0.2  | 0.1  | 0.3  | 0.2  | 1.1  | 0.2  | 1.3  | 0.3  | 0.0  | 0.3  | -0.1 | 0.1  | 0.2  | 0.2  | -0.2 | -0.3            | 0.2           | 1.3           |
| 21-Feb                                       | -0.2                          | -0.2   | 0.1  | 0.4                            | 0.6  | 0.5  | 0.3  | 0.2  | -0.2 | -0.4 | 0.3  | 0.3  | -0.2 | -0.7 | 0.0  | 0.0  | 0.3  | -0.1 | -0.3 | -0.3 | 0.0  | 0.0  | 0.2  | 0.1             | 0.0           | 0.6           |
| 22-Feb                                       | 0.4                           | 0.2  | 0.2  | 0.2                            | 0.1  | 0.2  | 0.1  | 0.1  | 0.1  | 0.1  | 0.2  | 0.1  | 0.1  | 0.2  | -0.3 | 0.1  | 0.1  | 0.2  | 0.2  | 0.1  | 0.2  | 0.1  | 0.1  | 0.1             | 0.1           | 0.4           |
| 23-Feb                                       | 0.1                           | 0.1  | -0.1 | 0.1                            | 0.0  | 0.0  | 0.0  | 0.0  | -0.1 | -0.1 | 0.4  | -0.2 | -0.2 | 0.1  | 0.7  | 0.0  | 0.1  | 0.3  | 0.4  | 0.4  | 0.2  | 0.3  | 0.5  | 0.1             | 0.1           | 0.7           |
| 24-Feb                                       | 0.4                           | 0.0  | 0.1  | 0.3                            | 0.4  | 0.3  | 0.4  | 0.5  | 0.4  | 0.5  | 0.7  | 0.8  | 0.3  | 0.2  | 0.8  | 1.0  | 0.6  | 0.5  | 0.1  | 0.5  | 0.3  | 0.3  | 0.3  | 0.2             | 0.4           | 1.0           |
| 25-Feb                                       | 0.1                           | 0.1  | 0.0  | 0.0                            | 0.1  | 0.0  | -0.1 | 0.0  | 0.1  | 0.1  | 0.3  | 0.2  | 0.4  | 0.1  | 0.3  | 0.6  | 1.2  | 0.2  | -0.1 | 0.0  | 0.5  | 0.5  | 0.6  | 0.1             | 0.2           | 1.2           |
| 26-Feb                                       | 0.3                           | 0.3  | 0.4  | 0.9                            | 0.0  | 0.5  | 0.4  | 1.1  | 0.7  | 0.4  | 0.4  | 1.4  | 0.1  | 0.8  | 0.6  | -0.4 | 0.4  | 0.3  | 0.5  | 0.0  | 0.1  | 0.3  | 0.2  | 0.2             | 0.4           | 1.4           |
| 27-Feb                                       | 0.2                           | 0.4  | 0.2  | -0.2                           | -0.4 | -0.2 | -0.3 | -0.3 | -0.2 | -0.4 | 0.1  | 0.2  | 0.3  | -0.1 | 0.8  | 0.5  | 0.3  | 0.1  | 0.0  | -0.1 | 0.2  | 0.2  | 0.1  | 0.0             | 0.1           | 0.8           |
| 28-Feb                                       | 0.2                           | 0.0  | 0.0  | 0.0                            | -0.1 | -0.1 | 0.2  | 0.2  | 0.1  | 0.2  | 0.0  | 0.1  | 0.0  | 0.2  | -0.3 | -0.2 | 0.1  | 0.1  | 0.1  | 0.2  | 0.1  | 0.2  | 0.3  | 0.4             | 0.1           | 0.4           |
|  |                               |  |      |                                |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Diurnal Average |               |               |
|  |                               |  |      |                                |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Diurnal Maximum |               |               |
| UO - Unstable Operation                      |                               |  |      |                                |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |               |               |



**Wood Buffalo Environmental Association**  
**Summary of Hour Standard Deviations**

**Vertical Wind Speed 75 m (VW75m) - km/h**  
**Mannix - February 2023**

| Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0<br>Maximum Value: 3.8 km/h on Feb 13 17:00<br>Minimum Value: 0.1 km/h on Feb 28 19:00<br>Percentiles: P <sub>1</sub> = 0.1 P <sub>10</sub> = 0.3 Q <sub>1</sub> = 0.6 Median = 1.0 Q <sub>3</sub> = 1.5 P <sub>90</sub> = 2.3 P <sub>99</sub> = 3.4 |                               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Hours in Service: 672<br>Hours of Data: 666<br>Hours of Missing Data: 6<br>Hours of Calibration: 0<br>Percent Operational Time: 99.1 |     |     |     |     |               |
|---|-------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|-----|-----|-----|-----|---------------|
| Day   | Hourly Period Ending At (MST) |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |  |     |     |     |     | Daily Maximum |
|   | 1                             | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19  | 20   | 21  | 22  | 23  | 24  |               |
| 1-Feb   | 1.3                           | 0.9 | 0.5 | 0.5 | 1.6 | 1.3 | 1.3 | 1.0 | 1.6 | 1.3 | 1.5 | 1.4 | 2.1 | 1.7 | 1.7 | 1.2 | 0.9 | 0.8 | 0.8 | 0.3  | 0.4 | 0.5 | 0.4 | 0.2 | 2.1           |
| 2-Feb   | 0.3                           | 0.2 | 0.3 | 0.3 | 0.4 | 0.4 | 0.6 | 0.4 | 0.7 | 0.8 | 0.8 | 0.7 | 0.9 | 1.7 | 2.1 | 3.2 | 3.2 | 3.3 | 3.2 | 3.2  | 2.9 | 2.8 | 2.7 | 2.5 | 3.3           |
| 3-Feb   | 2.7                           | 2.3 | 2.1 | 1.8 | 1.4 | 1.1 | 0.8 | 0.8 | 0.6 | 0.7 | 0.6 | 0.8 | 0.9 | 1.4 | 1.3 | 1.1 | 1.3 | 0.9 | 1.4 | 1.0  | 1.1 | 1.2 | 0.7 | 0.8 | 2.7           |
| 4-Feb   | 0.7                           | 0.6 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.9 | 1.0 | 1.1 | 1.3 | 1.2 | 1.4 | 0.9 | 0.7 | 0.4 | 0.6 | 0.5 | 0.5 | 0.6  | 0.5 | 0.5 | 0.4 | 1.4 |               |
| 5-Feb   | 0.4                           | 0.4 | 0.3 | 0.3 | 0.3 | 0.3 | 0.5 | 0.5 | 0.4 | 0.3 | 0.5 | 0.7 | 0.7 | 0.8 | 1.1 | 0.9 | 0.5 | 0.7 | 0.3 | 0.5  | 0.9 | 0.6 | 2.5 | 2.5 |               |
| 6-Feb   | 2.4                           | 1.8 | 1.4 | 1.3 | 1.5 | 1.2 | 0.9 | 0.5 | 0.5 | 1.0 | 1.0 | 0.9 | 0.9 | 1.3 | 1.3 | 1.5 | 1.2 | 0.7 | 1.4 | 0.6  | 0.8 | 0.9 | 0.7 | 0.8 | 2.4           |
| 7-Feb   | 0.9                           | 1.4 | 1.4 | 2.5 | 2.6 | 3.5 | 2.6 | 2.6 | 2.6 | 2.5 | 2.9 | 3.4 | 3.5 | 3.7 | 3.8 | 3.4 | 3.0 | 2.2 | 1.9 | 2.5  | 1.6 | 0.9 | 1.2 | 1.4 | 3.8           |
| 8-Feb   | 1.6                           | 1.1 | 1.0 | 0.6 | 0.3 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 | 0.3 | 1.1 | 0.9 | 0.9 | 0.9 | 0.6 | 0.9 | 0.3 | 0.4 | 0.4  | 0.7 | 0.7 | 0.6 | 0.7 | 1.6           |
| 9-Feb   | 0.8                           | 0.9 | 1.2 | 1.1 | 1.1 | 0.9 | 0.6 | 0.6 | 0.6 | 1.1 | 0.8 | 0.5 | 0.9 | 0.9 | 0.6 | 0.4 | 0.4 | 0.3 | 0.4 | 0.4  | 0.4 | 0.6 | 0.9 | 0.6 | 1.2           |
| 10-Feb  | 0.4                           | 0.5 | 0.5 | 0.5 | 0.6 | 1.2 | 0.9 | 1.0 | 0.9 | 1.2 | 1.2 | 1.3 | 1.3 | 1.3 | 1.5 | 1.5 | 1.4 | 1.2 | 1.1 | 1.2  | 1.0 | 0.7 | 0.6 | 0.3 | 1.5           |
| 11-Feb  | 0.2                           | 0.1 | 0.1 | 0.1 | 0.4 | 0.6 | 0.9 | 0.7 | 0.8 | 0.5 | 0.9 | 0.8 | 1.1 | 1.2 | 1.4 | 2.3 | 2.3 | 1.7 | 2.2 | 2.1  | 2.1 | 0.7 | 2.0 | 2.6 | 2.6           |
| 12-Feb  | 3.0                           | 3.1 | 2.7 | 1.6 | 1.5 | 1.5 | 1.7 | 1.3 | 0.7 | 0.4 | 0.6 | 0.5 | 0.8 | 1.0 | 1.0 | 0.8 | 1.1 | 1.5 | 1.7 | 1.5  | 1.5 | 1.6 | 1.8 | 1.7 | 3.1           |
| 13-Feb  | 1.5                           | 1.2 | 1.7 | 2.1 | 3.1 | 3.1 | 2.9 | 2.6 | 2.5 | UO  | UO  | UO  | UO  | UO  | UO  | 3.3 | 3.8 | 3.7 | 3.0 | 2.8  | 2.9 | 3.0 | 2.3 | 2.3 | 3.8           |
| 14-Feb  | 2.6                           | 2.4 | 1.8 | 1.2 | 1.4 | 1.4 | 1.6 | 1.2 | 1.4 | 0.8 | 0.9 | 1.4 | 1.0 | 1.3 | 1.4 | 1.2 | 1.1 | 1.6 | 1.3 | 1.1  | 1.3 | 1.4 | 0.7 | 0.2 | 2.6           |
| 15-Feb  | 0.1                           | 0.2 | 0.4 | 0.3 | 0.3 | 0.2 | 0.5 | 0.7 | 0.6 | 1.0 | 0.7 | 0.8 | 1.5 | 1.8 | 1.6 | 1.4 | 1.3 | 0.8 | 0.2 | 0.2  | 0.5 | 0.9 | 0.7 | 0.5 | 1.8           |
| 16-Feb  | 0.7                           | 0.8 | 0.6 | 0.9 | 0.6 | 1.2 | 0.9 | 0.7 | 1.5 | 1.1 | 0.9 | 0.8 | 0.7 | 0.8 | 0.6 | 0.6 | 0.4 | 1.0 | 1.2 | 1.5  | 1.9 | 1.9 | 1.5 | 1.5 | 1.9           |
| 17-Feb  | 1.2                           | 1.4 | 1.3 | 1.3 | 1.1 | 1.0 | 1.3 | 1.4 | 1.3 | 1.3 | 1.2 | 1.4 | 1.6 | 1.4 | 1.6 | 1.3 | 1.5 | 1.4 | 1.5 | 1.2  | 1.1 | 1.2 | 0.6 | 0.5 | 1.6           |
| 18-Feb  | 0.9                           | 0.7 | 0.6 | 0.2 | 0.4 | 0.5 | 0.5 | 0.6 | 0.6 | 0.9 | 0.5 | 1.0 | 1.4 | 1.6 | 1.3 | 1.1 | 0.5 | 0.1 | 0.2 | 0.2  | 0.4 | 0.2 | 0.4 | 0.2 | 1.6           |
| 19-Feb  | 0.5                           | 0.8 | 1.0 | 0.8 | 0.9 | 1.0 | 1.2 | 1.0 | 0.7 | 1.0 | 1.1 | 0.7 | 1.1 | 1.1 | 0.7 | 0.7 | 1.0 | 1.1 | 0.9 | 0.9  | 1.2 | 1.2 | 1.2 | 1.4 | 1.4           |
| 20-Feb  | 1.3                           | 0.7 | 1.0 | 1.0 | 0.6 | 0.4 | 0.3 | 0.5 | 0.6 | 0.6 | 0.8 | 0.8 | 1.3 | 1.3 | 1.5 | 1.3 | 1.3 | 1.3 | 1.4 | 1.0  | 0.5 | 0.5 | 1.7 | 2.5 | 2.5           |
| 21-Feb  | 2.3                           | 2.6 | 2.3 | 2.3 | 1.9 | 1.7 | 1.4 | 1.7 | 1.9 | 1.7 | 1.9 | 2.0 | 2.0 | 2.0 | 2.2 | 2.3 | 1.8 | 1.3 | 1.5 | 1.2  | 0.8 | 0.4 | 0.4 | 0.2 | 2.6           |
| 22-Feb  | 0.4                           | 0.3 | 0.4 | 0.5 | 0.5 | 0.3 | 0.3 | 0.3 | 0.4 | 0.5 | 1.0 | 0.7 | 1.3 | 1.5 | 1.2 | 1.3 | 0.7 | 0.2 | 0.2 | 0.2  | 0.2 | 0.2 | 0.2 | 0.1 | 1.5           |
| 23-Feb  | 0.1                           | 0.2 | 0.5 | 0.6 | 0.7 | 0.5 | 0.3 | 0.2 | 0.2 | 0.3 | 0.6 | 0.5 | 0.7 | 0.9 | 1.5 | 1.0 | 1.0 | 1.0 | 0.2 | 0.3  | 0.2 | 0.3 | 0.4 | 0.6 | 1.5           |
| 24-Feb  | 0.5                           | 0.7 | 0.7 | 0.8 | 0.5 | 0.5 | 0.5 | 0.5 | 0.7 | 1.0 | 1.2 | 1.7 | 2.7 | 2.8 | 2.5 | 2.3 | 2.3 | 2.1 | 2.8 | 2.2  | 2.3 | 1.7 | 1.5 | 1.6 | 2.8           |
| 25-Feb  | 1.0                           | 0.7 | 0.6 | 0.6 | 0.9 | 0.8 | 0.9 | 0.9 | 0.9 | 0.6 | 1.2 | 1.5 | 2.0 | 2.2 | 1.8 | 1.6 | 1.5 | 1.2 | 0.5 | 0.5  | 0.5 | 0.5 | 0.3 | 1.0 | 2.2           |
| 26-Feb  | 0.7                           | 1.1 | 1.3 | 1.7 | 1.3 | 1.4 | 2.2 | 1.7 | 1.4 | 1.0 | 1.8 | 2.6 | 2.0 | 1.6 | 1.5 | 1.8 | 1.7 | 1.1 | 1.2 | 1.0  | 0.8 | 1.0 | 0.9 | 0.8 | 2.6           |
| 27-Feb  | 1.0                           | 1.1 | 0.9 | 0.8 | 1.4 | 1.8 | 1.9 | 2.1 | 2.0 | 2.1 | 2.4 | 2.3 | 2.3 | 2.2 | 2.7 | 2.1 | 1.8 | 1.3 | 1.7 | 2.1  | 2.4 | 2.3 | 1.8 | 1.8 | 2.7           |
| 28-Feb  | 1.2                           | 1.1 | 1.3 | 1.0 | 0.5 | 0.4 | 0.5 | 0.3 | 0.3 | 0.5 | 0.6 | 1.0 | 1.2 | 1.3 | 0.8 | 0.9 | 0.7 | 0.3 | 0.1 | 0.2  | 0.2 | 0.3 | 0.2 | 0.3 | 1.3           |
| Diurnal Maximum   |                               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |  |     |     |     |     |               |
| UO - Unstable Operation   |                               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |  |     |     |     |     |               |



Summary of Hour Averages

Mannix - February 2023

| Maximum Value: 8.9 km/h on Feb 13 13:00      Maximum Daily Average: 0.6 km/h on Feb 13  |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Hours in Service: 672          |      |      |               |               |
|---|-------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|--------------------------------|------|------|---------------|---------------|
| Minimum Value: -1.2 km/h on Feb 11 17:00      Minimum Daily Average: -0.4 km/h on Feb 7   |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Hours of Data: 669             |      |      |               |               |
| Maximum Diurnal Average: 0.4 km/h at hour 13      Minimum Diurnal Average: 0.0 km/h at hour 10  |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Hours of Missing Data: 3       |      |      |               |               |
| Monthly Average: 0.11 km/h      Percentiles: P <sub>1</sub> = -0.9 P <sub>10</sub> = -0.4 Q <sub>1</sub> = -0.1 Median = 0.1 Q <sub>3</sub> = 0.3 P <sub>90</sub> = 0.6 P <sub>99</sub> = 1.3 |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Hours of Calibration: 0        |      |      |               |               |
|   |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Percent Operational Time: 99.6 |      |      |               |               |
| Day   | Hourly Period Ending At (MST) |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                                |      |      | Daily Average | Daily Maximum |
|   | 1                             | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20   | 21   | 22                             | 23   | 24   |               |               |
| 1-Feb   | 0.5                           | 0.4  | 0.3  | 0.3  | 0.4  | 0.4  | 1.0  | 0.5  | 0.3  | -0.1 | 0.2  | 0.0  | 0.8  | 0.0  | 0.0  | -0.4 | -0.1 | 0.2  | 0.0  | -0.2 | -0.1 | 0.0                            | 0.1  | 0.0  | 0.2           | 1.0           |
| 2-Feb   | 0.1                           | 0.0  | 0.0  | 0.2  | 0.1  | 0.1  | 0.4  | 0.5  | 0.6  | 0.7  | 0.6  | 0.4  | 0.2  | 0.3  | 0.0  | -0.2 | 0.3  | 0.0  | 0.1  | 0.1  | 0.1  | 0.1                            | 0.1  | 0.0  | 0.2           | 0.7           |
| 3-Feb   | 0.3                           | 0.2  | 0.3  | 0.1  | 0.1  | 0.0  | 0.2  | 0.2  | 0.2  | -0.1 | -0.1 | 0.1  | 0.0  | 0.0  | -0.1 | 0.4  | 1.0  | 0.6  | 0.7  | 0.4  | 0.2  | 0.5                            | 0.3  | 0.2  | 0.2           | 1.0           |
| 4-Feb   | 0.3                           | 0.0  | 0.5  | 0.5  | 0.4  | 0.3  | 0.4  | 0.2  | 0.4  | 0.3  | 0.2  | 0.4  | 0.4  | 0.5  | 0.0  | 0.0  | 0.1  | 0.2  | 0.2  | 0.2  | 0.2  | 0.2                            | 0.0  | 0.0  | 0.2           | 0.5           |
| 5-Feb   | 0.1                           | 0.1  | 0.0  | 0.1  | 0.1  | 0.1  | 0.1  | 0.1  | 0.1  | 0.1  | 0.1  | 0.0  | 0.1  | -0.4 | 0.2  | -0.1 | -0.2 | -0.2 | -0.2 | -0.2 | -0.4 | -0.5                           | -0.1 | 0.2  | 0.0           | 0.2           |
| 6-Feb   | -0.3                          | -0.5 | -0.3 | -0.3 | -0.2 | 0.0  | -0.4 | -0.5 | -0.6 | -0.2 | 0.0  | 0.2  | -0.2 | 0.2  | 0.6  | 0.5  | -0.1 | 0.2  | 0.0  | 0.4  | 0.1  | 0.2                            | 0.2  | 0.2  | 0.0           | 0.6           |
| 7-Feb   | -0.2                          | -0.1 | -0.3 | -0.8 | -0.7 | -0.3 | -0.2 | -0.3 | -0.6 | -0.6 | -0.6 | -0.4 | -0.5 | -0.7 | -0.7 | -0.5 | -0.6 | -0.8 | -0.8 | -0.5 | -0.5 | -0.4                           | 0.0  | 0.7  | -0.4          | 0.7           |
| 8-Feb   | 0.9                           | 0.4  | 0.3  | 0.3  | 0.2  | 0.2  | 0.1  | 0.2  | 0.2  | 0.0  | 0.1  | 0.0  | -0.1 | 0.1  | 0.1  | 0.2  | 0.2  | 0.2  | 0.3  | 0.3  | -0.1 | 0.0                            | 0.0  | 0.3  | 0.2           | 0.9           |
| 9-Feb   | 0.0                           | -0.2 | -0.7 | -0.3 | -0.5 | -0.8 | -0.6 | -0.5 | -0.5 | -0.4 | -0.1 | 0.1  | 0.2  | 0.3  | 0.1  | 0.2  | 0.2  | 0.3  | 0.1  | 0.2  | -0.3 | -0.4                           | -0.2 | 0.0  | -0.2          | 0.3           |
| 10-Feb  | 0.0                           | 0.1  | 0.3  | 0.4  | 0.2  | 0.4  | 1.0  | 0.3  | 0.5  | 0.2  | 0.4  | 0.1  | 0.3  | 0.3  | 0.1  | 0.1  | 0.2  | -0.2 | 0.0  | 0.1  | 0.0  | 0.0                            | -0.1 | 0.0  | 0.2           | 1.0           |
| 11-Feb  | 0.0                           | -0.1 | -0.1 | -0.1 | -0.2 | -0.2 | -0.2 | -0.3 | -0.4 | -0.5 | -0.2 | 0.1  | 0.4  | 0.0  | -0.4 | -1.0 | -1.2 | -0.9 | -0.4 | -0.3 | -0.3 | -0.4                           | -0.5 | -1.1 | -0.3          | 0.4           |
| 12-Feb  | -0.8                          | -0.9 | -0.6 | -0.8 | -0.7 | -0.7 | -0.7 | -0.5 | -0.3 | -0.4 | 0.0  | -0.1 | 0.0  | 0.0  | 0.4  | 0.7  | -0.2 | -0.4 | -0.2 | 0.0  | 0.4  | 0.1                            | 0.4  | 0.6  | -0.2          | 0.7           |
| 13-Feb  | 0.0                           | -0.5 | -1.0 | -1.0 | -1.1 | -1.0 | -0.9 | -0.5 | 0.2  | UO   | UO   | UO   | 8.9  | 2.0  | 0.4  | -0.3 | 0.2  | 1.3  | 1.5  | 1.5  | 0.9  | 0.8                            | 0.2  | 1.0  | 0.6           | 8.9           |
| 14-Feb  | 1.2                           | 1.3  | 0.7  | -0.2 | 0.3  | 0.5  | 0.5  | 0.2  | 0.2  | 0.2  | 0.1  | 0.8  | 0.4  | 0.4  | 0.5  | 0.3  | 0.4  | 0.9  | 0.6  | 0.3  | 0.5  | 0.2                            | 0.1  | 0.0  | 0.4           | 1.3           |
| 15-Feb  | -0.1                          | 0.1  | 0.0  | 0.0  | 0.0  | 0.1  | -0.1 | -0.1 | 0.0  | 0.0  | 0.1  | -0.1 | 0.2  | -0.1 | -0.4 | -0.5 | 0.0  | 0.3  | 0.2  | 0.2  | 0.6  | 0.2                            | 0.5  | 0.6  | 0.1           | 0.6           |
| 16-Feb  | 0.1                           | 0.2  | 0.3  | -0.4 | 0.1  | 0.2  | 0.0  | 0.4  | 0.3  | -0.1 | 0.0  | 0.0  | 0.3  | -0.2 | -0.1 | -0.2 | -0.3 | 0.3  | 0.9  | 1.1  | 1.0  | 0.5                            | 0.5  | 0.5  | 0.2           | 1.1           |
| 17-Feb  | 0.4                           | 0.6  | 0.5  | 0.4  | 0.2  | 0.4  | 0.7  | 0.8  | 0.6  | 0.5  | 0.2  | -0.2 | -0.2 | -0.1 | 0.3  | 0.3  | 0.6  | 0.8  | 0.5  | 0.1  | 0.4  | 0.6                            | 0.4  | 0.2  | 0.4           | 0.8           |
| 18-Feb  | 0.3                           | 0.7  | 0.8  | 0.4  | 0.4  | 0.2  | 0.0  | 0.1  | 0.0  | 0.2  | 0.0  | 0.1  | 0.3  | -0.2 | -0.2 | -0.2 | -0.2 | -0.1 | 0.2  | 0.3  | 0.0  | 0.0                            | 0.3  | 0.2  | 0.2           | 0.8           |
| 19-Feb  | 0.3                           | 0.2  | 0.2  | 0.3  | 0.2  | -0.6 | -0.1 | 0.0  | -0.1 | 0.2  | 0.1  | 0.1  | 0.3  | 0.5  | 0.0  | 0.1  | -0.2 | 0.2  | 0.3  | 0.1  | 0.5  | 0.3                            | 0.3  | -0.1 | 0.1           | 0.5           |
| 20-Feb  | 0.2                           | 0.5  | 0.5  | 0.0  | -0.2 | 0.3  | 0.0  | -0.1 | 0.1  | 0.1  | 0.2  | 0.0  | 0.9  | 0.1  | 1.3  | 0.2  | 0.4  | 0.8  | 0.1  | 0.5  | 0.5  | 0.6                            | 0.4  | 0.4  | 0.3           | 1.3           |
| 21-Feb  | 0.7                           | 0.9  | 0.8  | 1.0  | 1.2  | 1.0  | 0.5  | 0.4  | 0.0  | -0.2 | 0.3  | 0.0  | -0.5 | -0.9 | 0.1  | 0.2  | 0.6  | 0.0  | 0.0  | 0.3  | 0.2  | -0.1                           | 0.1  | -0.2 | 0.3           | 1.2           |
| 22-Feb  | 0.0                           | 0.1  | 0.1  | 0.0  | 0.0  | 0.0  | -0.1 | -0.2 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.2 | -0.7 | -0.2 | -0.1 | 0.0  | -0.1 | 0.0  | 0.2  | 0.2                            | 0.2  | 0.2  | -0.1          | 0.2           |
| 23-Feb  | 0.2                           | 0.1  | 0.2  | 0.8  | 0.7  | 0.3  | 0.1  | 0.0  | 0.0  | 0.0  | 0.3  | -0.3 | -0.5 | -0.2 | 0.5  | -0.2 | 0.0  | 0.3  | 0.1  | -0.1 | -0.2 | -0.2                           | -0.2 | -0.4 | 0.1           | 0.8           |
| 24-Feb  | -0.1                          | -0.5 | -0.4 | -0.5 | -0.3 | -0.2 | -0.3 | -0.1 | -0.3 | -0.4 | -0.1 | 0.4  | -0.3 | -0.7 | 0.1  | 0.5  | 0.0  | -0.2 | -0.8 | -0.2 | -0.5 | -0.3                           | -0.4 | -0.5 | -0.3          | 0.5           |
| 25-Feb  | -0.5                          | -0.6 | -0.5 | -0.4 | -0.3 | -0.4 | -0.6 | -0.3 | -0.1 | -0.2 | 0.0  | -0.2 | 0.0  | -0.5 | 0.0  | 0.5  | 1.2  | 0.0  | -0.7 | -0.5 | 0.1  | 0.2                            | 0.1  | 0.2  | -0.1          | 1.2           |
| 26-Feb  | 0.6                           | 0.4  | 0.3  | 0.4  | -0.2 | 0.4  | 0.3  | 0.9  | 0.6  | 0.3  | 0.4  | 1.7  | 0.5  | 1.1  | 0.7  | -0.1 | 0.8  | 0.8  | 0.9  | 0.4  | 0.3  | 0.5                            | 0.5  | 0.5  | 0.5           | 1.7           |
| 27-Feb  | 0.5                           | 0.6  | 0.6  | 0.1  | -0.2 | 0.2  | -0.1 | 0.1  | 0.2  | 0.0  | 0.2  | 0.3  | 0.4  | 0.0  | 1.2  | 0.8  | 0.8  | 0.7  | 0.6  | 0.4  | 0.8  | 1.0                            | 0.5  | 0.4  | 0.4           | 1.2           |
| 28-Feb  | 0.4                           | 0.3  | 0.3  | 0.2  | 0.0  | -0.1 | 0.2  | 0.1  | 0.2  | 0.2  | -0.1 | 0.0  | -0.2 | -0.2 | -0.5 | -0.5 | -0.1 | 0.0  | -0.1 | 0.1  | 0.0  | 0.1                            | 0.0  | 0.2  | 0.0           | 0.4           |
|   |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Diurnal Average                |      |      |               |               |
|   |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Diurnal Maximum                |      |      |               |               |
| 0.2 0.1 0.1 0.0 0.0 0.0 0.0 0.1 0.1 0.0 0.1 0.1 0.4 0.1 0.1 0.0 0.1 0.2 0.1 0.2 0.2 0.1 0.1 0.2   |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                                |      |      |               |               |
| 1.2 1.3 0.8 1.0 1.2 1.0 1.0 0.9 0.6 0.7 0.6 1.7 8.9 2.0 1.3 0.8 1.2 1.3 1.5 1.5 1.0 1.0 0.5 1.0   |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                                |      |      |               |               |
| UO - Unstable Operation   |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                                |      |      |               |               |





| Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0<br>Maximum Value: 6.9 km/h on Feb 13 13:00<br><br>Minimum Value: 0.1 km/h on Feb 18 22:00<br><br>Percentiles: P <sub>1</sub> = 0.1 P <sub>10</sub> = 0.3 Q <sub>1</sub> = 0.5 Median = 1.0 Q <sub>3</sub> = 1.5 P <sub>90</sub> = 2.3 P <sub>99</sub> = 3.7 |                               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Hours in Service: 672<br>Hours of Data: 669<br>Hours of Missing Data: 3<br>Hours of Calibration: 0<br>Percent Operational Time: 99.6 |     |     |     |     |               |
|---|-------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|-----|-----|-----|-----|---------------|
| Day   | Hourly Period Ending At (MST) |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |  |     |     |     |     | Daily Maximum |
|   | 1                             | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19  | 20   | 21  | 22  | 23  | 24  |               |
| 1-Feb   | 1.2                           | 0.9 | 0.5 | 0.5 | 1.6 | 1.4 | 1.3 | 1.2 | 1.7 | 1.4 | 1.4 | 1.4 | 2.2 | 1.7 | 1.6 | 1.2 | 0.9 | 0.8 | 0.9 | 0.4  | 0.3 | 0.6 | 0.3 | 0.2 | 2.2           |
| 2-Feb   | 0.3                           | 0.2 | 0.2 | 0.2 | 0.3 | 0.4 | 0.5 | 0.4 | 0.6 | 0.5 | 0.6 | 0.6 | 0.7 | 1.2 | 1.9 | 3.1 | 3.1 | 3.3 | 3.2 | 3.2  | 2.8 | 2.7 | 2.4 | 2.4 | 3.3           |
| 3-Feb   | 2.5                           | 2.2 | 1.9 | 1.8 | 1.2 | 1.0 | 0.7 | 0.7 | 0.6 | 0.7 | 0.6 | 0.8 | 1.0 | 1.3 | 1.3 | 1.1 | 1.3 | 0.9 | 1.4 | 1.0  | 1.1 | 1.1 | 0.7 | 0.8 | 2.5           |
| 4-Feb   | 0.7                           | 0.6 | 0.5 | 0.4 | 0.5 | 0.5 | 0.6 | 0.5 | 0.8 | 0.9 | 1.0 | 1.3 | 1.2 | 1.4 | 0.9 | 0.7 | 0.4 | 0.5 | 0.5 | 0.4  | 0.5 | 0.4 | 0.5 | 0.4 | 1.4           |
| 5-Feb   | 0.4                           | 0.3 | 0.3 | 0.3 | 0.3 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.3 | 0.5 | 0.6 | 0.8 | 0.8 | 1.0 | 0.8 | 0.5 | 0.6 | 0.2  | 0.6 | 1.0 | 0.6 | 2.4 | 2.6           |
| 6-Feb   | 2.4                           | 1.8 | 1.3 | 1.3 | 1.6 | 1.2 | 0.9 | 0.5 | 0.5 | 1.1 | 1.1 | 0.9 | 0.8 | 1.1 | 1.2 | 1.5 | 1.2 | 0.6 | 1.4 | 0.6  | 0.7 | 0.7 | 0.8 | 1.0 | 2.4           |
| 7-Feb   | 1.1                           | 1.8 | 1.6 | 2.4 | 2.5 | 3.3 | 2.6 | 2.6 | 2.6 | 2.5 | 3.0 | 3.5 | 3.7 | 3.7 | 3.8 | 3.6 | 3.1 | 2.1 | 1.9 | 2.6  | 1.7 | 0.9 | 1.2 | 1.2 | 3.8           |
| 8-Feb   | 1.7                           | 1.1 | 1.0 | 0.7 | 0.4 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 | 0.3 | 1.0 | 0.9 | 0.9 | 0.8 | 0.5 | 0.7 | 0.2 | 0.4 | 0.4  | 0.7 | 0.7 | 0.6 | 0.7 | 1.7           |
| 9-Feb   | 0.8                           | 1.0 | 1.3 | 1.3 | 1.3 | 1.0 | 0.6 | 0.7 | 0.7 | 1.1 | 0.9 | 0.4 | 0.6 | 0.7 | 0.6 | 0.5 | 0.3 | 0.4 | 0.4 | 0.4  | 0.5 | 0.6 | 0.9 | 0.6 | 1.3           |
| 10-Feb  | 0.3                           | 0.4 | 0.6 | 0.6 | 0.5 | 1.1 | 0.9 | 1.0 | 0.8 | 1.1 | 1.0 | 1.2 | 1.2 | 1.3 | 1.3 | 1.4 | 1.3 | 1.1 | 0.9 | 1.2  | 0.9 | 0.6 | 0.5 | 0.3 | 1.4           |
| 11-Feb  | 0.2                           | 0.1 | 0.1 | 0.1 | 0.2 | 0.6 | 1.0 | 0.7 | 0.9 | 0.5 | 0.9 | 0.6 | 1.0 | 1.3 | 1.4 | 2.4 | 2.5 | 1.8 | 2.3 | 2.1  | 2.1 | 0.8 | 2.1 | 2.6 | 2.6           |
| 12-Feb  | 2.9                           | 3.1 | 2.7 | 1.5 | 1.4 | 1.4 | 1.7 | 1.3 | 0.7 | 0.5 | 0.6 | 0.4 | 0.8 | 0.9 | 1.0 | 0.6 | 0.9 | 1.1 | 1.5 | 1.5  | 1.3 | 1.5 | 1.7 | 1.6 | 3.1           |
| 13-Feb  | 1.6                           | 1.3 | 1.9 | 2.2 | 3.3 | 3.2 | 2.9 | 2.8 | 2.5 | UO  | UO  | UO  | 6.9 | 4.5 | 3.8 | 3.0 | 3.8 | 3.9 | 3.2 | 2.9  | 3.1 | 2.9 | 2.2 | 2.4 | 6.9           |
| 14-Feb  | 2.5                           | 2.4 | 1.9 | 1.2 | 1.5 | 1.4 | 1.6 | 1.2 | 1.4 | 0.8 | 1.1 | 1.6 | 1.0 | 1.3 | 1.4 | 1.2 | 1.1 | 1.7 | 1.3 | 1.1  | 1.3 | 1.5 | 0.7 | 0.3 | 2.5           |
| 15-Feb  | 0.1                           | 0.1 | 0.3 | 0.2 | 0.2 | 0.2 | 0.4 | 0.7 | 0.5 | 0.9 | 0.6 | 0.8 | 1.7 | 2.1 | 1.7 | 1.4 | 1.2 | 0.8 | 0.2 | 0.1  | 0.5 | 0.6 | 0.6 | 0.5 | 2.1           |
| 16-Feb  | 0.5                           | 0.6 | 0.4 | 0.7 | 0.6 | 0.9 | 0.9 | 0.7 | 1.4 | 0.8 | 0.8 | 0.7 | 0.7 | 0.8 | 0.5 | 0.8 | 0.4 | 0.9 | 1.3 | 1.5  | 2.0 | 1.9 | 1.5 | 1.4 | 2.0           |
| 17-Feb  | 1.1                           | 1.4 | 1.3 | 1.3 | 1.1 | 1.1 | 1.3 | 1.4 | 1.4 | 1.4 | 1.2 | 1.5 | 1.8 | 1.4 | 1.5 | 1.4 | 1.4 | 1.3 | 1.5 | 1.2  | 1.0 | 1.2 | 0.6 | 0.5 | 1.8           |
| 18-Feb  | 0.9                           | 0.6 | 0.5 | 0.2 | 0.4 | 0.5 | 0.5 | 0.6 | 0.6 | 0.9 | 0.5 | 0.9 | 1.3 | 1.6 | 1.4 | 1.1 | 0.5 | 0.2 | 0.2 | 0.3  | 0.2 | 0.1 | 0.3 | 0.2 | 1.6           |
| 19-Feb  | 0.3                           | 0.5 | 0.7 | 0.5 | 0.5 | 0.8 | 1.1 | 0.9 | 0.6 | 1.1 | 1.2 | 0.7 | 1.2 | 1.2 | 0.6 | 0.6 | 0.9 | 1.1 | 0.9 | 1.0  | 1.3 | 1.2 | 1.1 | 1.4 | 1.4           |
| 20-Feb  | 1.3                           | 0.7 | 0.9 | 1.0 | 0.7 | 0.5 | 0.4 | 0.5 | 0.6 | 0.6 | 0.7 | 0.7 | 1.4 | 1.4 | 1.6 | 1.3 | 1.2 | 1.1 | 1.5 | 1.0  | 0.5 | 0.5 | 1.8 | 2.9 | 2.9           |
| 21-Feb  | 2.3                           | 2.5 | 2.3 | 2.2 | 1.9 | 1.7 | 1.6 | 1.9 | 2.0 | 1.8 | 1.9 | 2.1 | 2.0 | 1.9 | 2.2 | 2.3 | 1.8 | 1.4 | 1.6 | 1.1  | 1.0 | 0.6 | 0.4 | 0.2 | 2.5           |
| 22-Feb  | 0.3                           | 0.3 | 0.4 | 0.6 | 0.6 | 0.3 | 0.4 | 0.4 | 0.4 | 0.5 | 0.9 | 0.6 | 1.4 | 1.6 | 1.1 | 1.3 | 0.8 | 0.2 | 0.2 | 0.3  | 0.3 | 0.2 | 0.2 | 0.2 | 1.6           |
| 23-Feb  | 0.2                           | 0.3 | 0.5 | 0.6 | 0.7 | 0.5 | 0.2 | 0.2 | 0.1 | 0.3 | 0.7 | 0.5 | 0.8 | 0.9 | 1.7 | 1.1 | 1.0 | 1.0 | 0.2 | 0.1  | 0.1 | 0.2 | 0.3 | 0.5 | 1.7           |
| 24-Feb  | 0.5                           | 0.7 | 0.9 | 0.8 | 0.5 | 0.4 | 0.3 | 0.4 | 0.5 | 0.7 | 1.1 | 1.7 | 2.8 | 2.7 | 2.6 | 2.3 | 2.3 | 2.2 | 2.8 | 2.2  | 2.3 | 1.7 | 1.5 | 1.6 | 2.8           |
| 25-Feb  | 1.0                           | 0.7 | 0.6 | 0.6 | 1.0 | 0.8 | 1.0 | 1.0 | 0.9 | 0.7 | 1.2 | 1.6 | 2.1 | 2.2 | 1.9 | 1.7 | 1.3 | 1.1 | 0.5 | 0.5  | 0.5 | 0.5 | 0.3 | 0.7 | 2.2           |
| 26-Feb  | 0.4                           | 0.9 | 1.3 | 1.2 | 1.4 | 1.6 | 2.0 | 1.6 | 1.4 | 1.0 | 1.9 | 2.5 | 1.7 | 1.7 | 1.5 | 1.0 | 1.5 | 1.1 | 1.1 | 1.0  | 0.7 | 1.1 | 1.0 | 0.8 | 2.5           |
| 27-Feb  | 0.9                           | 1.0 | 0.8 | 0.8 | 1.4 | 1.7 | 1.6 | 1.9 | 2.0 | 2.1 | 2.4 | 2.3 | 2.2 | 2.2 | 2.8 | 2.1 | 1.7 | 1.3 | 1.8 | 2.2  | 2.4 | 2.4 | 1.8 | 1.8 | 2.8           |
| 28-Feb  | 1.3                           | 1.2 | 1.3 | 0.9 | 0.5 | 0.4 | 0.4 | 0.3 | 0.4 | 0.5 | 0.6 | 1.0 | 1.2 | 1.4 | 0.8 | 0.9 | 0.8 | 0.2 | 0.1 | 0.1  | 0.1 | 0.2 | 0.1 | 0.2 | 1.4           |
| Diurnal Maximum   |                               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |  |     |     |     |     |               |
| UO - Unstable Operation   |                               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |  |     |     |     |     |               |



## WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY  
MONITORING PROGRAM  
MONTHLY REPORT

### **AMS06 PATRICIA MCINNES FEBRUARY 2023**

Operations, Data Collection,  
QA/QC, Data Validation and Reporting by:  
Wood Buffalo Environmental Association  
Fort McMurray, Alberta

August 30, 2023

Revision V02

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - PATRICIA McINNES (AMS06)  
FEBRUARY 2023

MONTHLY SUMMARY

| Parameter                         | Hours of Data | Hours of Calibration | Hours without Data | Operational Time | Maximum 1-Hour Value | 1-Hour Exceedances | Maximum 24-Hour Value | 24-Hour Exceedances |
|-----------------------------------|---------------|----------------------|--------------------|------------------|----------------------|--------------------|-----------------------|---------------------|
| SO2 (ppb) Average                 | 638           | 32                   | 34                 | 99.7             | 28.1                 | 0                  | 6.5                   | 0                   |
| H2S(ppb) Average                  | 637           | 33                   | 35                 | 99.7             | 1.8                  | 0                  | 0.7                   | 0                   |
| TRS (ppb) Average                 | 0             | 0                    | 0                  | NaN              | --                   | 0                  | --                    | 0                   |
| THC (ppm) Average                 | 577           | 32                   | 95                 | 90.63            | 2.6                  | -                  | 2.4                   | -                   |
| NMHC(ppm) Average                 | 577           | 32                   | 95                 | 90.63            | 0.153                | -                  | 0.021                 | -                   |
| CH4(ppm) Average                  | 577           | 32                   | 95                 | 90.63            | 2.6                  | -                  | 2.3                   | -                   |
| O3 (ppb) Average                  | 638           | 32                   | 34                 | 99.7             | 44.9                 | 0                  | 39.8                  | -                   |
| NO2 (ppb) Average                 | 637           | 35                   | 35                 | 100              | 46.4                 | 0                  | 25.7                  | -                   |
| NO (ppb) Average                  | 637           | 35                   | 35                 | 100              | 90                   | -                  | 16.2                  | -                   |
| NOX (ppb) Average                 | 637           | 35                   | 35                 | 100              | 136.4                | -                  | 41.8                  | -                   |
| NH3 (ppb) Average                 | 593           | 36                   | 79                 | 93.6             | 0                    | 0                  | 0                     | -                   |
| PM2.5 (ug/m3) Average             | 671           | 1                    | 1                  | 100              | 23                   | 0                  | 12                    | 0                   |
| Temperature 2 m (C) Average       | 672           | 0                    | 0                  | 100              | 4.6                  | -                  | 0.3                   | -                   |
| Relative Humidity (%) Average     | 672           | 0                    | 0                  | 100              | 94.6                 | -                  | 85.7                  | -                   |
| Wind Speed 10 m (km/h) Average    | 620           | 0                    | 52                 | 92.26            | 31                   | -                  | 17                    | -                   |
| Wind Direction 10 m (deg) Average | 620           | 0                    | 52                 | 92.26            | -                    | -                  | -                     | -                   |

Note : Operational time includes periods of data collection and instrument calibration

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - PATRICIA McINNES (AMS06)  
 FEBRUARY 2023

MONTHLY SUMMARY FOR AIR QUALITY/ METEOROLOGICAL MONITORING MEASUREMENTS

| Parameter                         | Number | Mean   | StnDev | Total | Percentile |       |       |        |      |      |       |
|-----------------------------------|--------|--------|--------|-------|------------|-------|-------|--------|------|------|-------|
|                                   |        |        |        |       | Min        | P10   | Q1    | Median | Q3   | P90  | Max   |
| SO2 (ppb) Average                 | 638    | 2.38   | 3.9    | -     | 0          | 0.1   | 0.3   | 0.7    | 2.6  | 6.8  | 28.1  |
| H2S(ppb) Average                  | 637    | 0.29   | 0.3    | -     | 0          | 0.1   | 0.1   | 0.2    | 0.4  | 0.6  | 1.8   |
| TRS (ppb) Average                 | 0      | --     | --     | -     | --         | 0     | 0     | 0      | 0    | 0    | --    |
| THC (ppm) Average                 | 577    | 2.08   | 0.1    | -     | 1.9        | 2     | 2     | 2      | 2.1  | 2.2  | 2.6   |
| NMHC(ppm) Average                 | 577    | 0.002  | 0.012  | -     | 0          | 0     | 0     | 0      | 0    | 0    | 0.153 |
| CH4(ppm) Average                  | 577    | 2.07   | 0.1    | -     | 1.9        | 2     | 2     | 2      | 2.1  | 2.2  | 2.6   |
| O3 (ppb) Average                  | 638    | 23.43  | 11.7   | -     | 0.9        | 5.7   | 14.2  | 24.2   | 32.5 | 38.4 | 44.9  |
| NO2 (ppb) Average                 | 637    | 12.41  | 9.8    | -     | 0.1        | 1.5   | 5.2   | 9.6    | 17.5 | 27.9 | 46.4  |
| NO (ppb) Average                  | 637    | 5.04   | 8.9    | -     | 0          | 0.1   | 0.5   | 1.6    | 5.8  | 13.2 | 90    |
| NOX (ppb) Average                 | 637    | 17.44  | 17     | -     | 0.1        | 1.8   | 6.2   | 12.5   | 23.1 | 38.9 | 136.4 |
| NH3 (ppb) Average                 | 593    | 0      | 0      | -     | 0          | 0     | 0     | 0      | 0    | 0    | 0     |
| PM2.5 (ug/m3) Average             | 671    | 5.15   | 3.1    | -     | 0.4        | 1.8   | 3.1   | 4.5    | 6.6  | 9.1  | 23    |
| Temperature 2 m (C) Average       | 672    | -14.77 | 9.5    | -     | -36.6      | -27.6 | -21.1 | -14.7  | -8.1 | -1.3 | 4.6   |
| Relative Humidity (%) Average     | 672    | 73.4   | 10.7   | -     | 39.7       | 56    | 68.9  | 75.6   | 80.1 | 85.6 | 94.6  |
| Wind Speed 10 m (km/h) Average    | 620    | 8.9    | 5      | -     | 0          | 3     | 5     | 8      | 11   | 16   | 31    |
| Wind Direction 10 m (deg) Average | 620    | -      | -      | -     | -          | -     | -     | -      | -    | -    | -     |

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - PATRICIA McINNES (AMS06)  
FEBRUARY 2023

OPERATIONAL NOTES

| Parameter                  | Period<br>Start   | Period<br>End     | Duration<br>(Hours) | Notes   |
|----------------------------|-------------------|-------------------|---------------------|---|
| SO2, H2S, THC, O3, NH3     | 02 Feb 2023 15:00 | 02 Feb 2023 16:00 | 2                   | Maintenance - sample manifold cleaned             |
| TRS                        | 01 Feb 2023 01:00 | 01 Mar 2023 00:00 | 672                 | Not in Service                                    |
| THC/NMHC/CH4               | 23 Feb 2023 03:00 | 24 Feb 2023 02:00 | 24                  | Unstable Operation - excessive baseline drift     |
| THC/NMHC/CH4               | 24 Feb 2023 04:00 | 25 Feb 2023 03:00 | 24                  | Unstable Operation - excessive baseline drift     |
| THC/NMHC/CH4               | 25 Feb 2023 05:00 | 25 Feb 2023 11:00 | 7                   | Unstable Operation - excessive baseline drift     |
| THC/NMHC/CH4               | 25 Feb 2023 12:00 | 25 Feb 2023 17:00 | 6                   | Maintenance - replaced sample pump                |
| NH3                        | 01 Feb 2023 02:00 | 28 Feb 2023 05:00 | 41                  | Stabilization after daily QA check                |
| Wind Speed, Wind Direction | 13 Feb 2023 10:00 | 15 Feb 2023 13:00 | 52                  | Flat line in sensor output signal - Sensor frozen |



# Wood Buffalo Environmental Association

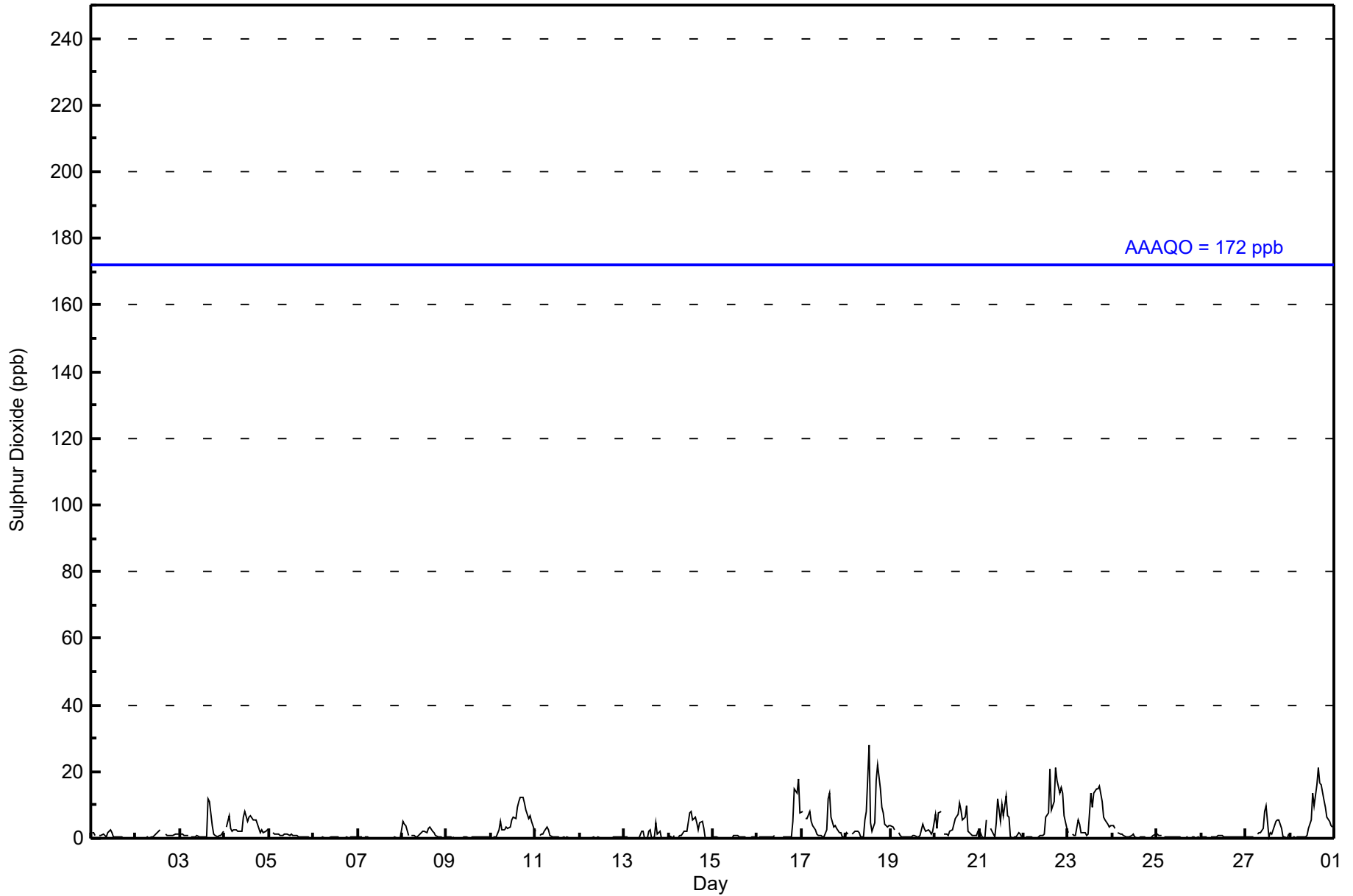
## Summary of Hour Averages

# Sulphur Dioxide (SO<sub>2</sub>) - ppb

## Patricia McInnes - February 2023

| Number of Exceedences (AAAQO):              |                               | 1-hr: 0                                    |     | 24-hr: 0                              |     | Hours in Service:   |     | 672                            |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |     |               |               |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |     |                 |
|---|-------------------------------|--|-----|---------------------------------------|-----|---|-----|--------------------------------|-----|-----|------|-----|------|------|------|------|------|------|------|------|------|------|------|-----|---------------|---------------|-----|-----|-----|-----|-----|-----|-----|------|-----|------|------|------|------|------|------|------|------|------|------|------|-----|-----------------|
| Maximum Value: 28.1 ppb on Feb 18 13:00     |                               | Maximum Daily Average: 6.5 ppb on Feb 22   |     | Minimum Value: 0.0 ppb on Feb 2 01:00 |     | Minimum Daily Average: 0.1 ppb on Feb 7   |     | Hours of Data: 638             |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |     |               |               |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |     |                 |
| Maximum Diurnal Average: 4.8 ppb at hour 18 |                               | Minimum Diurnal Average: 0.8 ppb at hour 9 |     | Monthly Average: 2.38 ppb             |     | Percentiles: P <sub>1</sub> = 0.0 P <sub>10</sub> = 0.1 Q <sub>1</sub> = 0.3 Median = 0.7 Q <sub>3</sub> = 2.6 P <sub>90</sub> = 6.8 P <sub>99</sub> = 17.5 |     | Hours of Missing Data: 34      |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |     |               |               |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |     |                 |
|   |                               |  |     |                                       |     |   |     | Hours of Calibration: 32       |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |     |               |               |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |     |                 |
|   |                               |  |     |                                       |     |   |     | Percent Operational Time: 99.7 |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |     |               |               |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |     |                 |
| Day   | Hourly Period Ending At (MST) |  |     |                                       |     |   |     |                                |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |     | Daily Average | Daily Maximum |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |     |                 |
|   | 1                             | 2  | 3   | 4                                     | 5   | 6   | 7   | 8                              | 9   | 10  | 11   | 12  | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20   | 21   | 22   | 23   | 24  |               |               |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |     |                 |
| 1-Feb                                       | 1.8                           | 1.5  | 0.9 | Z                                     | 0.8 | 0.8   | 1.3 | 1.0                            | 0.6 | 1.7 | 2.7  | 1.6 | 0.3  | 0.3  | 0.5  | 0.3  | 0.2  | 0.2  | 0.1  | 0.1  | 0.1  | 0.1  | 0.1  | 0.1 | 0.7           | 2.7           |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |     |                 |
| 2-Feb                                       | 0.0                           | 0.0  | 0.0 | 0.1                                   | Z   | 0.1   | 0.3 | 0.2                            | 0.3 | 0.6 | 0.9  | 1.2 | 2.0  | 2.6  | M    | M    | 1.5  | 1.0  | 1.0  | 0.9  | 1.0  | 1.1  | 1.1  | 1.2 | 0.8           | 2.6           |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |     |                 |
| 3-Feb                                       | 1.2                           | 1.1  | 1.0 | 0.7                                   | 0.7 | Z   | 0.6 | 0.6                            | 0.6 | 0.7 | 0.5  | 0.5 | 0.5  | 0.5  | 0.6  | 11.9 | 10.9 | 3.8  | 1.1  | 0.7  | 0.6  | 0.9  | 0.8  | 2.0 | 1.8           | 11.9          |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |     |                 |
| 4-Feb                                       | Z                             | 3.4  | 6.7 | 3.0                                   | 2.3 | 2.6   | 2.4 | 2.3                            | 2.3 | 2.2 | 6.2  | 8.1 | 5.1  | 6.5  | 6.8  | 5.4  | 5.3  | 5.4  | 2.9  | 1.9  | 2.4  | 1.8  | 2.1  | 2.5 | 3.9           | 8.1           |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |     |                 |
| 5-Feb                                       | 2.4                           | Z  | 1.9 | 1.4                                   | 1.4 | 1.2   | 1.0 | 1.0                            | 1.1 | 1.1 | 1.2  | 1.0 | 1.1  | 1.0  | 0.8  | 0.7  | 0.6  | 0.4  | 0.5  | 0.3  | 0.5  | 0.5  | 0.2  | 0.1 | 0.9           | 2.4           |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |     |                 |
| 6-Feb                                       | 0.0                           | 0.0  | Z   | 0.0                                   | 0.1 | 0.3   | 0.1 | 0.1                            | 0.0 | 0.2 | 0.3  | 0.2 | 0.3  | 0.2  | 0.1  | 0.1  | 0.1  | 0.1  | 0.2  | 0.2  | 0.3  | 0.3  | 0.3  | 0.3 | 0.2           | 0.3           |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |     |                 |
| 7-Feb                                       | 0.3                           | 0.3  | 0.3 | Z                                     | 0.3 | 0.2   | 0.1 | 0.2                            | 0.1 | 0.1 | 0.0  | 0.1 | 0.0  | 0.0  | 0.1  | 0.0  | 0.1  | 0.1  | 0.1  | 0.1  | 0.4  | 0.0  | 0.1  | 0.1 | 0.1           | 0.4           |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |     |                 |
| 8-Feb                                       | 4.9                           | 4.3  | 3.8 | 1.0                                   | Z   | 0.8   | 0.8 | 0.4                            | 0.3 | 1.0 | 1.8  | 2.2 | 2.0  | 1.7  | 3.2  | 3.3  | 2.3  | 1.5  | 1.0  | 0.6  | 0.5  | 0.5  | 0.1  | 0.2 | 1.7           | 4.9           |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |     |                 |
| 9-Feb                                       | 0.4                           | 0.3  | 0.2 | 0.1                                   | 0.2 | Z   | 0.1 | 0.2                            | 0.1 | 0.4 | 0.4  | 0.3 | 0.1  | 0.1  | 0.2  | 0.4  | 0.3  | 0.4  | 0.5  | 0.4  | 0.4  | 0.4  | 0.5  | 0.6 | 0.3           | 0.6           |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |     |                 |
| 10-Feb                                      | Z                             | 0.6  | 0.5 | 0.5                                   | 2.4 | 5.1   | 2.6 | 2.5                            | 3.5 | 2.9 | 3.3  | 5.6 | 6.2  | 6.0  | 9.4  | 11.0 | 12.4 | 12.4 | 10.5 | 8.3  | 5.7  | 6.7  | 5.1  | 2.6 | 5.5           | 12.4          |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |     |                 |
| 11-Feb                                      | 1.9                           | Z  | 1.0 | 1.1                                   | 1.4 | 1.9   | 3.3 | 2.6                            | 1.0 | 0.5 | 0.3  | 0.4 | 0.2  | 0.2  | 0.1  | 0.3  | 0.2  | 0.2  | 0.2  | 0.2  | 0.0  | 0.1  | 0.0  | 0.0 | 0.8           | 3.3           |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |     |                 |
| 12-Feb                                      | 0.0                           | 0.0  | Z   | 0.1                                   | 0.0 | 0.0   | 0.0 | 0.3                            | 0.1 | 0.1 | 0.3  | 0.2 | 0.1  | 0.1  | 0.1  | 0.1  | 0.1  | 0.1  | 0.5  | 0.4  | 0.2  | 0.3  | 0.3  | 0.3 | 0.2           | 0.5           |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |     |                 |
| 13-Feb                                      | 0.4                           | 0.4  | 0.3 | Z                                     | 0.2 | 0.1   | 0.0 | 0.0                            | 0.0 | 2.3 | 2.0  | 0.0 | 0.0  | 2.2  | 2.6  | 0.0  | 0.4  | 4.8  | 1.1  | 2.3  | 0.0  | 0.0  | 0.0  | 0.0 | 0.8           | 4.8           |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |     |                 |
| 14-Feb                                      | 0.8                           | 0.5  | 0.1 | 0.7                                   | Z   | 0.5   | 0.8 | 1.1                            | 2.0 | 2.1 | 1.9  | 7.6 | 8.0  | 5.7  | 6.3  | 4.7  | 2.4  | 4.6  | 5.3  | 2.9  | 0.2  | 0.1  | 0.1  | 0.1 | 2.5           | 8.0           |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |     |                 |
| 15-Feb                                      | 0.3                           | 0.4  | 0.3 | 0.2                                   | 0.2 | Z   | 0.1 | 0.1                            | 0.0 | 0.0 | 0.2  | 0.7 | 1.0  | 0.8  | 0.5  | 0.5  | 0.4  | 0.3  | 0.0  | 0.0  | 0.0  | 0.3  | 0.6  | 0.6 | 0.3           | 1.0           |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |     |                 |
| 16-Feb                                      | Z                             | 0.6  | 0.6 | 0.6                                   | 0.6 | 0.6   | 0.5 | 0.6                            | 0.6 | 0.8 | C    | C   | C    | C    | 0.6  | 0.5  | 0.4  | 0.3  | 0.5  | 5.1  | 14.8 | 13.6 | 17.7 | 7.8 | 3.5           | 17.7          |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |     |                 |
| 17-Feb                                      | 8.0                           | Z  | 6.0 | 5.7                                   | 7.9 | 5.3   | 4.0 | 2.6                            | 1.3 | 0.8 | 0.7  | 0.5 | 0.6  | 2.7  | 12.0 | 13.5 | 6.3  | 3.5  | 3.7  | 2.8  | 1.8  | 1.5  | 0.3  | 0.5 | 4.0           | 13.5          |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |     |                 |
| 18-Feb                                      | 1.5                           | 1.3  | Z   | 1.1                                   | 1.7 | 2.2   | 2.2 | 1.8                            | 0.4 | 0.5 | 5.5  | 8.1 | 28.1 | 4.7  | 2.3  | 4.8  | 17.4 | 22.1 | 14.7 | 9.1  | 7.7  | 4.3  | 3.3  | 3.7 | 6.5           | 28.1          |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |     |                 |
| 19-Feb                                      | 3.7                           | 3.4  | 2.4 | Z                                     | 1.7 | 0.9   | 0.5 | 0.3                            | 0.2 | 0.3 | 0.3  | 0.4 | 0.7  | 0.8  | 0.6  | 0.6  | 0.7  | 4.4  | 2.8  | 2.0  | 2.4  | 2.2  | 1.4  | 2.2 | 1.5           | 4.4           |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |     |                 |
| 20-Feb                                      | 7.0                           | 3.0  | 7.8 | 7.9                                   | Z   | 1.2   | 1.2 | 1.0                            | 2.0 | 2.6 | 4.3  | 5.9 | 7.1  | 10.7 | 8.4  | 5.5  | 6.3  | 9.7  | 2.2  | 1.3  | 0.8  | 0.9  | 0.9  | 1.9 | 4.3           | 10.7          |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |     |                 |
| 21-Feb                                      | 2.4                           | 0.6  | 0.0 | 0.3                                   | 5.5 | Z   | 2.9 | 2.1                            | 0.4 | 4.7 | 11.7 | 5.0 | 10.0 | 6.8  | 12.6 | 6.8  | 6.4  | 0.5  | 0.2  | 0.3  | 0.4  | 1.6  | 1.1  | 0.6 | 3.6           | 12.6          |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |     |                 |
| 22-Feb                                      | Z                             | 0.3  | 0.2 | 0.2                                   | 0.2 | 0.2   | 0.2 | 0.1                            | 0.4 | 0.7 | 0.7  | 1.2 | 6.5  | 7.6  | 20.7 | 8.4  | 11.1 | 21.3 | 17.5 | 13.7 | 15.1 | 13.5 | 7.0  | 3.0 | 6.5           | 21.3          |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |     |                 |
| 23-Feb                                      | 1.7                           | Z  | 1.5 | 0.9                                   | 0.7 | 5.5   | 4.3 | 1.7                            | 1.6 | 1.6 | 0.9  | 1.4 | 13.7 | 9.4  | 13.6 | 15.0 | 14.6 | 15.9 | 11.0 | 6.5  | 5.6  | 4.1  | 3.4  | 3.9 | 6.0           | 15.9          |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |     |                 |
| 24-Feb                                      | 3.8                           | 3.1  | Z   | 1.5                                   | 1.2 | 1.1   | 0.9 | 0.5                            | 0.3 | 0.4 | 0.9  | 1.3 | 0.3  | 0.1  | 0.2  | 0.5  | 0.2  | 0.3  | 0.1  | 0.1  | 0.2  | 0.4  | 0.8  | 1.4 | 0.8           | 3.8           |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |     |                 |
| 25-Feb                                      | 1.3                           | 1.0  | 0.7 | Z                                     | 0.3 | 0.3   | 0.3 | 0.2                            | 0.3 | 0.4 | 0.3  | 0.2 | 0.2  | 0.1  | 0.1  | 0.2  | 0.2  | 0.2  | 0.2  | 0.2  | 0.2  | 0.2  | 0.4  | 0.2 | 0.3           | 1.3           |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |     |                 |
| 26-Feb                                      | 0.3                           | 0.3  | 0.3 | 0.3                                   | Z   | 0.4   | 0.6 | 0.6                            | 0.6 | 0.8 | 0.8  | 0.7 | 0.6  | 0.5  | 0.4  | 0.5  | 0.3  | 0.3  | 0.3  | 0.3  | 0.2  | 0.3  | 0.2  | 0.3 | 0.4           | 0.8           |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |     |                 |
| 27-Feb                                      | 0.3                           | 0.4  | 0.3 | 0.3                                   | 0.3 | Z   | 1.4 | 1.9                            | 1.6 | 2.9 | 7.9  | 9.7 | 0.5  | 1.8  | 1.3  | 2.3  | 5.1  | 5.5  | 5.6  | 2.8  | 0.3  | 0.2  | 0.2  | 1.4 | 2.4           | 9.7           |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |     |                 |
| 28-Feb                                      | Z                             | 0.3  | 0.3 | 0.2                                   | 0.2 | 0.3   | 0.3 | 0.4                            | 0.5 | 0.7 | 3.2  | 5.7 | 13.6 | 9.9  | 16.2 | 21.4 | 16.4 | 16.0 | 11.6 | 9.4  | 6.5  | 5.1  | 3.9  | 3.2 | 6.3           | 21.4          |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |     |                 |
|   |                               |  |     |                                       |     |   |     |                                |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      | 1.9 | 1.1           | 1.5           | 1.2 | 1.3 | 1.4 | 1.2 | 0.9 | 0.8 | 1.2 | 2.2  | 2.6 | 4.0  | 3.1  | 4.5  | 4.4  | 4.4  | 4.8  | 3.4  | 2.6  | 2.4  | 2.2  | 1.9  | 1.5 | Diurnal Average |
|   |                               |  |     |                                       |     |   |     |                                |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      | 8.0 | 4.3           | 7.8           | 7.9 | 7.9 | 5.5 | 4.3 | 2.6 | 3.5 | 4.7 | 11.7 | 9.7 | 28.1 | 10.7 | 20.7 | 21.4 | 17.4 | 22.1 | 17.5 | 13.7 | 15.1 | 13.6 | 17.7 | 7.8 | Diurnal Maximum |

Z - zerospan      C - Calibration      M - Maintenance  
 Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 172 ppb    24-hr 48 ppb





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Sulphur Dioxide (SO<sub>2</sub>) - ppb**  
**Patricia McInnes - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 10                            | 602                    | 94.36    | 94.36               |
| 11 - 20                           | 31                     | 4.86     | 99.22               |
| 21 - 60                           | 5                      | 0.78     | 100.00              |
| 61 - 110                          | 0                      | 0.00     | 100.00              |
| 111 - 172                         | 0                      | 0.00     | 100.00              |
| > 172                             | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 638

Total Number of Hours: 672





**Wood Buffalo Environmental Association  
Frequency Distribution**

**Sulphur Dioxide (SO<sub>2</sub>) - ppb  
Patricia McInnes - February 2023**

| <b>Concentration<br/>Ranges (ppb)</b> | <b>Wind Direction</b> |     |    |     |   |     |    |     |    |     |    |     |    |     |    |     | <b>Totals</b> |
|---------------------------------------|-----------------------|-----|----|-----|---|-----|----|-----|----|-----|----|-----|----|-----|----|-----|---------------|
|                                       | N                     | NNE | NE | ENE | E | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |               |
| 0 - 10                                | 70                    | 25  | 15 | 8   | 6 | 29  | 63 | 36  | 35 | 35  | 30 | 32  | 33 | 21  | 14 | 100 | 552           |
| 11 - 20                               | 9                     | 2   | 5  | 2   | 1 | 1   | 0  | 0   | 0  | 2   | 0  | 1   | 1  | 3   | 0  | 4   | 31            |
| 21 - 60                               | 1                     | 1   | 2  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 1  | 0   | 0  | 0   | 5             |
| 61 - 110                              | 0                     | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| 111 - 172                             | 0                     | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| > 172                                 | 0                     | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| <b>Totals</b>                         | 80                    | 28  | 22 | 10  | 7 | 30  | 63 | 36  | 35 | 37  | 30 | 33  | 35 | 24  | 14 | 104 | 588           |

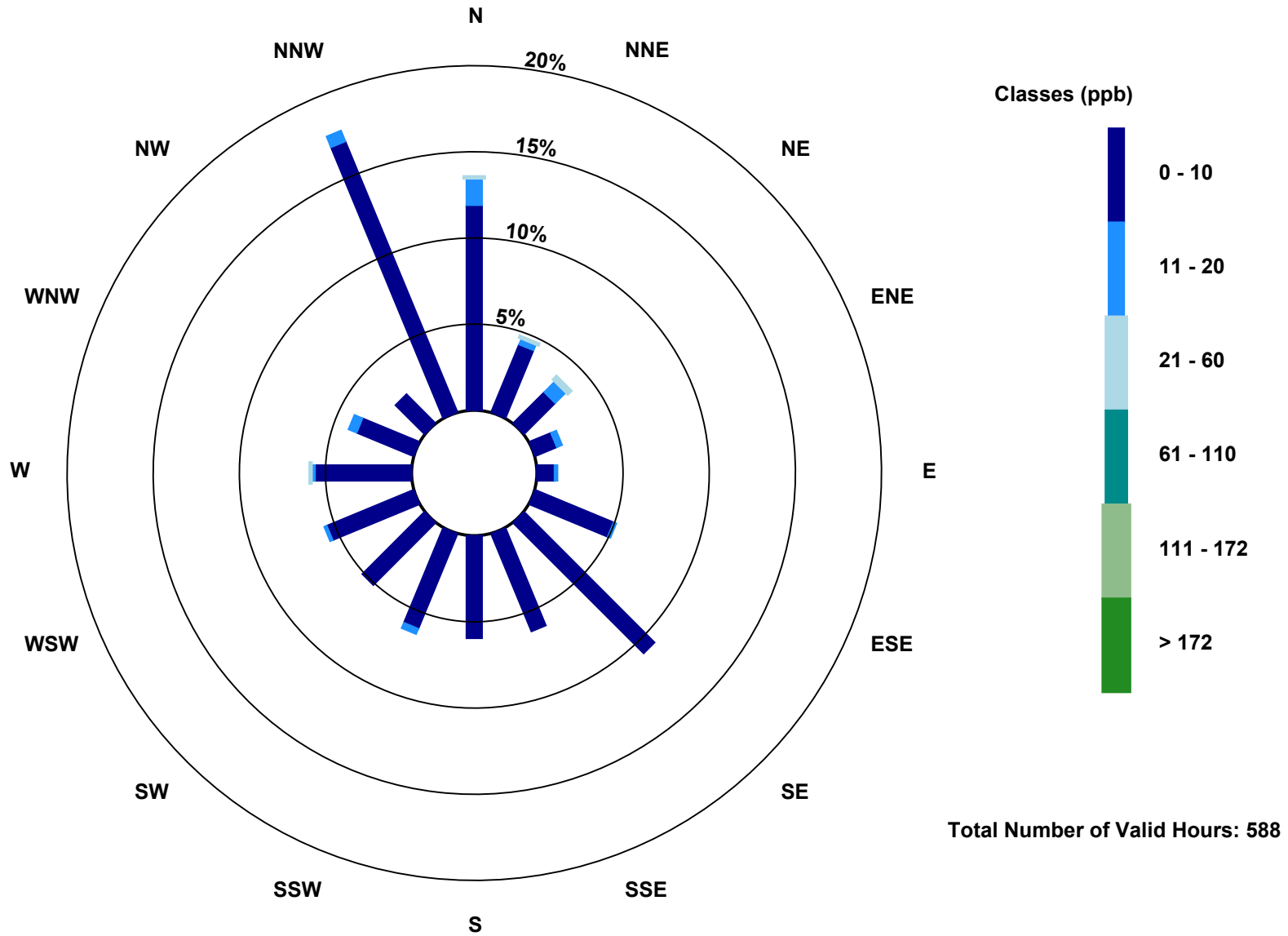
Total Number of Valid Hours: 588

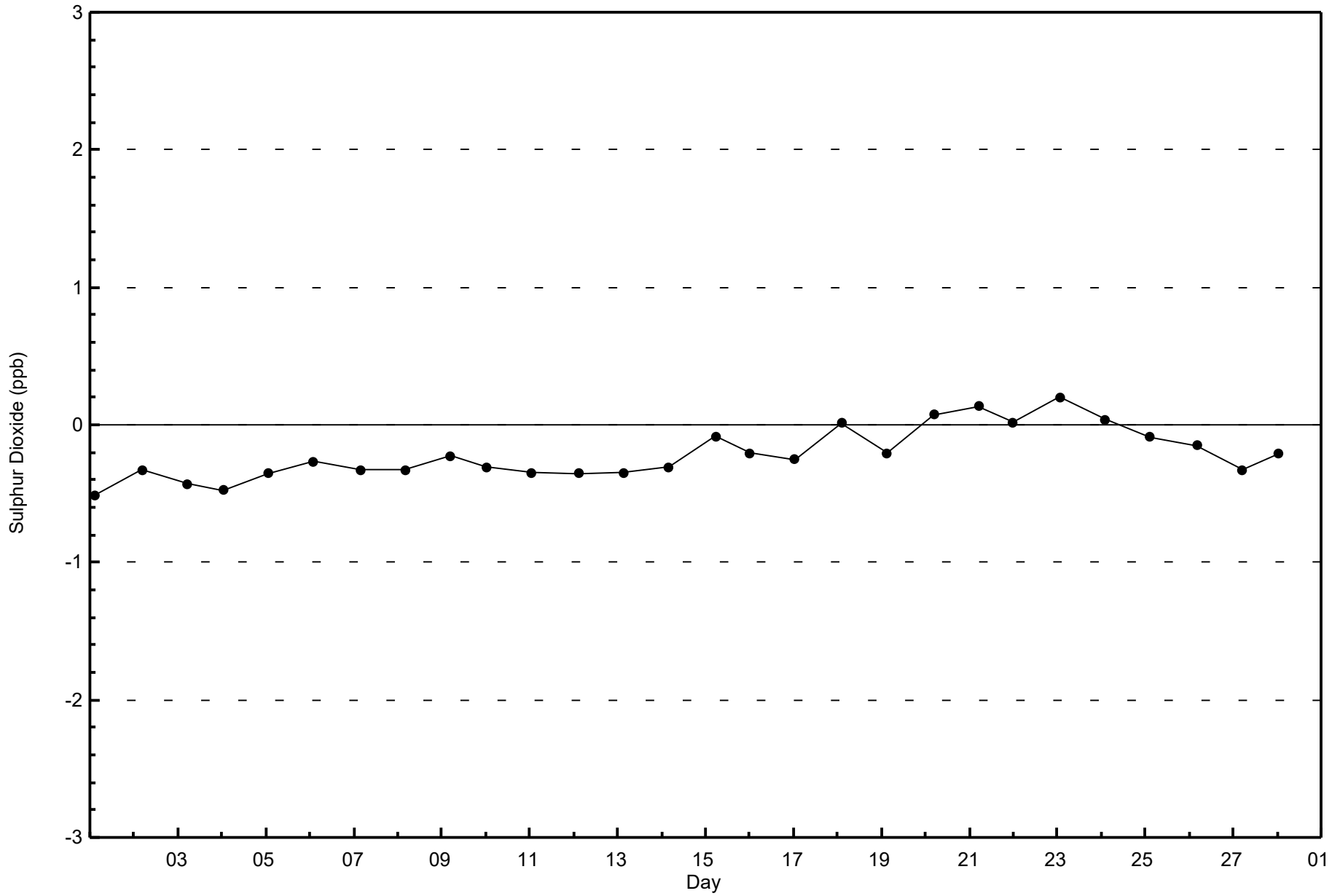
Total Number of Hours: 672

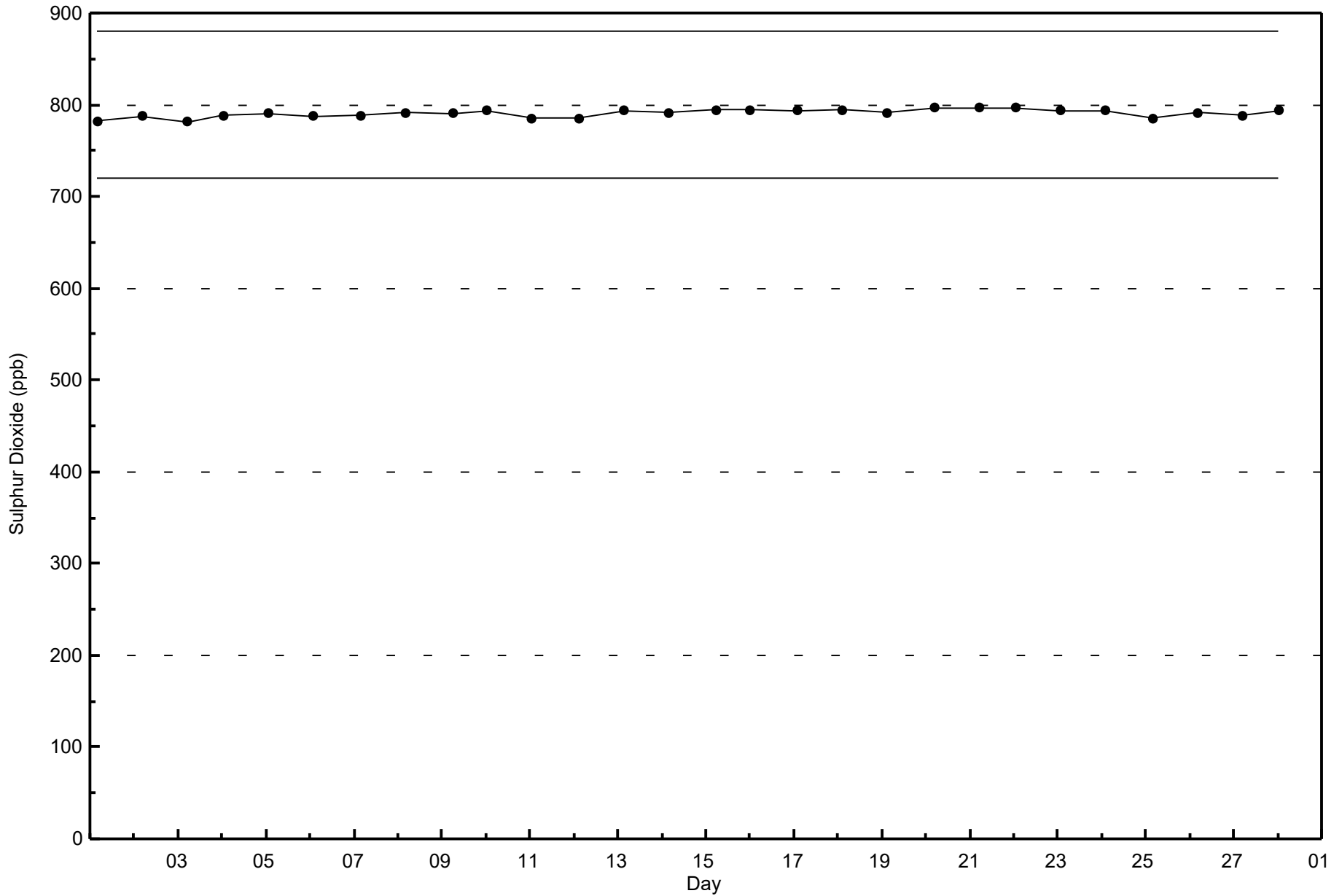


Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Sulphur Dioxide (SO<sub>2</sub>) - ppb  
Patricia McInnes









**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

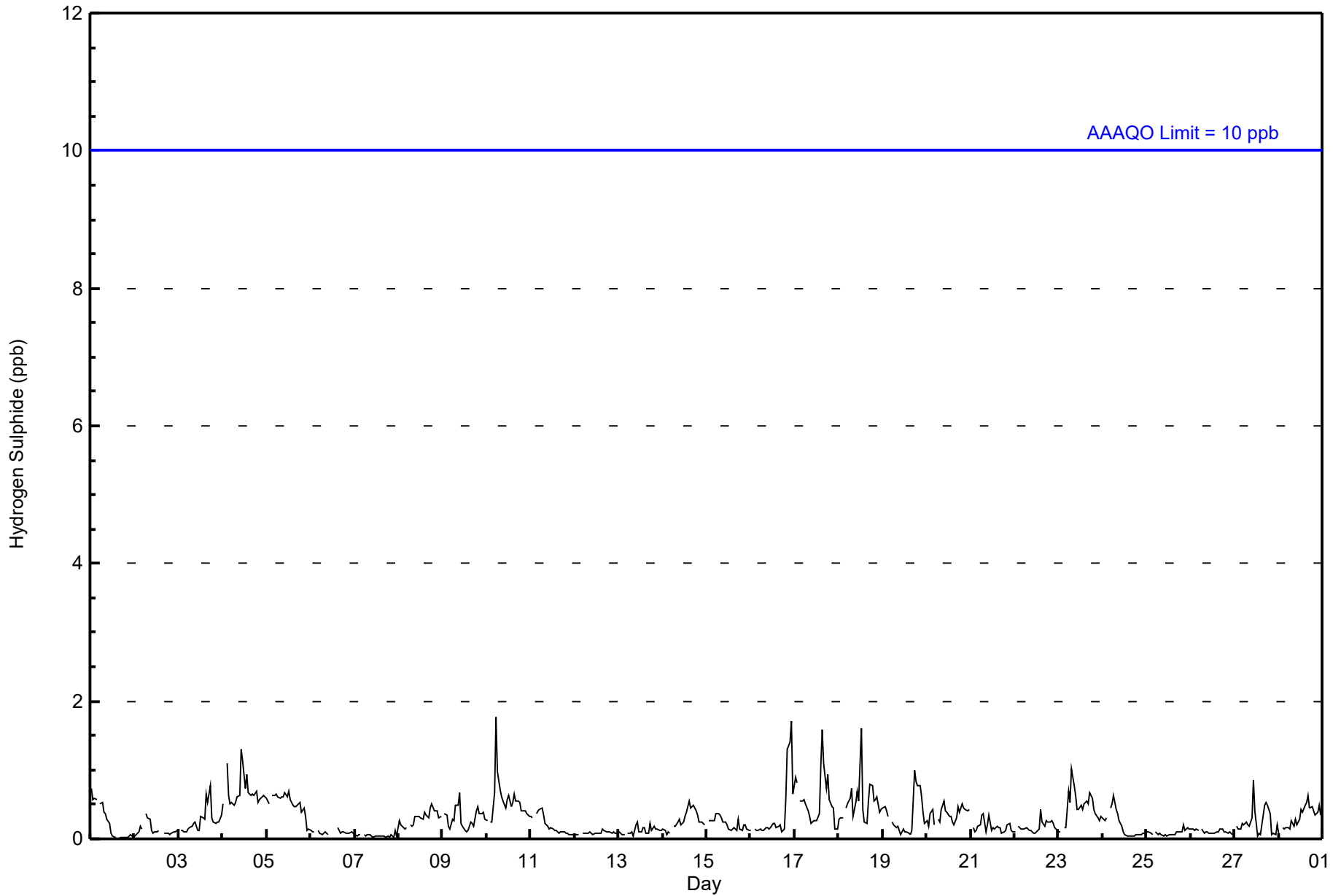
**Hydrogen Sulphide (H<sub>2</sub>S) - ppb**  
**Patricia McInnes - February 2023**

| Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0<br>Maximum Value: 1.8 ppb on Feb 10 06:00      Maximum Daily Average: 0.7 ppb on Feb 4 |                               | Hours in Service: 672<br>Hours of Data: 637<br>Hours of Missing Data: 35<br>Hours of Calibration: 33<br>Percent Operational Time: 99.7   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |               |               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |  |
|--|-------------------------------|--|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---------------|---------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----------------|-----------------|--|
| Minimum Value: 0.0 ppb on Feb 1 15:00<br>Maximum Diurnal Average: 0.4 ppb at hour 6<br>Monthly Average: 0.29 ppb                       |                               | Minimum Daily Average: 0.0 ppb on Feb 7<br>Minimum Diurnal Average: 0.2 ppb at hour 24<br>Percentiles: P <sub>1</sub> = 0.0 P <sub>10</sub> = 0.1 Q <sub>1</sub> = 0.1 Median = 0.2 Q <sub>3</sub> = 0.4 P <sub>90</sub> = 0.6 P <sub>99</sub> = 1.2 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |               |               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |  |
| Day  | Hourly Period Ending At (MST) |  |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Daily Average | Daily Maximum |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |  |
|  | 1                             | 2  | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19  | 20  | 21  | 22  | 23  | 24  |               |               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |  |
| 1-Feb  | 0.7                           | 0.6  | 0.6 | 0.6 | Z   | 0.5 | 0.5 | 0.4 | 0.4 | 0.3 | 0.2 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.2 | 0.7           |               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |  |
| 2-Feb  | 0.0                           | 0.1  | 0.1 | 0.2 | 0.2 | Z   | 0.4 | 0.3 | 0.3 | 0.1 | 0.1 | 0.1 | 0.1 | M   | M   | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1           | 0.1           | 0.4 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |  |
| 3-Feb  | Z                             | 0.1  | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.1 | 0.1 | 0.3 | 0.3 | 0.3 | 0.6 | 0.5 | 0.8 | 0.3 | 0.3 | 0.2 | 0.2 | 0.2 | 0.3 | 0.3           | 0.8           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |  |
| 4-Feb  | 0.5                           | Z  | 1.1 | 0.6 | 0.5 | 0.5 | 0.5 | 0.5 | 0.6 | 0.6 | 1.3 | 1.1 | 0.7 | 0.9 | 0.7 | 0.6 | 0.7 | 0.6 | 0.7 | 0.5 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6           | 1.3           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |  |
| 5-Feb  | 0.6                           | 0.5  | Z   | 0.6 | 0.6 | 0.7 | 0.6 | 0.6 | 0.6 | 0.6 | 0.7 | 0.6 | 0.7 | 0.6 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.4 | 0.4 | 0.3 | 0.1 | 0.1 | 0.5           | 0.7           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |  |
| 6-Feb  | 0.1                           | 0.1  | 0.1 | Z   | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | C   | C   | C   | C   | C   | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1           | 0.2           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |  |
| 7-Feb  | 0.1                           | 0.0  | 0.1 | 0.1 | Z   | 0.1 | 0.0 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.1 | 0.0 | 0.0           | 0.1           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |  |
| 8-Feb  | 0.3                           | 0.2  | 0.2 | 0.1 | 0.2 | Z   | 0.2 | 0.2 | 0.2 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.4 | 0.3 | 0.3 | 0.4 | 0.5 | 0.4 | 0.4 | 0.4 | 0.3 | 0.3 | 0.3           | 0.5           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |  |
| 9-Feb  | Z                             | 0.4  | 0.3 | 0.2 | 0.1 | 0.3 | 0.3 | 0.5 | 0.5 | 0.7 | 0.2 | 0.2 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.4 | 0.5 | 0.4 | 0.4 | 0.4 | 0.3 | 0.3           | 0.7           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |  |
| 10-Feb   | 0.3                           | Z  | 0.3 | 0.2 | 0.7 | 1.8 | 1.0 | 0.7 | 0.6 | 0.6 | 0.4 | 0.6 | 0.6 | 0.5 | 0.5 | 0.6 | 0.6 | 0.6 | 0.5 | 0.4 | 0.4 | 0.4 | 0.4 | 0.3 | 0.6           | 1.8           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |  |
| 11-Feb   | 0.3                           | 0.3  | Z   | 0.4 | 0.4 | 0.4 | 0.4 | 0.3 | 0.2 | 0.2 | 0.1 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1           | 0.4           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |  |
| 12-Feb   | 0.1                           | 0.1  | 0.1 | Z   | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1           | 0.1           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |  |
| 13-Feb   | 0.1                           | 0.1  | 0.1 | 0.1 | Z   | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.3 | 0.1 | 0.1 | 0.2 | 0.2 | 0.1 | 0.1 | 0.2 | 0.1 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1           | 0.3           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |  |
| 14-Feb   | 0.1                           | 0.1  | 0.1 | 0.1 | 0.1 | Z   | 0.2 | 0.2 | 0.2 | 0.3 | 0.2 | 0.2 | 0.3 | 0.4 | 0.5 | 0.5 | 0.5 | 0.5 | 0.4 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2           | 0.5           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |  |
| 15-Feb   | Z                             | 0.3  | 0.3 | 0.3 | 0.3 | 0.4 | 0.4 | 0.3 | 0.3 | 0.2 | 0.2 | 0.2 | 0.1 | 0.1 | 0.1 | 0.2 | 0.1 | 0.3 | 0.1 | 0.1 | 0.2 | 0.2 | 0.1 | 0.1 | 0.1           | 0.4           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |  |
| 16-Feb   | 0.1                           | Z  | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.1 | 0.1 | 0.6 | 1.3 | 1.4 | 1.7 | 0.7 | 0.4           | 1.7           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |  |
| 17-Feb   | 0.9                           | 0.8  | Z   | 0.5 | 0.6 | 0.6 | 0.5 | 0.4 | 0.3 | 0.2 | 0.3 | 0.3 | 0.3 | 0.4 | 1.1 | 1.6 | 1.1 | 0.7 | 0.9 | 0.6 | 0.5 | 0.4 | 0.1 | 0.1 | 0.6           | 1.6           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |  |
| 18-Feb   | 0.3                           | 0.3  | 0.3 | Z   | 0.4 | 0.5 | 0.6 | 0.7 | 0.3 | 0.5 | 0.7 | 0.5 | 1.6 | 0.4 | 0.2 | 0.2 | 0.5 | 0.8 | 0.8 | 0.6 | 0.6 | 0.6 | 0.4 | 0.4 | 0.5           | 1.6           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |  |
| 19-Feb   | 0.5                           | 0.5  | 0.4 | 0.3 | Z   | 0.2 | 0.2 | 0.2 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 1.0 | 0.8 | 0.8 | 0.8 | 0.6 | 0.4 | 0.2 | 0.3           | 1.0           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |  |
| 20-Feb   | 0.3                           | 0.2  | 0.4 | 0.4 | 0.2 | Z   | 0.3 | 0.2 | 0.4 | 0.5 | 0.4 | 0.4 | 0.3 | 0.3 | 0.2 | 0.2 | 0.3 | 0.5 | 0.4 | 0.5 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4           | 0.5           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |  |
| 21-Feb   | Z                             | 0.2  | 0.1 | 0.1 | 0.2 | 0.2 | 0.3 | 0.4 | 0.1 | 0.2 | 0.3 | 0.1 | 0.2 | 0.1 | 0.2 | 0.2 | 0.2 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.1 | 0.1 | 0.1           | 0.4           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |  |
| 22-Feb   | 0.1                           | Z  | 0.2 | 0.1 | 0.1 | 0.1 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.4 | 0.3 | 0.2 | 0.3 | 0.2 | 0.2 | 0.3 | 0.2 | 0.2 | 0.1 | 0.2           | 0.4           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |  |
| 23-Feb   | 0.1                           | 0.1  | Z   | 0.2 | 0.2 | 0.7 | 0.5 | 1.0 | 0.8 | 0.6 | 0.4 | 0.4 | 0.5 | 0.4 | 0.5 | 0.6 | 0.5 | 0.7 | 0.6 | 0.4 | 0.4 | 0.3 | 0.3 | 0.3 | 0.5           | 1.0           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |  |
| 24-Feb   | 0.3                           | 0.3  | 0.3 | Z   | 0.5 | 0.5 | 0.6 | 0.4 | 0.4 | 0.3 | 0.2 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1           | 0.6           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |  |
| 25-Feb   | 0.1                           | 0.1  | 0.1 | 0.1 | Z   | 0.1 | 0.1 | 0.1 | 0.1 | 0.0 | 0.1 | 0.0 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.1 | 0.2 | 0.1 | 0.1           | 0.2           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |  |
| 26-Feb   | 0.1                           | 0.1  | 0.1 | 0.1 | 0.1 | Z   | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1           | 0.1           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |  |
| 27-Feb   | Z                             | 0.2  | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.3 | 0.8 | 0.4 | 0.0 | 0.1 | 0.1 | 0.2 | 0.5 | 0.5 | 0.5 | 0.4 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2           | 0.8           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |  |
| 28-Feb   | 0.1                           | Z  | 0.2 | 0.1 | 0.2 | 0.2 | 0.2 | 0.3 | 0.2 | 0.3 | 0.2 | 0.3 | 0.4 | 0.4 | 0.5 | 0.5 | 0.6 | 0.4 | 0.5 | 0.4 | 0.4 | 0.4 | 0.4 | 0.5 | 0.4           | 0.6           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |  |
|  |                               |  |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | 0.3 | 0.2           | 0.2           | 0.2 | 0.3 | 0.4 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.2 | 0.3 | 0.3 | 0.3 | 0.4 | 0.3 | 0.3 | 0.3 | 0.3 | 0.2 | Diurnal Average |                 |  |
|  |                               |  |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | 0.9 | 0.8           | 1.1           | 0.6 | 0.7 | 1.8 | 1.0 | 1.0 | 0.8 | 0.7 | 1.3 | 1.1 | 1.6 | 0.9 | 1.1 | 1.6 | 1.1 | 1.0 | 0.9 | 0.8 | 1.3 | 1.4 | 1.7 | 0.7             | Diurnal Maximum |  |
| Z - zerospan      C - Calibration      M - Maintenance<br>Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 10 ppb    24-hr 3 ppb   |                               |  |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |               |               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |  |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Hydrogen Sulphide (H<sub>2</sub>S) - ppb**  
**Patricia McInnes - February 2023**





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Hydrogen Sulphide (H<sub>2</sub>S) - ppb  
Patricia McInnes - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 2                             | 637                    | 100.00   | 100.00              |
| 3 - 4                             | 0                      | 0.00     | 100.00              |
| 5 - 7                             | 0                      | 0.00     | 100.00              |
| 8 - 11                            | 0                      | 0.00     | 100.00              |
| > 11                              | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 637

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Hydrogen Sulphide (H<sub>2</sub>S) - ppb  
Patricia McInnes - February 2023**

| Concentration<br>Ranges (ppb) | Wind Direction |     |    |     |   |     |    |     |    |     |    |     |    |     |    |     | Totals |
|-------------------------------|----------------|-----|----|-----|---|-----|----|-----|----|-----|----|-----|----|-----|----|-----|--------|
|                               | N              | NNE | NE | ENE | E | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |        |
| 0 - 2                         | 78             | 28  | 21 | 10  | 5 | 30  | 63 | 37  | 36 | 36  | 30 | 33  | 36 | 24  | 15 | 105 | 587    |
| 3 - 4                         | 0              | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| 5 - 7                         | 0              | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| 8 - 11                        | 0              | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| > 11                          | 0              | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| <b>Totals</b>                 | 78             | 28  | 21 | 10  | 5 | 30  | 63 | 37  | 36 | 36  | 30 | 33  | 36 | 24  | 15 | 105 | 587    |

Total Number of Valid Hours: 587

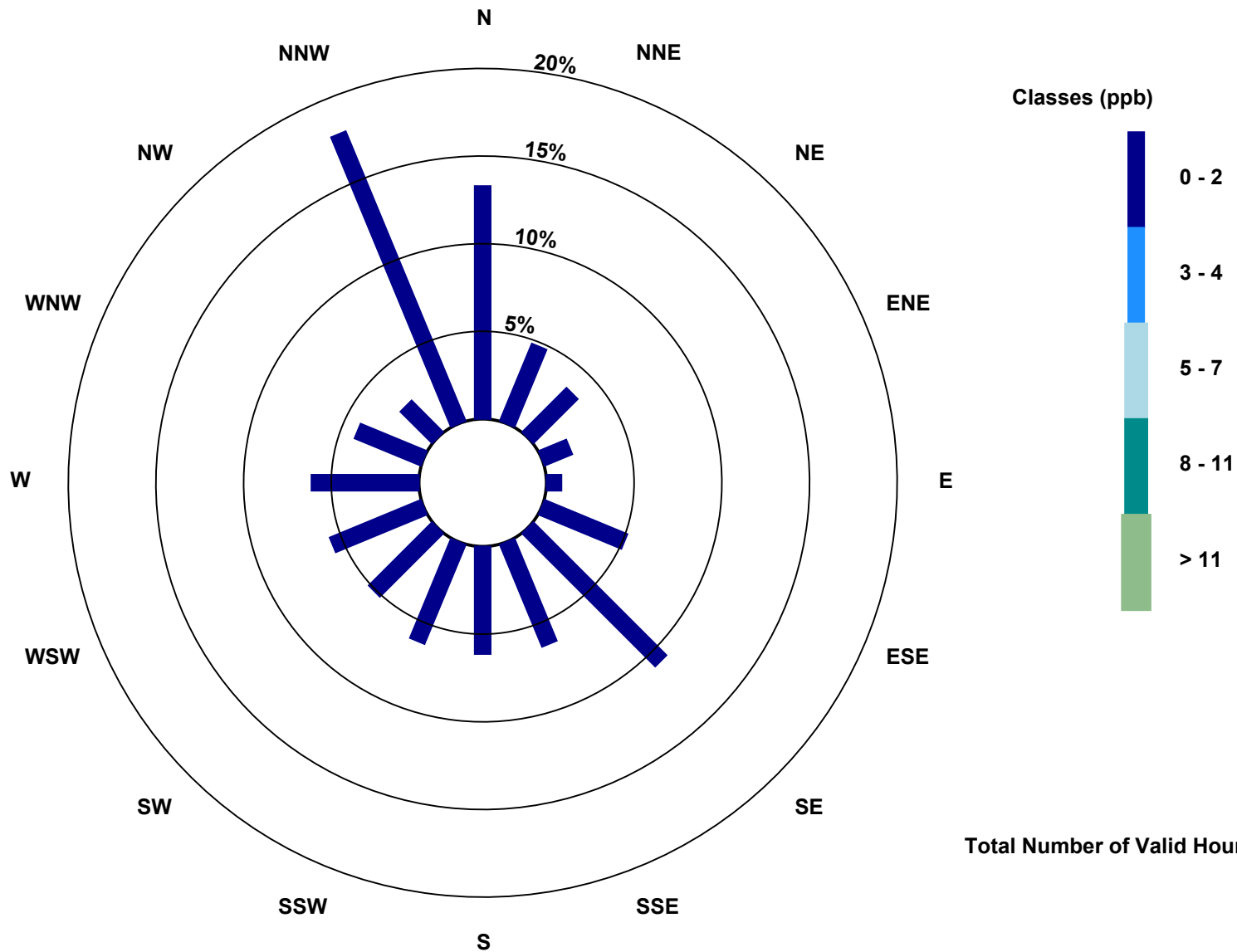
Total Number of Hours: 672



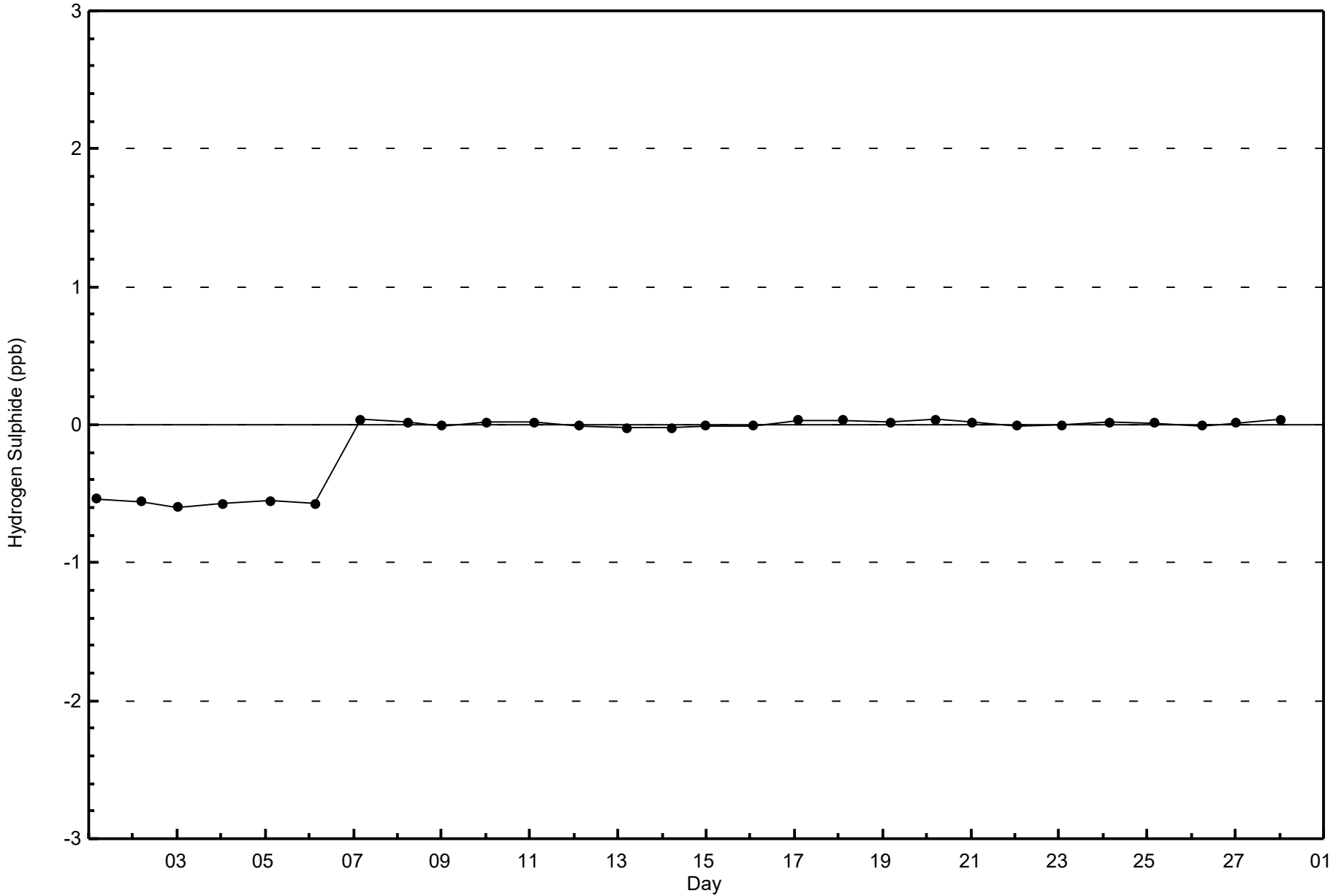


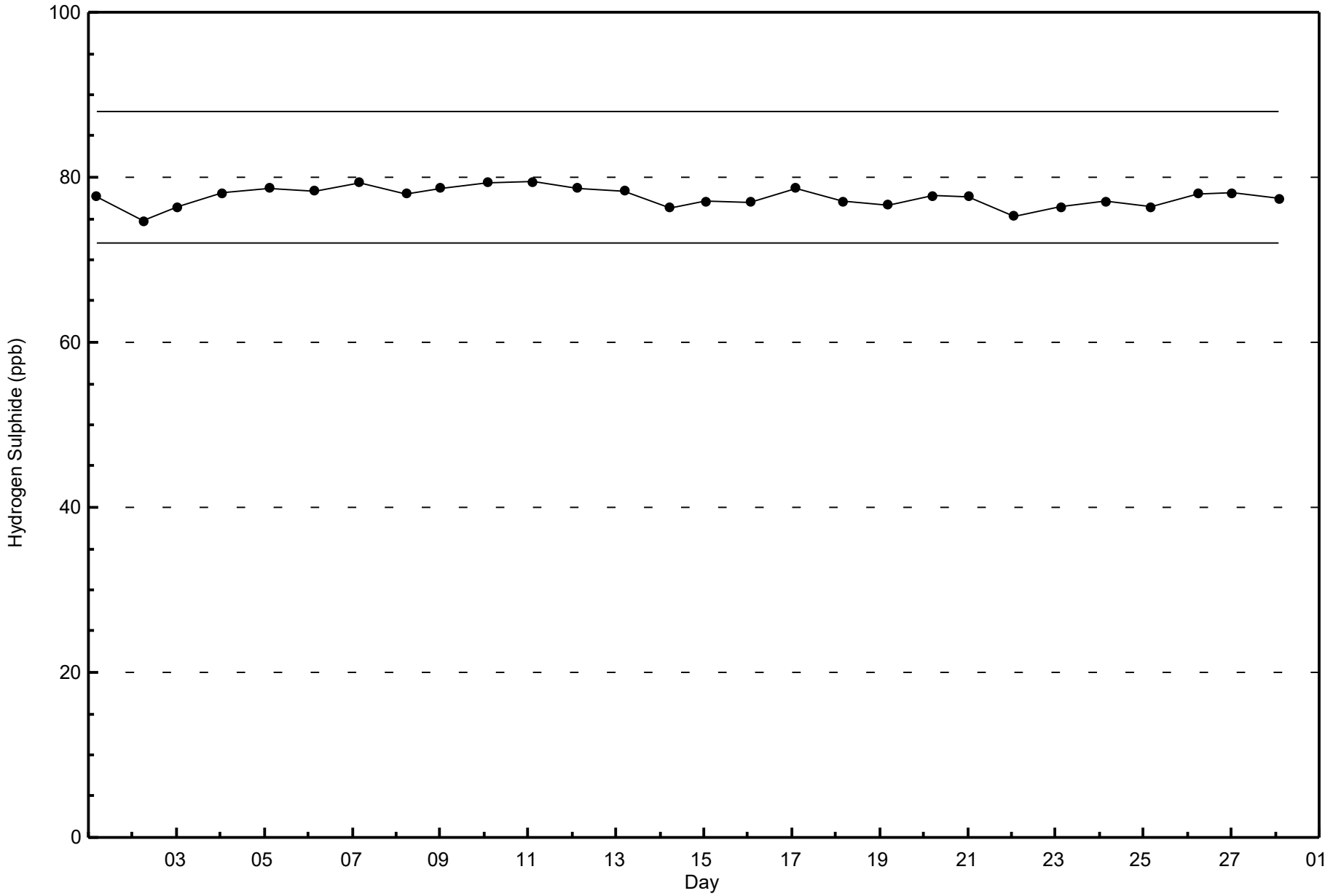
Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Hydrogen Sulphide (H<sub>2</sub>S) - ppb  
Patricia McInnes



Total Number of Valid Hours: 587







**Wood Buffalo Environmental Association**

**Summary of Hour Averages**

**Total Reduced Sulphur (TRS) - ppb**

**Patricia McInnes - February 2023**

|   |  |          |                           |     |
|---|--|----------|---------------------------|-----|
| Number of Exceedences (AAAQO):            | 1-hr: 0  | 24-hr: 0 | Hours in Service:         | 0   |
| Maximum Value: -- ppb on Feb 1 00:00      | Maximum Daily Average: -- ppb on Jan 31  |          | Hours of Data:            | 0   |
| Minimum Value: -- ppb on Feb 1 00:00      | Minimum Daily Average: -- ppb on Jan 31  |          | Hours of Missing Data:    | 0   |
| Maximum Diurnal Average: -- ppb at hour 0 | Minimum Diurnal Average: -- ppb at hour 0  |          | Hours of Calibration:     | 0   |
| Monthly Average: -- ppb                   | Percentiles: P <sub>1</sub> = 0.0 P <sub>10</sub> = 0.0 Q <sub>1</sub> = 0.0 Median = 0.0 Q <sub>3</sub> = 0.0 P <sub>90</sub> = 0.0 P <sub>99</sub> = 0.0 |          | Percent Operational Time: | 0.0 |

| Day    | Hourly Period Ending At (MST) |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    | Daily Average | Daily Maximum |                 |    |
|--------|-------------------------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|---------------|---------------|-----------------|----|
|        | 1                             | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |               |               |                 |    |
| 1-Feb  | NS                            | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS            | --            | --              |    |
| 2-Feb  | NS                            | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS            | NS            | --              | -- |
| 3-Feb  | NS                            | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS            | NS            | --              | -- |
| 4-Feb  | NS                            | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS            | NS            | --              | -- |
| 5-Feb  | NS                            | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS            | NS            | --              | -- |
| 6-Feb  | NS                            | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS            | NS            | --              | -- |
| 7-Feb  | NS                            | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS            | NS            | --              | -- |
| 8-Feb  | NS                            | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS            | NS            | --              | -- |
| 9-Feb  | NS                            | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS            | NS            | --              | -- |
| 10-Feb | NS                            | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS            | NS            | --              | -- |
| 11-Feb | NS                            | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS            | NS            | --              | -- |
| 12-Feb | NS                            | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS            | NS            | --              | -- |
| 13-Feb | NS                            | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS            | NS            | --              | -- |
| 14-Feb | NS                            | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS            | NS            | --              | -- |
| 15-Feb | NS                            | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS            | NS            | --              | -- |
| 16-Feb | NS                            | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS            | NS            | --              | -- |
| 17-Feb | NS                            | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS            | NS            | --              | -- |
| 18-Feb | NS                            | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS            | NS            | --              | -- |
| 19-Feb | NS                            | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS            | NS            | --              | -- |
| 20-Feb | NS                            | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS            | NS            | --              | -- |
| 21-Feb | NS                            | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS            | NS            | --              | -- |
| 22-Feb | NS                            | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS            | NS            | --              | -- |
| 23-Feb | NS                            | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS            | NS            | --              | -- |
| 24-Feb | NS                            | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS            | NS            | --              | -- |
| 25-Feb | NS                            | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS            | NS            | --              | -- |
| 26-Feb | NS                            | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS            | NS            | --              | -- |
| 27-Feb | NS                            | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS            | NS            | --              | -- |
| 28-Feb | NS                            | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS            | NS            | --              | -- |
| --     | --                            | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | --            | --            | Diurnal Average |    |
| --     | --                            | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | --            | --            | Diurnal Maximum |    |

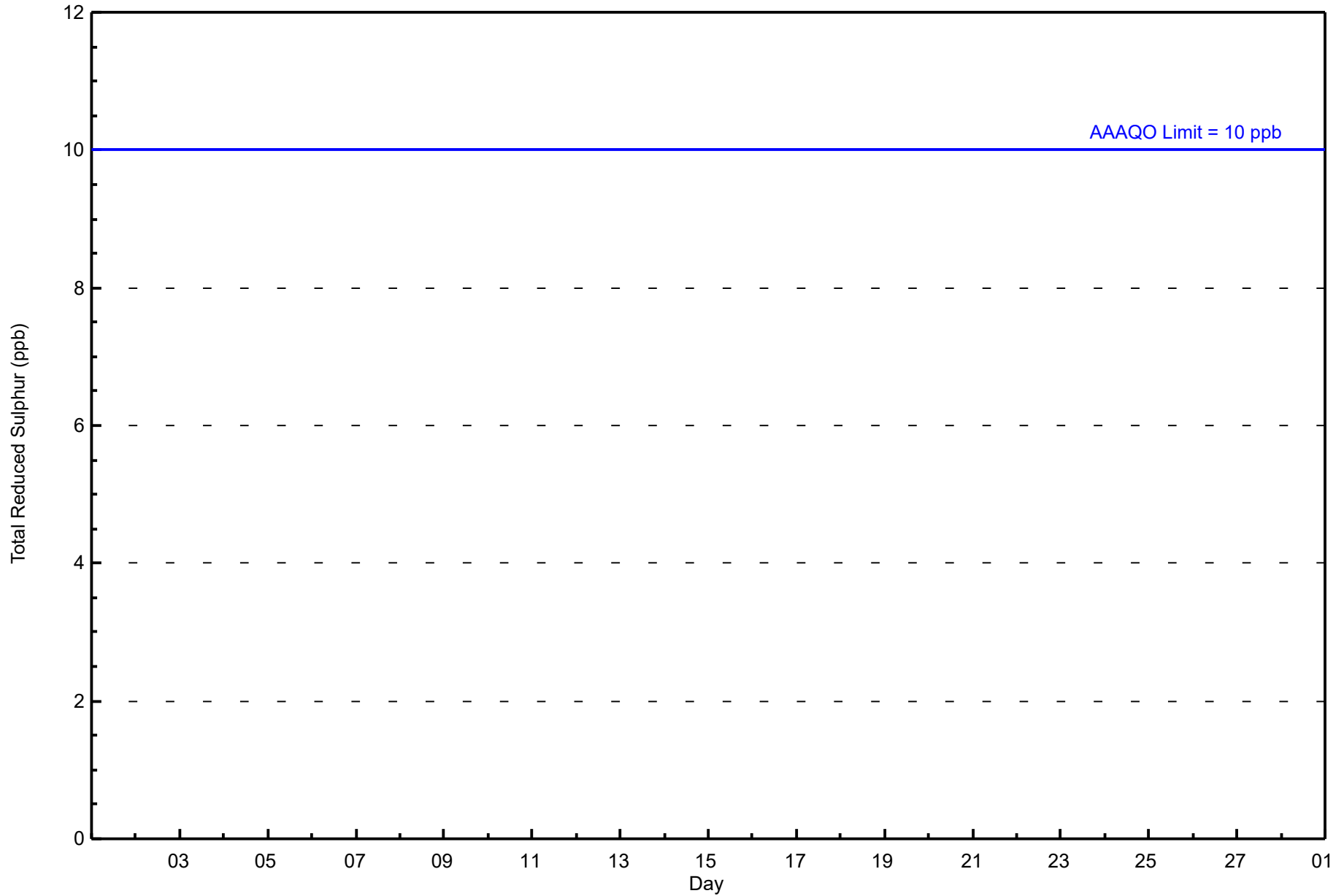
NS - Not in Service

Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 10 ppb 24-hr 3 ppb



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Total Reduced Sulphur (TRS) - ppb**  
**Patricia McInnes - February 2023**





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Total Reduced Sulphur (TRS) - ppb  
Patricia McInnes - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 2                             | 0                      | 0.00     | 0.00                |
| 3 - 4                             | 0                      | 0.00     | 0.00                |
| 5 - 7                             | 0                      | 0.00     | 0.00                |
| 8 - 11                            | 0                      | 0.00     | 0.00                |
| > 11                              | 0                      | 0.00     | 0.00                |

Total Number of Valid Hours: 0

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Total Reduced Sulphur (TRS) - ppb  
Patricia McInnes - February 2023**

| <b>Concentration<br/>Ranges (ppb)</b> | <b>Wind Direction</b> |            |           |            |          |            |           |            |          |            |           |            |          |            |           |            | <b>Totals</b> |
|---------------------------------------|-----------------------|------------|-----------|------------|----------|------------|-----------|------------|----------|------------|-----------|------------|----------|------------|-----------|------------|---------------|
|                                       | <b>N</b>              | <b>NNE</b> | <b>NE</b> | <b>ENE</b> | <b>E</b> | <b>ESE</b> | <b>SE</b> | <b>SSE</b> | <b>S</b> | <b>SSW</b> | <b>SW</b> | <b>WSW</b> | <b>W</b> | <b>WNW</b> | <b>NW</b> | <b>NNW</b> |               |
| 0 - 2                                 | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0             |
| 3 - 4                                 | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0             |
| 5 - 7                                 | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0             |
| 8 - 11                                | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0             |
| > 11                                  | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0             |
| <b>Totals</b>                         | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0             |

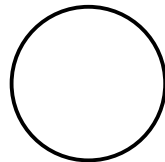
Total Number of Valid Hours: 0

Total Number of Hours: 672

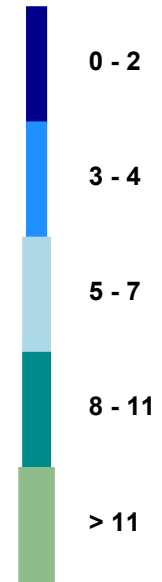


**Wood Buffalo Environmental Association**  
**Wind Rose Feb 2023**

**Total Reduced Sulphur (TRS) - ppb**  
**Patricia McInnes**

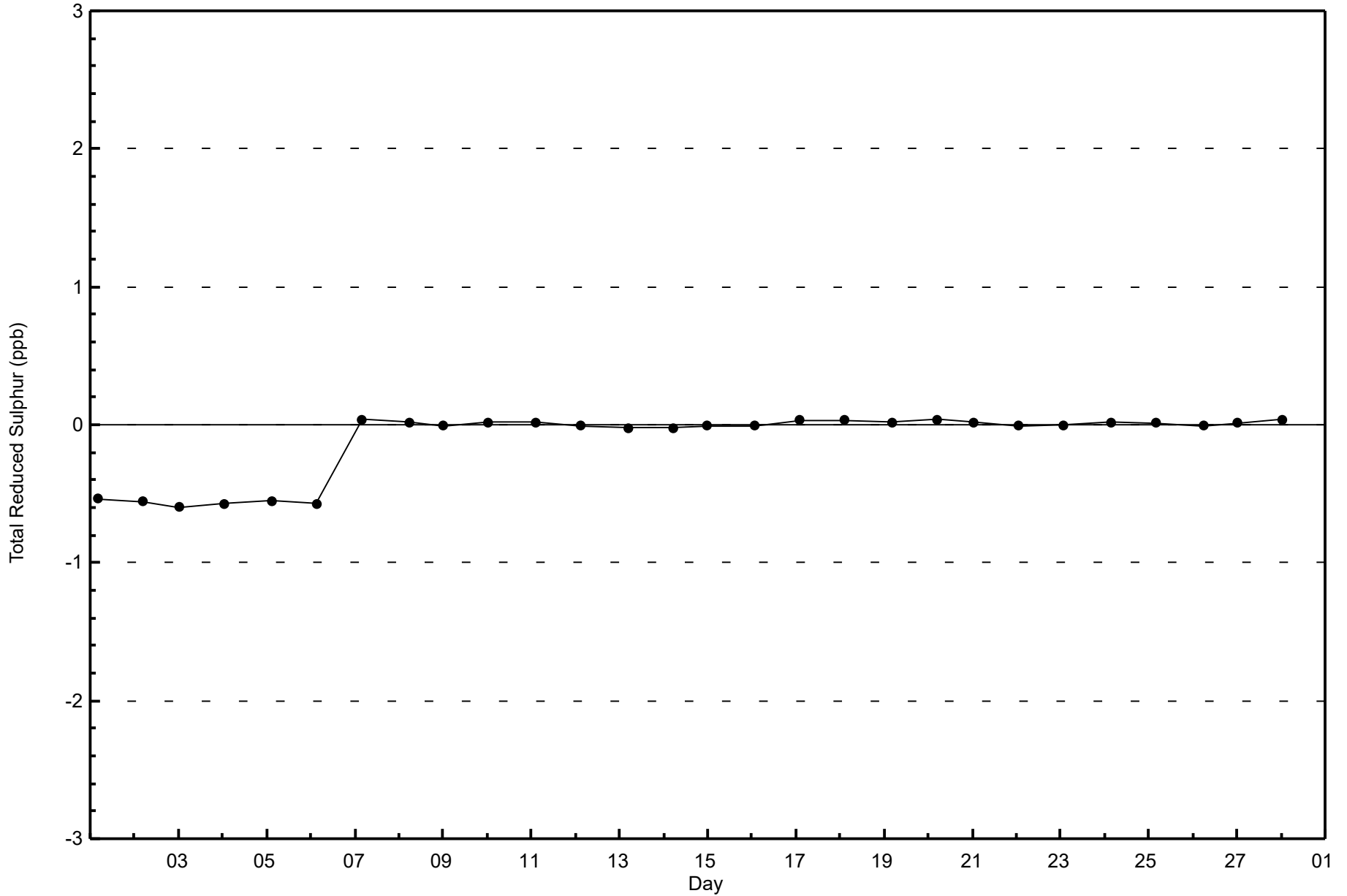


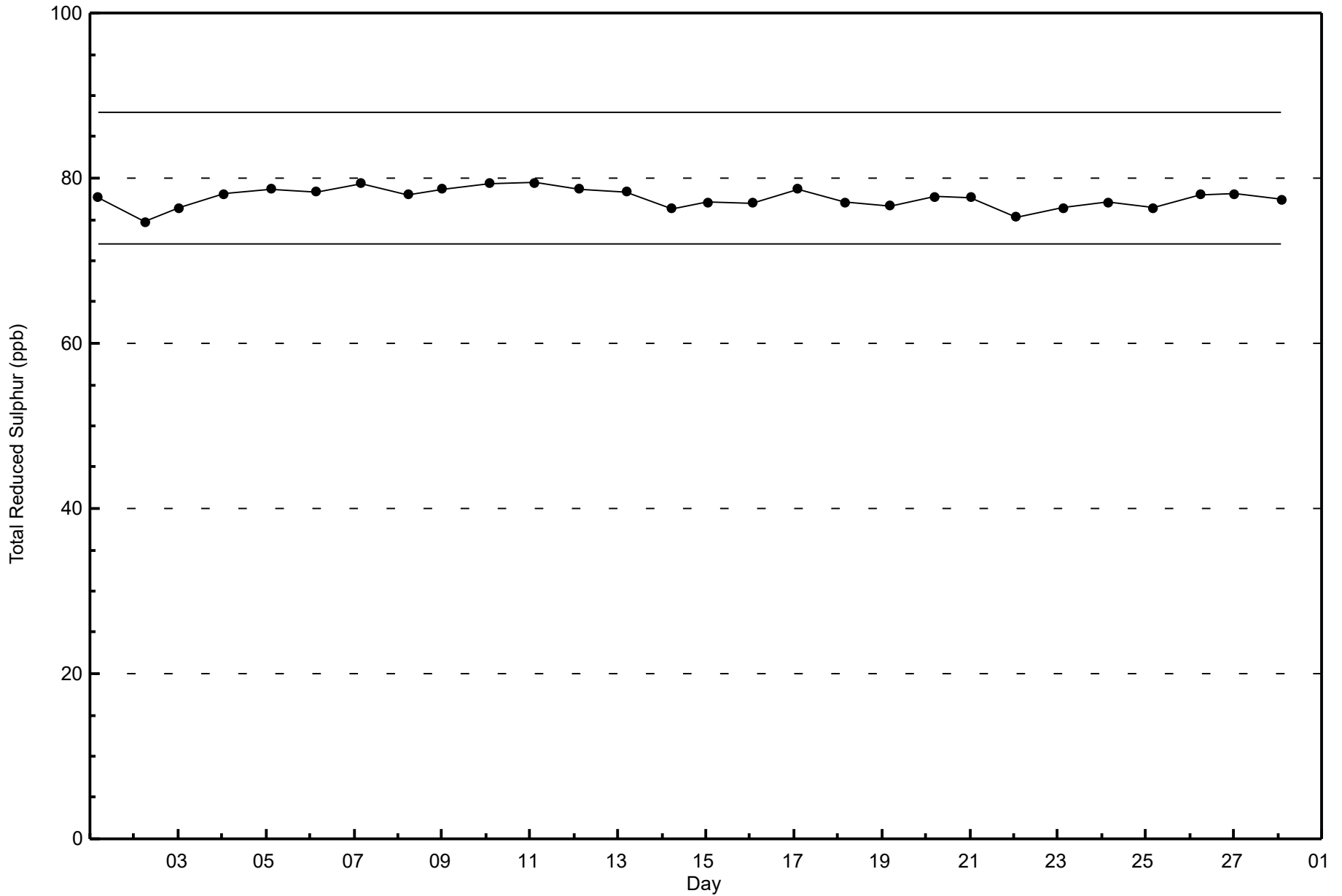
Classes (ppb)



**Total Number of Valid Hours: 0**









**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

**Total Hydrocarbons (THC) - ppm**  
**Patricia McInnes - February 2023**

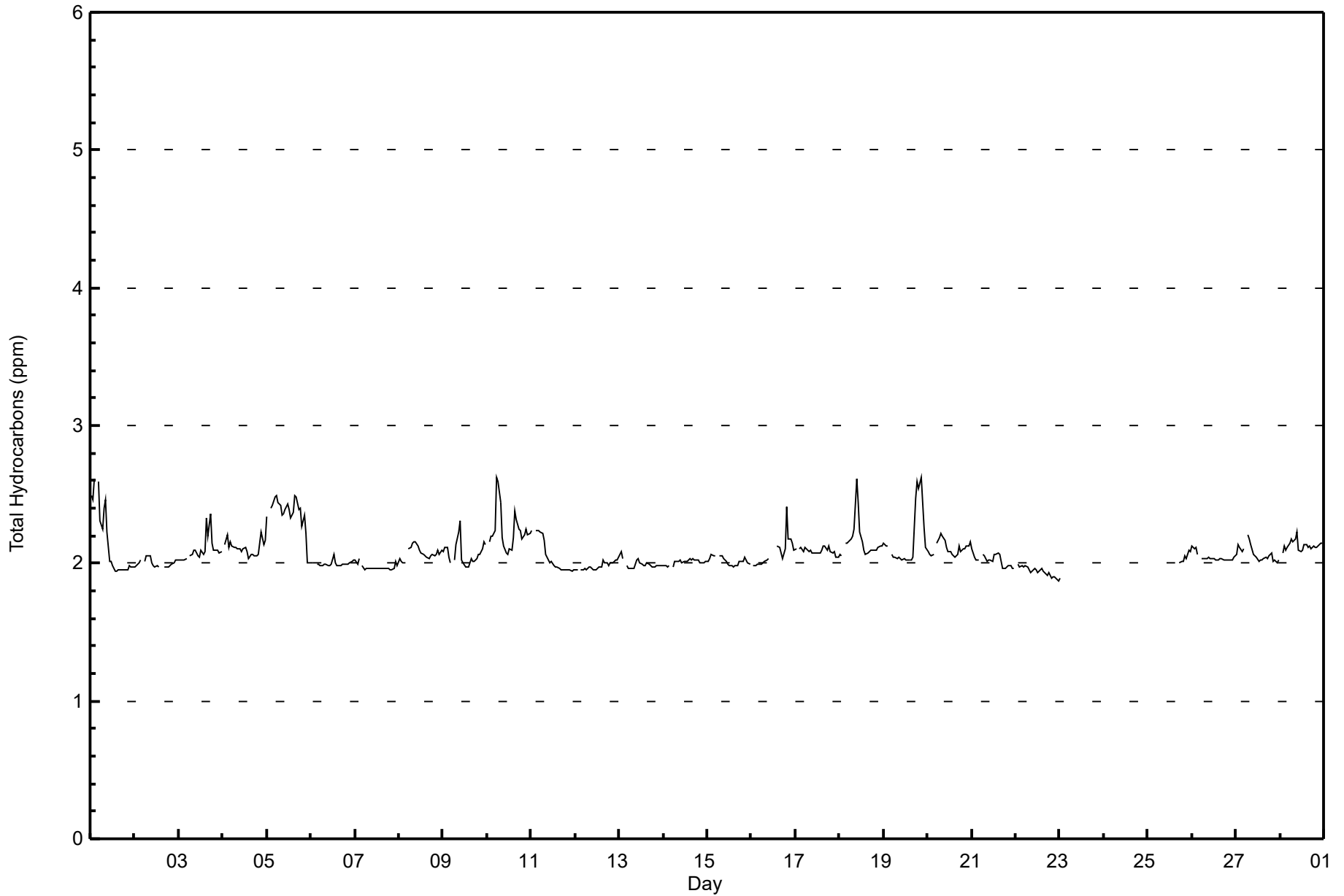
| Maximum Value: 2.6 ppm on Feb 19 21:00     |                               | Maximum Daily Average: 2.4 ppm on Feb 5  |     | Hours in Service: 672          |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |               |               |
|--|-------------------------------|--|-----|--------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----------------|---------------|---------------|
| Minimum Value: 1.9 ppm on Feb 23 00:00     |                               | Minimum Daily Average: 1.9 ppm on Feb 22   |     | Hours of Data: 577             |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |               |               |
| Maximum Diurnal Average: 2.1 ppm at hour 6 |                               | Minimum Diurnal Average: 2.0 ppm at hour 14  |     | Hours of Missing Data: 95      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |               |               |
| Monthly Average: 2.08 ppm                  |                               | Percentiles: P <sub>1</sub> = 1.9 P <sub>10</sub> = 2.0 Q <sub>1</sub> = 2.0 Median = 2.0 Q <sub>3</sub> = 2.1 P <sub>90</sub> = 2.2 P <sub>99</sub> = 2.6 |     | Hours of Calibration: 32       |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |               |               |
|  |                               |  |     | Percent Operational Time: 90.6 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |               |               |
| Day  | Hourly Period Ending At (MST) |  |     |                                |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 | Daily Average | Daily Maximum |
|  | 1                             | 2  | 3   | 4                              | 5   | 6   | 7   | 8   | 9   | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19  | 20  | 21  | 22  | 23  | 24              |               |               |
| 1-Feb                                      | 2.5                           | 2.5  | 2.6 | Z                              | 2.6 | 2.3 | 2.2 | 2.4 | 2.5 | 2.2 | 2.0 | 2.0 | 2.0 | 1.9 | 1.9 | 1.9 | 2.0 | 1.9 | 1.9 | 1.9 | 2.0 | 2.0 | 2.0 | 2.0             | 2.1           | 2.6           |
| 2-Feb                                      | 2.0                           | 2.0  | 2.0 | 2.0                            | Z   | 2.0 | 2.1 | 2.1 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | M   | M   | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0             | 2.0           | 2.1           |
| 3-Feb                                      | 2.0                           | 2.0  | 2.0 | 2.0                            | 2.0 | Z   | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.0 | 2.1 | 2.1 | 2.1 | 2.3 | 2.2 | 2.4 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1             | 2.1           | 2.4           |
| 4-Feb                                      | Z                             | 2.1  | 2.2 | 2.1                            | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.0 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.1             | 2.2           | 2.2           |
| 5-Feb                                      | 2.3                           | Z  | 2.4 | 2.4                            | 2.5 | 2.5 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.3 | 2.4 | 2.5 | 2.5 | 2.4 | 2.4 | 2.3 | 2.4 | 2.2 | 2.0 | 2.0             | 2.5           | 2.5           |
| 6-Feb                                      | 2.0                           | 2.0  | Z   | 2.0                            | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0             | 2.0           | 2.1           |
| 7-Feb                                      | 2.0                           | 2.0  | 2.0 | Z                              | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0             | 2.0           | 2.0           |
| 8-Feb                                      | 2.0                           | 2.0  | 2.0 | 2.0                            | Z   | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.0 | 2.0 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1             | 2.1           | 2.2           |
| 9-Feb                                      | 2.1                           | 2.1  | 2.1 | 2.0                            | 2.0 | Z   | 2.0 | 2.1 | 2.2 | 2.3 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1 | 2.1 | 2.1 | 2.2 | 2.1             | 2.3           | 2.3           |
| 10-Feb                                     | Z                             | 2.2  | 2.2 | 2.2                            | 2.2 | 2.6 | 2.6 | 2.4 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.4 | 2.3 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2             | 2.2           | 2.6           |
| 11-Feb                                     | 2.2                           | Z  | 2.2 | 2.2                            | 2.2 | 2.2 | 2.2 | 2.2 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9             | 2.0           | 2.2           |
| 12-Feb                                     | 2.0                           | 2.0  | Z   | 2.0                            | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0             | 2.0           | 2.0           |
| 13-Feb                                     | 2.1                           | 2.1  | 2.0 | Z                              | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0             | 2.0           | 2.1           |
| 14-Feb                                     | 2.0                           | 2.0  | 2.0 | 2.0                            | Z   | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0             | 2.0           | 2.0           |
| 15-Feb                                     | 2.0                           | 2.0  | 2.1 | 2.1                            | 2.1 | Z   | 2.1 | 2.1 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0             | 2.0           | 2.1           |
| 16-Feb                                     | Z                             | 2.0  | 2.0 | 2.0                            | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | C   | C   | C   | C   | 2.1 | 2.1 | 2.1 | 2.0 | 2.1 | 2.4 | 2.2 | 2.2 | 2.1 | 2.1             | 2.4           |               |
| 17-Feb                                     | 2.1                           | Z  | 2.1 | 2.1                            | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.0 | 2.0             | 2.1           | 2.1           |
| 18-Feb                                     | 2.1                           | 2.1  | Z   | 2.1                            | 2.1 | 2.2 | 2.2 | 2.2 | 2.2 | 2.6 | 2.4 | 2.2 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1             | 2.1           | 2.6           |
| 19-Feb                                     | 2.1                           | 2.1  | 2.1 | Z                              | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.5 | 2.6 | 2.5 | 2.6 | 2.4 | 2.3 | 2.1             | 2.6           |               |
| 20-Feb                                     | 2.1                           | 2.1  | 2.1 | 2.1                            | Z   | 2.1 | 2.2 | 2.2 | 2.2 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.0 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1             | 2.2           | 2.2           |
| 21-Feb                                     | 2.1                           | 2.0  | 2.0 | 2.0                            | 2.0 | Z   | 2.1 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1 | 2.1 | 2.1 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0             | 2.0           | 2.1           |
| 22-Feb                                     | Z                             | 2.0  | 2.0 | 2.0                            | 2.0 | 2.0 | 2.0 | 2.0 | 1.9 | 1.9 | 2.0 | 2.0 | 1.9 | 2.0 | 2.0 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9             | 1.9           | 2.0           |
| 23-Feb                                     | 1.9                           | Z  | UO  | UO                             | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO              | UO            | 1.9           |
| 24-Feb                                     | UO                            | UO   | Z   | UO                             | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO              | UO            | --            |
| 25-Feb                                     | UO                            | UO   | UO  | Z                              | UO  | UO  | UO  | UO  | UO  | UO  | UO  | M   | M   | M   | M   | M   | M   | M   | M   | M   | 2.0 | 2.0 | 2.1 | 2.0             | 2.1           | --            |
| 26-Feb                                     | 2.1                           | 2.1  | 2.1 | 2.1                            | Z   | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0             | 2.0           | 2.1           |
| 27-Feb                                     | 2.1                           | 2.1  | 2.1 | 2.1                            | 2.1 | Z   | 2.2 | 2.2 | 2.1 | 2.1 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1 | 2.1 | 2.0 | 2.0 | 2.0             | 2.0           | 2.2           |
| 28-Feb                                     | Z                             | 2.1  | 2.1 | 2.1                            | 2.1 | 2.1 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1             | 2.1           | 2.2           |
|  |                               |  |     |                                |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Diurnal Average |               |               |
|  |                               |  |     |                                |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Diurnal Maximum |               |               |
|  |                               |  |     |                                |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | 2.1 2.5         |               |               |
|  |                               |  |     |                                |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | 2.1 2.6         |               |               |

Z - zerospan      C - Calibration      M - Maintenance      UO - Unstable Operation



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Total Hydrocarbons (THC) - ppm**  
**Patricia McInnes - February 2023**





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Total Hydrocarbons (THC) - ppm**  
**Patricia McInnes - February 2023**

| <b>Concentration Ranges (ppm)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 2.0                           | 302                    | 52.34    | 52.34               |
| 2.1 - 3.0                         | 275                    | 47.66    | 100.00              |
| 3.1 - 10.0                        | 0                      | 0.00     | 100.00              |
| > 10.0                            | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 577

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Total Hydrocarbons (THC) - ppm  
Patricia McInnes - February 2023**

| <b>Concentration<br/>Ranges (ppm)</b> | <b>Wind Direction</b> |     |    |     |   |     |    |     |    |     |    |     |    |     |    |     | <b>Totals</b> |
|---------------------------------------|-----------------------|-----|----|-----|---|-----|----|-----|----|-----|----|-----|----|-----|----|-----|---------------|
|                                       | N                     | NNE | NE | ENE | E | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |               |
| 0 - 2.0                               | 13                    | 7   | 8  | 7   | 2 | 23  | 45 | 9   | 10 | 17  | 16 | 25  | 29 | 15  | 5  | 27  | 258           |
| 2.1 - 3.0                             | 65                    | 20  | 10 | 1   | 4 | 6   | 17 | 19  | 13 | 10  | 2  | 5   | 5  | 9   | 8  | 75  | 269           |
| 3.1 - 10.0                            | 0                     | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| > 10.0                                | 0                     | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| <b>Totals</b>                         | 78                    | 27  | 18 | 8   | 6 | 29  | 62 | 28  | 23 | 27  | 18 | 30  | 34 | 24  | 13 | 102 | 527           |

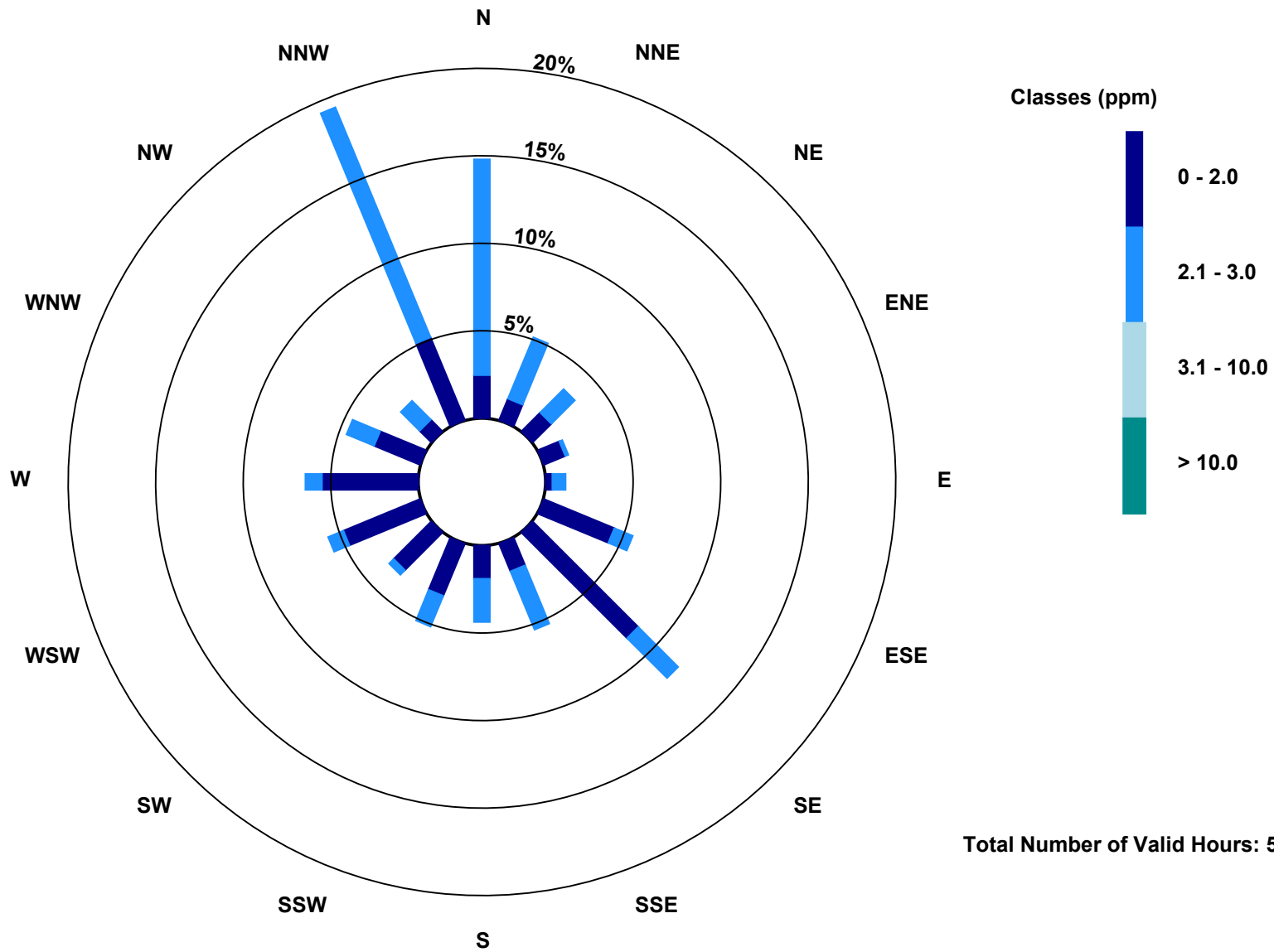
Total Number of Valid Hours: 527

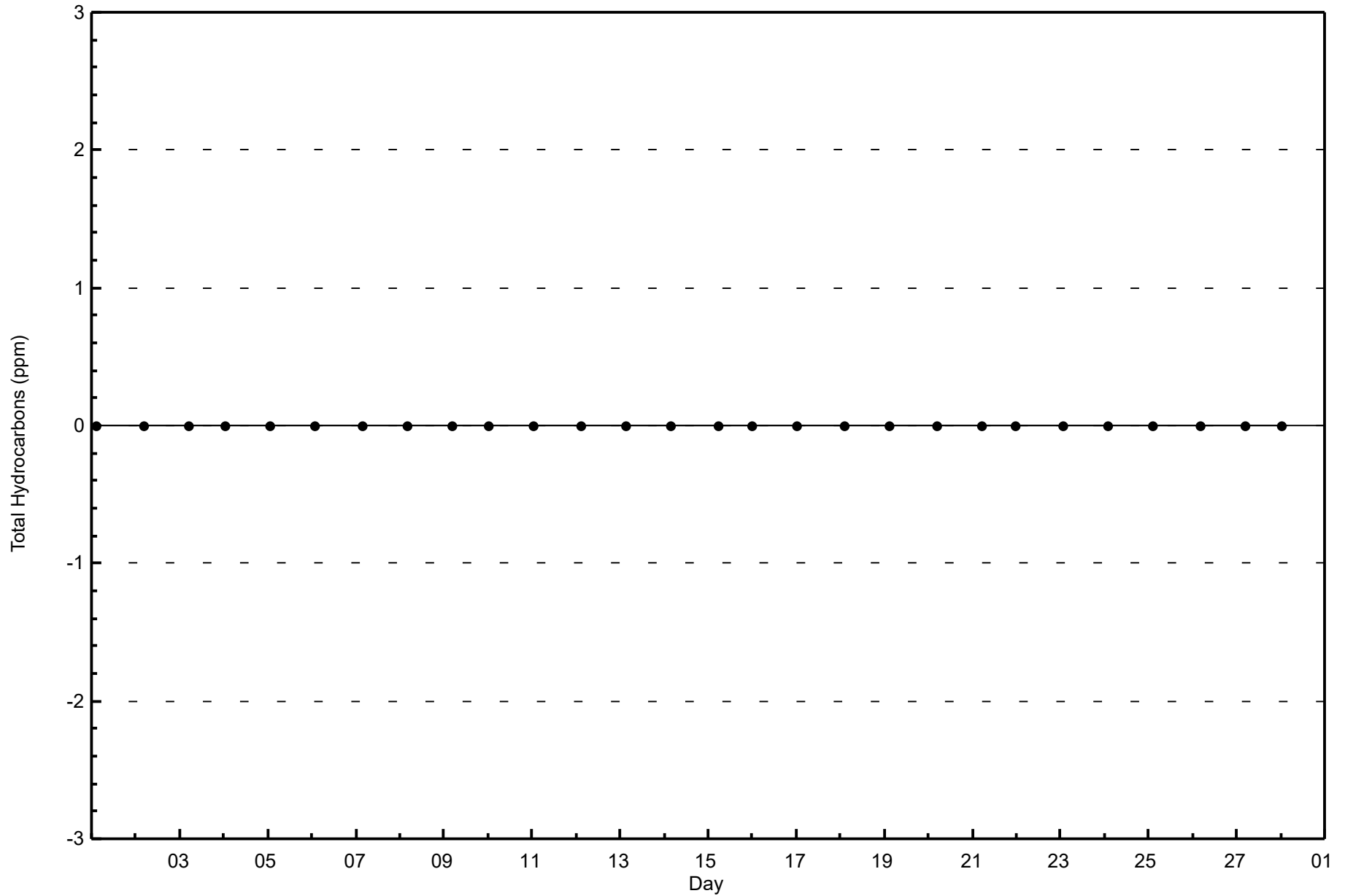
Total Number of Hours: 672



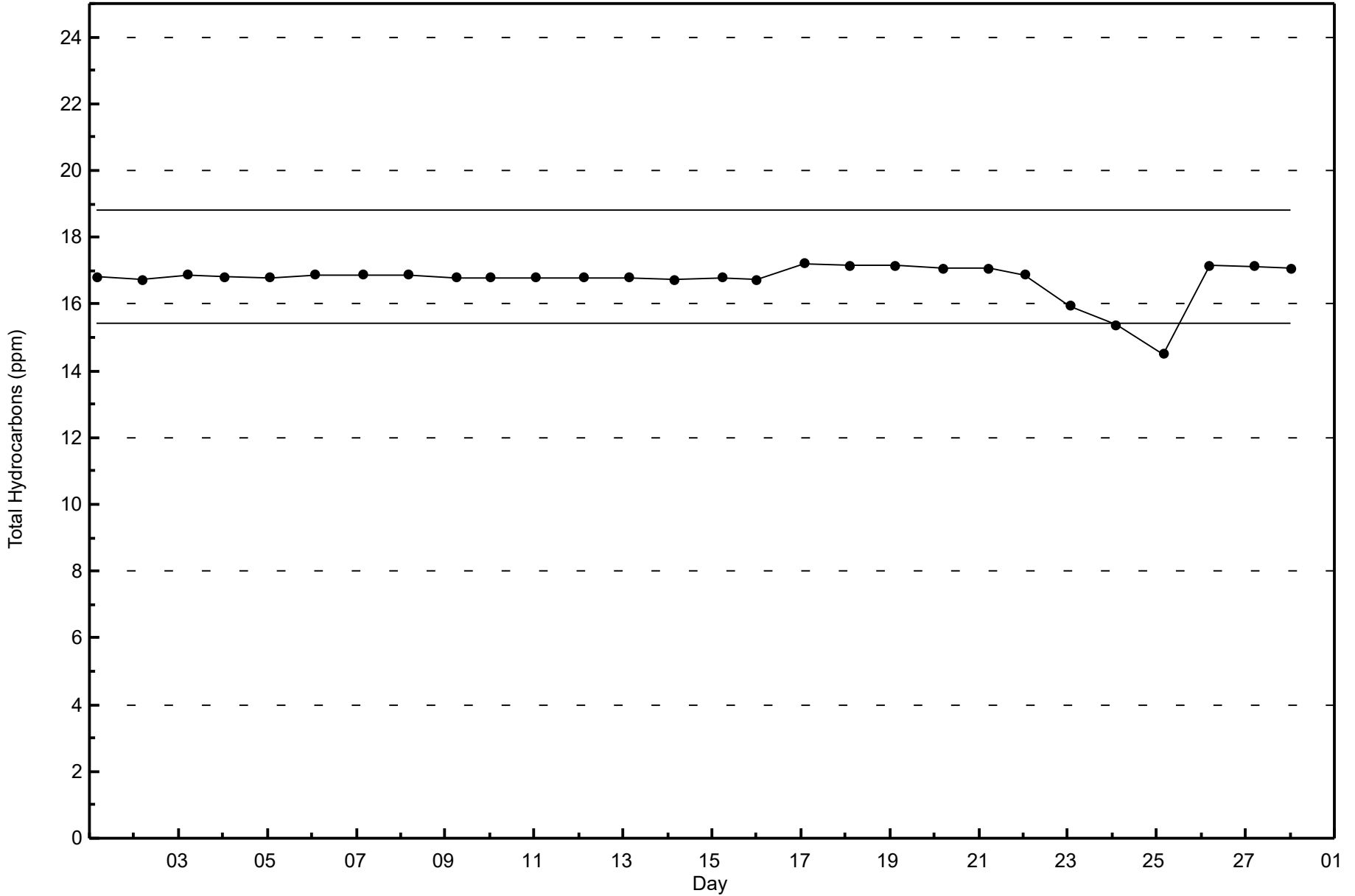
Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Total Hydrocarbons (THC) - ppm  
Patricia McInnes

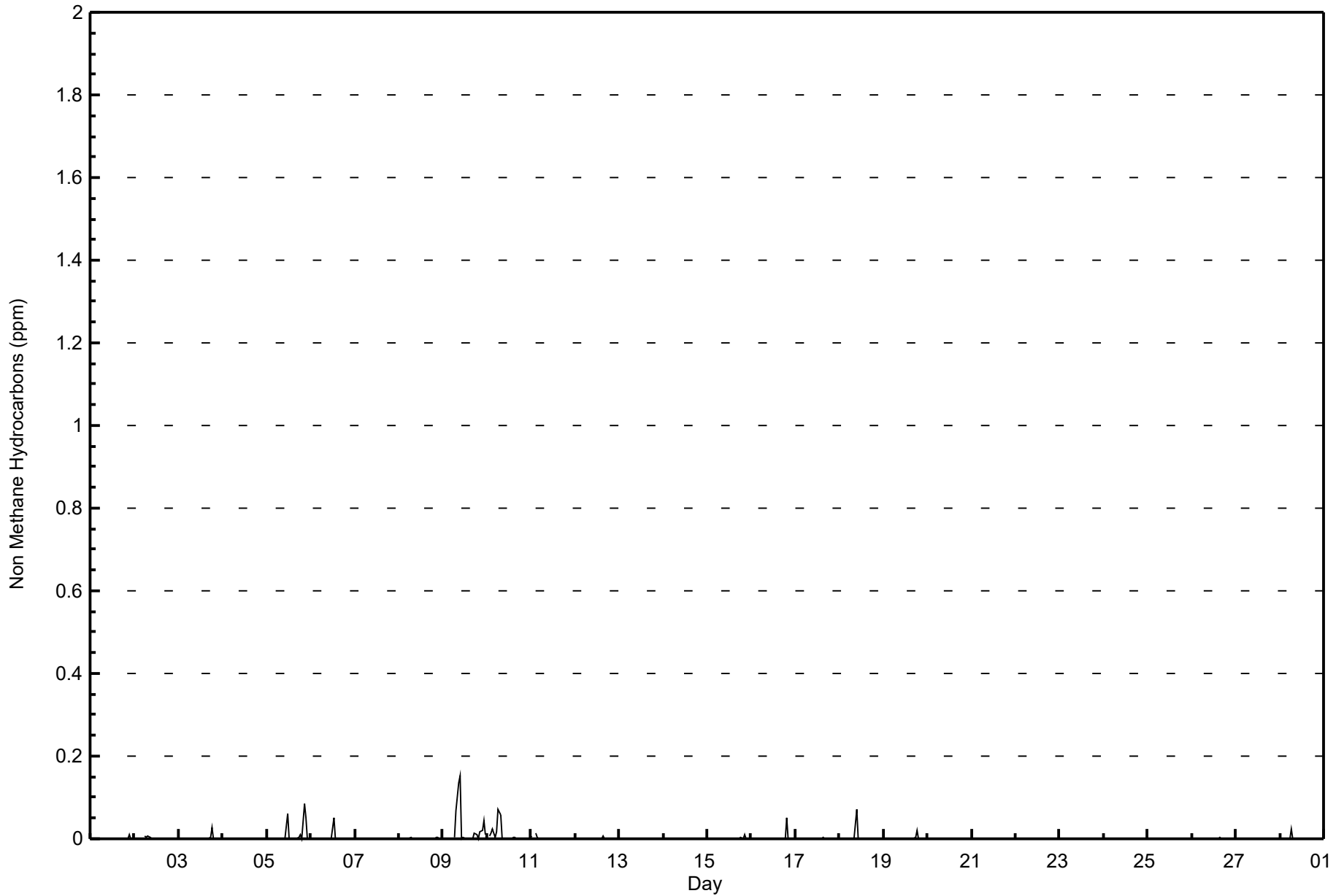














**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Non Methane Hydrocarbons (NMHC) - ppm**  
**Patricia McInnes - February 2023**

| <b>Concentration Ranges (ppm)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 0.005                         | 546                    | 94.63    | 94.63               |
| 0.006 - 0.05                      | 23                     | 3.99     | 98.61               |
| 0.06 - 0.1                        | 7                      | 1.21     | 99.83               |
| > 0.1                             | 1                      | 0.17     | 100.00              |

Total Number of Valid Hours: 577

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Non Methane Hydrocarbons (NMHC) - ppm  
Patricia McInnes - February 2023**

| <b>Concentration<br/>Ranges (ppm)</b> | <b>Wind Direction</b> |     |    |     |   |     |    |     |    |     |    |     |    |     |    |     | <b>Totals</b> |
|---------------------------------------|-----------------------|-----|----|-----|---|-----|----|-----|----|-----|----|-----|----|-----|----|-----|---------------|
|                                       | N                     | NNE | NE | ENE | E | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |               |
| 0 - 0.005                             | 73                    | 27  | 17 | 8   | 5 | 27  | 56 | 21  | 21 | 27  | 18 | 30  | 34 | 22  | 12 | 98  | 496           |
| 0.006 - 0.05                          | 3                     | 0   | 1  | 0   | 1 | 1   | 5  | 5   | 2  | 0   | 0  | 0   | 0  | 2   | 1  | 2   | 23            |
| 0.06 - 0.1                            | 2                     | 0   | 0  | 0   | 0 | 0   | 1  | 2   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 2   | 7             |
| > 0.1                                 | 0                     | 0   | 0  | 0   | 0 | 1   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 1             |
| <b>Totals</b>                         | 78                    | 27  | 18 | 8   | 6 | 29  | 62 | 28  | 23 | 27  | 18 | 30  | 34 | 24  | 13 | 102 | 527           |

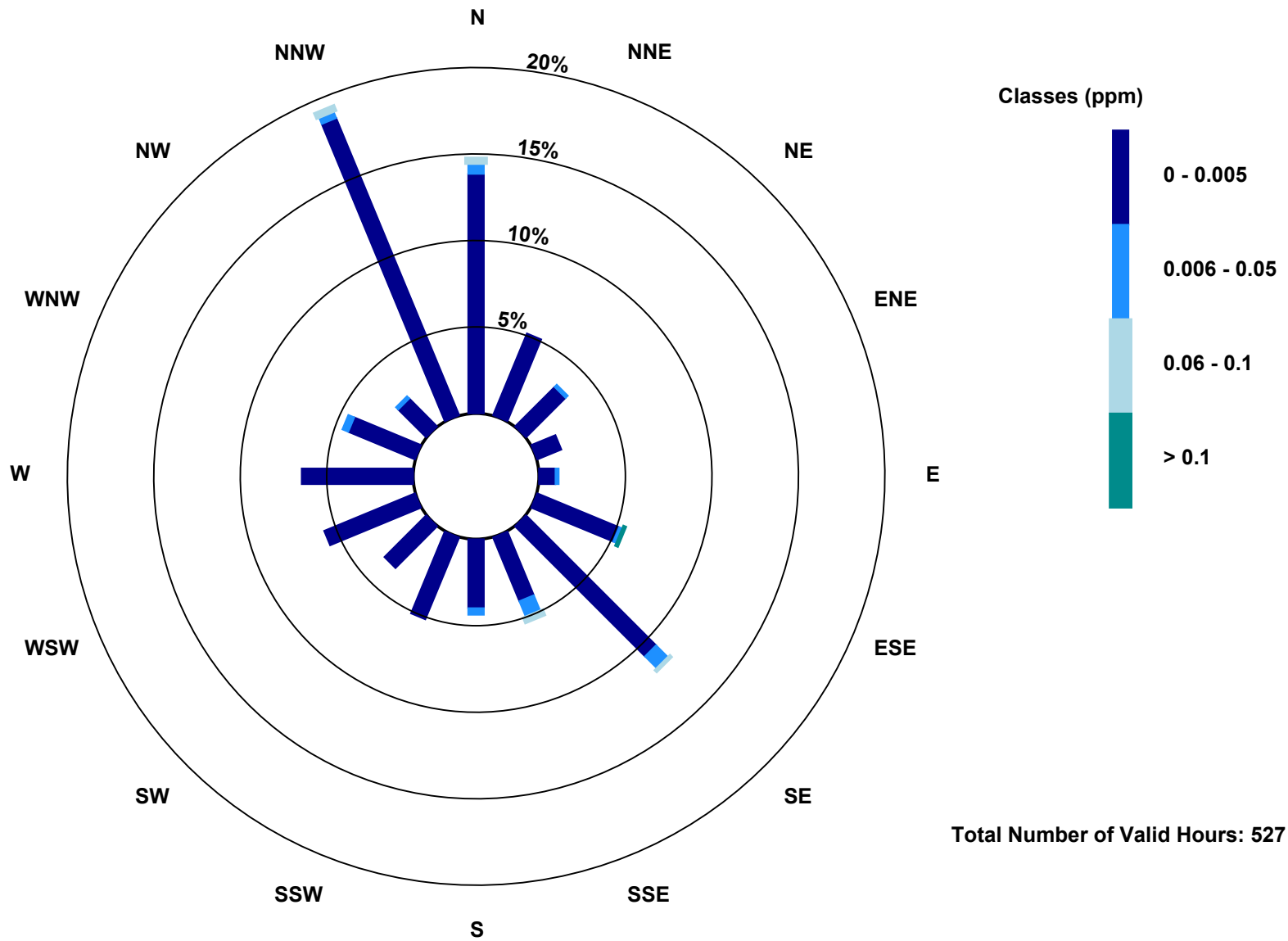
Total Number of Valid Hours: 527

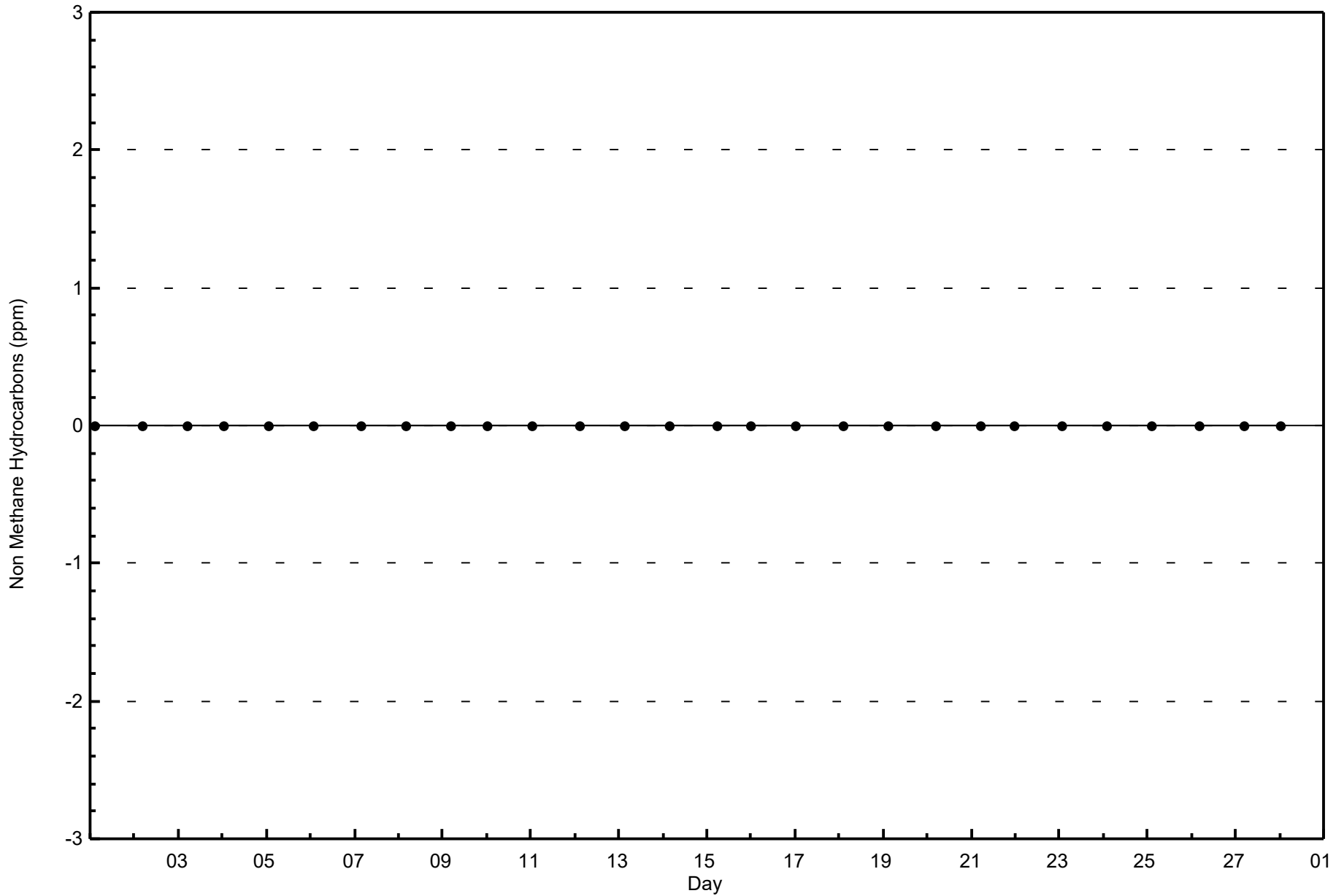
Total Number of Hours: 672

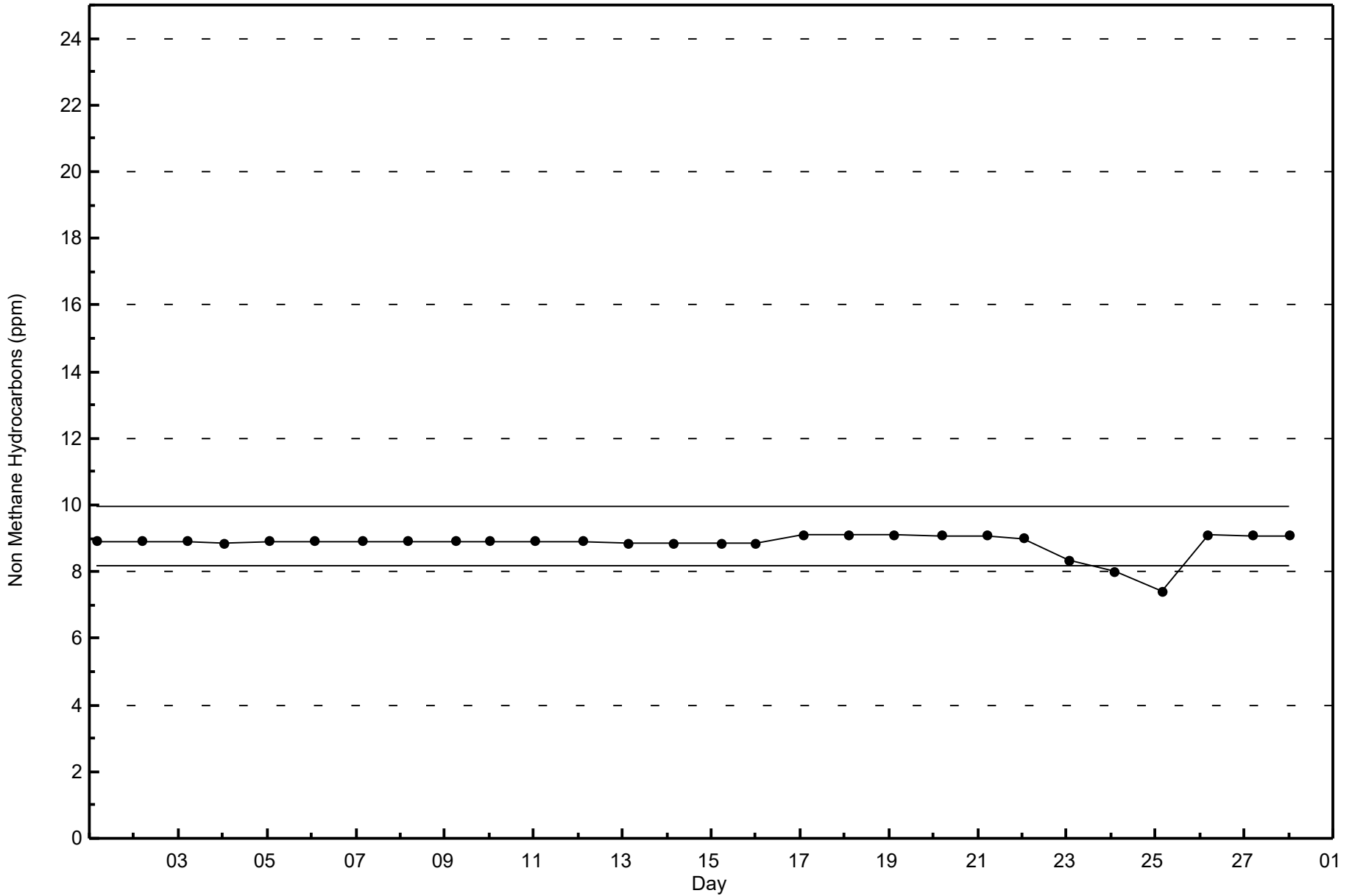


Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Non Methane Hydrocarbons (NMHC) - ppm  
Patricia McInnes











Wood Buffalo Environmental Association

Summary of Hour Averages

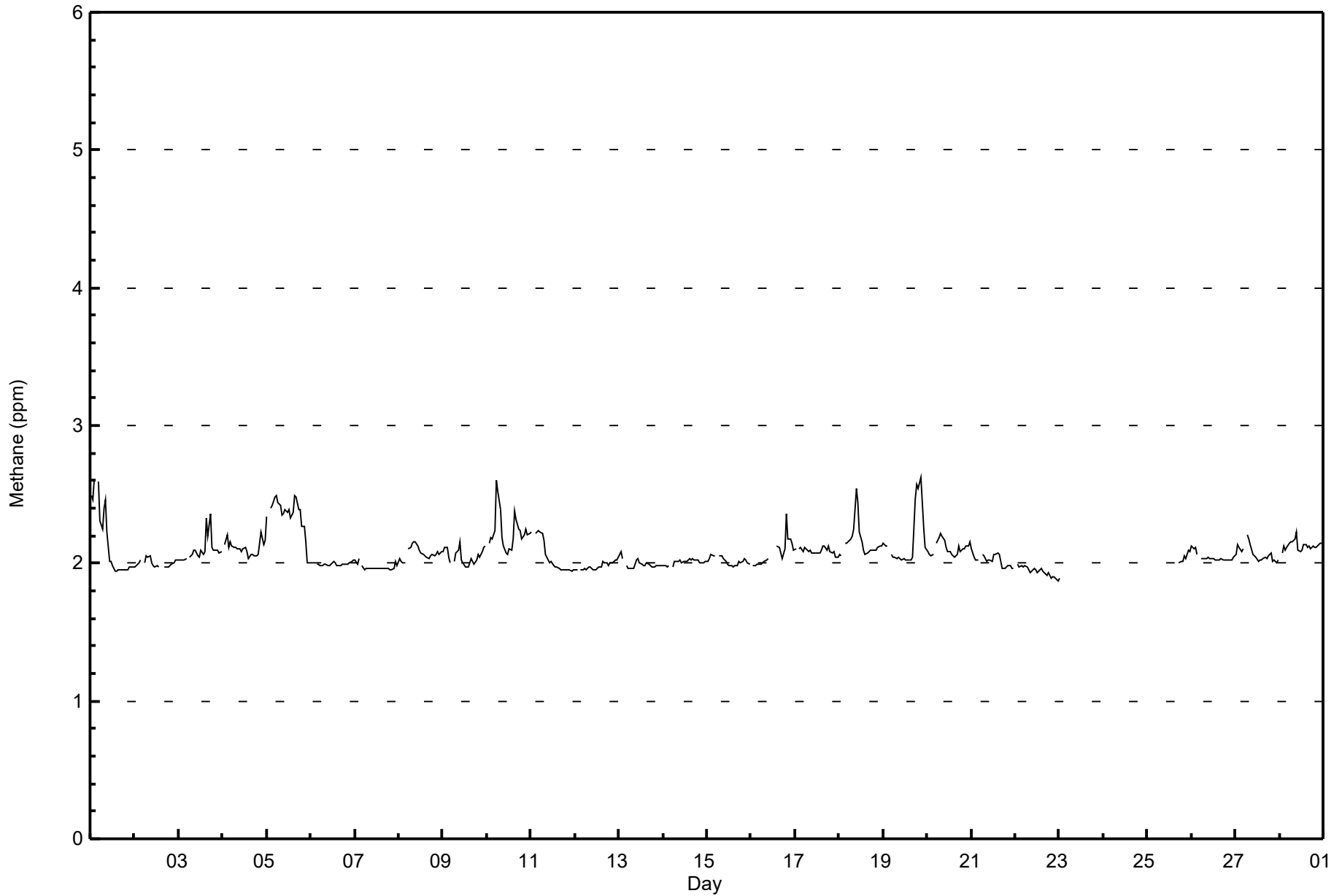
Methane (CH<sub>4</sub>) - ppm

Patricia McInnes - February 2023

|  |  |          |                           |      |
|--|--|----------|---------------------------|------|
| Number of Exceedences (AAAQO):             | 1-hr: 0  | 24-hr: 0 | Hours in Service:         | 672  |
| Maximum Value: 2.6 ppm on Feb 19 21:00     | Maximum Daily Average: 2.3 ppm on Feb 5  |          | Hours of Data:            | 577  |
| Minimum Value: 1.9 ppm on Feb 23 00:00     | Minimum Daily Average: 1.9 ppm on Feb 22   |          | Hours of Missing Data:    | 95   |
| Maximum Diurnal Average: 2.1 ppm at hour 6 | Minimum Diurnal Average: 2.0 ppm at hour 14  |          | Hours of Calibration:     | 32   |
| Monthly Average: 2.07 ppm                  | Percentiles: P <sub>1</sub> = 1.9 P <sub>10</sub> = 2.0 Q <sub>1</sub> = 2.0 Median = 2.0 Q <sub>3</sub> = 2.1 P <sub>90</sub> = 2.2 P <sub>99</sub> = 2.5 |          | Percent Operational Time: | 90.6 |

| Day    | Hourly Period Ending At (MST) |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Daily Average | Daily Maximum |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |
|--------|-------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---------------|---------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----------------|-----------------|
|        | 1                             | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19  | 20  | 21  | 22  | 23  | 24  |               |               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |
| 1-Feb  | 2.5                           | 2.5 | 2.6 | Z   | 2.6 | 2.3 | 2.2 | 2.4 | 2.5 | 2.2 | 2.0 | 2.0 | 2.0 | 1.9 | 1.9 | 1.9 | 2.0 | 1.9 | 1.9 | 1.9 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1           | 2.6           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |
| 2-Feb  | 2.0                           | 2.0 | 2.0 | 2.0 | Z   | 2.0 | 2.1 | 2.0 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | M   | M   | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0           | 2.1           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |
| 3-Feb  | 2.0                           | 2.0 | 2.0 | 2.0 | 2.0 | Z   | 2.0 | 2.1 | 2.1 | 2.1 | 2.1 | 2.0 | 2.1 | 2.1 | 2.1 | 2.3 | 2.2 | 2.4 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1           | 2.4           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |
| 4-Feb  | Z                             | 2.1 | 2.2 | 2.1 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.0 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.1 | 2.2           | 2.2           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |
| 5-Feb  | 2.3                           | Z   | 2.4 | 2.4 | 2.5 | 2.5 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.3 | 2.4 | 2.5 | 2.5 | 2.4 | 2.4 | 2.3 | 2.3 | 2.2 | 2.0 | 2.0 | 2.5           | 2.5           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |
| 6-Feb  | 2.0                           | 2.0 | Z   | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0           | 2.0           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |
| 7-Feb  | 2.0                           | 2.0 | 2.0 | Z   | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0           | 2.0           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |
| 8-Feb  | 2.0                           | 2.0 | 2.0 | 2.0 | Z   | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.0 | 2.0 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1           | 2.2           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |
| 9-Feb  | 2.1                           | 2.1 | 2.1 | 2.0 | 2.0 | Z   | 2.0 | 2.1 | 2.1 | 2.2 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1 | 2.0 | 2.1 | 2.1 | 2.1 | 2.2           | 2.2           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |
| 10-Feb | Z                             | 2.1 | 2.2 | 2.2 | 2.2 | 2.6 | 2.5 | 2.4 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.4 | 2.3 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.6           | 2.6           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |
| 11-Feb | 2.2                           | Z   | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 2.2           | 2.2           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |
| 12-Feb | 2.0                           | 2.0 | Z   | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0           | 2.0           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |
| 13-Feb | 2.1                           | 2.1 | 2.0 | Z   | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0           | 2.1           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |
| 14-Feb | 2.0                           | 2.0 | 2.0 | 2.0 | Z   | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0           | 2.0           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |
| 15-Feb | 2.0                           | 2.0 | 2.1 | 2.1 | 2.1 | Z   | 2.1 | 2.1 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0           | 2.1           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |
| 16-Feb | Z                             | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | C   | C   | C   | C   | 2.1 | 2.1 | 2.1 | 2.0 | 2.1 | 2.4 | 2.2 | 2.2 | 2.1 | 2.1 | 2.4           |               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |
| 17-Feb | 2.1                           | Z   | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.0 | 2.0 | 2.1           | 2.1           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |
| 18-Feb | 2.1                           | 2.1 | Z   | 2.1 | 2.1 | 2.2 | 2.2 | 2.2 | 2.2 | 2.5 | 2.4 | 2.2 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1           | 2.5           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |
| 19-Feb | 2.1                           | 2.1 | 2.1 | Z   | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.5 | 2.6 | 2.5 | 2.6 | 2.4 | 2.3 | 2.1 | 2.6           |               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |
| 20-Feb | 2.1                           | 2.1 | 2.1 | 2.1 | Z   | 2.1 | 2.2 | 2.2 | 2.2 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.0 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2           | 2.2           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |
| 21-Feb | 2.1                           | 2.0 | 2.0 | 2.0 | 2.0 | Z   | 2.1 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1 | 2.1 | 2.1 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0           | 2.1           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |
| 22-Feb | Z                             | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 1.9 | 1.9 | 2.0 | 2.0 | 1.9 | 2.0 | 2.0 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9           | 2.0           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |
| 23-Feb | 1.9                           | Z   | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO            | 1.9           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |
| 24-Feb | UO                            | UO  | Z   | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO            | --            |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |
| 25-Feb | UO                            | UO  | UO  | Z   | UO  | UO  | UO  | UO  | UO  | UO  | UO  | M   | M   | M   | M   | M   | M   | M   | M   | 2.0 | 2.0 | 2.1 | 2.0 | 2.1 | 2.1           | --            |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |
| 26-Feb | 2.1                           | 2.1 | 2.1 | 2.1 | Z   | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0           | 2.1           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |
| 27-Feb | 2.1                           | 2.1 | 2.1 | 2.1 | 2.1 | Z   | 2.2 | 2.2 | 2.1 | 2.1 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0           | 2.2           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |
| 28-Feb | Z                             | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | 2.2 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1           | 2.2           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |
|        |                               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | 2.1 | 2.1           | 2.1           | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | Diurnal Average |                 |
|        |                               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | 2.5 | 2.5           | 2.6           | 2.4 | 2.6 | 2.6 | 2.5 | 2.4 | 2.5 | 2.5 | 2.4 | 2.4 | 2.4 | 2.3 | 2.4 | 2.5 | 2.5 | 2.5 | 2.6 | 2.5 | 2.6 | 2.4 | 2.3 | 2.2 | 2.1             | Diurnal Maximum |

Z - zerspan                      C - Calibration                      M - Maintenance                      UO - Unstable Operation





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Methane (CH<sub>4</sub>) - ppm**  
**Patricia McInnes - February 2023**

| <b>Concentration Ranges (ppm)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 2.0                           | 306                    | 53.03    | 53.03               |
| 2.1 - 3.0                         | 271                    | 46.97    | 100.00              |
| 3.1 - 10.0                        | 0                      | 0.00     | 100.00              |
| > 10.0                            | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 577

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Methane (CH<sub>4</sub>) - ppm  
Patricia McInnes - February 2023**

| <b>Concentration<br/>Ranges (ppm)</b> | <b>Wind Direction</b> |            |           |            |          |            |           |            |           |            |           |            |           |            |           |            | <b>Totals</b> |
|---------------------------------------|-----------------------|------------|-----------|------------|----------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|---------------|
|                                       | <b>N</b>              | <b>NNE</b> | <b>NE</b> | <b>ENE</b> | <b>E</b> | <b>ESE</b> | <b>SE</b> | <b>SSE</b> | <b>S</b>  | <b>SSW</b> | <b>SW</b> | <b>WSW</b> | <b>W</b>  | <b>WNW</b> | <b>NW</b> | <b>NNW</b> |               |
| 0 - 2.0                               | 13                    | 7          | 8         | 7          | 3        | 23         | 47        | 10         | 10        | 17         | 16        | 25         | 29        | 15         | 5         | 27         | 262           |
| 2.1 - 3.0                             | 65                    | 20         | 10        | 1          | 3        | 6          | 15        | 18         | 13        | 10         | 2         | 5          | 5         | 9          | 8         | 75         | 265           |
| 3.1 - 10.0                            | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0             |
| > 10.0                                | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0             |
| <b>Totals</b>                         | <b>78</b>             | <b>27</b>  | <b>18</b> | <b>8</b>   | <b>6</b> | <b>29</b>  | <b>62</b> | <b>28</b>  | <b>23</b> | <b>27</b>  | <b>18</b> | <b>30</b>  | <b>34</b> | <b>24</b>  | <b>13</b> | <b>102</b> | <b>527</b>    |

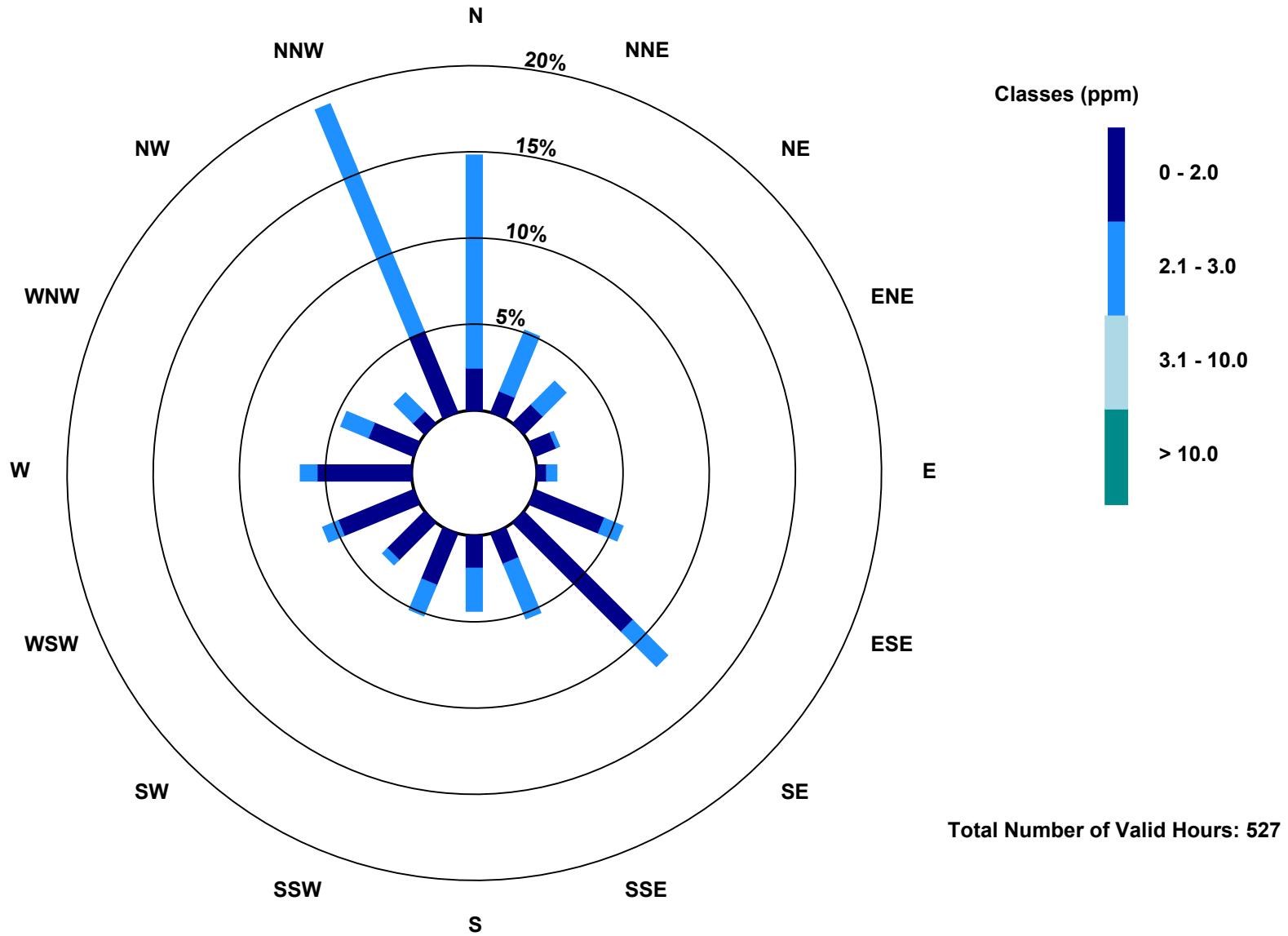
Total Number of Valid Hours: 527

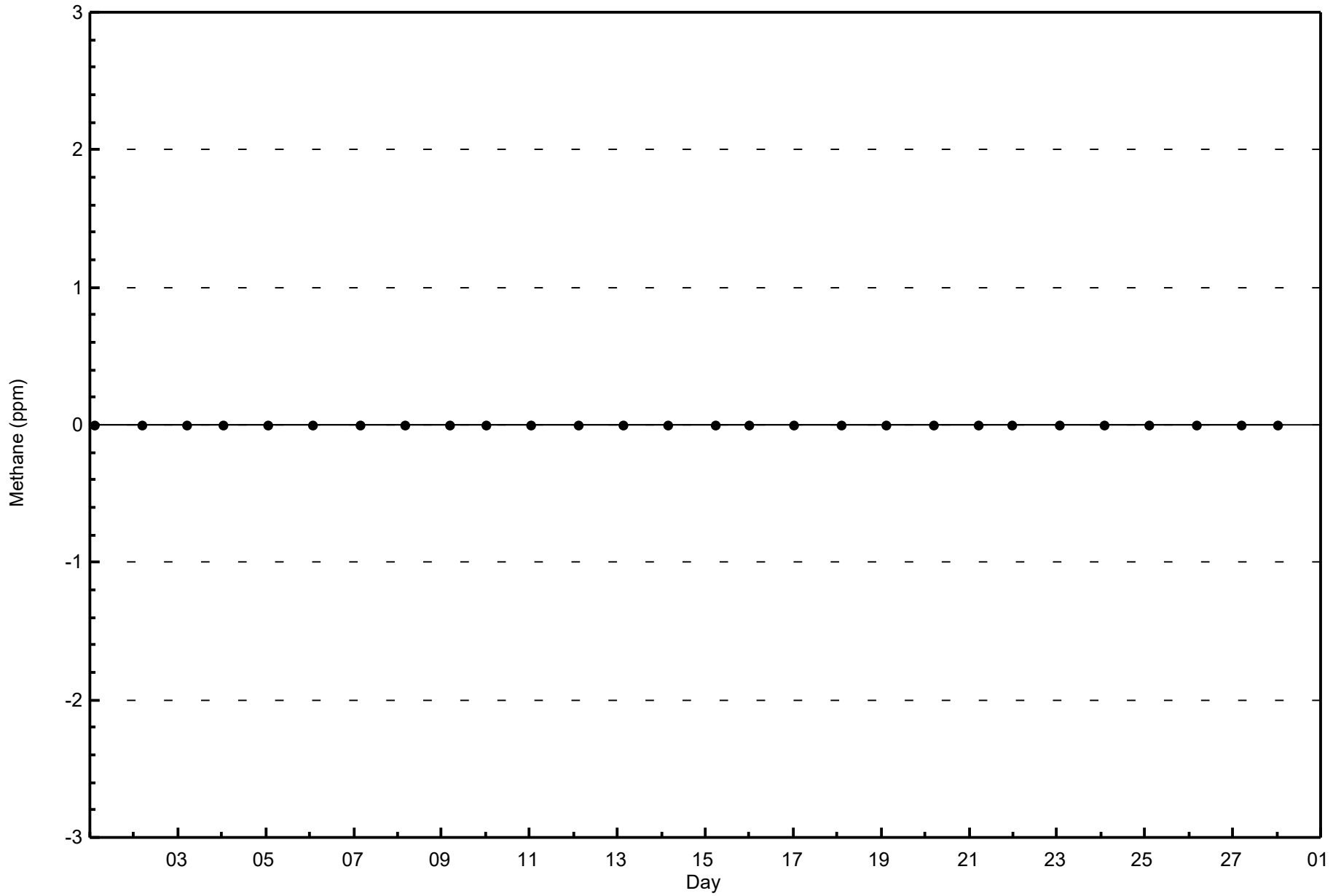
Total Number of Hours: 672

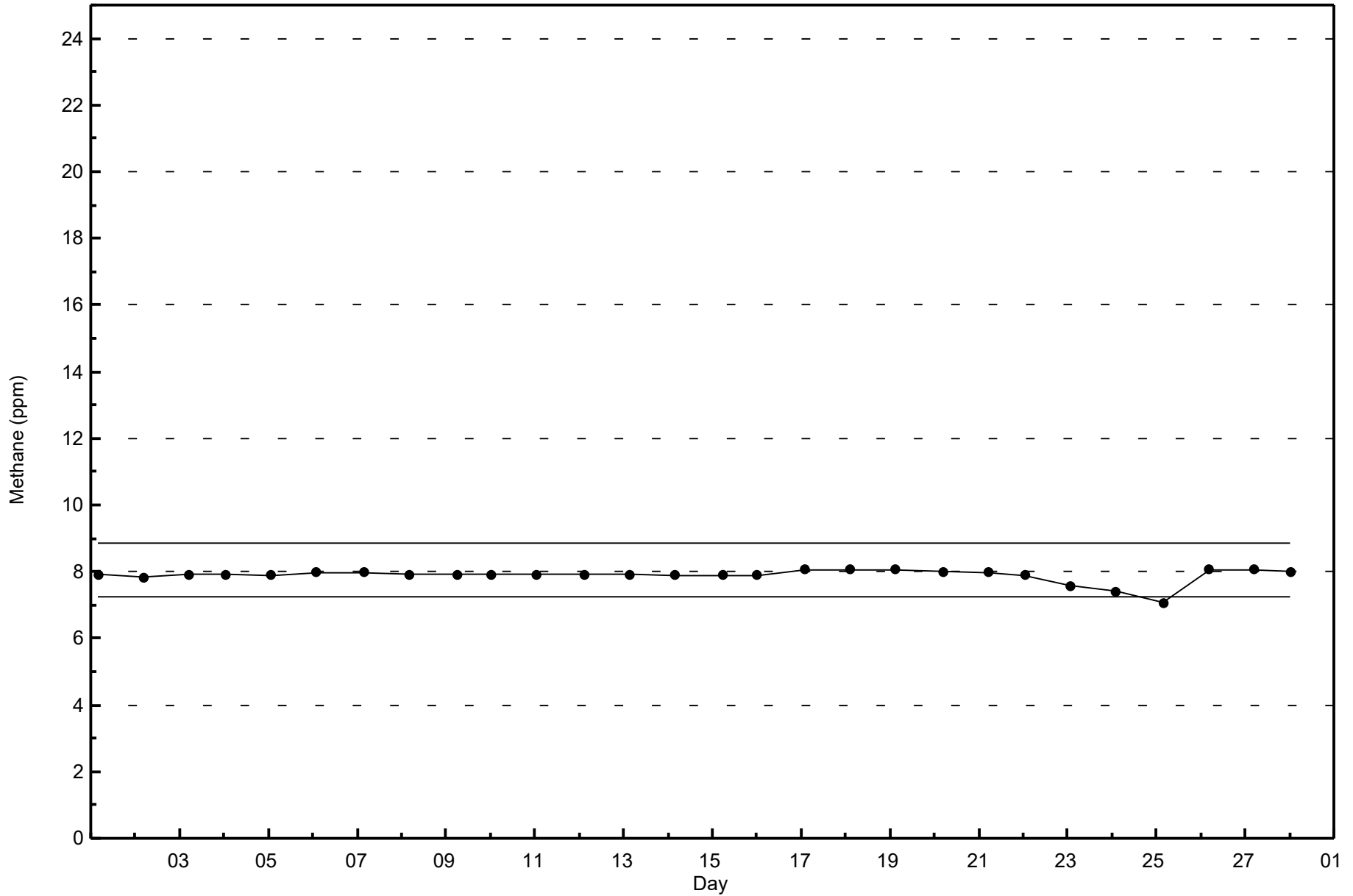


Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Methane (CH<sub>4</sub>) - ppm  
Patricia McInnes







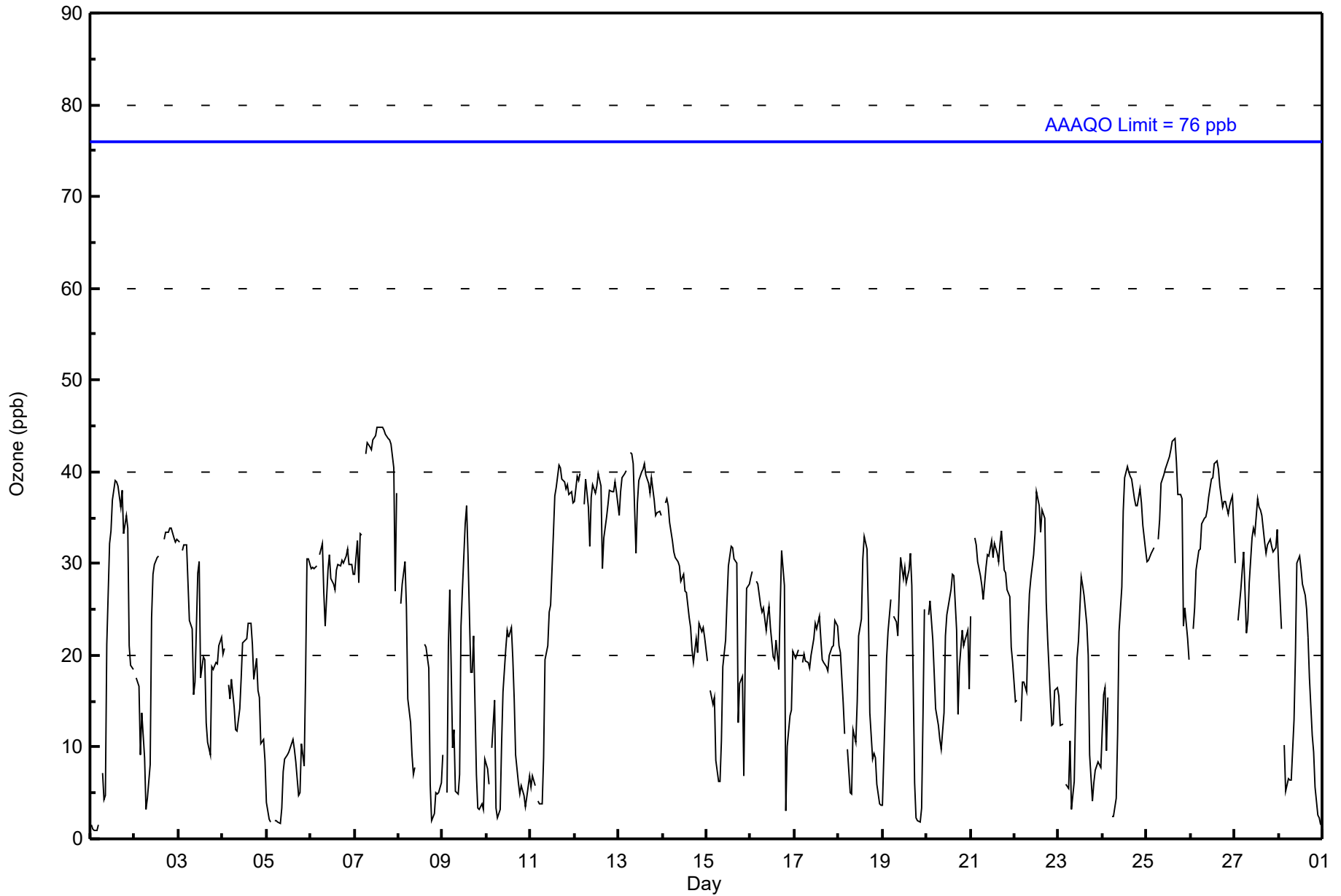


|  |   |          |                           |      |
|--|---|----------|---------------------------|------|
| Number of Exceedences (AAAQO):               | 1-hr: 0   | 24-hr: 0 | Hours in Service:         | 672  |
| Maximum Value: 44.9 ppb on Feb 7 15:00       | Maximum Daily Average: 39.8 ppb on Feb 7  |          | Hours of Data:            | 638  |
| Minimum Value: 0.9 ppb on Feb 1 04:00        | Minimum Daily Average: 8.7 ppb on Feb 5   |          | Hours of Missing Data:    | 34   |
| Maximum Diurnal Average: 31.2 ppb at hour 14 | Minimum Diurnal Average: 16.9 ppb at hour 6   |          | Hours of Calibration:     | 32   |
| Monthly Average: 23.43 ppb                   | Percentiles: P <sub>1</sub> = 1.7 P <sub>10</sub> = 5.7 Q <sub>1</sub> = 14.2 Median = 24.2 Q <sub>3</sub> = 32.5 P <sub>90</sub> = 38.4 P <sub>99</sub> = 43.8 |          | Percent Operational Time: | 99.7 |

| Day   | Hourly Period Ending At (MST) |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 | Daily Average | Daily Maximum |
|---|-------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----------------|---------------|---------------|
|   | 1                             | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20   | 21   | 22   | 23   | 24              |               |               |
| 1-Feb   | 1.5                           | 1.1  | 1.0  | 0.9  | 1.6  | Z    | 7.1  | 4.3  | 4.8  | 21.2 | 32.1 | 33.6 | 37.0 | 39.0 | 39.0 | 38.4 | 36.1 | 38.1 | 33.3 | 35.2 | 33.9 | 21.1 | 18.9 | 18.5            | 21.6          | 39.0          |
| 2-Feb   | Z                             | 17.6 | 16.7 | 9.2  | 13.8 | 8.9  | 3.3  | 4.4  | 8.2  | 24.2 | 28.8 | 29.8 | 30.7 | 30.8 | M    | M    | 32.7 | 33.4 | 33.4 | 33.8 | 33.8 | 32.8 | 32.4 | 32.6            | 23.4          | 33.8          |
| 3-Feb   | 32.4                          | Z    | 31.4 | 32.0 | 32.1 | 27.9 | 23.8 | 22.9 | 15.7 | 17.1 | 29.0 | 30.2 | 17.6 | 19.8 | 19.5 | 12.7 | 10.5 | 9.1  | 18.8 | 18.4 | 19.2 | 19.1 | 21.0 | 22.0            | 21.8          | 32.4          |
| 4-Feb   | 20.2                          | 20.8 | Z    | 16.8 | 15.3 | 17.3 | 14.3 | 11.9 | 11.8 | 14.2 | 17.5 | 21.3 | 21.7 | 21.9 | 23.5 | 23.5 | 21.2 | 17.5 | 19.7 | 16.1 | 15.4 | 10.4 | 10.8 | 8.5             | 17.0          | 23.5          |
| 5-Feb   | 3.9                           | 2.1  | 1.9  | Z    | 2.0  | 1.9  | 1.8  | 1.6  | 3.3  | 7.3  | 8.7  | 9.2  | 9.4  | 10.0 | 10.8 | 9.7  | 8.4  | 4.7  | 5.0  | 10.4 | 7.9  | 17.9 | 30.5 | 30.5            | 8.7           | 30.5          |
| 6-Feb   | 29.4                          | 29.6 | 29.5 | 29.8 | Z    | 31.0 | 32.2 | 26.8 | 23.2 | 29.3 | 30.9 | 28.3 | 27.7 | 27.2 | 29.3 | 29.9 | 29.8 | 30.3 | 30.1 | 30.9 | 31.5 | 29.9 | 30.0 | 28.8            | 29.4          | 32.2          |
| 7-Feb   | 28.9                          | 32.5 | 27.8 | 33.2 | 33.1 | Z    | 42.0 | 43.2 | 42.7 | 42.5 | 43.4 | 43.9 | 44.8 | 44.8 | 44.9 | 44.9 | 44.5 | 44.1 | 43.6 | 43.5 | 42.9 | 40.5 | 26.9 | 37.7            | 39.8          | 44.9          |
| 8-Feb   | Z                             | 25.6 | 27.8 | 30.2 | 25.3 | 15.2 | 12.6 | 9.2  | 7.0  | 7.7  | C    | C    | C    | C    | 21.2 | 20.9 | 18.6 | 5.9  | 2.0  | 2.7  | 5.0  | 4.8  | 5.0  | 6.0             | 13.3          | 30.2          |
| 9-Feb   | 9.1                           | Z    | 5.1  | 21.0 | 27.1 | 10.0 | 11.8 | 5.3  | 4.9  | 7.0  | 23.2 | 27.1 | 34.4 | 36.3 | 30.9 | 18.1 | 18.2 | 22.1 | 7.1  | 3.4  | 3.3  | 3.7  | 3.3  | 8.6             | 14.8          | 36.3          |
| 10-Feb  | 7.7                           | 5.9  | Z    | 9.9  | 15.1 | 3.3  | 2.3  | 3.2  | 10.4 | 16.0 | 20.8 | 22.8 | 21.9 | 23.0 | 19.7 | 15.3 | 9.1  | 6.1  | 4.9  | 5.7  | 4.7  | 3.5  | 4.5  | 6.9             | 10.6          | 23.0          |
| 11-Feb  | 5.7                           | 6.9  | 5.7  | Z    | 4.1  | 3.8  | 3.8  | 8.8  | 19.5 | 21.1 | 24.7 | 25.4 | 33.2 | 37.4 | 38.2 | 40.7 | 40.4 | 39.2 | 38.9 | 38.1 | 38.5 | 37.6 | 37.8 | 36.7            | 25.5          | 40.7          |
| 12-Feb  | 36.8                          | 39.5 | 39.0 | 39.8 | Z    | 36.5 | 39.2 | 36.2 | 31.8 | 37.2 | 38.6 | 37.7 | 38.4 | 39.9 | 38.5 | 29.4 | 32.8 | 35.1 | 36.5 | 37.9 | 37.9 | 37.9 | 38.8 | 37.8            | 37.1          | 39.9          |
| 13-Feb  | 35.2                          | 37.9 | 39.3 | 39.8 | 40.1 | Z    | 42.1 | 41.9 | 40.9 | 31.2 | 36.7 | 39.1 | 40.0 | 40.3 | 40.9 | 39.6 | 38.7 | 37.7 | 39.4 | 36.9 | 35.2 | 35.5 | 35.7 | 35.3            | 38.2          | 42.1          |
| 14-Feb  | Z                             | 36.5 | 37.0 | 36.2 | 34.5 | 32.4 | 31.3 | 30.7 | 30.2 | 29.7 | 28.1 | 28.9 | 27.1 | 26.9 | 24.1 | 23.0 | 20.6 | 19.2 | 21.8 | 20.4 | 23.4 | 22.5 | 23.0 | 22.0            | 27.4          | 37.0          |
| 15-Feb  | 19.4                          | Z    | 16.1 | 14.7 | 15.5 | 8.5  | 6.2  | 6.3  | 10.6 | 18.8 | 21.7 | 25.9 | 29.7 | 31.9 | 31.7 | 30.5 | 30.0 | 12.6 | 17.0 | 17.7 | 6.9  | 19.4 | 27.3 | 27.7            | 19.4          | 31.9          |
| 16-Feb  | 28.6                          | 29.1 | Z    | 28.1 | 27.8 | 25.5 | 24.7 | 25.2 | 22.7 | 24.3 | 25.4 | 23.1 | 19.9 | 19.6 | 21.7 | 18.4 | 25.3 | 31.4 | 27.6 | 3.1  | 10.0 | 13.5 | 14.1 | 20.4            | 22.1          | 31.4          |
| 17-Feb  | 19.6                          | 20.1 | 20.6 | Z    | 19.2 | 20.2 | 19.4 | 19.2 | 18.6 | 20.0 | 21.8 | 23.4 | 22.8 | 24.2 | 21.9 | 19.6 | 19.2 | 18.7 | 18.3 | 20.0 | 20.9 | 21.1 | 23.8 | 23.2            | 20.7          | 24.2          |
| 18-Feb  | 21.0                          | 20.4 | 14.8 | 11.5 | Z    | 9.7  | 5.0  | 4.8  | 11.9 | 10.5 | 14.9 | 22.1 | 24.0 | 30.5 | 33.0 | 31.5 | 24.4 | 13.8 | 8.6  | 9.4  | 8.8  | 5.9  | 3.8  | 3.7             | 15.0          | 33.0          |
| 19-Feb  | 3.6                           | 14.2 | 19.7 | 22.6 | 26.1 | Z    | 24.2 | 23.7 | 22.2 | 26.8 | 30.7 | 28.3 | 29.5 | 27.9 | 29.3 | 31.1 | 27.7 | 6.1  | 2.4  | 2.0  | 1.8  | 3.3  | 13.6 | 25.0            | 19.2          | 31.1          |
| 20-Feb  | Z                             | 24.4 | 25.9 | 21.6 | 17.9 | 14.2 | 12.4 | 10.8 | 9.8  | 13.7 | 22.2 | 24.4 | 26.2 | 27.2 | 28.8 | 28.7 | 22.8 | 13.6 | 18.8 | 22.7 | 21.1 | 21.6 | 22.7 | 16.3            | 20.3          | 28.8          |
| 21-Feb  | 24.3                          | Z    | 32.8 | 32.0 | 30.2 | 28.6 | 27.6 | 26.0 | 29.5 | 31.0 | 30.9 | 32.4 | 30.7 | 32.2 | 31.1 | 30.3 | 32.1 | 33.6 | 29.3 | 28.9 | 27.2 | 26.4 | 21.0 | 19.2            | 29.0          | 33.6          |
| 22-Feb  | 14.9                          | 15.1 | Z    | 12.9 | 17.1 | 17.0 | 16.0 | 22.7 | 26.7 | 28.3 | 30.9 | 33.3 | 37.8 | 36.3 | 33.3 | 35.9 | 35.0 | 25.8 | 21.9 | 15.3 | 12.4 | 12.5 | 16.2 | 16.5            | 23.2          | 37.8          |
| 23-Feb  | 15.6                          | 12.4 | 12.4 | Z    | 6.0  | 5.5  | 10.7 | 3.2  | 6.2  | 14.3 | 19.7 | 21.5 | 28.5 | 27.7 | 26.6 | 23.4 | 20.0 | 9.1  | 4.2  | 6.0  | 7.5  | 8.4  | 8.1  | 7.7             | 13.2          | 28.5          |
| 24-Feb  | 15.7                          | 16.4 | 9.7  | 15.4 | Z    | 2.4  | 2.4  | 4.4  | 11.4 | 22.6 | 27.4 | 35.8 | 39.4 | 40.5 | 39.9 | 39.5 | 39.3 | 37.1 | 36.3 | 38.1 | 36.7 | 34.2 | 31.4 | 26.6            | 40.5          | 40.5          |
| 25-Feb  | 30.2                          | 30.3 | 31.1 | 31.4 | 31.7 | Z    | 32.7 | 34.7 | 38.8 | 39.7 | 40.3 | 40.7 | 41.6 | 42.4 | 43.3 | 43.6 | 41.0 | 37.5 | 37.5 | 37.0 | 23.2 | 25.2 | 21.8 | 19.6            | 34.6          | 43.6          |
| 26-Feb  | Z                             | 22.8 | 25.1 | 29.3 | 31.4 | 31.6 | 34.3 | 35.0 | 35.0 | 35.9 | 37.2 | 39.2 | 39.4 | 40.8 | 41.1 | 40.3 | 38.5 | 36.1 | 36.7 | 36.8 | 35.3 | 36.2 | 37.0 | 37.3            | 35.3          | 41.1          |
| 27-Feb  | 30.1                          | Z    | 23.7 | 27.2 | 29.4 | 31.3 | 22.4 | 23.7 | 27.8 | 32.8 | 33.9 | 33.2 | 37.1 | 36.1 | 35.8 | 35.3 | 32.4 | 31.1 | 32.1 | 32.6 | 31.8 | 31.3 | 31.8 | 33.6            | 31.2          | 37.1          |
| 28-Feb  | 29.6                          | 22.9 | Z    | 10.2 | 5.2  | 6.6  | 6.3  | 6.5  | 12.9 | 20.2 | 30.1 | 30.9 | 29.5 | 27.7 | 26.6 | 25.0 | 22.0 | 17.6 | 11.2 | 9.4  | 5.6  | 2.7  | 2.2  | 1.5             | 15.8          | 30.9          |
| 20.2 21.1 21.5 23.2 20.9 16.9 18.3 17.7 19.2 23.0 27.8 29.3 30.4 31.2 30.5 28.9 27.5 23.8 22.7 21.8 20.8 20.8 21.3 22.0 |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Diurnal Average |               |               |
| 36.8 39.5 39.3 39.8 40.1 36.5 42.1 43.2 42.7 42.5 43.4 43.9 44.8 44.8 44.9 44.9 44.5 44.1 43.6 43.5 42.9 40.5 38.8 37.8 |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Diurnal Maximum |               |               |

Z - zerspan C - Calibration M - Maintenance  
 Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 76 ppb







**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Ozone (O<sub>3</sub>) - ppb**  
**Patricia McInnes - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 20                            | 246                    | 38.56    | 38.56               |
| 21 - 50                           | 392                    | 61.44    | 100.00              |
| 51 - 82                           | 0                      | 0.00     | 100.00              |
| > 83                              | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 638

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Ozone (O<sub>3</sub>) - ppb  
Patricia McInnes - February 2023**

| <b>Concentration<br/>Ranges (ppb)</b> | <b>Wind Direction</b> |     |    |     |   |     |    |     |    |     |    |     |    |     |    |     | <b>Totals</b> |
|---------------------------------------|-----------------------|-----|----|-----|---|-----|----|-----|----|-----|----|-----|----|-----|----|-----|---------------|
|                                       | N                     | NNE | NE | ENE | E | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |               |
| 0 - 20                                | 46                    | 12  | 4  | 0   | 2 | 9   | 12 | 24  | 16 | 20  | 10 | 9   | 8  | 10  | 8  | 45  | 235           |
| 21 - 50                               | 35                    | 15  | 18 | 10  | 5 | 21  | 52 | 11  | 19 | 15  | 22 | 25  | 28 | 13  | 8  | 56  | 353           |
| 51 - 82                               | 0                     | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| > 83                                  | 0                     | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| <b>Totals</b>                         | 81                    | 27  | 22 | 10  | 7 | 30  | 64 | 35  | 35 | 35  | 32 | 34  | 36 | 23  | 16 | 101 | 588           |

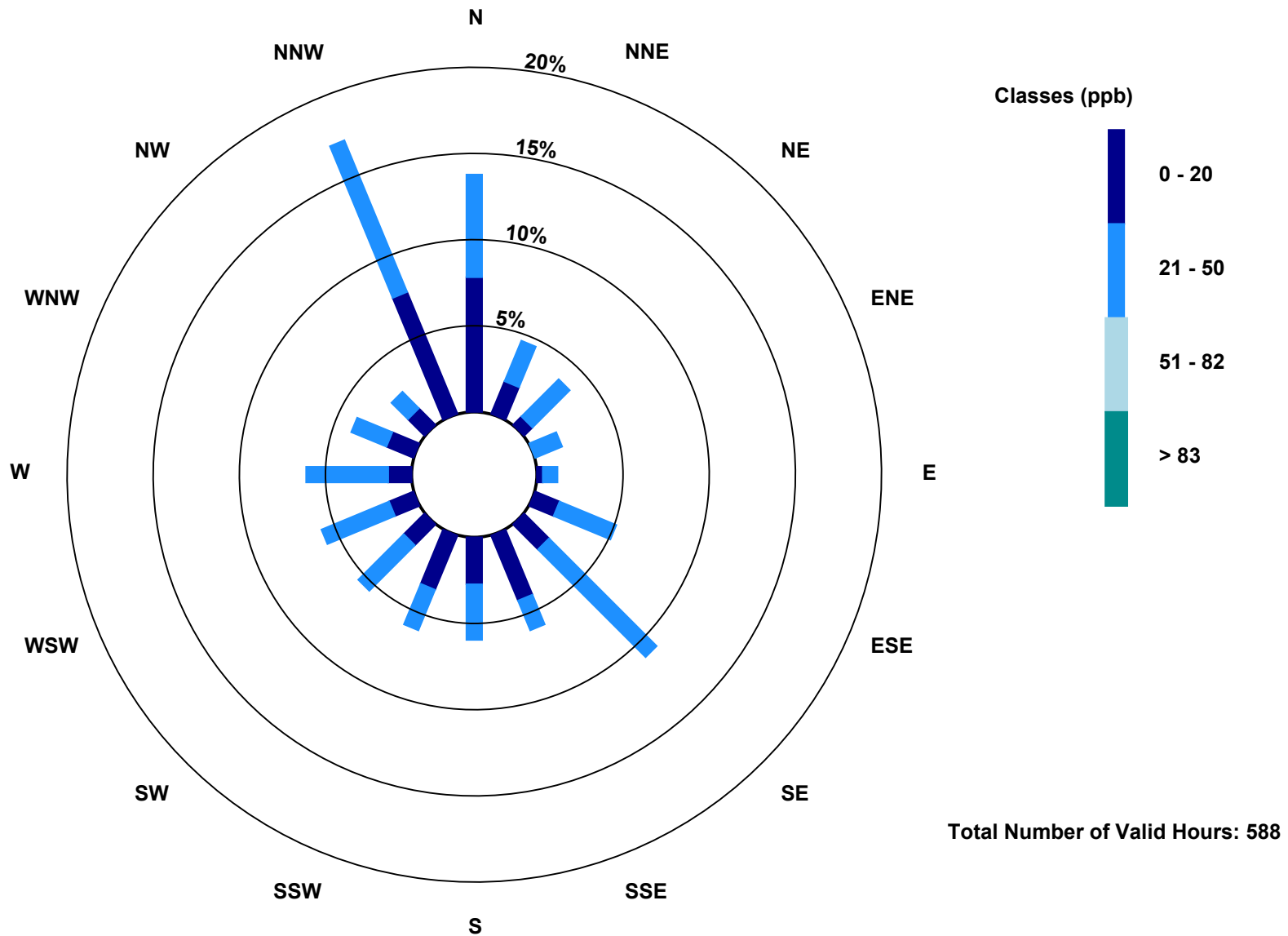
Total Number of Valid Hours: 588

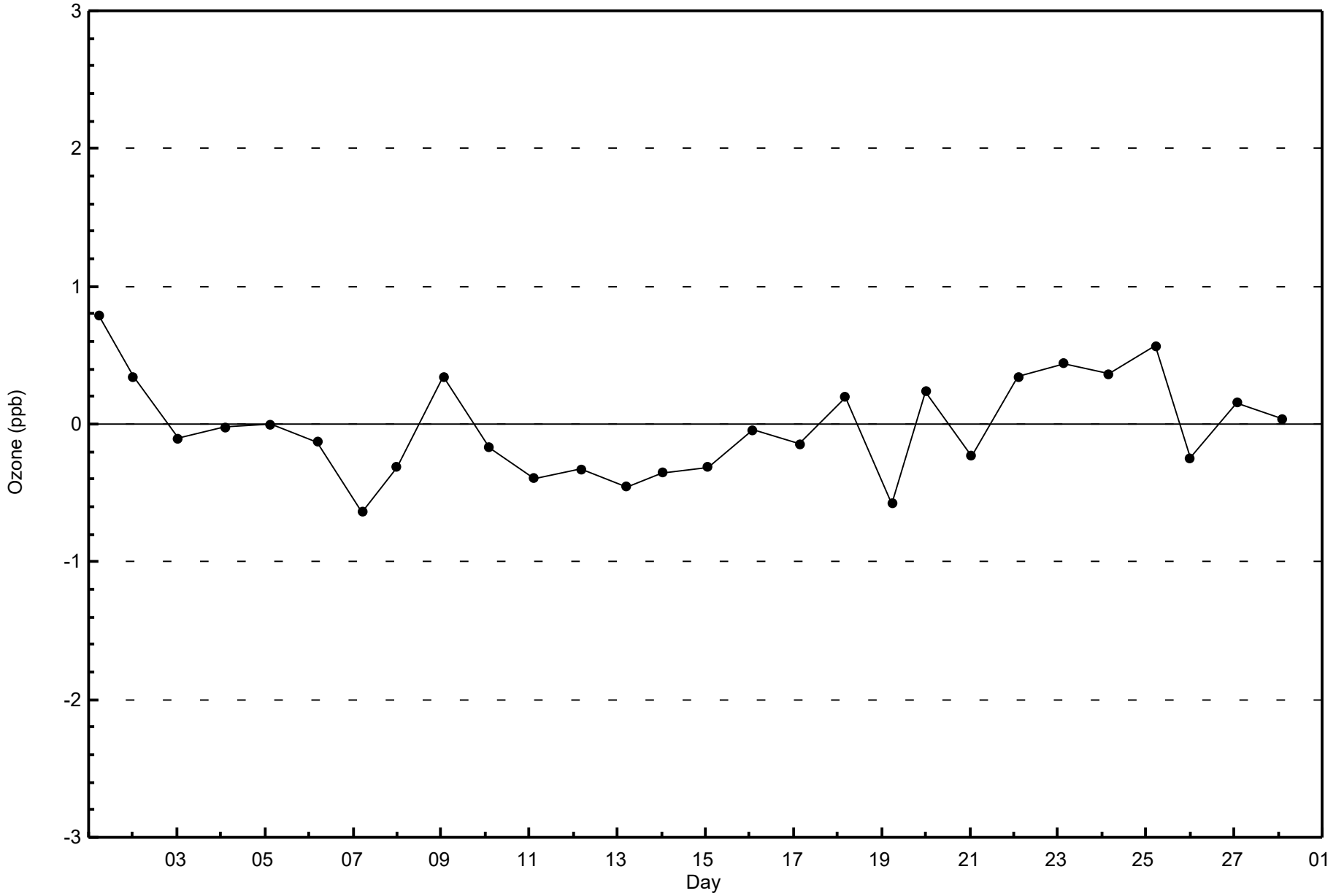
Total Number of Hours: 672

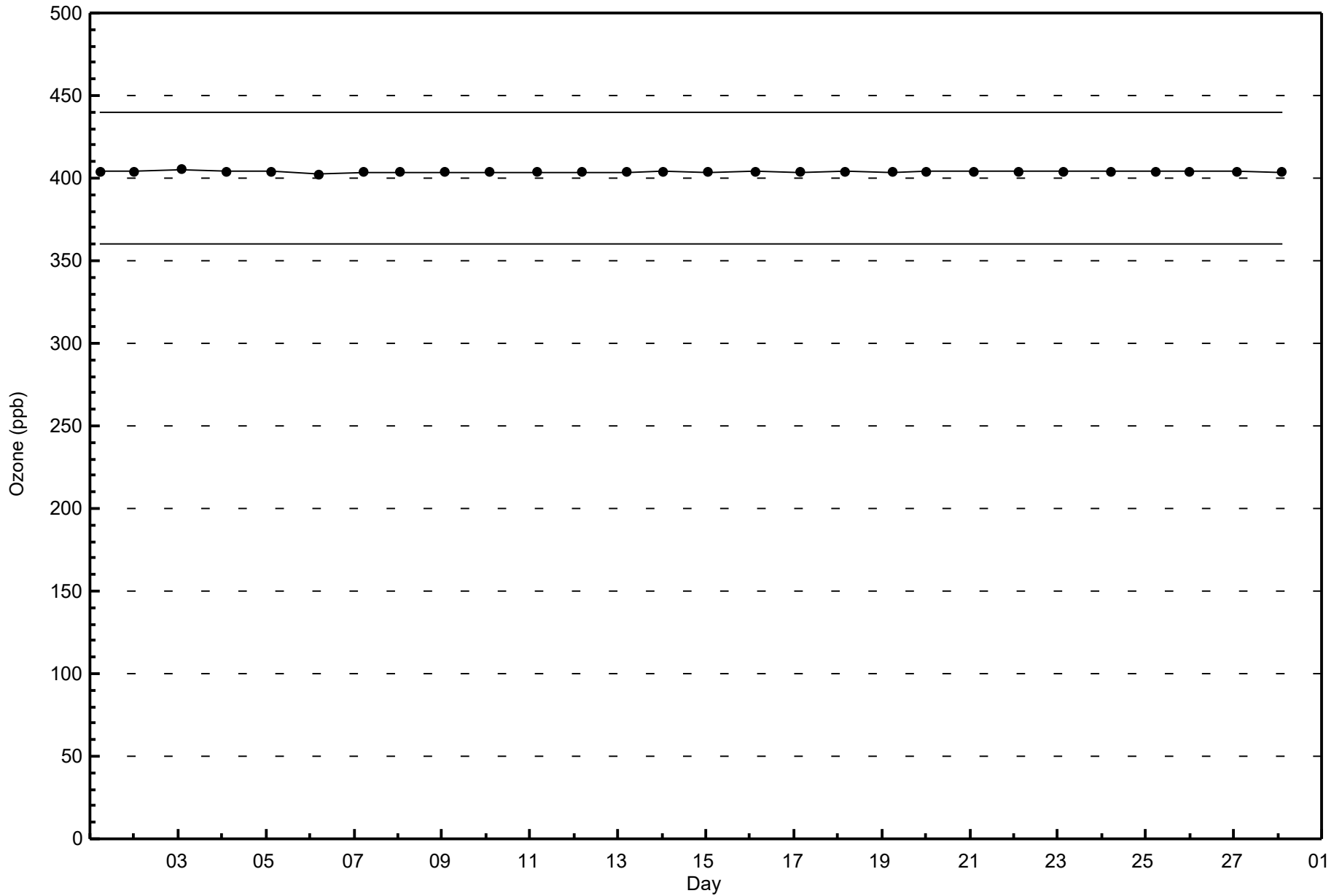


Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Ozone (O<sub>3</sub>) - ppb  
Patricia McInnes







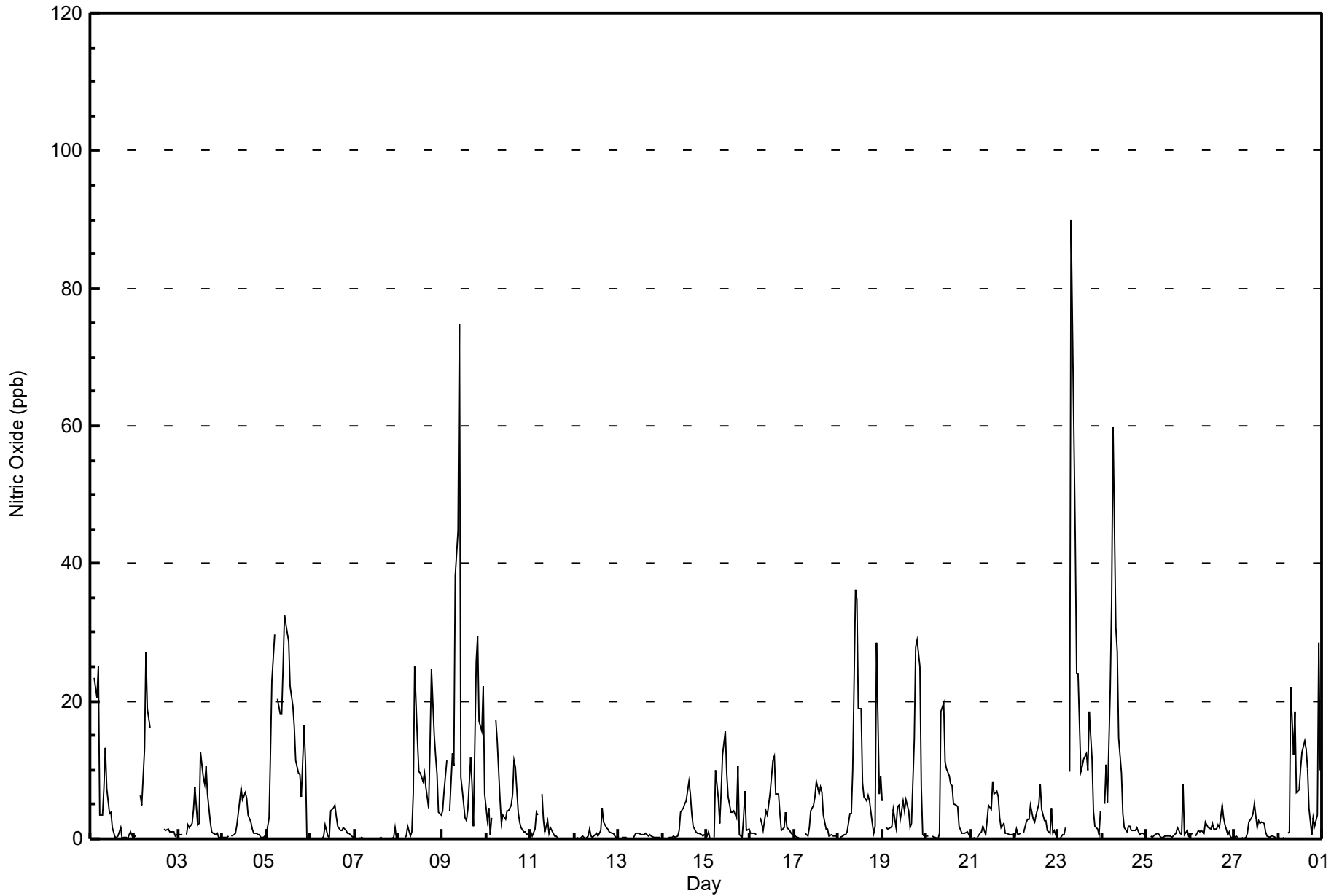


| Maximum Value: 90.0 ppb on Feb 23 08:00      Maximum Daily Average: 16.2 ppb on Feb 9   |                               |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Hours in Service: 672<br>Hours of Data: 637           |      |                 |               |               |
|---|-------------------------------|-----|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|---|------|-----------------|---------------|---------------|
| Minimum Value: 0.0 ppb on Feb 1 18:00      Minimum Daily Average: 0.1 ppb on Feb 7  |                               |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Hours of Missing Data: 35<br>Hours of Calibration: 35 |      |                 |               |               |
| Maximum Diurnal Average: 12.0 ppb at hour 10      Minimum Diurnal Average: 1.1 ppb at hour 2  |                               |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Percent Operational Time: 100.0                       |      |                 |               |               |
| Monthly Average: 5.04 ppb      Percentiles: P <sub>1</sub> = 0.0 P <sub>10</sub> = 0.1 Q <sub>1</sub> = 0.5 Median = 1.6 Q <sub>3</sub> = 5.8 P <sub>90</sub> = 13.2 P <sub>99</sub> = 37.6 |                               |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |   |      |                 |               |               |
| Day   | Hourly Period Ending At (MST) |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |   |      |                 | Daily Average | Daily Maximum |
|   | 1                             | 2   | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20   | 21   | 22  | 23   | 24              |               |               |
| 1-Feb   | 26.0                          | Z   | 23.3 | 20.5 | 25.0 | 3.5  | 3.4  | 7.6  | 13.3 | 7.4  | 3.7  | 3.9  | 1.6  | 0.2  | 0.3  | 0.4  | 1.7  | 0.0  | 0.1  | 0.2  | 0.1  | 0.7   | 1.1  | 0.1             | 6.3           | 26.0          |
| 2-Feb   | 0.5                           | 0.5 | Z    | 6.3  | 4.8  | 12.9 | 27.1 | 18.9 | 16.0 | C    | C    | C    | C    | C    | C    | C    | 1.3  | 1.3  | 1.4  | 1.0  | 1.0  | 1.1   | 0.5  | 0.6             | --            | 27.1          |
| 3-Feb   | 0.6                           | 0.6 | 0.6  | Z    | 0.6  | 2.1  | 1.7  | 2.3  | 4.2  | 7.5  | 2.0  | 2.2  | 12.7 | 8.9  | 8.0  | 10.7 | 6.5  | 2.4  | 1.0  | 0.9  | 0.6  | 0.9   | 0.3  | 0.3             | 3.4           | 12.7          |
| 4-Feb   | 0.2                           | 0.1 | 0.2  | 0.3  | Z    | 0.5  | 0.7  | 0.9  | 2.1  | 5.5  | 7.3  | 5.7  | 6.7  | 5.8  | 3.4  | 2.4  | 1.3  | 0.9  | 0.8  | 0.7  | 0.6  | 0.3   | 0.3  | 0.3             | 2.0           | 7.3           |
| 5-Feb   | 0.5                           | 3.1 | 12.6 | 23.1 | 29.7 | Z    | 20.3 | 18.2 | 18.0 | 25.1 | 32.6 | 29.8 | 28.7 | 22.2 | 19.3 | 16.3 | 11.5 | 9.6  | 9.4  | 6.1  | 16.4 | 11.0  | 0.0  | 0.0             | 15.8          | 32.6          |
| 6-Feb   | Z                             | 0.0 | 0.0  | 0.0  | 0.0  | 0.0  | 0.1  | 0.3  | 2.0  | 0.5  | 0.3  | 4.0  | 4.4  | 4.9  | 3.2  | 1.8  | 1.3  | 1.1  | 1.7  | 1.3  | 0.8  | 0.9   | 0.4  | 0.3             | 1.3           | 4.9           |
| 7-Feb   | 0.4                           | Z   | 0.2  | 0.0  | 0.2  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.1  | 0.1  | 0.1  | 0.1  | 0.1  | 0.0  | 0.0  | 0.0  | 0.2   | 1.7  | 0.0             | 0.1           | 1.7           |
| 8-Feb   | 0.0                           | 0.0 | Z    | 0.2  | 0.5  | 1.8  | 0.5  | 1.0  | 6.4  | 25.0 | 14.3 | 9.7  | 9.6  | 8.4  | 9.6  | 7.5  | 4.5  | 13.9 | 24.7 | 15.1 | 12.0 | 9.4   | 3.9  | 3.5             | 7.9           | 25.0          |
| 9-Feb   | 4.0                           | 6.9 | 11.4 | Z    | 4.0  | 12.4 | 10.5 | 38.3 | 44.8 | 74.8 | 8.9  | 7.2  | 3.1  | 2.6  | 4.2  | 11.8 | 8.0  | 1.9  | 25.8 | 29.4 | 17.1 | 15.6  | 22.2 | 6.6             | 16.2          | 74.8          |
| 10-Feb  | 2.7                           | 4.4 | 0.6  | 3.0  | Z    | 17.4 | 14.2 | 5.6  | 2.2  | 3.4  | 2.9  | 4.1  | 4.0  | 4.9  | 6.6  | 11.3 | 10.4 | 3.8  | 2.4  | 1.7  | 1.1  | 1.0   | 0.7  | 0.8             | 4.7           | 17.4          |
| 11-Feb  | 1.1                           | 0.3 | 1.4  | 3.9  | 3.5  | Z    | 6.5  | 2.9  | 1.1  | 2.7  | 0.8  | 1.6  | 0.7  | 0.4  | 0.4  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.1   | 0.0  | 0.0             | 1.2           | 6.5           |
| 12-Feb  | Z                             | 0.2 | 0.1  | 0.0  | 0.4  | 0.2  | 0.0  | 0.4  | 1.4  | 0.4  | 0.3  | 0.6  | 0.9  | 0.5  | 1.2  | 4.5  | 2.4  | 1.7  | 1.4  | 0.9  | 0.9  | 0.8   | 0.4  | 0.2             | 0.9           | 4.5           |
| 13-Feb  | 0.3                           | Z   | 0.2  | 0.1  | 0.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.8  | 0.8  | 0.8  | 0.7  | 0.7  | 0.7  | 0.7  | 0.5  | 0.5  | 0.4  | 0.3  | 0.3  | 0.3   | 0.1  | 0.0             | 0.4           | 0.8           |
| 14-Feb  | 0.0                           | 0.0 | Z    | 0.0  | 0.1  | 0.2  | 0.4  | 0.1  | 0.3  | 1.3  | 3.9  | 4.5  | 5.1  | 5.5  | 8.3  | 6.6  | 3.7  | 1.8  | 1.0  | 0.8  | 0.8  | 0.6   | 0.4  | 0.5             | 2.0           | 8.3           |
| 15-Feb  | 0.4                           | 0.9 | 0.0  | Z    | 0.2  | 10.0 | 6.0  | 2.3  | 6.7  | 12.3 | 15.7 | 9.7  | 6.1  | 3.8  | 3.8  | 4.0  | 3.0  | 10.7 | 0.5  | 0.3  | 3.0  | 6.9   | 1.3  | 1.4             | 4.7           | 15.7          |
| 16-Feb  | 0.9                           | 0.7 | 0.7  | 0.7  | Z    | 3.0  | 2.3  | 1.2  | 4.2  | 3.4  | 5.0  | 6.7  | 11.4 | 11.9 | 6.4  | 6.6  | 3.7  | 1.3  | 1.6  | 3.9  | 1.6  | 1.2   | 0.8  | 0.5             | 3.5           | 11.9          |
| 17-Feb  | 0.3                           | 0.2 | 0.2  | 0.1  | 0.0  | Z    | 0.8  | 0.3  | 1.7  | 4.0  | 4.8  | 6.1  | 8.3  | 6.6  | 7.6  | 6.6  | 3.4  | 1.4  | 1.5  | 0.5  | 0.6  | 0.4   | 0.4  | 0.4             | 2.4           | 8.3           |
| 18-Feb  | Z                             | 0.2 | 0.5  | 0.7  | 0.6  | 1.1  | 3.6  | 3.6  | 10.0 | 36.3 | 34.7 | 19.0 | 18.9 | 8.2  | 6.1  | 5.5  | 6.3  | 5.4  | 2.3  | 0.9  | 1.8  | 28.5  | 6.5  | 9.1             | 9.1           | 36.3          |
| 19-Feb  | 5.4                           | Z   | 1.7  | 1.4  | 1.6  | 1.7  | 4.3  | 1.6  | 4.6  | 4.9  | 2.8  | 5.5  | 4.0  | 5.8  | 4.0  | 1.7  | 2.3  | 14.5 | 27.8 | 28.9 | 25.0 | 7.6   | 0.6  | 0.3             | 6.9           | 28.9          |
| 20-Feb  | 0.4                           | 0.3 | Z    | 0.4  | 0.1  | 0.2  | 0.1  | 0.8  | 18.5 | 19.7 | 11.2 | 10.2 | 9.1  | 8.0  | 7.7  | 5.1  | 4.8  | 4.7  | 1.7  | 0.7  | 0.8  | 0.8   | 1.0  | 0.5             | 4.6           | 19.7          |
| 21-Feb  | 0.2                           | 0.1 | 0.2  | Z    | 0.2  | 0.9  | 1.0  | 1.9  | 0.7  | 2.7  | 5.0  | 4.3  | 8.4  | 6.6  | 7.0  | 6.2  | 3.0  | 1.7  | 2.2  | 0.8  | 0.9  | 0.6   | 0.5  | 0.6             | 2.4           | 8.4           |
| 22-Feb  | 0.2                           | 1.4 | 0.7  | 0.9  | Z    | 0.8  | 2.4  | 2.8  | 2.8  | 4.8  | 2.8  | 2.5  | 3.4  | 5.2  | 7.9  | 4.2  | 2.6  | 2.7  | 1.2  | 0.9  | 4.4  | 0.8   | 1.2  | 0.1             | 2.5           | 7.9           |
| 23-Feb  | 0.0                           | 0.0 | 0.7  | 0.5  | 1.5  | Z    | 9.7  | 90.0 | 59.2 | 43.6 | 24.1 | 24.0 | 9.8  | 10.5 | 11.5 | 12.4 | 10.0 | 18.6 | 11.6 | 4.0  | 1.9  | 1.4   | 0.6  | 4.1             | 15.2          | 90.0          |
| 24-Feb  | Z                             | 5.0 | 10.7 | 5.2  | 21.7 | 34.6 | 59.7 | 30.7 | 27.3 | 14.7 | 9.6  | 3.6  | 1.7  | 1.0  | 1.8  | 1.7  | 1.3  | 1.2  | 1.2  | 1.6  | 0.7  | 0.7   | 0.8  | 0.6             | 10.3          | 59.7          |
| 25-Feb  | 0.5                           | Z   | 0.3  | 0.2  | 0.4  | 0.6  | 0.7  | 0.5  | 0.2  | 0.2  | 0.3  | 0.4  | 0.3  | 0.5  | 0.3  | 0.5  | 0.8  | 1.5  | 0.7  | 0.6  | 7.9  | 0.7   | 1.1  | 0.4             | 0.9           | 7.9           |
| 26-Feb  | 0.6                           | 0.8 | Z    | 0.3  | 1.2  | 1.1  | 1.2  | 0.9  | 2.5  | 2.1  | 1.6  | 1.5  | 2.2  | 1.5  | 1.3  | 1.9  | 1.6  | 4.9  | 3.1  | 2.1  | 0.6  | 0.9   | 0.2  | 0.1             | 1.5           | 4.9           |
| 27-Feb  | 0.3                           | 0.4 | 0.3  | Z    | 0.2  | 0.1  | 0.3  | 0.7  | 2.4  | 3.0  | 3.7  | 5.1  | 1.7  | 2.7  | 2.2  | 2.4  | 2.2  | 1.1  | 0.3  | 0.3  | 0.5  | 0.5   | 0.2  | 0.0             | 1.3           | 5.1           |
| 28-Feb  | 0.1                           | 0.0 | 0.1  | 0.3  | Z    | 0.8  | 1.0  | 21.9 | 12.1 | 18.4 | 6.8  | 7.1  | 10.1 | 12.5 | 14.3 | 13.1 | 10.3 | 4.5  | 0.7  | 3.1  | 1.9  | 3.5   | 28.4 | 10.0            | 7.9           | 28.4          |
| 1.9   1.1   2.9   3.0   4.2   4.4   6.4   9.1   9.4   12.0   7.6   6.7   6.4   5.5   5.5   5.4   3.9   4.0   4.5   3.8   3.7   3.5   2.7   1.5  |                               |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |   |      | Diurnal Average |               |               |
| 26.0   6.9   23.3   23.1   29.7   34.6   59.7   90.0   59.2   74.8   34.7   29.8   28.7   22.2   19.3   16.3   11.5   18.6   27.8   29.4   25.0   28.5   28.4   10.0                        |                               |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |   |      | Diurnal Maximum |               |               |
| Z - zerospan      C - Calibration   |                               |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |   |      |                 |               |               |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Nitric Oxide (NO) - ppb**  
**Patricia McInnes - February 2023**







**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Nitric Oxide (NO) - ppb  
Patricia McInnes - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 20                            | 600                    | 94.19    | 94.19               |
| 21 - 40                           | 31                     | 4.87     | 99.06               |
| 41 - 80                           | 5                      | 0.78     | 99.84               |
| 81 - 159                          | 1                      | 0.16     | 100.00              |
| > 159                             | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 637

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Nitric Oxide (NO) - ppb  
Patricia McInnes - February 2023**

| <b>Concentration<br/>Ranges (ppb)</b> | <b>Wind Direction</b> |            |           |            |          |            |           |            |           |            |           |            |           |            |           |            | <b>Totals</b> |
|---------------------------------------|-----------------------|------------|-----------|------------|----------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|---------------|
|                                       | <b>N</b>              | <b>NNE</b> | <b>NE</b> | <b>ENE</b> | <b>E</b> | <b>ESE</b> | <b>SE</b> | <b>SSE</b> | <b>S</b>  | <b>SSW</b> | <b>SW</b> | <b>WSW</b> | <b>W</b>  | <b>WNW</b> | <b>NW</b> | <b>NNW</b> |               |
| 0 - 20                                | 77                    | 24         | 20        | 10         | 5        | 27         | 59        | 28         | 32        | 35         | 28        | 34         | 37        | 21         | 16        | 97         | 550           |
| 21 - 40                               | 1                     | 3          | 2         | 0          | 1        | 1          | 3         | 7          | 2         | 1          | 1         | 1          | 0         | 1          | 1         | 6          | 31            |
| 11 - 80                               | 0                     | 1          | 0         | 0          | 0        | 1          | 0         | 3          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 5             |
| 81 - 159                              | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 1          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 1             |
| > 159                                 | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0             |
| <b>Totals</b>                         | <b>78</b>             | <b>28</b>  | <b>22</b> | <b>10</b>  | <b>6</b> | <b>29</b>  | <b>62</b> | <b>39</b>  | <b>34</b> | <b>36</b>  | <b>29</b> | <b>35</b>  | <b>37</b> | <b>22</b>  | <b>17</b> | <b>103</b> | <b>587</b>    |

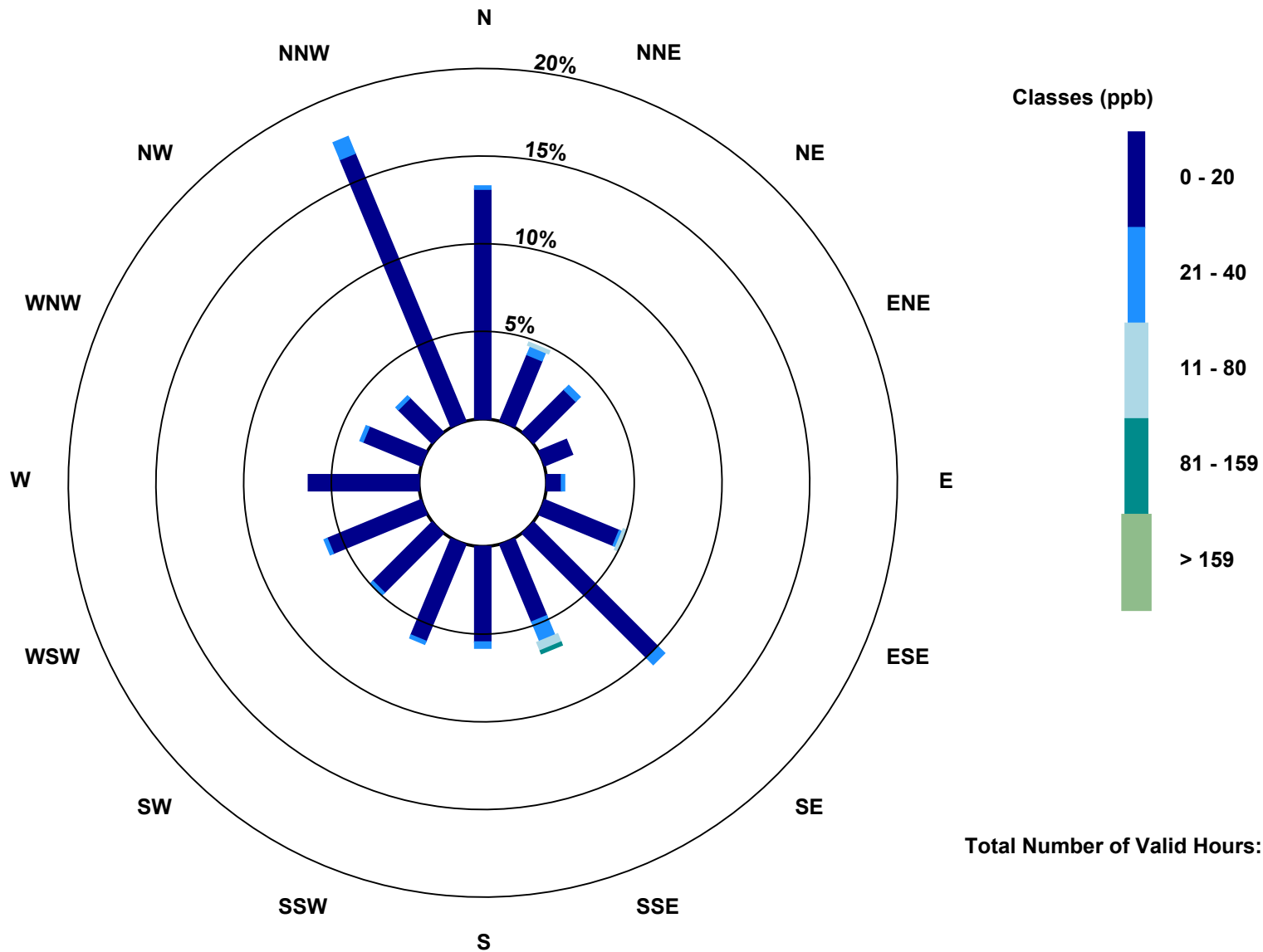
Total Number of Valid Hours: 587

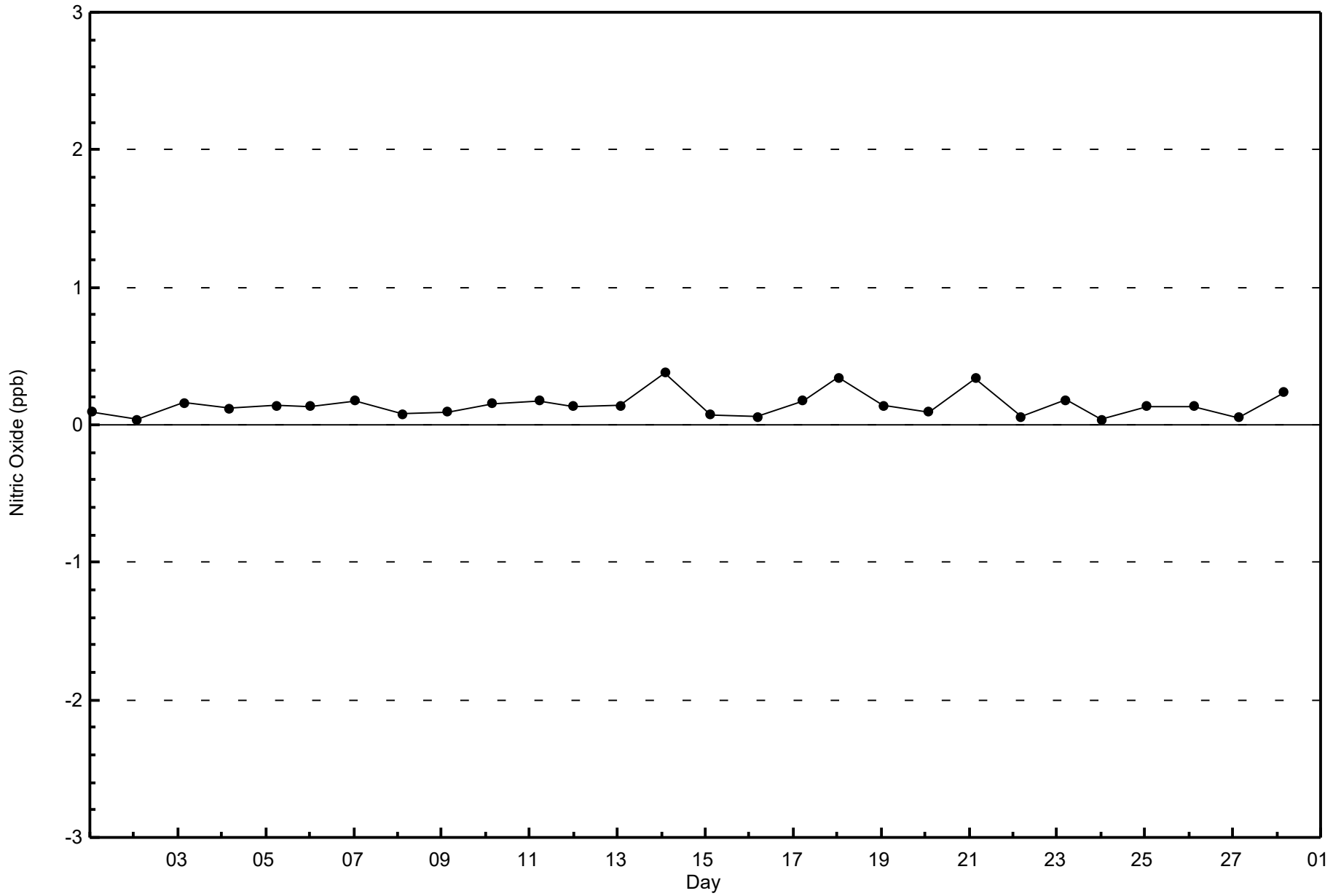
Total Number of Hours: 672

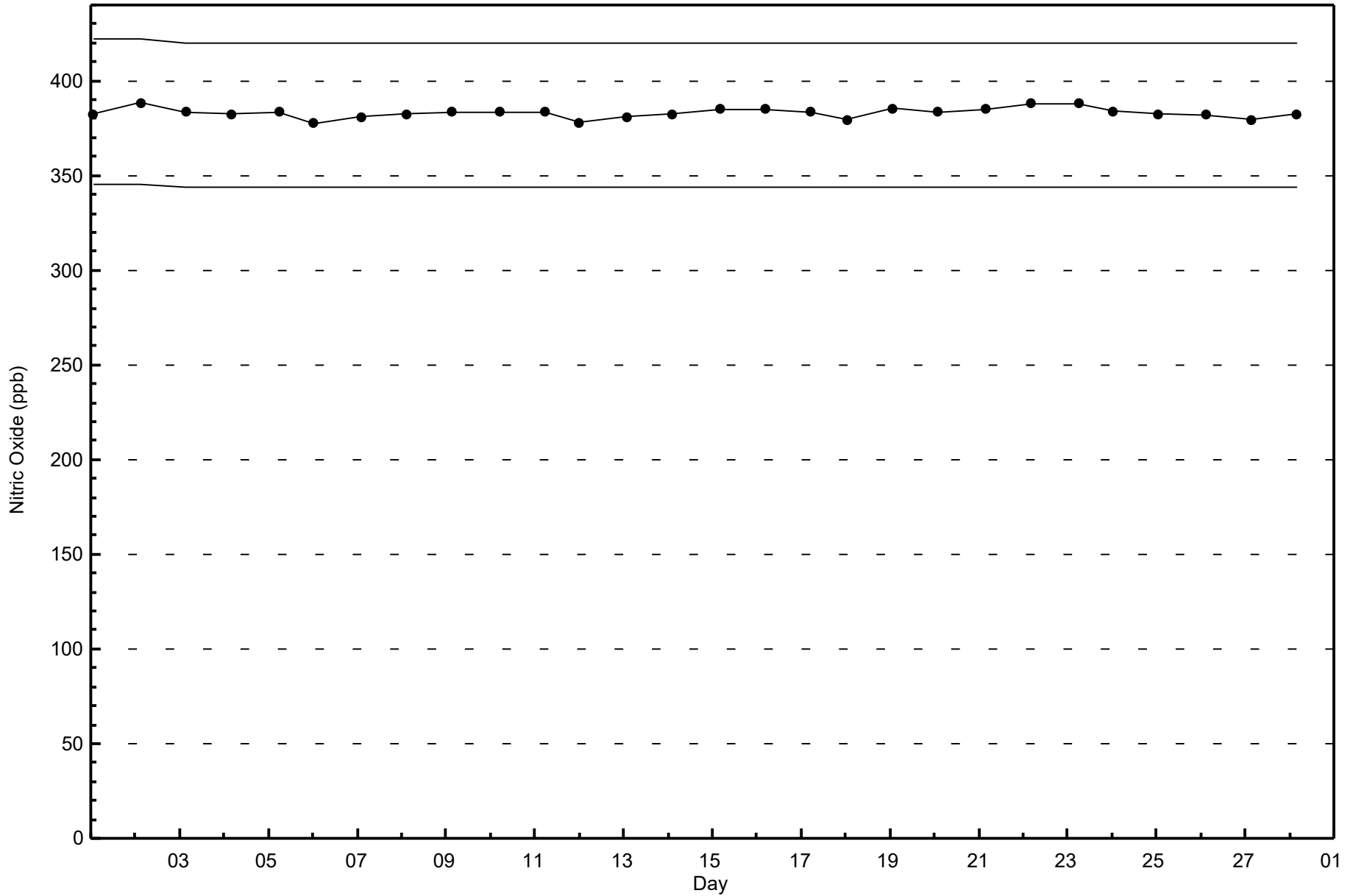


Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Nitric Oxide (NO) - ppb  
Patricia McInnes









Wood Buffalo Environmental Association

Summary of Hour Averages

Nitrogen Dioxide (NO<sub>2</sub>) - ppb

Patricia McInnes - February 2023

|   |   |          |                           |       |
|---|---|----------|---------------------------|-------|
| Number of Exceedences (AAAQO):              | 1-hr: 0   | 24-hr: 0 | Hours in Service:         | 672   |
| Maximum Value: 46.4 ppb on Feb 23 08:00     | Maximum Daily Average: 25.7 ppb on Feb 9  |          | Hours of Data:            | 637   |
| Minimum Value: 0.1 ppb on Feb 7 20:00       | Minimum Daily Average: 2.4 ppb on Feb 7   |          | Hours of Missing Data:    | 35    |
| Maximum Diurnal Average: 17.0 ppb at hour 8 | Minimum Diurnal Average: 7.0 ppb at hour 14   |          | Hours of Calibration:     | 35    |
| Monthly Average: 12.41 ppb                  | Percentiles: P <sub>1</sub> = 0.3 P <sub>10</sub> = 1.5 Q <sub>1</sub> = 5.2 Median = 9.6 Q <sub>3</sub> = 17.5 P <sub>90</sub> = 27.9 P <sub>99</sub> = 39.7 |          | Percent Operational Time: | 100.0 |

| Day    | Hourly Period Ending At (MST) |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Daily Average | Daily Maximum   |
|--------|-------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|---------------|-----------------|
|        | 1                             | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20   | 21   | 22   | 23   | 24   |               |                 |
| 1-Feb  | 36.8                          | Z    | 38.4 | 35.9 | 39.6 | 33.1 | 31.4 | 35.2 | 35.9 | 17.9 | 7.0  | 5.8  | 2.4  | 0.3  | 0.3  | 0.8  | 3.8  | 0.6  | 3.7  | 1.3  | 1.1  | 3.3  | 7.3  | 0.7  | 14.9          | 39.6            |
| 2-Feb  | 3.7                           | 5.2  | Z    | 23.7 | 18.9 | 23.9 | 29.3 | 28.2 | 26.2 | C    | C    | C    | C    | C    | C    | C    | 5.9  | 5.5  | 5.7  | 5.2  | 5.2  | 6.2  | 6.0  | 5.6  | --            | 29.3            |
| 3-Feb  | 5.6                           | 6.0  | 6.3  | Z    | 5.2  | 10.1 | 14.0 | 15.0 | 22.5 | 21.4 | 6.9  | 4.7  | 20.7 | 16.8 | 16.2 | 22.6 | 22.8 | 24.8 | 15.3 | 14.9 | 13.8 | 13.8 | 11.4 | 10.5 | 14.0          | 24.8            |
| 4-Feb  | 11.3                          | 10.5 | 12.3 | 14.2 | Z    | 12.2 | 15.1 | 17.1 | 18.0 | 17.1 | 15.0 | 11.2 | 11.4 | 11.6 | 9.9  | 9.5  | 11.6 | 15.4 | 12.5 | 15.3 | 15.7 | 21.0 | 20.0 | 22.4 | 14.4          | 22.4            |
| 5-Feb  | 28.8                          | 31.6 | 32.3 | 32.8 | 33.8 | Z    | 31.1 | 30.9 | 28.9 | 26.1 | 24.7 | 24.5 | 24.6 | 22.6 | 20.8 | 20.7 | 21.5 | 25.4 | 24.8 | 16.5 | 23.1 | 12.3 | 1.6  | 0.6  | 23.5          | 33.8            |
| 6-Feb  | Z                             | 0.6  | 0.3  | 0.3  | 0.3  | 0.5  | 0.5  | 5.0  | 6.0  | 1.3  | 0.6  | 4.8  | 6.6  | 7.3  | 5.4  | 5.4  | 6.0  | 5.9  | 5.4  | 5.2  | 4.0  | 5.6  | 5.8  | 5.8  | 3.9           | 7.3             |
| 7-Feb  | 4.0                           | Z    | 9.5  | 5.3  | 8.2  | 1.6  | 0.5  | 0.3  | 0.3  | 0.4  | 0.3  | 0.3  | 0.2  | 0.3  | 0.3  | 0.2  | 0.4  | 0.2  | 0.3  | 0.1  | 0.6  | 2.3  | 16.2 | 2.4  | 2.4           | 16.2            |
| 8-Feb  | 9.8                           | 6.8  | Z    | 3.6  | 8.0  | 16.5 | 11.7 | 13.0 | 14.3 | 16.0 | 15.4 | 11.1 | 10.1 | 9.8  | 12.6 | 13.5 | 17.2 | 32.2 | 33.8 | 27.3 | 24.2 | 24.1 | 16.6 | 18.6 | 15.9          | 33.8            |
| 9-Feb  | 20.9                          | 25.0 | 27.5 | Z    | 12.1 | 33.3 | 28.3 | 42.5 | 38.3 | 39.7 | 13.9 | 10.2 | 4.5  | 3.5  | 9.7  | 20.7 | 22.4 | 17.7 | 37.0 | 41.1 | 35.9 | 36.4 | 38.5 | 31.6 | 25.7          | 42.5            |
| 10-Feb | 31.7                          | 34.4 | 25.9 | 25.0 | Z    | 31.7 | 31.0 | 26.5 | 17.1 | 12.7 | 9.4  | 8.7  | 9.9  | 9.2  | 13.4 | 19.7 | 25.8 | 27.9 | 28.9 | 27.5 | 28.2 | 30.0 | 28.0 | 25.1 | 22.9          | 34.4            |
| 11-Feb | 26.3                          | 22.5 | 24.0 | 28.6 | 26.6 | Z    | 24.5 | 18.8 | 8.1  | 7.2  | 1.9  | 2.2  | 1.5  | 1.4  | 1.7  | 1.0  | 1.2  | 1.5  | 0.5  | 0.5  | 0.6  | 0.7  | 0.5  | 0.9  | 8.8           | 28.6            |
| 12-Feb | Z                             | 0.8  | 0.3  | 0.5  | 1.9  | 2.0  | 0.5  | 4.2  | 6.9  | 1.3  | 0.6  | 1.0  | 1.7  | 1.2  | 3.4  | 13.2 | 10.0 | 7.0  | 5.8  | 4.0  | 4.0  | 4.2  | 3.1  | 5.0  | 3.6           | 13.2            |
| 13-Feb | 8.3                           | Z    | 2.3  | 1.4  | 1.3  | 0.3  | 0.3  | 0.2  | 0.2  | 3.7  | 3.3  | 2.9  | 2.9  | 2.4  | 2.7  | 3.7  | 4.1  | 5.7  | 3.6  | 4.2  | 4.1  | 3.0  | 2.7  | 3.0  | 2.9           | 8.3             |
| 14-Feb | 2.5                           | 1.3  | Z    | 1.5  | 2.5  | 4.3  | 5.4  | 5.3  | 5.1  | 5.6  | 7.5  | 7.2  | 9.4  | 9.5  | 12.5 | 13.7 | 16.9 | 17.8 | 14.1 | 14.8 | 12.4 | 13.0 | 11.5 | 9.5  | 8.8           | 17.8            |
| 15-Feb | 6.1                           | 7.8  | 5.6  | Z    | 4.7  | 17.9 | 18.0 | 16.4 | 13.9 | 16.4 | 16.2 | 9.9  | 6.9  | 4.6  | 5.4  | 8.0  | 8.6  | 29.2 | 14.7 | 9.0  | 18.4 | 16.0 | 7.3  | 6.2  | 11.6          | 29.2            |
| 16-Feb | 5.6                           | 4.6  | 3.9  | 4.7  | Z    | 6.6  | 6.3  | 5.8  | 8.8  | 6.9  | 7.5  | 9.4  | 14.4 | 13.0 | 8.4  | 12.3 | 10.3 | 6.1  | 7.7  | 28.0 | 21.3 | 17.7 | 17.4 | 11.0 | 10.3          | 28.0            |
| 17-Feb | 11.2                          | 9.9  | 9.4  | 8.5  | 10.7 | Z    | 10.4 | 10.4 | 11.1 | 10.5 | 9.4  | 8.1  | 9.3  | 8.6  | 11.2 | 13.2 | 12.4 | 11.9 | 12.2 | 9.5  | 8.7  | 8.6  | 6.1  | 6.0  | 9.9           | 13.2            |
| 18-Feb | Z                             | 7.7  | 13.5 | 17.2 | 15.7 | 19.2 | 24.9 | 25.6 | 18.9 | 22.6 | 19.3 | 13.1 | 12.9 | 7.8  | 7.6  | 9.6  | 17.5 | 29.0 | 28.6 | 22.1 | 22.8 | 32.9 | 19.8 | 20.5 | 18.6          | 32.9            |
| 19-Feb | 19.3                          | Z    | 15.5 | 12.1 | 9.0  | 9.2  | 12.0 | 11.2 | 12.9 | 7.7  | 4.1  | 6.9  | 5.1  | 7.4  | 6.3  | 4.2  | 7.9  | 32.4 | 38.1 | 37.2 | 36.2 | 34.0 | 23.5 | 12.8 | 15.9          | 38.1            |
| 20-Feb | 14.9                          | 12.1 | Z    | 14.5 | 17.0 | 20.8 | 23.0 | 22.1 | 28.6 | 25.7 | 16.1 | 13.6 | 11.3 | 10.2 | 9.6  | 8.9  | 15.0 | 25.6 | 18.0 | 13.2 | 14.6 | 12.7 | 11.4 | 19.5 | 16.5          | 28.6            |
| 21-Feb | 12.1                          | 5.1  | 4.3  | Z    | 5.8  | 7.3  | 6.9  | 7.3  | 3.0  | 4.4  | 5.6  | 4.2  | 7.1  | 6.2  | 7.6  | 8.9  | 7.5  | 5.7  | 10.0 | 9.4  | 11.4 | 8.4  | 9.2  | 7.2  | 7.2           | 12.1            |
| 22-Feb | 8.2                           | 15.5 | 12.9 | 11.1 | Z    | 8.1  | 11.0 | 11.6 | 7.4  | 6.6  | 3.1  | 2.9  | 4.3  | 5.9  | 10.3 | 7.7  | 9.3  | 18.3 | 17.1 | 16.3 | 18.8 | 15.9 | 11.2 | 7.8  | 10.5          | 18.8            |
| 23-Feb | 7.4                           | 7.6  | 10.0 | 11.0 | 14.3 | Z    | 29.6 | 46.4 | 34.9 | 28.8 | 19.1 | 17.5 | 9.2  | 10.1 | 12.2 | 16.1 | 19.7 | 34.8 | 33.8 | 23.9 | 19.8 | 14.7 | 14.2 | 19.7 | 19.8          | 46.4            |
| 24-Feb | Z                             | 19.7 | 27.9 | 23.1 | 39.7 | 43.9 | 41.0 | 35.1 | 28.7 | 17.5 | 10.9 | 4.2  | 2.5  | 1.7  | 3.0  | 3.3  | 3.1  | 4.9  | 4.8  | 5.7  | 3.1  | 4.3  | 5.5  | 7.7  | 14.8          | 43.9            |
| 25-Feb | 8.0                           | Z    | 6.3  | 5.8  | 5.4  | 5.7  | 5.2  | 3.9  | 1.2  | 0.9  | 0.8  | 0.7  | 0.7  | 0.8  | 0.8  | 1.5  | 4.7  | 8.6  | 7.6  | 7.8  | 23.7 | 12.9 | 17.4 | 10.7 | 6.1           | 23.7            |
| 26-Feb | 13.7                          | 12.6 | Z    | 9.6  | 9.1  | 10.0 | 6.4  | 5.5  | 5.3  | 5.0  | 3.8  | 3.4  | 4.4  | 3.5  | 3.9  | 5.1  | 5.9  | 9.9  | 8.4  | 9.4  | 8.8  | 8.0  | 6.8  | 5.1  | 7.1           | 13.7            |
| 27-Feb | 11.2                          | 20.3 | 16.8 | Z    | 8.4  | 6.8  | 16.4 | 14.9 | 11.5 | 6.9  | 5.6  | 6.7  | 2.3  | 3.5  | 3.6  | 4.5  | 6.9  | 7.8  | 5.9  | 4.8  | 5.4  | 5.7  | 4.8  | 2.4  | 8.0           | 20.3            |
| 28-Feb | 6.3                           | 12.6 | 16.2 | 15.4 | Z    | 15.7 | 16.4 | 18.6 | 12.9 | 16.9 | 7.2  | 6.7  | 8.8  | 10.9 | 13.3 | 15.4 | 18.3 | 22.4 | 26.1 | 25.4 | 25.6 | 26.5 | 27.9 | 24.0 | 16.9          | 27.9            |
|        | 13.1                          | 12.2 | 14.0 | 13.3 | 13.0 | 14.2 | 16.1 | 17.0 | 15.2 | 12.9 | 8.7  | 7.5  | 7.6  | 7.0  | 7.9  | 9.8  | 11.3 | 15.5 | 15.2 | 14.3 | 14.7 | 14.1 | 12.6 | 10.8 |               | Diurnal Average |
|        | 36.8                          | 34.4 | 38.4 | 35.9 | 39.7 | 43.9 | 41.0 | 46.4 | 38.3 | 39.7 | 24.7 | 24.5 | 24.6 | 22.6 | 20.8 | 22.6 | 25.8 | 34.8 | 38.1 | 41.1 | 36.2 | 36.4 | 38.5 | 31.6 |               | Diurnal Maximum |

Z - zerospan      C - Calibration  
 Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 159 ppb





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Nitrogen Dioxide (NO<sub>2</sub>) - ppb**  
**Patricia McInnes - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 20                            | 509                    | 79.91    | 79.91               |
| 21 - 40                           | 123                    | 19.31    | 99.22               |
| 41 - 80                           | 5                      | 0.78     | 100.00              |
| 81 - 159                          | 0                      | 0.00     | 100.00              |
| > 159                             | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 637

Total Number of Hours: 672





**Wood Buffalo Environmental Association  
Frequency Distribution**

**Nitrogen Dioxide (NO<sub>2</sub>) - ppb  
Patricia McInnes - February 2023**

| <b>Concentration<br/>Ranges (ppb)</b> | <b>Wind Direction</b> |            |           |            |          |            |           |            |           |            |           |            |           |            |           |            | <b>Totals</b> |
|---------------------------------------|-----------------------|------------|-----------|------------|----------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|---------------|
|                                       | <b>N</b>              | <b>NNE</b> | <b>NE</b> | <b>ENE</b> | <b>E</b> | <b>ESE</b> | <b>SE</b> | <b>SSE</b> | <b>S</b>  | <b>SSW</b> | <b>SW</b> | <b>WSW</b> | <b>W</b>  | <b>WNW</b> | <b>NW</b> | <b>NNW</b> |               |
| 0 - 20                                | 59                    | 19         | 19        | 10         | 5        | 21         | 54        | 17         | 22        | 28         | 25        | 34         | 35        | 17         | 13        | 81         | 459           |
| 21 - 40                               | 19                    | 9          | 3         | 0          | 1        | 7          | 8         | 18         | 12        | 8          | 4         | 1          | 2         | 5          | 4         | 22         | 123           |
| 11 - 80                               | 0                     | 0          | 0         | 0          | 0        | 1          | 0         | 4          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 5             |
| 81 - 159                              | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0             |
| > 159                                 | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0             |
| <b>Totals</b>                         | <b>78</b>             | <b>28</b>  | <b>22</b> | <b>10</b>  | <b>6</b> | <b>29</b>  | <b>62</b> | <b>39</b>  | <b>34</b> | <b>36</b>  | <b>29</b> | <b>35</b>  | <b>37</b> | <b>22</b>  | <b>17</b> | <b>103</b> | <b>587</b>    |

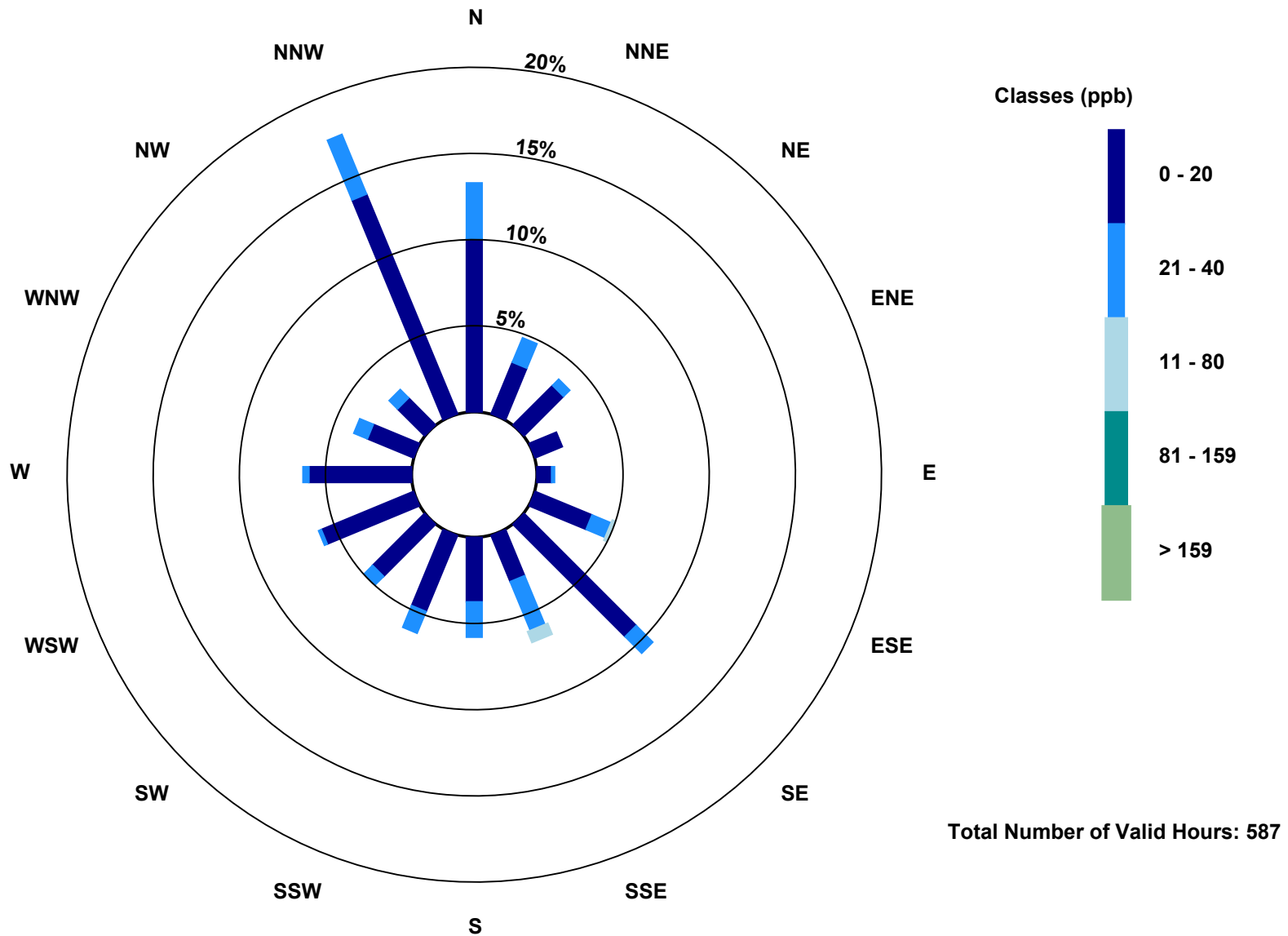
Total Number of Valid Hours: 587

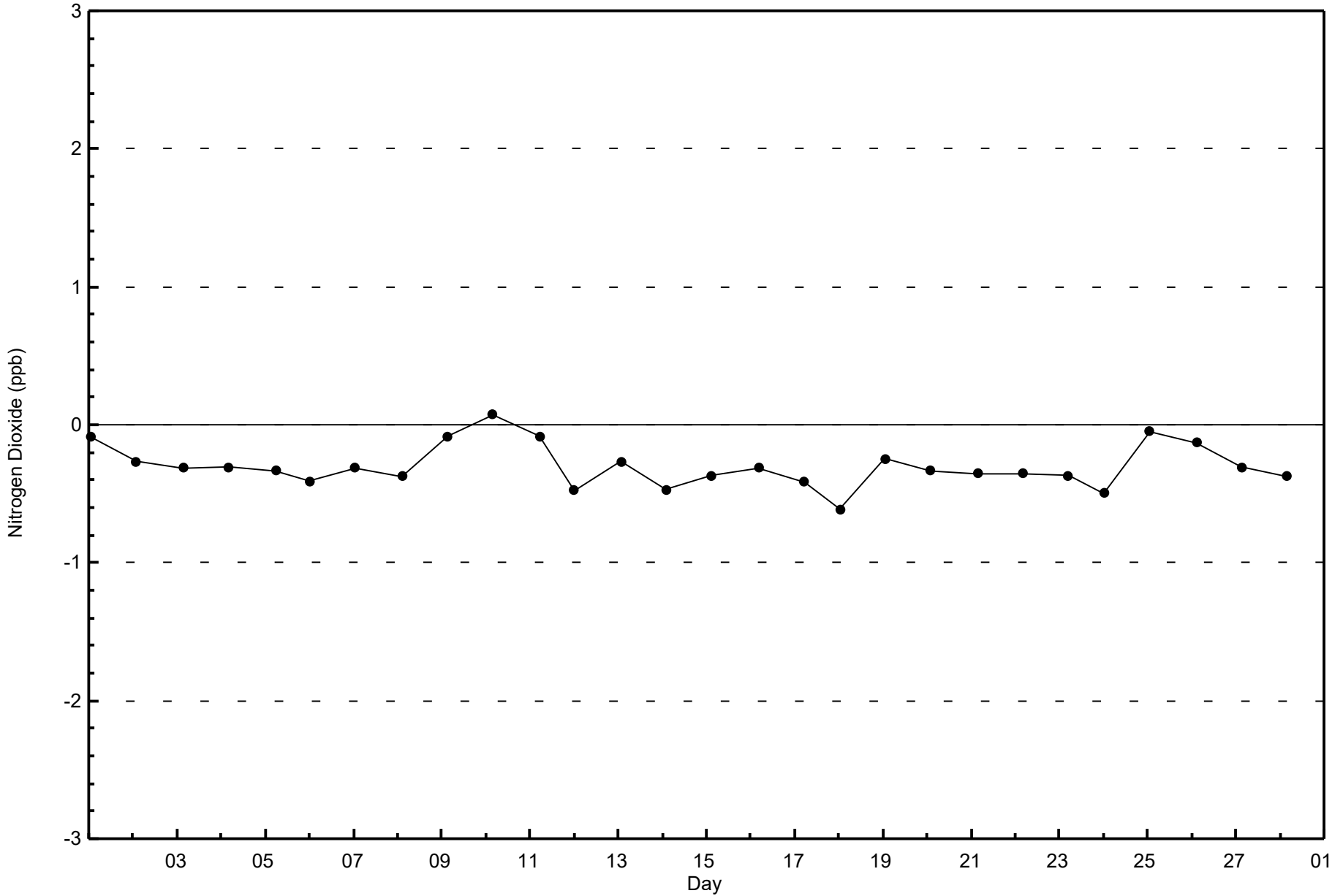
Total Number of Hours: 672

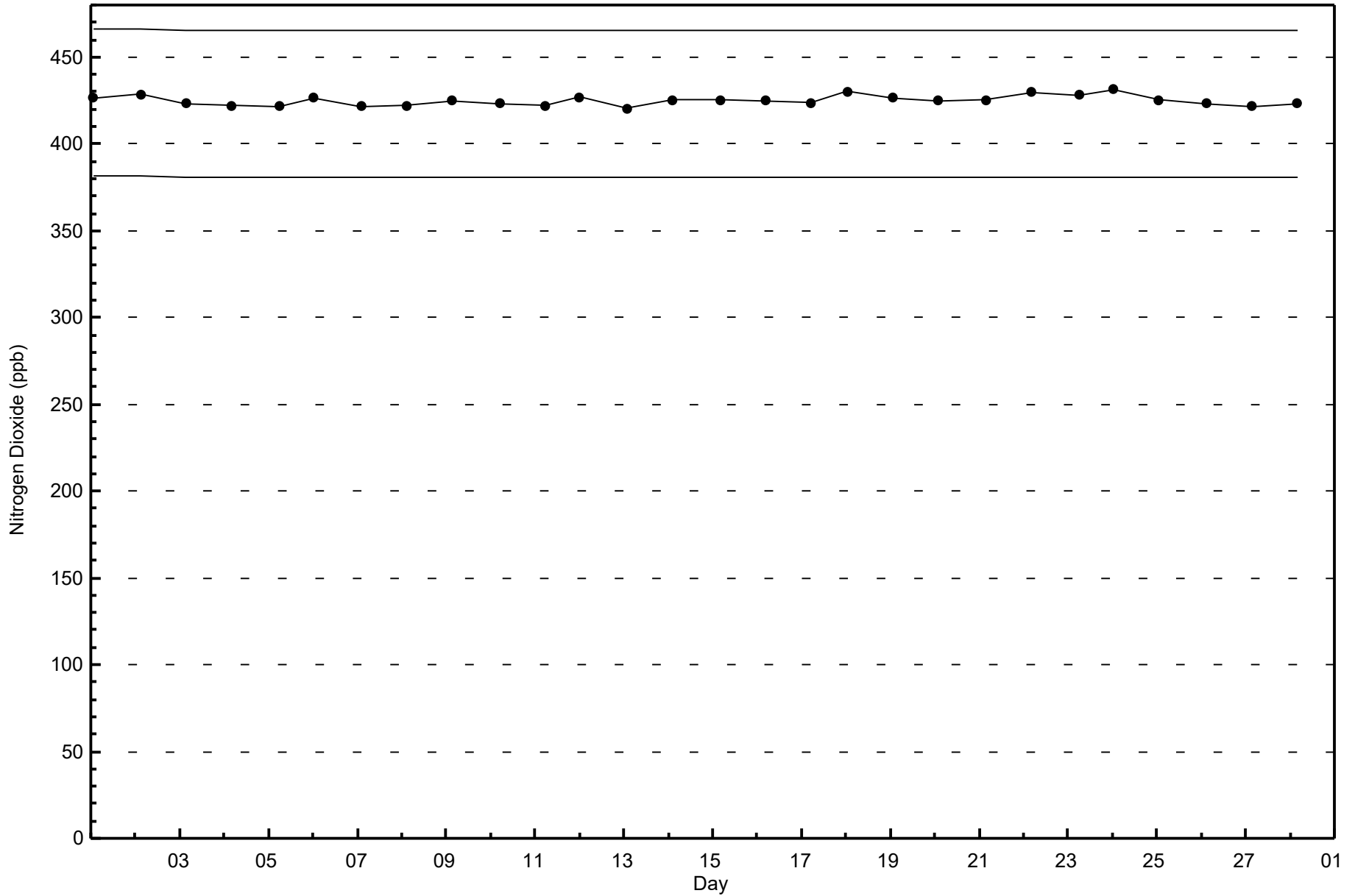


Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Nitrogen Dioxide (NO<sub>2</sub>) - ppb  
Patricia McInnes





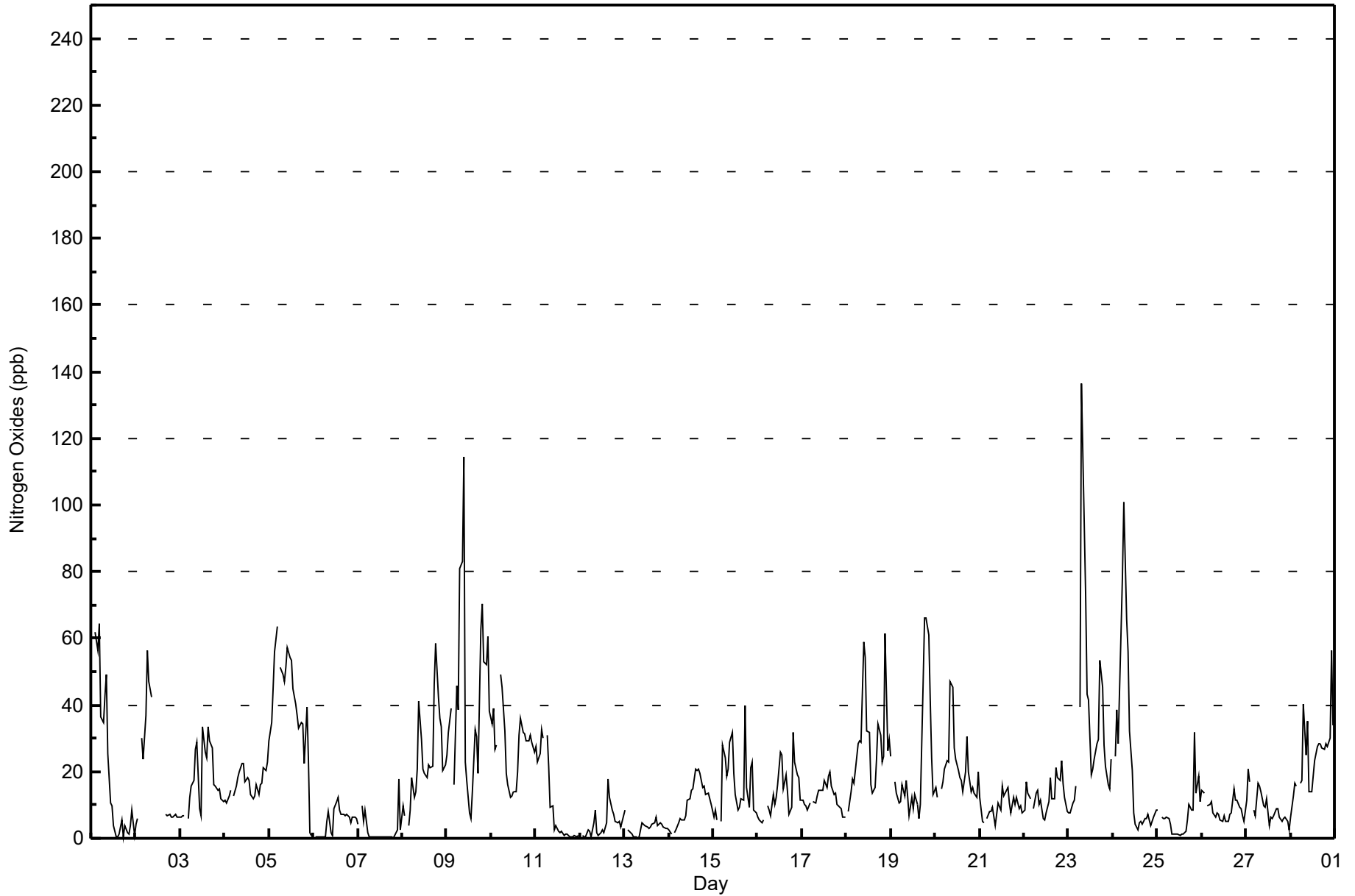




**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

**Nitrogen Oxides (NO<sub>x</sub>) - ppb**  
**Patricia McInnes - February 2023**

| Maximum Value: 136.4 ppb on Feb 23 08:00      Maximum Daily Average: 41.8 ppb on Feb 9<br>Minimum Value: 0.1 ppb on Feb 7 20:00      Minimum Daily Average: 2.5 ppb on Feb 7<br>Maximum Diurnal Average: 26.2 ppb at hour 8      Minimum Diurnal Average: 12.3 ppb at hour 24<br>Monthly Average: 17.44 ppb      Percentiles: P <sub>1</sub> = 0.3 P <sub>10</sub> = 1.8 Q <sub>1</sub> = 6.2 Median = 12.5 Q <sub>3</sub> = 23.1 P <sub>90</sub> = 38.9 P <sub>99</sub> = 76.3 |                               |      |      |      |      |      |       |       |      |       |      |      |      |      |      |      |      |      |      |      |      | Hours in Service:         | 672  |      |               |               |
|---|-------------------------------|------|------|------|------|------|-------|-------|------|-------|------|------|------|------|------|------|------|------|------|------|------|---------------------------|--|------|---------------|---------------|
|   |                               |      |      |      |      |      |       |       |      |       |      |      |      |      |      |      |      |      |      |      |      | Hours of Data:            | 637  |      |               |               |
|   |                               |      |      |      |      |      |       |       |      |       |      |      |      |      |      |      |      |      |      |      |      | Hours of Missing Data:    | 35   |      |               |               |
|   |                               |      |      |      |      |      |       |       |      |       |      |      |      |      |      |      |      |      |      |      |      | Hours of Calibration:     | 35   |      |               |               |
|   |                               |      |      |      |      |      |       |       |      |       |      |      |      |      |      |      |      |      |      |      |      | Percent Operational Time: | 100.0  |      |               |               |
| Day   | Hourly Period Ending At (MST) |      |      |      |      |      |       |       |      |       |      |      |      |      |      |      |      |      |      |      |      |                           |  |      | Daily Average | Daily Maximum |
|   | 1                             | 2    | 3    | 4    | 5    | 6    | 7     | 8     | 9    | 10    | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20   | 21   | 22                        | 23   | 24   |               |               |
| 1-Feb   | 62.8                          | Z    | 61.7 | 56.4 | 64.6 | 36.6 | 34.8  | 42.8  | 49.2 | 25.3  | 10.7 | 9.7  | 4.0  | 0.5  | 0.6  | 1.2  | 5.5  | 0.6  | 3.8  | 1.5  | 1.2  | 4.0                       | 8.4  | 0.8  | 21.2          | 64.6          |
| 2-Feb   | 4.2                           | 5.7  | Z    | 30.0 | 23.7 | 36.8 | 56.4  | 47.1  | 42.2 | C     | C    | C    | C    | C    | C    | C    | 7.2  | 6.8  | 7.1  | 6.2  | 6.2  | 7.3                       | 6.5  | 6.2  | --            | 56.4          |
| 3-Feb   | 6.2                           | 6.6  | 6.9  | Z    | 5.8  | 12.2 | 15.7  | 17.3  | 26.7 | 28.9  | 8.9  | 6.9  | 33.4 | 25.7 | 24.2 | 33.3 | 29.3 | 27.2 | 16.3 | 15.8 | 14.4 | 14.7                      | 11.7   | 10.8 | 17.3          | 33.4          |
| 4-Feb   | 11.5                          | 10.6 | 12.5 | 14.5 | Z    | 12.7 | 15.8  | 18.0  | 20.1 | 22.6  | 22.3 | 16.9 | 18.1 | 17.4 | 13.3 | 11.9 | 12.9 | 16.3 | 13.3 | 16.0 | 16.3 | 21.3                      | 20.3   | 22.7 | 16.4          | 22.7          |
| 5-Feb   | 29.3                          | 34.7 | 44.9 | 55.9 | Z    | 63.5 | 51.4  | 49.1  | 46.9 | 51.2  | 57.3 | 54.3 | 53.3 | 44.8 | 40.1 | 37.0 | 33.0 | 35.0 | 34.2 | 22.6 | 39.5 | 23.3                      | 1.6  | 0.6  | 39.3          | 63.5          |
| 6-Feb   | Z                             | 0.6  | 0.3  | 0.3  | 0.3  | 0.5  | 0.6   | 5.3   | 8.0  | 1.8   | 0.9  | 8.8  | 11.0 | 12.2 | 8.6  | 7.2  | 7.3  | 7.0  | 7.1  | 6.5  | 4.8  | 6.5                       | 6.2  | 6.1  | 5.1           | 12.2          |
| 7-Feb   | 4.4                           | Z    | 9.7  | 5.3  | 8.4  | 1.6  | 0.5   | 0.3   | 0.3  | 0.4   | 0.3  | 0.3  | 0.2  | 0.4  | 0.4  | 0.3  | 0.5  | 0.3  | 0.3  | 0.1  | 0.6  | 2.5                       | 17.9   | 2.4  | 2.5           | 17.9          |
| 8-Feb   | 9.8                           | 6.8  | Z    | 3.8  | 8.5  | 18.3 | 12.2  | 14.0  | 20.7 | 41.0  | 29.7 | 20.8 | 19.7 | 18.2 | 22.2 | 21.0 | 21.7 | 46.1 | 58.6 | 42.4 | 36.2 | 33.5                      | 20.5   | 22.1 | 23.8          | 58.6          |
| 9-Feb   | 24.9                          | 31.9 | 38.9 | Z    | 16.1 | 45.7 | 38.8  | 80.8  | 83.1 | 114.5 | 22.8 | 17.4 | 7.6  | 6.1  | 13.9 | 32.5 | 30.4 | 19.6 | 62.8 | 70.5 | 53.0 | 52.0                      | 60.7   | 38.2 | 41.8          | 114.5         |
| 10-Feb  | 34.4                          | 38.8 | 26.5 | 28.0 | Z    | 49.1 | 45.2  | 32.1  | 19.3 | 16.1  | 12.3 | 12.8 | 13.9 | 14.1 | 20.0 | 31.0 | 36.2 | 31.7 | 31.3 | 29.2 | 29.3 | 31.0                      | 28.7   | 25.9 | 27.7          | 49.1          |
| 11-Feb  | 27.4                          | 22.8 | 25.4 | 32.5 | 30.1 | Z    | 31.0  | 21.7  | 9.2  | 9.9   | 2.7  | 3.8  | 2.2  | 1.8  | 2.1  | 1.0  | 1.2  | 1.5  | 0.5  | 0.5  | 0.6  | 0.8                       | 0.5  | 0.9  | 10.0          | 32.5          |
| 12-Feb  | Z                             | 1.0  | 0.4  | 0.5  | 2.3  | 2.2  | 0.5   | 4.6   | 8.3  | 1.7   | 0.9  | 1.6  | 2.6  | 1.7  | 4.6  | 17.7 | 12.4 | 8.7  | 7.2  | 4.9  | 4.9  | 5.0                       | 3.5  | 5.2  | 4.5           | 17.7          |
| 13-Feb  | 8.6                           | Z    | 2.5  | 1.5  | 1.4  | 0.3  | 0.3   | 0.2   | 0.2  | 4.5   | 4.1  | 3.7  | 3.6  | 3.1  | 3.4  | 4.4  | 4.6  | 6.2  | 4.0  | 4.5  | 4.4  | 3.3                       | 2.8  | 3.0  | 3.3           | 8.6           |
| 14-Feb  | 2.5                           | 1.3  | Z    | 1.5  | 2.6  | 4.5  | 5.8   | 5.4   | 5.4  | 6.9   | 11.4 | 11.7 | 14.5 | 15.0 | 20.8 | 20.3 | 20.6 | 19.6 | 15.1 | 15.6 | 13.2 | 13.6                      | 11.9   | 10.0 | 10.8          | 20.8          |
| 15-Feb  | 6.5                           | 8.7  | 5.6  | Z    | 4.9  | 27.9 | 24.0  | 18.7  | 20.6 | 28.7  | 31.9 | 19.6 | 13.0 | 8.4  | 9.2  | 12.0 | 11.6 | 39.9 | 15.2 | 9.3  | 21.4 | 22.9                      | 8.6  | 7.6  | 16.4          | 39.9          |
| 16-Feb  | 6.5                           | 5.3  | 4.6  | 5.4  | Z    | 9.6  | 8.6   | 7.0   | 13.0 | 10.3  | 12.5 | 16.1 | 25.8 | 24.9 | 14.8 | 18.9 | 14.0 | 7.4  | 9.3  | 31.9 | 22.9 | 18.9                      | 18.2   | 11.5 | 13.8          | 31.9          |
| 17-Feb  | 11.5                          | 10.1 | 9.6  | 8.6  | 10.7 | Z    | 11.2  | 10.7  | 12.8 | 14.5  | 14.2 | 14.2 | 17.6 | 15.2 | 18.8 | 19.8 | 15.8 | 13.3 | 13.7 | 10.0 | 9.3  | 9.0                       | 6.5  | 6.4  | 12.3          | 19.8          |
| 18-Feb  | Z                             | 7.9  | 14.0 | 17.9 | 16.3 | 20.3 | 28.5  | 29.2  | 28.9 | 58.9  | 54.0 | 32.1 | 31.8 | 16.0 | 13.7 | 15.1 | 23.8 | 34.4 | 30.9 | 23.0 | 24.6 | 61.4                      | 26.3   | 29.6 | 27.8          | 61.4          |
| 19-Feb  | 24.7                          | Z    | 17.2 | 13.5 | 10.6 | 10.9 | 16.3  | 12.8  | 17.5 | 12.6  | 6.9  | 12.4 | 9.1  | 13.2 | 10.3 | 5.9  | 10.2 | 46.9 | 65.9 | 66.1 | 61.2 | 41.6                      | 24.1   | 13.1 | 22.7          | 66.1          |
| 20-Feb  | 15.3                          | 12.4 | Z    | 14.9 | 17.1 | 21.0 | 23.1  | 22.9  | 47.1 | 45.4  | 27.3 | 23.8 | 20.4 | 18.2 | 17.3 | 14.0 | 19.8 | 30.3 | 19.7 | 13.9 | 15.4 | 13.5                      | 12.4   | 20.0 | 21.1          | 47.1          |
| 21-Feb  | 12.3                          | 5.2  | 4.5  | Z    | 6.0  | 8.2  | 7.9   | 9.2   | 3.7  | 7.1   | 10.6 | 8.5  | 15.5 | 12.8 | 14.6 | 15.1 | 10.5 | 7.4  | 12.2 | 10.2 | 12.3 | 9.0                       | 9.7  | 7.8  | 9.6           | 15.5          |
| 22-Feb  | 8.4                           | 16.9 | 13.6 | 12.0 | Z    | 8.9  | 13.4  | 14.4  | 10.2 | 11.4  | 5.9  | 5.4  | 7.7  | 11.1 | 18.2 | 11.9 | 11.9 | 21.0 | 18.3 | 17.2 | 23.2 | 16.7                      | 12.4   | 7.9  | 13.0          | 23.2          |
| 23-Feb  | 7.4                           | 7.6  | 10.7 | 11.5 | 15.8 | Z    | 39.3  | 136.4 | 94.1 | 72.4  | 43.2 | 41.5 | 19.0 | 20.6 | 23.7 | 28.5 | 29.7 | 53.4 | 45.4 | 27.9 | 21.7 | 16.1                      | 14.9   | 23.8 | 35.0          | 136.4         |
| 24-Feb  | Z                             | 24.7 | 38.6 | 28.3 | 61.4 | 78.5 | 100.7 | 65.8  | 56.0 | 32.2  | 20.5 | 7.8  | 4.2  | 2.7  | 4.8  | 5.0  | 4.4  | 6.1  | 6.0  | 7.3  | 3.8  | 5.0                       | 6.3  | 8.3  | 25.2          | 100.7         |
| 25-Feb  | 8.5                           | Z    | 6.6  | 6.0  | 5.8  | 6.3  | 5.9   | 4.4   | 1.4  | 1.1   | 1.1  | 1.1  | 1.0  | 1.3  | 1.1  | 2.0  | 5.5  | 10.1 | 8.3  | 8.4  | 31.6 | 13.6                      | 18.5   | 11.1 | 7.0           | 31.6          |
| 26-Feb  | 14.3                          | 13.4 | Z    | 9.9  | 10.3 | 11.1 | 7.6   | 6.4   | 7.8  | 7.1   | 5.4  | 4.9  | 6.6  | 5.0  | 5.2  | 7.0  | 7.5  | 14.8 | 11.5 | 11.5 | 9.4  | 8.9                       | 7.0  | 5.2  | 8.6           | 14.8          |
| 27-Feb  | 11.5                          | 20.7 | 17.1 | Z    | 8.6  | 6.9  | 16.7  | 15.6  | 13.9 | 9.9   | 9.3  | 11.8 | 4.0  | 6.2  | 5.8  | 6.9  | 9.1  | 8.9  | 6.2  | 5.1  | 5.9  | 6.2                       | 5.0  | 2.4  | 9.3           | 20.7          |
| 28-Feb  | 6.4                           | 12.6 | 16.3 | 15.7 | Z    | 16.5 | 17.4  | 40.5  | 25.0 | 35.3  | 14.0 | 13.8 | 18.9 | 23.4 | 27.6 | 28.5 | 28.6 | 26.9 | 26.8 | 28.5 | 27.5 | 30.0                      | 56.3   | 34.0 | 24.8          | 56.3          |
|   |                               |      |      |      |      |      |       |       |      |       |      |      |      |      |      |      |      |      |      |      |      | Diurnal Average           | 15.0 13.3 16.9 16.3 17.2 18.6 22.5 26.2 24.7 24.9 16.3 14.1 14.0 12.6 13.3 15.2 15.2 19.5 19.7 18.1 18.4 17.6 15.3 12.3    |      |               |               |
|   |                               |      |      |      |      |      |       |       |      |       |      |      |      |      |      |      |      |      |      |      |      | Diurnal Maximum           | 62.8 38.8 61.7 56.4 64.6 78.5 100.7 136.4 94.1 114.5 57.3 54.3 53.3 44.8 40.1 37.0 36.2 53.4 65.9 70.5 61.2 61.4 60.7 38.2 |      |               |               |
| Z - zerospan      C - Calibration   |                               |      |      |      |      |      |       |       |      |       |      |      |      |      |      |      |      |      |      |      |      |                           |  |      |               |               |





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Nitrogen Oxides (NO<sub>x</sub>) - ppb**  
**Patricia McInnes - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 20                            | 448                    | 70.33    | 70.33               |
| 21 - 40                           | 131                    | 20.57    | 90.89               |
| 41 - 80                           | 52                     | 8.16     | 99.06               |
| 81 - 159                          | 5                      | 0.78     | 99.84               |
| > 159                             | 0                      | 0.00     | 99.84               |

Total Number of Valid Hours: 637

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Nitrogen Oxides (NO<sub>x</sub>) - ppb  
Patricia McInnes - February 2023**

| <b>Concentration<br/>Ranges (ppb)</b> | <b>Wind Direction</b> |            |           |            |          |            |           |            |          |            |           |            |          |            |           |            | <b>Totals</b> |
|---------------------------------------|-----------------------|------------|-----------|------------|----------|------------|-----------|------------|----------|------------|-----------|------------|----------|------------|-----------|------------|---------------|
|                                       | <b>N</b>              | <b>NNE</b> | <b>NE</b> | <b>ENE</b> | <b>E</b> | <b>ESE</b> | <b>SE</b> | <b>SSE</b> | <b>S</b> | <b>SSW</b> | <b>SW</b> | <b>WSW</b> | <b>W</b> | <b>WNW</b> | <b>NW</b> | <b>NNW</b> |               |
| 0 - 20                                | 50                    | 15         | 12        | 7          | 3        | 20         | 49        | 10         | 18       | 24         | 23        | 34         | 33       | 15         | 12        | 80         | 405           |
| 21 - 40                               | 21                    | 8          | 8         | 3          | 2        | 4          | 8         | 16         | 12       | 10         | 4         | 0          | 4        | 7          | 3         | 14         | 124           |
| 11 - 80                               | 7                     | 5          | 2         | 0          | 1        | 4          | 5         | 8          | 4        | 2          | 2         | 1          | 0        | 0          | 2         | 9          | 52            |
| 81 - 159                              | 0                     | 0          | 0         | 0          | 0        | 1          | 0         | 4          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 5             |
| > 159                                 | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0             |
| <b>Totals</b>                         | 78                    | 28         | 22        | 10         | 6        | 29         | 62        | 38         | 34       | 36         | 29        | 35         | 37       | 22         | 17        | 103        | 586           |

Total Number of Valid Hours: 587

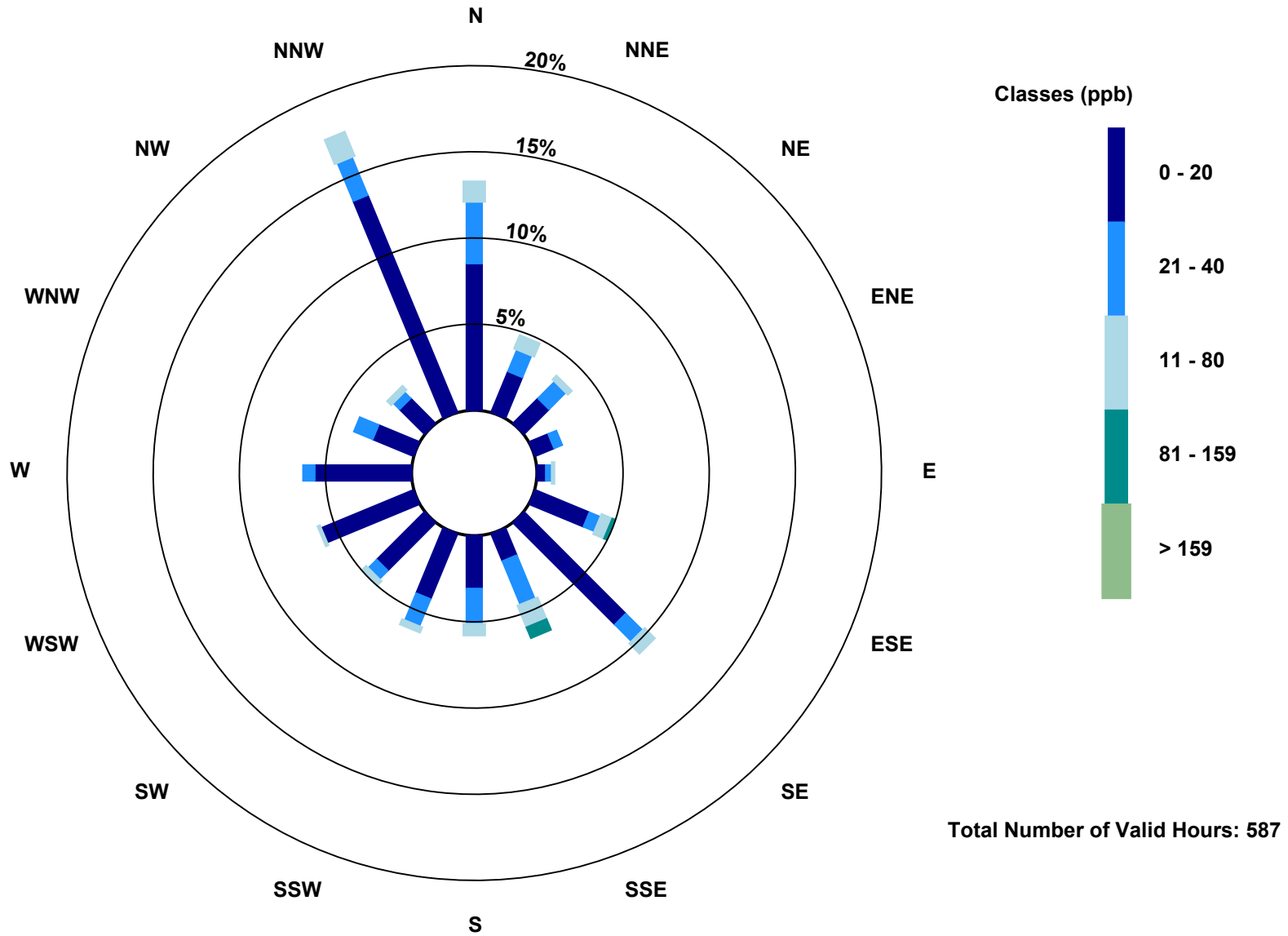
Total Number of Hours: 672

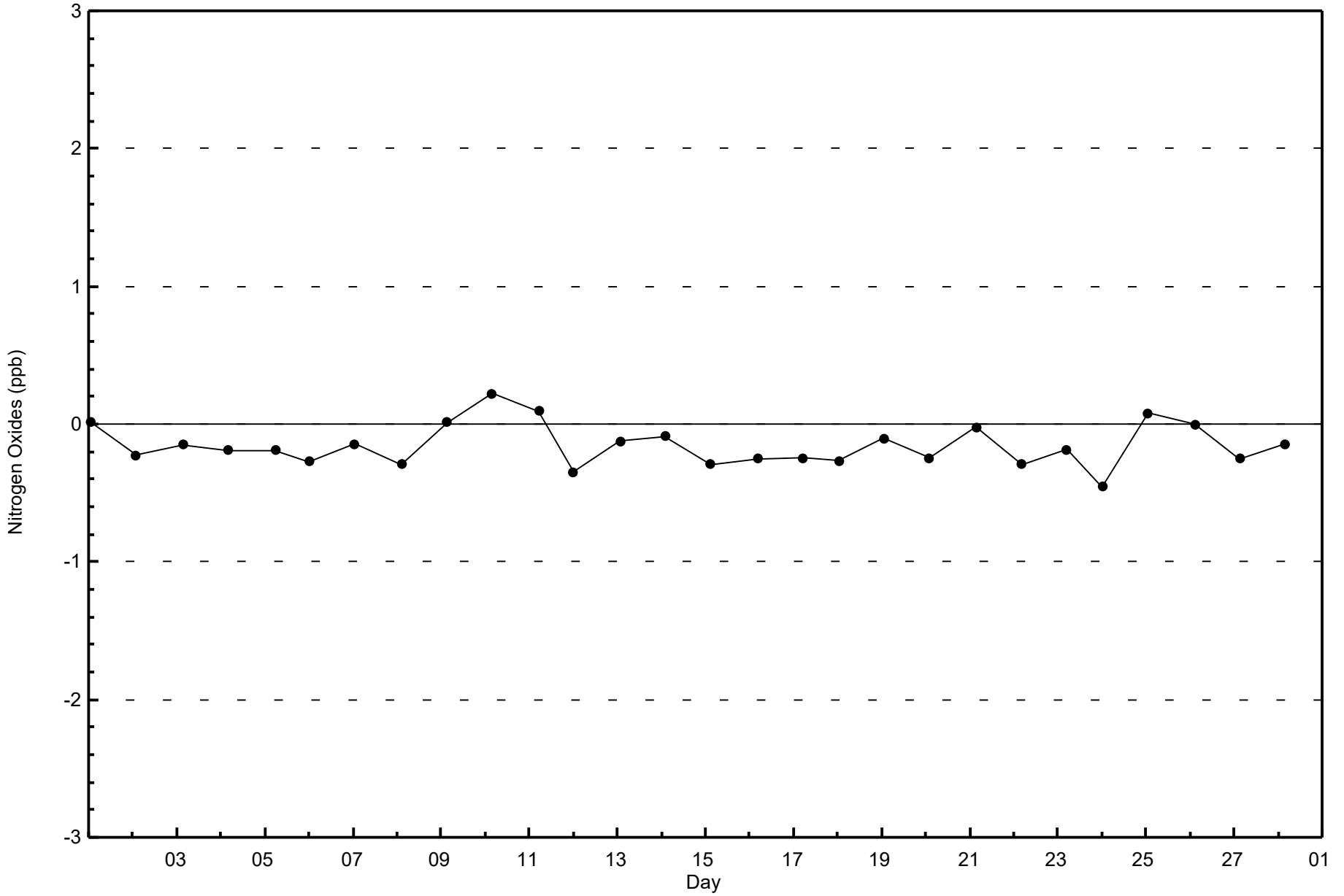


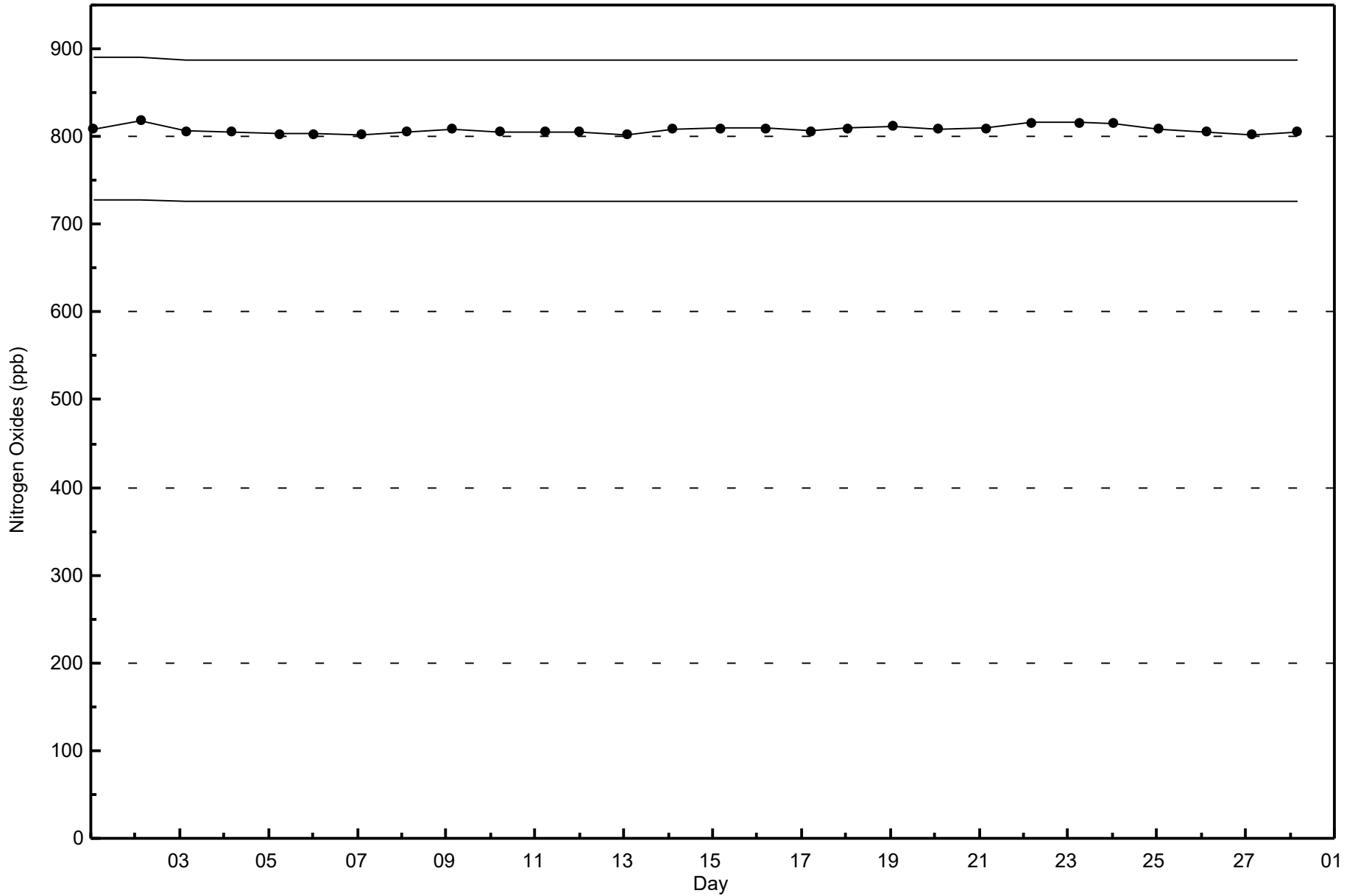


Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Nitrogen Oxides (NO<sub>x</sub>) - ppb  
Patricia McInnes









Wood Buffalo Environmental Association

Summary of Hour Averages

Ammonia (NH<sub>3</sub>) - ppb

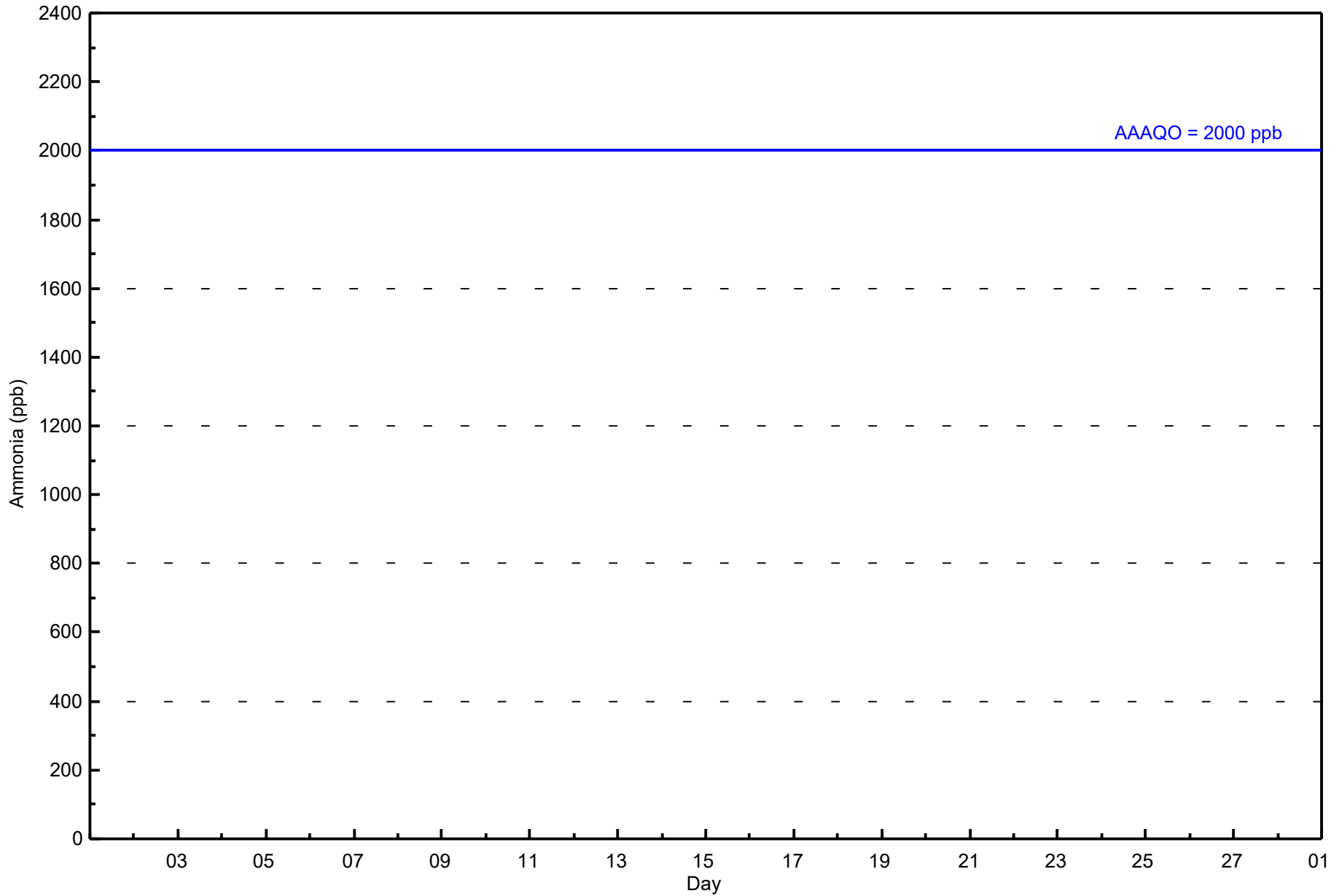
Patricia McInnes - February 2023

| Number of Exceedences (AAAQO): 1-hr: 0                        |                               | Hours in Service: 672  |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |               |               |     |
|---|-------------------------------|--|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----------------|---------------|---------------|-----|
| Maximum Value: 0.0 ppb on Feb 1 03:00                         |                               | Maximum Daily Average: 0.0 ppb on Feb 1  |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |               |               |     |
| Minimum Value: 0.0 ppb on Feb 1 03:00                         |                               | Hours of Data: 593   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |               |               |     |
| Maximum Diurnal Average: 0.0 ppb at hour 1                    |                               | Hours of Missing Data: 79  |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |               |               |     |
| Monthly Average: 0.00 ppb                                     |                               | Hours of Calibration: 36   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |               |               |     |
| Minimum Daily Average: 0.0 ppb on Feb 1                       |                               | Percent Operational Time: 93.6   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |               |               |     |
| Minimum Diurnal Average: 0.0 ppb at hour 1                    |                               | Percentages: P <sub>1</sub> = 0.0 P <sub>10</sub> = 0.0 Q <sub>1</sub> = 0.0 Median = 0.0 Q <sub>3</sub> = 0.0 P <sub>90</sub> = 0.0 P <sub>99</sub> = 0.0 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |               |               |     |
| Day   | Hourly Period Ending At (MST) |  |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 | Daily Average | Daily Maximum |     |
|   | 1                             | 2  | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19  | 20  | 21  | 22  | 23  | 24              |               |               |     |
| 1-Feb   | Z                             | RE   | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.0           | 0.0           | 0.0 |
| 2-Feb   | 0.0                           | Z  | RE  | RE  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | M   | M   | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.0           | 0.0           | 0.0 |
| 3-Feb   | 0.0                           | 0.0  | Z   | RE  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.0           | 0.0           | 0.0 |
| 4-Feb   | 0.0                           | 0.0  | 0.0 | Z   | RE  | RE  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.0           | 0.0           | 0.0 |
| 5-Feb   | 0.0                           | 0.0  | 0.0 | 0.0 | Z   | RE  | RE  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.0           | 0.0           | 0.0 |
| 6-Feb   | 0.0                           | 0.0  | 0.0 | 0.0 | 0.0 | Z   | RE  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.0           | 0.0           | 0.0 |
| 7-Feb   | Z                             | RE   | RE  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | C   | C   | C   | C   | C   | C   | C   | C   | RE  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.0           | 0.0           | 0.0 |
| 8-Feb   | 0.0                           | Z  | RE  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.0           | 0.0           | 0.0 |
| 9-Feb   | 0.0                           | 0.0  | Z   | RE  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.0           | 0.0           | 0.0 |
| 10-Feb  | 0.0                           | 0.0  | 0.0 | Z   | RE  | RE  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.0           | 0.0           | 0.0 |
| 11-Feb  | 0.0                           | 0.0  | 0.0 | 0.0 | Z   | RE  | RE  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.0           | 0.0           | 0.0 |
| 12-Feb  | 0.0                           | 0.0  | 0.0 | 0.0 | 0.0 | Z   | RE  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.0           | 0.0           | 0.0 |
| 13-Feb  | Z                             | RE   | RE  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.0           | 0.0           | 0.0 |
| 14-Feb  | 0.0                           | Z  | RE  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.0           | 0.0           | 0.0 |
| 15-Feb  | 0.0                           | 0.0  | Z   | RE  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.0           | 0.0           | 0.0 |
| 16-Feb  | 0.0                           | 0.0  | 0.0 | Z   | RE  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.0           | 0.0           | 0.0 |
| 17-Feb  | 0.0                           | 0.0  | 0.0 | 0.0 | Z   | RE  | RE  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.0           | 0.0           | 0.0 |
| 18-Feb  | 0.0                           | 0.0  | 0.0 | 0.0 | 0.0 | Z   | RE  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.0           | 0.0           | 0.0 |
| 19-Feb  | Z                             | RE   | RE  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.0           | 0.0           | 0.0 |
| 20-Feb  | 0.0                           | Z  | RE  | RE  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.0           | 0.0           | 0.0 |
| 21-Feb  | 0.0                           | 0.0  | Z   | RE  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.0           | 0.0           | 0.0 |
| 22-Feb  | 0.0                           | 0.0  | 0.0 | Z   | RE  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.0           | 0.0           | 0.0 |
| 23-Feb  | 0.0                           | 0.0  | 0.0 | 0.0 | Z   | RE  | RE  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.0           | 0.0           | 0.0 |
| 24-Feb  | 0.0                           | 0.0  | 0.0 | 0.0 | 0.0 | Z   | RE  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.0           | 0.0           | 0.0 |
| 25-Feb  | Z                             | RE   | RE  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.0           | 0.0           | 0.0 |
| 26-Feb  | 0.0                           | Z  | RE  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.0           | 0.0           | 0.0 |
| 27-Feb  | 0.0                           | 0.0  | Z   | RE  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.0           | 0.0           | 0.0 |
| 28-Feb  | 0.0                           | 0.0  | 0.0 | Z   | RE  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.0           | 0.0           | 0.0 |
| 0.0   |                               |  |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Diurnal Average |               |               |     |
| 0.0   |                               |  |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Diurnal Maximum |               |               |     |
| Z - zerospan C - Calibration M - Maintenance RE - Recovery    |                               |  |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |               |               |     |
| Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 2000 ppb |                               |  |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |               |               |     |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Ammonia (NH<sub>3</sub>) - ppb**  
**Patricia McInnes - February 2023**





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Ammonia (NH<sub>3</sub>) - ppb**  
**Patricia McInnes - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 5                             | 593                    | 100.00   | 100.00              |
| 6 - 10                            | 0                      | 0.00     | 100.00              |
| 11 - 15                           | 0                      | 0.00     | 100.00              |
| 16 - 20                           | 0                      | 0.00     | 100.00              |
| 21 - 25                           | 0                      | 0.00     | 100.00              |
| > 26                              | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 593

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Ammonia (NH<sub>3</sub>) - ppb  
Patricia McInnes - February 2023**

| <b>Concentration<br/>Ranges (ppb)</b> | <b>Wind Direction</b> |            |           |            |          |            |           |            |          |            |           |            |          |            |           |            | <b>Totals</b> |
|---------------------------------------|-----------------------|------------|-----------|------------|----------|------------|-----------|------------|----------|------------|-----------|------------|----------|------------|-----------|------------|---------------|
|                                       | <b>N</b>              | <b>NNE</b> | <b>NE</b> | <b>ENE</b> | <b>E</b> | <b>ESE</b> | <b>SE</b> | <b>SSE</b> | <b>S</b> | <b>SSW</b> | <b>SW</b> | <b>WSW</b> | <b>W</b> | <b>WNW</b> | <b>NW</b> | <b>NNW</b> |               |
| 0 - 5                                 | 70                    | 27         | 21        | 10         | 6        | 31         | 61        | 33         | 34       | 32         | 25        | 33         | 28       | 22         | 16        | 96         | 545           |
| 6 - 10                                | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0             |
| 11 - 15                               | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0             |
| 16 - 20                               | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0             |
| 21 - 25                               | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0             |
| > 26                                  | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0             |
| <b>Totals</b>                         | 70                    | 27         | 21        | 10         | 6        | 31         | 61        | 33         | 34       | 32         | 25        | 33         | 28       | 22         | 16        | 96         | 545           |

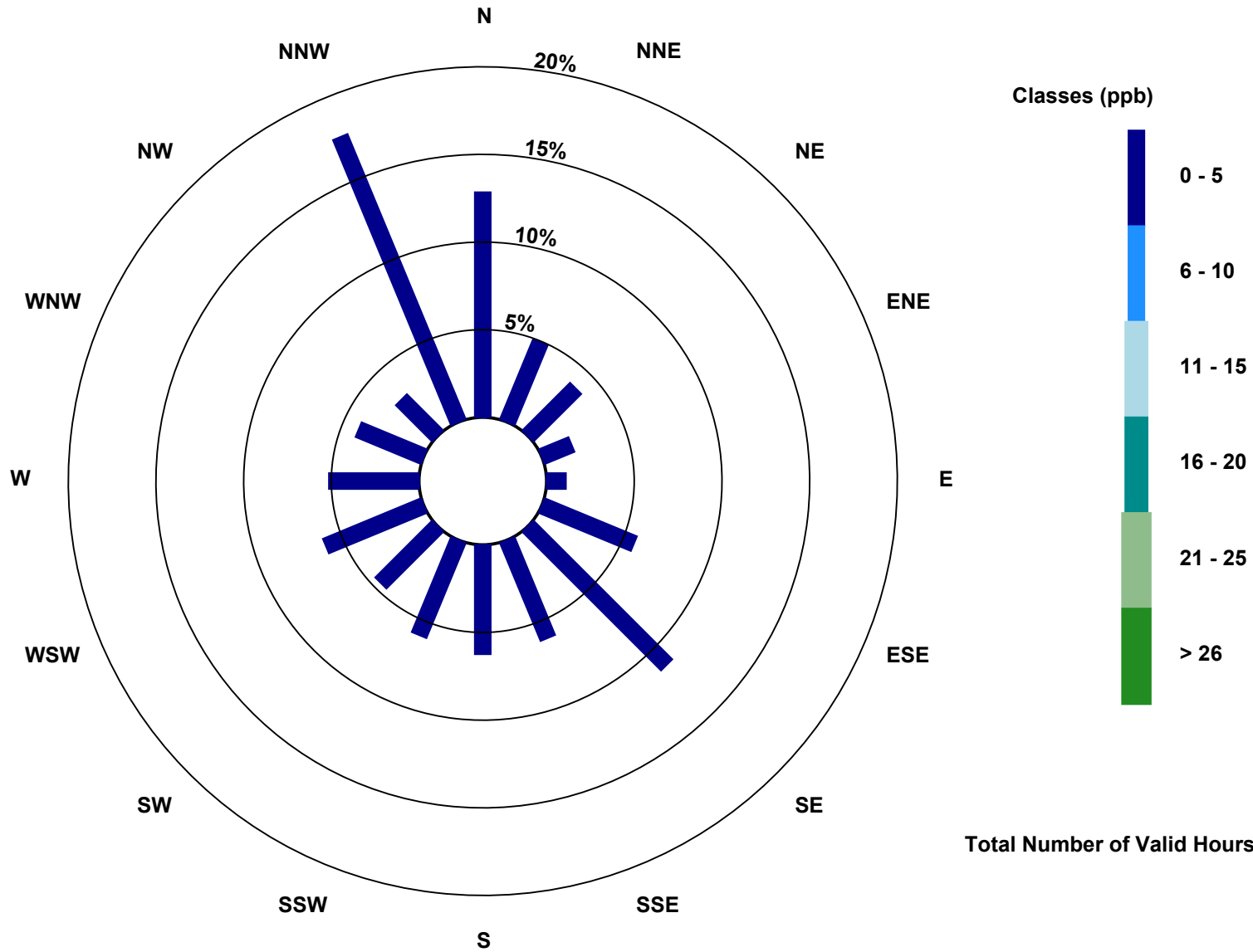
Total Number of Valid Hours: 545

Total Number of Hours: 672

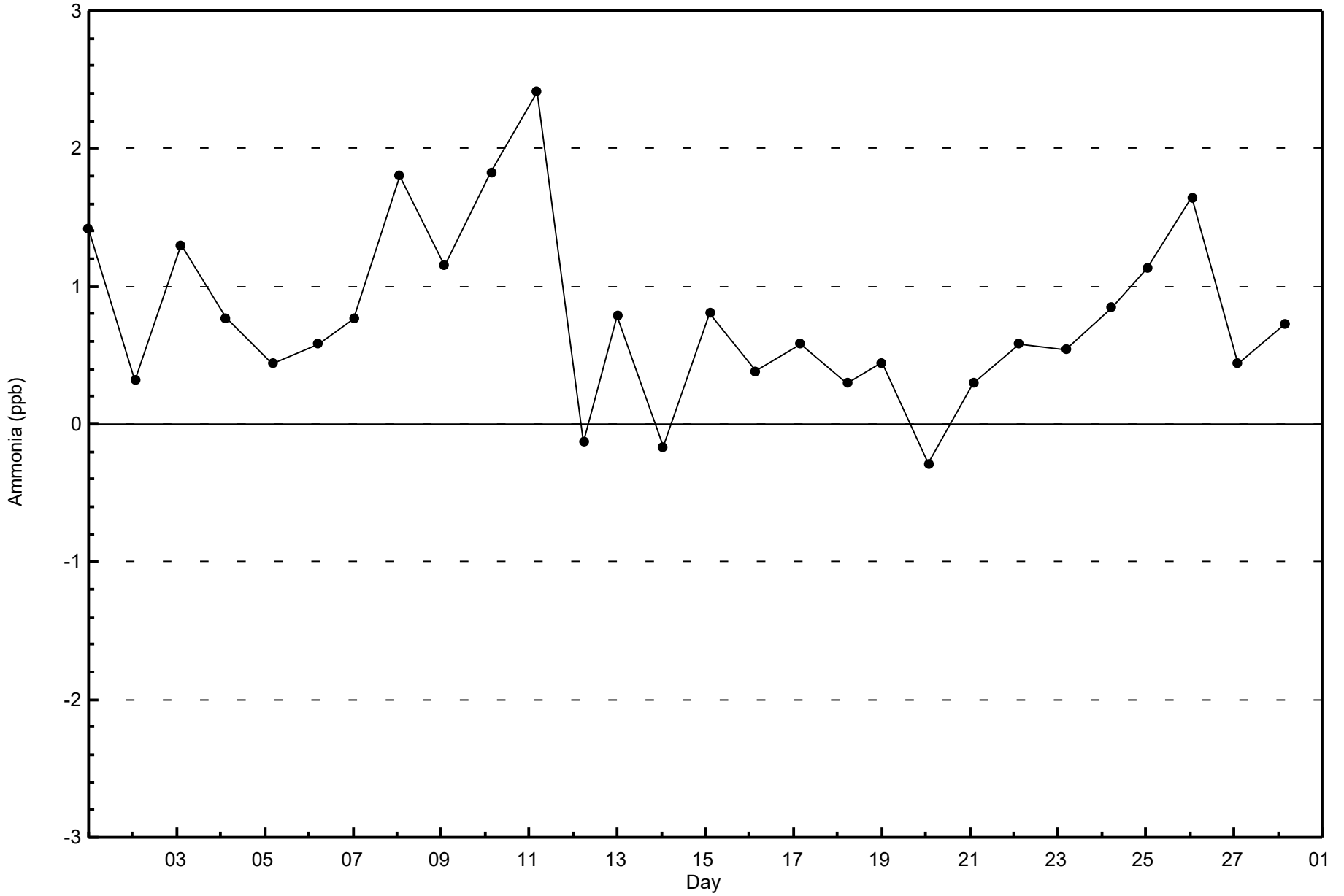


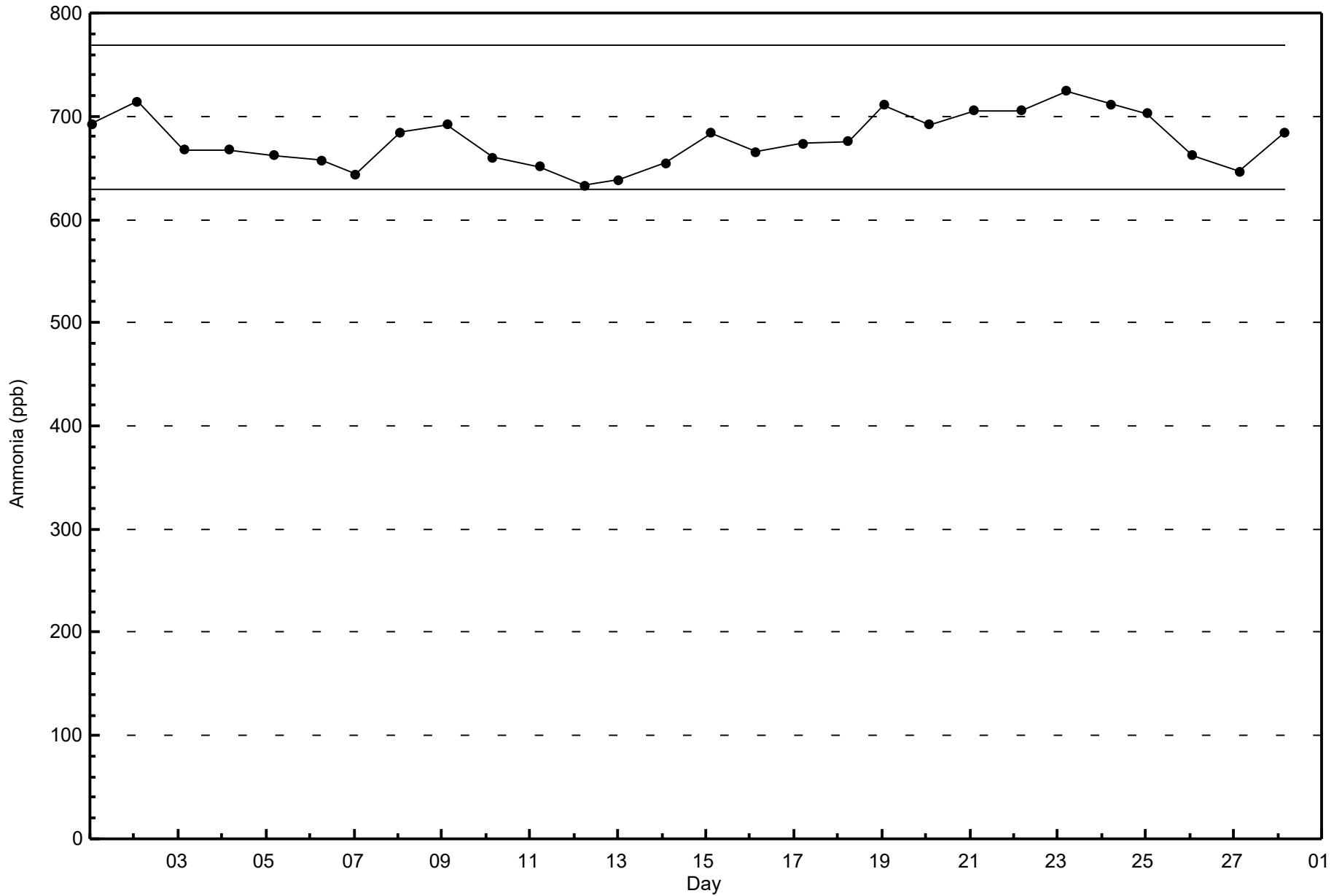
Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Ammonia (NH<sub>3</sub>) - ppb  
Patricia McInnes



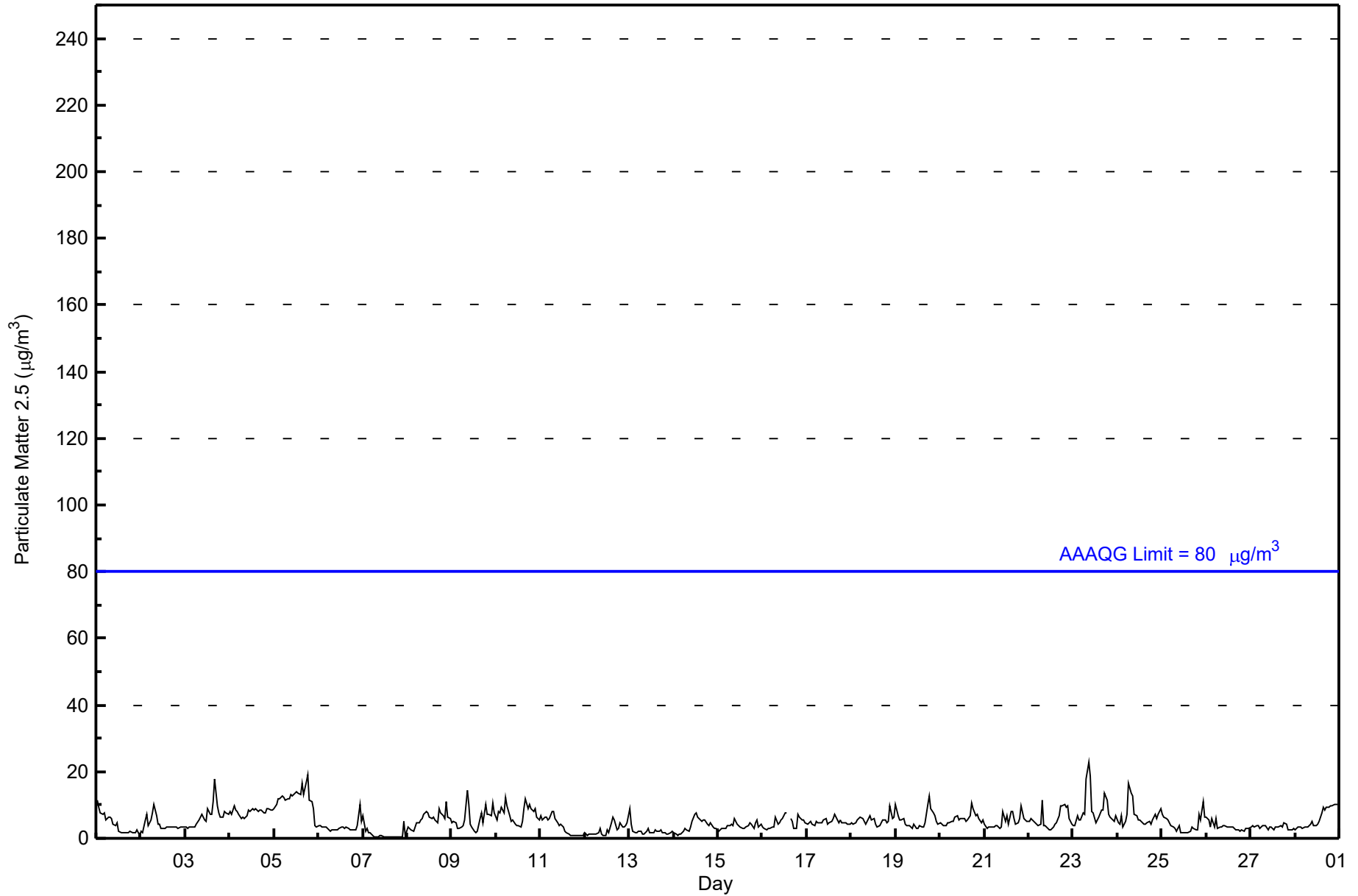








| Number of Exceedences (AAAQO):  |                               | 1-hr: 0   | 24-hr: 0 | Hours in Service: 672 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                                 |      | 672  |      |      |                 |               |               |
|---|-------------------------------|---|----------|-----------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|---------------------------------|------|------|------|------|-----------------|---------------|---------------|
| Maximum Value: 23.0 µg/m <sup>3</sup> on Feb 23 09:00   |                               | Maximum Daily Average: 12.0 µg/m <sup>3</sup> on Feb 5  |          |                       |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Hours of Data: 671              |      |      |      |      |                 |               |               |
| Minimum Value: 0.4 µg/m <sup>3</sup> on Feb 7 21:00   |                               | Minimum Daily Average: 1.3 µg/m <sup>3</sup> on Feb 7   |          |                       |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Hours of Missing Data: 1        |      |      |      |      |                 |               |               |
| Maximum Diurnal Average: 6.1 µg/m <sup>3</sup> at hour 19   |                               | Minimum Diurnal Average: 4.3 µg/m <sup>3</sup> at hour 14   |          |                       |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Hours of Calibration: 1         |      |      |      |      |                 |               |               |
| Monthly Average: 5.15 µg/m <sup>3</sup>   |                               | Percentiles: P <sub>1</sub> = 0.4 P <sub>10</sub> = 1.8 Q <sub>1</sub> = 3.1 Median = 4.5 Q <sub>3</sub> = 6.6 P <sub>90</sub> = 9.1 P <sub>99</sub> = 16.4 |          |                       |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Percent Operational Time: 100.0 |      |      |      |      |                 |               |               |
| Day   | Hourly Period Ending At (MST) |   |          |                       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                                 |      |      |      |      |                 | Daily Average | Daily Maximum |
|   | 1                             | 2   | 3        | 4                     | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19                              | 20   | 21   | 22   | 23   | 24              |               |               |
| 1-Feb   | 11.4                          | 9.2   | 7.6      | 7.2                   | 7.7  | 5.3  | 6.2  | 6.4  | 5.7  | 4.4  | 3.8  | 4.5  | 2.3  | 1.7  | 1.7  | 1.7  | 1.7  | 2.1  | 1.6                             | 1.5  | 1.5  | 2.4  | 1.0  | 4.2             | 11.4          |               |
| 2-Feb   | 2.2                           | 1.8   | 5.6      | 7.1                   | 3.6  | 5.6  | 7.6  | 10.2 | 6.8  | 4.1  | 4.3  | 3.0  | 2.8  | 3.0  | 3.3  | 3.3  | 3.4  | 3.3  | 3.4                             | 3.2  | 3.2  | 3.3  | 3.4  | 3.5             | 4.2           | 10.2          |
| 3-Feb   | 3.3                           | 3.1   | 3.2      | 3.3                   | 3.2  | 3.6  | 4.0  | 5.5  | 6.5  | 7.3  | 5.6  | 5.2  | 9.0  | 7.3  | 7.4  | 10.9 | 17.6 | 9.6  | 7.5                             | 6.5  | 6.3  | 7.9  | 7.4  | 7.0             | 6.6           | 17.6          |
| 4-Feb   | 8.0                           | 7.3   | 9.8      | 8.6                   | 8.1  | 7.3  | 6.1  | 6.2  | 6.1  | 6.8  | 8.6  | 8.0  | 8.8  | 8.6  | 8.8  | 8.1  | 8.3  | 8.4  | 7.6                             | 7.7  | 8.8  | 8.9  | 8.5  | 8.3             | 8.0           | 9.8           |
| 5-Feb   | 8.7                           | 10.1  | 11.8     | 11.7                  | 12.6 | 12.1 | 11.6 | 12.0 | 12.0 | 13.3 | 12.9 | 13.4 | 14.0 | 13.4 | 13.1 | 16.4 | 13.3 | 16.9 | 19.1                            | 11.4 | 11.2 | 9.1  | 3.9  | 3.4             | 12.0          | 19.1          |
| 6-Feb   | 3.7                           | 3.6   | 3.6      | 3.4                   | 3.3  | 3.0  | 2.3  | 2.5  | 2.6  | 2.5  | 2.4  | 3.2  | 3.6  | 3.5  | 3.1  | 3.2  | 3.1  | 2.4  | 2.7                             | 2.4  | 2.7  | 3.7  | 10.2 | 4.9             | 3.4           | 10.2          |
| 7-Feb   | 6.8                           | 2.3   | 2.9      | 1.8                   | 1.6  | 0.9  | 0.6  | 0.4  | 0.6  | 0.7  | 0.7  | 0.6  | 0.6  | 0.5  | 0.4  | 0.4  | 0.4  | 0.4  | 0.4                             | 0.4  | 0.4  | 0.6  | 5.1  | 1.0             | 1.3           | 6.8           |
| 8-Feb   | 3.5                           | 3.0   | 2.7      | 2.3                   | 3.4  | 4.5  | 4.8  | 5.3  | 5.9  | 7.2  | 8.1  | 7.4  | 6.4  | 6.0  | 6.4  | 5.6  | 4.7  | 8.9  | 7.7                             | 6.7  | 6.0  | 10.8 | 6.3  | 5.8             | 5.8           | 10.8          |
| 9-Feb   | 4.9                           | 5.1   | 4.5      | 2.9                   | 3.0  | 3.5  | 3.7  | 5.4  | 14.5 | 10.1 | 4.1  | 3.5  | 1.9  | 1.7  | 2.1  | 6.1  | 7.7  | 4.5  | 10.3                            | 7.1  | 7.4  | 6.8  | 10.7 | 7.6             | 5.8           | 14.5          |
| 10-Feb  | 5.4                           | 8.1   | 7.4      | 9.3                   | 7.8  | 12.1 | 9.8  | 6.6  | 5.2  | 5.4  | 4.4  | 3.7  | 3.7  | 3.4  | 5.3  | 8.9  | 11.7 | 9.0  | 10.1                            | 8.8  | 8.1  | 8.9  | 6.5  | 5.7             | 7.3           | 12.1          |
| 11-Feb  | 7.0                           | 5.4   | 6.2      | 6.5                   | 5.5  | 5.9  | 8.1  | 8.1  | 5.8  | 4.5  | 3.8  | 4.2  | 3.4  | 2.1  | 1.6  | 1.1  | 0.8  | 1.0  | 1.0                             | 0.8  | 0.7  | 0.9  | 0.8  | 0.9             | 3.6           | 8.1           |
| 12-Feb  | 1.7                           | 1.0   | 1.2      | 1.2                   | 1.3  | 1.3  | 1.3  | 1.8  | 3.0  | 1.1  | 1.0  | 1.0  | 2.8  | 1.7  | 4.5  | 6.2  | 5.3  | 2.6  | 3.1                             | 4.5  | 3.5  | 3.3  | 3.7  | 4.8             | 2.6           | 6.2           |
| 13-Feb  | 8.8                           | 4.2   | 2.1      | 1.8                   | 1.9  | 2.0  | 2.0  | 1.2  | 1.2  | 2.2  | 3.0  | 1.8  | 1.8  | 1.8  | 2.7  | 2.2  | 2.2  | 2.5  | 1.7                             | 1.5  | 1.2  | 1.2  | 1.7  | 2.0             | 2.3           | 8.8           |
| 14-Feb  | 1.6                           | 1.2   | 1.0      | 1.4                   | 1.3  | 1.9  | 2.8  | 2.7  | 2.3  | 3.3  | 5.0  | 7.3  | 7.7  | 6.4  | 5.4  | 5.0  | 5.5  | 5.7  | 4.4                             | 3.8  | 4.5  | 3.4  | 2.9  | 2.8             | 3.7           | 7.7           |
| 15-Feb  | 2.2                           | 2.7   | 3.0      | 2.8                   | 2.9  | 3.9  | 3.7  | 4.0  | 3.9  | 5.8  | 4.3  | 3.6  | 3.3  | 2.9  | 2.9  | 3.6  | 3.8  | 4.8  | 4.2                             | 3.0  | 4.8  | 5.5  | 3.3  | 4.2             | 3.7           | 5.8           |
| 16-Feb  | 3.4                           | 3.0   | 2.6      | 2.8                   | 2.9  | 3.2  | 3.2  | 6.2  | 4.2  | 4.8  | 5.7  | 5.9  | 7.4  | 7.6  | C    | 6.0  | 5.0  | 2.8  | 3.1                             | 7.1  | 6.1  | 5.6  | 5.7  | 4.6             | 4.7           | 7.6           |
| 17-Feb  | 4.3                           | 4.7   | 4.9      | 4.3                   | 4.0  | 5.2  | 4.6  | 4.7  | 4.6  | 5.5  | 6.0  | 4.0  | 4.5  | 5.0  | 6.0  | 7.1  | 6.2  | 4.7  | 5.5                             | 4.7  | 4.8  | 4.8  | 4.3  | 4.4             | 4.9           | 7.1           |
| 18-Feb  | 4.5                           | 4.3   | 4.7      | 5.7                   | 5.7  | 6.4  | 5.8  | 4.9  | 4.4  | 6.1  | 6.6  | 5.4  | 6.0  | 4.2  | 3.6  | 3.7  | 4.5  | 5.3  | 5.7                             | 4.8  | 5.1  | 9.6  | 6.1  | 6.4             | 5.4           | 9.6           |
| 19-Feb  | 10.1                          | 6.9   | 5.5      | 5.6                   | 5.9  | 4.2  | 3.8  | 3.6  | 3.2  | 3.0  | 4.3  | 2.9  | 2.9  | 3.7  | 3.4  | 3.4  | 4.7  | 10.0 | 12.8                            | 8.9  | 7.8  | 6.9  | 5.2  | 4.2             | 5.5           | 12.8          |
| 20-Feb  | 4.5                           | 4.1   | 3.6      | 3.9                   | 4.6  | 4.8  | 5.0  | 5.1  | 6.2  | 6.8  | 5.6  | 6.1  | 5.9  | 6.1  | 5.3  | 5.6  | 6.9  | 10.8 | 8.9                             | 6.7  | 7.2  | 5.9  | 4.9  | 5.4             | 5.8           | 10.8          |
| 21-Feb  | 4.2                           | 3.1   | 3.4      | 3.5                   | 3.5  | 3.6  | 3.9  | 4.0  | 3.1  | 3.5  | 7.9  | 5.2  | 6.9  | 4.4  | 7.9  | 8.0  | 5.8  | 4.1  | 4.5                             | 5.9  | 9.7  | 5.7  | 5.6  | 5.1             | 5.1           | 9.7           |
| 22-Feb  | 5.3                           | 6.0   | 5.6      | 4.9                   | 4.1  | 4.0  | 4.1  | 11.4 | 3.7  | 3.6  | 2.9  | 2.7  | 2.5  | 3.3  | 4.1  | 4.5  | 6.6  | 9.5  | 9.7                             | 10.1 | 9.3  | 9.5  | 5.9  | 4.2             | 5.7           | 11.4          |
| 23-Feb  | 4.0                           | 3.9   | 6.9      | 5.5                   | 5.5  | 7.5  | 7.0  | 17.8 | 23.0 | 18.6 | 8.2  | 7.6  | 4.8  | 5.3  | 6.5  | 8.6  | 8.5  | 13.5 | 11.6                            | 7.1  | 6.6  | 5.4  | 5.3  | 6.8             | 8.6           | 23.0          |
| 24-Feb  | 4.8                           | 4.4   | 6.8      | 3.5                   | 5.1  | 7.3  | 16.4 | 13.4 | 12.8 | 7.4  | 6.7  | 5.6  | 5.4  | 4.5  | 4.1  | 4.4  | 4.8  | 5.3  | 4.0                             | 5.7  | 7.0  | 6.0  | 7.2  | 9.1             | 6.7           | 16.4          |
| 25-Feb  | 7.2                           | 6.5   | 6.0      | 5.3                   | 4.6  | 4.0  | 3.5  | 2.8  | 2.3  | 3.8  | 1.8  | 1.6  | 1.6  | 1.6  | 1.5  | 2.0  | 3.4  | 2.9  | 2.6                             | 2.7  | 7.3  | 5.3  | 11.1 | 6.3             | 4.1           | 11.1          |
| 26-Feb  | 6.2                           | 5.3   | 3.3      | 5.9                   | 3.2  | 5.7  | 2.8  | 3.4  | 3.6  | 3.9  | 3.6  | 3.4  | 3.4  | 3.3  | 3.3  | 2.9  | 2.3  | 2.4  | 2.3                             | 2.3  | 2.1  | 2.9  | 3.1  | 3.0             | 3.5           | 6.2           |
| 27-Feb  | 3.5                           | 3.6   | 3.2      | 3.7                   | 3.8  | 3.1  | 3.9  | 4.0  | 3.9  | 2.7  | 3.2  | 3.4  | 2.6  | 3.5  | 3.6  | 3.5  | 3.8  | 3.4  | 4.5                             | 4.1  | 2.7  | 2.6  | 2.8  | 3.1             | 3.4           | 4.5           |
| 28-Feb  | 2.6                           | 3.5   | 3.3      | 3.2                   | 3.2  | 3.2  | 3.4  | 3.3  | 4.3  | 5.3  | 3.9  | 3.6  | 4.3  | 5.1  | 7.8  | 9.3  | 8.6  | 9.4  | 9.5                             | 9.6  | 9.8  | 10.2 | 10.2 | 10.2            | 6.1           | 10.2          |
| 5.1 4.5 4.7 4.6 4.4 4.8 5.1 5.8 5.8 5.5 4.9 4.6 4.7 4.3 4.7 5.4 5.7 5.9 6.1 5.3 5.6 5.6 5.5 4.9                         |                               |   |          |                       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                                 |      |      |      |      | Diurnal Average |               |               |
| 11.4 10.1 11.8 11.7 12.6 12.1 16.4 17.8 23.0 18.6 12.9 13.4 14.0 13.4 13.1 16.4 17.6 16.9 19.1 11.4 11.2 10.8 11.1 10.2 |                               |   |          |                       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                                 |      |      |      |      | Diurnal Maximum |               |               |
| C - Calibration   |                               |   |          |                       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                                 |      |      |      |      |                 |               |               |
| Alberta Ambient Air Quality Guideline/Objectives: 1-hr 80 µg/m <sup>3</sup> 24-hr 29 µg/m <sup>3</sup>                  |                               |   |          |                       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                                 |      |      |      |      |                 |               |               |





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Particulate Matter 2.5 (PM<sub>2.5</sub>) -  $\mu\text{g}/\text{m}^3$**   
**Patricia McInnes - February 2023**

| <b>Concentration Ranges (<math>\mu\text{g}/\text{m}^3</math>)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---|------------------------|----------|---------------------|
| 0 - 5   | 417                    | 62.15    | 62.15               |
| 6 - 15  | 246                    | 36.66    | 98.81               |
| 16 - 25   | 8                      | 1.19     | 100.00              |
| 26 - 80   | 0                      | 0.00     | 100.00              |
| > 81.0  | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 671

Total Number of Hours: 672



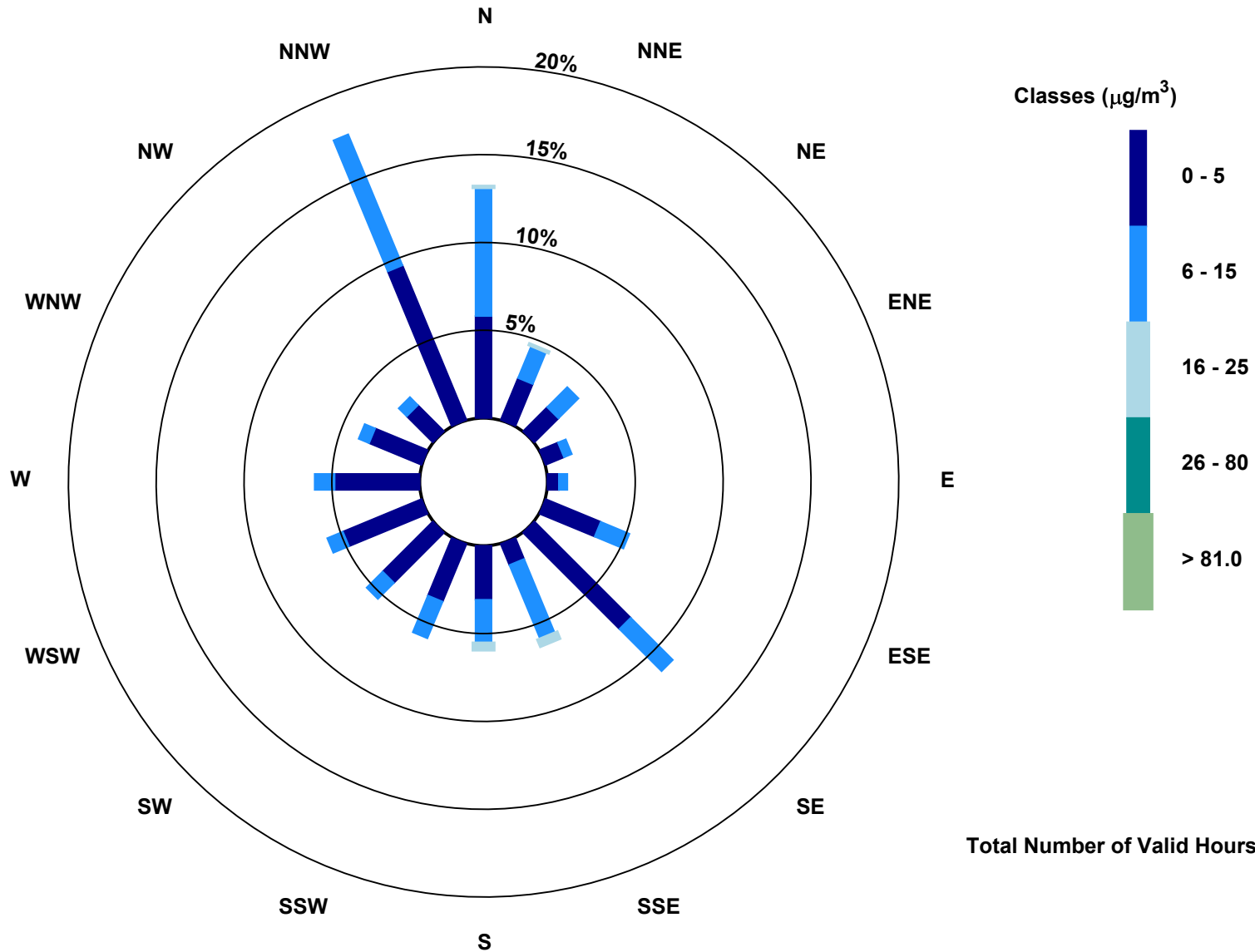
**Wood Buffalo Environmental Association**  
**Frequency Distribution**

**Particulate Matter 2.5 (PM<sub>2.5</sub>) - μg/m<sup>3</sup>**  
**Patricia McInnes - February 2023**

| Concentration<br>Ranges (μg/m <sup>3</sup> ) | Wind Direction |     |    |     |   |     |    |     |    |     |    |     |    |     |    |     | Totals |
|--|----------------|-----|----|-----|---|-----|----|-----|----|-----|----|-----|----|-----|----|-----|--------|
|  | N              | NNE | NE | ENE | E | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |        |
| 0 - 5  | 36             | 16  | 12 | 7   | 4 | 21  | 48 | 8   | 19 | 22  | 25 | 30  | 30 | 20  | 13 | 59  | 370    |
| 6 - 15                                       | 45             | 12  | 10 | 3   | 3 | 11  | 21 | 28  | 15 | 14  | 8  | 6   | 7  | 4   | 4  | 50  | 241    |
| 16 - 25                                      | 1              | 1   | 0  | 0   | 0 | 0   | 0  | 3   | 3  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 8      |
| 26 - 80                                      | 0              | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| > 81.0                                       | 0              | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| <b>Totals</b>                                | 82             | 29  | 22 | 10  | 7 | 32  | 69 | 39  | 37 | 36  | 33 | 36  | 37 | 24  | 17 | 109 | 619    |

Total Number of Valid Hours: 619

Total Number of Hours: 672





**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

**Ambient Temperature (AT) - C**  
**Patricia McInnes - February 2023**

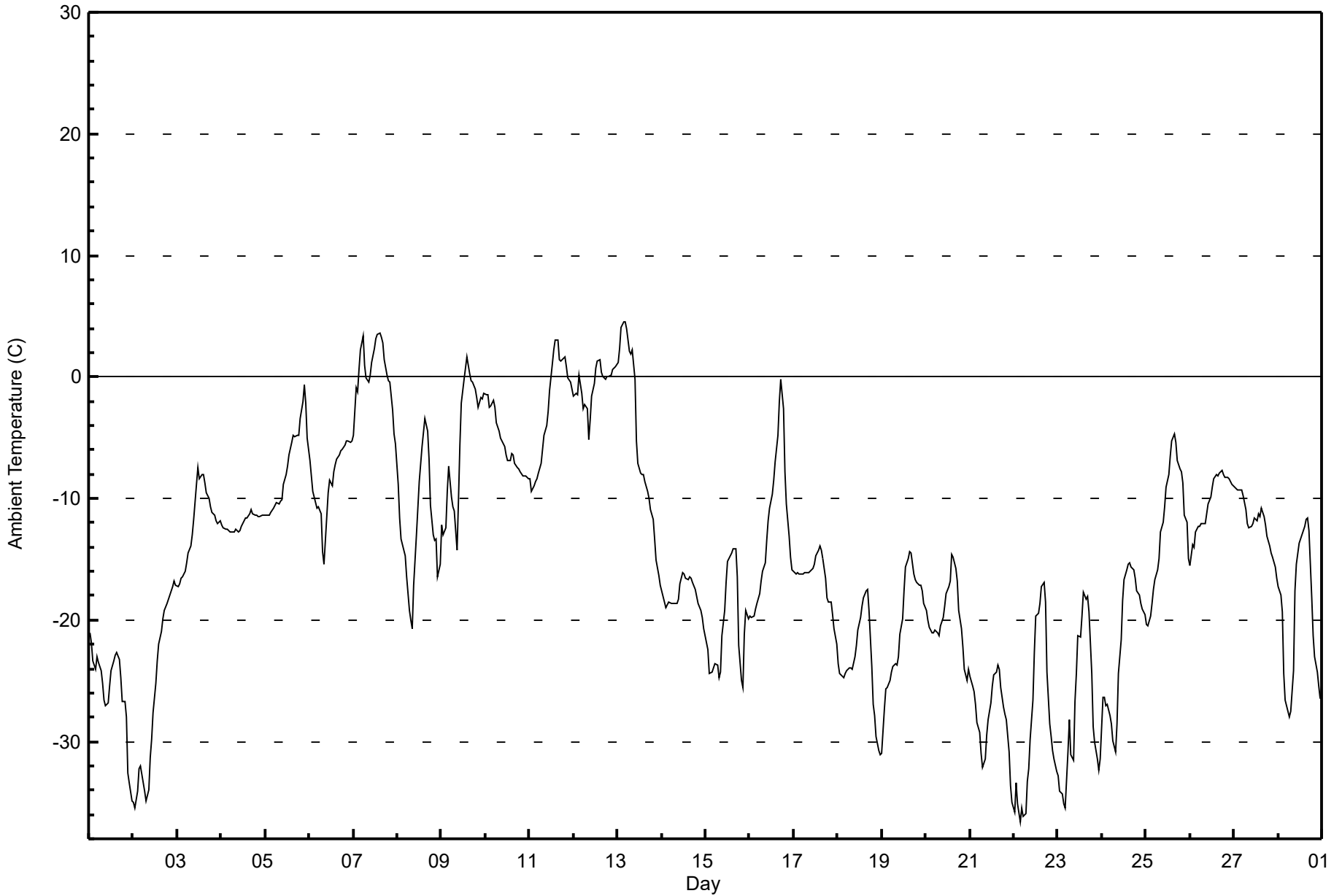
| Maximum Value: 4.6 C on Feb 13 04:00        |                               | Maximum Daily Average: 0.3 C on Feb 7  |       | Hours in Service: 672           |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |               |                 |  |
|---|-------------------------------|--|-------|---------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------------|-----------------|--|
| Minimum Value: -36.6 C on Feb 22 04:00      |                               | Minimum Daily Average: -28.4 C on Feb 22   |       | Hours of Data: 672              |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |               |                 |  |
| Maximum Diurnal Average: -10.5 C at hour 16 |                               | Minimum Diurnal Average: -17.6 C at hour 8   |       | Hours of Missing Data: 0        |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |               |                 |  |
| Monthly Average: -14.77 C                   |                               | Percentiles: P <sub>1</sub> = -35.2 P <sub>10</sub> = -27.6 Q <sub>1</sub> = -21.1 Median = -14.7 Q <sub>3</sub> = -8.1 P <sub>90</sub> = -1.3 P <sub>99</sub> = 3.3 |       | Hours of Calibration: 0         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |               |                 |  |
|   |                               |  |       | Percent Operational Time: 100.0 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |               |                 |  |
| Day   | Hourly Period Ending At (MST) |  |       |                                 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Daily Average | Daily Maximum   |  |
|   | 1                             | 2  | 3     | 4                               | 5     | 6     | 7     | 8     | 9     | 10    | 11    | 12    | 13    | 14    | 15    | 16    | 17    | 18    | 19    | 20    | 21    | 22    | 23    | 24    |               |                 |  |
| 1-Feb                                       | -21.0                         | -21.9  | -23.4 | -24.0                           | -23.0 | -23.5 | -24.2 | -25.2 | -26.6 | -27.0 | -26.8 | -25.5 | -24.2 | -23.4 | -22.9 | -22.7 | -23.3 | -24.7 | -26.7 | -26.7 | -28.0 | -32.6 | -33.3 | -34.8 | -25.6         | -21.0           |  |
| 2-Feb                                       | -35.1                         | -35.5  | -34.0 | -32.3                           | -32.0 | -33.4 | -34.0 | -34.9 | -34.0 | -31.3 | -29.8 | -27.6 | -25.2 | -23.3 | -22.0 | -20.9 | -19.9 | -19.2 | -18.6 | -18.3 | -17.9 | -17.3 | -16.8 | -17.2 | -26.3         | -16.8           |  |
| 3-Feb                                       | -17.2                         | -17.0  | -16.6 | -16.4                           | -16.0 | -15.3 | -14.5 | -13.9 | -12.9 | -11.7 | -8.8  | -7.4  | -8.3  | -8.1  | -8.1  | -8.7  | -9.5  | -10.0 | -10.7 | -11.2 | -11.3 | -11.8 | -12.1 | -11.9 | -12.1         | -7.4            |  |
| 4-Feb                                       | -12.1                         | -12.4  | -12.6 | -12.5                           | -12.6 | -12.8 | -12.8 | -12.8 | -12.6 | -12.7 | -12.6 | -12.3 | -11.8 | -11.6 | -11.6 | -11.2 | -11.0 | -11.3 | -11.3 | -11.3 | -11.5 | -11.5 | -11.3 | -11.3 | -12.0         | -11.0           |  |
| 5-Feb                                       | -11.4                         | -11.4  | -11.4 | -11.2                           | -10.8 | -10.5 | -10.4 | -10.5 | -10.3 | -10.1 | -8.9  | -8.0  | -7.4  | -6.4  | -5.4  | -4.8  | -4.9  | -4.9  | -4.8  | -3.4  | -2.0  | -0.7  | -2.2  | -5.0  | -7.4          | -0.7            |  |
| 6-Feb                                       | -6.9                          | -8.2   | -9.4  | -10.3                           | -10.8 | -10.7 | -11.2 | -14.4 | -15.4 | -11.5 | -9.5  | -8.5  | -9.0  | -7.8  | -7.2  | -6.7  | -6.4  | -6.1  | -6.0  | -5.6  | -5.3  | -5.3  | -5.4  | -5.3  | -8.5          | -5.3            |  |
| 7-Feb                                       | -4.8                          | -0.9   | -1.2  | 0.6                             | 2.2   | 3.4   | 1.0   | -0.1  | -0.4  | 0.1   | 1.2   | 2.4   | 3.1   | 3.5   | 3.6   | 3.3   | 2.8   | 1.5   | 0.1   | -0.4  | -0.5  | -2.7  | -4.7  | -5.6  | 0.3           | 3.6             |  |
| 8-Feb                                       | -8.9                          | -11.6  | -13.3 | -14.3                           | -14.7 | -16.4 | -19.2 | -20.1 | -20.7 | -17.1 | -13.0 | -10.8 | -8.6  | -5.8  | -4.5  | -3.5  | -4.4  | -6.8  | -10.6 | -13.0 | -13.4 | -13.3 | -16.4 | -15.4 | -12.3         | -3.5            |  |
| 9-Feb                                       | -12.2                         | -12.9  | -12.5 | -9.5                            | -7.3  | -9.9  | -10.7 | -11.1 | -14.3 | -10.1 | -5.6  | -2.1  | -0.2  | 0.7   | 1.7   | 0.3   | -0.3  | -0.4  | -1.0  | -1.7  | -2.5  | -1.7  | -1.9  | -1.4  | -5.3          | 1.7             |  |
| 10-Feb                                      | -1.5                          | -1.5   | -2.5  | -2.4                            | -2.0  | -2.5  | -3.7  | -4.5  | -5.0  | -5.3  | -5.7  | -6.4  | -6.8  | -6.9  | -6.3  | -6.4  | -7.1  | -7.4  | -7.6  | -7.8  | -8.2  | -8.1  | -8.2  | -8.4  | -5.5          | -1.5            |  |
| 11-Feb                                      | -8.3                          | -9.4   | -9.0  | -8.6                            | -8.4  | -7.9  | -7.1  | -6.0  | -4.8  | -4.0  | -2.9  | -1.1  | 1.1   | 2.2   | 3.0   | 3.1   | 1.5   | 1.3   | 1.6   | 1.6   | 0.8   | -0.1  | -0.4  | -1.0  | -2.6          | 3.1             |  |
| 12-Feb                                      | -1.5                          | -1.3   | -1.4  | 0.2                             | -1.3  | -2.6  | -2.2  | -2.6  | -5.1  | -3.5  | -1.5  | -0.6  | 0.7   | 1.2   | 1.4   | 0.4   | 0.1   | -0.2  | 0.0   | 0.0   | 0.1   | 0.6   | 0.7   | 0.8   | -0.7          | 1.4             |  |
| 13-Feb                                      | 1.2                           | 2.4  | 4.1   | 4.6                             | 4.6   | 3.9   | 2.1   | 1.9   | 2.2   | -0.2  | -5.2  | -7.2  | -7.9  | -8.0  | -8.0  | -8.6  | -9.4  | -10.0 | -10.9 | -11.7 | -13.4 | -15.1 | -16.3 | -17.1 | -5.1          | 4.6             |  |
| 14-Feb                                      | -17.6                         | -18.6  | -19.0 | -18.8                           | -18.6 | -18.6 | -18.6 | -18.6 | -18.7 | -18.3 | -17.0 | -16.2 | -16.2 | -16.5 | -16.7 | -16.4 | -16.5 | -17.0 | -17.5 | -18.0 | -18.6 | -19.2 | -19.7 | -20.7 | -18.0         | -16.2           |  |
| 15-Feb                                      | -21.8                         | -22.5  | -24.4 | -24.3                           | -23.9 | -23.6 | -23.7 | -24.7 | -24.3 | -21.3 | -19.2 | -16.9 | -15.1 | -14.7 | -14.4 | -14.1 | -14.2 | -16.4 | -22.2 | -25.0 | -25.6 | -21.2 | -19.3 | -19.9 | -20.5         | -14.1           |  |
| 16-Feb                                      | -19.6                         | -19.7  | -19.7 | -19.1                           | -18.6 | -17.9 | -16.8 | -16.0 | -15.3 | -13.5 | -11.9 | -10.8 | -9.6  | -8.5  | -7.0  | -4.8  | -2.1  | -0.2  | -2.6  | -7.8  | -10.5 | -13.1 | -14.9 | -15.9 | -12.3         | -0.2            |  |
| 17-Feb                                      | -16.1                         | -16.2  | -16.1 | -16.2                           | -16.2 | -16.2 | -16.2 | -16.1 | -16.1 | -16.0 | -15.8 | -15.4 | -14.7 | -14.2 | -13.9 | -14.3 | -15.0 | -16.6 | -18.1 | -18.5 | -18.5 | -19.6 | -20.8 | -22.0 | -16.6         | -13.9           |  |
| 18-Feb                                      | -23.6                         | -24.4  | -24.6 | -24.8                           | -24.4 | -24.1 | -24.0 | -24.0 | -24.0 | -23.0 | -22.1 | -20.8 | -19.8 | -18.9 | -18.2 | -17.6 | -17.5 | -19.2 | -23.8 | -27.0 | -27.8 | -29.6 | -30.7 | -31.1 | -23.5         | -17.5           |  |
| 19-Feb                                      | -30.9                         | -27.3  | -25.7 | -25.5                           | -24.9 | -24.2 | -23.8 | -23.6 | -23.7 | -23.0 | -21.1 | -19.9 | -17.6 | -15.7 | -14.9 | -14.4 | -14.4 | -16.2 | -16.6 | -16.9 | -17.2 | -17.1 | -17.5 | -18.6 | -20.5         | -14.4           |  |
| 20-Feb                                      | -19.2                         | -20.0  | -20.6 | -21.0                           | -21.1 | -20.9 | -21.1 | -21.3 | -20.5 | -19.8 | -18.9 | -17.9 | -17.3 | -16.7 | -14.6 | -14.9 | -15.8 | -16.8 | -19.2 | -20.7 | -22.2 | -24.1 | -25.0 | -24.0 | -19.7         | -14.6           |  |
| 21-Feb                                      | -24.6                         | -25.5  | -25.8 | -26.9                           | -28.4 | -29.2 | -31.0 | -32.2 | -31.4 | -29.4 | -28.3 | -26.8 | -25.4 | -24.6 | -24.3 | -23.7 | -24.0 | -25.6 | -27.2 | -27.8 | -28.2 | -30.9 | -33.7 | -35.0 | -27.9         | -23.7           |  |
| 22-Feb                                      | -35.8                         | -33.4  | -35.2 | -36.6                           | -35.5 | -36.1 | -35.9 | -33.2 | -32.2 | -29.8 | -26.6 | -22.7 | -19.6 | -19.4 | -18.6 | -17.3 | -16.9 | -18.5 | -24.3 | -28.6 | -29.6 | -30.7 | -31.4 | -32.5 | -28.4         | -16.9           |  |
| 23-Feb                                      | -32.8                         | -34.0  | -34.3 | -35.1                           | -35.5 | -30.9 | -28.3 | -31.1 | -31.5 | -26.7 | -24.3 | -21.3 | -21.4 | -19.6 | -17.7 | -18.3 | -18.1 | -19.3 | -24.4 | -28.8 | -30.0 | -31.4 | -32.4 | -31.5 | -27.4         | -17.7           |  |
| 24-Feb                                      | -26.3                         | -26.4  | -27.1 | -27.0                           | -27.9 | -28.6 | -30.0 | -30.8 | -28.5 | -24.5 | -21.7 | -18.4 | -16.7 | -15.9 | -15.4 | -15.3 | -15.7 | -15.9 | -16.6 | -17.6 | -17.9 | -18.6 | -19.1 | -19.5 | -21.7         | -15.3           |  |
| 25-Feb                                      | -20.4                         | -20.5  | -19.6 | -18.7                           | -17.5 | -16.7 | -15.8 | -14.9 | -12.8 | -12.0 | -10.6 | -9.0  | -8.0  | -6.6  | -5.2  | -4.7  | -5.4  | -6.8  | -7.6  | -7.8  | -8.7  | -11.4 | -12.0 | -14.9 | -12.0         | -4.7            |  |
| 26-Feb                                      | -15.6                         | -13.8  | -14.1 | -12.7                           | -12.2 | -12.3 | -12.1 | -12.1 | -11.2 | -10.5 | -9.9  | -9.0  | -8.4  | -8.0  | -8.1  | -7.9  | -7.7  | -8.1  | -8.3  | -8.3  | -8.4  | -8.6  | -8.8  | -10.3 | -7.7          |                 |  |
| 27-Feb                                      | -9.0                          | -9.1   | -9.3  | -9.3                            | -9.2  | -9.7  | -10.9 | -12.0 | -12.4 | -12.3 | -12.0 | -11.6 | -11.8 | -11.3 | -11.5 | -10.8 | -11.5 | -12.2 | -13.1 | -13.9 | -14.5 | -14.8 | -15.7 | -16.6 | -11.9         | -9.0            |  |
| 28-Feb                                      | -17.3                         | -17.9  | -19.3 | -24.4                           | -26.6 | -27.5 | -28.0 | -27.5 | -24.2 | -17.6 | -15.4 | -13.7 | -13.3 | -13.0 | -12.3 | -11.7 | -11.6 | -12.6 | -18.2 | -21.3 | -23.0 | -24.2 | -25.5 | -26.4 | -19.7         | -11.6           |  |
|   |                               | -16.8  | -16.8 | -17.1                           | -17.0 | -16.9 | -17.0 | -17.3 | -17.6 | -17.4 | -15.8 | -14.5 | -13.1 | -12.2 | -11.3 | -10.7 | -10.5 | -10.7 | -11.4 | -13.1 | -14.2 | -14.8 | -15.5 | -16.2 | -16.8         | Diurnal Average |  |
|   |                               | 1.2  | 2.4   | 4.1                             | 4.6   | 4.6   | 3.9   | 2.1   | 1.9   | 2.2   | 0.1   | 1.2   | 2.4   | 3.1   | 3.5   | 3.6   | 3.3   | 2.8   | 1.5   | 1.6   | 1.6   | 0.8   | 0.6   | 0.7   | 0.8           | Diurnal Maximum |  |





**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Ambient Temperature (AT) - C**  
**Patricia McInnes - February 2023**





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Ambient Temperature (AT) - C  
Patricia McInnes - February 2023**

| <b>Concentration Ranges (C)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---------------------------------|------------------------|----------|---------------------|
| -50 - -20                       | 185                    | 27.53    | 27.53               |
| -20 - 0                         | 440                    | 65.48    | 93.01               |
| 0 - 10                          | 47                     | 6.99     | 100.00              |
| 10 - 20                         | 0                      | 0.00     | 100.00              |
| > 20                            | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 672

Total Number of Hours: 672



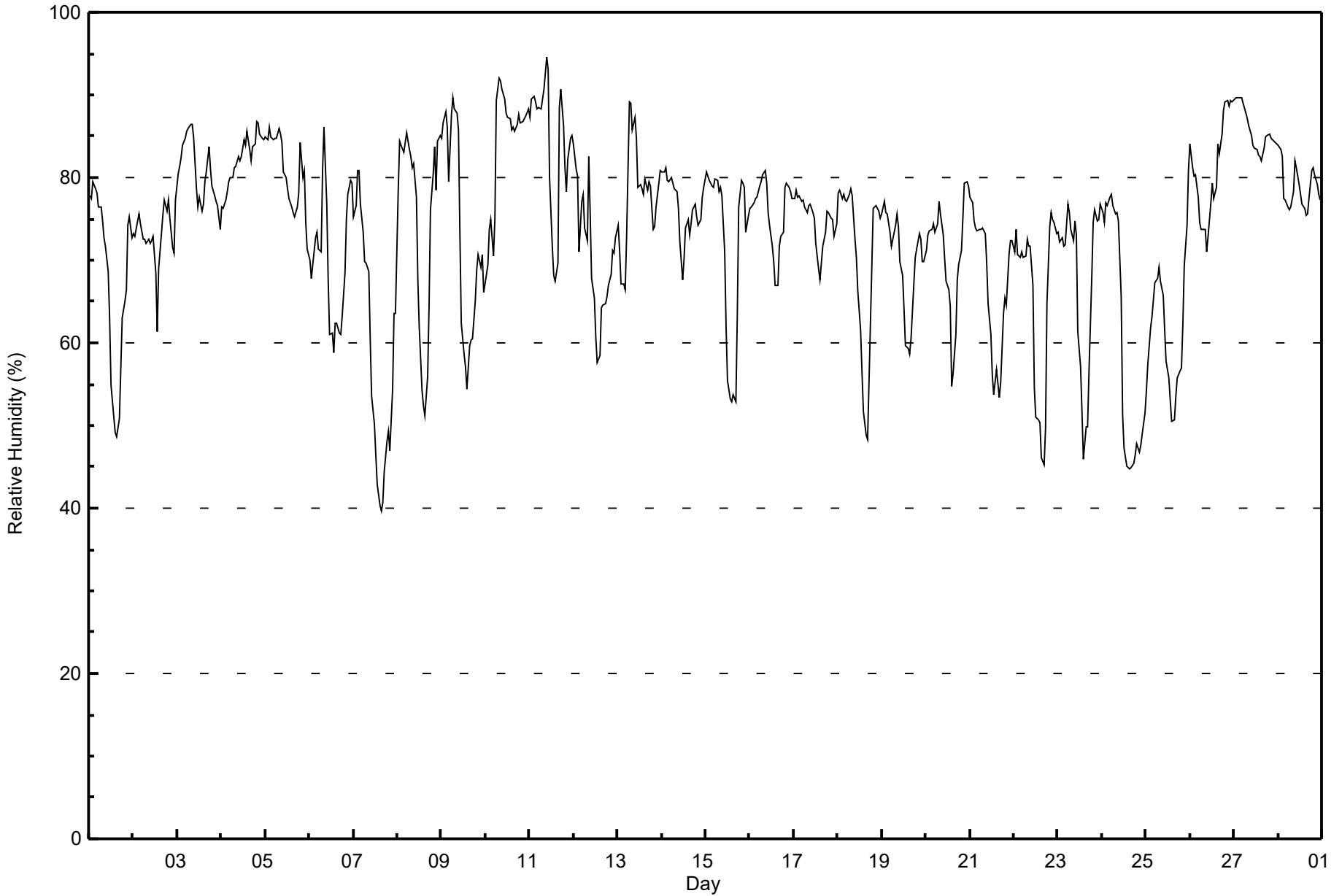
**Wood Buffalo Environmental Association**

**Summary of Hour Averages**

**Relative Humidity (RH) - %**

**Patricia McInnes - February 2023**

| <b>Maximum Value: 94.6 % on Feb 11 10:00</b> <b>Maximum Daily Average: 85.7 % on Feb 27</b>  |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | <b>Hours in Service: 672</b>    |      |      |               |               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
|--|-------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|---------------------------------|------|------|---------------|---------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----------------|--|
| <b>Minimum Value: 39.7 % on Feb 7 16:00</b> <b>Minimum Daily Average: 59.0 % on Feb 7</b>  |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | <b>Hours of Data: 672</b>       |      |      |               |               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| <b>Maximum Diurnal Average: 79.1 % at hour 9</b> <b>Minimum Diurnal Average: 63.2 % at hour 15</b>   |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | <b>Hours of Missing Data: 0</b> |      |      |               |               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| <b>Monthly Average: 73.40 %</b> <b>Percentiles: P<sub>1</sub> = 44.9 P<sub>10</sub> = 56.0 Q<sub>1</sub> = 68.9 Median = 75.6 Q<sub>3</sub> = 80.1 P<sub>90</sub> = 85.6 P<sub>99</sub> = 90.1</b> |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | <b>Hours of Calibration: 0</b>  |      |      |               |               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| <b>Percent Operational Time: 100.0</b>   |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                                 |      |      |               |               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| Day  | Hourly Period Ending At (MST) |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                                 |      |      | Daily Average | Daily Maximum |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
|  | 1                             | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20   | 21   | 22                              | 23   | 24   |               |               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 1-Feb  | 77.7                          | 77.4 | 79.5 | 78.6 | 78.2 | 76.5 | 76.4 | 74.8 | 72.7 | 71.7 | 68.7 | 63.0 | 55.0 | 51.0 | 49.2 | 48.6 | 50.8 | 56.9 | 63.1 | 65.0 | 66.4 | 74.2                            | 75.2 | 72.8 | 67.6          | 79.5          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 2-Feb  | 73.2                          | 72.9 | 74.7 | 75.7 | 74.5 | 72.5 | 72.5 | 72.0 | 72.6 | 72.1 | 72.4 | 72.9 | 68.5 | 61.4 | 69.0 | 73.2 | 75.4 | 77.4 | 75.9 | 77.3 | 75.0 | 71.5                            | 70.9 | 77.3 | 72.9          | 77.4          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 3-Feb  | 80.5                          | 81.3 | 82.4 | 83.9 | 84.8 | 85.6 | 86.0 | 86.4 | 86.4 | 84.7 | 78.7 | 76.4 | 77.7 | 75.9 | 76.8 | 79.4 | 80.7 | 83.7 | 81.0 | 79.0 | 77.7 | 77.1                            | 76.6 | 73.7 | 80.7          | 86.4          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 4-Feb  | 76.4                          | 76.3 | 77.4 | 78.2 | 79.5 | 80.0 | 80.0 | 81.1 | 81.4 | 82.5 | 82.0 | 82.5 | 84.5 | 83.9 | 85.6 | 83.3 | 82.0 | 83.8 | 84.1 | 86.7 | 86.6 | 85.3                            | 84.7 | 84.6 | 82.2          | 86.7          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 5-Feb  | 85.0                          | 84.7 | 86.1 | 85.0 | 84.6 | 84.7 | 84.8 | 86.0 | 85.3 | 84.3 | 80.7 | 80.0 | 78.6 | 77.5 | 76.5 | 75.8 | 75.2 | 76.5 | 78.2 | 84.3 | 79.9 | 80.8                            | 74.6 | 71.3 | 80.8          | 86.1          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 6-Feb  | 69.9                          | 67.8 | 69.5 | 72.7 | 73.5 | 71.4 | 71.0 | 80.8 | 86.1 | 76.7 | 67.6 | 61.0 | 61.2 | 58.9 | 62.3 | 62.3 | 61.2 | 61.1 | 63.3 | 68.4 | 74.9 | 78.0                            | 79.6 | 79.4 | 69.9          | 86.1          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 7-Feb  | 75.2                          | 76.6 | 80.9 | 80.8 | 76.9 | 73.4 | 69.9 | 69.6 | 68.7 | 60.6 | 53.6 | 50.2 | 46.5 | 42.8 | 40.4 | 39.7 | 40.6 | 44.4 | 48.2 | 49.3 | 47.0 | 54.4                            | 63.6 | 63.5 | 59.0          | 80.9          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 8-Feb  | 78.5                          | 84.3 | 83.9 | 83.0 | 84.3 | 85.5 | 83.4 | 82.5 | 81.2 | 81.8 | 77.7 | 67.7 | 61.9 | 54.2 | 52.3 | 51.2 | 56.0 | 64.4 | 76.0 | 80.5 | 83.7 | 78.5                            | 84.5 | 85.1 | 75.1          | 85.5          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 9-Feb  | 84.7                          | 86.5 | 87.9 | 86.1 | 79.5 | 87.6 | 89.6 | 88.2 | 87.9 | 85.8 | 73.4 | 62.4 | 58.6 | 57.1 | 54.3 | 59.6 | 60.3 | 60.5 | 65.1 | 68.9 | 70.7 | 69.1                            | 70.7 | 66.1 | 73.4          | 89.6          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 10-Feb   | 68.3                          | 69.5 | 73.7 | 74.9 | 70.5 | 75.0 | 89.4 | 92.1 | 91.7 | 90.7 | 89.5 | 87.8 | 87.4 | 87.2 | 85.7 | 86.0 | 85.6 | 86.5 | 87.6 | 86.6 | 86.9 | 87.1                            | 87.4 | 88.3 | 84.0          | 92.1          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 11-Feb   | 87.3                          | 89.6 | 89.9 | 89.1 | 88.4 | 88.4 | 88.3 | 89.5 | 90.7 | 94.6 | 93.1 | 80.0 | 71.6 | 68.2 | 67.4 | 69.6 | 88.4 | 90.8 | 86.2 | 81.1 | 78.4 | 82.2                            | 84.7 | 85.1 | 84.3          | 94.6          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 12-Feb   | 84.1                          | 81.1 | 80.2 | 71.0 | 77.1 | 78.0 | 74.0 | 72.4 | 82.6 | 75.6 | 67.8 | 65.5 | 60.7 | 57.6 | 58.5 | 64.2 | 64.5 | 64.8 | 65.5 | 66.9 | 68.3 | 71.1                            | 70.8 | 72.7 | 70.6          | 84.1          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 13-Feb   | 74.2                          | 71.1 | 67.1 | 67.1 | 66.4 | 72.8 | 89.1 | 89.0 | 85.8 | 87.3 | 84.8 | 78.8 | 79.2 | 78.6 | 78.0 | 79.9 | 78.4 | 79.5 | 79.0 | 73.8 | 74.0 | 76.4                            | 79.4 | 80.9 | 77.9          | 89.1          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 14-Feb   | 80.6                          | 80.7 | 81.1 | 79.7 | 79.5 | 79.9 | 79.3 | 78.7 | 78.4 | 76.2 | 72.1 | 67.6 | 70.3 | 73.9 | 74.9 | 73.1 | 74.3 | 76.2 | 76.8 | 75.3 | 74.3 | 75.0                            | 77.6 | 78.9 | 76.4          | 81.1          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 15-Feb   | 80.7                          | 80.2 | 79.7 | 79.1 | 78.7 | 79.9 | 79.6 | 78.4 | 78.9 | 77.8 | 71.0 | 61.9 | 55.5 | 53.3 | 52.9 | 53.8 | 52.9 | 63.4 | 76.5 | 79.7 | 79.3 | 78.9                            | 73.5 | 75.5 | 71.7          | 80.7          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 16-Feb   | 76.2                          | 76.5 | 77.0 | 77.5 | 77.7 | 78.9 | 79.6 | 80.4 | 80.9 | 79.2 | 75.8 | 74.2 | 71.7 | 69.8 | 67.0 | 67.0 | 71.8 | 72.9 | 73.4 | 78.9 | 79.3 | 78.8                            | 78.3 | 77.5 | 75.8          | 80.9          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 17-Feb   | 77.4                          | 78.5 | 77.6 | 77.8 | 77.0 | 77.3 | 76.4 | 75.8 | 76.7 | 76.8 | 75.7 | 75.0 | 72.1 | 69.0 | 67.7 | 69.7 | 71.8 | 73.5 | 75.9 | 75.8 | 75.0 | 74.9                            | 72.9 | 74.4 | 74.8          | 78.5          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 18-Feb   | 78.2                          | 78.4 | 77.4 | 78.0 | 77.3 | 77.2 | 77.9 | 78.6 | 77.9 | 72.6 | 70.4 | 66.2 | 61.5 | 56.5 | 51.7 | 48.9 | 48.3 | 55.2 | 69.1 | 76.2 | 76.5 | 76.5                            | 75.9 | 75.2 | 70.1          | 78.6          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 19-Feb   | 75.6                          | 77.2 | 75.7 | 75.5 | 73.3 | 71.7 | 72.5 | 74.3 | 75.5 | 74.1 | 69.8 | 68.1 | 64.0 | 59.7 | 59.3 | 58.7 | 60.5 | 67.2 | 70.3 | 71.3 | 73.2 | 72.5                            | 69.9 | 69.8 | 70.0          | 77.2          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 20-Feb   | 71.2                          | 73.1 | 73.5 | 73.7 | 74.4 | 73.4 | 74.4 | 77.2 | 75.6 | 73.1 | 70.2 | 67.4 | 66.4 | 64.3 | 54.8 | 56.3 | 61.0 | 67.6 | 69.5 | 71.1 | 75.2 | 79.3                            | 79.5 | 79.0 | 70.9          | 79.5          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 21-Feb   | 77.6                          | 76.9 | 74.7 | 73.8 | 73.5 | 73.7 | 73.7 | 74.0 | 73.2 | 69.7 | 64.7 | 61.1 | 56.0 | 53.8 | 56.7 | 55.0 | 53.4 | 55.2 | 63.5 | 65.4 | 64.5 | 70.8                            | 72.3 | 72.4 | 66.9          | 77.6          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 22-Feb   | 71.1                          | 73.7 | 70.7 | 70.4 | 71.1 | 70.3 | 70.6 | 72.5 | 71.7 | 71.7 | 67.0 | 54.6 | 51.1 | 50.7 | 50.4 | 46.1 | 45.3 | 49.7 | 64.7 | 74.1 | 75.8 | 74.9                            | 74.5 | 73.2 | 65.2          | 75.8          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 23-Feb   | 73.4                          | 72.2 | 72.8 | 71.7 | 71.9 | 76.8 | 75.8 | 73.8 | 72.4 | 74.8 | 73.0 | 61.3 | 57.2 | 51.7 | 46.0 | 49.8 | 49.8 | 56.4 | 68.0 | 74.6 | 76.1 | 74.7                            | 75.0 | 76.8 | 67.8          | 76.8          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 24-Feb   | 75.8                          | 74.6 | 76.9 | 76.7 | 77.6 | 77.9 | 76.6 | 75.7 | 75.7 | 74.8 | 65.6 | 51.4 | 47.3 | 45.1 | 44.8 | 44.8 | 45.0 | 45.4 | 46.5 | 47.8 | 46.8 | 47.5                            | 49.1 | 51.5 | 60.0          | 77.9          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 25-Feb   | 54.2                          | 57.4 | 61.9 | 63.2 | 65.2 | 67.3 | 67.8 | 69.1 | 67.4 | 65.8 | 61.7 | 57.8 | 55.8 | 53.0 | 50.5 | 50.6 | 53.5 | 55.7 | 56.6 | 56.9 | 62.2 | 69.3                            | 74.2 | 80.8 | 61.6          | 80.8          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 26-Feb   | 84.0                          | 81.2 | 80.2 | 80.3 | 77.5 | 74.6 | 73.8 | 73.7 | 73.7 | 71.0 | 72.8 | 77.0 | 79.3 | 77.5 | 78.8 | 84.1 | 82.9 | 85.2 | 88.1 | 89.2 | 89.3 | 88.6                            | 89.3 | 89.2 | 80.9          | 89.3          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 27-Feb   | 89.5                          | 89.6 | 89.6 | 89.6 | 89.6 | 89.0 | 87.8 | 87.1 | 86.4 | 85.2 | 83.9 | 83.5 | 83.5 | 82.7 | 82.6 | 82.0 | 83.6 | 84.9 | 85.2 | 85.2 | 84.8 | 84.5                            | 84.2 | 84.0 | 85.7          | 89.6          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 28-Feb   | 83.9                          | 83.3 | 82.5 | 77.4 | 77.2 | 76.4 | 76.2 | 76.5 | 78.3 | 82.0 | 81.1 | 79.1 | 77.9 | 76.8 | 76.2 | 75.5 | 75.6 | 77.5 | 80.9 | 81.2 | 80.3 | 79.1                            | 77.9 | 77.3 | 78.8          | 83.9          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 77.3   |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                                 |      | 77.6 | 78.0          | 77.5          | 77.1 | 77.7 | 78.4 | 78.9 | 79.1 | 77.6 | 73.7 | 69.1 | 66.5 | 64.0 | 63.2 | 63.9 | 65.3 | 68.4 | 72.1 | 73.9 | 74.4 | 75.4 | 76.0 | 76.3 | Diurnal Average |  |
| 89.5   |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                                 |      | 89.6 | 89.9          | 89.6          | 89.6 | 89.0 | 89.6 | 92.1 | 91.7 | 94.6 | 93.1 | 87.8 | 87.4 | 87.2 | 85.7 | 86.0 | 88.4 | 90.8 | 88.1 | 89.2 | 89.3 | 88.6 | 89.3 | 89.2 | Diurnal Maximum |  |





|   |   |                                |
|---|---|--------------------------------|
| Maximum Speed: 31 km/h on Feb 7 16:00             | Maximum Daily Speed Average: 15.9 km/h on Feb 7   | Hours in Service: 672          |
| Minimum Speed Value: 0 km/h on Feb 23 12:00       | Minimum Daily Speed Average: 0.3 km/h on Feb 23   | Hours of Data: 620             |
| Maximum Diurnal Speed Average: 3.3 km/h at hour 6 | Minimum Diurnal Speed Average: 0.9 km/h at hour 12  | Hours of Missing Data: 52      |
| Monthly Average Velocity: 1.7 km/h 305.1 deg      | Percentiles: P <sub>1</sub> = 1 P <sub>10</sub> = 3 Q <sub>1</sub> = 5 Median = 8 Q <sub>3</sub> = 11 P <sub>90</sub> = 16 P <sub>99</sub> = 24 | Percent Operational Time: 92.3 |

| Day    | Hourly Period Ending At (MST) |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Daily Average | Daily Maximum |     |      |
|--------|-------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------------|---------------|-----|------|
|        | 1                             | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     | 10    | 11    | 12    | 13    | 14    | 15    | 16    | 17    | 18    | 19    | 20    | 21    | 22    | 23    | 24    |               |               |     |      |
| 1-Feb  | NNW12                         | NNW9  | NW6   | NW4   | N8    | NNW9  | N9    | N10   | N11   | N13   | N12   | NNW10 | NNW12 | NNW16 | NNW15 | NNW11 | NW10  | WNW7  | WNW7  | WNW9  | WNW6  | WNW4  | SSW4  | SW2   | NNW8.1        | NNW16         |     |      |
| 2-Feb  | SSW4                          | SSW4  | S4    | SSE5  | S5    | SSE4  | SSE3  | SE3   | SE5   | SE9   | SE11  | SE12  | ESE17 | ESE18 | ESE20 | SE20  | SE19  | SE19  | SE19  | SE20  | SE19  | SE16  | SE15  | SE16  | SE11.5        | ESE20         |     |      |
| 3-Feb  | SE15                          | SE15  | SE13  | SE12  | SE11  | SE8   | SE6   | SE7   | SSE5  | SSE3  | WSW10 | WSW9  | NNE7  | N4    | NNE7  | N10   | N11   | N10   | N11   | N9    | NNW8  | N10   | NNW8  | NNW1  | ENE2.3        | SE15          |     |      |
| 4-Feb  | NNW7                          | N8    | NNW9  | N8    | N9    | NNW9  | NNW9  | NNW8  | N8    | N12   | N10   | NNW9  | N9    | NNW9  | NNW9  | N5    | NNW3  | NNE8  | N7    | NNW9  | N10   | NNW8  | NNW7  | NNW7  | N8.1          | N12           |     |      |
| 5-Feb  | NNW7                          | N6    | N5    | NNE3  | NNE2  | NNE4  | N5    | NNW5  | NNE4  | SW1   | NNW3  | SE5   | SE5   | SSE5  | S4    | S6    | SSW6  | S7    | S8    | SW10  | NNW2  | NW17  | NNW23 | NW26  | WNW2.9        | NW26          |     |      |
| 6-Feb  | WNW20                         | W19   | W17   | WSW14 | W12   | W13   | WNW9  | W4    | WSW8  | W7    | NW6   | NE6   | E9    | E8    | ESE9  | ESE8  | SE9   | SE10  | ESE10 | SE11  | SE12  | SSE8  | SSE9  | S8    | SW2.4         | WNW20         |     |      |
| 7-Feb  | SSW11                         | SW10  | SW5   | WSW7  | SW9   | NNW24 | WNW20 | W15   | W19   | W17   | WSW18 | WSW24 | W29   | W30   | W27   | W31   | W23   | W16   | WSW18 | W19   | W15   | WSW8  | S6    | W8    | W15.9         | W31           |     |      |
| 8-Feb  | NNW13                         | NNW15 | NNW13 | NNW13 | NW6   | WSW4  | W3    | W2    | W2    | SSW3  | SSE4  | SSE6  | SSE5  | SE6   | SE6   | ESE6  | SE7   | SSE5  | SSE5  | S5    | SSW7  | S6    | S6    | S7    | SSW1.1        | NNW15         |     |      |
| 9-Feb  | S8                            | S8    | SSW8  | SW9   | SW7   | SW6   | SW7   | SSE4  | SSE5  | ESE5  | SE6   | SE5   | S8    | SSW8  | S6    | ESE6  | ESE6  | SSE7  | SSE3  | ESE4  | SSE2  | S5    | SE3   | SE4   | S4.6          | SW9           |     |      |
| 10-Feb | SE3                           | SSE3  | N1    | NE1   | N6    | N9    | N10   | N10   | N9    | N8    | N11   | N13   | NNW14 | NNW14 | NNW13 | NNW15 | NNW15 | NNW13 | NNW9  | NNW9  | NNW8  | NNW6  | N5    | NE3   | N8.2          | NNW15         |     |      |
| 11-Feb | NNE2                          | NNE1  | SE1   | SSE3  | SSE5  | S6    | SSW5  | SSW6  | WSW6  | SSW6  | SW11  | SSW9  | SW13  | SW14  | SW12  | WSW21 | WSW17 | WSW16 | W19   | WNW20 | WNW23 | W14   | WSW16 | WSW16 | WSW9.1        | WNW23         |     |      |
| 12-Feb | WSW16                         | WSW18 | W18   | W19   | WSW14 | WSW14 | W14   | W6    | SSW9  | WSW12 | WSW7  | SW8   | S9    | S7    | SSE6  | ESE6  | ESE8  | SE9   | ESE13 | SE13  | ESE13 | ESE12 | SE13  | SE11  | SSW6.0        | W19           |     |      |
| 13-Feb | SSE8                          | S9    | SW14  | SW17  | WSW17 | WSW25 | WSW19 | W21   | W17   | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | ---           | WSW25         |     |      |
| 14-Feb | UO                            | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | ---           | ---           |     |      |
| 15-Feb | UO                            | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | SE4   | ESE4  | ENE5  | E5    | ESE4  | WSW1  | SW1   | SE5   | SE8   | SE10          | SE9           | --- | SE10 |
| 16-Feb | SE11                          | SE12  | SE12  | SE10  | SE11  | SE11  | SE14  | SE14  | SE11  | SE11  | SE11  | SSE7  | SSE6  | SSE7  | SSW7  | WSW2  | WNW11 | NW14  | NNW19 | NNW16 | N15   | N16   | N16   | N13   | E2.4          | NNW19         |     |      |
| 17-Feb | N9                            | NNW8  | NNW9  | NNW8  | NNW8  | NNW7  | N7    | N6    | N7    | N7    | N8    | NNE8  | NNE7  | N8    | N9    | N11   | N12   | NNW15 | NNW13 | NNW14 | N13   | N14   | N14   | N11   | N9.4          | NNW15         |     |      |
| 18-Feb | NNW10                         | NNW11 | NNW10 | NNW10 | NNW8  | NNW8  | N10   | N12   | N10   | NNW6  | NNE8  | N10   | N10   | NNW10 | N9    | NNE7  | NNE5  | NE4   | SSW1  | WNW3  | WNW3  | WSW2  | SSW1  | SSW3  | N6.2          | N12           |     |      |
| 19-Feb | SSE3                          | SE7   | SE7   | SE8   | SE9   | SE9   | SE7   | ESE6  | SE5   | ESE9  | ESE9  | NE7   | NNE5  | NE3   | NNE4  | N5    | N8    | NNW13 | NNW11 | NNW6  | NNW7  | NNW9  | NNW12 | NNW15 | NE2.6         | NNW15         |     |      |
| 20-Feb | NNW14                         | NNW11 | NNW10 | NNW9  | NW7   | NW6   | WNW3  | NW3   | ESE3  | ESE4  | ENE4  | E2    | NE4   | NE8   | NNE4  | NE6   | NNE7  | NNE9  | NNW10 | NNW9  | NNW7  | NNW7  | NNW8  | NNW10 | N5.7          | NNW14         |     |      |
| 21-Feb | NNW9                          | NNW11 | N12   | N9    | NNW8  | N7    | NW5   | NW6   | NW7   | NNW11 | NNW12 | NNW11 | NNW13 | N13   | N15   | N14   | NNW15 | NNW11 | NNW8  | N7    | N8    | W8    | WSW7  | WSW6  | NNW8.7        | NNW15         |     |      |
| 22-Feb | WSW5                          | SW6   | SSW3  | S3    | SW5   | SSW3  | SSW5  | SSW5  | SSW4  | S3    | S7    | S5    | NNW4  | NNE9  | NNE7  | NNE6  | N5    | W2    | WNW3  | WSW3  | WNW4  | W4    | W4    | W3    | WSW1.7        | NNE9          |     |      |
| 23-Feb | WNW2                          | WSW1  | N3    | NW2   | NNW3  | NNW6  | N5    | SSE2  | SSE2  | NNE3  | NE3   | NE0   | NE9   | NE5   | ENE2  | ENE5  | E5    | ESE4  | SSW4  | SW5   | SW6   | SSW3  | SSW4  | SSW7  | ENE0.3        | NE9           |     |      |
| 24-Feb | SSW10                         | S9    | S9    | SSW7  | S7    | SSE6  | SSE5  | S5    | SSE7  | SSE9  | SE8   | S12   | SSW14 | S19   | S18   | SSE18 | SSE18 | S17   | S16   | S14   | S15   | S13   | S12   | SSW10 | S11.1         | S19           |     |      |
| 25-Feb | SW11                          | SW14  | SW16  | SW9   | SW9   | SW9   | SW11  | SW13  | W9    | WSW10 | WSW11 | WSW12 | WSW13 | SW11  | SW8   | SSW10 | SSW9  | SSW8  | SSW9  | SSW9  | SSE4  | SSE3  | SE5   | ESE5  | SW8.4         | SW16          |     |      |
| 26-Feb | ESE5                          | SE5   | E4    | SE3   | ESE5  | SE6   | SE10  | ESE9  | ESE8  | ESE8  | ESE9  | ESE11 | E9    | ENE11 | ENE10 | ENE11 | ENE10 | ENE10 | NE10  | NE7   | NE7   | NE8   | NNE6  | NNE7  | E6.7          | ENE11         |     |      |
| 27-Feb | NNE9                          | NNE9  | N9    | N7    | NNW7  | NNW10 | NNW13 | NNW14 | NNW16 | NNW17 | N15   | NNW14 | NNW19 | NNW18 | NNW17 | N13   | N11   | N12   | NNW12 | N13   | N11   | NNW10 | NNW9  | NNW9  | NNW12.1       | NNW19         |     |      |
| 28-Feb | NNW8                          | NNW7  | NNW6  | NW5   | WNW4  | NW4   | WNW4  | WNW3  | N2    | N4    | NNW6  | NNE6  | NE8   | NE9   | NE7   | NE7   | NE4   | NNE1  | WNW2  | W4    | W4    | W3    | E2    | SSE3  | N3.1          | NE9           |     |      |

|        |      |      |      |       |        |        |        |        |       |        |       |        |        |      |        |      |        |       |       |       |       |        |        |                 |
|--------|------|------|------|-------|--------|--------|--------|--------|-------|--------|-------|--------|--------|------|--------|------|--------|-------|-------|-------|-------|--------|--------|-----------------|
| WNW2.1 | W2.2 | W2.4 | W2.6 | W2.1  | NNW3.3 | NNW2.7 | NNW2.1 | NNW2.1 | NW1.3 | NNW1.1 | NW0.9 | NNW1.7 | NNW1.9 | N1.6 | NNE1.8 | N1.5 | NNW1.3 | NW1.9 | NW2.5 | NW2.0 | NW1.7 | NNW1.3 | NNW1.7 | Diurnal Average |
| WNW20  | W19  | W18  | W19  | WSW17 | WSW25  | WNW20  | W21    | W19    | W17   | WSW18  | WSW24 | W29    | W30    | W27  | W31    | W23  | SE19   | NNW19 | SE20  | WNW23 | NW17  | WNW23  | NW26   | Diurnal Maximum |

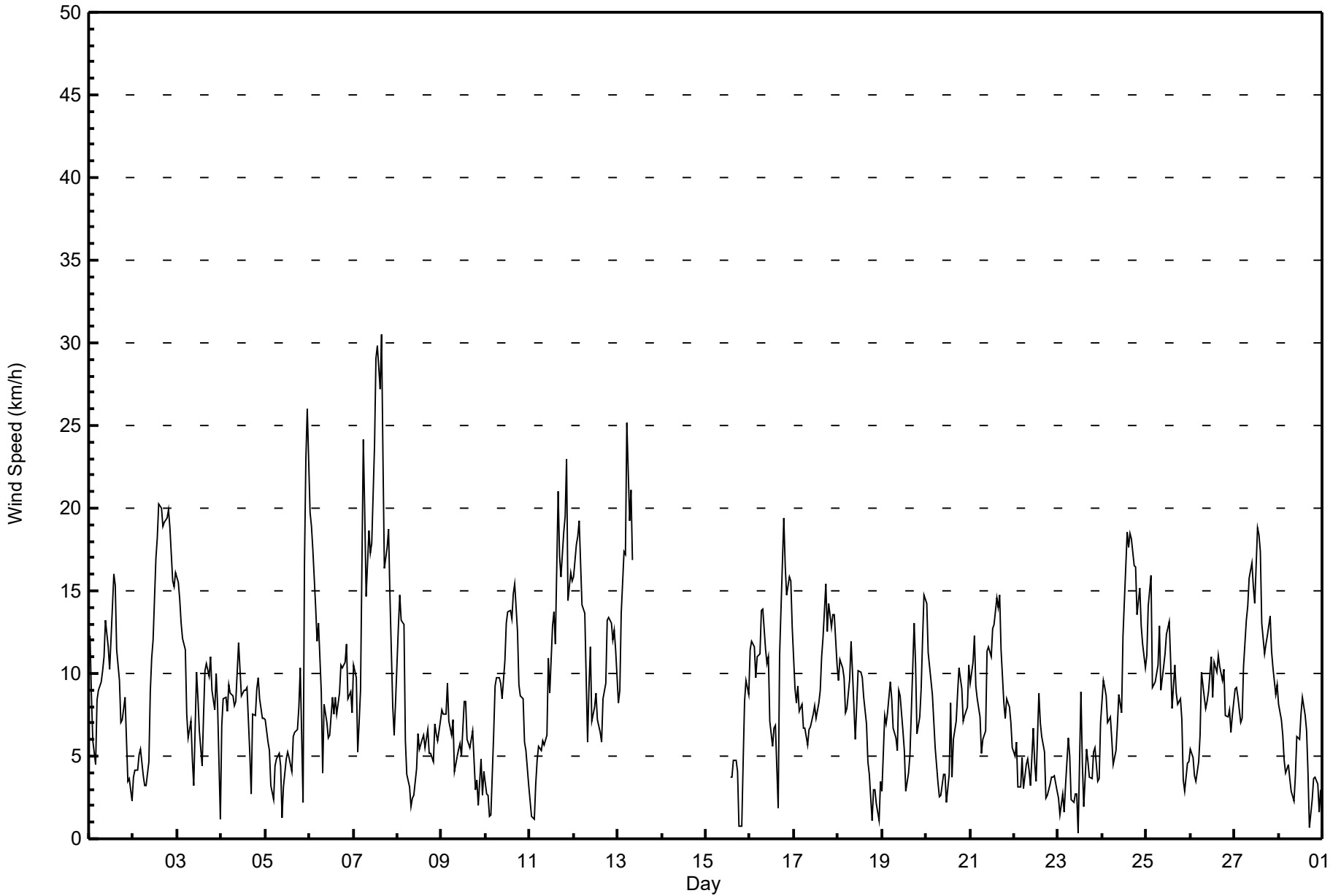
UO - Unstable Operation  
 All monthly, daily, and diurnal averages have been calculated using vector methods



**Wood Buffalo Environmental Association**  
**Summary of Hour Standard Deviations**

**Wind Speed (WS) - km/h**  
**Patricia McInnes - February 2023**

| Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0<br>Maximum Value: 10 km/h on Feb 5 22:00   |                               |    |    |    |    |    |    |    |    |    |    |    |    | Hours in Service: 672<br>Hours of Data: 620<br>Hours of Missing Data: 52<br>Hours of Calibration: 0<br>Percent Operational Time: 92.3 |    |    |    |    |    |    |    |    |    |               |    |   |   |   |   |   |   |   |   |   |    |   |   |  |
|--|-------------------------------|----|----|----|----|----|----|----|----|----|----|----|----|---|----|----|----|----|----|----|----|----|----|---------------|----|---|---|---|---|---|---|---|---|---|----|---|---|--|
| Minimum Value: 0 km/h on Feb 28 09:00  |                               |    |    |    |    |    |    |    |    |    |    |    |    |   |    |    |    |    |    |    |    |    |    |               |    |   |   |   |   |   |   |   |   |   |    |   |   |  |
| Percentiles: P <sub>1</sub> = 1 P <sub>10</sub> = 1 Q <sub>1</sub> = 1 Median = 2 Q <sub>3</sub> = 3 P <sub>90</sub> = 3 P <sub>99</sub> = 7 |                               |    |    |    |    |    |    |    |    |    |    |    |    |   |    |    |    |    |    |    |    |    |    |               |    |   |   |   |   |   |   |   |   |   |    |   |   |  |
| Day  | Hourly Period Ending At (MST) |    |    |    |    |    |    |    |    |    |    |    |    |   |    |    |    |    |    |    |    |    |    | Daily Maximum |    |   |   |   |   |   |   |   |   |   |    |   |   |  |
|  | 1                             | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 | 14  | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |               | 24 |   |   |   |   |   |   |   |   |   |    |   |   |  |
| 1-Feb  | 2                             | 2  | 2  | 1  | 2  | 1  | 2  | 3  | 2  | 2  | 3  | 2  | 3  | 3   | 3  | 3  | 2  | 1  | 1  | 1  | 2  | 1  | 1  | 1             | 3  |   |   |   |   |   |   |   |   |   |    |   |   |  |
| 2-Feb  | 1                             | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 2  | 2  | 2  | 3  | 4  | 4   | 5  | 5  | 5  | 5  | 5  | 5  | 5  | 4  | 3  | 4             | 5  |   |   |   |   |   |   |   |   |   |    |   |   |  |
| 3-Feb  | 3                             | 4  | 3  | 3  | 3  | 2  | 2  | 2  | 1  | 2  | 3  | 2  | 2  | 2   | 2  | 2  | 2  | 2  | 2  | 3  | 2  | 2  | 2  | 1             | 4  |   |   |   |   |   |   |   |   |   |    |   |   |  |
| 4-Feb  | 2                             | 2  | 1  | 1  | 2  | 1  | 1  | 2  | 2  | 2  | 2  | 2  | 2  | 2   | 1  | 3  | 1  | 1  | 1  | 2  | 2  | 1  | 2  | 1             | 3  |   |   |   |   |   |   |   |   |   |    |   |   |  |
| 5-Feb  | 1                             | 1  | 1  | 1  | 1  | 1  | 1  | 2  | 2  | 2  | 2  | 1  | 1  | 3   | 2  | 2  | 2  | 2  | 1  | 4  | 3  | 10 | 5  | 5             | 10 |   |   |   |   |   |   |   |   |   |    |   |   |  |
| 6-Feb  | 4                             | 4  | 3  | 3  | 2  | 2  | 3  | 2  | 2  | 2  | 2  | 2  | 1  | 2   | 2  | 2  | 2  | 3  | 2  | 3  | 3  | 2  | 2  | 2             | 4  |   |   |   |   |   |   |   |   |   |    |   |   |  |
| 7-Feb  | 3                             | 3  | 2  | 3  | 3  | 9  | 5  | 4  | 5  | 4  | 4  | 6  | 5  | 7   | 7  | 7  | 5  | 3  | 3  | 3  | 3  | 3  | 2  | 2             | 9  |   |   |   |   |   |   |   |   |   |    |   |   |  |
| 8-Feb  | 2                             | 2  | 2  | 2  | 4  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1   | 1  | 1  | 1  | 2  | 1  | 1  | 1  | 1  | 1  | 1             | 4  |   |   |   |   |   |   |   |   |   |    |   |   |  |
| 9-Feb  | 1                             | 1  | 1  | 1  | 3  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 2  | 2   | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 2  | 1  | 2             | 3  |   |   |   |   |   |   |   |   |   |    |   |   |  |
| 10-Feb   | 1                             | 1  | 1  | 1  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 3  | 3  | 2   | 2  | 3  | 3  | 2  | 2  | 2  | 2  | 1  | 1  | 1             | 3  |   |   |   |   |   |   |   |   |   |    |   |   |  |
| 11-Feb   | 1                             | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 3  | 3  | 2  | 3  | 4   | 3  | 7  | 4  | 3  | 3  | 4  | 5  | 3  | 3  | 3             | 7  |   |   |   |   |   |   |   |   |   |    |   |   |  |
| 12-Feb   | 2                             | 3  | 3  | 3  | 2  | 2  | 3  | 3  | 2  | 2  | 3  | 2  | 2  | 1   | 2  | 1  | 2  | 2  | 3  | 3  | 3  | 4  | 3  | 2             | 4  |   |   |   |   |   |   |   |   |   |    |   |   |  |
| 13-Feb   | 2                             | 3  | 4  | 3  | 4  | 6  | 4  | 3  | 3  | UO | UO | UO | UO | UO  | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO            | 6  |   |   |   |   |   |   |   |   |   |    |   |   |  |
| 14-Feb   | UO                            | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO  | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO            | -  |   |   |   |   |   |   |   |   |   |    |   |   |  |
| 15-Feb   | UO                            | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO  | 1  | 2  | 2  | 1  | 1  | 1  | 1  | 3  | 2  | 2             | 3  |   |   |   |   |   |   |   |   |   |    |   |   |  |
| 16-Feb   | 3                             | 3  | 3  | 3  | 2  | 3  | 3  | 4  | 3  | 3  | 3  | 2  | 1  | 2   | 2  | 2  | 2  | 7  | 3  | 4  | 3  | 3  | 3  | 3             | 7  |   |   |   |   |   |   |   |   |   |    |   |   |  |
| 17-Feb   | 2                             | 1  | 2  | 1  | 1  | 1  | 1  | 1  | 2  | 2  | 1  | 1  | 1  | 2   | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 3  | 2             | 3  |   |   |   |   |   |   |   |   |   |    |   |   |  |
| 18-Feb   | 1                             | 1  | 2  | 1  | 1  | 2  | 2  | 2  | 2  | 1  | 2  | 2  | 2  | 2   | 2  | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1             | 2  |   |   |   |   |   |   |   |   |   |    |   |   |  |
| 19-Feb   | 1                             | 3  | 2  | 2  | 2  | 2  | 2  | 2  | 1  | 3  | 3  | 2  | 2  | 2   | 2  | 2  | 2  | 2  | 3  | 1  | 1  | 2  | 1  | 2             | 3  |   |   |   |   |   |   |   |   |   |    |   |   |  |
| 20-Feb   | 3                             | 2  | 2  | 2  | 2  | 1  | 1  | 1  | 2  | 1  | 2  | 1  | 3  | 2   | 2  | 2  | 2  | 2  | 1  | 1  | 2  | 1  | 1  | 2             | 3  |   |   |   |   |   |   |   |   |   |    |   |   |  |
| 21-Feb   | 1                             | 3  | 2  | 3  | 3  | 2  | 1  | 1  | 1  | 3  | 3  | 2  | 3  | 3   | 3  | 3  | 2  | 3  | 1  | 1  | 2  | 1  | 1  | 1             | 3  |   |   |   |   |   |   |   |   |   |    |   |   |  |
| 22-Feb   | 1                             | 2  | 1  | 1  | 2  | 2  | 1  | 2  | 2  | 2  | 2  | 2  | 2  | 3   | 2  | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1             | 3  |   |   |   |   |   |   |   |   |   |    |   |   |  |
| 23-Feb   | 1                             | 1  | 1  | 1  | 1  | 1  | 2  | 1  | 0  | 2  | 2  | 1  | 2  | 2   | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 2             | 2  |   |   |   |   |   |   |   |   |   |    |   |   |  |
| 24-Feb   | 1                             | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 2  | 2  | 4  | 3  | 4   | 4  | 4  | 4  | 4  | 4  | 3  | 4  | 3  | 2  | 2             | 4  |   |   |   |   |   |   |   |   |   |    |   |   |  |
| 25-Feb   | 2                             | 3  | 3  | 3  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 3   | 2  | 3  | 2  | 2  | 2  | 2  | 1  | 1  | 1  | 1             | 3  |   |   |   |   |   |   |   |   |   |    |   |   |  |
| 26-Feb   | 1                             | 1  | 1  | 1  | 1  | 3  | 2  | 3  | 2  | 2  | 3  | 3  | 2  | 2   | 2  | 2  | 2  | 2  | 3  | 1  | 1  | 2  | 1  | 1             | 3  |   |   |   |   |   |   |   |   |   |    |   |   |  |
| 27-Feb   | 1                             | 1  | 1  | 1  | 1  | 2  | 2  | 2  | 3  | 3  | 3  | 3  | 3  | 3   | 3  | 3  | 3  | 2  | 2  | 2  | 2  | 2  | 1  | 1             | 3  |   |   |   |   |   |   |   |   |   |    |   |   |  |
| 28-Feb   | 1                             | 1  | 1  | 0  | 1  | 0  | 1  | 0  | 0  | 1  | 1  | 2  | 2  | 1   | 2  | 1  | 2  | 1  | 1  | 1  | 1  | 0  | 1  | 1             | 2  |   |   |   |   |   |   |   |   |   |    |   |   |  |
|  |                               |    |    |    |    |    |    |    |    |    |    |    |    | 4   | 4  | 4  | 3  | 4  | 9  | 5  | 4  | 5  | 4  | 4             | 6  | 5 | 7 | 7 | 7 | 7 | 5 | 5 | 5 | 5 | 10 | 5 | 5 |  |
| Diurnal Maximum  |                               |    |    |    |    |    |    |    |    |    |    |    |    |   |    |    |    |    |    |    |    |    |    |               |    |   |   |   |   |   |   |   |   |   |    |   |   |  |
| UO - Unstable Operation  |                               |    |    |    |    |    |    |    |    |    |    |    |    |   |    |    |    |    |    |    |    |    |    |               |    |   |   |   |   |   |   |   |   |   |    |   |   |  |





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Wind Speed (WS) - km/h  
Patricia McInnes - February 2023**

| <b>Wind Speed Ranges (km/h)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---------------------------------|------------------------|----------|---------------------|
| 0 - 5                           | 164                    | 26.45    | 26.45               |
| 6 - 11                          | 303                    | 48.87    | 75.32               |
| 12 - 19                         | 134                    | 21.61    | 96.94               |
| 20 - 28                         | 16                     | 2.58     | 99.52               |
| 29 - 38                         | 3                      | 0.48     | 100.00              |
| > 38                            | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 620

Total Number of Hours: 672





**Wood Buffalo Environmental Association  
Frequency Distribution**

**Wind Speed (WS) - km/h  
Patricia McInnes - February 2023**

| <b>Wind Speed<br/>Ranges (km/h)</b> | <b>Wind Direction</b> |            |           |            |          |            |           |            |           |            |           |            |           |            |           |            | <b>Totals</b> |
|-------------------------------------|-----------------------|------------|-----------|------------|----------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|---------------|
|                                     | <b>N</b>              | <b>NNE</b> | <b>NE</b> | <b>ENE</b> | <b>E</b> | <b>ESE</b> | <b>SE</b> | <b>SSE</b> | <b>S</b>  | <b>SSW</b> | <b>SW</b> | <b>WSW</b> | <b>W</b>  | <b>WNW</b> | <b>NW</b> | <b>NNW</b> |               |
| 0 - 5                               | 12                    | 12         | 9         | 4          | 5        | 10         | 15        | 24         | 8         | 17         | 6         | 7          | 10        | 12         | 6         | 7          | 164           |
| 6 - 11                              | 49                    | 17         | 13        | 6          | 2        | 16         | 33        | 13         | 20        | 19         | 18        | 11         | 5         | 6          | 8         | 67         | 303           |
| 12 - 19                             | 21                    | 0          | 0         | 0          | 0        | 5          | 19        | 2          | 9         | 1          | 9         | 15         | 16        | 0          | 2         | 35         | 134           |
| 20 - 28                             | 0                     | 0          | 0         | 0          | 0        | 1          | 2         | 0          | 0         | 0          | 0         | 3          | 3         | 6          | 1         | 0          | 16            |
| 29 - 38                             | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 3         | 0          | 0         | 0          | 3             |
| > 38                                | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0             |
| <b>Totals</b>                       | <b>82</b>             | <b>29</b>  | <b>22</b> | <b>10</b>  | <b>7</b> | <b>32</b>  | <b>69</b> | <b>39</b>  | <b>37</b> | <b>37</b>  | <b>33</b> | <b>36</b>  | <b>37</b> | <b>24</b>  | <b>17</b> | <b>109</b> | <b>620</b>    |

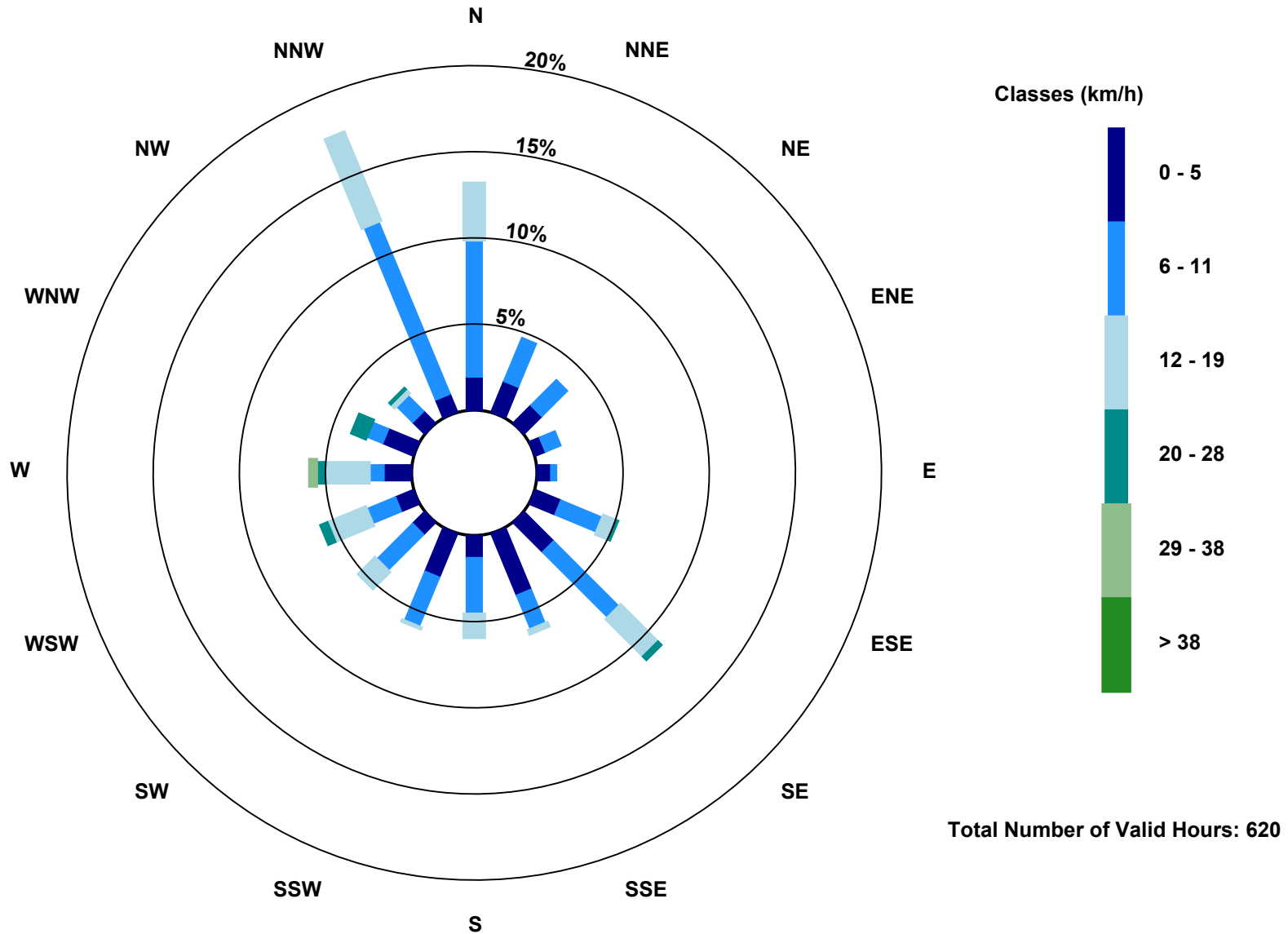
Total Number of Valid Hours: 620

Total Number of Hours: 672



Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Wind Speed (WS) - km/h  
Patricia McInnes





**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

**Wind Direction (WD) - deg**  
**Patricia McInnes - February 2023**

|  |                                |
|--|--------------------------------|
| Direction of Maximum Speed: 270 deg on Feb 7 16:00           | Hours in Service: 672          |
| Direction of Maximum Daily Speed Average: 265.4 deg on Feb 7 | Hours of Data: 620             |
| Direction of Minimum Speed: 42 deg on Feb 23 12:00           | Hours of Missing Data: 52      |
| Direction of Minimum Daily Speed Average: 0.3 deg on Feb 23  | Percent Operational Time: 92.3 |
| Monthly Average Direction: 305.1 deg                         |                                |

| Day  | Hourly Period Ending At (MST) |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Daily Average |    |
|--|-------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---------------|----|
|  | 1                             | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19  | 20  | 21  | 22  | 23  | 24  |               |    |
| 1-Feb  | 333                           | 330 | 314 | 306 | 358 | 345 | 355 | 354 | 353 | 352 | 357 | 340 | 332 | 335 | 337 | 335 | 320 | 296 | 289 | 298 | 300 | 296 | 203 | 226 | 332.2         |    |
| 2-Feb  | 210                           | 193 | 177 | 162 | 176 | 157 | 151 | 136 | 144 | 131 | 134 | 127 | 120 | 120 | 120 | 124 | 128 | 136 | 138 | 139 | 137 | 137 | 136 | 131 | 134.9         |    |
| 3-Feb  | 132                           | 139 | 139 | 125 | 130 | 137 | 139 | 134 | 148 | 164 | 245 | 256 | 29  | 2   | 26  | 2   | 2   | 355 | 1   | 1   | 345 | 358 | 346 | 337 | 68.8          |    |
| 4-Feb  | 343                           | 355 | 348 | 356 | 3   | 344 | 346 | 343 | 350 | 352 | 349 | 347 | 360 | 345 | 347 | 5   | 341 | 21  | 9   | 347 | 0   | 338 | 348 | 346 | 351.7         |    |
| 5-Feb  | 344                           | 349 | 357 | 19  | 15  | 15  | 352 | 347 | 13  | 221 | 347 | 144 | 134 | 157 | 177 | 181 | 201 | 186 | 187 | 234 | 337 | 310 | 301 | 307 | 300.2         |    |
| 6-Feb  | 303                           | 281 | 267 | 258 | 264 | 278 | 296 | 271 | 258 | 264 | 310 | 56  | 82  | 88  | 121 | 117 | 127 | 131 | 122 | 127 | 138 | 147 | 163 | 183 | 223.7         |    |
| 7-Feb  | 200                           | 229 | 222 | 247 | 233 | 287 | 296 | 273 | 272 | 268 | 252 | 258 | 267 | 279 | 277 | 270 | 274 | 270 | 251 | 263 | 267 | 253 | 186 | 273 | 265.4         |    |
| 8-Feb  | 335                           | 333 | 333 | 333 | 324 | 251 | 266 | 266 | 264 | 209 | 163 | 149 | 156 | 129 | 125 | 123 | 146 | 154 | 164 | 190 | 199 | 172 | 182 | 183 | 213.4         |    |
| 9-Feb  | 176                           | 182 | 206 | 223 | 227 | 224 | 218 | 157 | 164 | 115 | 130 | 129 | 186 | 202 | 189 | 115 | 117 | 155 | 150 | 109 | 166 | 182 | 137 | 134 | 174.3         |    |
| 10-Feb   | 133                           | 149 | 352 | 50  | 359 | 1   | 355 | 352 | 353 | 350 | 355 | 358 | 347 | 348 | 346 | 347 | 345 | 340 | 339 | 338 | 334 | 340 | 352 | 39  | 350.2         |    |
| 11-Feb   | 30                            | 17  | 136 | 165 | 168 | 188 | 198 | 213 | 237 | 211 | 223 | 205 | 222 | 224 | 218 | 243 | 243 | 245 | 271 | 292 | 292 | 267 | 253 | 245 | 244.4         |    |
| 12-Feb   | 246                           | 245 | 260 | 271 | 240 | 241 | 264 | 260 | 203 | 249 | 248 | 226 | 182 | 186 | 156 | 103 | 122 | 128 | 120 | 127 | 123 | 122 | 127 | 145 | 203.1         |    |
| 13-Feb   | 160                           | 188 | 219 | 232 | 240 | 257 | 255 | 261 | 278 | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO  | --            |    |
| 14-Feb   | UO                            | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO  | --            |    |
| 15-Feb   | UO                            | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO  | 137 | 116 | 74  | 95  | 108 | 239 | 219 | 126 | 129 | 130 | 130           | -- |
| 16-Feb   | 132                           | 134 | 132 | 133 | 128 | 127 | 129 | 135 | 143 | 138 | 142 | 150 | 160 | 167 | 194 | 239 | 292 | 311 | 329 | 346 | 4   | 360 | 350 | 353 | 98.9          |    |
| 17-Feb   | 356                           | 344 | 344 | 331 | 336 | 327 | 4   | 352 | 351 | 357 | 6   | 18  | 21  | 8   | 359 | 2   | 353 | 346 | 339 | 346 | 350 | 353 | 353 | 349 | 352.0         |    |
| 18-Feb   | 340                           | 339 | 346 | 347 | 346 | 348 | 354 | 355 | 2   | 340 | 12  | 4   | 354 | 345 | 357 | 12  | 27  | 38  | 212 | 283 | 284 | 237 | 205 | 193 | 350.7         |    |
| 19-Feb   | 154                           | 140 | 141 | 140 | 136 | 132 | 129 | 118 | 127 | 119 | 113 | 39  | 26  | 41  | 17  | 7   | 1   | 347 | 347 | 338 | 336 | 334 | 333 | 336 | 42.8          |    |
| 20-Feb   | 339                           | 345 | 341 | 336 | 326 | 325 | 289 | 304 | 105 | 109 | 76  | 85  | 36  | 38  | 28  | 35  | 33  | 13  | 346 | 347 | 347 | 339 | 339 | 333 | 354.4         |    |
| 21-Feb   | 336                           | 342 | 354 | 349 | 339 | 350 | 325 | 310 | 309 | 336 | 343 | 345 | 342 | 352 | 6   | 2   | 347 | 340 | 334 | 349 | 351 | 259 | 246 | 247 | 339.0         |    |
| 22-Feb   | 241                           | 230 | 213 | 191 | 217 | 208 | 207 | 202 | 209 | 185 | 181 | 187 | 348 | 12  | 32  | 12  | 9   | 279 | 287 | 251 | 287 | 268 | 265 | 265 | 247.7         |    |
| 23-Feb   | 286                           | 258 | 357 | 316 | 343 | 341 | 351 | 153 | 152 | 31  | 43  | 42  | 44  | 53  | 76  | 78  | 86  | 121 | 204 | 224 | 215 | 206 | 204 | 206 | 65.9          |    |
| 24-Feb   | 209                           | 188 | 187 | 203 | 182 | 163 | 165 | 175 | 168 | 150 | 131 | 190 | 199 | 189 | 178 | 164 | 165 | 182 | 183 | 183 | 189 | 186 | 189 | 200 | 181.1         |    |
| 25-Feb   | 215                           | 219 | 224 | 226 | 223 | 220 | 221 | 233 | 278 | 255 | 249 | 239 | 233 | 228 | 229 | 213 | 211 | 207 | 206 | 201 | 151 | 157 | 137 | 103 | 222.8         |    |
| 26-Feb   | 105                           | 129 | 98  | 130 | 113 | 129 | 125 | 111 | 110 | 115 | 113 | 105 | 79  | 62  | 73  | 73  | 68  | 62  | 52  | 39  | 39  | 52  | 30  | 20  | 82.1          |    |
| 27-Feb   | 22                            | 15  | 11  | 351 | 343 | 332 | 330 | 332 | 333 | 343 | 358 | 344 | 342 | 344 | 345 | 352 | 6   | 2   | 347 | 352 | 356 | 348 | 346 | 331 | 348.0         |    |
| 28-Feb   | 337                           | 337 | 330 | 304 | 292 | 315 | 303 | 290 | 7   | 6   | 347 | 22  | 37  | 41  | 44  | 42  | 45  | 29  | 284 | 275 | 276 | 281 | 101 | 164 | 350.9         |    |
| 298.6 275.3 281.1 271.3 262.8 282.1 290.7 284.6 291.5 314.8 327.3 314.7 341.6 345.4 8.0 12.1 2.4 336.0 307.3 308.1 324.2 312.1 297.2 284.1 |                               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |               |    |
| Diurnal Average  |                               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |               |    |

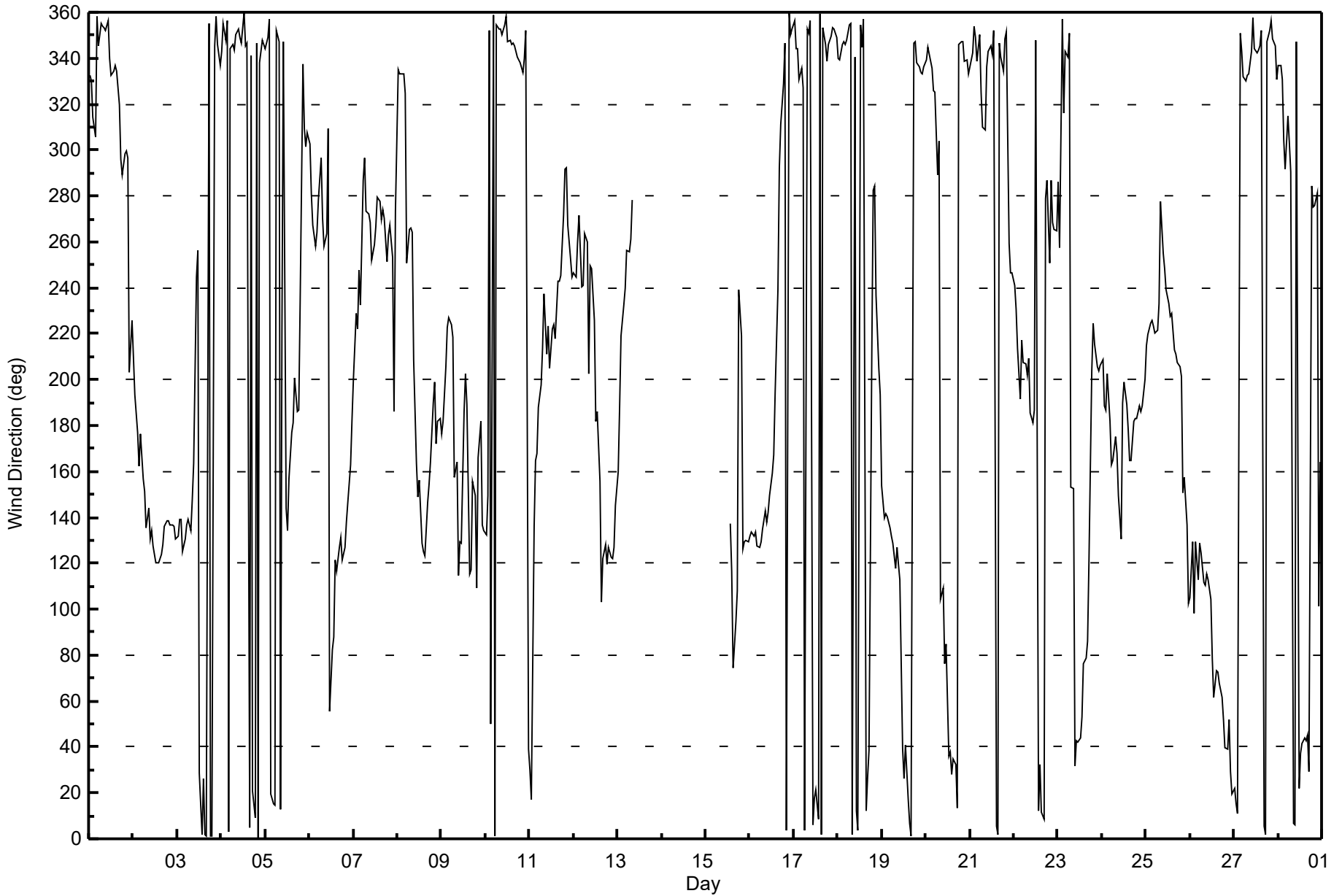
UO - Unstable Operation  
 All monthly, daily, and diurnal averages have been calculated using vector methods



**Wood Buffalo Environmental Association**  
**Summary of Hour Standard Deviations**

**Wind Direction (WD) - deg**  
**Patricia McInnes - February 2023**

| Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0<br>Maximum Value: 101 deg on Feb 23 12:00<br>Minimum Value: 5 deg on Feb 8 23:00<br>Percentiles: P <sub>1</sub> = 6 P <sub>10</sub> = 10 Q <sub>1</sub> = 12 Median = 15 Q <sub>3</sub> = 20 P <sub>90</sub> = 32 P <sub>99</sub> = 72 |                               |    |    |    |    |    |    |    |    |    |    |     |    | Hours in Service: 672<br>Hours of Data: 620<br>Hours of Missing Data: 52<br>Hours of Calibration: 0<br>Percent Operational Time: 92.3 |    |    |    |    |    |    |    |    |    |    |               |  |  |
|--|-------------------------------|----|----|----|----|----|----|----|----|----|----|-----|----|---|----|----|----|----|----|----|----|----|----|----|---------------|--|--|
| Day  | Hourly Period Ending At (MST) |    |    |    |    |    |    |    |    |    |    |     |    |   |    |    |    |    |    |    |    |    |    |    | Daily Maximum |  |  |
|  | 1                             | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12  | 13 | 14  | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |               |  |  |
| 1-Feb  | 8                             | 8  | 20 | 31 | 25 | 11 | 14 | 15 | 15 | 14 | 17 | 15  | 16 | 13  | 13 | 11 | 14 | 8  | 10 | 7  | 12 | 30 | 24 | 34 | 34            |  |  |
| 2-Feb  | 15                            | 12 | 24 | 15 | 12 | 22 | 28 | 21 | 26 | 14 | 13 | 15  | 12 | 12  | 13 | 13 | 14 | 14 | 14 | 13 | 13 | 13 | 12 | 13 | 28            |  |  |
| 3-Feb  | 13                            | 13 | 13 | 12 | 15 | 14 | 26 | 24 | 28 | 62 | 20 | 36  | 10 | 29  | 19 | 17 | 14 | 14 | 13 | 16 | 13 | 13 | 16 | 81 | 81            |  |  |
| 4-Feb  | 52                            | 15 | 10 | 13 | 12 | 10 | 8  | 8  | 12 | 12 | 13 | 13  | 18 | 14  | 15 | 31 | 47 | 14 | 12 | 15 | 17 | 10 | 15 | 13 | 52            |  |  |
| 5-Feb  | 11                            | 15 | 19 | 32 | 48 | 15 | 25 | 39 | 25 | 65 | 60 | 32  | 19 | 29  | 48 | 21 | 19 | 15 | 13 | 20 | 68 | 56 | 11 | 10 | 68            |  |  |
| 6-Feb  | 13                            | 11 | 12 | 10 | 11 | 9  | 9  | 24 | 9  | 14 | 24 | 38  | 9  | 17  | 19 | 17 | 15 | 15 | 13 | 14 | 17 | 14 | 20 | 16 | 38            |  |  |
| 7-Feb  | 24                            | 15 | 24 | 20 | 15 | 19 | 12 | 16 | 18 | 13 | 13 | 15  | 13 | 13  | 13 | 11 | 11 | 10 | 9  | 12 | 15 | 45 | 45 | 40 | 45            |  |  |
| 8-Feb  | 9                             | 8  | 7  | 6  | 56 | 24 | 19 | 34 | 25 | 27 | 20 | 18  | 26 | 20  | 15 | 16 | 11 | 22 | 23 | 23 | 21 | 11 | 5  | 6  | 56            |  |  |
| 9-Feb  | 11                            | 7  | 20 | 7  | 31 | 10 | 11 | 33 | 11 | 17 | 14 | 20  | 17 | 14  | 16 | 15 | 12 | 12 | 37 | 17 | 40 | 9  | 41 | 55 | 55            |  |  |
| 10-Feb   | 45                            | 20 | 61 | 73 | 20 | 14 | 14 | 12 | 14 | 12 | 14 | 13  | 12 | 11  | 12 | 13 | 10 | 11 | 11 | 12 | 13 | 16 | 23 | 14 | 73            |  |  |
| 11-Feb   | 19                            | 39 | 61 | 28 | 18 | 12 | 17 | 13 | 22 | 29 | 14 | 15  | 17 | 13  | 13 | 15 | 10 | 11 | 12 | 11 | 10 | 13 | 10 | 9  | 61            |  |  |
| 12-Feb   | 9                             | 11 | 14 | 11 | 9  | 9  | 16 | 62 | 27 | 13 | 18 | 20  | 12 | 15  | 25 | 8  | 9  | 11 | 12 | 12 | 12 | 12 | 12 | 13 | 62            |  |  |
| 13-Feb   | 14                            | 22 | 15 | 12 | 13 | 10 | 10 | 11 | 16 | UO | UO | UO  | UO | UO  | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | 22            |  |  |
| 14-Feb   | UO                            | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO  | UO | UO  | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | --            |  |  |
| 15-Feb   | UO                            | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO  | UO | 45  | 52 | 25 | 18 | 18 | 54 | 69 | 12 | 12 | 12 | 12 | 69            |  |  |
| 16-Feb   | 12                            | 13 | 13 | 14 | 13 | 14 | 13 | 14 | 14 | 14 | 17 | 16  | 16 | 13  | 16 | 78 | 31 | 24 | 16 | 14 | 13 | 16 | 14 | 15 | 78            |  |  |
| 17-Feb   | 20                            | 15 | 14 | 10 | 11 | 14 | 18 | 20 | 20 | 20 | 16 | 14  | 22 | 18  | 17 | 14 | 15 | 11 | 8  | 10 | 12 | 13 | 13 | 11 | 22            |  |  |
| 18-Feb   | 8                             | 8  | 12 | 11 | 12 | 16 | 15 | 15 | 14 | 14 | 17 | 19  | 21 | 20  | 21 | 21 | 24 | 18 | 61 | 31 | 24 | 26 | 35 | 15 | 61            |  |  |
| 19-Feb   | 18                            | 16 | 16 | 14 | 15 | 14 | 16 | 18 | 23 | 18 | 20 | 29  | 19 | 50  | 39 | 21 | 17 | 11 | 12 | 10 | 7  | 9  | 8  | 9  | 50            |  |  |
| 20-Feb   | 10                            | 11 | 11 | 13 | 9  | 17 | 22 | 29 | 71 | 22 | 27 | 71  | 74 | 17  | 56 | 15 | 13 | 16 | 10 | 10 | 10 | 8  | 10 | 9  | 74            |  |  |
| 21-Feb   | 8                             | 12 | 13 | 17 | 12 | 15 | 11 | 9  | 9  | 11 | 15 | 18  | 17 | 21  | 16 | 16 | 13 | 9  | 8  | 12 | 19 | 11 | 6  | 5  | 21            |  |  |
| 22-Feb   | 11                            | 16 | 21 | 23 | 17 | 29 | 13 | 19 | 33 | 66 | 15 | 63  | 63 | 37  | 23 | 21 | 20 | 33 | 33 | 11 | 20 | 15 | 29 | 24 | 66            |  |  |
| 23-Feb   | 20                            | 43 | 55 | 59 | 19 | 7  | 30 | 26 | 18 | 54 | 59 | 101 | 20 | 39  | 89 | 20 | 22 | 25 | 18 | 7  | 10 | 9  | 7  | 10 | 101           |  |  |
| 24-Feb   | 10                            | 8  | 6  | 14 | 10 | 6  | 10 | 14 | 13 | 14 | 20 | 30  | 17 | 15  | 15 | 12 | 12 | 17 | 13 | 12 | 13 | 11 | 13 | 12 | 30            |  |  |
| 25-Feb   | 12                            | 11 | 11 | 16 | 13 | 14 | 10 | 13 | 22 | 14 | 19 | 15  | 16 | 23  | 23 | 20 | 18 | 21 | 14 | 12 | 31 | 27 | 15 | 11 | 31            |  |  |
| 26-Feb   | 9                             | 12 | 11 | 27 | 19 | 18 | 14 | 16 | 16 | 16 | 14 | 14  | 16 | 16  | 14 | 17 | 14 | 14 | 13 | 13 | 12 | 15 | 16 | 15 | 27            |  |  |
| 27-Feb   | 11                            | 10 | 11 | 14 | 12 | 8  | 8  | 8  | 9  | 12 | 16 | 16  | 13 | 14  | 13 | 16 | 19 | 14 | 12 | 15 | 16 | 13 | 10 | 10 | 19            |  |  |
| 28-Feb   | 13                            | 11 | 7  | 12 | 19 | 13 | 22 | 14 | 29 | 14 | 17 | 31  | 19 | 14  | 20 | 23 | 30 | 65 | 15 | 6  | 16 | 8  | 73 | 39 | 73            |  |  |
|  |                               |    |    |    |    |    |    |    |    |    |    |     |    | Diurnal Maximum   |    |    |    |    |    |    |    |    |    |    |               |  |  |
| UO - Unstable Operation  |                               |    |    |    |    |    |    |    |    |    |    |     |    |   |    |    |    |    |    |    |    |    |    |    |               |  |  |





## **WOOD BUFFALO ENVIRONMENTAL ASSOCIATION**

CONTINUOUS AMBIENT AIR QUALITY  
MONITORING PROGRAM  
MONTHLY REPORT

### **AMS07 ATHABASCA VALLEY FEBRUARY 2023**

Operations, Data Collection,  
QA/QC, Data Validation and Reporting by:  
Wood Buffalo Environmental Association  
Fort McMurray, Alberta

March 31, 2023

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - ATHABASCA VALLEY (AMS07)  
FEBRUARY 2023

MONTHLY SUMMARY

| Parameter                          | Hours of Data | Hours of Calibration | Hours without Data | Operational Time | Maximum 1-Hour Value | 1-Hour Exceedances | Maximum 24-Hour Value | 24-Hour Exceedances |
|------------------------------------|---------------|----------------------|--------------------|------------------|----------------------|--------------------|-----------------------|---------------------|
| SO2 (ppb) Average                  | 639           | 32                   | 33                 | 99.85            | 24.4                 | 0                  | 6.7                   | 0                   |
| TRS (ppb) Average                  | 636           | 35                   | 36                 | 99.85            | 2.4                  | 0                  | 1                     | 0                   |
| THC (ppm) Average                  | 639           | 32                   | 33                 | 99.85            | 2.8                  | -                  | 2.5                   | -                   |
| NMHC (ppm) Average                 | 639           | 32                   | 33                 | 99.85            | 0.471                | -                  | 0.087                 | -                   |
| CH4(ppm) Average                   | 639           | 32                   | 33                 | 99.85            | 2.7                  | -                  | 2.5                   | -                   |
| O3 (ppb) Average                   | 639           | 33                   | 33                 | 100              | 45.5                 | 0                  | 34.6                  | -                   |
| NO2 (ppb) Average                  | 638           | 33                   | 34                 | 99.85            | 40.5                 | 0                  | 24.7                  | -                   |
| NO (ppb) Average                   | 638           | 33                   | 34                 | 99.85            | 93.5                 | -                  | 17.6                  | -                   |
| NOX (ppb) Average                  | 638           | 33                   | 34                 | 99.85            | 126.3                | -                  | 42.4                  | -                   |
| PM2.5 (ug/m3) Average              | 670           | 2                    | 2                  | 100              | 64.5                 | 0                  | 12.1                  | 0                   |
| CO(ppm) Average                    | 641           | 31                   | 31                 | 100              | 1                    | 0                  | 0.3                   | -                   |
| Temperature 2 m (C) Average        | 672           | 0                    | 0                  | 100              | 5.3                  | -                  | 0                     | -                   |
| Relative Humidity (%) Average      | 672           | 0                    | 0                  | 100              | 92.6                 | -                  | 83.9                  | -                   |
| Barometric Pressure (inHg) Average | 672           | 0                    | 0                  | 100              | 29.9                 | -                  | 29.8                  | -                   |
| Wind Speed 10 m (km/h) Average     | 672           | 0                    | 0                  | 100              | 34                   | -                  | 18                    | -                   |
| Wind Direction 10 m (deg) Average  | 672           | 0                    | 0                  | 100              | -                    | -                  | -                     | -                   |

Note : Operational time includes periods of data collection and instrument calibration

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - ATHABASCA VALLEY (AMS07)  
 FEBRUARY 2023

MONTHLY SUMMARY FOR AIR QUALITY/ METEOROLOGICAL MONITORING MEASUREMENTS

| Parameter                          | Number | Mean   | StnDev | Total | Percentile |       |       |        |      |      |       |
|------------------------------------|--------|--------|--------|-------|------------|-------|-------|--------|------|------|-------|
|                                    |        |        |        |       | Min        | P10   | Q1    | Median | Q3   | P90  | Max   |
| SO2 (ppb) Average                  | 639    | 1.81   | 3.1    | -     | 0          | 0.1   | 0.3   | 0.6    | 1.8  | 4.7  | 24.4  |
| TRS (ppb) Average                  | 636    | 0.39   | 0.3    | -     | 0.1        | 0.1   | 0.2   | 0.3    | 0.5  | 0.8  | 2.4   |
| THC (ppm) Average                  | 639    | 2.15   | 0.1    | -     | 2          | 2     | 2.1   | 2.1    | 2.2  | 2.4  | 2.8   |
| NMHC (ppm) Average                 | 639    | 0.01   | 0.047  | -     | 0          | 0     | 0     | 0      | 0    | 0    | 0.471 |
| CH4(ppm) Average                   | 639    | 2.14   | 0.1    | -     | 2          | 2     | 2.1   | 2.1    | 2.2  | 2.3  | 2.7   |
| O3 (ppb) Average                   | 639    | 19.58  | 10.2   | -     | 0.9        | 5.2   | 11.1  | 19.7   | 27.5 | 33.8 | 45.5  |
| NO2 (ppb) Average                  | 638    | 14.02  | 8.8    | -     | 0.7        | 3.1   | 7.7   | 11.8   | 19.4 | 27   | 40.5  |
| NO (ppb) Average                   | 638    | 5.7    | 8.4    | -     | 0          | 0.1   | 0.7   | 2.6    | 7    | 15.3 | 93.5  |
| NOX (ppb) Average                  | 638    | 19.72  | 15.2   | -     | 0.8        | 4     | 9.4   | 16     | 26.2 | 40.4 | 126.3 |
| PM2.5 (ug/m3) Average              | 670    | 5.83   | 4.5    | -     | 0.8        | 2.3   | 3.4   | 4.8    | 7.2  | 10   | 64.5  |
| CO(ppm) Average                    | 641    | 0.18   | 0.1    | -     | 0.1        | 0.1   | 0.1   | 0.2    | 0.2  | 0.2  | 1     |
| Temperature 2 m (C) Average        | 672    | -14.91 | 9.5    | -     | -36.2      | -28.5 | -21.6 | -14.6  | -7.9 | -3.6 | 5.3   |
| Relative Humidity (%) Average      | 672    | 69.17  | 10.4   | -     | 37.8       | 54    | 65.3  | 70.6   | 75.4 | 81.2 | 92.6  |
| Barometric Pressure (inHg) Average | 672    | 28.96  | 0.4    | -     | 28.1       | 28.5  | 28.7  | 28.9   | 29.2 | 29.5 | 29.9  |
| Wind Speed 10 m (km/h) Average     | 672    | 8.1    | 6      | -     | 0          | 2     | 4     | 7      | 11   | 15   | 34    |
| Wind Direction 10 m (deg) Average  | 672    | -      | -      | -     | -          | -     | -     | -      | -    | -    | -     |



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - ATHABASCA VALLEY (AMS07)  
FEBRUARY 2023

OPERATIONAL NOTES

| Parameter                  | Period<br>Start   | Period<br>End     | Duration<br>(Hours) | Notes                                 |
|----------------------------|-------------------|-------------------|---------------------|---------------------------------------|
| NO2, SO2, THC/NMHC/CH4/TRS | 08 Feb 2023 12:00 | 08 Feb 2023 12:00 | 1                   | Maintenance - sample manifold cleaned |



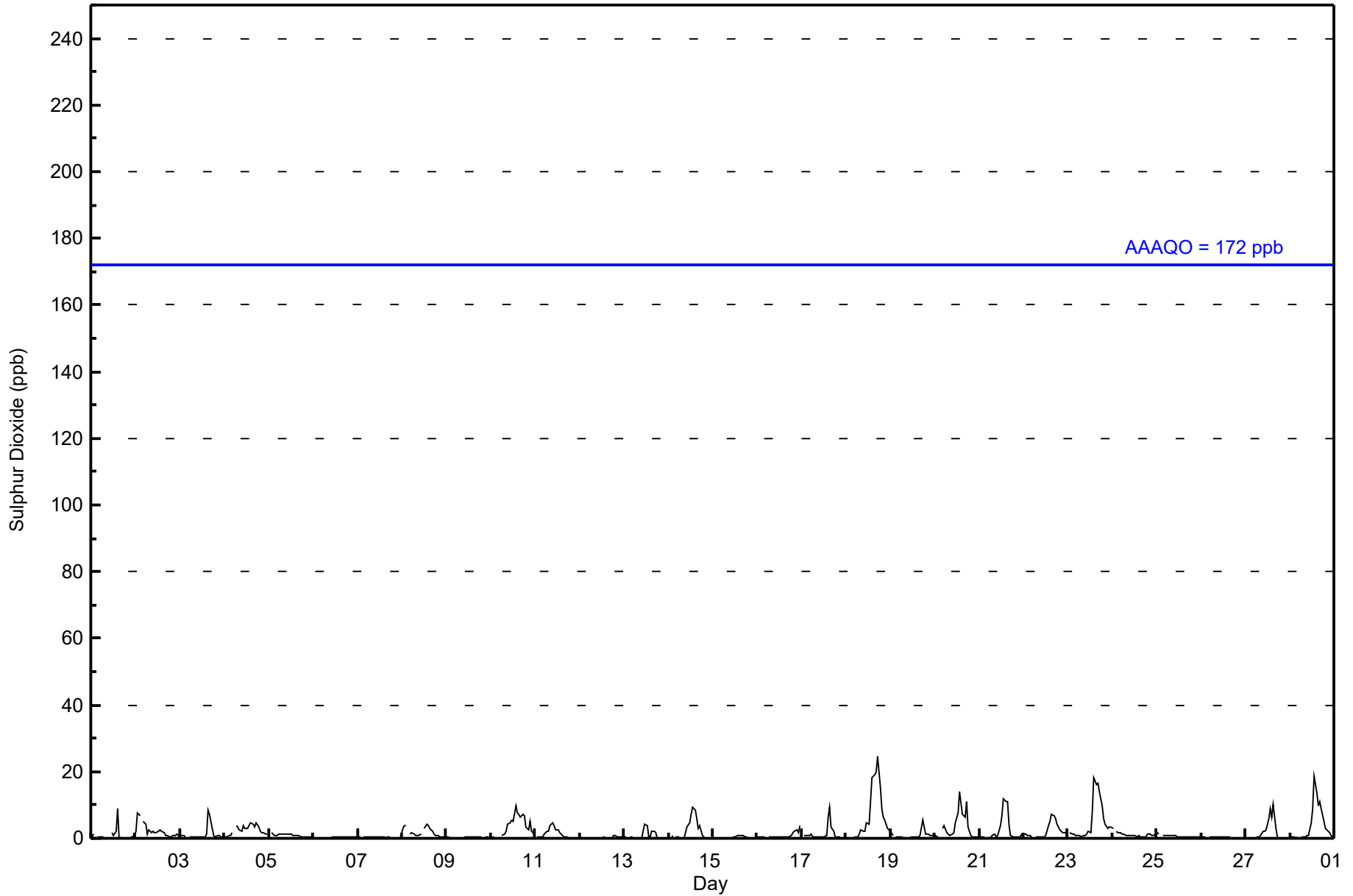
# Wood Buffalo Environmental Association

## Summary of Hour Averages

# Sulphur Dioxide (SO<sub>2</sub>) - ppb

## Athabasca Valley - February 2023

| Number of Exceedences (AAAQO):   |                               | 1-hr: 0   | 24-hr: 0 | Hours in Service: 672 |     |     |     |     |     |     |     |     |     |      |      |      |      |      |                                |     | 672 |     |     |     |               |               |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |     |     |     |     |     |                 |  |
|--|-------------------------------|---|----------|-----------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|--------------------------------|-----|-----|-----|-----|-----|---------------|---------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|-----|-----|-----|-----|-----|-----------------|--|
| Maximum Value: 24.4 ppb on Feb 18 18:00  |                               | Maximum Daily Average: 6.7 ppb on Feb 18  |          |                       |     |     |     |     |     |     |     |     |     |      |      |      |      |      | Hours of Data: 639             |     |     |     |     |     |               |               |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |     |     |     |     |     |                 |  |
| Minimum Value: 0.0 ppb on Feb 1 19:00  |                               | Minimum Daily Average: 0.2 ppb on Feb 12  |          |                       |     |     |     |     |     |     |     |     |     |      |      |      |      |      | Hours of Missing Data: 33      |     |     |     |     |     |               |               |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |     |     |     |     |     |                 |  |
| Maximum Diurnal Average: 4.8 ppb at hour 15                                    |                               | Minimum Diurnal Average: 0.5 ppb at hour 4  |          |                       |     |     |     |     |     |     |     |     |     |      |      |      |      |      | Hours of Calibration: 32       |     |     |     |     |     |               |               |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |     |     |     |     |     |                 |  |
| Monthly Average: 1.81 ppb  |                               | Percentiles: P <sub>1</sub> = 0.0 P <sub>10</sub> = 0.1 Q <sub>1</sub> = 0.3 Median = 0.6 Q <sub>3</sub> = 1.8 P <sub>90</sub> = 4.7 P <sub>99</sub> = 16.3 |          |                       |     |     |     |     |     |     |     |     |     |      |      |      |      |      | Percent Operational Time: 99.9 |     |     |     |     |     |               |               |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |     |     |     |     |     |                 |  |
| Day  | Hourly Period Ending At (MST) |   |          |                       |     |     |     |     |     |     |     |     |     |      |      |      |      |      |                                |     |     |     |     |     | Daily Average | Daily Maximum |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |     |     |     |     |     |                 |  |
|  | 1                             | 2   | 3        | 4                     | 5   | 6   | 7   | 8   | 9   | 10  | 11  | 12  | 13  | 14   | 15   | 16   | 17   | 18   | 19                             | 20  | 21  | 22  | 23  | 24  |               |               |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |     |     |     |     |     |                 |  |
| 1-Feb  | 0.4                           | 1.3   | Z        | 0.6                   | 0.5 | 0.5 | 0.2 | C   | C   | C   | C   | 1.6 | 1.0 | 1.9  | 9.1  | 0.6  | 0.0  | 0.0  | 0.0                            | 0.0 | 0.0 | 0.0 | 0.3 | 0.9 | 1.0           | 9.1           |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |     |     |     |     |     |                 |  |
| 2-Feb  | 2.0                           | 7.5   | 6.8      | Z                     | 5.1 | 4.3 | 1.1 | 2.6 | 1.8 | 2.1 | 1.7 | 1.7 | 2.2 | 2.7  | 2.3  | 1.6  | 1.0  | 0.7  | 0.6                            | 0.6 | 0.7 | 0.9 | 1.2 | 1.0 | 2.3           | 7.5           |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |     |     |     |     |     |                 |  |
| 3-Feb  | 0.8                           | 0.7   | 0.7      | 0.6                   | Z   | 0.5 | 0.5 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.5  | 1.3  | 8.5  | 7.3  | 2.9  | 0.8                            | 0.6 | 0.6 | 0.7 | 0.6 | 0.6 | 1.3           | 8.5           |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |     |     |     |     |     |                 |  |
| 4-Feb  | 0.6                           | 0.5   | 0.9      | 1.0                   | 1.6 | Z   | 3.7 | 3.5 | 2.6 | 2.2 | 3.8 | 3.1 | 2.8 | 3.7  | 4.6  | 4.3  | 3.5  | 4.5  | 3.4                            | 2.2 | 1.5 | 1.9 | 1.3 | 1.3 | 2.5           | 4.6           |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |     |     |     |     |     |                 |  |
| 5-Feb  | Z                             | 1.5   | 1.3      | 1.0                   | 1.0 | 1.2 | 1.2 | 1.1 | 1.1 | 1.1 | 1.2 | 1.2 | 1.1 | 1.0  | 0.9  | 0.8  | 0.7  | 0.6  | 0.5                            | 0.6 | 0.5 | 0.4 | 0.3 | 0.3 | 0.9           | 1.5           |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |     |     |     |     |     |                 |  |
| 6-Feb  | 0.2                           | Z   | 0.2      | 0.1                   | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.3 | 0.3 | 0.5  | 0.5  | 0.3  | 0.3  | 0.3  | 0.4                            | 0.5 | 0.4 | 0.4 | 0.4 | 0.5 | 0.3           | 0.5           |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |     |     |     |     |     |                 |  |
| 7-Feb  | 0.5                           | 0.5   | Z        | 0.5                   | 0.5 | 0.5 | 0.6 | 0.4 | 0.4 | 0.5 | 0.4 | 0.3 | 0.3 | 0.2  | 0.2  | 0.1  | 0.3  | 0.4  | 0.2                            | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.3           | 0.6           |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |     |     |     |     |     |                 |  |
| 8-Feb  | 3.1                           | 4.0   | 3.6      | Z                     | 1.4 | 1.5 | 1.4 | 1.0 | 0.9 | 1.0 | 1.3 | M   | 3.2 | 4.1  | 3.8  | 2.9  | 2.1  | 1.5  | 1.0                            | 0.8 | 0.6 | 0.5 | 0.4 | 0.3 | 1.8           | 4.1           |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |     |     |     |     |     |                 |  |
| 9-Feb  | 0.3                           | 0.2   | 0.2      | 0.2                   | Z   | 0.2 | 0.2 | 0.1 | 0.1 | 0.2 | 0.2 | 0.3 | 0.3 | 0.3  | 0.3  | 0.3  | 0.3  | 0.3  | 0.3                            | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2           | 0.3           |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |     |     |     |     |     |                 |  |
| 10-Feb   | 0.2                           | 0.2   | 0.2      | 0.2                   | 0.2 | Z   | 1.0 | 1.3 | 2.1 | 4.3 | 4.5 | 5.3 | 4.9 | 9.6  | 7.6  | 7.2  | 6.5  | 7.2  | 6.6                            | 3.6 | 2.7 | 5.1 | 2.0 | 1.1 | 3.6           | 9.6           |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |     |     |     |     |     |                 |  |
| 11-Feb   | Z                             | 0.6   | 0.5      | 0.5                   | 0.6 | 1.2 | 1.9 | 2.2 | 3.9 | 4.7 | 3.8 | 2.7 | 2.7 | 1.9  | 1.4  | 0.5  | 0.3  | 0.2  | 0.2                            | 0.2 | 0.2 | 0.1 | 0.1 | 0.1 | 1.3           | 4.7           |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |     |     |     |     |     |                 |  |
| 12-Feb   | 0.1                           | Z   | 0.1      | 0.1                   | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2  | 0.3  | 0.2  | 0.2  | 0.2  | 0.2                            | 0.8 | 0.7 | 0.4 | 0.3 | 0.3 | 0.4           | 0.2           | 0.8 |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |     |     |     |     |     |                 |  |
| 13-Feb   | 0.5                           | 0.4   | Z        | 0.3                   | 0.2 | 0.2 | 0.1 | 0.1 | 0.1 | 0.2 | 2.2 | 4.2 | 3.9 | 0.6  | 0.3  | 2.3  | 2.2  | 1.7  | 0.1                            | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.9           | 4.2           |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |     |     |     |     |     |                 |  |
| 14-Feb   | 0.0                           | 0.2   | 0.8      | Z                     | 0.6 | 0.2 | 0.1 | 0.0 | 0.1 | 1.7 | 3.5 | 4.8 | 7.3 | 9.2  | 8.5  | 5.8  | 2.9  | 4.0  | 0.9                            | 0.5 | 0.2 | 0.1 | 0.1 | 0.1 | 2.2           | 9.2           |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |     |     |     |     |     |                 |  |
| 15-Feb   | 0.1                           | 0.1   | 0.0      | 0.0                   | Z   | 0.1 | 0.1 | 0.0 | 0.1 | 0.1 | 0.2 | 0.2 | 0.6 | 0.8  | 0.6  | 0.7  | 0.7  | 0.5  | 0.3                            | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.3           | 0.8           |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |     |     |     |     |     |                 |  |
| 16-Feb   | 0.3                           | 0.3   | 0.4      | 0.4                   | 0.4 | Z   | 0.4 | 0.3 | 0.4 | 0.4 | 0.5 | 0.6 | 0.6 | 0.6  | 0.5  | 0.5  | 0.5  | 0.5  | 1.0                            | 1.6 | 2.0 | 2.7 | 1.8 | 3.8 | 0.9           | 3.8           |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |     |     |     |     |     |                 |  |
| 17-Feb   | Z                             | 1.1   | 0.8      | 0.7                   | 0.7 | 1.2 | 0.6 | 0.6 | 0.5 | 0.4 | 0.4 | 0.4 | 0.5 | 0.8  | 6.2  | 9.2  | 3.2  | 2.1  | 0.5                            | 0.5 | 0.3 | 0.2 | 0.1 | 0.1 | 1.4           | 9.2           |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |     |     |     |     |     |                 |  |
| 18-Feb   | 0.4                           | Z   | 0.2      | 0.1                   | 0.1 | 0.3 | 0.6 | 1.5 | 2.7 | 2.3 | 2.0 | 4.5 | 4.2 | 11.2 | 18.4 | 19.1 | 19.9 | 24.4 | 15.4                           | 8.9 | 6.2 | 5.6 | 3.2 | 2.6 | 6.7           | 24.4          |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |     |     |     |     |     |                 |  |
| 19-Feb   | 2.0                           | 0.9   | Z        | 0.6                   | 0.3 | 0.3 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 | 0.3 | 0.4 | 0.6  | 0.5  | 0.5  | 0.7  | 5.4  | 3.3                            | 1.3 | 1.1 | 0.9 | 0.9 | 0.9 | 1.0           | 5.4           |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |     |     |     |     |     |                 |  |
| 20-Feb   | 0.8                           | 0.4   | 0.4      | Z                     | 3.0 | 4.0 | 1.9 | 1.4 | 1.0 | 1.3 | 1.9 | 4.6 | 7.7 | 13.8 | 10.6 | 7.2  | 6.3  | 10.9 | 3.4                            | 0.8 | 0.4 | 0.3 | 0.3 | 0.2 | 3.6           | 13.8          |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |     |     |     |     |     |                 |  |
| 21-Feb   | 0.3                           | 0.2   | 0.2      | 0.1                   | Z   | 0.2 | 0.2 | 0.7 | 1.2 | 0.6 | 0.8 | 3.9 | 7.0 | 12.0 | 11.0 | 10.9 | 4.3  | 1.0  | 0.4                            | 0.3 | 0.3 | 0.3 | 0.5 | 1.3 | 2.5           | 12.0          |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |     |     |     |     |     |                 |  |
| 22-Feb   | 1.4                           | 1.2   | 0.9      | 0.7                   | 0.5 | Z   | 0.3 | 0.3 | 0.4 | 0.5 | 0.4 | 0.5 | 0.9 | 3.9  | 5.2  | 7.2  | 6.7  | 5.8  | 4.2                            | 2.3 | 2.3 | 1.8 | 1.9 | 1.5 | 2.2           | 7.2           |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |     |     |     |     |     |                 |  |
| 23-Feb   | Z                             | 1.5   | 1.4      | 1.2                   | 1.0 | 0.9 | 0.7 | 0.6 | 0.7 | 0.9 | 1.3 | 2.0 | 1.9 | 8.2  | 18.2 | 15.9 | 16.5 | 14.0 | 9.7                            | 5.7 | 4.2 | 3.1 | 3.4 | 3.2 | 5.1           | 18.2          |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |     |     |     |     |     |                 |  |
| 24-Feb   | 2.9                           | Z   | 2.1      | 1.8                   | 1.6 | 1.4 | 1.3 | 1.0 | 0.9 | 0.9 | 0.9 | 1.0 | 0.7 | 0.6  | 0.9  | 0.6  | 0.4  | 0.4  | 0.6                            | 1.1 | 1.2 | 0.8 | 0.7 | 1.4 | 1.1           | 2.9           |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |     |     |     |     |     |                 |  |
| 25-Feb   | 1.7                           | 1.3   | Z        | 0.9                   | 0.8 | 0.8 | 0.7 | 0.7 | 0.7 | 0.8 | 0.7 | 0.5 | 0.5 | 0.4  | 0.4  | 0.3  | 0.4  | 0.3  | 0.4                            | 0.5 | 0.5 | 0.4 | 0.4 | 0.2 | 0.6           | 1.7           |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |     |     |     |     |     |                 |  |
| 26-Feb   | 0.2                           | 0.2   | 0.2      | Z                     | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.4 | 0.6 | 0.6 | 0.6 | 0.6  | 0.5  | 0.4  | 0.3  | 0.2  | 0.2                            | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.3           | 0.6           |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |     |     |     |     |     |                 |  |
| 27-Feb   | 0.1                           | 0.1   | 0.1      | 0.1                   | Z   | 0.2 | 0.4 | 0.4 | 0.7 | 2.1 | 2.1 | 2.4 | 6.1 | 8.7  | 6.4  | 10.0 | 3.1  | 0.3  | 0.1                            | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 1.9           | 10.0          |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |     |     |     |     |     |                 |  |
| 28-Feb   | 0.3                           | 0.3   | 0.2      | 0.2                   | 0.2 | Z   | 0.2 | 0.2 | 0.2 | 0.7 | 0.6 | 4.6 | 9.0 | 18.5 | 13.4 | 9.9  | 11.1 | 8.9  | 5.0                            | 3.1 | 2.6 | 1.6 | 1.0 | 0.6 | 4.0           | 18.5          |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |     |     |     |     |     |                 |  |
|  |                               |   |          |                       |     |     |     |     |     |     |     |     |     |      |      |      |      |      |                                |     |     |     |     | 0.8 | 1.1           | 1.0           | 0.5 | 0.9 | 0.9 | 0.7 | 0.8 | 0.9 | 1.1 | 1.3 | 1.9 | 2.6 | 4.2  | 4.8  | 4.6  | 3.6  | 3.5  | 2.1  | 1.3 | 1.1 | 1.0 | 0.8 | 0.8 | Diurnal Average |  |
|  |                               |   |          |                       |     |     |     |     |     |     |     |     |     |      |      |      |      |      |                                |     |     |     |     | 3.1 | 7.5           | 6.8           | 1.8 | 5.1 | 4.3 | 3.7 | 3.5 | 3.9 | 4.7 | 4.5 | 5.3 | 9.0 | 18.5 | 18.4 | 19.1 | 19.9 | 24.4 | 15.4 | 8.9 | 6.2 | 5.6 | 3.4 | 3.8 | Diurnal Maximum |  |
| Z - zerspan      C - Calibration      M - Maintenance                          |                               |   |          |                       |     |     |     |     |     |     |     |     |     |      |      |      |      |      |                                |     |     |     |     |     |               |               |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |     |     |     |     |     |                 |  |
| Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 172 ppb      24-hr 48 ppb |                               |   |          |                       |     |     |     |     |     |     |     |     |     |      |      |      |      |      |                                |     |     |     |     |     |               |               |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |     |     |     |     |     |                 |  |





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Sulphur Dioxide (SO<sub>2</sub>) - ppb**  
**Athabasca Valley - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 10                            | 620                    | 97.03    | 97.03               |
| 11 - 20                           | 18                     | 2.82     | 99.84               |
| 21 - 60                           | 1                      | 0.16     | 100.00              |
| 61 - 110                          | 0                      | 0.00     | 100.00              |
| 111 - 172                         | 0                      | 0.00     | 100.00              |
| > 172                             | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 639

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Sulphur Dioxide (SO<sub>2</sub>) - ppb  
Athabasca Valley - February 2023**

| <b>Concentration<br/>Ranges (ppb)</b> | <b>Wind Direction</b> |     |    |     |    |     |     |     |    |     |    |     |    |     |    |     | <b>Totals</b> |
|---------------------------------------|-----------------------|-----|----|-----|----|-----|-----|-----|----|-----|----|-----|----|-----|----|-----|---------------|
|                                       | N                     | NNE | NE | ENE | E  | ESE | SE  | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |               |
| 0 - 10                                | 92                    | 13  | 7  | 9   | 13 | 12  | 116 | 50  | 17 | 23  | 24 | 38  | 28 | 22  | 26 | 130 | 620           |
| 11 - 20                               | 2                     | 0   | 0  | 0   | 0  | 0   | 0   | 0   | 0  | 0   | 0  | 0   | 3  | 1   | 6  | 6   | 18            |
| 21 - 60                               | 0                     | 0   | 0  | 0   | 0  | 0   | 0   | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 1   | 1             |
| 61 - 110                              | 0                     | 0   | 0  | 0   | 0  | 0   | 0   | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| 111 - 172                             | 0                     | 0   | 0  | 0   | 0  | 0   | 0   | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| > 172                                 | 0                     | 0   | 0  | 0   | 0  | 0   | 0   | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| <b>Totals</b>                         | 94                    | 13  | 7  | 9   | 13 | 12  | 116 | 50  | 17 | 23  | 24 | 38  | 31 | 23  | 32 | 137 | 639           |

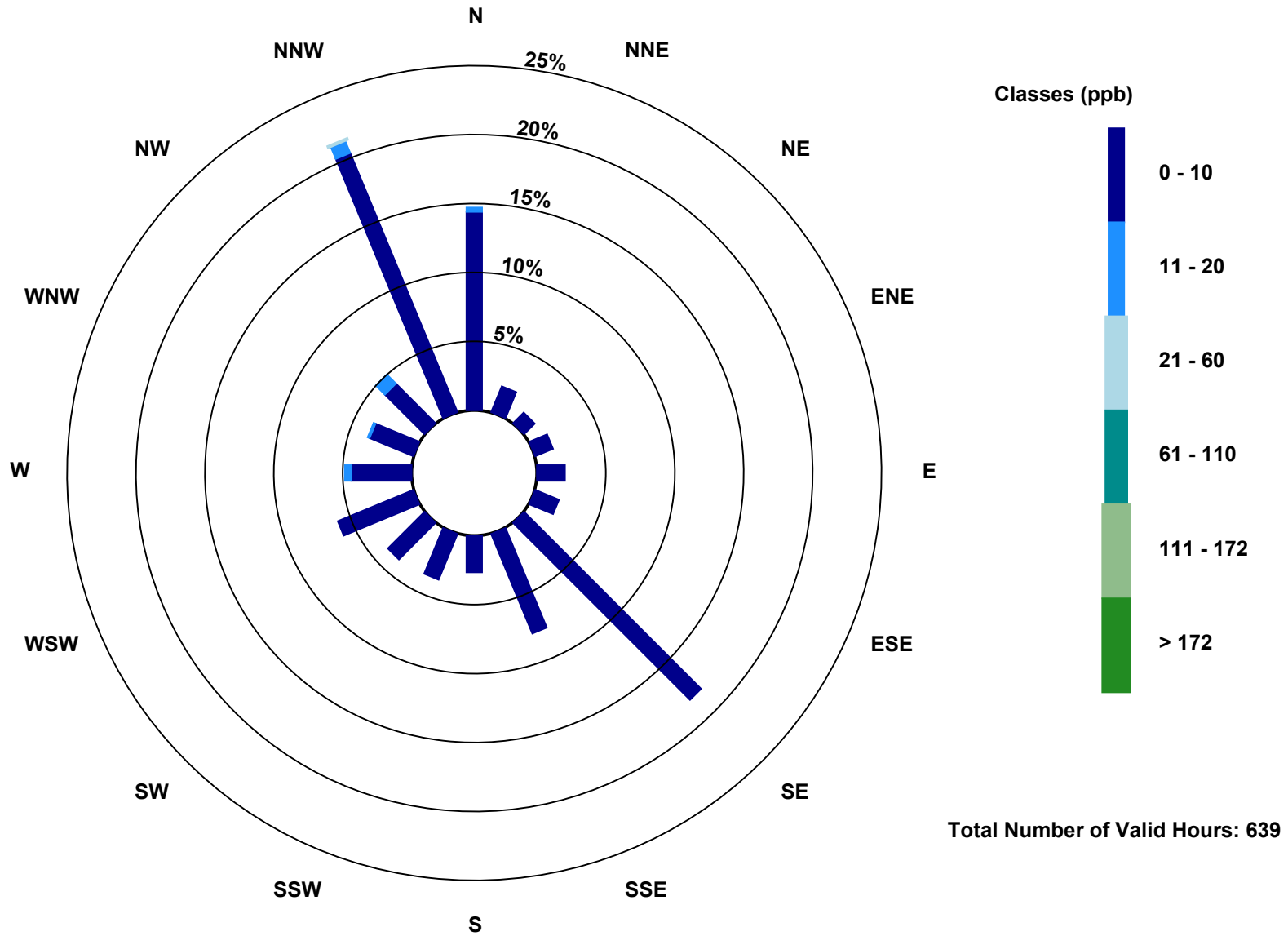
Total Number of Valid Hours: 639

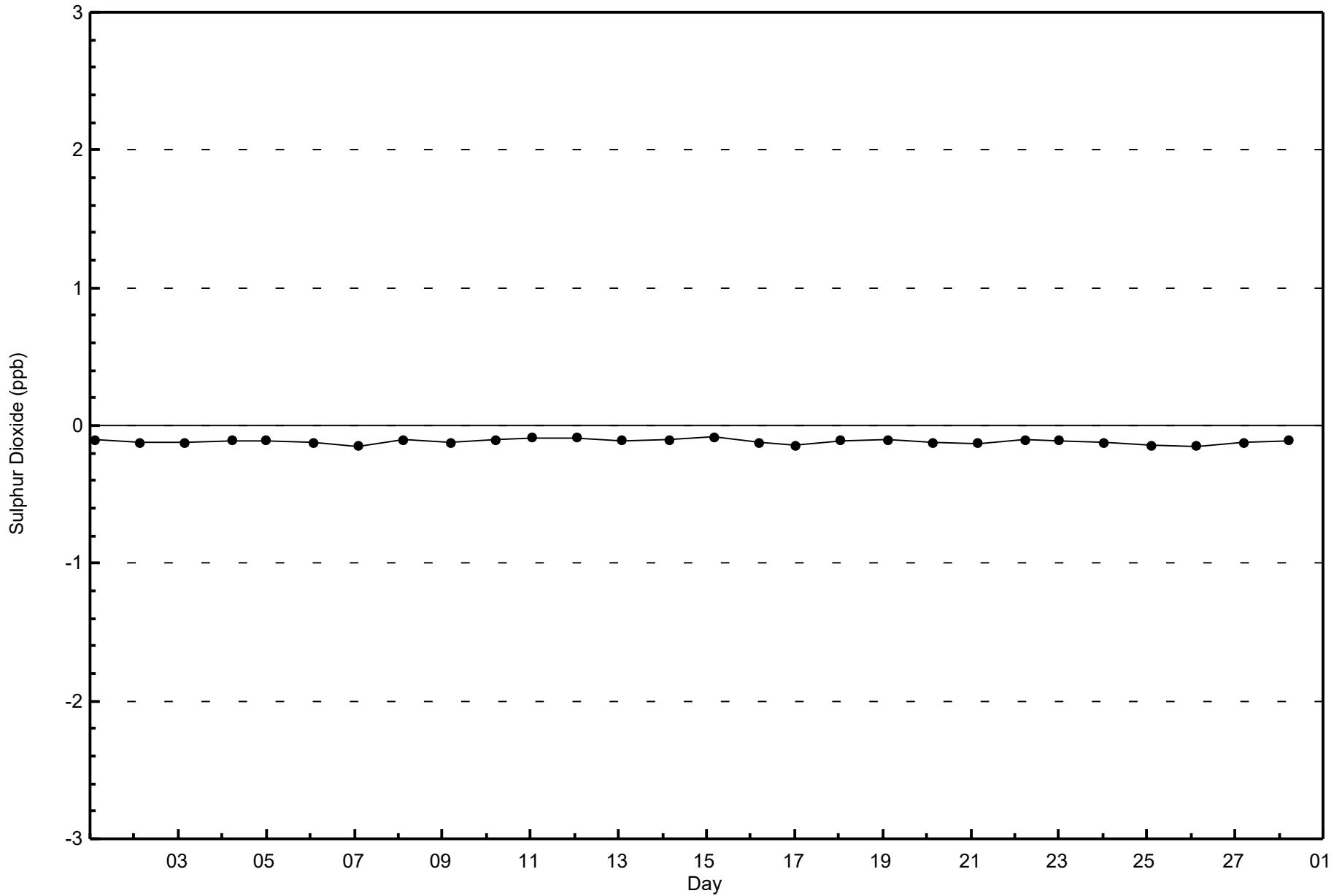
Total Number of Hours: 672

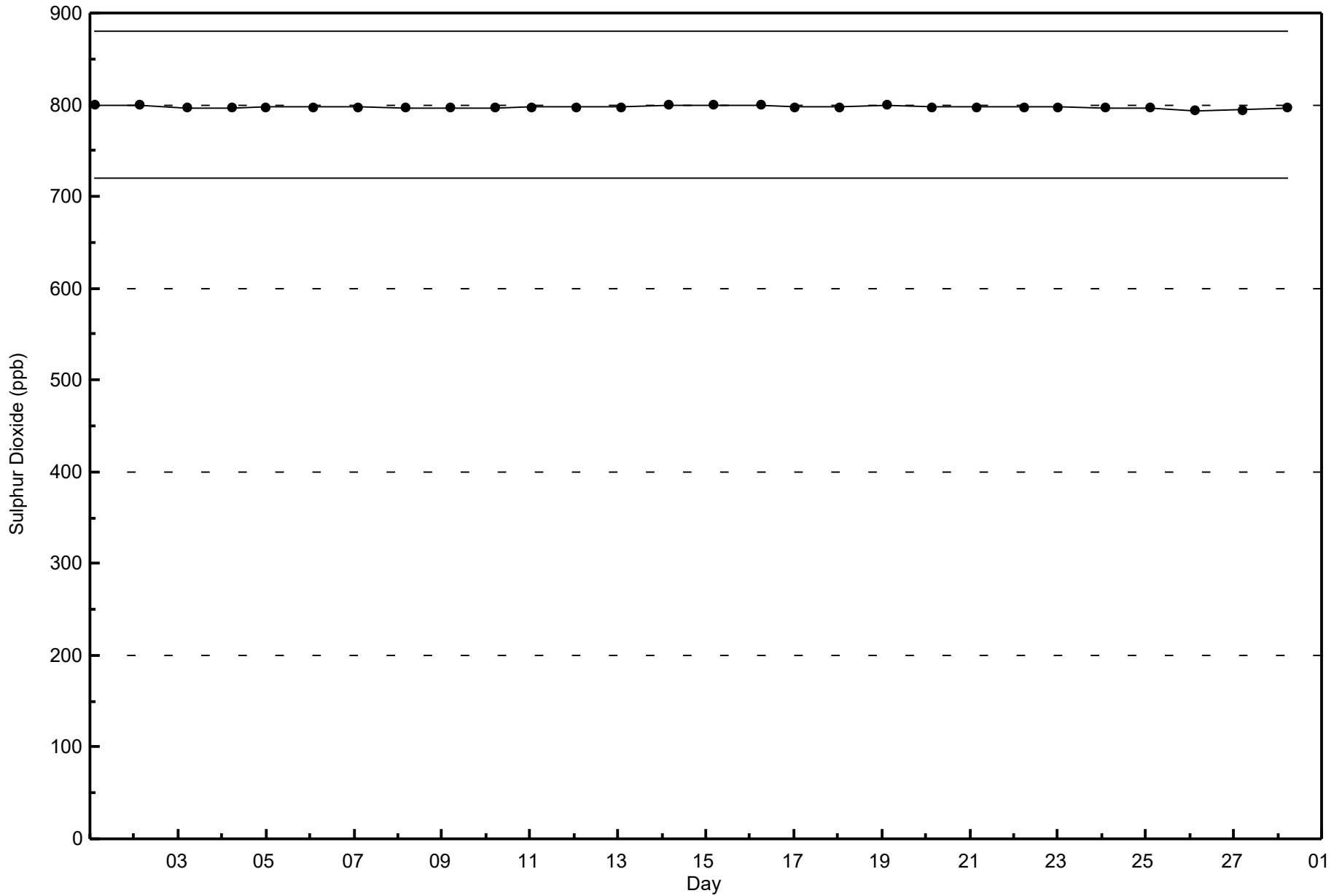


Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Sulphur Dioxide (SO<sub>2</sub>) - ppb  
Athabasca Valley











# Wood Buffalo Environmental Association

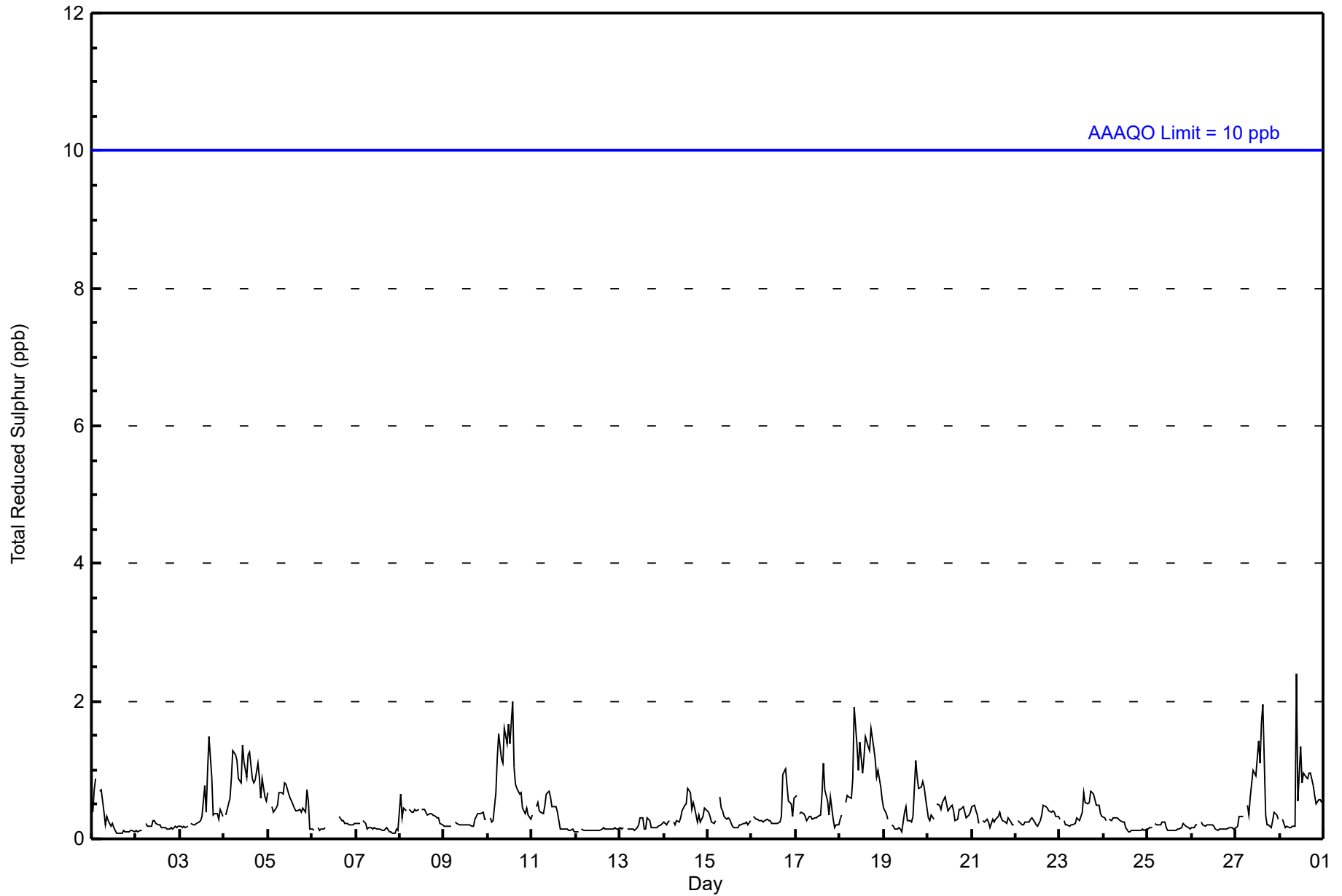
## Summary of Hour Averages

# Total Reduced Sulphur (TRS) - ppb

## Athabasca Valley - February 2023

| Number of Exceedences (AAAQO):              |                               | 1-hr: 0  |     | 24-hr: 0                              |     | Hours in Service:                        |     | 672                            |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |   |               |               |     |
|---|-------------------------------|--|-----|---------------------------------------|-----|--|-----|--------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---|---------------|---------------|-----|
| Maximum Value: 2.4 ppb on Feb 28 10:00      |                               | Maximum Daily Average: 1.0 ppb on Feb 18   |     | Minimum Value: 0.1 ppb on Feb 1 16:00 |     | Minimum Daily Average: 0.1 ppb on Feb 12 |     | Hours of Data: 636             |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |   |               |               |     |
| Maximum Diurnal Average: 0.5 ppb at hour 10 |                               | Minimum Diurnal Average: 0.3 ppb at hour 2   |     | Hours of Missing Data: 36             |     | Hours of Calibration: 35                 |     | Percent Operational Time: 99.9 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |   |               |               |     |
| Monthly Average: 0.39 ppb                   |                               | Percentiles: P <sub>1</sub> = 0.1 P <sub>10</sub> = 0.1 Q <sub>1</sub> = 0.2 Median = 0.3 Q <sub>3</sub> = 0.5 P <sub>90</sub> = 0.8 P <sub>99</sub> = 1.6 |     |                                       |     |  |     |                                |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |   |               |               |     |
| Day   | Hourly Period Ending At (MST) |  |     |                                       |     |  |     |                                |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |   | Daily Average | Daily Maximum |     |
|   | 1                             | 2  | 3   | 4                                     | 5   | 6  | 7   | 8                              | 9   | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19  | 20  | 21  | 22  | 23  | 24  |               |               |     |
| 1-Feb                                       | 0.4                           | 0.7  | 0.9 | Z                                     | 0.7 | 0.7                                      | 0.4 | 0.2                            | 0.3 | 0.3 | 0.2 | 0.2 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1   | 0.3           | 0.9           |     |
| 2-Feb                                       | 0.1                           | 0.1  | 0.1 | 0.1                                   | Z   | 0.2                                      | 0.2 | 0.2                            | 0.2 | 0.3 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2   | 0.2           | 0.2           | 0.3 |
| 3-Feb                                       | 0.2                           | 0.2  | 0.2 | 0.2                                   | 0.2 | Z  | 0.2 | 0.2                            | 0.2 | 0.2 | 0.2 | 0.3 | 0.3 | 0.8 | 0.4 | 1.0 | 1.5 | 0.9 | 0.4 | 0.4 | 0.4 | 0.3 | 0.4 | 0.3   | 0.4           | 1.5           |     |
| 4-Feb                                       | Z                             | 0.4  | 0.5 | 0.6                                   | 0.9 | 1.3                                      | 1.2 | 1.1                            | 0.9 | 0.8 | 1.4 | 1.1 | 0.9 | 1.2 | 1.3 | 0.9 | 0.8 | 0.8 | 1.1 | 0.9 | 0.6 | 0.9 | 0.6 | 0.6   | 0.9           | 1.4           |     |
| 5-Feb                                       | 0.7                           | Z  | 0.5 | 0.4                                   | 0.4 | 0.5                                      | 0.7 | 0.7                            | 0.6 | 0.8 | 0.8 | 0.6 | 0.6 | 0.5 | 0.5 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.7 | 0.5 | 0.1   | 0.5           | 0.8           |     |
| 6-Feb                                       | 0.1                           | 0.1  | Z   | 0.2                                   | 0.1 | 0.1                                      | 0.1 | 0.2                            | C   | C   | C   | C   | C   | C   | C   | 0.3 | 0.3 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2   | --            | 0.3           |     |
| 7-Feb                                       | 0.2                           | 0.2  | 0.2 | Z                                     | 0.3 | 0.2                                      | 0.1 | 0.2                            | 0.2 | 0.1 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1   | 0.2           | 0.3           |     |
| 8-Feb                                       | 0.6                           | 0.3  | 0.5 | 0.4                                   | Z   | 0.4                                      | 0.4 | 0.4                            | 0.4 | 0.4 | 0.4 | M   | 0.4 | 0.4 | 0.4 | 0.3 | 0.4 | 0.4 | 0.4 | 0.3 | 0.3 | 0.3 | 0.2 | 0.2   | 0.4           | 0.6           |     |
| 9-Feb                                       | 0.2                           | 0.2  | 0.2 | 0.2                                   | 0.2 | Z  | 0.2 | 0.2                            | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.3 | 0.4 | 0.4 | 0.4 | 0.4 | 0.3 | 0.3   | 0.2           | 0.4           |     |
| 10-Feb                                      | Z                             | 0.3  | 0.2 | 0.3                                   | 0.7 | 1.2                                      | 1.5 | 1.2                            | 1.1 | 1.6 | 1.4 | 1.7 | 1.4 | 2.0 | 1.0 | 0.8 | 0.7 | 0.7 | 0.7 | 0.4 | 0.4 | 0.4 | 0.3 | 0.3   | 0.9           | 2.0           |     |
| 11-Feb                                      | 0.3                           | Z  | 0.5 | 0.5                                   | 0.4 | 0.4                                      | 0.4 | 0.5                            | 0.7 | 0.7 | 0.6 | 0.5 | 0.5 | 0.5 | 0.4 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1   | 0.3           | 0.7           |     |
| 12-Feb                                      | 0.1                           | 0.1  | Z   | 0.1                                   | 0.1 | 0.1                                      | 0.1 | 0.1                            | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.1   | 0.1           | 0.2           |     |
| 13-Feb                                      | 0.2                           | 0.1  | 0.2 | Z                                     | 0.1 | 0.1                                      | 0.1 | 0.1                            | 0.1 | 0.2 | 0.2 | 0.3 | 0.3 | 0.2 | 0.1 | 0.3 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2   | 0.2           | 0.3           |     |
| 14-Feb                                      | 0.2                           | 0.2  | 0.2 | 0.3                                   | Z   | 0.2                                      | 0.2 | 0.3                            | 0.2 | 0.3 | 0.4 | 0.5 | 0.5 | 0.7 | 0.7 | 0.4 | 0.5 | 0.4 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.4   | 0.4           | 0.7           |     |
| 15-Feb                                      | 0.4                           | 0.3  | 0.2 | 0.2                                   | 0.3 | Z  | 0.6 | 0.5                            | 0.4 | 0.3 | 0.3 | 0.3 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.3   | 0.3           | 0.6           |     |
| 16-Feb                                      | Z                             | 0.3  | 0.3 | 0.3                                   | 0.3 | 0.3                                      | 0.2 | 0.3                            | 0.3 | 0.3 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.3 | 0.9 | 1.0 | 0.8 | 0.5 | 0.5 | 0.3 | 0.6   | 0.4           | 1.0           |     |
| 17-Feb                                      | 0.6                           | Z  | 0.4 | 0.4                                   | 0.4 | 0.3                                      | 0.3 | 0.3                            | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.4 | 0.6 | 1.1 | 0.7 | 0.5 | 0.3 | 0.6 | 0.3 | 0.2 | 0.2 | 0.2   | 0.4           | 1.1           |     |
| 18-Feb                                      | 0.3                           | 0.4  | Z   | 0.5                                   | 0.6 | 0.6                                      | 0.6 | 0.9                            | 1.9 | 1.4 | 1.0 | 1.4 | 1.0 | 1.2 | 1.5 | 1.3 | 1.3 | 1.6 | 1.3 | 1.2 | 0.9 | 1.0 | 0.8 | 0.6   | 1.0           | 1.9           |     |
| 19-Feb                                      | 0.5                           | 0.4  | 0.3 | Z                                     | 0.2 | 0.2                                      | 0.1 | 0.1                            | 0.2 | 0.1 | 0.1 | 0.4 | 0.5 | 0.3 | 0.3 | 0.3 | 0.3 | 1.1 | 0.9 | 0.7 | 0.7 | 0.8 | 0.8 | 0.6   | 0.4           | 1.1           |     |
| 20-Feb                                      | 0.3                           | 0.3  | 0.3 | 0.3                                   | Z   | 0.5                                      | 0.5 | 0.4                            | 0.5 | 0.6 | 0.5 | 0.4 | 0.5 | 0.5 | 0.4 | 0.3 | 0.3 | 0.4 | 0.4 | 0.5 | 0.4 | 0.3 | 0.3 | 0.4   | 0.4           | 0.6           |     |
| 21-Feb                                      | 0.5                           | 0.5  | 0.4 | 0.3                                   | 0.2 | Z  | 0.3 | 0.2                            | 0.3 | 0.2 | 0.2 | 0.3 | 0.2 | 0.3 | 0.3 | 0.4 | 0.3 | 0.3 | 0.2 | 0.2 | 0.3 | 0.2 | 0.2 | 0.2   | 0.3           | 0.5           |     |
| 22-Feb                                      | Z                             | 0.3  | 0.2 | 0.2                                   | 0.2 | 0.2                                      | 0.2 | 0.3                            | 0.3 | 0.3 | 0.2 | 0.2 | 0.2 | 0.3 | 0.3 | 0.5 | 0.5 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.3 | 0.3   | 0.3           | 0.5           |     |
| 23-Feb                                      | 0.3                           | Z  | 0.3 | 0.2                                   | 0.2 | 0.2                                      | 0.2 | 0.2                            | 0.2 | 0.3 | 0.3 | 0.3 | 0.4 | 0.7 | 0.5 | 0.5 | 0.5 | 0.7 | 0.6 | 0.6 | 0.5 | 0.5 | 0.4 | 0.3   | 0.4           | 0.7           |     |
| 24-Feb                                      | 0.3                           | 0.3  | Z   | 0.3                                   | 0.3 | 0.3                                      | 0.3 | 0.3                            | 0.3 | 0.3 | 0.2 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1   | 0.2           | 0.3           |     |
| 25-Feb                                      | 0.1                           | 0.2  | 0.2 | Z                                     | 0.2 | 0.2                                      | 0.2 | 0.2                            | 0.2 | 0.2 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2   | 0.2           | 0.2           |     |
| 26-Feb                                      | 0.2                           | 0.2  | 0.2 | 0.2                                   | Z   | 0.2                                      | 0.2 | 0.2                            | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.2   | 0.2           | 0.2           |     |
| 27-Feb                                      | 0.2                           | 0.2  | 0.3 | 0.3                                   | 0.3 | Z  | 0.5 | 0.3                            | 0.6 | 1.0 | 0.9 | 0.9 | 1.4 | 1.1 | 1.7 | 2.0 | 0.4 | 0.2 | 0.2 | 0.2 | 0.3 | 0.4 | 0.4 | 0.3   | 0.6           | 2.0           |     |
| 28-Feb                                      | Z                             | 0.3  | 0.2 | 0.2                                   | 0.2 | 0.2                                      | 0.2 | 0.2                            | 0.2 | 2.4 | 0.5 | 1.4 | 0.8 | 1.0 | 0.9 | 0.9 | 1.0 | 1.0 | 0.8 | 0.6 | 0.5 | 0.6 | 0.6 | 0.5   | 0.6           | 2.4           |     |
|   |                               |  |     |                                       |     |  |     |                                |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Diurnal Average   |               |               |     |
|   |                               |  |     |                                       |     |  |     |                                |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Diurnal Maximum   |               |               |     |
|   |                               |  |     |                                       |     |  |     |                                |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | 0.3 0.3 0.3 0.3 0.3 0.4 0.4 0.4 0.4 0.5 0.4 0.5 0.4 0.5 0.5 0.5 0.4 0.5 0.4 0.4 0.3 0.4 0.3 0.3 |               |               |     |
|   |                               |  |     |                                       |     |  |     |                                |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | 0.7 0.7 0.9 0.6 0.9 1.3 1.5 1.2 1.9 2.4 1.4 1.7 1.4 2.0 1.7 2.0 1.5 1.6 1.3 1.2 0.9 1.0 0.8 0.6 |               |               |     |

Z - zerospan      C - Calibration      M - Maintenance  
 Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 10 ppb    24-hr 3 ppb





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Total Reduced Sulphur (TRS) - ppb  
Athabasca Valley - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 2                             | 636                    | 100.00   | 100.00              |
| 3 - 4                             | 0                      | 0.00     | 100.00              |
| 5 - 7                             | 0                      | 0.00     | 100.00              |
| 8 - 11                            | 0                      | 0.00     | 100.00              |
| > 11                              | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 636

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Total Reduced Sulphur (TRS) - ppb  
Athabasca Valley - February 2023**

| <b>Concentration<br/>Ranges (ppb)</b> | <b>Wind Direction</b> |     |    |     |    |     |     |     |    |     |    |     |    |     |    |     | <b>Totals</b> |
|---------------------------------------|-----------------------|-----|----|-----|----|-----|-----|-----|----|-----|----|-----|----|-----|----|-----|---------------|
|                                       | N                     | NNE | NE | ENE | E  | ESE | SE  | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |               |
| 0 - 2                                 | 95                    | 12  | 7  | 9   | 15 | 11  | 116 | 50  | 16 | 22  | 24 | 35  | 29 | 23  | 31 | 141 | 636           |
| 3 - 4                                 | 0                     | 0   | 0  | 0   | 0  | 0   | 0   | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| 5 - 7                                 | 0                     | 0   | 0  | 0   | 0  | 0   | 0   | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| 8 - 11                                | 0                     | 0   | 0  | 0   | 0  | 0   | 0   | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| > 11                                  | 0                     | 0   | 0  | 0   | 0  | 0   | 0   | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| <b>Totals</b>                         | 95                    | 12  | 7  | 9   | 15 | 11  | 116 | 50  | 16 | 22  | 24 | 35  | 29 | 23  | 31 | 141 | 636           |

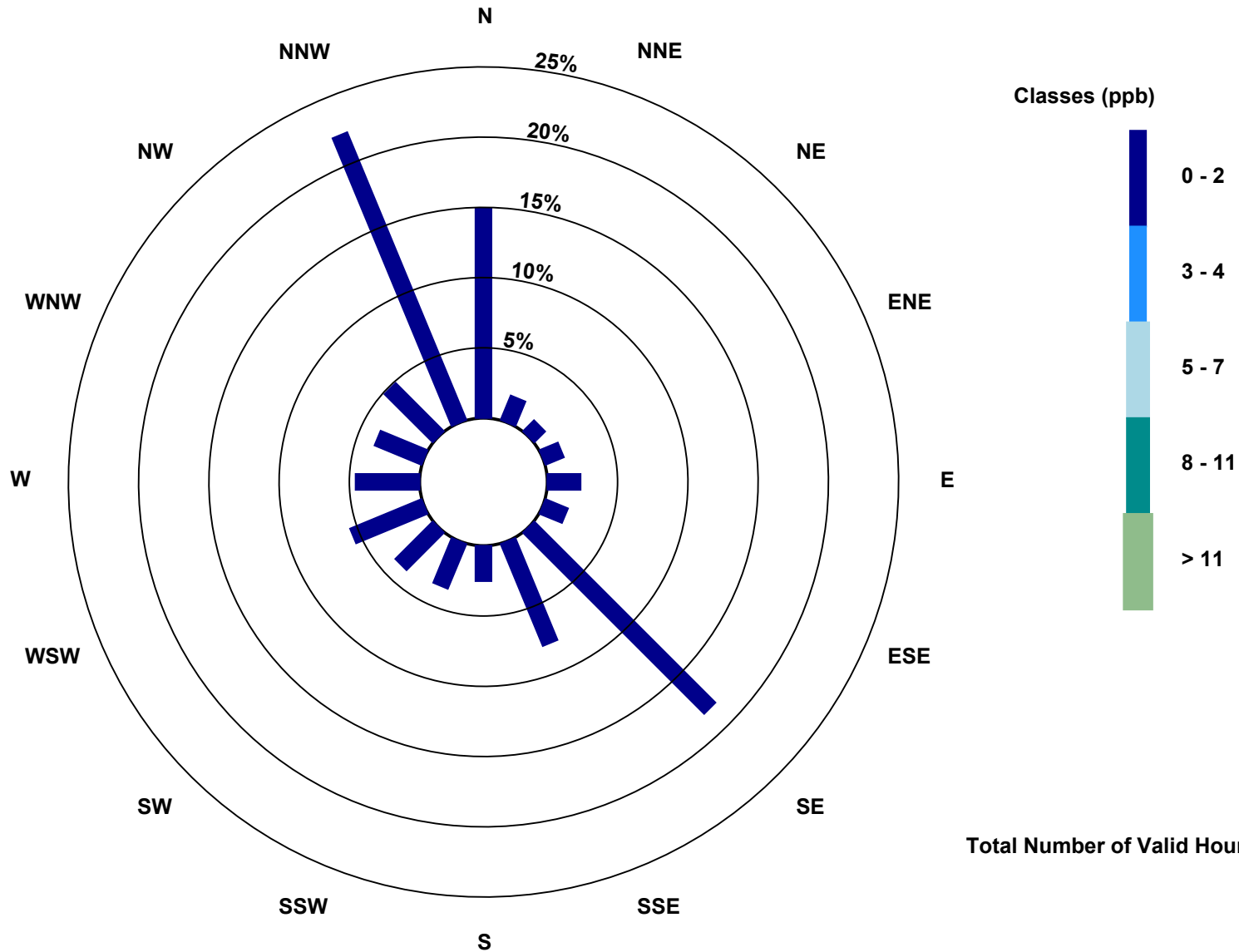
Total Number of Valid Hours: 636

Total Number of Hours: 672

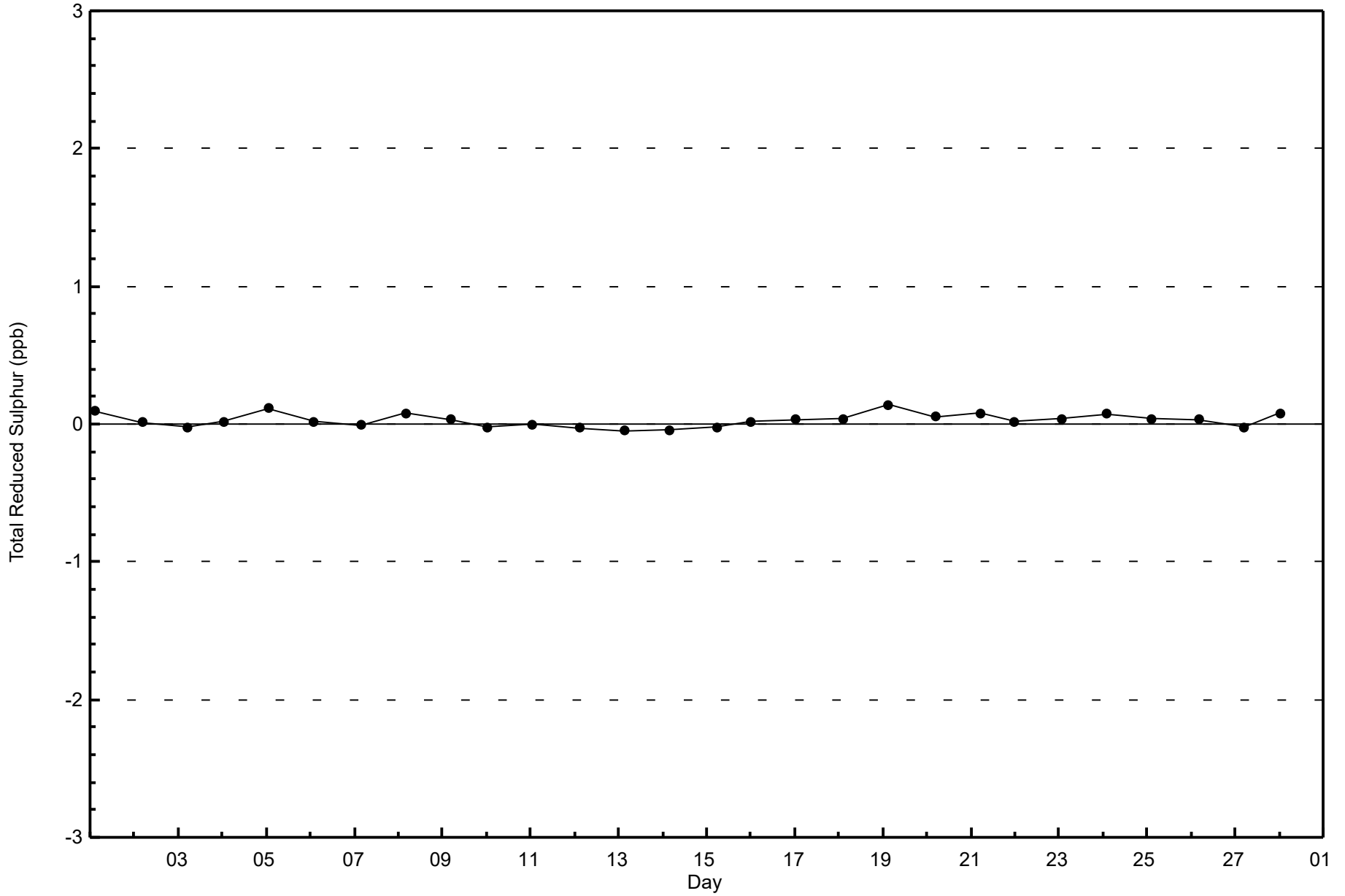


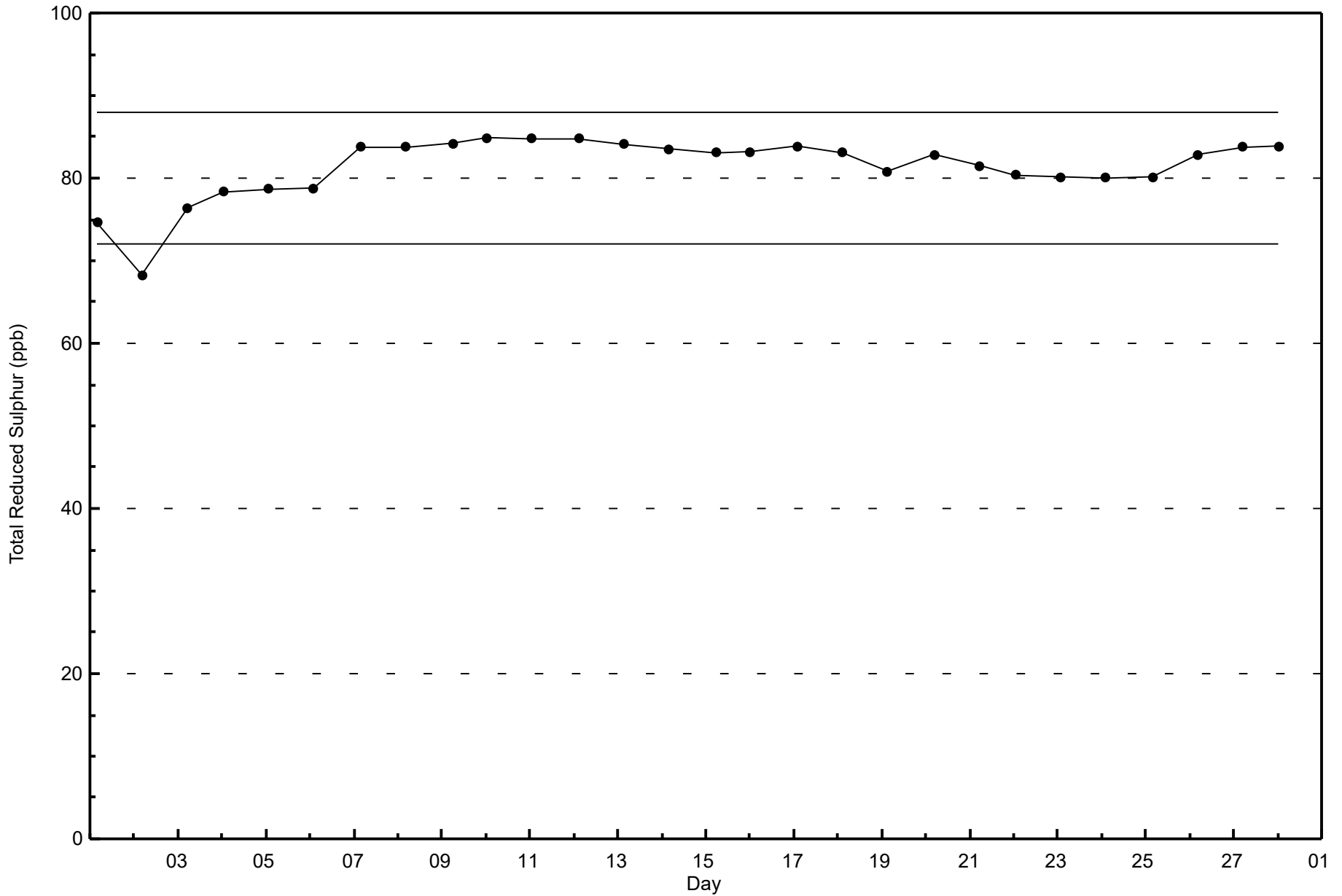
Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Total Reduced Sulphur (TRS) - ppb  
Athabasca Valley



Total Number of Valid Hours: 636







**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

**Total Hydrocarbons (THC) - ppm**  
**Athabasca Valley - February 2023**

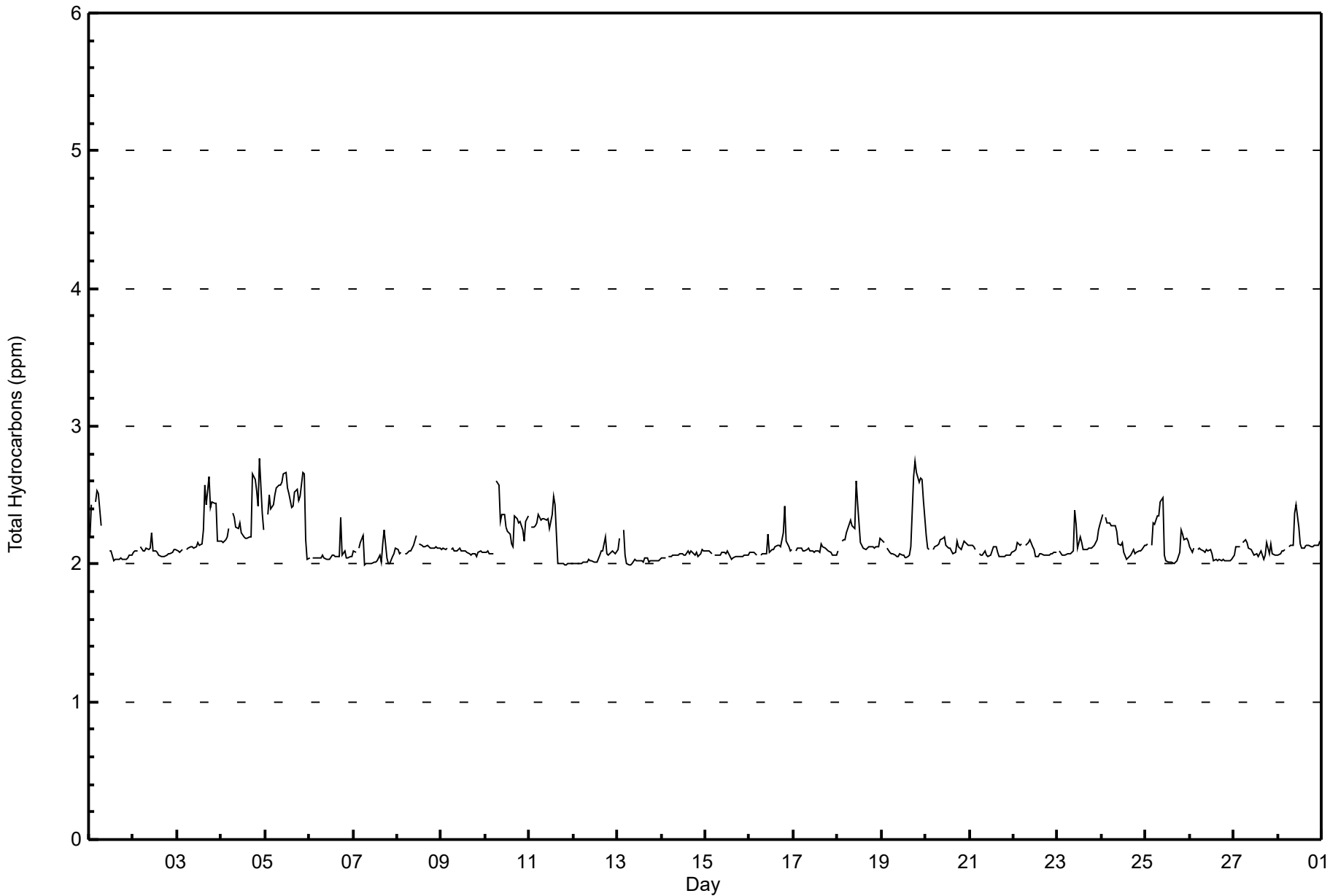
| Maximum Value: 2.8 ppm on Feb 4 22:00       |                               | Maximum Daily Average: 2.5 ppm on Feb 5  |     | Hours in Service: 672          |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |   |               |                 |  |
|---|-------------------------------|--|-----|--------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---|---------------|-----------------|--|
| Minimum Value: 2.0 ppm on Feb 13 07:00      |                               | Minimum Daily Average: 2.0 ppm on Feb 13   |     | Hours of Data: 639             |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |   |               |                 |  |
| Maximum Diurnal Average: 2.2 ppm at hour 11 |                               | Minimum Diurnal Average: 2.1 ppm at hour 16  |     | Hours of Missing Data: 33      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |   |               |                 |  |
| Monthly Average: 2.15 ppm                   |                               | Percentiles: P <sub>1</sub> = 2.0 P <sub>10</sub> = 2.0 Q <sub>1</sub> = 2.1 Median = 2.1 Q <sub>3</sub> = 2.2 P <sub>90</sub> = 2.4 P <sub>99</sub> = 2.7 |     | Hours of Calibration: 32       |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |   |               |                 |  |
|   |                               |  |     | Percent Operational Time: 99.9 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |   |               |                 |  |
| Day   | Hourly Period Ending At (MST) |  |     |                                |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |   | Daily Average | Daily Maximum   |  |
|   | 1                             | 2  | 3   | 4                              | 5   | 6   | 7   | 8   | 9   | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19  | 20  | 21  | 22  | 23  | 24  |               |                 |  |
| 1-Feb                                       | 2.2                           | 2.4  | Z   | 2.4                            | 2.5 | 2.5 | 2.3 | C   | C   | C   | C   | 2.1 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1 | 2.1 | 2.2   | 2.5           |                 |  |
| 2-Feb                                       | 2.1                           | 2.1  | 2.1 | Z                              | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1   | 2.2           |                 |  |
| 3-Feb                                       | 2.1                           | 2.1  | 2.1 | 2.1                            | Z   | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.1 | 2.1 | 2.2 | 2.6 | 2.4 | 2.6 | 2.4 | 2.5 | 2.4 | 2.4 | 2.2 | 2.2   | 2.6           |                 |  |
| 4-Feb                                       | 2.2                           | 2.2  | 2.2 | 2.2                            | 2.3 | Z   | 2.4 | 2.3 | 2.3 | 2.3 | 2.3 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.6 | 2.6 | 2.5 | 2.4 | 2.8 | 2.4 | 2.2   | 2.8           |                 |  |
| 5-Feb                                       | Z                             | 2.4  | 2.5 | 2.4                            | 2.4 | 2.5 | 2.6 | 2.6 | 2.6 | 2.6 | 2.7 | 2.7 | 2.6 | 2.5 | 2.4 | 2.4 | 2.5 | 2.5 | 2.5 | 2.5 | 2.7 | 2.7 | 2.2 | 2.0   | 2.7           |                 |  |
| 6-Feb                                       | 2.0                           | Z  | 2.0 | 2.0                            | 2.0 | 2.0 | 2.0 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1 | 2.1 | 2.0 | 2.1 | 2.1 | 2.3 | 2.1 | 2.1 | 2.0 | 2.0 | 2.1 | 2.1   | 2.3           |                 |  |
| 7-Feb                                       | 2.1                           | 2.1  | Z   | 2.1                            | 2.2 | 2.2 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1 | 2.0 | 2.1 | 2.2 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1 | 2.1   | 2.2           |                 |  |
| 8-Feb                                       | 2.1                           | 2.1  | 2.1 | Z                              | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | M   | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1   | 2.2           |                 |  |
| 9-Feb                                       | 2.1                           | 2.1  | 2.1 | 2.1                            | Z   | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1   | 2.1           |                 |  |
| 10-Feb                                      | 2.1                           | 2.1  | 2.1 | 2.1                            | 2.1 | Z   | 2.6 | 2.6 | 2.3 | 2.4 | 2.4 | 2.3 | 2.2 | 2.2 | 2.1 | 2.1 | 2.4 | 2.3 | 2.3 | 2.3 | 2.2 | 2.2 | 2.3 | 2.4   | 2.6           |                 |  |
| 11-Feb                                      | Z                             | 2.3  | 2.3 | 2.3                            | 2.3 | 2.4 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.4 | 2.5 | 2.4 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0   | 2.5           |                 |  |
| 12-Feb                                      | 2.0                           | Z  | 2.0 | 2.0                            | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1   | 2.2           |                 |  |
| 13-Feb                                      | 2.1                           | 2.2  | Z   | 2.2                            | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0   | 2.2           |                 |  |
| 14-Feb                                      | 2.0                           | 2.0  | 2.0 | Z                              | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1   | 2.1           |                 |  |
| 15-Feb                                      | 2.1                           | 2.1  | 2.1 | 2.1                            | Z   | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.0 | 2.0 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1   | 2.1           |                 |  |
| 16-Feb                                      | 2.1                           | 2.1  | 2.1 | 2.1                            | 2.1 | Z   | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.4 | 2.2 | 2.1 | 2.1 | 2.1   | 2.4           |                 |  |
| 17-Feb                                      | Z                             | 2.1  | 2.1 | 2.1                            | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1   | 2.1           |                 |  |
| 18-Feb                                      | 2.1                           | Z  | 2.2 | 2.2                            | 2.2 | 2.2 | 2.3 | 2.3 | 2.3 | 2.3 | 2.6 | 2.4 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2   | 2.6           |                 |  |
| 19-Feb                                      | 2.2                           | 2.2  | Z   | 2.1                            | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.0 | 2.1 | 2.1 | 2.1 | 2.6 | 2.7 | 2.7 | 2.6 | 2.6 | 2.6 | 2.5   | 2.7           |                 |  |
| 20-Feb                                      | 2.2                           | 2.1  | 2.1 | Z                              | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.1 | 2.1 | 2.1 | 2.2 | 2.1 | 2.1   | 2.2           |                 |  |
| 21-Feb                                      | 2.1                           | 2.1  | 2.1 | 2.1                            | Z   | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1   | 2.1           |                 |  |
| 22-Feb                                      | 2.1                           | 2.1  | 2.2 | 2.1                            | 2.1 | Z   | 2.1 | 2.1 | 2.2 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1   | 2.2           |                 |  |
| 23-Feb                                      | Z                             | 2.1  | 2.1 | 2.1                            | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.4 | 2.3 | 2.1 | 2.2 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | 2.3   | 2.4           |                 |  |
| 24-Feb                                      | 2.4                           | Z  | 2.3 | 2.3                            | 2.3 | 2.3 | 2.3 | 2.3 | 2.2 | 2.1 | 2.1 | 2.2 | 2.1 | 2.0 | 2.0 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1   | 2.4           |                 |  |
| 25-Feb                                      | 2.1                           | 2.1  | Z   | 2.1                            | 2.3 | 2.3 | 2.4 | 2.4 | 2.5 | 2.5 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1 | 2.3 | 2.2 | 2.2 | 2.2 | 2.2   | 2.5           |                 |  |
| 26-Feb                                      | 2.1                           | 2.1  | 2.1 | Z                              | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0   | 2.1           |                 |  |
| 27-Feb                                      | 2.1                           | 2.1  | 2.1 | 2.1                            | Z   | 2.2 | 2.2 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.0 | 2.1 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1   | 2.2           |                 |  |
| 28-Feb                                      | 2.1                           | 2.1  | 2.1 | 2.1                            | 2.1 | Z   | 2.1 | 2.1 | 2.1 | 2.4 | 2.4 | 2.3 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2   | 2.4           |                 |  |
|   |                               |  |     |                                |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Diurnal Average   |               |                 |  |
|   |                               |  |     |                                |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Diurnal Maximum   |               |                 |  |
|   |                               |  |     |                                |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | 2.1 2.1 2.1 2.2 2.2 2.2 2.2 2.2 2.2 2.2 2.2 2.1 2.1 2.1 2.1 2.1 2.1 2.1 2.2 2.2 2.2 2.2 2.1 2.1 2.1 2.1 |               |                 |  |
|   |                               |  |     |                                |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | 2.4 2.4 2.5 2.4 2.5 2.5 2.6 2.6 2.6 2.6 2.7 2.7 2.6 2.5 2.4 2.6 2.5 2.6 2.7 2.7 2.7 2.7 2.8 2.6 2.5 2.5 |               |                 |  |
| Z - zerospan                                |                               |  |     |                                |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | C - Calibration   |               | M - Maintenance |  |





**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Total Hydrocarbons (THC) - ppm**  
**Athabasca Valley - February 2023**





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Total Hydrocarbons (THC) - ppm  
Athabasca Valley - February 2023**

| <b>Concentration Ranges (ppm)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 2.0                           | 104                    | 16.28    | 16.28               |
| 2.1 - 3.0                         | 535                    | 83.72    | 100.00              |
| 3.1 - 10.0                        | 0                      | 0.00     | 100.00              |
| > 10.0                            | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 639

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Total Hydrocarbons (THC) - ppm  
Athabasca Valley - February 2023**

| <b>Concentration<br/>Ranges (ppm)</b> | <b>Wind Direction</b> |     |    |     |    |     |     |     |    |     |    |     |    |     |    |     | <b>Totals</b> |
|---------------------------------------|-----------------------|-----|----|-----|----|-----|-----|-----|----|-----|----|-----|----|-----|----|-----|---------------|
|                                       | N                     | NNE | NE | ENE | E  | ESE | SE  | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |               |
| 0 - 2.0                               | 13                    | 1   | 2  | 2   | 3  | 0   | 3   | 1   | 2  | 9   | 9  | 24  | 10 | 5   | 5  | 15  | 104           |
| 2.1 - 3.0                             | 81                    | 12  | 5  | 7   | 10 | 12  | 113 | 49  | 15 | 14  | 15 | 14  | 21 | 18  | 27 | 122 | 535           |
| 3.1 - 10.0                            | 0                     | 0   | 0  | 0   | 0  | 0   | 0   | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| > 10.0                                | 0                     | 0   | 0  | 0   | 0  | 0   | 0   | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| <b>Totals</b>                         | 94                    | 13  | 7  | 9   | 13 | 12  | 116 | 50  | 17 | 23  | 24 | 38  | 31 | 23  | 32 | 137 | 639           |

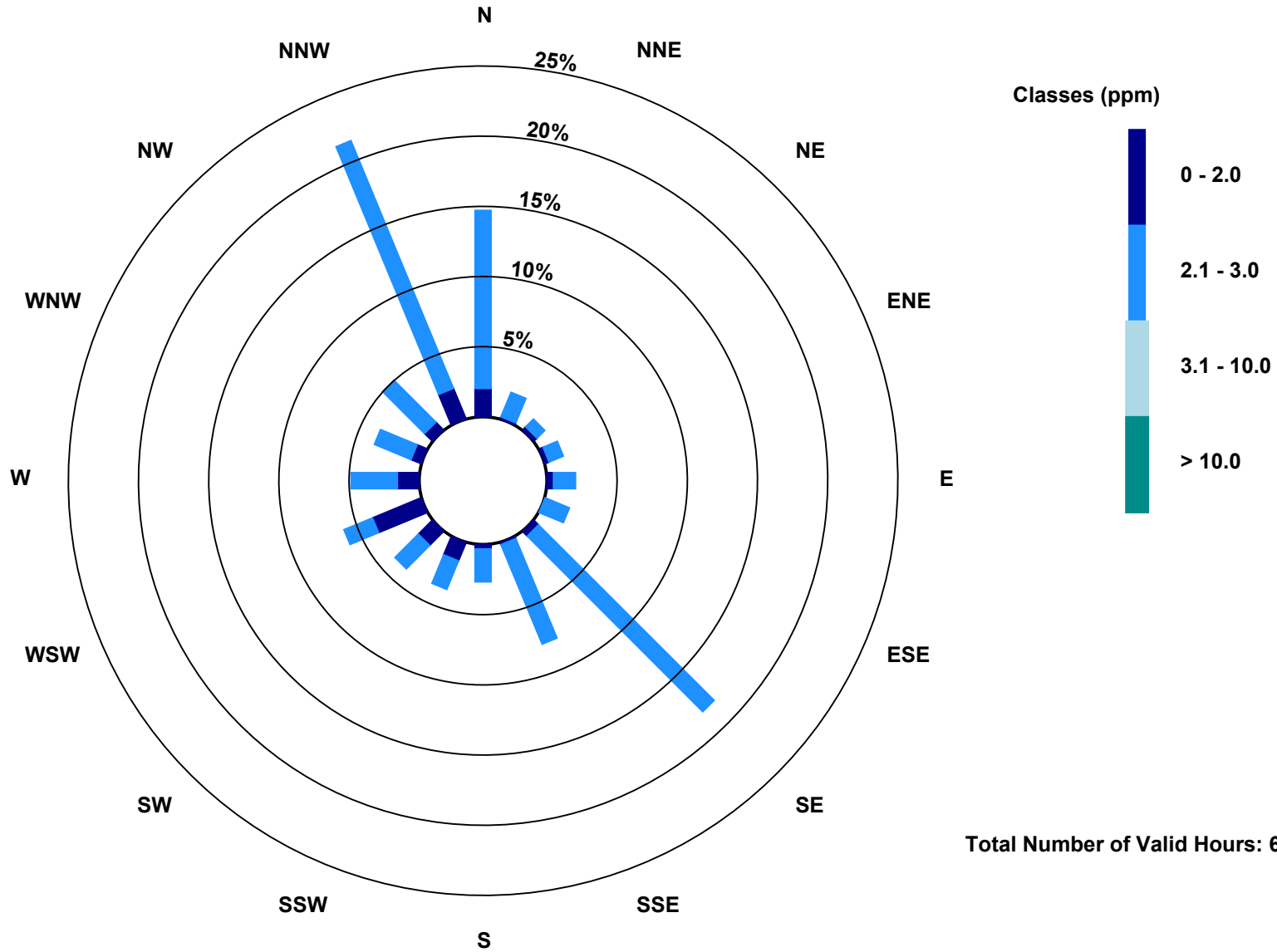
Total Number of Valid Hours: 639

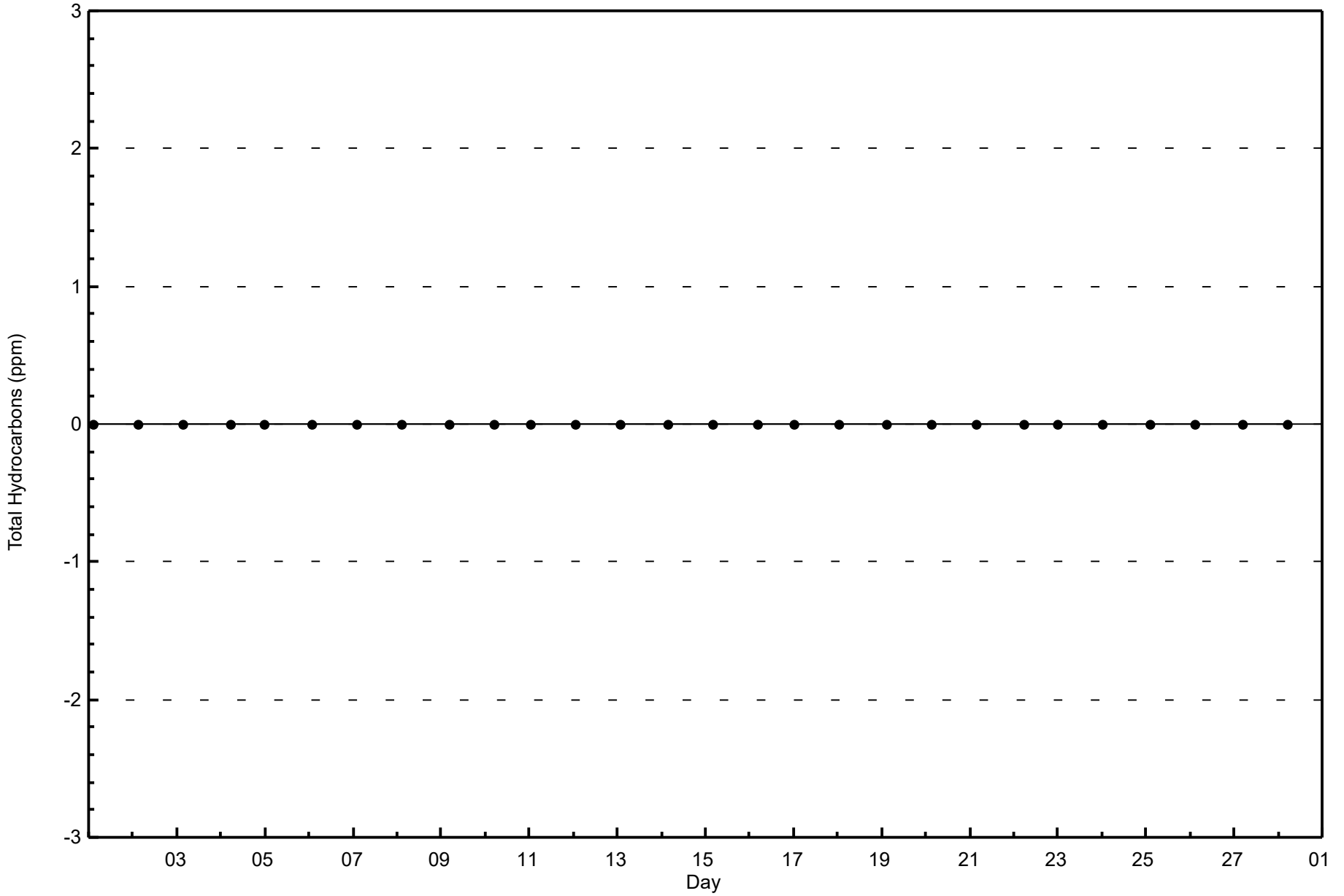
Total Number of Hours: 672

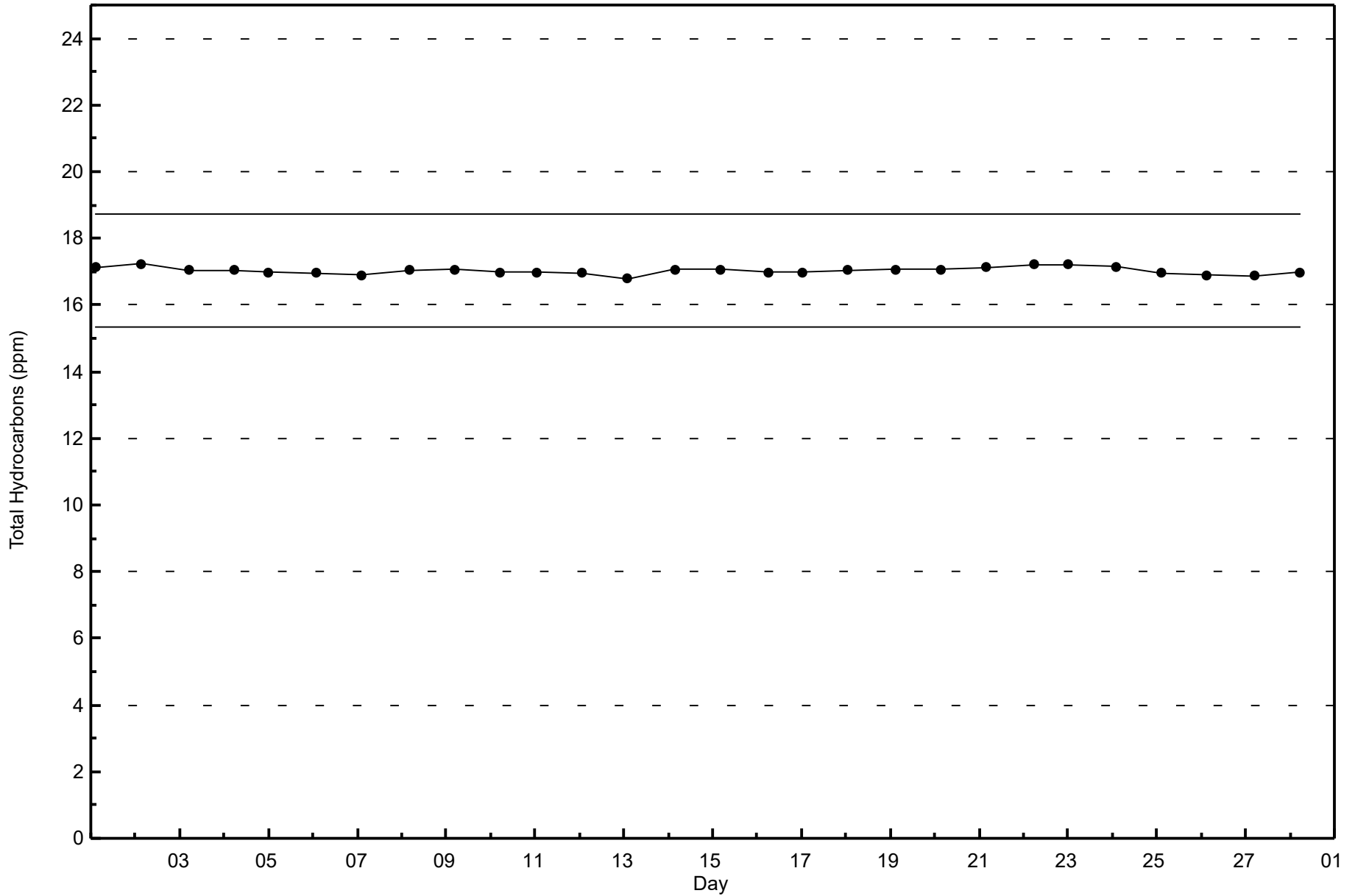


Wood Buffalo Environmental Association  
Wind Rose Feb 2023

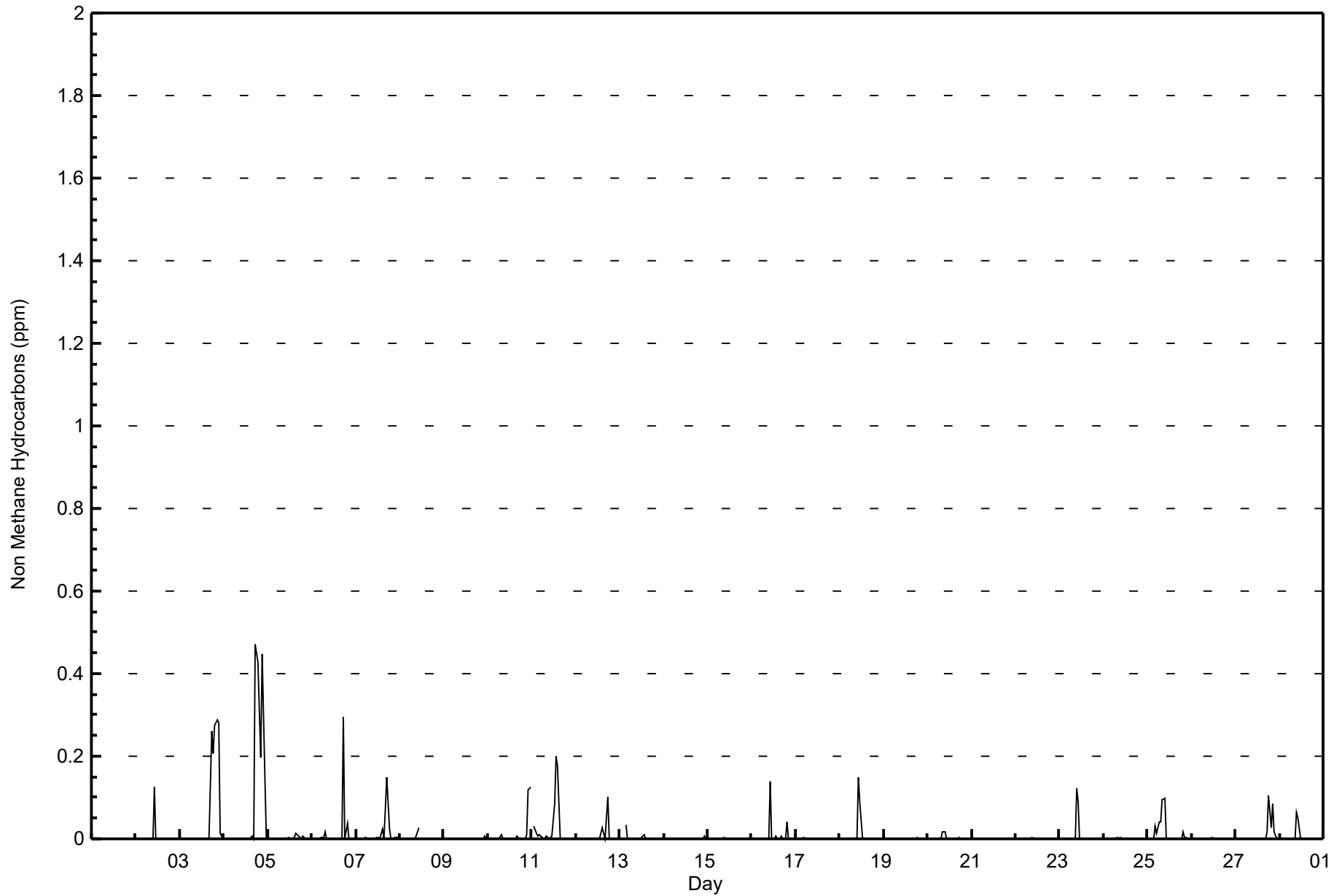
Total Hydrocarbons (THC) - ppm  
Athabasca Valley















**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Non Methane Hydrocarbons (NMHC) - ppm  
Athabasca Valley - February 2023**

| <b>Concentration Ranges (ppm)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 0.005                         | 568                    | 88.89    | 88.89               |
| 0.006 - 0.05                      | 40                     | 6.26     | 95.15               |
| 0.06 - 0.1                        | 18                     | 2.82     | 97.97               |
| > 0.1                             | 13                     | 2.03     | 100.00              |

Total Number of Valid Hours: 639

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Non Methane Hydrocarbons (NMHC) - ppm  
Athabasca Valley - February 2023**

| <b>Concentration<br/>Ranges (ppm)</b> | <b>Wind Direction</b> |     |    |     |    |     |     |     |    |     |    |     |    |     |    |     | <b>Totals</b> |
|---------------------------------------|-----------------------|-----|----|-----|----|-----|-----|-----|----|-----|----|-----|----|-----|----|-----|---------------|
|                                       | N                     | NNE | NE | ENE | E  | ESE | SE  | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |               |
| 0 - 0.005                             | 85                    | 13  | 6  | 7   | 12 | 9   | 100 | 45  | 16 | 21  | 23 | 37  | 29 | 22  | 28 | 115 | 568           |
| 0.006 - 0.05                          | 5                     | 0   | 0  | 1   | 1  | 2   | 8   | 5   | 1  | 2   | 1  | 1   | 0  | 1   | 3  | 9   | 40            |
| 0.06 - 0.1                            | 3                     | 0   | 1  | 1   | 0  | 1   | 5   | 0   | 0  | 0   | 0  | 0   | 2  | 0   | 1  | 4   | 18            |
| > 0.1                                 | 1                     | 0   | 0  | 0   | 0  | 0   | 3   | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 9   | 13            |
| <b>Totals</b>                         | 94                    | 13  | 7  | 9   | 13 | 12  | 116 | 50  | 17 | 23  | 24 | 38  | 31 | 23  | 32 | 137 | 639           |

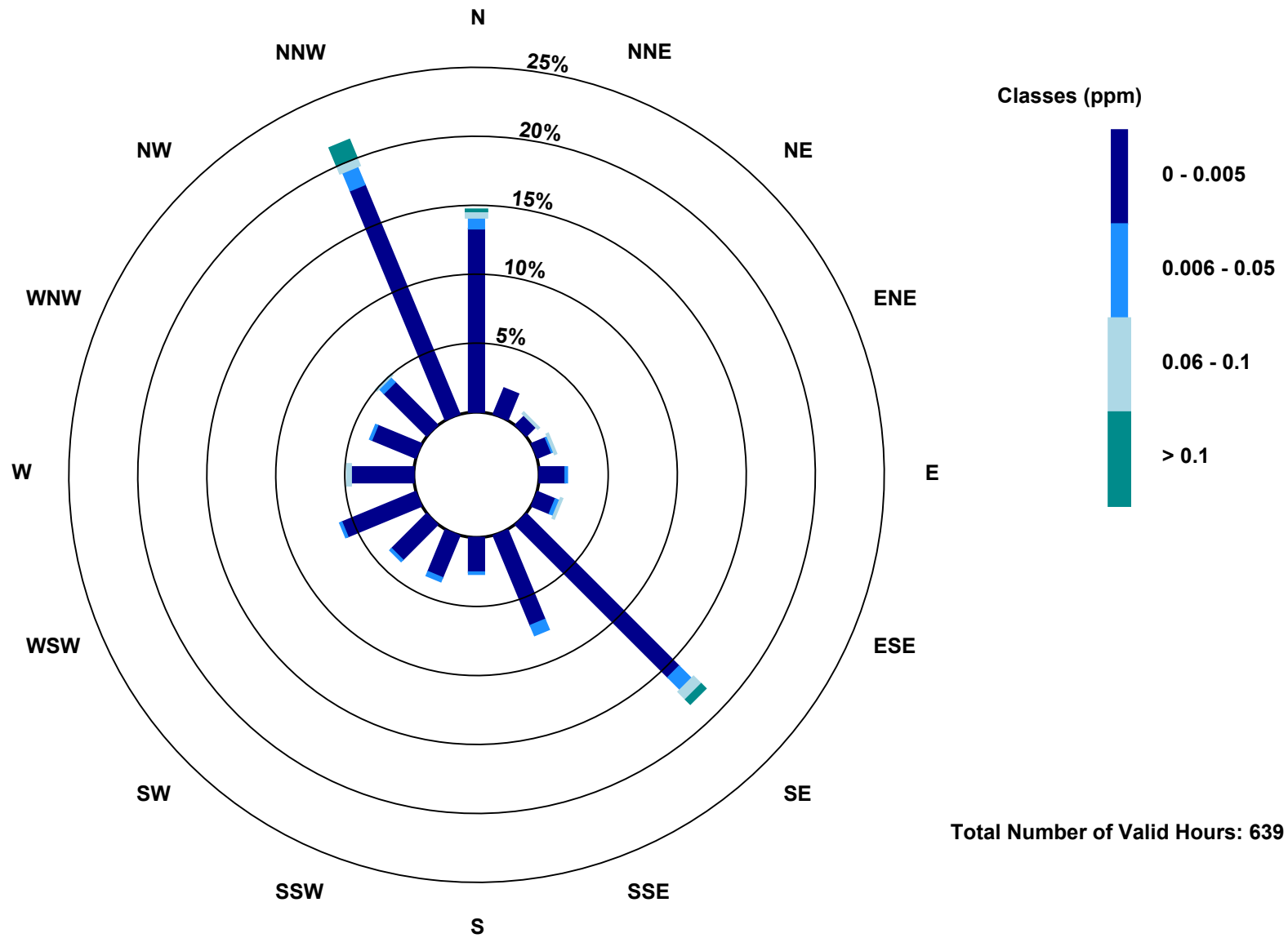
Total Number of Valid Hours: 639

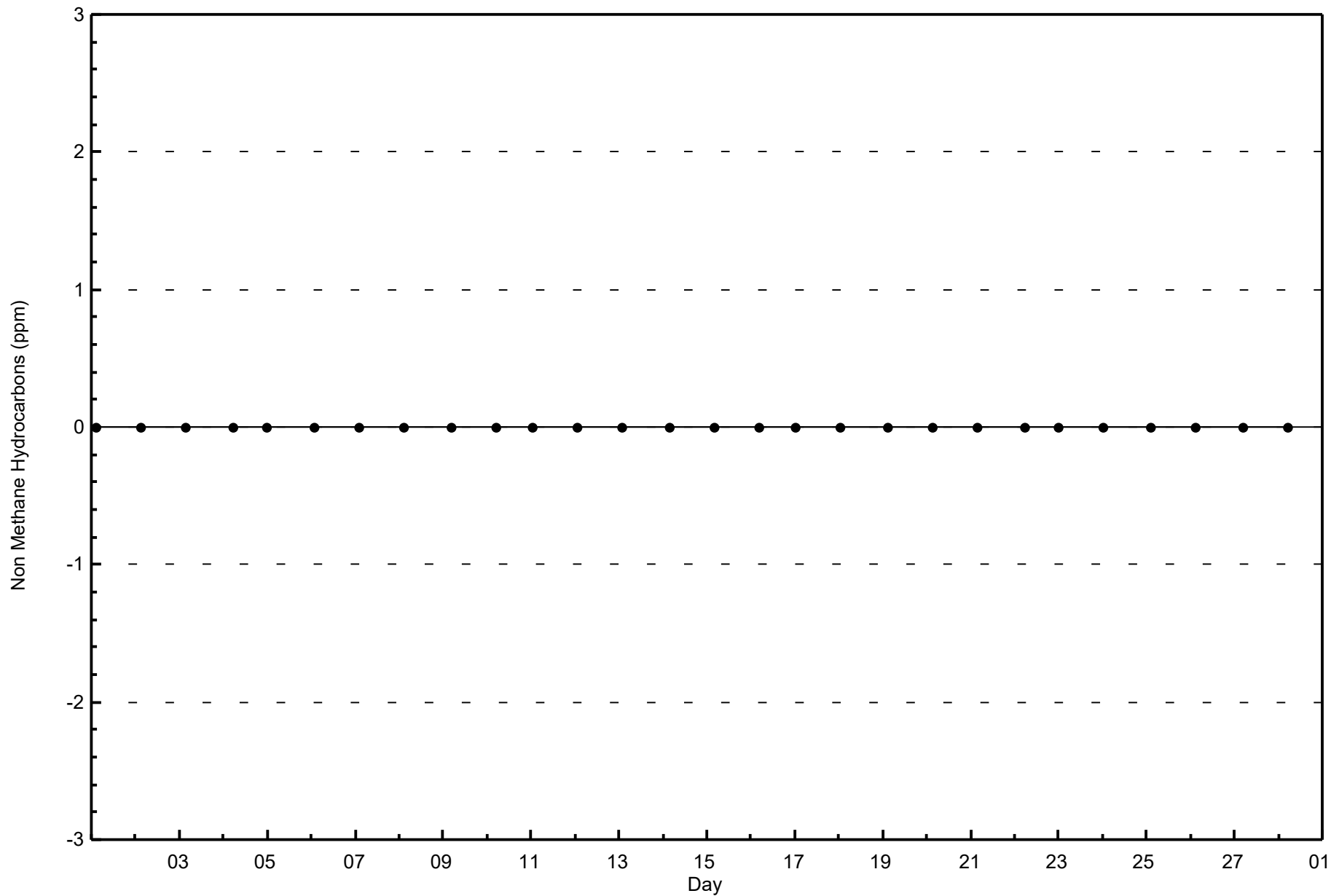
Total Number of Hours: 672

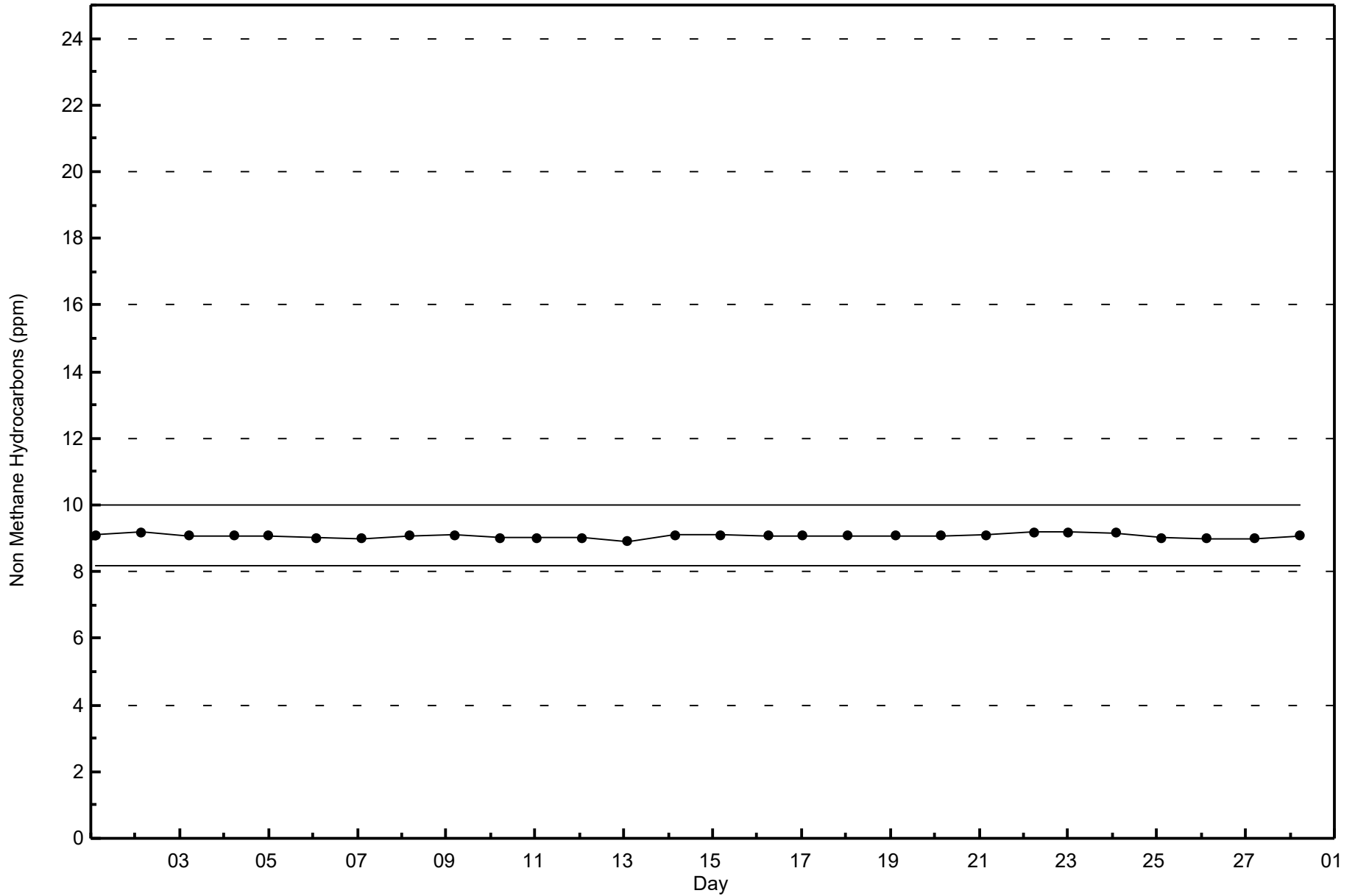


Wood Buffalo Environmental Association  
Wind Rose Feb 2023

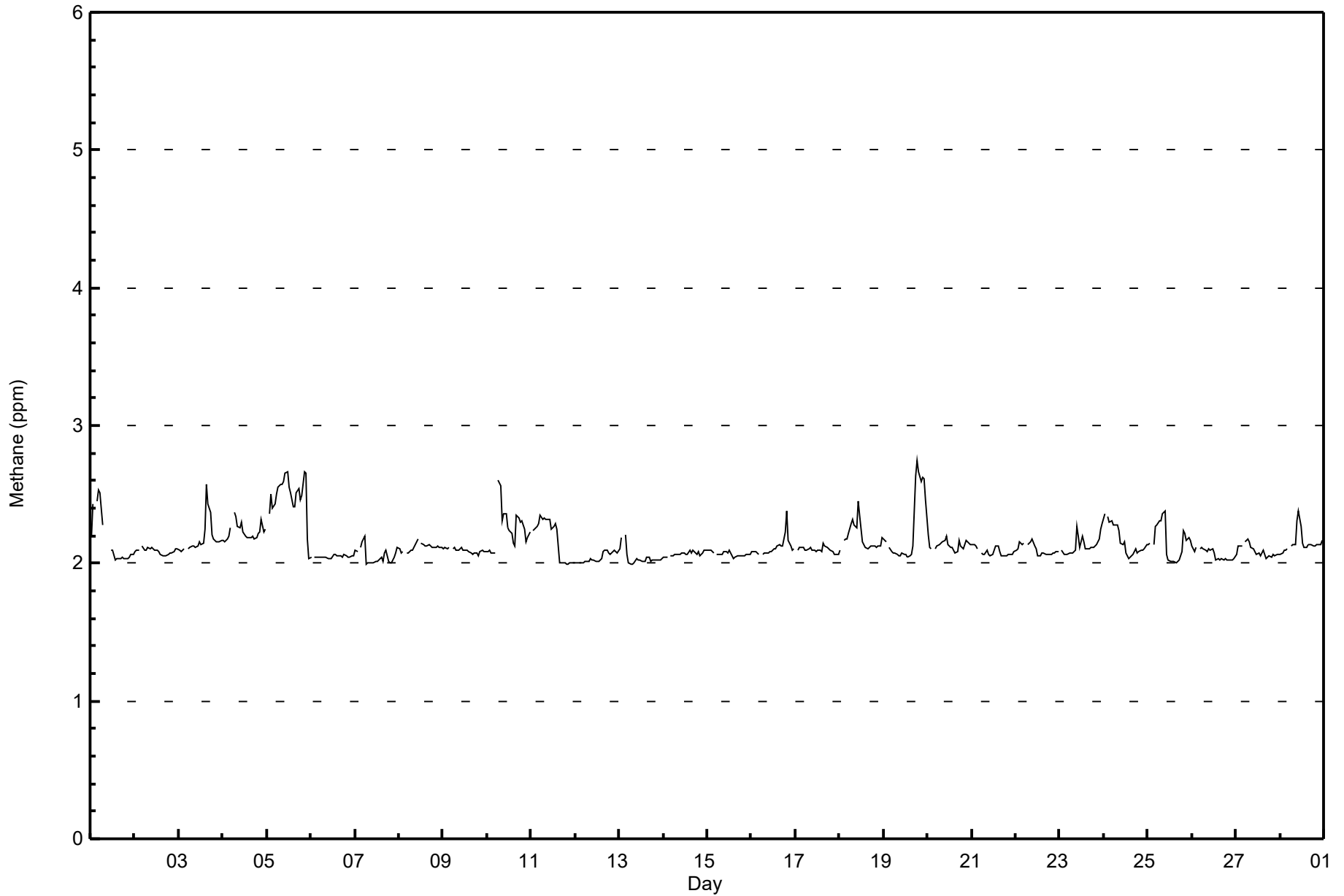
Non Methane Hydrocarbons (NMHC) - ppm  
Athabasca Valley













**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Methane (CH<sub>4</sub>) - ppm**  
**Athabasca Valley - February 2023**

| <b>Concentration Ranges (ppm)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 2.0                           | 110                    | 17.21    | 17.21               |
| 2.1 - 3.0                         | 529                    | 82.79    | 100.00              |
| 3.1 - 10.0                        | 0                      | 0.00     | 100.00              |
| > 10.0                            | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 639

Total Number of Hours: 672





**Wood Buffalo Environmental Association  
Frequency Distribution**

**Methane (CH<sub>4</sub>) - ppm  
Athabasca Valley - February 2023**

| <b>Concentration<br/>Ranges (ppm)</b> | <b>Wind Direction</b> |     |    |     |    |     |     |     |    |     |    |     |    |     |    |     | <b>Totals</b> |
|---------------------------------------|-----------------------|-----|----|-----|----|-----|-----|-----|----|-----|----|-----|----|-----|----|-----|---------------|
|                                       | N                     | NNE | NE | ENE | E  | ESE | SE  | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |               |
| 0 - 2.0                               | 14                    | 1   | 2  | 2   | 3  | 1   | 4   | 1   | 2  | 9   | 9  | 24  | 10 | 6   | 6  | 16  | 110           |
| 2.1 - 3.0                             | 80                    | 12  | 5  | 7   | 10 | 11  | 112 | 49  | 15 | 14  | 15 | 14  | 21 | 17  | 26 | 121 | 529           |
| 3.1 - 10.0                            | 0                     | 0   | 0  | 0   | 0  | 0   | 0   | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| > 10.0                                | 0                     | 0   | 0  | 0   | 0  | 0   | 0   | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| <b>Totals</b>                         | 94                    | 13  | 7  | 9   | 13 | 12  | 116 | 50  | 17 | 23  | 24 | 38  | 31 | 23  | 32 | 137 | 639           |

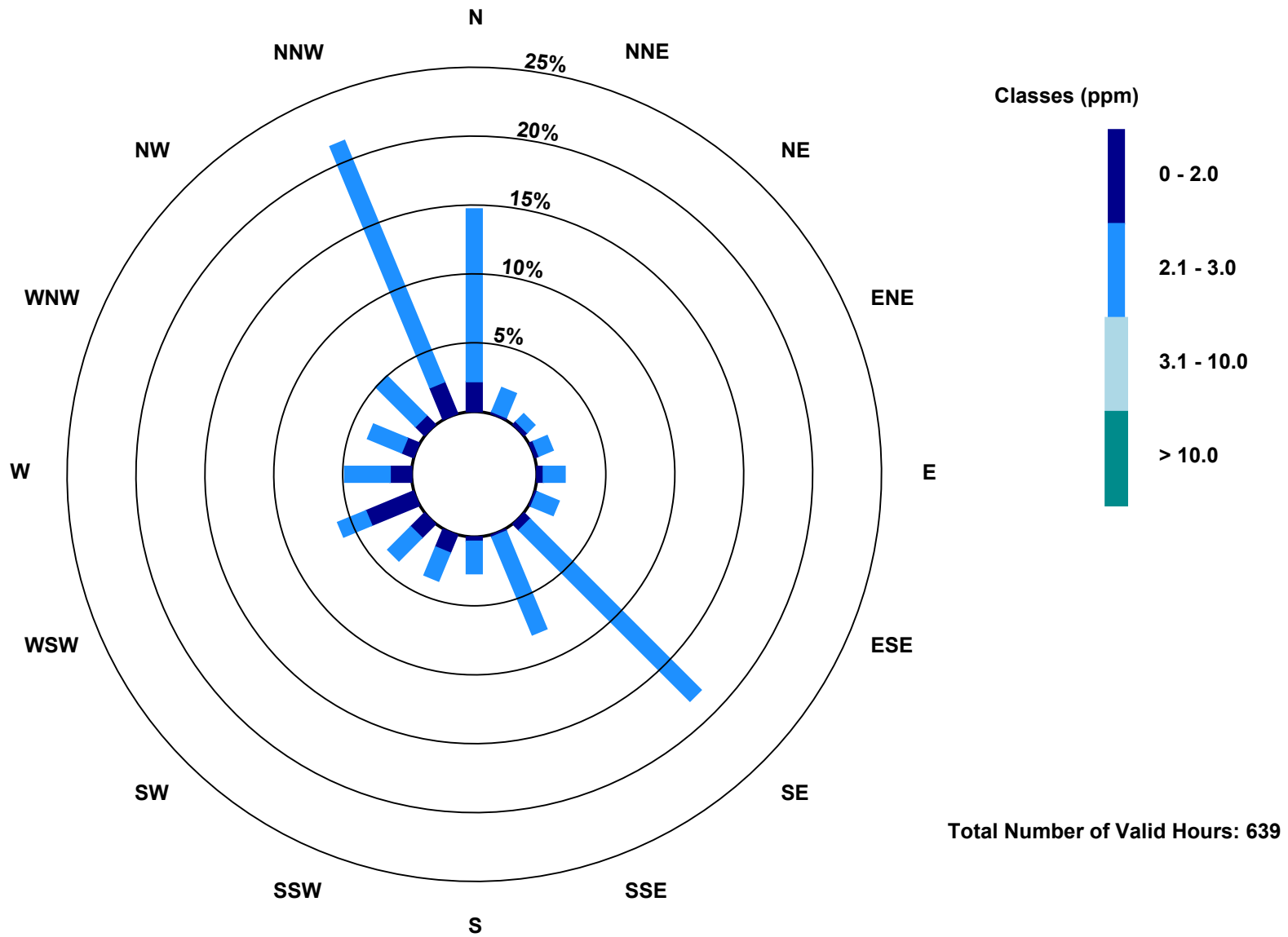
Total Number of Valid Hours: 639

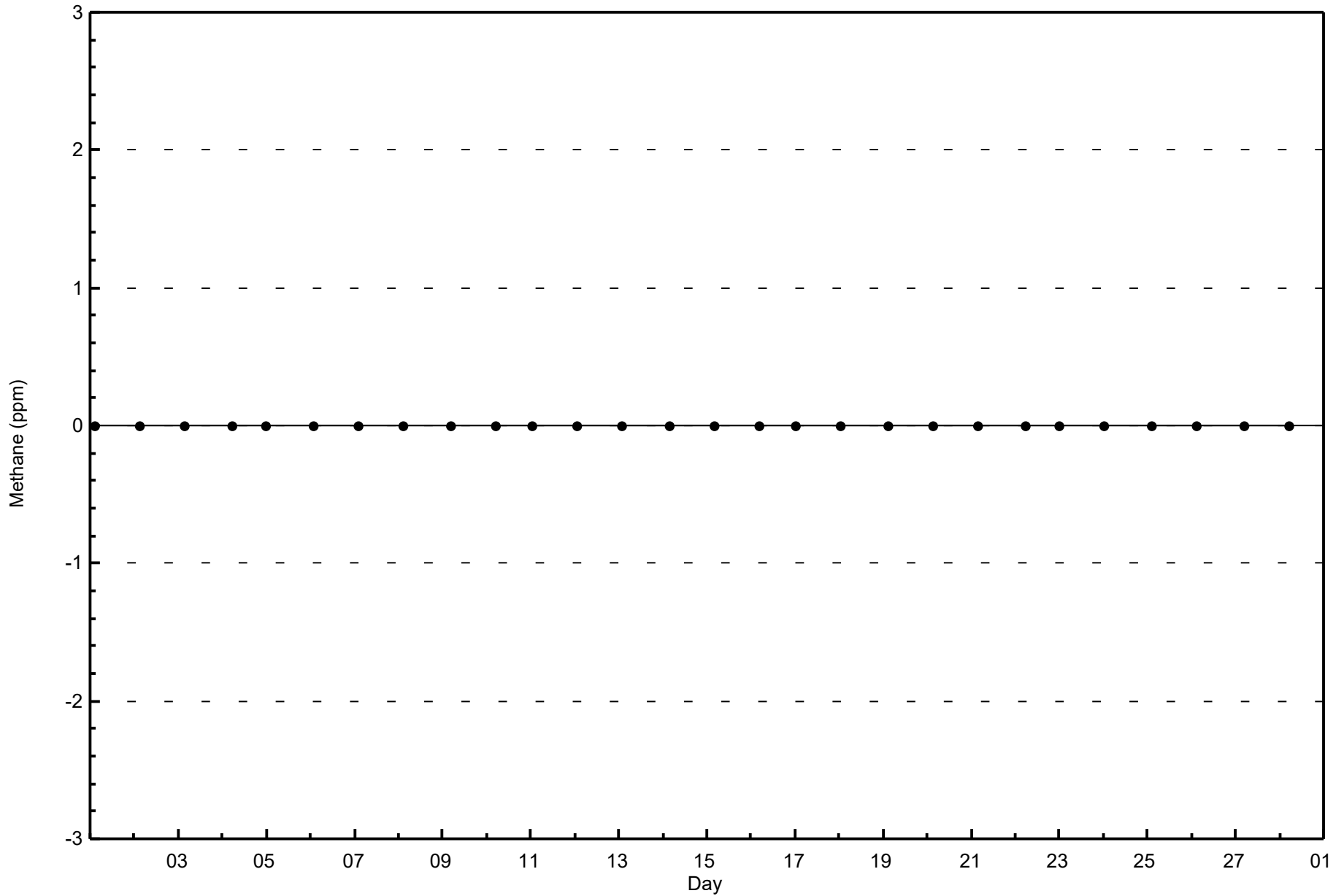
Total Number of Hours: 672

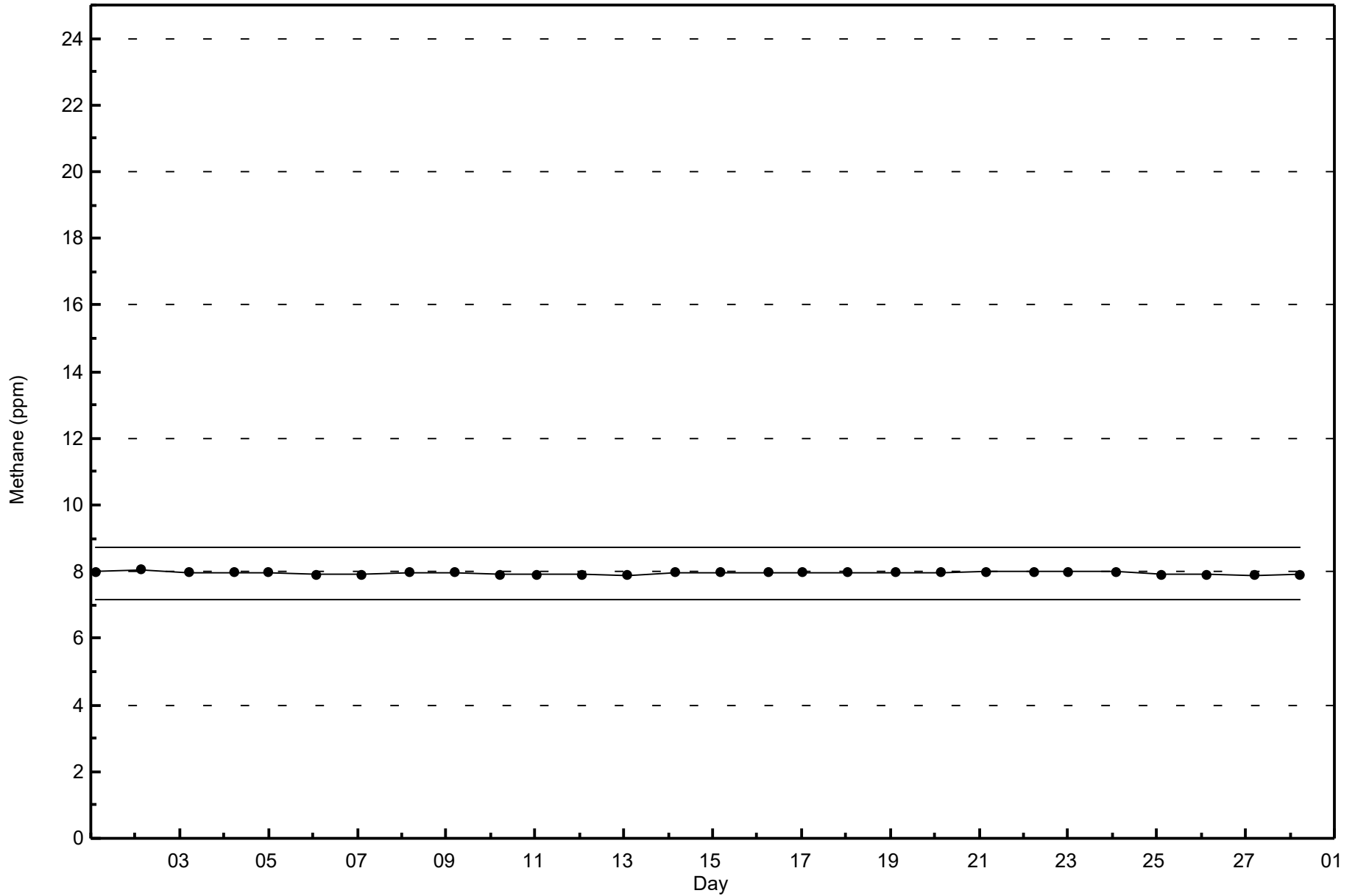


Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Methane (CH<sub>4</sub>) - ppm  
Athabasca Valley









Wood Buffalo Environmental Association

Summary of Hour Averages

Ozone (O<sub>3</sub>) - ppb

Athabasca Valley - February 2023

|  |   |          |                           |       |
|--|---|----------|---------------------------|-------|
| Number of Exceedences (AAAQO):               | 1-hr: 0   | 24-hr: 0 | Hours in Service:         | 672   |
| Maximum Value: 45.5 ppb on Feb 7 18:00       | Maximum Daily Average: 34.6 ppb on Feb 13   |          | Hours of Data:            | 639   |
| Minimum Value: 0.9 ppb on Feb 1 04:00        | Minimum Daily Average: 5.5 ppb on Feb 5   |          | Hours of Missing Data:    | 33    |
| Maximum Diurnal Average: 26.5 ppb at hour 15 | Minimum Diurnal Average: 15.2 ppb at hour 6   |          | Hours of Calibration:     | 33    |
| Monthly Average: 19.58 ppb                   | Percentiles: P <sub>1</sub> = 1.1 P <sub>10</sub> = 5.2 Q <sub>1</sub> = 11.1 Median = 19.7 Q <sub>3</sub> = 27.5 P <sub>90</sub> = 33.8 P <sub>99</sub> = 38.9 |          | Percent Operational Time: | 100.0 |

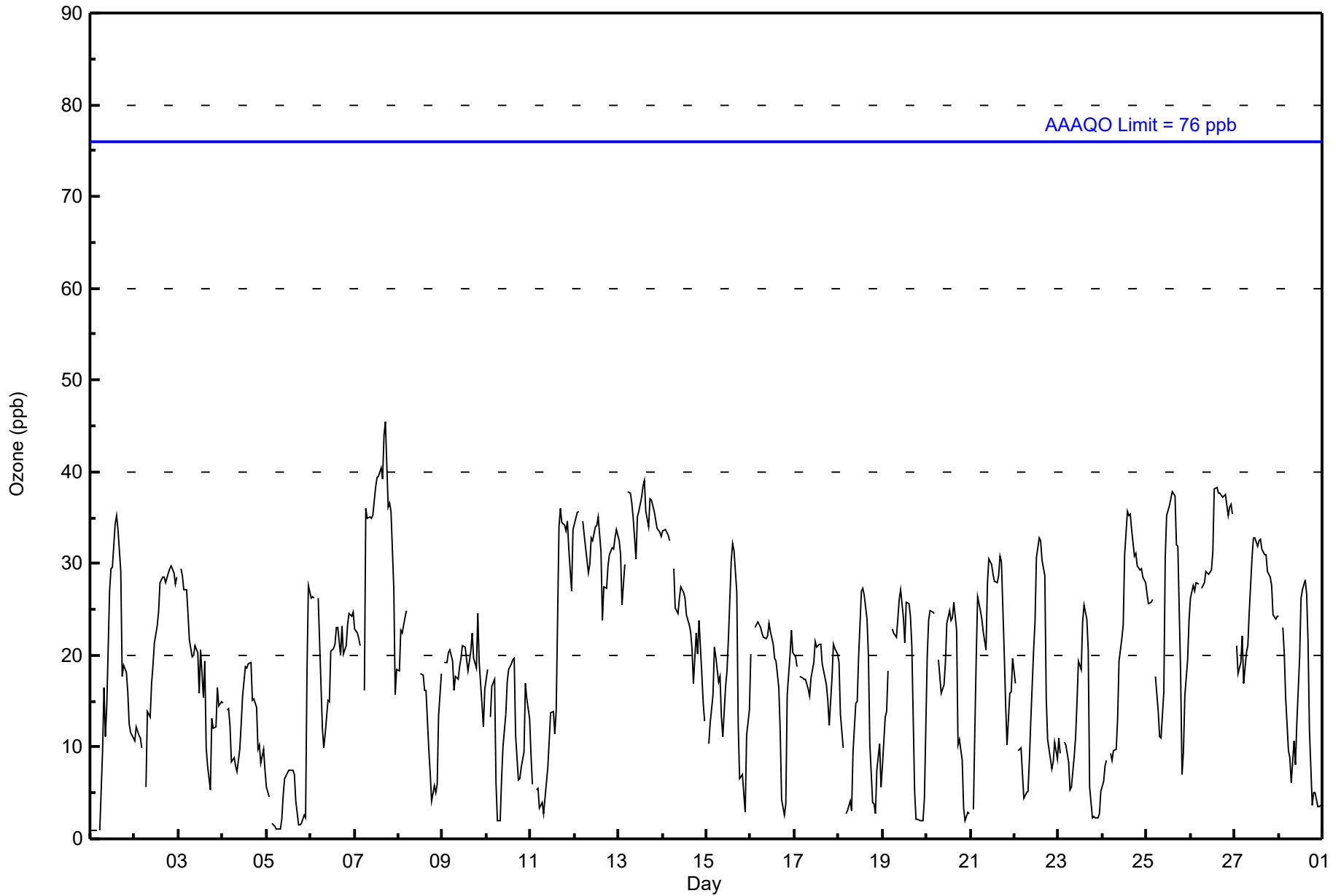
| Day    | Hourly Period Ending At (MST) |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Daily Average | Daily Maximum |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
|--------|-------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|---------------|---------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----------------|--|
|        | 1                             | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20   | 21   | 22   | 23   | 24   |               |               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 1-Feb  | 1.0                           | 0.9  | 0.9  | 0.9  | Z    | 1.0  | 9.6  | 16.5 | 11.2 | 14.5 | 27.1 | 29.5 | 34.4 | 35.2 | 33.7 | 29.2 | 17.7 | 18.9 | 18.2 | 16.0 | 12.4 | 11.6 | 11.0 | 16.6 | 35.2          |               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 2-Feb  | 10.7                          | 12.3 | 11.3 | 11.0 | 9.8  | Z    | 5.6  | 13.9 | 13.3 | 16.9 | 18.9 | 21.4 | 23.1 | 24.7 | 27.9 | 28.5 | 28.5 | 28.0 | 28.9 | 29.4 | 29.8 | 29.0 | 27.8 | 28.5 | 20.8          | 29.8          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 3-Feb  | Z                             | 29.5 | 28.7 | 27.2 | 27.1 | 24.6 | 21.7 | 19.8 | 20.0 | 21.0 | 20.3 | 15.8 | 20.6 | 15.5 | 19.3 | 9.9  | 8.0  | 5.3  | 13.1 | 12.1 | 12.3 | 16.4 | 14.6 | 14.9 | 18.2          | 29.5          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 4-Feb  | 14.8                          | Z    | 14.0 | 14.3 | 12.3 | 8.4  | 8.8  | 7.9  | 7.4  | 9.8  | 12.5 | 15.6 | 18.7 | 18.7 | 19.1 | 19.2 | 15.0 | 15.2 | 14.3 | 9.8  | 10.3 | 8.2  | 9.7  | 7.5  | 12.7          | 19.2          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 5-Feb  | 5.7                           | 4.6  | Z    | 1.7  | 1.4  | 1.1  | 1.1  | 1.1  | 2.2  | 4.8  | 6.6  | 7.1  | 7.5  | 7.5  | 7.4  | 7.0  | 4.2  | 1.6  | 1.5  | 1.6  | 2.6  | 2.2  | 18.1 | 27.6 | 5.5           | 27.6          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 6-Feb  | 26.2                          | 26.4 | 26.3 | Z    | 26.2 | 21.5 | 12.0 | 9.9  | 11.4 | 15.1 | 14.9 | 20.4 | 20.7 | 21.3 | 23.1 | 23.0 | 19.9 | 23.2 | 20.1 | 21.1 | 23.3 | 24.6 | 24.3 | 24.7 | 20.9          | 26.4          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 7-Feb  | 22.8                          | 22.4 | 21.9 | 21.0 | Z    | 16.2 | 35.9 | 35.0 | 35.1 | 34.9 | 35.2 | 38.3 | 39.4 | 39.5 | 40.3 | 39.2 | 43.9 | 45.5 | 36.2 | 36.6 | 35.7 | 27.3 | 15.7 | 18.4 | 32.0          | 45.5          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 8-Feb  | 18.3                          | 22.8 | 22.4 | 24.2 | 24.8 | Z    | 5.2  | C    | C    | C    | C    | C    | 18.0 | 17.8 | 16.1 | 16.1 | 9.8  | 7.1  | 4.1  | 5.9  | 5.0  | 6.0  | 13.4 | 18.0 | 14.2          | 24.8          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 9-Feb  | Z                             | 19.2 | 19.2 | 20.3 | 20.6 | 19.4 | 16.2 | 17.6 | 17.5 | 18.7 | 19.7 | 21.1 | 20.9 | 19.6 | 18.3 | 20.4 | 22.5 | 19.7 | 18.6 | 24.6 | 19.2 | 14.7 | 12.2 | 16.4 | 19.0          | 24.6          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 10-Feb | 18.4                          | Z    | 13.3 | 16.6 | 17.4 | 6.2  | 2.0  | 2.0  | 6.5  | 10.0 | 13.6 | 17.1 | 18.4 | 19.1 | 19.5 | 19.6 | 11.4 | 6.4  | 6.5  | 7.8  | 9.5  | 17.0 | 15.3 | 13.1 | 12.5          | 19.6          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 11-Feb | 9.2                           | 5.9  | Z    | 5.3  | 5.6  | 3.3  | 4.0  | 2.7  | 4.5  | 7.8  | 10.7 | 13.7 | 13.9 | 11.5 | 14.0 | 34.0 | 36.0 | 34.4 | 34.1 | 33.6 | 34.6 | 31.5 | 27.0 | 33.8 | 17.9          | 36.0          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 12-Feb | 34.4                          | 35.6 | 35.7 | Z    | 34.6 | 33.1 | 31.8 | 29.0 | 29.9 | 32.8 | 32.4 | 34.0 | 34.1 | 35.1 | 31.3 | 23.9 | 27.5 | 27.3 | 29.8 | 31.0 | 31.7 | 31.6 | 32.7 | 33.7 | 31.9          | 35.7          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 13-Feb | 32.6                          | 31.0 | 25.5 | 29.8 | Z    | 37.8 | 37.6 | 36.6 | 35.0 | 30.5 | 35.2 | 35.7 | 37.2 | 38.5 | 39.1 | 35.7 | 34.0 | 37.0 | 36.9 | 35.6 | 34.7 | 33.8 | 33.5 | 32.9 | 34.6          | 39.1          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 14-Feb | 33.6                          | 33.7 | 33.3 | 33.1 | 32.6 | Z    | 29.5 | 25.2 | 24.5 | 26.3 | 27.5 | 26.9 | 26.2 | 24.4 | 23.3 | 22.5 | 20.7 | 17.0 | 22.5 | 20.1 | 23.8 | 18.0 | 14.8 | 12.9 | 24.9          | 33.7          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 15-Feb | Z                             | 10.4 | 12.6 | 15.8 | 20.9 | 19.9 | 17.1 | 17.7 | 13.3 | 11.1 | 16.6 | 18.3 | 21.8 | 30.3 | 32.2 | 31.4 | 26.8 | 12.5 | 6.5  | 7.0  | 4.9  | 2.9  | 11.4 | 14.1 | 16.3          | 32.2          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 16-Feb | 20.1                          | Z    | 23.0 | 23.3 | 23.7 | 23.0 | 22.4 | 21.9 | 21.8 | 22.2 | 23.5 | 22.5 | 21.2 | 19.7 | 19.4 | 16.5 | 11.7 | 4.3  | 2.5  | 3.8  | 15.7 | 19.9 | 22.7 | 20.3 | 18.5          | 23.7          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 17-Feb | 19.8                          | 18.8 | Z    | 17.7 | 17.5 | 17.3 | 17.3 | 16.3 | 15.6 | 17.6 | 19.2 | 21.5 | 20.9 | 21.2 | 21.2 | 19.1 | 18.4 | 16.7 | 15.2 | 12.4 | 17.6 | 21.2 | 20.8 | 20.1 | 18.4          | 21.5          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 18-Feb | 19.2                          | 13.6 | 9.9  | Z    | 2.7  | 3.0  | 4.2  | 3.1  | 9.4  | 14.8 | 15.0 | 19.8 | 27.0 | 27.2 | 26.6 | 23.9 | 20.0 | 10.4 | 4.0  | 3.7  | 2.7  | 7.5  | 10.3 | 5.7  | 12.3          | 27.2          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 19-Feb | 8.0                           | 13.2 | 13.9 | 18.3 | Z    | 22.9 | 22.4 | 21.9 | 24.0 | 26.1 | 27.2 | 24.0 | 21.3 | 25.7 | 25.6 | 24.2 | 21.0 | 5.1  | 2.1  | 2.1  | 2.0  | 2.0  | 2.0  | 4.5  | 15.6          | 27.2          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 20-Feb | 19.9                          | 23.8 | 24.9 | 24.7 | 24.5 | Z    | 19.6 | 17.8 | 15.8 | 16.7 | 19.3 | 23.5 | 24.8 | 23.8 | 24.1 | 25.8 | 22.7 | 10.2 | 10.9 | 8.6  | 3.4  | 2.0  | 2.8  | 2.7  | 17.1          | 25.8          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 21-Feb | Z                             | 3.2  | 11.7 | 19.6 | 26.4 | 24.9 | 24.0 | 22.5 | 20.6 | 27.8 | 30.5 | 30.0 | 28.8 | 28.1 | 27.9 | 28.6 | 30.9 | 30.3 | 20.3 | 14.7 | 10.2 | 15.9 | 16.0 | 19.7 | 22.3          | 30.9          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 22-Feb | 16.9                          | Z    | 9.6  | 9.9  | 7.2  | 4.3  | 5.0  | 5.2  | 8.7  | 13.0 | 20.7 | 23.7 | 30.6 | 32.8 | 32.5 | 30.4 | 28.7 | 15.4 | 10.9 | 8.8  | 7.6  | 8.4  | 10.6 | 8.8  | 15.2          | 32.8          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 23-Feb | 11.0                          | 9.3  | Z    | 10.6 | 10.3 | 8.4  | 5.3  | 5.7  | 9.1  | 11.1 | 15.0 | 19.3 | 18.4 | 23.6 | 25.4 | 24.0 | 20.6 | 5.6  | 2.2  | 2.5  | 2.3  | 2.4  | 2.8  | 5.3  | 10.9          | 25.4          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 24-Feb | 6.2                           | 7.9  | 8.5  | Z    | 9.3  | 8.5  | 9.6  | 9.8  | 13.1 | 19.4 | 21.8 | 23.3 | 30.9 | 35.7 | 35.2 | 35.4 | 33.7 | 30.8 | 31.1 | 29.8 | 29.3 | 29.5 | 28.5 | 27.9 | 22.4          | 35.7          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 25-Feb | 26.6                          | 25.7 | 25.8 | 26.1 | Z    | 17.6 | 13.9 | 11.1 | 11.0 | 16.0 | 30.6 | 35.3 | 36.3 | 37.1 | 37.9 | 37.4 | 32.0 | 31.9 | 17.9 | 7.0  | 9.5  | 15.6 | 19.6 | 23.8 | 23.7          | 37.9          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 26-Feb | 26.2                          | 27.6 | 27.0 | 27.9 | 27.7 | Z    | 27.3 | 27.9 | 29.2 | 28.9 | 28.8 | 29.2 | 31.2 | 38.2 | 38.2 | 37.6 | 37.7 | 37.3 | 37.3 | 37.5 | 35.3 | 36.2 | 36.4 | 35.4 | 32.4          | 38.2          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 27-Feb | Z                             | 21.0 | 18.0 | 19.2 | 22.1 | 16.9 | 20.3 | 21.0 | 24.7 | 30.7 | 32.7 | 32.9 | 31.9 | 32.4 | 32.7 | 31.5 | 31.0 | 30.9 | 29.1 | 28.6 | 27.6 | 24.4 | 24.0 | 24.2 | 26.4          | 32.9          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 28-Feb | 24.3                          | Z    | 23.0 | 20.2 | 15.4 | 9.6  | 8.8  | 6.2  | 10.7 | 8.1  | 12.7 | 19.9 | 26.3 | 27.1 | 28.3 | 26.7 | 21.6 | 12.0 | 3.6  | 5.0  | 5.1  | 3.6  | 3.4  | 3.6  | 14.1          | 28.3          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 18.5   |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 18.2 | 19.2          | 18.3          | 18.3 | 15.2 | 15.6 | 15.8 | 16.5 | 18.8 | 21.8 | 23.7 | 25.0 | 26.1 | 26.5 | 25.9 | 23.8 | 19.2 | 17.1 | 16.4 | 16.5 | 16.6 | 17.2 | 18.2 | Diurnal Average |  |
| 34.4   |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 35.6 | 35.7          | 33.1          | 34.6 | 37.8 | 37.6 | 36.6 | 35.1 | 34.9 | 35.2 | 38.3 | 39.4 | 39.5 | 40.3 | 39.2 | 43.9 | 45.5 | 37.3 | 37.5 | 35.7 | 36.2 | 36.4 | 35.4 | Diurnal Maximum |  |

Z - zerospan      C - Calibration  
 Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 76 ppb



Wood Buffalo Environmental Association  
Hourly Averages

Ozone (O<sub>3</sub>) - ppb  
Athabasca Valley - February 2023





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Ozone (O<sub>3</sub>) - ppb**  
**Athabasca Valley - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 20                            | 342                    | 53.52    | 53.52               |
| 21 - 50                           | 297                    | 46.48    | 100.00              |
| 51 - 82                           | 0                      | 0.00     | 100.00              |
| > 83                              | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 639

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Ozone (O<sub>3</sub>) - ppb  
Athabasca Valley - February 2023**

| <b>Concentration<br/>Ranges (ppb)</b> | <b>Wind Direction</b> |            |           |            |           |            |            |            |           |            |           |            |           |            |           |            | <b>Totals</b> |
|---------------------------------------|-----------------------|------------|-----------|------------|-----------|------------|------------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|---------------|
|                                       | <b>N</b>              | <b>NNE</b> | <b>NE</b> | <b>ENE</b> | <b>E</b>  | <b>ESE</b> | <b>SE</b>  | <b>SSE</b> | <b>S</b>  | <b>SSW</b> | <b>SW</b> | <b>WSW</b> | <b>W</b>  | <b>WNW</b> | <b>NW</b> | <b>NNW</b> |               |
| 0 - 20                                | 56                    | 8          | 5         | 7          | 9         | 6          | 48         | 30         | 11        | 14         | 14        | 14         | 13        | 12         | 14        | 81         | 342           |
| 21 - 50                               | 37                    | 4          | 2         | 2          | 6         | 6          | 67         | 20         | 5         | 9          | 10        | 21         | 14        | 12         | 16        | 66         | 297           |
| 51 - 82                               | 0                     | 0          | 0         | 0          | 0         | 0          | 0          | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0             |
| > 83                                  | 0                     | 0          | 0         | 0          | 0         | 0          | 0          | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0             |
| <b>Totals</b>                         | <b>93</b>             | <b>12</b>  | <b>7</b>  | <b>9</b>   | <b>15</b> | <b>12</b>  | <b>115</b> | <b>50</b>  | <b>16</b> | <b>23</b>  | <b>24</b> | <b>35</b>  | <b>27</b> | <b>24</b>  | <b>30</b> | <b>147</b> | <b>639</b>    |

Total Number of Valid Hours: 639

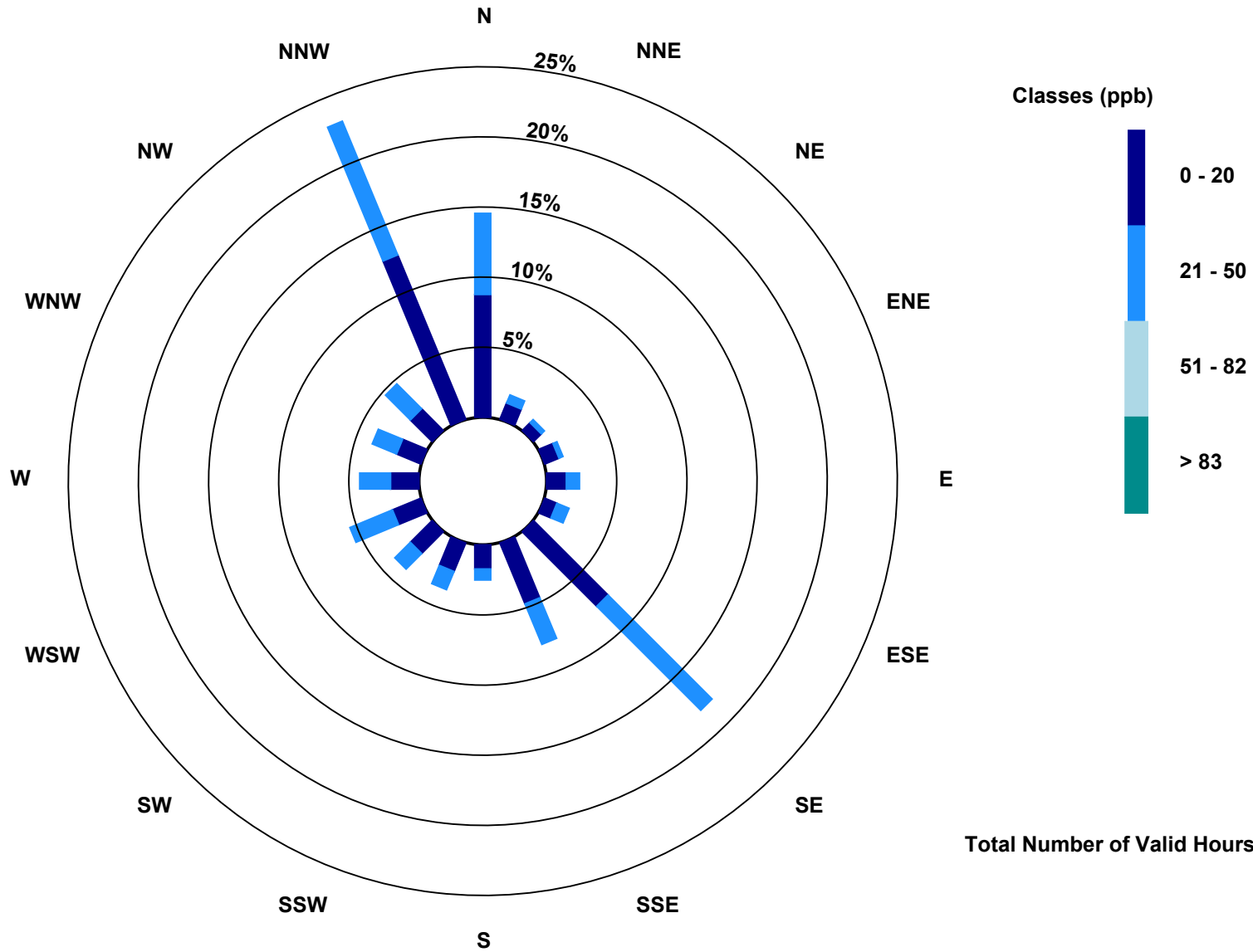
Total Number of Hours: 672

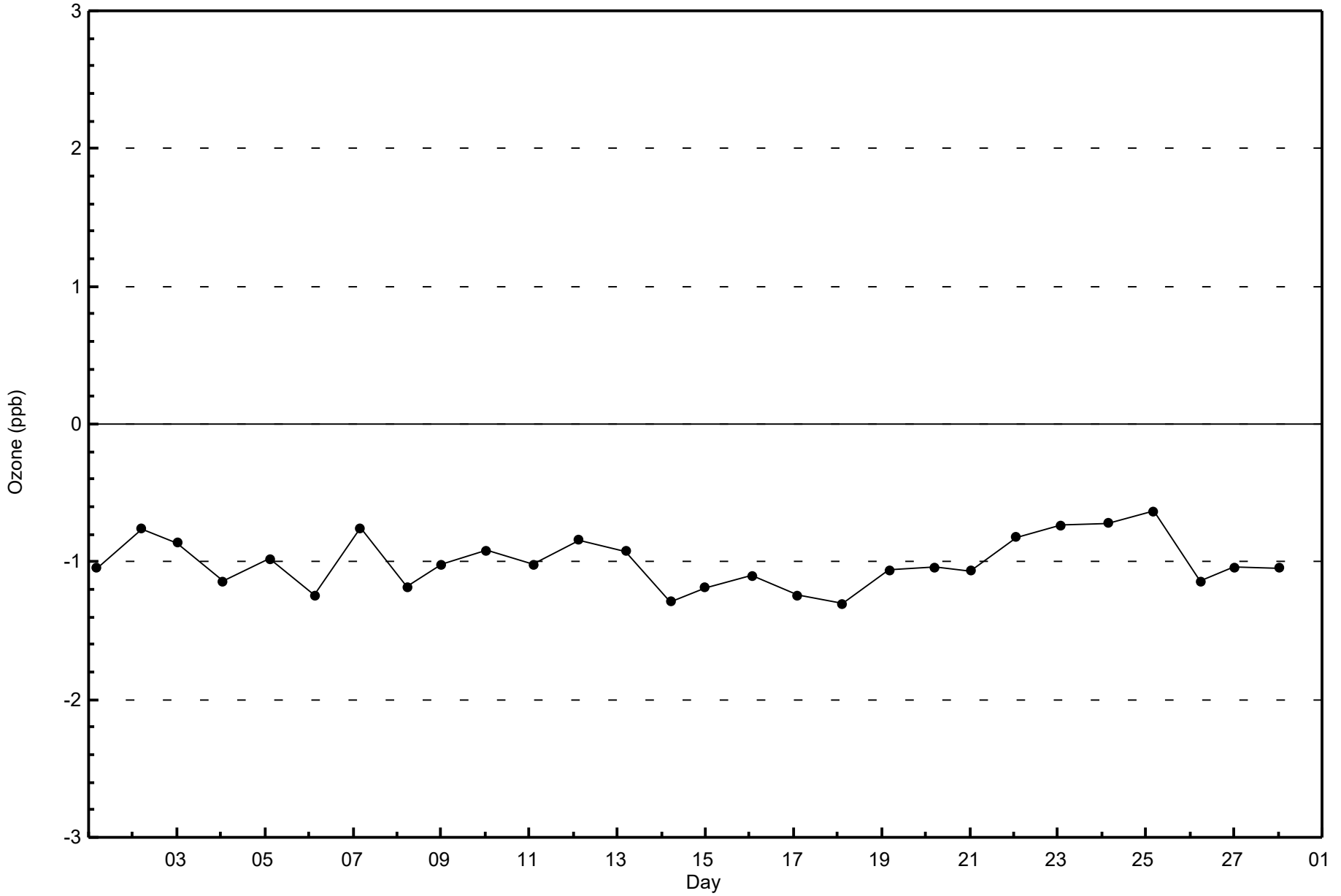


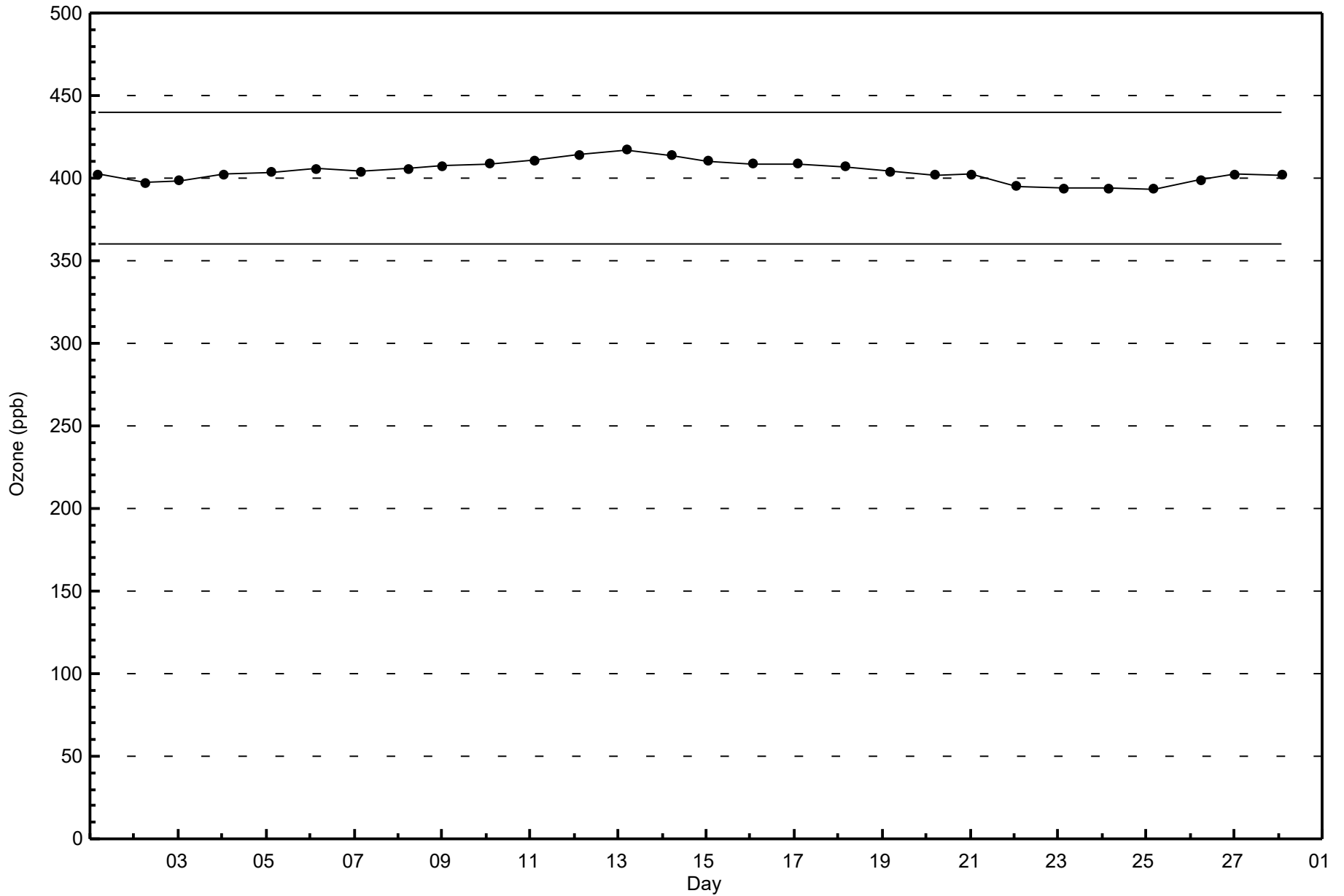


Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Ozone (O<sub>3</sub>) - ppb  
Athabasca Valley

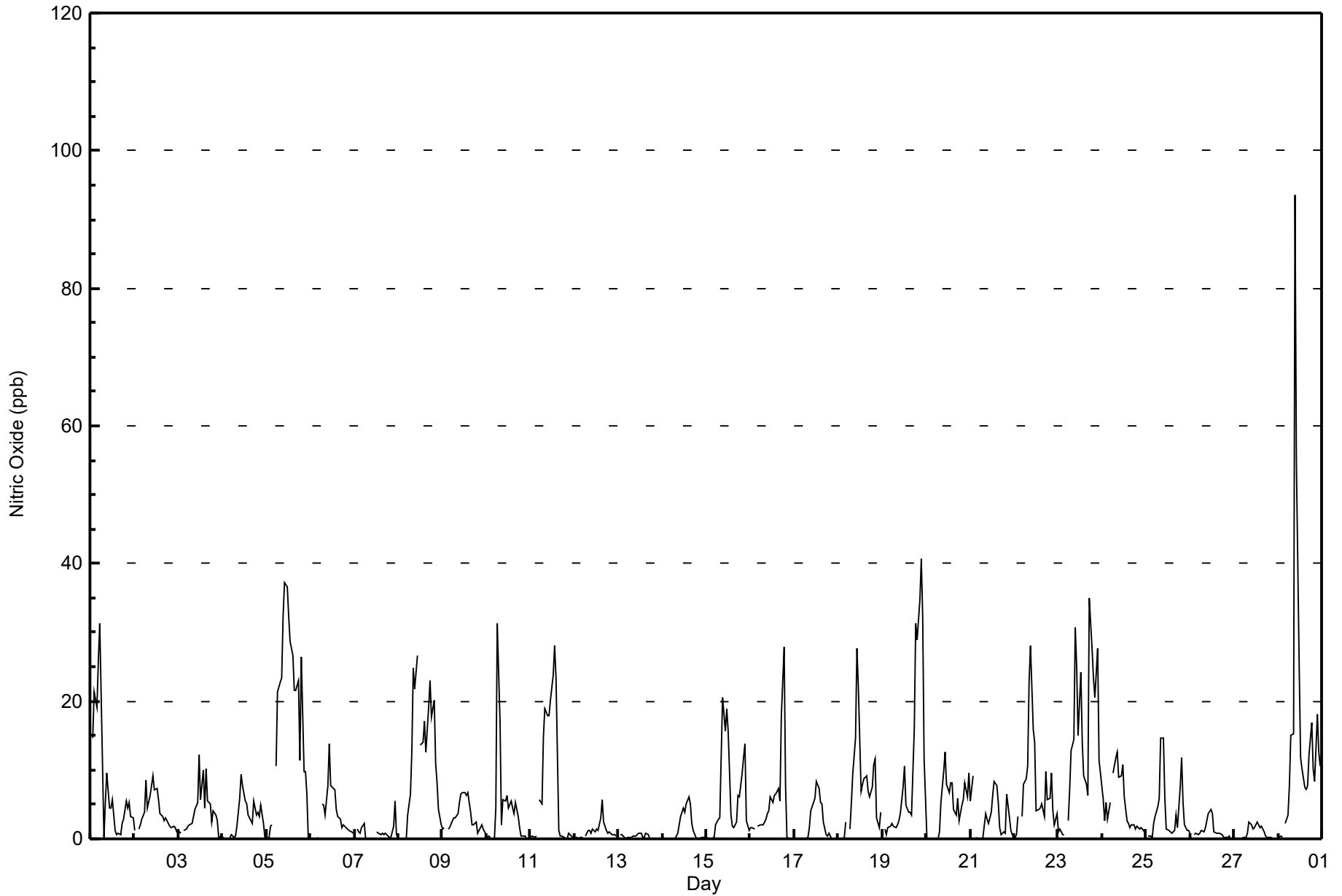








| Maximum Value: 93.5 ppb on Feb 28 10:00  |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Maximum Daily Average: 17.6 ppb on Feb 5   |      |      |      |                 | Hours in Service: 672          |               |
|--|-------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|--|------|------|------|-----------------|--------------------------------|---------------|
| Minimum Value: 0.0 ppb on Feb 18 01:00   |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Minimum Daily Average: 0.3 ppb on Feb 13   |      |      |      |                 | Hours of Data: 638             |               |
| Maximum Diurnal Average: 13.3 ppb at hour 10   |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Minimum Diurnal Average: 0.9 ppb at hour 1   |      |      |      |                 | Hours of Missing Data: 34      |               |
| Monthly Average: 5.70 ppb  |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Percentiles: P <sub>1</sub> = 0.0 P <sub>10</sub> = 0.1 Q <sub>1</sub> = 0.7 Median = 2.6 Q <sub>3</sub> = 7.0 P <sub>90</sub> = 15.3 P <sub>99</sub> = 33.8 |      |      |      |                 | Hours of Calibration: 33       |               |
|  |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |      |      |      |                 | Percent Operational Time: 99.9 |               |
| Day  | Hourly Period Ending At (MST) |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |      |      |      |                 | Daily Average                  | Daily Maximum |
|  | 1                             | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20   | 21   | 22   | 23   | 24              |                                |               |
| 1-Feb  | Z                             | 14.7 | 21.3 | 19.1 | 25.9 | 31.3 | 10.6 | 0.2  | 5.2  | 9.5  | 4.5  | 4.5  | 5.7  | 1.3  | 0.7  | 0.8  | 0.7  | 2.2  | 2.9  | 5.6  | 4.4  | 5.4  | 3.3  | 3.1             | 8.0                            | 31.3          |
| 2-Feb  | 1.2                           | Z    | 1.5  | 2.1  | 2.8  | 3.9  | 8.5  | 4.4  | 6.2  | 7.7  | 9.1  | 7.2  | 7.4  | 5.6  | 3.6  | 3.2  | 2.6  | 3.1  | 2.3  | 1.9  | 1.6  | 1.8  | 1.7  | 1.1             | 3.9                            | 9.1           |
| 3-Feb  | 1.0                           | 0.9  | Z    | 1.2  | 1.3  | 1.8  | 2.1  | 2.3  | 3.2  | 4.2  | 5.2  | 12.3 | 5.6  | 10.0 | 4.5  | 10.2 | 5.5  | 5.1  | 2.4  | 4.0  | 3.4  | 2.7  | 0.2  | 0.5             | 3.9                            | 12.3          |
| 4-Feb  | 0.3                           | 0.1  | 0.1  | Z    | 0.1  | 0.5  | 0.3  | 0.3  | 1.7  | 5.8  | 9.3  | 7.7  | 5.4  | 5.1  | 3.5  | 2.7  | 2.3  | 5.5  | 3.5  | 3.8  | 3.3  | 4.8  | 2.2  | 0.1             | 3.0                            | 9.3           |
| 5-Feb  | 0.1                           | 0.2  | 1.9  | 2.0  | Z    | 10.5 | 21.3 | 22.7 | 23.5 | 32.3 | 37.2 | 36.5 | 32.4 | 28.8 | 26.7 | 21.5 | 21.6 | 22.9 | 11.3 | 26.4   | 9.8  | 9.8  | 6.5  | 0.0             | 17.6                           | 37.2          |
| 6-Feb  | 0.0                           | 0.0  | 0.1  | 0.1  | 0.2  | Z    | 5.2  | 4.9  | 3.6  | 7.8  | 13.9 | 7.8  | 7.4  | 7.1  | 4.3  | 3.3  | 2.9  | 1.6  | 2.1  | 1.6  | 1.4  | 1.1  | 0.9  | 0.8             | 3.4                            | 13.9          |
| 7-Feb  | Z                             | 1.3  | 0.9  | 0.9  | 1.6  | 2.2  | 0.0  | C    | C    | C    | C    | C    | 1.0  | 0.8  | 0.6  | 0.7  | 0.5  | 0.8  | 0.3  | 0.3  | 0.3  | 1.8  | 5.6  | 0.6             | 1.1                            | 5.6           |
| 8-Feb  | 0.1                           | Z    | 0.0  | 0.0  | 0.0  | 3.4  | 6.5  | 12.7 | 24.9 | 21.9 | 26.6 | M    | 13.6 | 14.0 | 17.2 | 12.5 | 19.1 | 23.0 | 17.8 | 20.0   | 10.9 | 8.2  | 4.3  | 2.0             | 11.8                           | 26.6          |
| 9-Feb  | 1.5                           | 1.7  | Z    | 1.4  | 1.5  | 2.6  | 3.1  | 3.0  | 3.7  | 5.3  | 6.4  | 6.8  | 6.7  | 6.2  | 6.7  | 3.8  | 2.0  | 2.0  | 2.4  | 0.7  | 1.1  | 2.0  | 1.5  | 1.0             | 3.2                            | 6.8           |
| 10-Feb   | 0.2                           | 0.3  | 0.1  | Z    | 0.1  | 4.4  | 31.4 | 17.0 | 2.1  | 5.6  | 5.4  | 6.4  | 4.5  | 5.5  | 4.5  | 3.6  | 5.4  | 3.2  | 1.5  | 0.4  | 0.3  | 0.3  | 0.0  | 0.0             | 4.4                            | 31.4          |
| 11-Feb   | 0.2                           | 0.3  | 0.2  | 0.4  | Z    | 5.7  | 5.1  | 14.9 | 18.9 | 17.8 | 17.9 | 20.0 | 23.9 | 28.0 | 23.4 | 1.1  | 0.4  | 0.4  | 0.2  | 0.1  | 0.0  | 0.8  | 0.4  | 0.1             | 7.8                            | 28.0          |
| 12-Feb   | 0.1                           | 0.1  | 0.1  | 0.1  | 0.2  | Z    | 0.4  | 1.2  | 1.2  | 0.9  | 1.4  | 1.0  | 1.5  | 1.3  | 3.0  | 5.6  | 2.5  | 1.2  | 0.9  | 0.9  | 0.7  | 0.6  | 0.6  | 0.5             | 1.1                            | 5.6           |
| 13-Feb   | Z                             | 0.5  | 0.6  | 0.1  | 0.1  | 0.1  | 0.2  | 0.2  | 0.5  | 0.5  | 0.6  | 0.8  | 0.9  | 0.3  | 0.2  | 0.9  | 0.6  | 0.1  | 0.0  | 0.0  | 0.1  | 0.1  | 0.0  | 0.0             | 0.3                            | 0.9           |
| 14-Feb   | 0.0                           | Z    | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.1  | 0.8  | 1.9  | 3.2  | 4.4  | 3.9  | 5.0  | 6.1  | 5.1  | 2.3  | 1.1  | 0.2  | 0.1  | 0.1  | 0.1  | 0.2  | 0.2             | 1.5                            | 6.1           |
| 15-Feb   | 0.1                           | 0.1  | Z    | 0.1  | 0.2  | 2.0  | 2.9  | 3.1  | 11.7 | 20.5 | 15.8 | 18.9 | 15.6 | 3.5  | 1.7  | 1.6  | 2.4  | 6.2  | 6.1  | 9.6  | 11.8 | 13.8 | 2.7  | 1.3             | 6.6                            | 20.5          |
| 16-Feb   | 1.6                           | 1.6  | 1.5  | Z    | 1.8  | 2.0  | 2.0  | 2.1  | 2.8  | 3.7  | 4.0  | 6.2  | 5.3  | 6.2  | 6.5  | 7.2  | 5.6  | 18.0 | 27.9 | 7.7  | 0.2  | 0.1  | 0.0  | 0.1             | 5.0                            | 27.9          |
| 17-Feb   | 0.0                           | 0.0  | 0.1  | 0.0  | Z    | 0.1  | 0.1  | 0.2  | 1.6  | 4.0  | 5.2  | 5.9  | 8.4  | 7.4  | 5.3  | 5.1  | 2.4  | 0.7  | 0.3  | 0.8  | 0.1  | 0.0  | 0.0  | 0.0             | 2.1                            | 8.4           |
| 18-Feb   | 0.0                           | 0.0  | 0.0  | 0.3  | 2.4  | Z    | 1.4  | 5.1  | 9.3  | 14.7 | 27.6 | 22.1 | 6.9  | 8.0  | 8.8  | 9.1  | 6.8  | 6.1  | 7.5  | 10.7   | 11.7 | 3.0  | 1.6  | 3.8             | 7.3                            | 27.6          |
| 19-Feb   | Z                             | 1.4  | 0.6  | 1.7  | 1.9  | 2.3  | 1.9  | 1.5  | 2.1  | 2.6  | 3.7  | 7.6  | 10.6 | 4.9  | 3.8  | 3.8  | 3.4  | 16.1 | 31.2 | 28.9   | 34.7 | 40.7 | 32.1 | 11.7            | 10.8                           | 40.7          |
| 20-Feb   | 0.1                           | Z    | 0.0  | 0.0  | 0.0  | 0.0  | 0.1  | 1.1  | 5.2  | 9.7  | 12.7 | 7.8  | 6.8  | 8.2  | 8.2  | 4.2  | 3.5  | 5.9  | 2.6  | 4.8  | 5.7  | 8.1  | 6.0  | 9.5             | 4.8                            | 12.7          |
| 21-Feb   | 5.5                           | 9.2  | Z    | 0.1  | 0.0  | 0.0  | 0.1  | 0.3  | 3.7  | 2.8  | 2.3  | 3.8  | 6.3  | 8.3  | 7.8  | 5.3  | 1.7  | 0.7  | 1.0  | 0.9  | 6.5  | 3.1  | 1.2  | 0.6             | 3.1                            | 9.2           |
| 22-Feb   | 0.3                           | 0.7  | 3.3  | Z    | 3.3  | 7.8  | 8.7  | 10.5 | 22.9 | 28.0 | 15.9 | 14.1 | 4.2  | 4.3  | 4.4  | 5.0  | 3.3  | 9.7  | 5.6  | 5.9  | 9.6  | 4.0  | 2.0  | 3.7             | 7.7                            | 28.0          |
| 23-Feb   | 1.1                           | 1.5  | 0.5  | 0.7  | Z    | 2.6  | 7.2  | 12.9 | 14.4 | 30.7 | 25.1 | 15.0 | 24.2 | 14.0 | 9.1  | 7.9  | 6.4  | 34.9 | 27.6 | 23.4   | 20.6 | 27.6 | 11.4 | 9.5             | 14.3                           | 34.9          |
| 24-Feb   | 5.7                           | 2.7  | 5.3  | 2.9  | 5.3  | Z    | 9.6  | 11.9 | 12.6 | 8.9  | 9.1  | 10.9 | 6.1  | 2.6  | 2.2  | 1.6  | 2.1  | 2.0  | 1.4  | 1.8  | 1.5  | 1.6  | 1.5  | 0.8             | 4.8                            | 12.6          |
| 25-Feb   | Z                             | 0.5  | 0.3  | 0.3  | 2.3  | 3.2  | 4.6  | 6.0  | 14.6 | 14.6 | 6.0  | 1.4  | 1.1  | 1.0  | 0.8  | 1.1  | 3.4  | 1.6  | 7.5  | 11.8   | 5.4  | 2.1  | 1.3  | 1.3             | 4.0                            | 14.6          |
| 26-Feb   | 0.9                           | Z    | 0.6  | 0.8  | 0.6  | 0.9  | 1.2  | 1.1  | 1.7  | 2.6  | 3.7  | 4.3  | 3.7  | 0.9  | 0.7  | 0.8  | 0.7  | 0.6  | 0.2  | 0.2  | 0.3  | 0.4  | 0.1  | 0.0             | 1.2                            | 4.3           |
| 27-Feb   | 0.0                           | 0.0  | Z    | 0.1  | 0.1  | 0.2  | 0.2  | 0.7  | 2.5  | 1.9  | 1.5  | 1.5  | 2.3  | 2.1  | 1.6  | 1.9  | 0.9  | 0.3  | 0.3  | 0.2  | 0.3  | 0.1  | 0.0  | 0.0             | 0.8                            | 2.5           |
| 28-Feb   | 0.2                           | 0.5  | 0.2  | Z    | 2.2  | 3.5  | 7.8  | 15.1 | 15.2 | 93.5 | 54.8 | 25.0 | 11.9 | 10.3 | 7.6  | 7.2  | 7.8  | 12.3 | 16.9 | 10.1   | 8.4  | 18.1 | 12.7 | 10.6            | 15.3                           | 93.5          |
| 0.9 1.7 1.7 1.5 2.2 3.8 5.1 5.8 8.0 13.3 12.1 10.0 8.3 7.2 6.2 4.9 4.2 6.7 6.6 6.5 5.5 5.8 3.6 2.2                     |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |      |      |      | Diurnal Average |                                |               |
| 5.7 14.7 21.3 19.1 25.9 31.3 31.4 22.7 24.9 93.5 54.8 36.5 32.4 28.8 26.7 21.5 21.6 34.9 31.2 28.9 34.7 40.7 32.1 11.7 |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |      |      |      | Diurnal Maximum |                                |               |
| Z - zerospan C - Calibration M - Maintenance   |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |      |      |      |                 |                                |               |





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Nitric Oxide (NO) - ppb**  
**Athabasca Valley - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 20                            | 592                    | 92.79    | 92.79               |
| 21 - 40                           | 43                     | 6.74     | 99.53               |
| 41 - 80                           | 2                      | 0.31     | 99.84               |
| 81 - 159                          | 1                      | 0.16     | 100.00              |
| > 159                             | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 638

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Nitric Oxide (NO) - ppb  
Athabasca Valley - February 2023**

| <b>Concentration<br/>Ranges (ppb)</b> | <b>Wind Direction</b> |     |    |     |    |     |     |     |    |     |    |     |    |     |    |     | <b>Totals</b> |
|---------------------------------------|-----------------------|-----|----|-----|----|-----|-----|-----|----|-----|----|-----|----|-----|----|-----|---------------|
|                                       | N                     | NNE | NE | ENE | E  | ESE | SE  | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |               |
| 0 - 20                                | 93                    | 12  | 5  | 4   | 13 | 11  | 113 | 46  | 15 | 20  | 24 | 31  | 26 | 20  | 28 | 131 | 592           |
| 21 - 40                               | 5                     | 0   | 0  | 4   | 1  | 0   | 6   | 1   | 2  | 2   | 1  | 3   | 2  | 3   | 1  | 12  | 43            |
| 11 - 80                               | 0                     | 0   | 0  | 1   | 0  | 0   | 0   | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 1  | 0   | 2             |
| 81 - 159                              | 0                     | 0   | 1  | 0   | 0  | 0   | 0   | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 1             |
| > 159                                 | 0                     | 0   | 0  | 0   | 0  | 0   | 0   | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| <b>Totals</b>                         | 98                    | 12  | 6  | 9   | 14 | 11  | 119 | 47  | 17 | 22  | 25 | 34  | 28 | 23  | 30 | 143 | 638           |

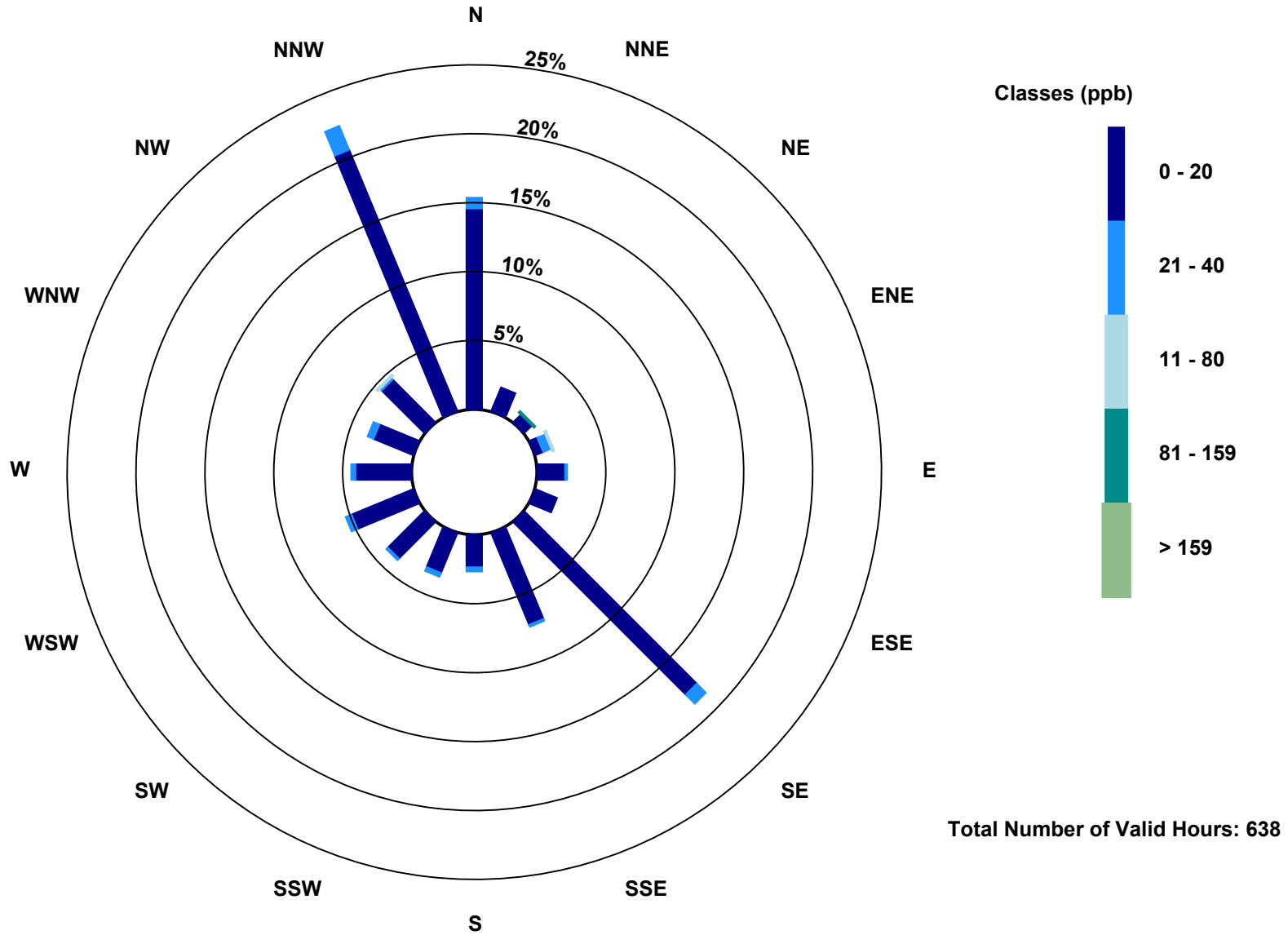
Total Number of Valid Hours: 638

Total Number of Hours: 672

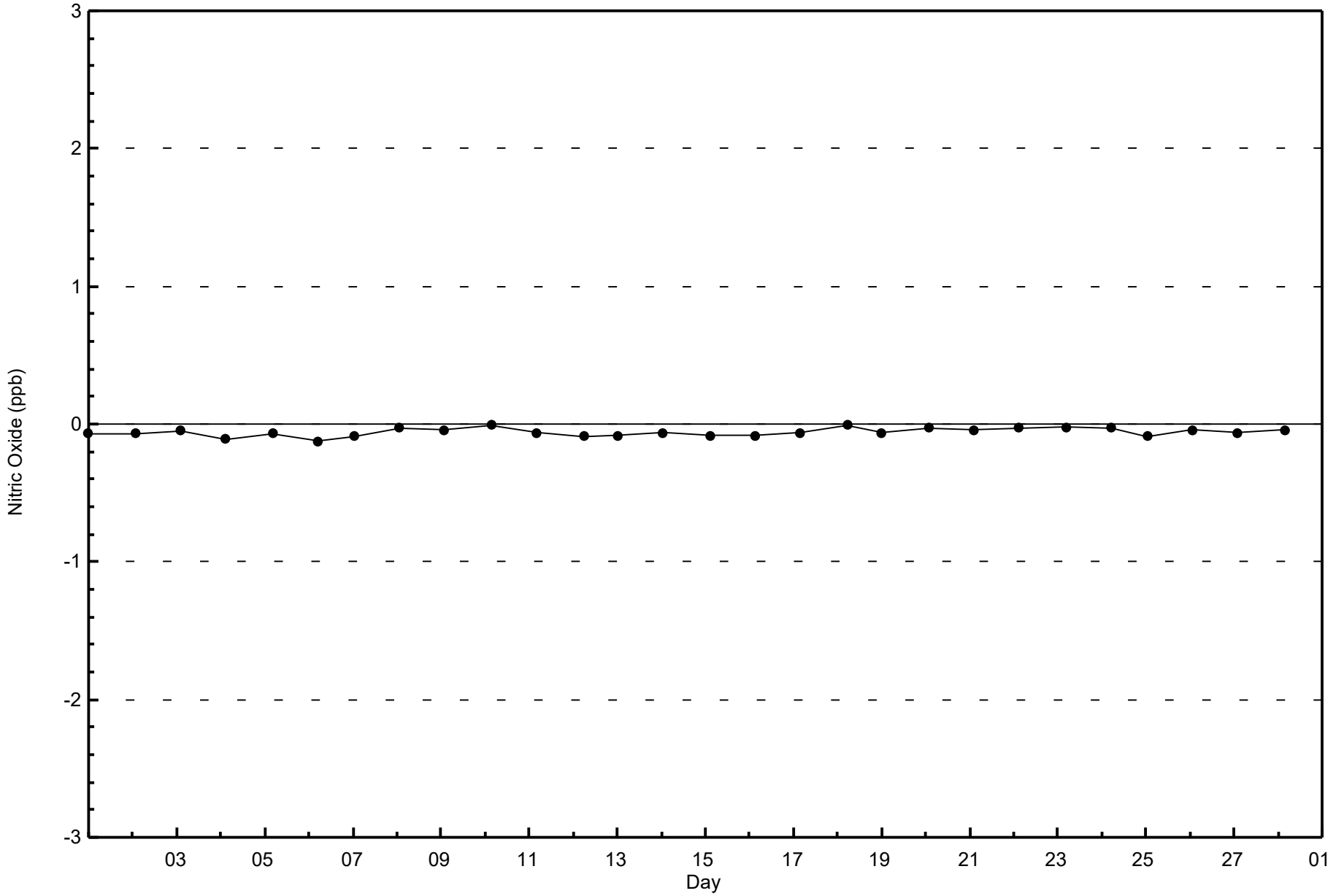


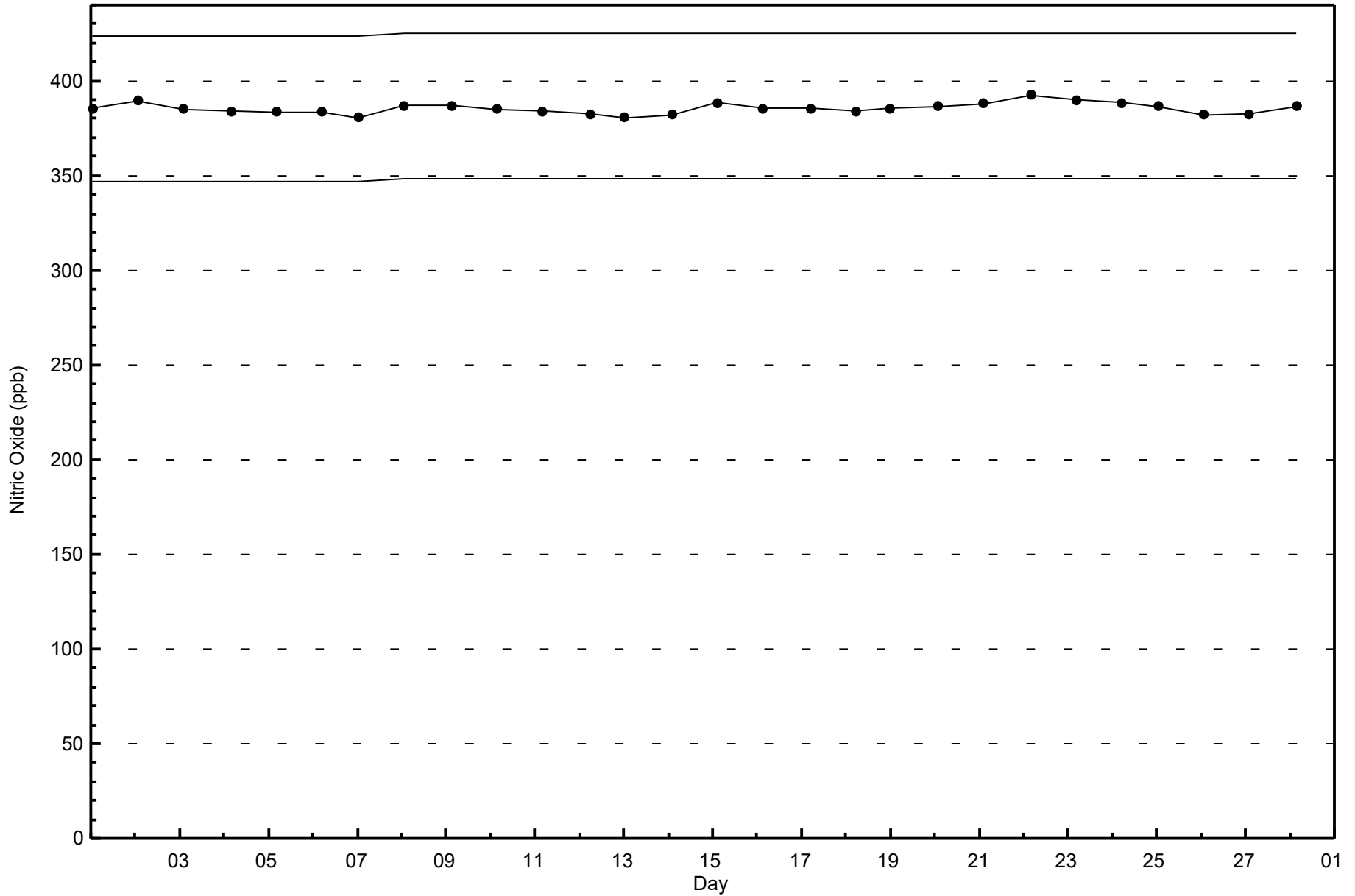
Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Nitric Oxide (NO) - ppb  
Athabasca Valley











Wood Buffalo Environmental Association

Summary of Hour Averages

Nitrogen Dioxide (NO<sub>2</sub>) - ppb

Athabasca Valley - February 2023

|  |  |          |                           |      |
|--|--|----------|---------------------------|------|
| Number of Exceedences (AAAQO):               | 1-hr: 0  | 24-hr: 0 | Hours in Service:         | 672  |
| Maximum Value: 40.5 ppb on Feb 25 20:00      | Maximum Daily Average: 24.7 ppb on Feb 5   |          | Hours of Data:            | 638  |
| Minimum Value: 0.7 ppb on Feb 12 03:00       | Minimum Daily Average: 3.5 ppb on Feb 13   |          | Hours of Missing Data:    | 34   |
| Maximum Diurnal Average: 19.4 ppb at hour 19 | Minimum Diurnal Average: 9.0 ppb at hour 15  |          | Hours of Calibration:     | 33   |
| Monthly Average: 14.02 ppb                   | Percentiles: P <sub>1</sub> = 1.2 P <sub>10</sub> = 3.1 Q <sub>1</sub> = 7.7 Median = 11.8 Q <sub>3</sub> = 19.4 P <sub>90</sub> = 27.0 P <sub>99</sub> = 37.5 |          | Percent Operational Time: | 99.9 |

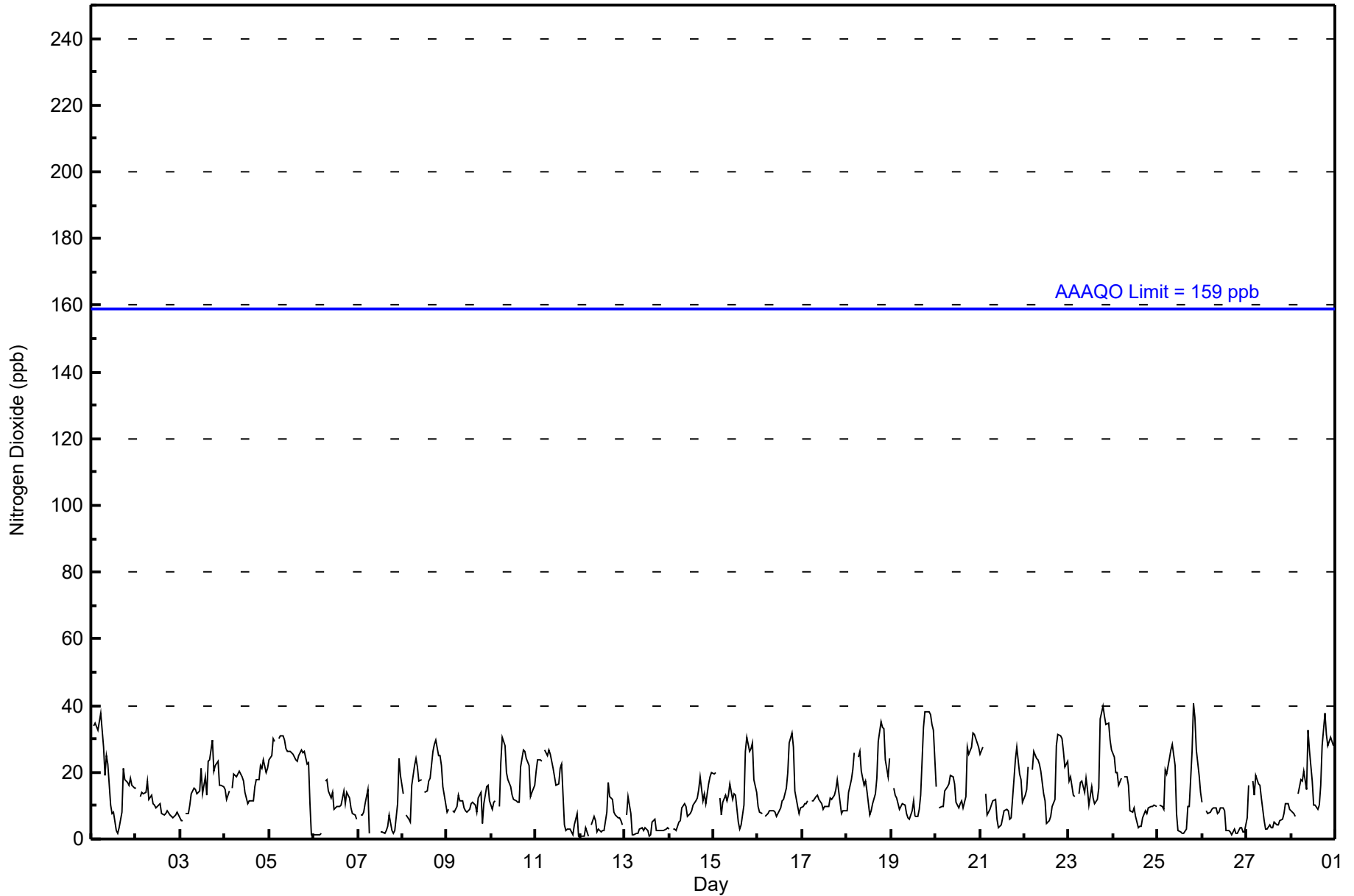
| Day    | Hourly Period Ending At (MST) |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Daily Average | Daily Maximum |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |                 |  |
|--------|-------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|---------------|---------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----------------|-----------------|--|
|        | 1                             | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20   | 21   | 22   | 23   | 24   |               |               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |                 |  |
| 1-Feb  | Z                             | 33.8 | 34.8 | 32.5 | 35.0 | 37.6 | 27.6 | 18.9 | 25.2 | 22.5 | 10.1 | 7.8  | 8.2  | 2.4  | 1.8  | 3.3  | 8.1  | 21.2 | 17.9 | 16.9 | 16.2 | 18.2 | 16.3 | 15.4 | 18.8          | 37.6          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |                 |  |
| 2-Feb  | 15.2                          | Z    | 12.8 | 13.8 | 13.7 | 14.1 | 17.5 | 11.7 | 13.2 | 10.7 | 10.1 | 9.3  | 10.2 | 10.7 | 7.7  | 7.1  | 7.6  | 8.5  | 7.2  | 6.8  | 6.5  | 7.3  | 7.9  | 7.0  | 10.3          | 17.5          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |                 |  |
| 3-Feb  | 5.5                           | 5.6  | Z    | 7.6  | 7.5  | 10.2 | 13.4 | 15.3 | 14.8 | 13.6 | 14.3 | 21.0 | 13.6 | 18.8 | 13.2 | 23.1 | 23.6 | 29.5 | 20.3 | 21.9 | 23.4 | 16.0 | 16.0 | 15.5 | 15.8          | 29.5          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |                 |  |
| 4-Feb  | 14.7                          | 11.9 | 14.3 | Z    | 15.1 | 19.5 | 18.6 | 19.4 | 20.2 | 18.6 | 17.4 | 14.1 | 10.8 | 11.4 | 11.5 | 11.4 | 15.5 | 18.0 | 17.6 | 22.0 | 21.3 | 23.7 | 19.8 | 21.1 | 16.9          | 23.7          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |                 |  |
| 5-Feb  | 23.6                          | 25.2 | 30.2 | 29.4 | Z    | 30.0 | 30.9 | 30.8 | 29.5 | 27.1 | 26.4 | 26.2 | 25.9 | 25.5 | 23.6 | 23.1 | 24.9 | 26.9 | 26.0 | 22.0 | 26.4 | 22.6 | 22.8 | 10.8 | 1.3           | 24.7          | 30.9 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |                 |  |
| 6-Feb  | 1.4                           | 1.3  | 1.3  | 1.3  | 1.7  | Z    | 17.3 | 18.0 | 14.5 | 12.3 | 13.8 | 9.0  | 9.9  | 9.6  | 10.2 | 14.2 | 10.4 | 13.8 | 12.3 | 9.2  | 7.5  | 7.1  | 5.9  | 9.2  | 18.0          |               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |                 |  |
| 7-Feb  | Z                             | 7.2  | 7.3  | 7.9  | 10.7 | 14.8 | 1.8  | C    | C    | C    | C    | C    | 2.2  | 2.1  | 1.5  | 2.5  | 3.7  | 7.4  | 2.7  | 1.9  | 2.5  | 10.4 | 24.0 | 19.0 | 7.2           | 24.0          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |                 |  |
| 8-Feb  | 13.7                          | Z    | 7.0  | 6.1  | 5.0  | 16.0 | 22.0 | 24.3 | 21.6 | 17.2 | 17.9 | M    | 13.9 | 14.6 | 17.5 | 18.2 | 26.1 | 28.6 | 29.6 | 25.1 | 25.1 | 22.0 | 15.5 | 10.7 | 18.1          | 29.6          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |                 |  |
| 9-Feb  | 7.9                           | 9.1  | Z    | 8.6  | 8.2  | 9.6  | 13.2 | 11.5 | 11.6 | 9.5  | 8.3  | 8.1  | 8.9  | 10.7 | 11.1 | 10.1 | 8.0  | 12.4 | 14.0 | 4.5  | 10.4 | 15.8 | 15.9 | 11.3 | 10.4          | 15.9          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |                 |  |
| 10-Feb | 9.0                           | 11.2 | 11.3 | Z    | 9.8  | 22.7 | 30.4 | 27.8 | 20.0 | 17.8 | 15.5 | 13.0 | 11.7 | 11.3 | 10.9 | 11.0 | 21.6 | 26.7 | 26.3 | 24.2 | 22.0 | 12.7 | 14.0 | 16.0 | 17.3          | 30.4          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |                 |  |
| 11-Feb | 20.3                          | 23.7 | 23.8 | 23.5 | Z    | 26.8 | 25.2 | 26.7 | 25.4 | 21.3 | 18.7 | 16.2 | 16.4 | 21.3 | 22.4 | 4.4  | 2.4  | 3.0  | 3.0  | 2.2  | 1.4  | 4.4  | 7.7  | 0.9  | 14.8          | 26.8          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |                 |  |
| 12-Feb | 1.0                           | 0.8  | 0.7  | 3.4  | 1.0  | Z    | 4.3  | 6.7  | 5.6  | 2.2  | 3.1  | 2.0  | 2.6  | 2.7  | 7.9  | 17.1 | 12.9 | 11.9 | 8.0  | 7.2  | 6.2  | 6.3  | 5.4  | 4.3  | 5.4           | 17.1          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |                 |  |
| 13-Feb | Z                             | 7.2  | 12.6 | 7.5  | 1.3  | 1.4  | 1.6  | 1.7  | 3.0  | 3.5  | 2.6  | 3.3  | 2.4  | 1.0  | 1.2  | 4.9  | 5.9  | 2.5  | 2.5  | 2.7  | 2.4  | 2.6  | 3.1  | 3.6  | 3.5           | 12.6          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |                 |  |
| 14-Feb | 2.9                           | Z    | 2.8  | 2.8  | 2.6  | 4.9  | 5.3  | 9.5  | 10.4 | 9.6  | 6.9  | 7.6  | 8.3  | 10.3 | 11.4 | 12.3 | 14.8 | 18.7 | 11.6 | 13.4 | 10.8 | 16.4 | 18.8 | 19.8 | 10.1          | 19.8          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |                 |  |
| 15-Feb | 19.5                          | 19.9 | Z    | 12.2 | 7.2  | 11.1 | 13.3 | 11.3 | 13.3 | 16.5 | 12.0 | 13.5 | 13.2 | 4.9  | 3.1  | 4.3  | 10.0 | 26.2 | 30.3 | 26.4 | 27.3 | 28.7 | 17.6 | 13.9 | 15.5          | 30.3          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |                 |  |
| 16-Feb | 9.8                           | 7.9  | 7.7  | Z    | 6.9  | 7.6  | 8.4  | 8.4  | 8.5  | 8.1  | 6.6  | 7.8  | 9.5  | 11.4 | 11.7 | 15.3 | 19.8 | 29.0 | 31.6 | 27.7 | 14.4 | 9.9  | 7.5  | 9.5  | 12.4          | 31.6          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |                 |  |
| 17-Feb | 9.9                           | 10.8 | 10.7 | 11.6 | Z    | 11.5 | 11.3 | 12.5 | 13.3 | 11.8 | 10.8 | 8.7  | 9.7  | 9.9  | 9.8  | 12.1 | 11.9 | 13.0 | 14.9 | 17.6 | 11.2 | 7.6  | 8.5  | 8.4  | 11.2          | 17.6          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |                 |  |
| 18-Feb | 8.5                           | 13.9 | 17.8 | 20.9 | 25.9 | Z    | 24.4 | 26.3 | 20.5 | 16.1 | 17.5 | 14.2 | 7.1  | 8.5  | 10.4 | 13.7 | 18.3 | 29.2 | 35.0 | 33.6 | 33.2 | 23.8 | 18.7 | 24.2 | 20.1          | 35.0          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |                 |  |
| 19-Feb | Z                             | 15.3 | 13.2 | 12.1 | 9.0  | 9.7  | 10.4 | 10.2 | 7.8  | 6.2  | 6.1  | 8.5  | 11.4 | 6.8  | 6.8  | 9.0  | 13.1 | 33.3 | 38.2 | 38.1 | 38.1 | 37.3 | 34.5 | 32.6 | 17.7          | 38.2          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |                 |  |
| 20-Feb | 15.5                          | Z    | 9.3  | 9.6  | 9.7  | 14.2 | 15.5 | 16.6 | 19.0 | 18.6 | 16.6 | 11.1 | 9.2  | 10.7 | 11.3 | 9.4  | 12.6 | 27.4 | 25.5 | 27.7 | 31.8 | 31.4 | 28.8 | 27.5 | 17.8          | 31.8          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |                 |  |
| 21-Feb | 25.4                          | 27.4 | Z    | 13.5 | 7.1  | 9.0  | 10.2 | 11.3 | 11.7 | 5.8  | 3.3  | 4.4  | 6.4  | 8.5  | 9.0  | 8.5  | 5.8  | 6.4  | 17.7 | 23.6 | 27.7 | 19.6 | 17.9 | 11.0 | 12.7          | 27.7          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |                 |  |
| 22-Feb | 13.3                          | 14.8 | 21.7 | Z    | 20.7 | 26.2 | 24.3 | 23.7 | 22.5 | 20.3 | 13.6 | 11.5 | 4.7  | 5.6  | 6.8  | 9.8  | 11.9 | 27.9 | 31.2 | 31.1 | 29.9 | 26.3 | 21.8 | 23.1 | 19.2          | 31.2          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |                 |  |
| 23-Feb | 17.5                          | 18.8 | 13.2 | 12.9 | Z    | 13.5 | 16.9 | 17.2 | 14.1 | 18.1 | 14.7 | 10.1 | 15.7 | 12.3 | 10.6 | 11.7 | 15.4 | 36.2 | 40.0 | 36.7 | 34.3 | 34.6 | 29.7 | 26.6 | 20.5          | 40.0          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |                 |  |
| 24-Feb | 24.4                          | 20.1 | 19.8 | 16.0 | 18.1 | Z    | 18.5 | 18.8 | 16.0 | 8.6  | 7.9  | 9.5  | 6.6  | 3.6  | 3.9  | 4.0  | 6.3  | 8.5  | 7.5  | 9.2  | 9.9  | 9.7  | 10.3 | 9.7  | 11.6          | 24.4          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |                 |  |
| 25-Feb | Z                             | 10.2 | 9.6  | 8.9  | 20.7 | 19.3 | 24.0 | 26.9 | 28.3 | 22.0 | 7.5  | 2.4  | 2.0  | 1.9  | 1.7  | 3.1  | 9.9  | 9.6  | 26.3 | 40.5 | 36.4 | 26.8 | 19.1 | 13.9 | 16.1          | 40.5          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |                 |  |
| 26-Feb | 11.0                          | Z    | 8.6  | 7.6  | 8.0  | 8.7  | 9.4  | 9.3  | 7.7  | 8.1  | 9.2  | 9.5  | 8.4  | 2.5  | 2.5  | 2.1  | 1.4  | 2.9  | 1.9  | 1.7  | 3.6  | 3.2  | 2.0  | 2.1  | 5.7           | 11.0          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |                 |  |
| 27-Feb | 6.5                           | 16.0 | Z    | 17.4 | 13.1 | 19.0 | 16.7 | 16.0 | 12.2 | 5.7  | 3.0  | 2.8  | 4.1  | 3.5  | 3.4  | 4.9  | 4.4  | 4.4  | 5.7  | 6.1  | 7.5  | 10.6 | 10.5 | 9.0  | 8.8           | 19.0          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |                 |  |
| 28-Feb | 8.6                           | 7.7  | 6.8  | Z    | 13.7 | 18.0 | 17.5 | 20.2 | 14.7 | 32.8 | 26.5 | 17.3 | 10.3 | 10.0 | 8.8  | 10.3 | 16.3 | 27.9 | 37.6 | 31.5 | 28.0 | 30.6 | 29.4 | 27.8 | 19.7          | 37.6          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |                 |  |
|        |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 12.4 | 13.9          | 12.9          | 12.5 | 11.3 | 15.6 | 16.1 | 16.7 | 15.7 | 14.2 | 11.9 | 10.3 | 9.4  | 9.0  | 9.9  | 12.4 | 18.1 | 19.4 | 19.3 | 18.3 | 17.4 | 15.7 | 14.0 | Diurnal Average |                 |  |
|        |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 25.4 | 33.8          | 34.8          | 32.5 | 35.0 | 37.6 | 30.9 | 30.8 | 29.5 | 32.8 | 26.5 | 26.2 | 25.9 | 25.5 | 23.6 | 23.1 | 26.1 | 36.2 | 40.0 | 40.5 | 38.1 | 37.3 | 34.5 | 32.6            | Diurnal Maximum |  |

Z - zerospan      C - Calibration      M - Maintenance  
 Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 159 ppb



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Nitrogen Dioxide (NO<sub>2</sub>) - ppb**  
**Athabasca Valley - February 2023**





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Nitrogen Dioxide (NO<sub>2</sub>) - ppb  
Athabasca Valley - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 20                            | 494                    | 77.43    | 77.43               |
| 21 - 40                           | 143                    | 22.41    | 99.84               |
| 41 - 80                           | 1                      | 0.16     | 100.00              |
| 81 - 159                          | 0                      | 0.00     | 100.00              |
| > 159                             | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 638

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Nitrogen Dioxide (NO<sub>2</sub>) - ppb  
Athabasca Valley - February 2023**

| <b>Concentration<br/>Ranges (ppb)</b> | <b>Wind Direction</b> |            |           |            |          |            |           |            |          |            |           |            |          |            |           |            | <b>Totals</b> |
|---------------------------------------|-----------------------|------------|-----------|------------|----------|------------|-----------|------------|----------|------------|-----------|------------|----------|------------|-----------|------------|---------------|
|                                       | <b>N</b>              | <b>NNE</b> | <b>NE</b> | <b>ENE</b> | <b>E</b> | <b>ESE</b> | <b>SE</b> | <b>SSE</b> | <b>S</b> | <b>SSW</b> | <b>SW</b> | <b>WSW</b> | <b>W</b> | <b>WNW</b> | <b>NW</b> | <b>NNW</b> |               |
| 0 - 20                                | 76                    | 10         | 5         | 6          | 9        | 8          | 106       | 36         | 13       | 13         | 17        | 28         | 16       | 19         | 23        | 109        | 494           |
| 21 - 40                               | 22                    | 2          | 1         | 3          | 5        | 3          | 12        | 11         | 4        | 9          | 8         | 6          | 12       | 4          | 7         | 34         | 143           |
| 11 - 80                               | 0                     | 0          | 0         | 0          | 0        | 0          | 1         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 1             |
| 81 - 159                              | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0             |
| > 159                                 | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0             |
| <b>Totals</b>                         | 98                    | 12         | 6         | 9          | 14       | 11         | 119       | 47         | 17       | 22         | 25        | 34         | 28       | 23         | 30        | 143        | 638           |

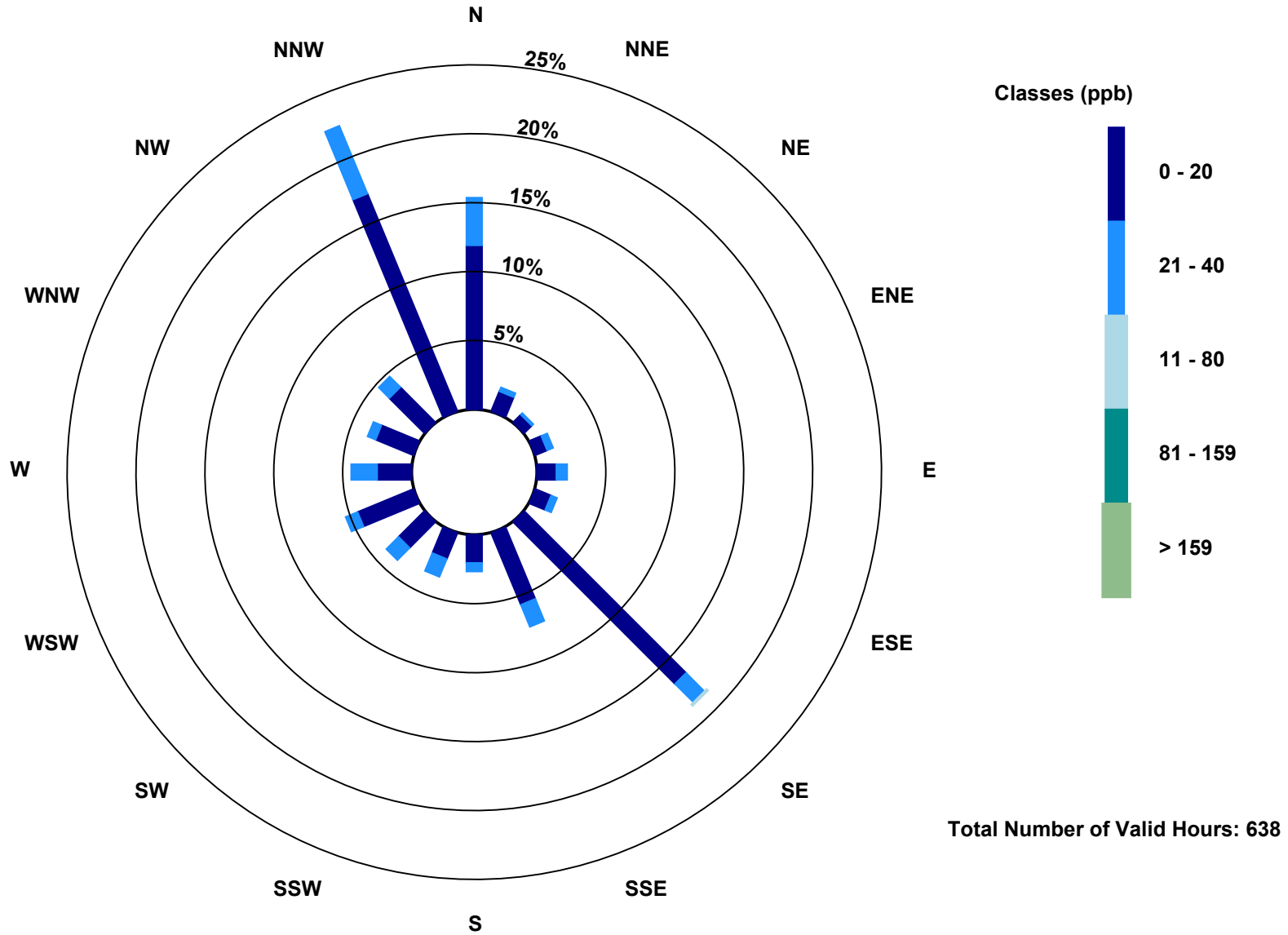
Total Number of Valid Hours: 638

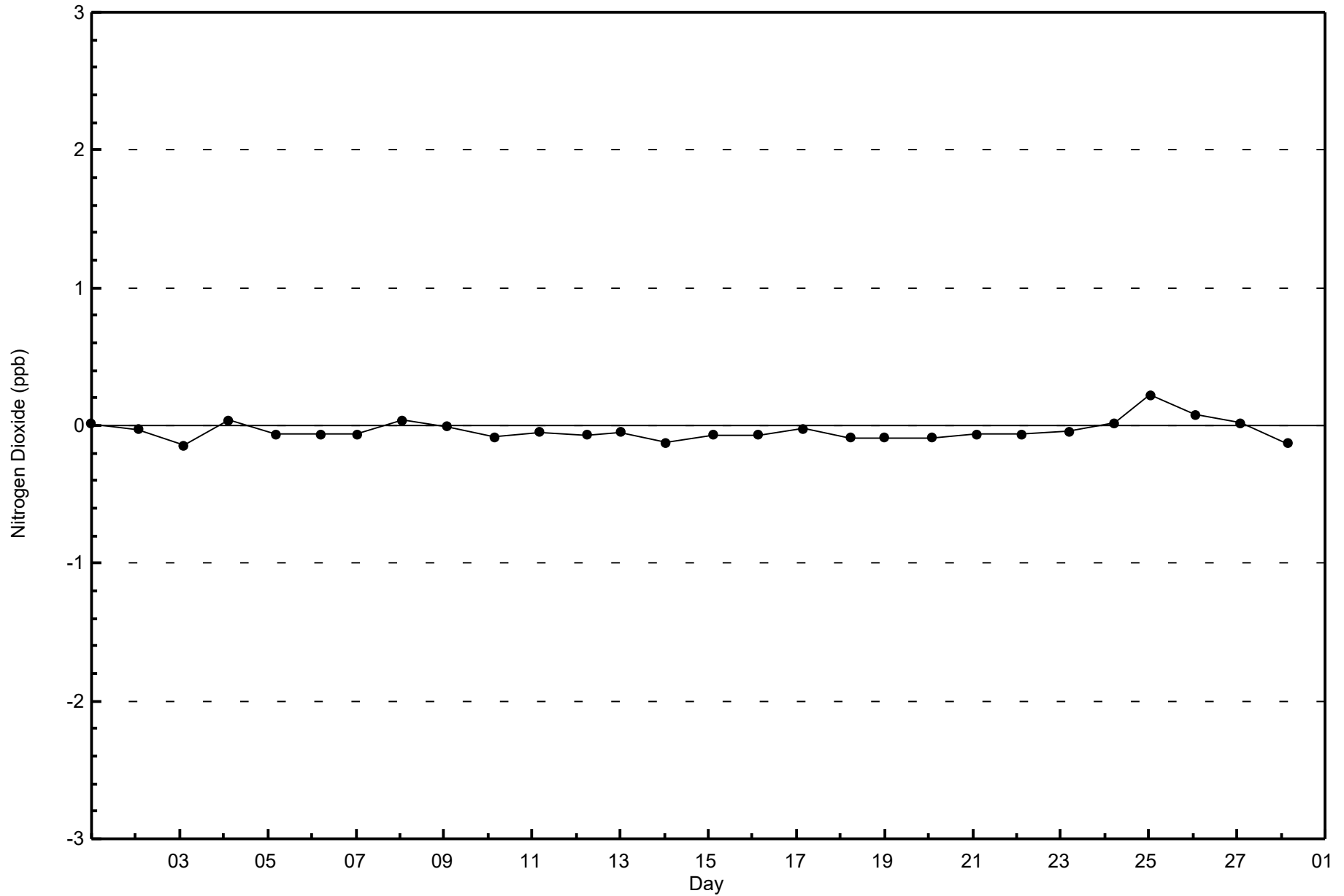
Total Number of Hours: 672



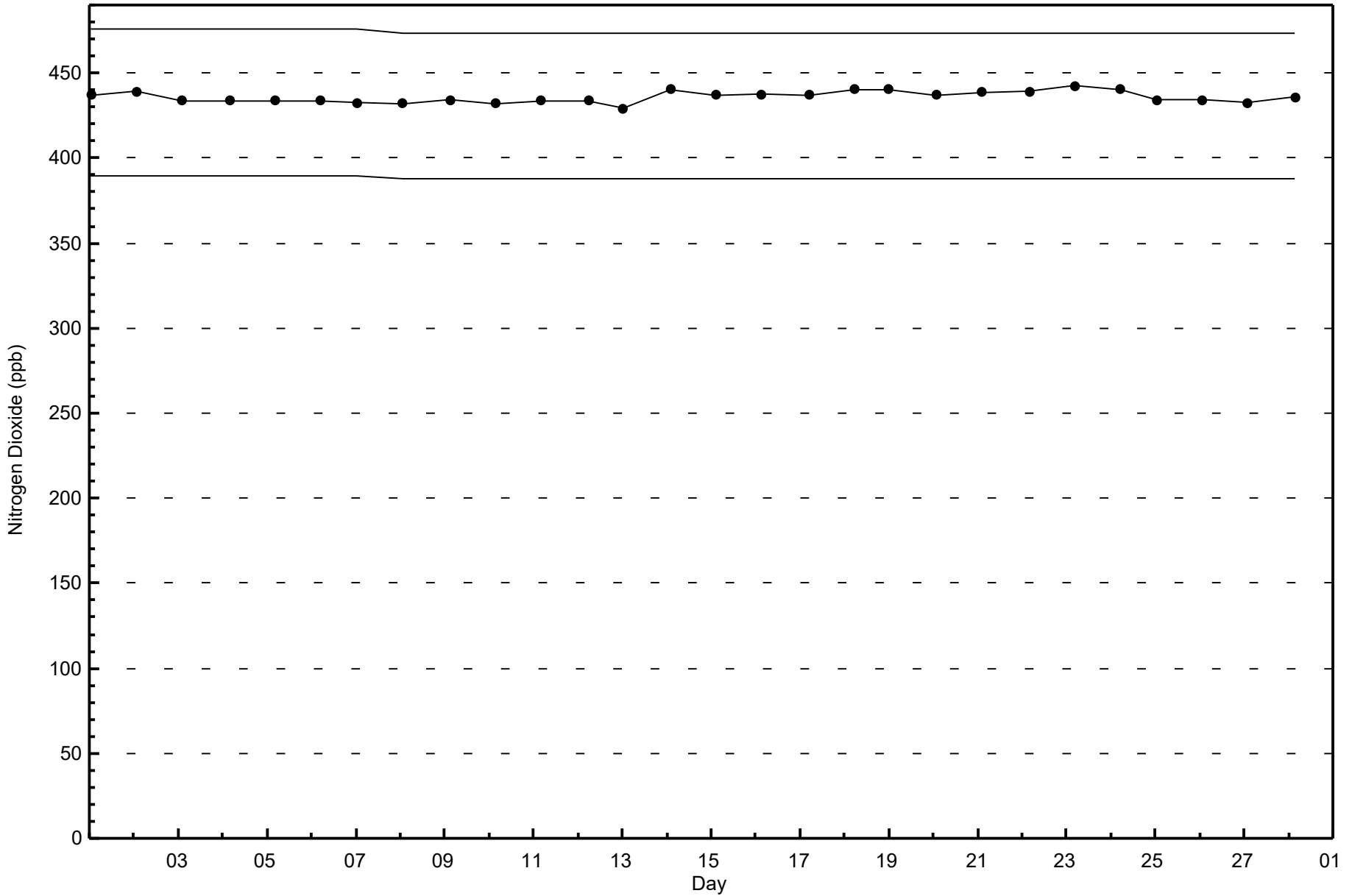
Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Nitrogen Dioxide (NO<sub>2</sub>) - ppb  
Athabasca Valley











**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

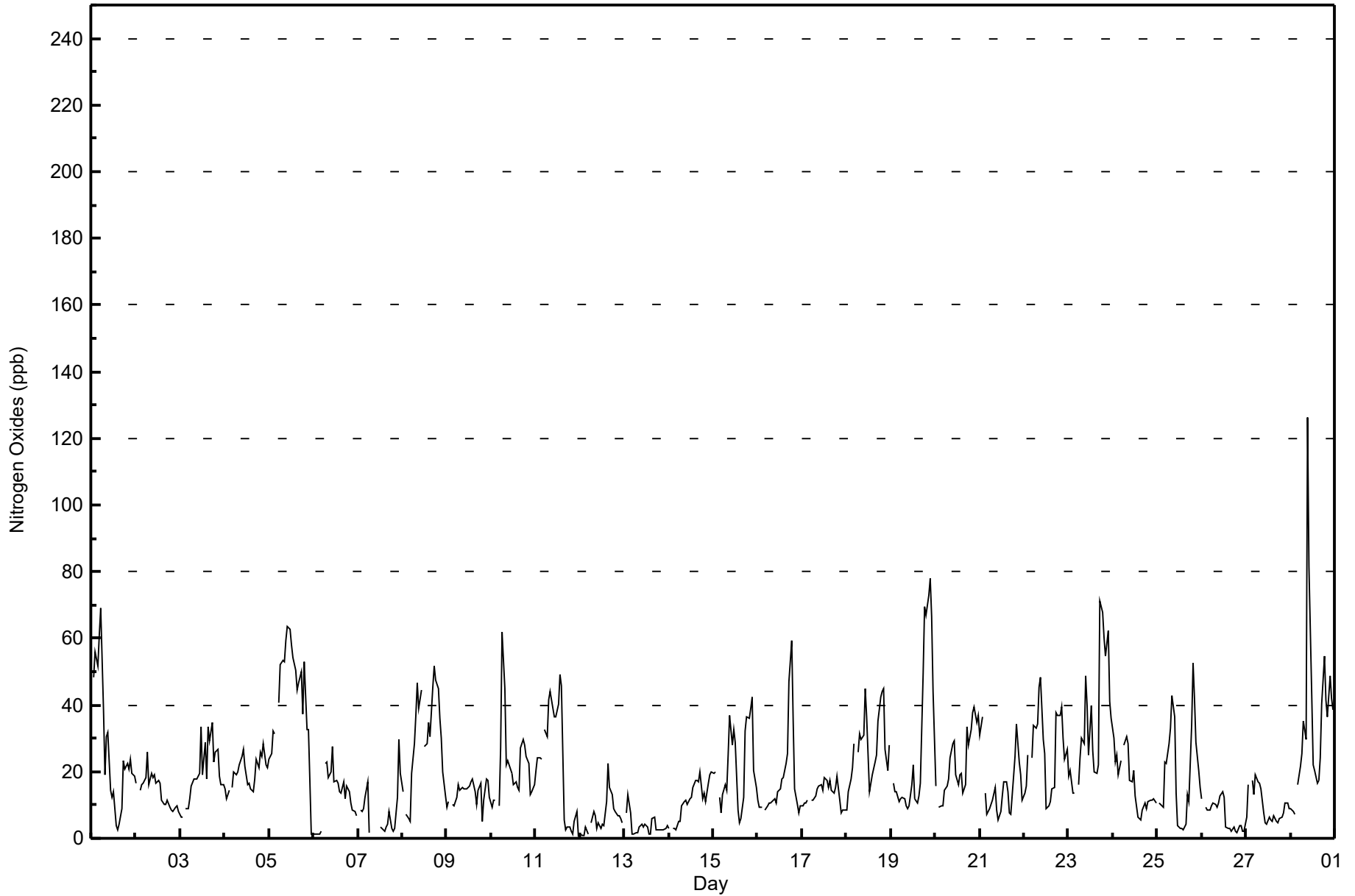
**Nitrogen Oxides (NO<sub>x</sub>) - ppb**  
**Athabasca Valley - February 2023**

| Maximum Value: 126.3 ppb on Feb 28 10:00      Maximum Daily Average: 42.4 ppb on Feb 5   |                               |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |      |      |      | Hours in Service: 672<br>Hours of Data: 638           |      |                 |               |               |
|--|-------------------------------|------|------|------|------|------|------|------|------|-------|------|------|------|------|------|------|------|------|------|------|------|---|------|-----------------|---------------|---------------|
| Minimum Value: 0.8 ppb on Feb 12 03:00      Minimum Daily Average: 3.8 ppb on Feb 13   |                               |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |      |      |      | Hours of Missing Data: 34<br>Hours of Calibration: 33 |      |                 |               |               |
| Maximum Diurnal Average: 27.5 ppb at hour 10      Minimum Diurnal Average: 13.3 ppb at hour 1  |                               |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |      |      |      | Percent Operational Time: 99.9                        |      |                 |               |               |
| Monthly Average: 19.72 ppb      Percentiles: P <sub>1</sub> = 1.3 P <sub>10</sub> = 4.0 Q <sub>1</sub> = 9.4 Median = 16.0 Q <sub>3</sub> = 26.2 P <sub>90</sub> = 40.4 P <sub>99</sub> = 68.4 |                               |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |      |      |      |   |      |                 |               |               |
| Day  | Hourly Period Ending At (MST) |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |      |      |      |   |      |                 | Daily Average | Daily Maximum |
|  | 1                             | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10    | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20   | 21   | 22  | 23   | 24              |               |               |
| 1-Feb  | Z                             | 48.5 | 56.1 | 51.6 | 60.9 | 68.9 | 38.2 | 19.1 | 30.4 | 32.0  | 14.6 | 12.3 | 13.9 | 3.7  | 2.5  | 4.1  | 8.8  | 23.4 | 20.8 | 22.5 | 20.6 | 23.6  | 19.6 | 18.5            | 26.7          | 68.9          |
| 2-Feb  | 16.4                          | Z    | 14.3 | 15.9 | 16.5 | 18.0 | 26.0 | 16.1 | 19.4 | 18.4  | 19.2 | 16.5 | 17.6 | 16.3 | 11.3 | 10.3 | 10.2 | 11.6 | 9.5  | 8.7  | 8.1  | 9.1   | 9.6  | 8.1             | 14.2          | 26.0          |
| 3-Feb  | 6.5                           | 6.5  | Z    | 8.8  | 8.8  | 12.0 | 15.5 | 17.6 | 18.0 | 17.8  | 19.5 | 33.3 | 19.2 | 28.8 | 17.7 | 33.3 | 29.1 | 34.6 | 22.7 | 25.9 | 26.8 | 18.7  | 16.2 | 16.0            | 19.7          | 34.6          |
| 4-Feb  | 15.0                          | 12.0 | 14.4 | Z    | 15.2 | 20.0 | 18.9 | 19.7 | 21.9 | 24.4  | 26.7 | 21.8 | 16.2 | 16.5 | 15.0 | 14.1 | 17.8 | 23.5 | 21.1 | 25.8 | 24.6 | 28.5  | 22.0 | 21.2            | 19.8          | 28.5          |
| 5-Feb  | 23.7                          | 25.4 | 32.1 | 31.4 | Z    | 40.5 | 52.2 | 53.5 | 53.0 | 59.4  | 63.6 | 62.7 | 58.3 | 54.3 | 50.3 | 44.6 | 46.5 | 49.8 | 37.3 | 52.8 | 32.4 | 32.6  | 17.3 | 1.3             | 42.4          | 63.6          |
| 6-Feb  | 1.4                           | 1.3  | 1.4  | 1.4  | 1.9  | Z    | 22.5 | 22.9 | 18.1 | 20.1  | 27.7 | 16.8 | 17.3 | 16.7 | 14.0 | 13.5 | 17.1 | 12.0 | 15.9 | 13.9 | 10.6 | 8.6   | 8.0  | 6.7             | 12.6          | 27.7          |
| 7-Feb  | Z                             | 8.5  | 8.2  | 8.8  | 12.3 | 17.0 | 1.8  | C    | C    | C     | C    | C    | 3.2  | 2.9  | 2.1  | 3.2  | 4.2  | 8.2  | 3.0  | 2.2  | 2.8  | 12.2  | 29.6 | 19.6            | 8.3           | 29.6          |
| 8-Feb  | 13.8                          | Z    | 7.0  | 6.1  | 5.0  | 19.4 | 28.5 | 37.0 | 46.5 | 39.1  | 44.5 | M    | 27.5 | 28.6 | 34.7 | 30.7 | 45.2 | 51.6 | 47.4 | 45.1 | 36.0 | 30.2  | 19.8 | 12.7            | 29.8          | 51.6          |
| 9-Feb  | 9.4                           | 10.8 | Z    | 10.0 | 9.7  | 12.2 | 16.3 | 14.5 | 15.3 | 14.8  | 14.7 | 14.9 | 15.6 | 16.9 | 17.8 | 13.9 | 10.0 | 14.4 | 16.4 | 5.2  | 11.5 | 17.8  | 17.4 | 12.3            | 13.6          | 17.8          |
| 10-Feb   | 9.2                           | 11.5 | 11.4 | Z    | 9.9  | 27.1 | 61.8 | 44.8 | 22.1 | 23.4  | 20.9 | 19.4 | 16.2 | 16.8 | 15.4 | 14.6 | 27.0 | 29.9 | 27.8 | 24.6 | 22.3 | 13.0  | 14.0 | 16.0            | 21.7          | 61.8          |
| 11-Feb   | 20.5                          | 24.0 | 24.0 | 23.9 | Z    | 32.5 | 30.3 | 41.6 | 44.3 | 39.1  | 36.6 | 36.2 | 40.3 | 49.3 | 45.8 | 5.5  | 2.8  | 3.4  | 3.2  | 2.3  | 1.4  | 5.2   | 8.1  | 1.0             | 22.7          | 49.3          |
| 12-Feb   | 1.1                           | 0.9  | 0.8  | 3.5  | 1.2  | Z    | 4.7  | 7.9  | 6.8  | 3.1   | 4.5  | 3.0  | 4.1  | 4.0  | 10.9 | 22.7 | 15.4 | 13.1 | 8.9  | 8.1  | 6.9  | 6.9   | 6.0  | 4.8             | 6.5           | 22.7          |
| 13-Feb   | Z                             | 7.7  | 13.2 | 7.6  | 1.4  | 1.5  | 1.8  | 1.9  | 3.5  | 4.0   | 3.2  | 4.1  | 3.3  | 1.3  | 1.4  | 5.8  | 6.5  | 2.6  | 2.5  | 2.7  | 2.5  | 2.7   | 3.1  | 3.6             | 3.8           | 13.2          |
| 14-Feb   | 2.9                           | Z    | 2.8  | 2.8  | 2.6  | 4.9  | 5.3  | 9.6  | 11.2 | 11.5  | 10.1 | 12.0 | 12.2 | 15.3 | 17.5 | 17.4 | 17.1 | 19.8 | 11.8 | 13.5 | 10.9 | 16.5  | 19.0 | 20.0            | 11.6          | 20.0          |
| 15-Feb   | 19.6                          | 20.0 | Z    | 12.3 | 7.4  | 13.1 | 16.2 | 14.4 | 25.0 | 37.0  | 27.8 | 32.4 | 28.8 | 8.4  | 4.8  | 5.9  | 12.4 | 32.4 | 36.4 | 36.0 | 39.1 | 42.5  | 20.3 | 15.2            | 22.1          | 42.5          |
| 16-Feb   | 11.4                          | 9.5  | 9.2  | Z    | 8.7  | 9.6  | 10.4 | 10.5 | 11.3 | 11.8  | 10.6 | 14.0 | 14.8 | 17.6 | 18.2 | 22.5 | 25.4 | 47.0 | 59.5 | 35.4 | 14.6 | 10.0  | 7.5  | 9.6             | 17.4          | 59.5          |
| 17-Feb   | 9.9                           | 10.8 | 10.8 | 11.6 | Z    | 11.6 | 11.4 | 12.7 | 14.9 | 15.8  | 16.0 | 14.6 | 18.1 | 17.3 | 15.1 | 17.2 | 14.3 | 13.7 | 15.2 | 18.4 | 11.3 | 7.6   | 8.5  | 8.4             | 13.3          | 18.4          |
| 18-Feb   | 8.5                           | 13.9 | 17.8 | 21.2 | 28.3 | Z    | 25.8 | 31.4 | 29.8 | 30.8  | 45.1 | 36.3 | 14.0 | 16.5 | 19.2 | 22.8 | 25.1 | 35.3 | 42.5 | 44.3 | 44.9 | 26.8  | 20.3 | 28.0            | 27.3          | 45.1          |
| 19-Feb   | Z                             | 16.7 | 13.8 | 13.8 | 10.9 | 12.0 | 12.3 | 11.7 | 9.9  | 8.8   | 9.8  | 16.1 | 22.0 | 11.7 | 10.6 | 12.8 | 16.5 | 49.4 | 69.4 | 67.0 | 72.8 | 78.0  | 66.6 | 44.3            | 28.6          | 78.0          |
| 20-Feb   | 15.6                          | Z    | 9.3  | 9.6  | 9.7  | 14.2 | 15.6 | 17.7 | 24.2 | 28.3  | 29.3 | 18.9 | 16.0 | 18.9 | 19.5 | 13.6 | 16.1 | 33.3 | 28.1 | 32.5 | 37.5 | 39.5  | 34.8 | 37.0            | 22.6          | 39.5          |
| 21-Feb   | 30.9                          | 36.6 | Z    | 13.6 | 7.1  | 9.0  | 10.3 | 11.6 | 15.4 | 8.6   | 5.6  | 8.2  | 12.7 | 16.8 | 16.8 | 13.8 | 7.5  | 7.1  | 18.7 | 24.5 | 34.2 | 22.7  | 19.1 | 11.6            | 15.8          | 36.6          |
| 22-Feb   | 13.6                          | 15.5 | 25.0 | Z    | 24.0 | 34.0 | 33.0 | 34.2 | 45.4 | 48.3  | 29.5 | 25.6 | 8.9  | 9.9  | 11.2 | 14.8 | 15.2 | 37.6 | 36.8 | 37.0 | 39.5 | 30.3  | 23.8 | 26.8            | 26.9          | 48.3          |
| 23-Feb   | 18.6                          | 20.3 | 13.7 | 13.6 | Z    | 16.1 | 24.1 | 30.1 | 28.5 | 48.8  | 39.8 | 25.1 | 39.9 | 26.3 | 19.7 | 19.6 | 21.8 | 71.1 | 67.6 | 60.1 | 54.9 | 62.2  | 41.1 | 36.1            | 34.7          | 71.1          |
| 24-Feb   | 30.1                          | 22.8 | 25.1 | 18.9 | 23.4 | Z    | 28.1 | 30.7 | 28.6 | 17.5  | 17.0 | 20.4 | 12.7 | 6.2  | 6.1  | 5.6  | 8.4  | 10.5 | 8.9  | 11.0 | 11.4 | 11.3  | 11.8 | 10.5            | 16.4          | 30.7          |
| 25-Feb   | Z                             | 10.7 | 9.9  | 9.2  | 23.0 | 22.5 | 28.6 | 32.9 | 42.9 | 36.6  | 13.5 | 3.8  | 3.1  | 2.9  | 2.5  | 4.2  | 13.3 | 11.2 | 33.8 | 52.3 | 41.8 | 28.9  | 20.4 | 15.2            | 20.1          | 52.3          |
| 26-Feb   | 11.9                          | Z    | 9.2  | 8.4  | 8.6  | 9.6  | 10.6 | 10.4 | 9.4  | 10.7  | 12.9 | 13.8 | 12.1 | 3.4  | 3.2  | 2.9  | 2.1  | 3.5  | 2.1  | 1.9  | 3.9  | 3.6   | 2.1  | 2.1             | 6.9           | 13.8          |
| 27-Feb   | 6.5                           | 16.0 | Z    | 17.5 | 13.2 | 19.2 | 16.9 | 16.7 | 14.7 | 7.6   | 4.5  | 4.3  | 6.4  | 5.6  | 5.0  | 6.8  | 5.3  | 4.7  | 6.0  | 6.3  | 7.8  | 10.7  | 10.5 | 9.0             | 9.6           | 19.2          |
| 28-Feb   | 8.8                           | 8.2  | 7.0  | Z    | 15.9 | 21.5 | 25.3 | 35.3 | 29.9 | 126.3 | 81.3 | 42.3 | 22.2 | 20.3 | 16.4 | 17.5 | 24.1 | 40.2 | 54.5 | 41.6 | 36.4 | 48.7  | 42.1 | 38.4            | 35.0          | 126.3         |
|  |                               |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |      |      |      |   |      | Diurnal Average |               |               |
|  |                               |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |      |      |      |   |      | Diurnal Maximum |               |               |
|  |                               |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |      |      |      |   |      |                 |               |               |
| Z - zerospan      C - Calibration      M - Maintenance   |                               |      |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |      |      |      |   |      |                 |               |               |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Nitrogen Oxides (NO<sub>x</sub>) - ppb**  
**Athabasca Valley - February 2023**





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Nitrogen Oxides (NO<sub>x</sub>) - ppb  
Athabasca Valley - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 20                            | 420                    | 65.83    | 65.83               |
| 21 - 40                           | 155                    | 24.29    | 90.13               |
| 41 - 80                           | 61                     | 9.56     | 99.69               |
| 81 - 159                          | 1                      | 0.16     | 99.84               |
| > 159                             | 0                      | 0.00     | 99.84               |

Total Number of Valid Hours: 638

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Nitrogen Oxides (NO<sub>x</sub>) - ppb  
Athabasca Valley - February 2023**

| <b>Concentration<br/>Ranges (ppb)</b> | <b>Wind Direction</b> |            |           |            |          |            |           |            |          |            |           |            |          |            |           |            | <b>Totals</b> |
|---------------------------------------|-----------------------|------------|-----------|------------|----------|------------|-----------|------------|----------|------------|-----------|------------|----------|------------|-----------|------------|---------------|
|                                       | <b>N</b>              | <b>NNE</b> | <b>NE</b> | <b>ENE</b> | <b>E</b> | <b>ESE</b> | <b>SE</b> | <b>SSE</b> | <b>S</b> | <b>SSW</b> | <b>SW</b> | <b>WSW</b> | <b>W</b> | <b>WNW</b> | <b>NW</b> | <b>NNW</b> |               |
| 0 - 20                                | 68                    | 9          | 4         | 4          | 8        | 7          | 96        | 30         | 10       | 12         | 12        | 23         | 14       | 14         | 15        | 94         | 420           |
| 21 - 40                               | 23                    | 3          | 1         | 0          | 3        | 4          | 15        | 12         | 5        | 8          | 10        | 8          | 9        | 6          | 13        | 35         | 155           |
| 11 - 80                               | 7                     | 0          | 0         | 4          | 3        | 0          | 8         | 5          | 2        | 2          | 3         | 3          | 5        | 3          | 2         | 14         | 61            |
| 81 - 159                              | 0                     | 0          | 1         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 1             |
| > 159                                 | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0             |
| <b>Totals</b>                         | 98                    | 12         | 6         | 8          | 14       | 11         | 119       | 47         | 17       | 22         | 25        | 34         | 28       | 23         | 30        | 143        | 637           |

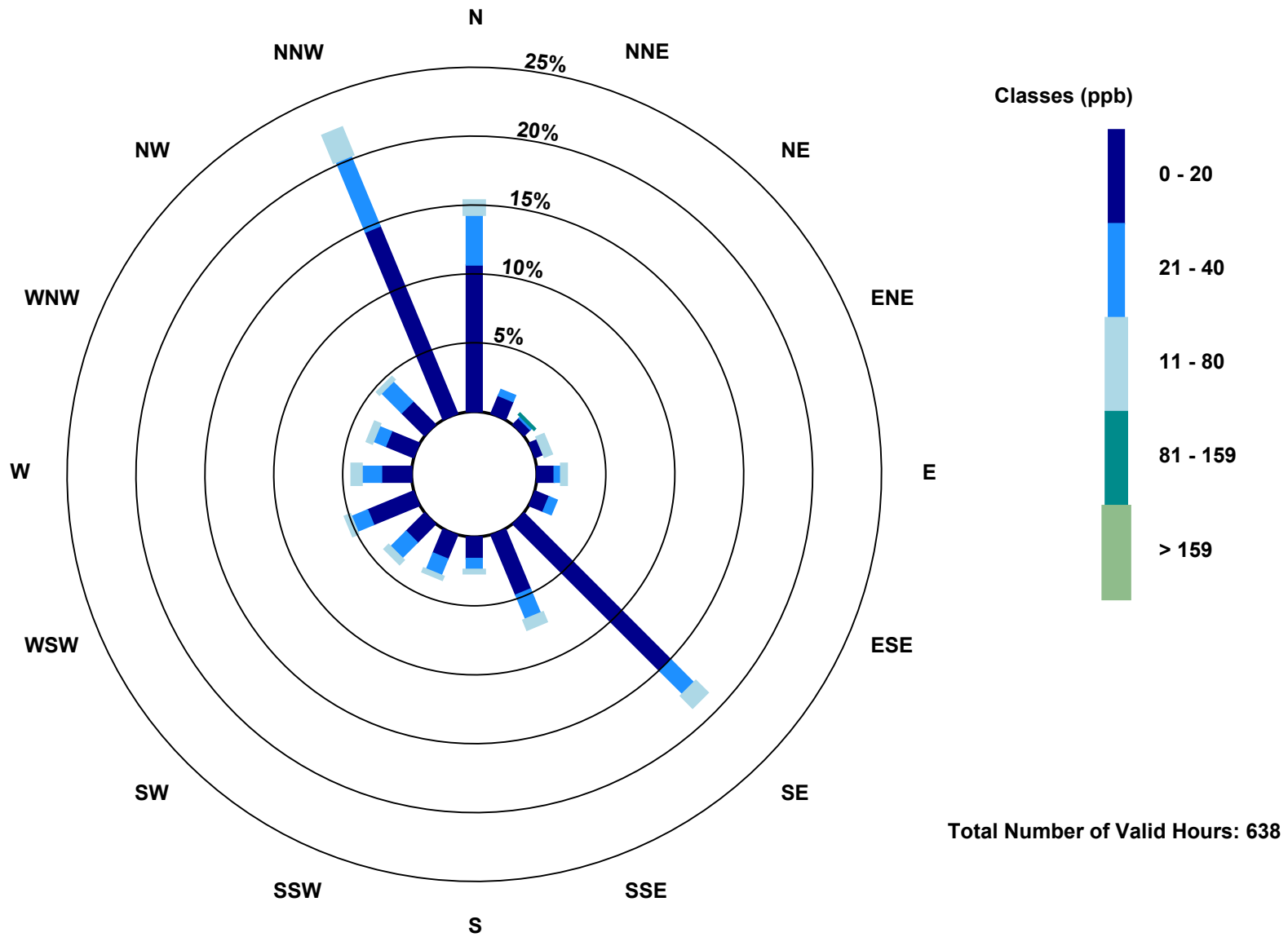
Total Number of Valid Hours: 638

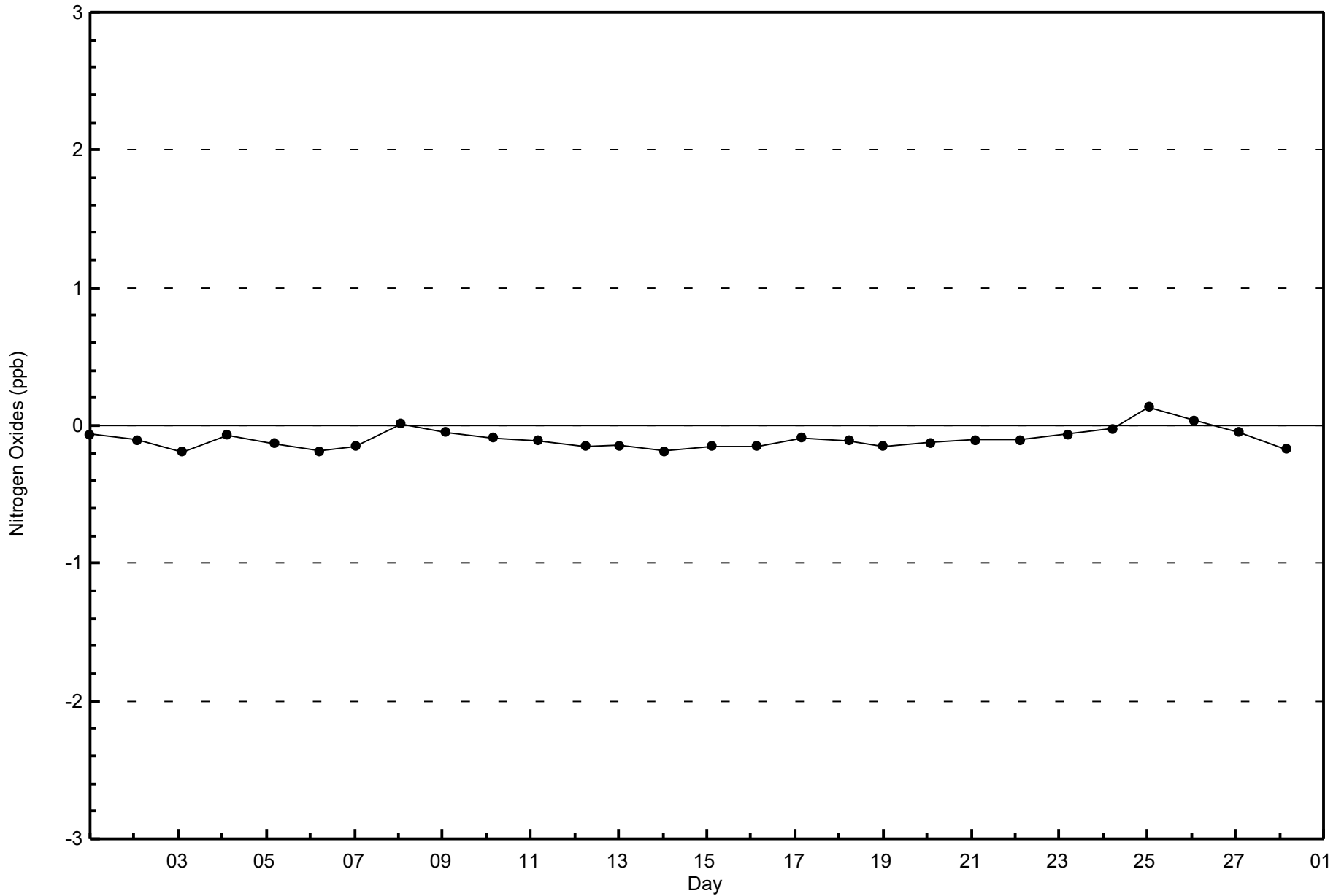
Total Number of Hours: 672

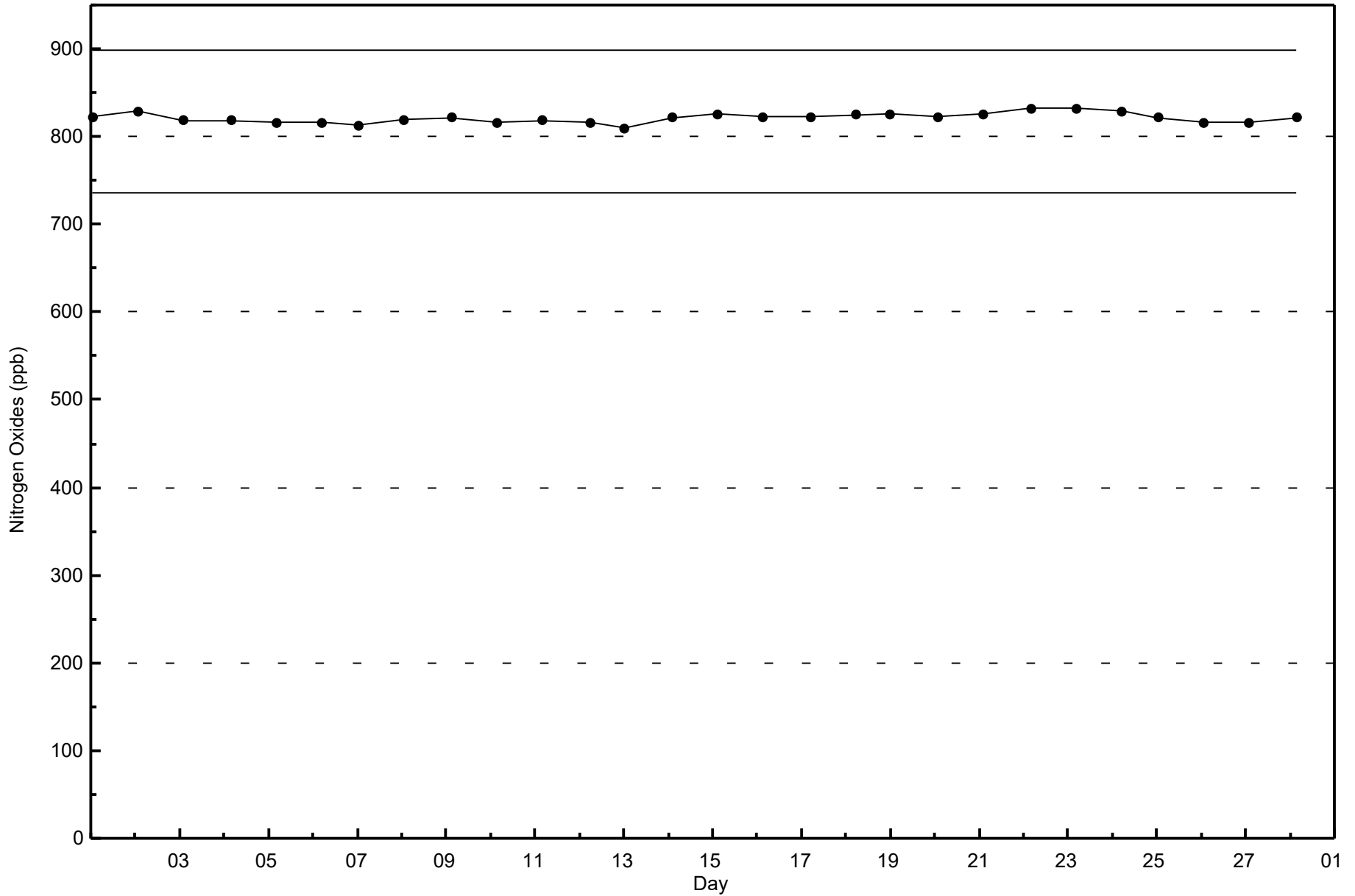


Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Nitrogen Oxides (NO<sub>x</sub>) - ppb  
Athabasca Valley









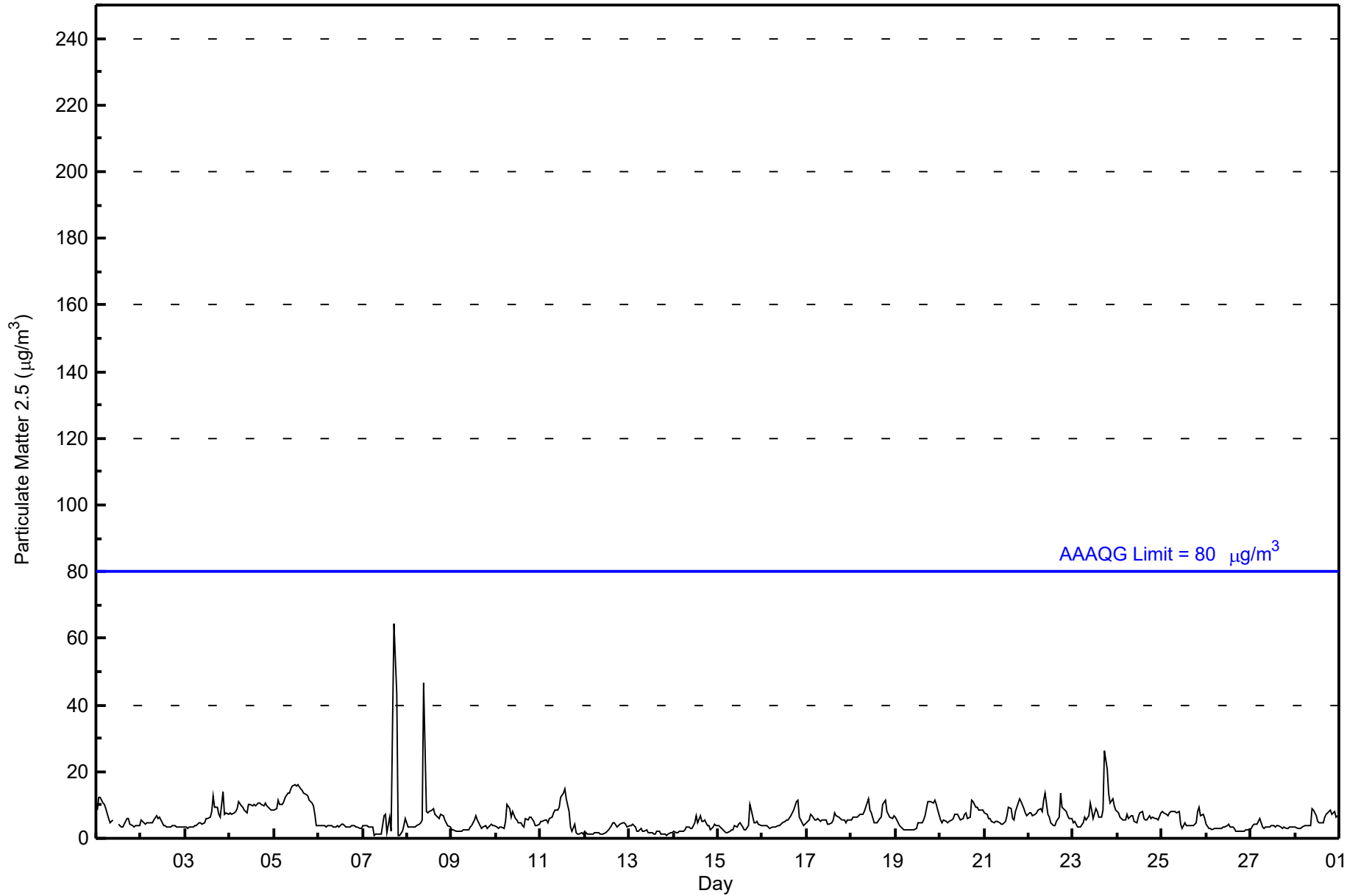


| Number of Exceedences (AAAQO):   |                               | 1-hr: 0  |      | 24-hr: 0 |      | Hours in Service: |      |      |      |      |      |      |      |      |      |                           |      |       |      | 672  |      |      |      |                 |               |               |
|--|-------------------------------|--|------|----------|------|-------------------|------|------|------|------|------|------|------|------|------|---------------------------|------|-------|------|------|------|------|------|-----------------|---------------|---------------|
| Maximum Value: 64.5 µg/m <sup>3</sup> on Feb 7 18:00   |                               | Maximum Daily Average: 12.1 µg/m <sup>3</sup> on Feb 5   |      |          |      |                   |      |      |      |      |      |      |      |      |      | Hours of Data:            |      | 670   |      |      |      |      |      |                 |               |               |
| Minimum Value: 0.8 µg/m <sup>3</sup> on Feb 7 07:00  |                               | Minimum Daily Average: 2.1 µg/m <sup>3</sup> on Feb 13   |      |          |      |                   |      |      |      |      |      |      |      |      |      | Hours of Missing Data:    |      | 2     |      |      |      |      |      |                 |               |               |
| Maximum Diurnal Average: 9.5 µg/m <sup>3</sup> at hour 18  |                               | Minimum Diurnal Average: 4.6 µg/m <sup>3</sup> at hour 5   |      |          |      |                   |      |      |      |      |      |      |      |      |      | Hours of Calibration:     |      | 2     |      |      |      |      |      |                 |               |               |
| Monthly Average: 5.83 µg/m <sup>3</sup>  |                               | Percentiles: P <sub>1</sub> = 1.1 P <sub>10</sub> = 2.3 Q <sub>1</sub> = 3.4 Median = 4.8 Q <sub>3</sub> = 7.2 P <sub>90</sub> = 10.0 P <sub>99</sub> = 16.0 |      |          |      |                   |      |      |      |      |      |      |      |      |      | Percent Operational Time: |      | 100.0 |      |      |      |      |      |                 |               |               |
| Day  | Hourly Period Ending At (MST) |  |      |          |      |                   |      |      |      |      |      |      |      |      |      |                           |      |       |      |      |      |      |      |                 | Daily Average | Daily Maximum |
|  | 1                             | 2  | 3    | 4        | 5    | 6                 | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16                        | 17   | 18    | 19   | 20   | 21   | 22   | 23   | 24              |               |               |
| 1-Feb  | 8.6                           | 12.3   | 12.4 | 10.7     | 10.1 | 8.9               | 6.0  | 4.6  | 5.0  | 5.7  | C    | C    | 4.1  | 3.2  | 3.3  | 4.4                       | 5.8  | 5.8   | 4.3  | 3.9  | 3.6  | 3.8  | 4.0  | 4.0             | 6.1           | 12.4          |
| 2-Feb  | 5.4                           | 5.1  | 4.4  | 4.8      | 4.6  | 4.7               | 4.8  | 5.5  | 6.9  | 5.9  | 6.2  | 5.5  | 3.8  | 3.6  | 3.5  | 3.5                       | 3.6  | 3.7   | 3.8  | 3.6  | 3.4  | 3.4  | 3.4  | 3.3             | 4.4           | 6.9           |
| 3-Feb  | 3.2                           | 3.2  | 3.2  | 3.3      | 3.4  | 3.6               | 4.0  | 4.5  | 4.5  | 4.4  | 4.7  | 6.1  | 5.9  | 6.3  | 8.1  | 12.8                      | 9.4  | 9.4   | 7.1  | 6.3  | 13.9 | 7.2  | 7.8  | 7.4             | 6.2           | 13.9          |
| 4-Feb  | 7.6                           | 7.1  | 7.6  | 8.2      | 8.9  | 10.9              | 9.8  | 9.4  | 8.5  | 7.8  | 10.2 | 10.0 | 9.6  | 10.2 | 9.8  | 10.6                      | 10.7 | 10.0  | 9.6  | 10.6 | 9.6  | 9.5  | 8.7  | 8.4             | 9.3           | 10.9          |
| 5-Feb  | 8.6                           | 9.0  | 11.6 | 10.2     | 10.1 | 11.1              | 12.4 | 13.5 | 13.6 | 14.7 | 15.6 | 16.0 | 15.9 | 16.0 | 14.8 | 14.4                      | 13.7 | 13.2  | 12.7 | 11.5 | 10.5 | 9.9  | 7.2  | 3.7             | 12.1          | 16.0          |
| 6-Feb  | 3.9                           | 3.9  | 3.7  | 3.7      | 3.5  | 3.6               | 3.8  | 3.9  | 3.5  | 3.4  | 3.6  | 3.6  | 4.1  | 4.2  | 3.6  | 3.3                       | 3.4  | 3.4   | 3.6  | 4.0  | 3.5  | 3.5  | 3.2  | 3.1             | 3.6           | 4.2           |
| 7-Feb  | 3.6                           | 3.8  | 3.9  | 3.5      | 3.5  | 3.4               | 0.8  | 1.1  | 1.1  | 1.1  | 1.4  | 6.6  | 7.3  | 1.7  | 6.5  | 2.0                       | 33.7 | 64.5  | 43.2 | 0.8  | 1.0  | 2.2  | 4.0  | 5.9             | 8.6           | 64.5          |
| 8-Feb  | 3.4                           | 3.4  | 3.5  | 3.5      | 3.3  | 3.9               | 4.3  | 4.8  | 5.5  | 46.8 | 8.1  | 7.5  | 8.0  | 8.3  | 9.1  | 7.3                       | 6.4  | 5.8   | 7.3  | 6.8  | 5.6  | 4.8  | 3.9  | 3.2             | 7.3           | 46.8          |
| 9-Feb  | 2.6                           | 2.5  | 2.3  | 2.1      | 2.0  | 2.0               | 2.4  | 2.6  | 2.6  | 2.7  | 3.4  | 3.6  | 5.5  | 6.6  | 5.5  | 3.8                       | 2.9  | 3.5   | 3.7  | 2.9  | 3.4  | 4.0  | 3.9  | 3.8             | 3.3           | 6.6           |
| 10-Feb   | 3.5                           | 3.1  | 3.5  | 3.2      | 3.1  | 5.2               | 10.3 | 8.9  | 6.5  | 7.9  | 6.0  | 5.3  | 4.6  | 4.7  | 4.0  | 3.5                       | 6.1  | 5.5   | 6.4  | 6.5  | 5.3  | 3.7  | 3.8  | 4.3             | 5.2           | 10.3          |
| 11-Feb   | 4.9                           | 5.0  | 5.4  | 5.7      | 4.9  | 6.0               | 6.3  | 7.6  | 8.5  | 8.6  | 9.5  | 12.2 | 13.7 | 14.7 | 11.9 | 8.2                       | 3.3  | 2.1   | 4.1  | 1.7  | 1.2  | 1.4  | 1.8  | 1.4             | 6.3           | 14.7          |
| 12-Feb   | 2.1                           | 1.2  | 1.1  | 1.4      | 1.4  | 1.6               | 1.6  | 1.8  | 1.4  | 1.2  | 1.4  | 1.6  | 2.1  | 2.4  | 3.7  | 4.7                       | 4.5  | 3.4   | 4.0  | 4.4  | 4.7  | 4.8  | 4.0  | 3.6             | 2.7           | 4.8           |
| 13-Feb   | 3.6                           | 3.8  | 4.4  | 3.3      | 2.0  | 2.2               | 3.0  | 2.0  | 2.1  | 2.3  | 1.8  | 1.6  | 1.6  | 1.4  | 1.5  | 2.0                       | 2.2  | 1.3   | 1.3  | 1.0  | 1.2  | 1.6  | 1.9  | 2.1             | 4.4           |               |
| 14-Feb   | 2.1                           | 1.7  | 1.7  | 2.0      | 2.0  | 1.9               | 2.5  | 3.3  | 3.4  | 3.0  | 3.1  | 4.5  | 6.7  | 4.7  | 6.6  | 5.1                       | 5.3  | 5.4   | 3.6  | 3.6  | 2.6  | 3.3  | 4.2  | 4.0             | 3.6           | 6.7           |
| 15-Feb   | 3.9                           | 3.5  | 3.0  | 2.3      | 1.9  | 1.8               | 2.2  | 2.4  | 2.8  | 3.9  | 3.5  | 4.1  | 4.8  | 3.2  | 2.4  | 2.6                       | 3.7  | 10.0  | 8.5  | 4.6  | 4.8  | 5.2  | 4.4  | 4.0             | 3.9           | 10.0          |
| 16-Feb   | 4.0                           | 3.7  | 3.6  | 3.3      | 3.1  | 3.3               | 3.3  | 3.4  | 3.8  | 3.8  | 4.1  | 4.5  | 5.0  | 5.7  | 5.4  | 6.6                       | 7.5  | 8.4   | 11.1 | 11.6 | 6.3  | 4.8  | 3.9  | 4.1             | 5.2           | 11.6          |
| 17-Feb   | 4.9                           | 5.7  | 7.2  | 6.9      | 5.6  | 5.3               | 5.8  | 5.2  | 5.6  | 5.4  | 5.3  | 4.2  | 4.2  | 4.7  | 5.7  | 7.5                       | 6.8  | 6.3   | 5.9  | 5.4  | 5.5  | 4.7  | 5.4  | 5.5             | 5.6           | 7.5           |
| 18-Feb   | 5.6                           | 6.2  | 6.3  | 6.3      | 6.9  | 7.1               | 7.1  | 7.9  | 9.3  | 12.1 | 8.4  | 7.7  | 4.7  | 4.5  | 4.9  | 5.7                       | 6.5  | 10.1  | 11.4 | 8.1  | 7.3  | 6.3  | 5.8  | 6.7             | 7.2           | 12.1          |
| 19-Feb   | 6.3                           | 4.8  | 4.0  | 3.2      | 2.5  | 2.4               | 2.7  | 2.4  | 2.4  | 2.4  | 2.6  | 2.9  | 4.5  | 4.7  | 4.5  | 5.6                       | 6.8  | 11.2  | 11.0 | 10.9 | 10.6 | 11.4 | 10.0 | 8.4             | 5.8           | 11.4          |
| 20-Feb   | 5.4                           | 4.8  | 5.4  | 5.0      | 4.6  | 5.1               | 5.6  | 6.1  | 7.4  | 7.1  | 6.5  | 5.5  | 5.8  | 7.3  | 7.8  | 5.9                       | 6.2  | 11.5  | 11.0 | 9.4  | 9.4  | 8.3  | 8.5  | 8.4             | 7.0           | 11.5          |
| 21-Feb   | 7.5                           | 7.0  | 5.7  | 6.1      | 5.1  | 4.8               | 5.2  | 5.0  | 4.8  | 4.3  | 4.2  | 5.1  | 6.8  | 9.4  | 9.0  | 6.1                       | 5.4  | 7.9   | 10.8 | 11.8 | 11.1 | 9.0  | 7.6  | 6.6             | 6.9           | 11.8          |
| 22-Feb   | 7.4                           | 7.4  | 6.8  | 7.1      | 7.6  | 8.3               | 8.8  | 8.1  | 11.3 | 13.4 | 7.2  | 6.5  | 4.7  | 3.7  | 3.9  | 5.3                       | 6.3  | 13.5  | 9.4  | 8.5  | 7.9  | 6.8  | 6.0  | 6.1             | 7.6           | 13.5          |
| 23-Feb   | 4.7                           | 5.0  | 3.6  | 3.3      | 3.4  | 4.8               | 6.5  | 5.5  | 6.9  | 10.6 | 8.3  | 6.0  | 9.1  | 7.9  | 6.4  | 6.4                       | 8.3  | 26.4  | 20.9 | 13.4 | 10.8 | 11.9 | 9.6  | 8.5             | 8.7           | 26.4          |
| 24-Feb   | 7.5                           | 6.5  | 5.9  | 5.5      | 5.7  | 7.1               | 5.8  | 7.0  | 6.9  | 5.0  | 4.8  | 6.4  | 7.7  | 7.9  | 6.0  | 5.4                       | 5.6  | 6.6   | 5.8  | 6.4  | 6.1  | 5.9  | 5.6  | 7.5             | 6.3           | 7.9           |
| 25-Feb   | 8.2                           | 7.8  | 7.1  | 6.7      | 7.5  | 8.0               | 8.1  | 8.2  | 7.5  | 8.1  | 4.3  | 3.2  | 4.5  | 4.0  | 3.7  | 3.9                       | 3.9  | 3.7   | 4.8  | 8.3  | 9.2  | 6.9  | 7.2  | 5.8             | 6.3           | 9.2           |
| 26-Feb   | 4.0                           | 3.1  | 3.0  | 2.4      | 2.8  | 3.0               | 3.1  | 3.0  | 3.1  | 3.3  | 3.5  | 3.8  | 4.1  | 3.3  | 3.2  | 2.9                       | 2.3  | 2.2   | 2.3  | 2.0  | 2.3  | 2.4  | 2.5  | 2.3             | 2.9           | 4.1           |
| 27-Feb   | 3.0                           | 3.8  | 4.2  | 4.4      | 4.9  | 5.8               | 3.5  | 3.1  | 3.2  | 3.3  | 3.4  | 3.6  | 3.7  | 3.4  | 3.6  | 3.9                       | 3.5  | 3.1   | 3.3  | 2.8  | 3.0  | 3.2  | 3.2  | 3.5             | 3.6           | 5.8           |
| 28-Feb   | 3.4                           | 3.2  | 3.1  | 3.1      | 3.3  | 3.6               | 3.6  | 3.8  | 3.8  | 9.0  | 8.3  | 6.9  | 5.1  | 4.8  | 4.5  | 4.8                       | 6.4  | 7.2   | 8.2  | 8.3  | 7.2  | 8.0  | 6.2  | 6.7             | 5.5           | 9.0           |
| 5.0  |                               |  |      |          |      |                   |      |      |      |      |      |      |      |      |      |                           |      |       |      |      |      |      |      | Diurnal Average |               |               |
| 8.6  |                               |  |      |          |      |                   |      |      |      |      |      |      |      |      |      |                           |      |       |      |      |      |      |      | Diurnal Maximum |               |               |
| C - Calibration  |                               |  |      |          |      |                   |      |      |      |      |      |      |      |      |      |                           |      |       |      |      |      |      |      |                 |               |               |
| Alberta Ambient Air Quality Guideline/Objectives: 1-hr 80 µg/m <sup>3</sup> 24-hr 29 µg/m <sup>3</sup> |                               |  |      |          |      |                   |      |      |      |      |      |      |      |      |      |                           |      |       |      |      |      |      |      |                 |               |               |



Wood Buffalo Environmental Association  
Hourly Averages

Particulate Matter 2.5 (PM<sub>2.5</sub>) -  $\mu\text{g}/\text{m}^3$   
Athabasca Valley - February 2023





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Particulate Matter 2.5 (PM<sub>2.5</sub>) -  $\mu\text{g}/\text{m}^3$   
Athabasca Valley - February 2023**

| <b>Concentration Ranges (<math>\mu\text{g}/\text{m}^3</math>)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---|------------------------|----------|---------------------|
| 0 - 5   | 383                    | 57.16    | 57.16               |
| 6 - 15  | 277                    | 41.34    | 98.51               |
| 16 - 25   | 5                      | 0.75     | 99.25               |
| 26 - 80   | 5                      | 0.75     | 100.00              |
| > 81.0  | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 670

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Particulate Matter 2.5 (PM<sub>2.5</sub>) -  $\mu\text{g}/\text{m}^3$   
Athabasca Valley - February 2023**

| Concentration<br>Ranges ( $\mu\text{g}/\text{m}^3$ ) | Wind Direction |     |    |     |    |     |     |     |    |     |    |     |    |     |    |     | Totals |
|--|----------------|-----|----|-----|----|-----|-----|-----|----|-----|----|-----|----|-----|----|-----|--------|
|  | N              | NNE | NE | ENE | E  | ESE | SE  | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |        |
| 0 - 5  | 50             | 7   | 6  | 4   | 9  | 8   | 92  | 22  | 6  | 14  | 15 | 30  | 14 | 14  | 15 | 77  | 383    |
| 6 - 15   | 48             | 6   | 1  | 5   | 6  | 4   | 31  | 29  | 12 | 9   | 10 | 8   | 13 | 10  | 17 | 68  | 277    |
| 16 - 25  | 1              | 0   | 0  | 0   | 0  | 0   | 0   | 1   | 0  | 0   | 0  | 0   | 1  | 0   | 0  | 2   | 5      |
| 26 - 80  | 0              | 0   | 0  | 0   | 0  | 0   | 1   | 0   | 0  | 0   | 0  | 1   | 3  | 0   | 0  | 0   | 5      |
| > 81.0   | 0              | 0   | 0  | 0   | 0  | 0   | 0   | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| <b>Totals</b>  | 99             | 13  | 7  | 9   | 15 | 12  | 124 | 52  | 18 | 23  | 25 | 39  | 31 | 24  | 32 | 147 | 670    |

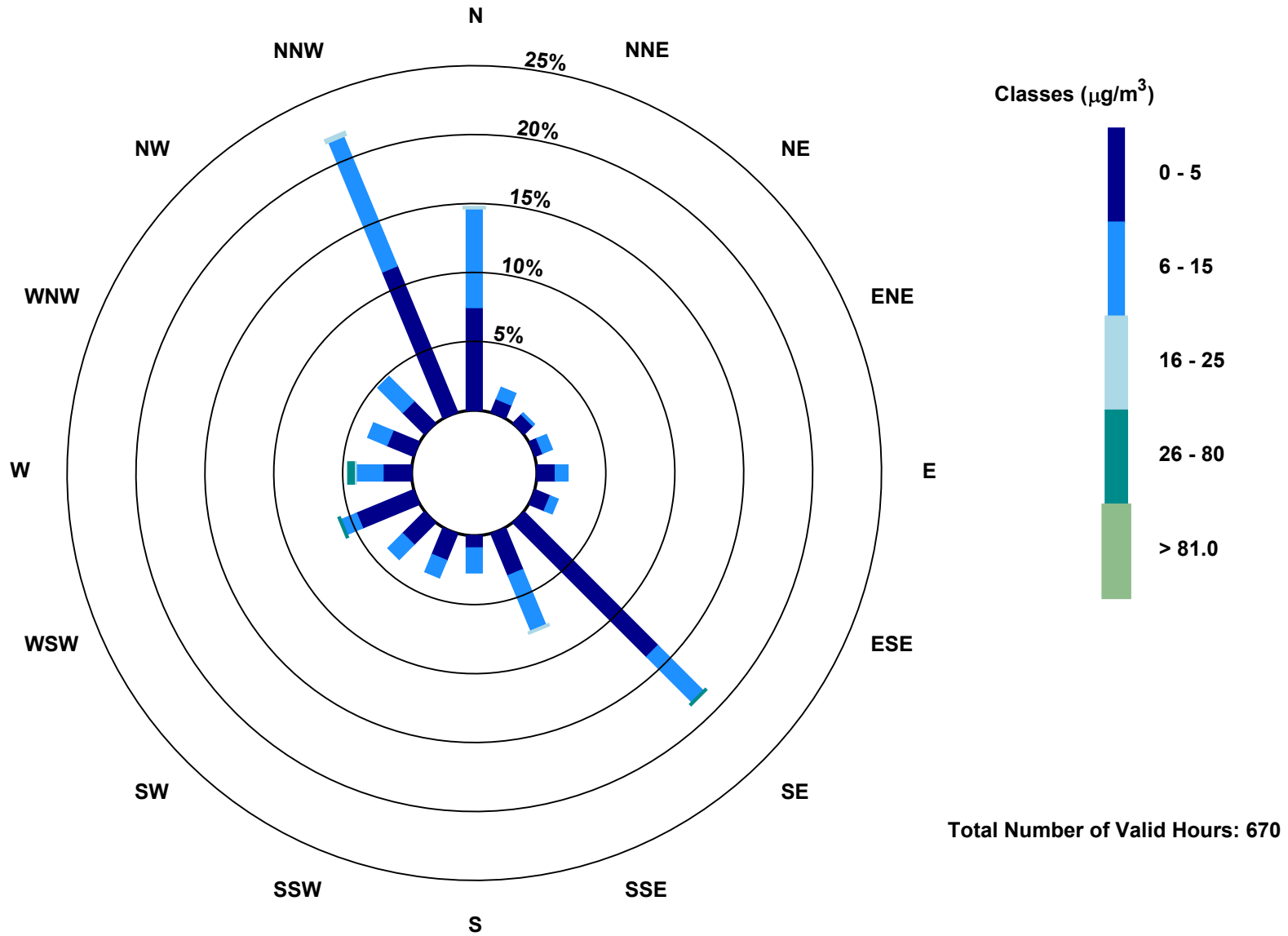
Total Number of Valid Hours: 670

Total Number of Hours: 672



Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Particulate Matter 2.5 (PM<sub>2.5</sub>) -  $\mu\text{g}/\text{m}^3$   
Athabasca Valley





**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

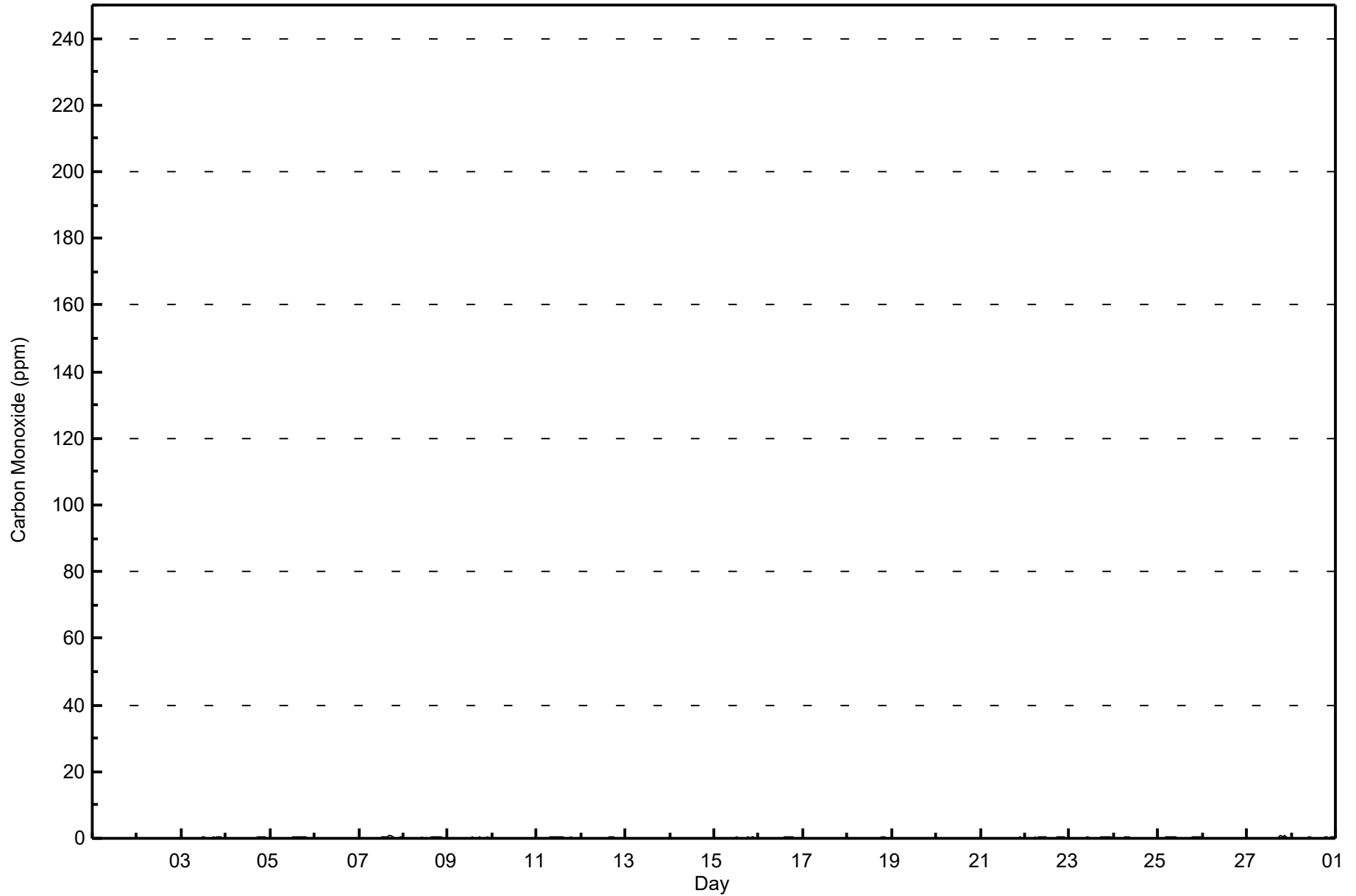
**Carbon Monoxide (CO) - ppm**  
**Athabasca Valley - February 2023**

| Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0<br>Maximum Value: 1.0 ppm on Feb 7 18:00 Maximum Daily Average: 0.3 ppm on Feb 7 |                               | Hours in Service: 672<br>Hours of Data: 641<br>Hours of Missing Data: 31<br>Hours of Calibration: 31<br>Percent Operational Time: 100.0  |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |               |               |
|--|-------------------------------|--|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----------------|---------------|---------------|
| Minimum Value: 0.1 ppm on Feb 8 05:00<br>Maximum Diurnal Average: 0.2 ppm at hour 18<br>Monthly Average: 0.18 ppm                |                               | Minimum Daily Average: 0.1 ppm on Feb 14<br>Minimum Diurnal Average: 0.1 ppm at hour 2<br>Percentiles: P <sub>1</sub> = 0.1 P <sub>10</sub> = 0.1 Q <sub>1</sub> = 0.1 Median = 0.2 Q <sub>3</sub> = 0.2 P <sub>90</sub> = 0.2 P <sub>99</sub> = 0.4 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |               |               |
| Day  | Hourly Period Ending At (MST) |  |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 | Daily Average | Daily Maximum |
|  | 1                             | 2  | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19  | 20  | 21  | 22  | 23  | 24              |               |               |
| 1-Feb  | 0.2                           | Z  | 0.2 | 0.2 | 0.2 | 0.2 | 0.1 | 0.2 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.1             | 0.2           | 0.2           |
| 2-Feb  | 0.2                           | 0.1  | Z   | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.1 | 0.1 | 0.1             | 0.2           | 0.2           |
| 3-Feb  | 0.1                           | 0.1  | 0.1 | Z   | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.3 | 0.2 | 0.1 | 0.1             | 0.2           | 0.3           |
| 4-Feb  | 0.1                           | 0.1  | 0.1 | 0.1 | Z   | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.1 | 0.2 | 0.1 | 0.2 | 0.2 | 0.3 | 0.3 | 0.3 | 0.2 | 0.3 | 0.2 | 0.1             | 0.2           | 0.3           |
| 5-Feb  | 0.1                           | 0.1  | 0.1 | 0.1 | 0.1 | Z   | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.3 | 0.3 | 0.2 | 0.2 | 0.3 | 0.2 | 0.3 | 0.2 | 0.2 | 0.1 | 0.1             | 0.2           | 0.3           |
| 6-Feb  | Z                             | 0.1  | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.1 | 0.1 | 0.1             | 0.2           | 0.2           |
| 7-Feb  | 0.2                           | Z  | 0.1 | 0.1 | 0.2 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.3 | 0.3 | 0.5 | 0.3 | 0.8 | 1.0 | 0.3 | 0.2 | 0.1 | 0.2 | 0.2             | 0.2           | 0.3           |
| 8-Feb  | 0.1                           | 0.1  | Z   | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | C   | C   | C   | 0.2 | 0.2 | 0.3 | 0.4 | 0.3 | 0.3 | 0.2 | 0.2 | 0.2 | 0.1             | 0.2           | 0.4           |
| 9-Feb  | 0.1                           | 0.1  | 0.1 | Z   | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2             | 0.2           | 0.2           |
| 10-Feb   | 0.2                           | 0.2  | 0.2 | 0.2 | Z   | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.1 | 0.1 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1             | 0.1           | 0.2           |
| 11-Feb   | 0.1                           | 0.1  | 0.1 | 0.1 | 0.1 | Z   | 0.2 | 0.2 | 0.2 | 0.2 | 0.3 | 0.3 | 0.3 | 0.4 | 0.4 | 0.2 | 0.1 | 0.1 | 0.2 | 0.2 | 0.1 | 0.2 | 0.2 | 0.1             | 0.2           | 0.4           |
| 12-Feb   | Z                             | 0.1  | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2             | 0.2           | 0.3           |
| 13-Feb   | 0.2                           | Z  | 0.2 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1             | 0.1           | 0.2           |
| 14-Feb   | 0.1                           | 0.1  | Z   | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1             | 0.1           | 0.1           |
| 15-Feb   | 0.1                           | 0.1  | 0.1 | Z   | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.3 | 0.2 | 0.2 | 0.1             | 0.2           | 0.3           |
| 16-Feb   | 0.1                           | 0.1  | 0.1 | 0.1 | Z   | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.3 | 0.2 | 0.3 | 0.3 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1             | 0.2           | 0.3           |
| 17-Feb   | 0.1                           | 0.1  | 0.1 | 0.1 | 0.1 | Z   | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1             | 0.1           | 0.1           |
| 18-Feb   | Z                             | 0.1  | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2             | 0.2           | 0.2           |
| 19-Feb   | 0.2                           | Z  | 0.1 | 0.2 | 0.1 | 0.2 | 0.2 | 0.2 | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.1 | 0.1 | 0.2 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2             | 0.2           | 0.2           |
| 20-Feb   | 0.1                           | 0.1  | Z   | 0.1 | 0.1 | 0.1 | 0.2 | 0.1 | 0.2 | 0.2 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.1 | 0.2 | 0.2             | 0.2           | 0.2           |
| 21-Feb   | 0.2                           | 0.2  | 0.1 | Z   | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.1             | 0.2           | 0.2           |
| 22-Feb   | 0.1                           | 0.2  | 0.2 | 0.2 | Z   | 0.2 | 0.2 | 0.2 | 0.3 | 0.3 | 0.2 | 0.2 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2             | 0.2           | 0.3           |
| 23-Feb   | 0.2                           | 0.2  | 0.2 | 0.1 | 0.1 | Z   | 0.2 | 0.2 | 0.2 | 0.3 | 0.3 | 0.2 | 0.2 | 0.2 | 0.1 | 0.1 | 0.1 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.2 | 0.2             | 0.2           | 0.3           |
| 24-Feb   | Z                             | 0.2  | 0.2 | 0.2 | 0.2 | 0.2 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2             | 0.2           | 0.3           |
| 25-Feb   | 0.2                           | Z  | 0.2 | 0.2 | 0.2 | 0.2 | 0.3 | 0.3 | 0.3 | 0.3 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.3 | 0.4 | 0.3 | 0.3 | 0.3 | 0.2             | 0.2           | 0.4           |
| 26-Feb   | 0.2                           | 0.2  | Z   | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.1 | 0.1 | 0.1             | 0.2           | 0.2           |
| 27-Feb   | 0.1                           | 0.1  | 0.1 | Z   | 0.1 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.4 | 0.7 | 0.6 | 0.9 | 0.3 | 0.1 | 0.1             | 0.2           | 0.9           |
| 28-Feb   | 0.1                           | 0.1  | 0.1 | 0.1 | Z   | 0.1 | 0.1 | 0.2 | 0.2 | 0.4 | 0.4 | 0.2 | 0.2 | 0.2 | 0.1 | 0.1 | 0.2 | 0.2 | 0.3 | 0.2 | 0.2 | 0.3 | 0.2 | 0.2             | 0.2           | 0.4           |
|  |                               |  |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Diurnal Average |               |               |
|  |                               |  |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Diurnal Maximum |               |               |
| Z - zerospan C - Calibration<br>Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 13 ppm                                      |                               |  |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |               |               |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Carbon Monoxide (CO) - ppm**  
**Athabasca Valley - February 2023**





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Carbon Monoxide (CO) - ppm  
Athabasca Valley - February 2023**

| <b>Concentration Ranges (ppm)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 0.3                           | 628                    | 97.97    | 97.97               |
| 0.4 - 0.5                         | 8                      | 1.25     | 99.22               |
| 0.6 - 0.7                         | 2                      | 0.31     | 99.53               |
| 0.8 - 1.4                         | 3                      | 0.47     | 100.00              |
| 1.5 - 10                          | 0                      | 0.00     | 100.00              |
| > 10                              | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 641

Total Number of Hours: 672





**Wood Buffalo Environmental Association  
Frequency Distribution**

**Carbon Monoxide (CO) - ppm  
Athabasca Valley - February 2023**

| <b>Concentration<br/>Ranges (ppm)</b> | <b>Wind Direction</b> |     |    |     |    |     |     |     |    |     |    |     |    |     |    |     | <b>Totals</b> |
|---------------------------------------|-----------------------|-----|----|-----|----|-----|-----|-----|----|-----|----|-----|----|-----|----|-----|---------------|
|                                       | N                     | NNE | NE | ENE | E  | ESE | SE  | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |               |
| 0 - 0.3                               | 96                    | 13  | 5  | 8   | 15 | 12  | 111 | 49  | 16 | 20  | 25 | 38  | 29 | 23  | 31 | 137 | 628           |
| 0.4 - 0.5                             | 1                     | 0   | 1  | 1   | 0  | 0   | 4   | 0   | 0  | 0   | 0  | 0   | 0  | 1   | 0  | 0   | 8             |
| 0.6 - 0.7                             | 1                     | 0   | 0  | 0   | 0  | 0   | 0   | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 1   | 2             |
| 0.8 - 1.4                             | 0                     | 0   | 0  | 0   | 0  | 0   | 0   | 0   | 0  | 0   | 0  | 0   | 2  | 0   | 0  | 1   | 3             |
| 1.5 - 10                              | 0                     | 0   | 0  | 0   | 0  | 0   | 0   | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| > 10                                  | 0                     | 0   | 0  | 0   | 0  | 0   | 0   | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| <b>Totals</b>                         | 98                    | 13  | 6  | 9   | 15 | 12  | 115 | 49  | 16 | 20  | 25 | 38  | 31 | 24  | 31 | 139 | 641           |

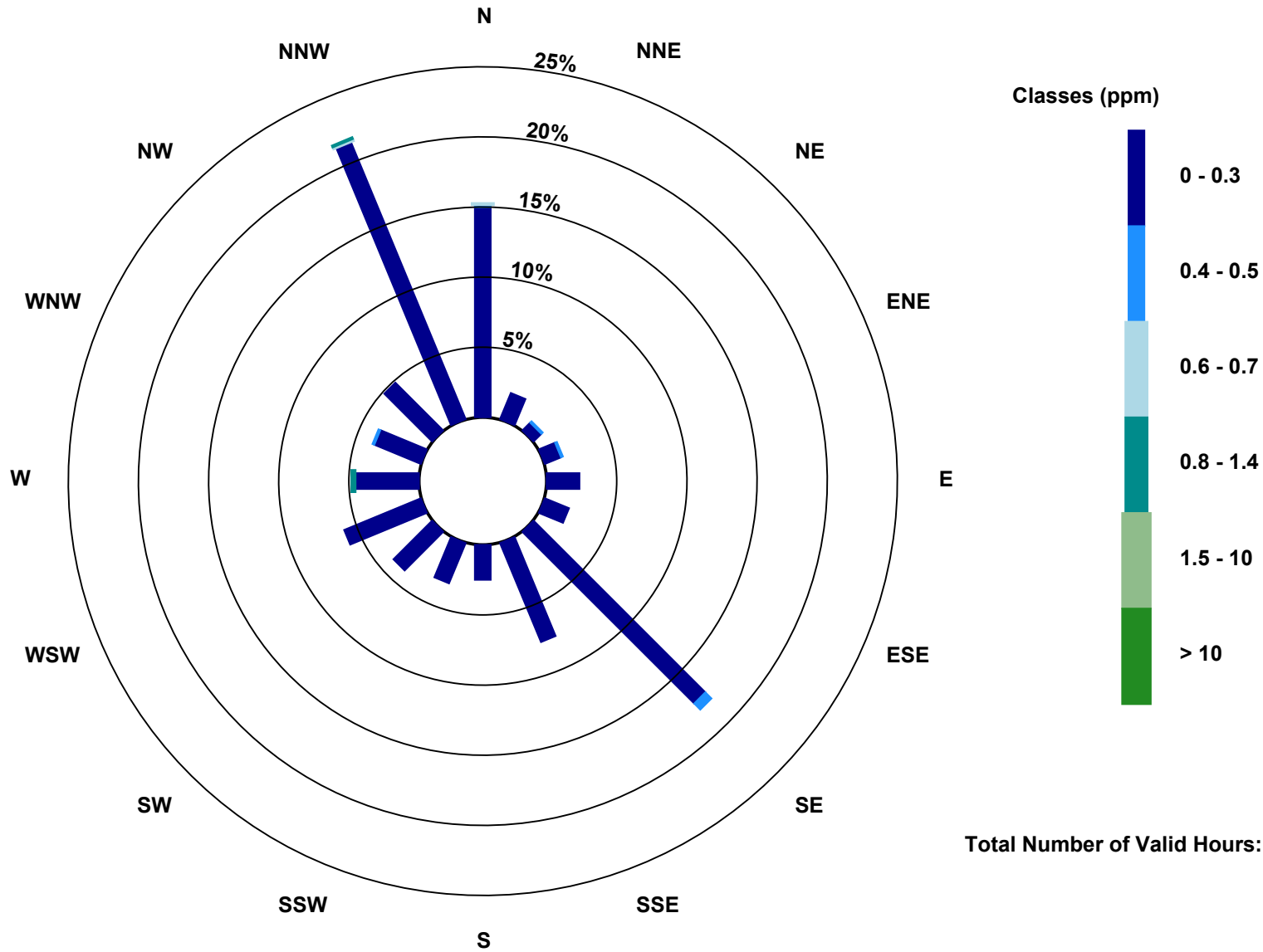
Total Number of Valid Hours: 641

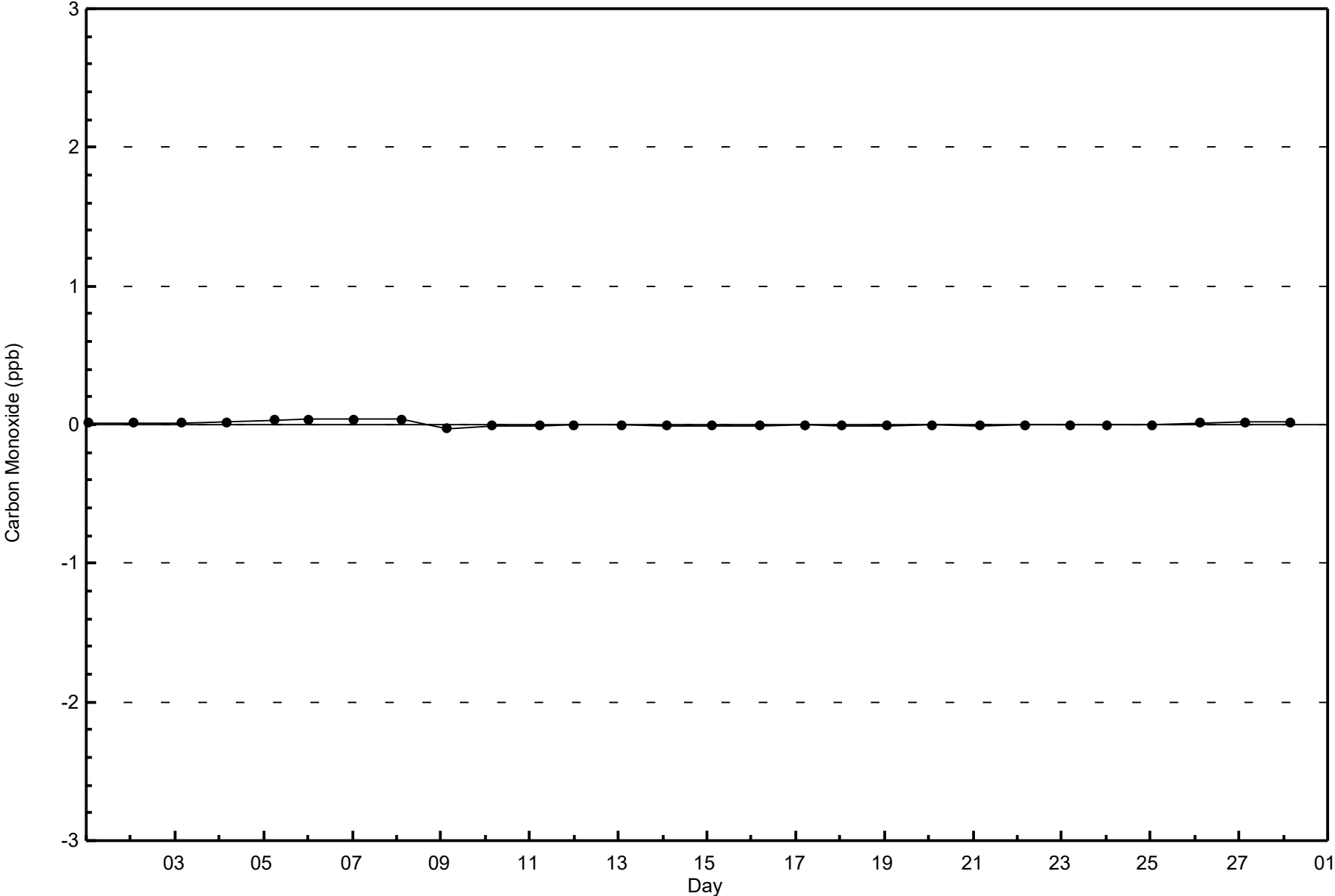
Total Number of Hours: 672



Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Carbon Monoxide (CO) - ppm  
Athabasca Valley

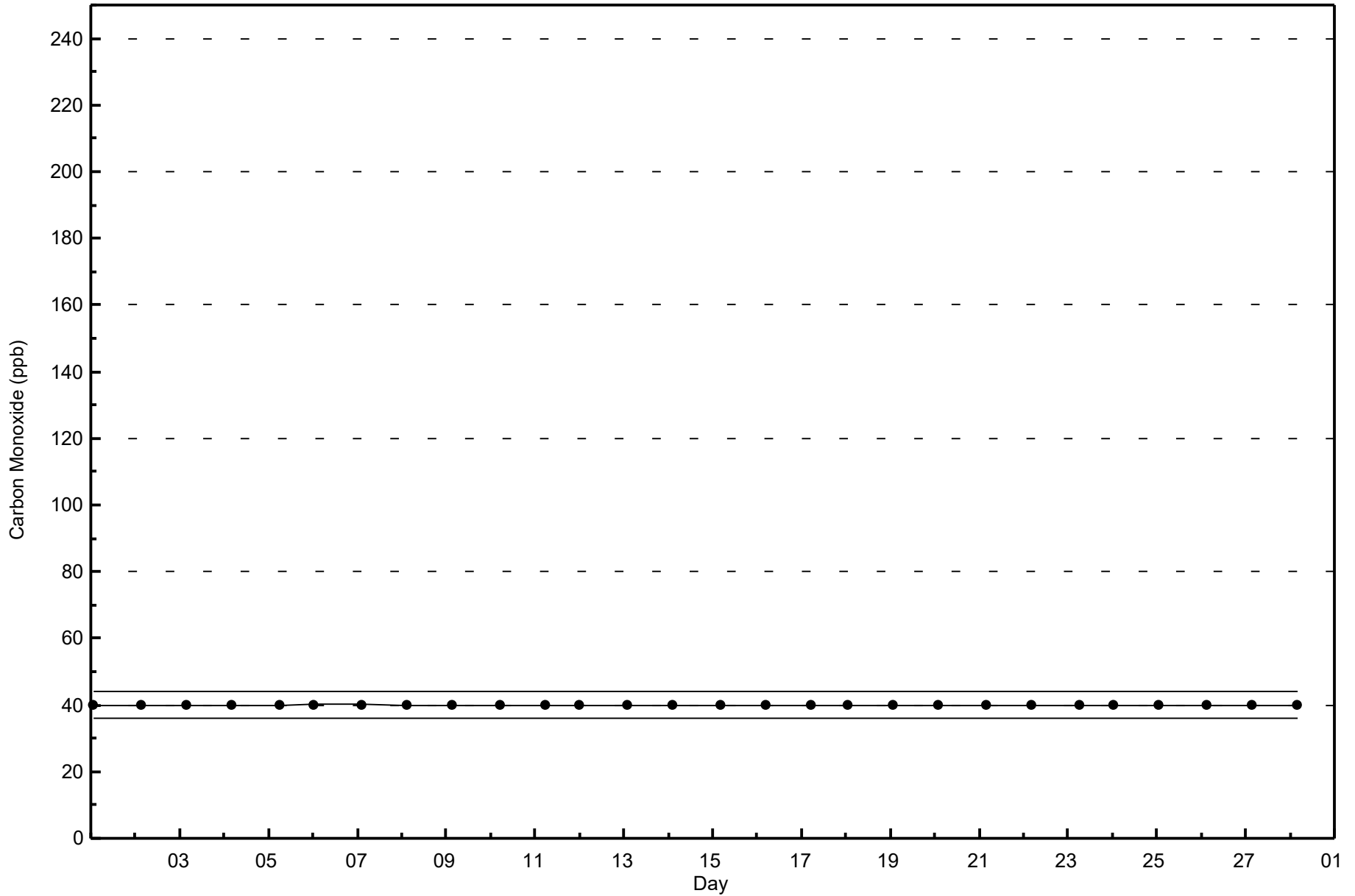






**Wood Buffalo Environmental Association**  
**Span Responses**

**Carbon Monoxide (CO) - ppb**  
**Athabasca Valley - February 2023**





**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

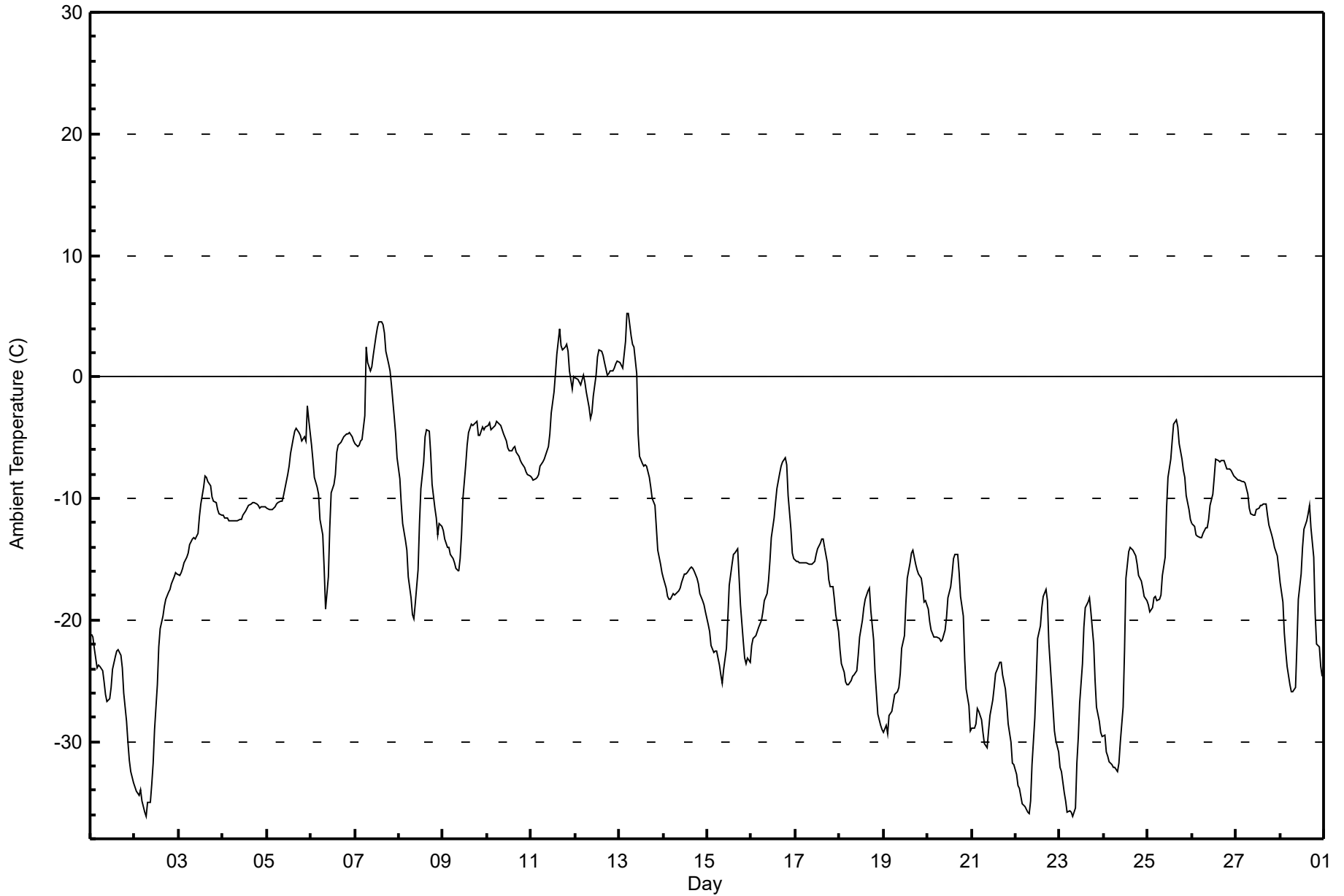
**Ambient Temperature (AT) - C**  
**Athabasca Valley - February 2023**

| Maximum Value: 5.3 C on Feb 13 06:00      Maximum Daily Average: 0.0 C on Feb 12  |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Hours in Service:         | 672   |       |               |               |
|---|-------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------------------------|-------|-------|---------------|---------------|
| Minimum Value: -36.2 C on Feb 2 07:00      Minimum Daily Average: -28.4 C on Feb 23   |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Hours of Data:            | 672   |       |               |               |
| Maximum Diurnal Average: -10.2 C at hour 16      Minimum Diurnal Average: -18.2 C at hour 9   |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Hours of Missing Data:    | 0     |       |               |               |
| Monthly Average: -14.91 C      Percentiles: P <sub>1</sub> = -35.7 P <sub>10</sub> = -28.5 Q <sub>1</sub> = -21.6 Median = -14.6 Q <sub>3</sub> = -7.9 P <sub>90</sub> = -3.6 P <sub>99</sub> = 3.7 |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Hours of Calibration:     | 0     |       |               |               |
|   |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Percent Operational Time: | 100.0 |       |               |               |
| Day   | Hourly Period Ending At (MST) |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                           |       |       | Daily Average | Daily Maximum |
|   | 1                             | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     | 10    | 11    | 12    | 13    | 14    | 15    | 16    | 17    | 18    | 19    | 20    | 21    | 22                        | 23    | 24    |               |               |
| 1-Feb   | -21.2                         | -21.4 | -22.4 | -24.0 | -23.7 | -23.8 | -24.1 | -25.1 | -26.1 | -26.7 | -26.5 | -25.6 | -24.0 | -23.1 | -22.5 | -22.4 | -22.9 | -23.9 | -26.0 | -28.3 | -30.1 | -31.6                     | -32.5 | -33.4 | -25.5         | -21.2         |
| 2-Feb   | -33.7                         | -34.1 | -34.5 | -34.0 | -34.8 | -35.8 | -36.2 | -35.0 | -35.1 | -33.5 | -31.8 | -29.0 | -25.3 | -22.2 | -20.7 | -19.7 | -18.9 | -18.3 | -17.8 | -17.5 | -17.0 | -16.4                     | -16.0 | -16.3 | -26.4         | -16.0         |
| 3-Feb   | -16.4                         | -16.2 | -15.8 | -15.3 | -14.8 | -14.5 | -13.8 | -13.3 | -13.2 | -12.8 | -11.5 | -10.5 | -9.1  | -8.1  | -8.3  | -8.7  | -9.0  | -9.9  | -10.2 | -10.4 | -10.9 | -11.2                     | -11.3 | -12.0 | -8.1          | -8.1          |
| 4-Feb   | -11.4                         | -11.6 | -11.6 | -11.8 | -11.8 | -11.8 | -11.8 | -11.9 | -11.9 | -11.7 | -11.7 | -11.4 | -11.1 | -10.8 | -10.6 | -10.5 | -10.3 | -10.4 | -10.5 | -10.6 | -10.8 | -10.7                     | -10.6 | -10.6 | -11.2         | -10.3         |
| 5-Feb   | -10.8                         | -10.9 | -10.9 | -10.9 | -10.7 | -10.5 | -10.3 | -10.3 | -10.2 | -9.8  | -9.2  | -8.1  | -7.4  | -6.3  | -5.1  | -4.4  | -4.3  | -4.6  | -4.8  | -5.3  | -4.9  | -5.3                      | -2.4  | -3.6  | -7.5          | -2.4          |
| 6-Feb   | -5.6                          | -6.9  | -8.3  | -9.1  | -9.7  | -11.8 | -13.0 | -15.8 | -19.1 | -16.5 | -12.4 | -9.5  | -8.9  | -8.0  | -6.2  | -5.6  | -5.3  | -5.1  | -4.9  | -4.7  | -4.6  | -4.6                      | -5.0  | -5.3  | -8.6          | -4.6          |
| 7-Feb   | -5.5                          | -5.7  | -5.6  | -5.3  | -5.1  | -3.2  | 2.4   | 1.1   | 0.5   | 0.9   | 1.8   | 3.4   | 4.1   | 4.5   | 4.5   | 4.3   | 3.6   | 2.1   | 1.1   | 0.5   | -0.6  | -3.3                      | -4.7  | -6.7  | -0.5          | 4.5           |
| 8-Feb   | -8.4                          | -10.4 | -12.1 | -13.5 | -14.3 | -16.5 | -18.2 | -19.6 | -19.8 | -18.6 | -15.8 | -12.0 | -9.2  | -6.9  | -4.9  | -4.3  | -4.5  | -6.3  | -8.8  | -10.7 | -11.6 | -13.0                     | -12.0 | -12.3 | -11.8         | -4.3          |
| 9-Feb   | -12.6                         | -13.4 | -14.0 | -14.0 | -14.6 | -14.9 | -15.3 | -15.8 | -16.0 | -14.9 | -13.0 | -10.0 | -7.3  | -5.6  | -4.5  | -3.9  | -4.0  | -3.9  | -3.6  | -4.8  | -4.8  | -4.1                      | -4.4  | -4.1  | -9.3          | -3.6          |
| 10-Feb  | -4.0                          | -3.8  | -4.4  | -4.2  | -4.0  | -3.7  | -3.8  | -4.0  | -4.4  | -4.7  | -5.2  | -5.8  | -6.0  | -6.1  | -5.8  | -5.7  | -6.2  | -6.6  | -6.8  | -7.1  | -7.4  | -7.8                      | -8.0  | -8.1  | -5.6          | -3.7          |
| 11-Feb  | -8.3                          | -8.5  | -8.4  | -8.3  | -8.0  | -7.3  | -7.0  | -6.8  | -6.4  | -5.7  | -4.7  | -2.9  | -1.2  | 0.3   | 1.9   | 4.0   | 2.6   | 2.2   | 2.5   | 2.7   | 2.1   | 0.5                       | -1.0  | 0.0   | -2.7          | 4.0           |
| 12-Feb  | -0.1                          | -0.2  | -0.5  | -0.7  | 0.2   | -0.4  | -1.2  | -2.5  | -3.4  | -3.0  | -1.5  | 0.1   | 1.6   | 2.2   | 2.1   | 1.7   | 1.2   | 0.2   | 0.2   | 0.5   | 0.5   | 0.8                       | 1.1   | 1.3   | 0.0           | 2.2           |
| 13-Feb  | 1.2                           | 1.0   | 0.8   | 2.9   | 5.2   | 5.3   | 3.3   | 2.7   | 2.5   | 0.3   | -4.6  | -6.6  | -7.1  | -7.4  | -7.2  | -7.3  | -8.2  | -9.1  | -9.9  | -10.6 | -12.4 | -14.3                     | -15.4 | -16.1 | -4.6          | 5.3           |
| 14-Feb  | -16.6                         | -17.4 | -18.1 | -18.3 | -18.3 | -17.9 | -18.0 | -17.8 | -17.6 | -17.4 | -16.9 | -16.3 | -16.2 | -16.1 | -15.8 | -15.6 | -15.8 | -16.0 | -16.5 | -17.1 | -17.9 | -18.5                     | -18.8 | -19.4 | -17.2         | -15.6         |
| 15-Feb  | -20.3                         | -20.9 | -22.1 | -22.7 | -22.6 | -22.6 | -23.7 | -24.5 | -25.2 | -24.0 | -22.3 | -19.8 | -17.1 | -15.4 | -14.6 | -14.5 | -14.1 | -16.5 | -18.8 | -21.7 | -23.1 | -23.6                     | -23.2 | -23.5 | -20.7         | -14.1         |
| 16-Feb  | -22.1                         | -21.5 | -21.3 | -20.9 | -20.6 | -20.0 | -19.4 | -18.5 | -17.8 | -16.8 | -15.2 | -13.2 | -11.6 | -10.4 | -9.1  | -7.9  | -7.4  | -6.9  | -6.7  | -7.2  | -9.8  | -12.5                     | -14.5 | -14.9 | -14.4         | -6.7          |
| 17-Feb  | -15.1                         | -15.2 | -15.3 | -15.3 | -15.3 | -15.3 | -15.3 | -15.4 | -15.4 | -15.4 | -15.1 | -14.6 | -14.1 | -13.6 | -13.3 | -13.4 | -14.0 | -15.3 | -16.7 | -17.3 | -17.3 | -18.3                     | -19.5 | -21.0 | -15.7         | -13.3         |
| 18-Feb  | -22.4                         | -23.7 | -24.3 | -25.1 | -25.3 | -25.3 | -25.0 | -24.7 | -24.5 | -24.2 | -22.9 | -21.4 | -20.1 | -18.9 | -18.3 | -17.6 | -17.4 | -19.2 | -21.7 | -24.2 | -26.0 | -27.8                     | -28.7 | -29.0 | -23.2         | -17.4         |
| 19-Feb  | -29.2                         | -28.6 | -29.4 | -27.9 | -27.5 | -26.9 | -26.1 | -25.9 | -25.6 | -24.4 | -22.4 | -21.2 | -18.6 | -16.6 | -15.3 | -14.5 | -14.3 | -15.4 | -15.9 | -16.2 | -16.6 | -17.4                     | -18.6 | -18.4 | -21.4         | -14.3         |
| 20-Feb  | -19.1                         | -20.1 | -20.9 | -21.4 | -21.4 | -21.4 | -21.6 | -21.8 | -21.6 | -20.9 | -19.8 | -18.2 | -17.3 | -16.2 | -14.9 | -14.6 | -14.5 | -16.1 | -18.1 | -19.7 | -23.2 | -25.6                     | -27.0 | -29.1 | -20.2         | -14.5         |
| 21-Feb  | -28.9                         | -28.9 | -28.5 | -27.3 | -27.5 | -28.2 | -29.2 | -30.2 | -30.6 | -29.2 | -27.8 | -26.6 | -25.5 | -24.4 | -23.8 | -23.5 | -23.4 | -24.5 | -25.7 | -26.9 | -28.5 | -30.0                     | -31.8 | -31.9 | -27.6         | -23.4         |
| 22-Feb  | -32.7                         | -33.6 | -33.8 | -35.1 | -35.2 | -35.4 | -35.8 | -36.0 | -34.9 | -31.8 | -28.1 | -24.9 | -21.5 | -20.5 | -19.0 | -18.0 | -17.5 | -18.4 | -21.8 | -25.4 | -27.3 | -29.1                     | -29.9 | -30.8 | -28.2         | -17.5         |
| 23-Feb  | -32.1                         | -32.5 | -34.2 | -34.9 | -35.8 | -35.7 | -35.8 | -36.1 | -35.4 | -31.8 | -29.7 | -26.8 | -23.5 | -20.6 | -19.0 | -18.5 | -18.2 | -19.4 | -22.0 | -25.0 | -27.1 | -28.3                     | -29.2 | -29.5 | -28.4         | -18.2         |
| 24-Feb  | -29.5                         | -30.8 | -31.2 | -31.7 | -31.9 | -32.1 | -32.1 | -32.4 | -31.7 | -30.1 | -27.2 | -22.5 | -16.6 | -14.3 | -14.1 | -14.2 | -14.3 | -14.7 | -15.4 | -16.3 | -16.8 | -17.4                     | -18.1 | -18.4 | -23.1         | -14.1         |
| 25-Feb  | -18.8                         | -19.4 | -19.0 | -18.2 | -18.0 | -18.4 | -18.2 | -17.9 | -16.3 | -14.9 | -10.8 | -8.2  | -6.7  | -5.2  | -3.9  | -3.5  | -4.1  | -5.5  | -6.7  | -7.7  | -8.3  | -9.7                      | -10.9 | -11.7 | -11.8         | -3.5          |
| 26-Feb  | -12.0                         | -12.3 | -13.0 | -13.1 | -13.2 | -13.3 | -12.9 | -12.4 | -11.8 | -10.6 | -9.6  | -8.3  | -6.8  | -6.9  | -7.0  | -6.8  | -6.8  | -7.3  | -7.6  | -7.6  | -7.6  | -7.6                      | -7.9  | -8.1  | -9.8          | -6.8          |
| 27-Feb  | -8.4                          | -8.5  | -8.5  | -8.6  | -8.7  | -8.7  | -9.7  | -10.9 | -11.3 | -11.4 | -11.4 | -10.9 | -10.8 | -10.6 | -10.5 | -10.4 | -10.5 | -11.3 | -12.2 | -13.0 | -13.5 | -14.0                     | -14.7 | -15.7 | -11.0         | -8.4          |
| 28-Feb  | -16.9                         | -18.5 | -21.0 | -22.6 | -23.8 | -25.3 | -25.9 | -25.9 | -25.5 | -22.1 | -18.3 | -16.2 | -14.0 | -12.5 | -11.8 | -11.3 | -10.6 | -12.4 | -14.9 | -19.4 | -21.9 | -22.2                     | -23.8 | -24.7 | -19.2         | -10.6         |
|   |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Diurnal Average           |       |       |               |               |
|   |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Diurnal Maximum           |       |       |               |               |
|   |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                           |       |       |               |               |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Ambient Temperature (AT) - C**  
**Athabasca Valley - February 2023**





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Ambient Temperature (AT) - C  
Athabasca Valley - February 2023**

| <b>Concentration Ranges (C)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---------------------------------|------------------------|----------|---------------------|
| -50 - -20                       | 193                    | 28.72    | 28.72               |
| -20 - 0                         | 432                    | 64.29    | 93.01               |
| 0 - 10                          | 47                     | 6.99     | 100.00              |
| 10 - 20                         | 0                      | 0.00     | 100.00              |
| > 20                            | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 672

Total Number of Hours: 672



**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

**Barometric Pressure (BP) - inHg**  
**Athabasca Valley - February 2023**

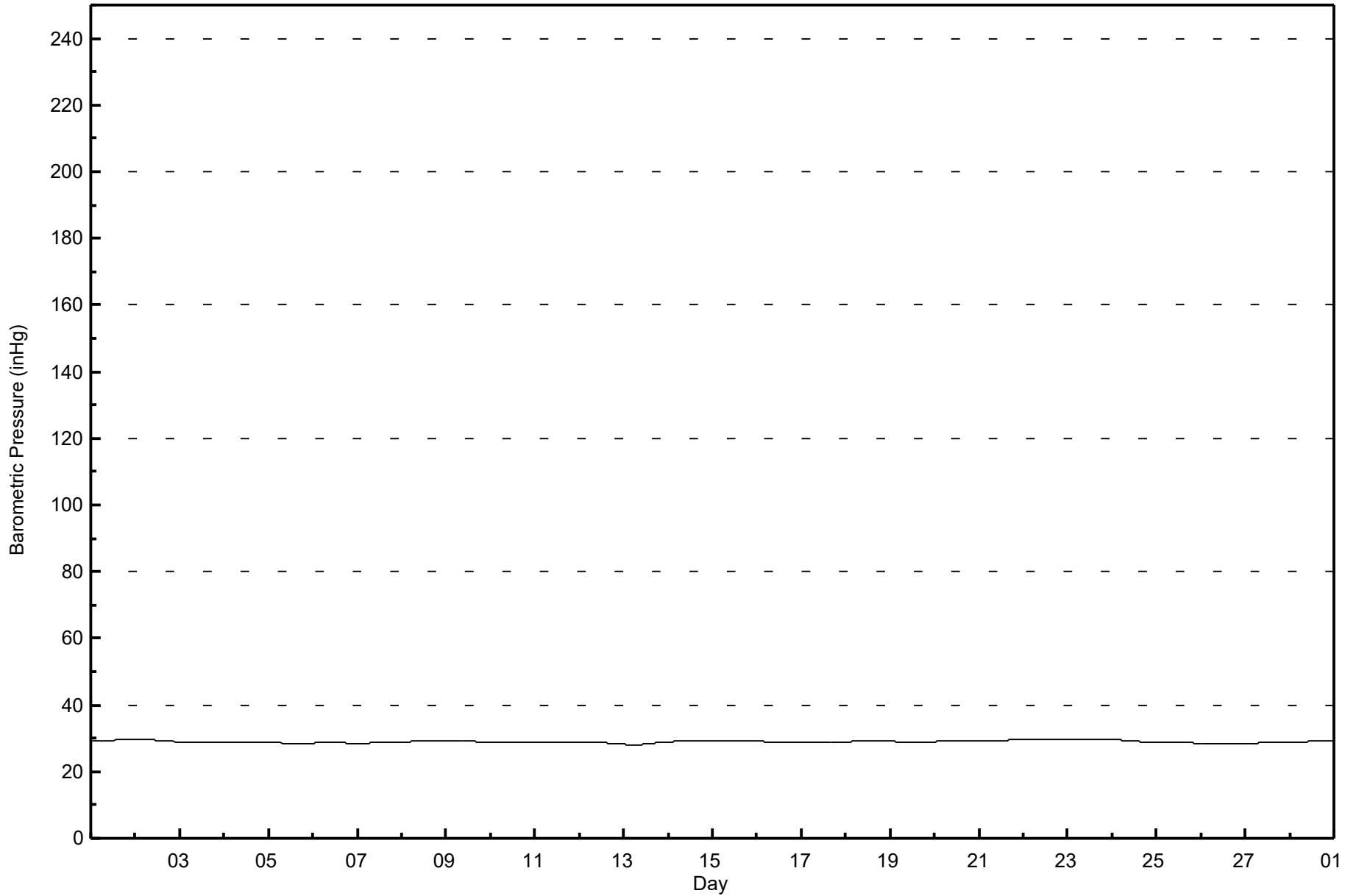
| Maximum Value: 29.9 inHg on Feb 23 10:00      Maximum Daily Average: 29.8 inHg on Feb 23   |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Hours in Service: 672           |      |      |               |               |
|--|-------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|---------------------------------|------|------|---------------|---------------|
| Minimum Value: 28.1 inHg on Feb 13 05:00      Minimum Daily Average: 28.4 inHg on Feb 13   |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Hours of Data: 672              |      |      |               |               |
| Maximum Diurnal Average: 29.0 inHg at hour 10      Minimum Diurnal Average: 28.9 inHg at hour 17   |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Hours of Missing Data: 0        |      |      |               |               |
| Monthly Average: 28.96 inHg      Percentiles: P <sub>1</sub> = 28.1 P <sub>10</sub> = 28.5 Q <sub>1</sub> = 28.7 Median = 28.9 Q <sub>3</sub> = 29.2 P <sub>90</sub> = 29.5 P <sub>99</sub> = 29.8 |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Hours of Calibration: 0         |      |      |               |               |
|  |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Percent Operational Time: 100.0 |      |      |               |               |
| Day  | Hourly Period Ending At (MST) |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                                 |      |      | Daily Average | Daily Maximum |
|  | 1                             | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20   | 21   | 22                              | 23   | 24   |               |               |
| 1-Feb  | 29.1                          | 29.1 | 29.1 | 29.2 | 29.2 | 29.2 | 29.2 | 29.3 | 29.3 | 29.4 | 29.4 | 29.4 | 29.4 | 29.5 | 29.5 | 29.5 | 29.5 | 29.5 | 29.5 | 29.6 | 29.6 | 29.6                            | 29.6 | 29.6 | 29.4          | 29.6          |
| 2-Feb  | 29.6                          | 29.6 | 29.6 | 29.6 | 29.6 | 29.6 | 29.6 | 29.5 | 29.5 | 29.5 | 29.5 | 29.4 | 29.4 | 29.3 | 29.3 | 29.3 | 29.2 | 29.2 | 29.1 | 29.1 | 29.1 | 29.0                            | 29.0 | 29.0 | 29.4          | 29.6          |
| 3-Feb  | 28.9                          | 28.9 | 28.8 | 28.8 | 28.7 | 28.7 | 28.7 | 28.7 | 28.7 | 28.6 | 28.7 | 28.7 | 28.7 | 28.7 | 28.7 | 28.7 | 28.7 | 28.7 | 28.7 | 28.7 | 28.8 | 28.8                            | 28.8 | 28.8 | 28.7          | 28.9          |
| 4-Feb  | 28.8                          | 28.8 | 28.8 | 28.8 | 28.8 | 28.8 | 28.8 | 28.8 | 28.8 | 28.8 | 28.8 | 28.9 | 28.9 | 28.9 | 28.9 | 28.9 | 28.9 | 28.9 | 28.8 | 28.8 | 28.8 | 28.8                            | 28.8 | 28.8 | 28.8          | 28.9          |
| 5-Feb  | 28.8                          | 28.8 | 28.7 | 28.7 | 28.7 | 28.7 | 28.6 | 28.6 | 28.6 | 28.5 | 28.5 | 28.5 | 28.5 | 28.4 | 28.4 | 28.4 | 28.4 | 28.4 | 28.4 | 28.4 | 28.4 | 28.4                            | 28.4 | 28.5 | 28.5          | 28.8          |
| 6-Feb  | 28.6                          | 28.6 | 28.7 | 28.7 | 28.7 | 28.7 | 28.7 | 28.7 | 28.7 | 28.8 | 28.8 | 28.8 | 28.7 | 28.7 | 28.7 | 28.6 | 28.6 | 28.6 | 28.6 | 28.5 | 28.5 | 28.5                            | 28.5 | 28.5 | 28.6          | 28.8          |
| 7-Feb  | 28.5                          | 28.5 | 28.5 | 28.5 | 28.5 | 28.5 | 28.6 | 28.6 | 28.6 | 28.7 | 28.7 | 28.7 | 28.7 | 28.7 | 28.7 | 28.7 | 28.7 | 28.7 | 28.7 | 28.7 | 28.8 | 28.8                            | 28.8 | 28.8 | 28.6          | 28.8          |
| 8-Feb  | 28.9                          | 28.9 | 28.9 | 29.0 | 29.0 | 29.0 | 29.1 | 29.1 | 29.1 | 29.1 | 29.1 | 29.1 | 29.2 | 29.2 | 29.2 | 29.1 | 29.2 | 29.2 | 29.2 | 29.2 | 29.2 | 29.2                            | 29.2 | 29.2 | 29.1          | 29.2          |
| 9-Feb  | 29.2                          | 29.2 | 29.2 | 29.2 | 29.2 | 29.2 | 29.2 | 29.2 | 29.2 | 29.2 | 29.1 | 29.1 | 29.1 | 29.1 | 29.1 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | 28.9 | 28.9                            | 28.9 | 28.9 | 29.1          | 29.2          |
| 10-Feb   | 28.9                          | 28.9 | 28.9 | 28.8 | 28.8 | 28.8 | 28.8 | 28.8 | 28.8 | 28.8 | 28.8 | 28.7 | 28.7 | 28.7 | 28.7 | 28.7 | 28.7 | 28.7 | 28.8 | 28.8 | 28.8 | 28.8                            | 28.8 | 28.8 | 28.8          | 28.9          |
| 11-Feb   | 28.8                          | 28.8 | 28.8 | 28.8 | 28.8 | 28.8 | 28.8 | 28.8 | 28.8 | 28.8 | 28.8 | 28.7 | 28.7 | 28.7 | 28.6 | 28.6 | 28.6 | 28.6 | 28.7 | 28.7 | 28.7 | 28.7                            | 28.7 | 28.7 | 28.7          | 28.8          |
| 12-Feb   | 28.7                          | 28.7 | 28.7 | 28.7 | 28.7 | 28.7 | 28.7 | 28.7 | 28.7 | 28.7 | 28.7 | 28.7 | 28.7 | 28.7 | 28.6 | 28.6 | 28.6 | 28.5 | 28.5 | 28.4 | 28.4 | 28.3                            | 28.3 | 28.2 | 28.6          | 28.7          |
| 13-Feb   | 28.2                          | 28.2 | 28.1 | 28.1 | 28.1 | 28.1 | 28.1 | 28.1 | 28.1 | 28.1 | 28.2 | 28.3 | 28.3 | 28.4 | 28.4 | 28.5 | 28.6 | 28.6 | 28.7 | 28.7 | 28.8 | 28.8                            | 28.8 | 28.9 | 28.4          | 28.9          |
| 14-Feb   | 28.9                          | 29.0 | 29.0 | 29.0 | 29.1 | 29.1 | 29.1 | 29.1 | 29.1 | 29.2 | 29.2 | 29.2 | 29.2 | 29.2 | 29.2 | 29.2 | 29.2 | 29.2 | 29.2 | 29.2 | 29.3 | 29.3                            | 29.3 | 29.3 | 29.2          | 29.3          |
| 15-Feb   | 29.3                          | 29.3 | 29.3 | 29.3 | 29.3 | 29.3 | 29.3 | 29.3 | 29.3 | 29.3 | 29.3 | 29.3 | 29.3 | 29.3 | 29.3 | 29.3 | 29.3 | 29.2 | 29.2 | 29.2 | 29.2 | 29.2                            | 29.2 | 29.2 | 29.3          | 29.3          |
| 16-Feb   | 29.2                          | 29.1 | 29.1 | 29.0 | 29.0 | 29.0 | 28.9 | 28.9 | 28.8 | 28.8 | 28.7 | 28.7 | 28.7 | 28.7 | 28.6 | 28.6 | 28.6 | 28.7 | 28.7 | 28.7 | 28.8 | 28.8                            | 28.9 | 28.9 | 28.8          | 29.2          |
| 17-Feb   | 28.9                          | 28.9 | 28.9 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0                            | 29.0 | 29.0 | 29.0          | 29.0          |
| 18-Feb   | 29.0                          | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | 29.1 | 29.1 | 29.1 | 29.1 | 29.1 | 29.1 | 29.1 | 29.1 | 29.1 | 29.1 | 29.1 | 29.1 | 29.1 | 29.1 | 29.1 | 29.1                            | 29.1 | 29.1 | 29.1          | 29.1          |
| 19-Feb   | 29.1                          | 29.0 | 29.0 | 29.0 | 29.0 | 28.9 | 28.9 | 28.9 | 28.9 | 28.8 | 28.8 | 28.8 | 28.8 | 28.8 | 28.8 | 28.8 | 28.8 | 28.9 | 28.9 | 28.9 | 28.9 | 28.9                            | 29.0 | 29.0 | 28.9          | 29.1          |
| 20-Feb   | 29.0                          | 29.1 | 29.1 | 29.1 | 29.1 | 29.1 | 29.1 | 29.1 | 29.1 | 29.1 | 29.1 | 29.1 | 29.1 | 29.1 | 29.1 | 29.1 | 29.0 | 29.0 | 29.0 | 29.1 | 29.1 | 29.1                            | 29.1 | 29.1 | 29.1          | 29.1          |
| 21-Feb   | 29.1                          | 29.1 | 29.2 | 29.2 | 29.2 | 29.2 | 29.3 | 29.3 | 29.3 | 29.4 | 29.4 | 29.4 | 29.4 | 29.4 | 29.4 | 29.4 | 29.5 | 29.5 | 29.5 | 29.5 | 29.5 | 29.6                            | 29.6 | 29.6 | 29.4          | 29.6          |
| 22-Feb   | 29.6                          | 29.6 | 29.6 | 29.6 | 29.6 | 29.6 | 29.7 | 29.7 | 29.7 | 29.7 | 29.7 | 29.7 | 29.7 | 29.7 | 29.7 | 29.7 | 29.7 | 29.7 | 29.7 | 29.7 | 29.7 | 29.7                            | 29.7 | 29.7 | 29.7          | 29.8          |
| 23-Feb   | 29.8                          | 29.8 | 29.8 | 29.8 | 29.8 | 29.8 | 29.8 | 29.8 | 29.8 | 29.9 | 29.9 | 29.8 | 29.8 | 29.8 | 29.8 | 29.7 | 29.7 | 29.7 | 29.7 | 29.7 | 29.7 | 29.7                            | 29.6 | 29.6 | 29.8          | 29.9          |
| 24-Feb   | 29.6                          | 29.6 | 29.5 | 29.5 | 29.5 | 29.4 | 29.4 | 29.4 | 29.3 | 29.3 | 29.2 | 29.1 | 29.1 | 29.0 | 29.0 | 28.9 | 28.9 | 28.9 | 28.9 | 28.8 | 28.8 | 28.8                            | 28.8 | 28.8 | 29.2          | 29.6          |
| 25-Feb   | 28.8                          | 28.8 | 28.7 | 28.7 | 28.7 | 28.7 | 28.7 | 28.7 | 28.7 | 28.7 | 28.7 | 28.7 | 28.7 | 28.7 | 28.6 | 28.6 | 28.6 | 28.6 | 28.6 | 28.6 | 28.6 | 28.6                            | 28.6 | 28.6 | 28.7          | 28.8          |
| 26-Feb   | 28.6                          | 28.6 | 28.6 | 28.5 | 28.5 | 28.5 | 28.5 | 28.5 | 28.5 | 28.5 | 28.5 | 28.5 | 28.5 | 28.5 | 28.5 | 28.5 | 28.5 | 28.5 | 28.5 | 28.5 | 28.5 | 28.5                            | 28.5 | 28.5 | 28.5          | 28.6          |
| 27-Feb   | 28.5                          | 28.5 | 28.5 | 28.5 | 28.6 | 28.6 | 28.6 | 28.6 | 28.6 | 28.6 | 28.7 | 28.7 | 28.7 | 28.7 | 28.7 | 28.7 | 28.7 | 28.7 | 28.8 | 28.8 | 28.8 | 28.8                            | 28.8 | 28.8 | 28.7          | 28.8          |
| 28-Feb   | 28.9                          | 28.9 | 28.9 | 28.9 | 28.9 | 28.9 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | 29.1 | 29.1 | 29.1 | 29.1 | 29.1 | 29.1 | 29.1                            | 29.1 | 29.1 | 29.0          | 29.1          |
|  |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Diurnal Average                 |      |      |               |               |
|  |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Diurnal Maximum                 |      |      |               |               |





**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Barometric Pressure (BP) - inHg**  
**Athabasca Valley - February 2023**





**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

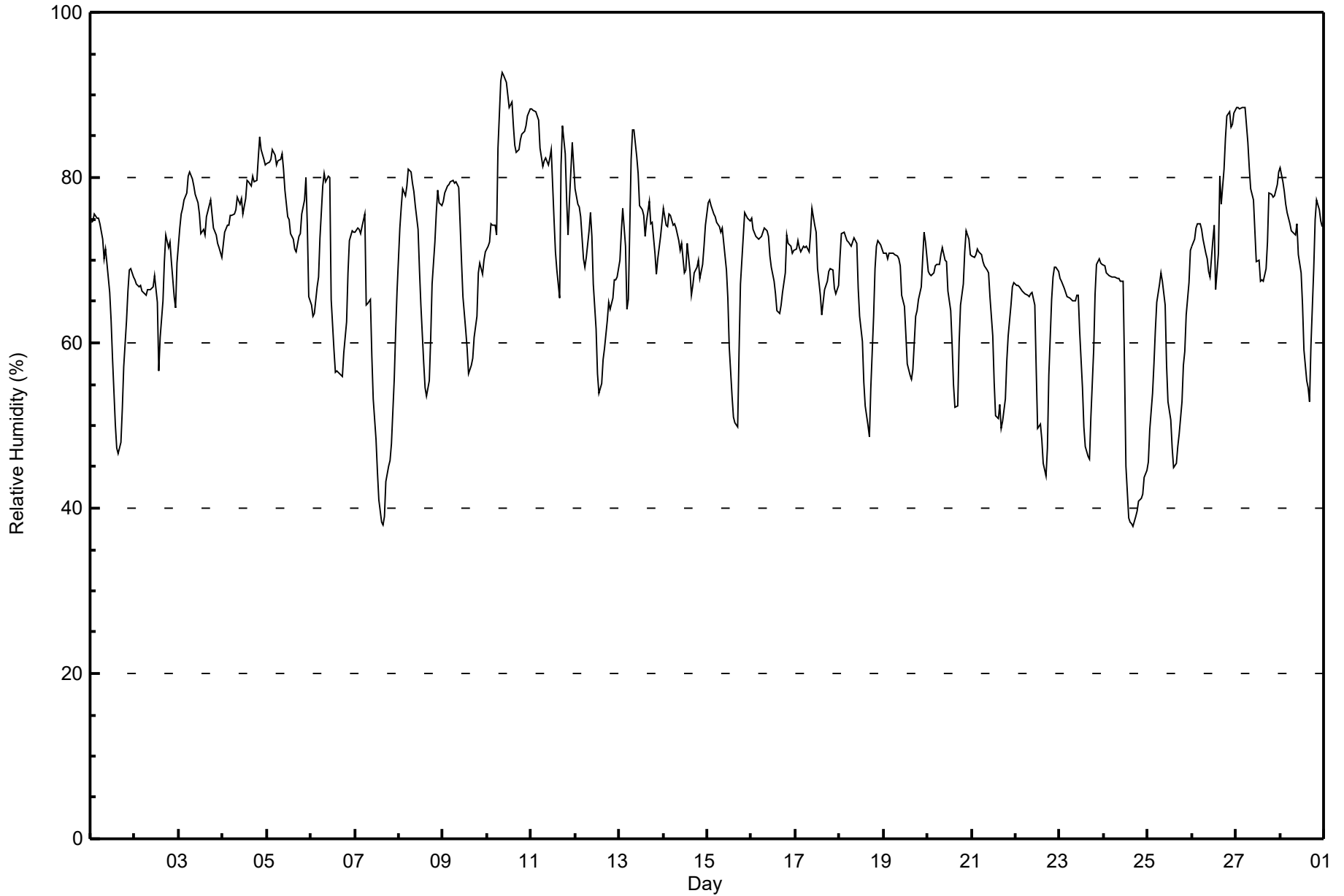
**Relative Humidity (RH) - %**  
**Athabasca Valley - February 2023**

| Maximum Value: 92.6 % on Feb 10 09:00     |                               | Maximum Daily Average: 83.9 % on Feb 10   |      | Hours in Service: 672           |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |               |
|---|-------------------------------|---|------|---------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----------------|---------------|
| Minimum Value: 37.8 % on Feb 24 17:00     |                               | Minimum Daily Average: 53.9 % on Feb 24   |      | Hours of Data: 672              |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |               |
| Maximum Diurnal Average: 74.3 % at hour 9 |                               | Minimum Diurnal Average: 59.2 % at hour 15  |      | Hours of Missing Data: 0        |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |               |
| Monthly Average: 69.17 %                  |                               | Percentiles: P <sub>1</sub> = 39.0 P <sub>10</sub> = 54.0 Q <sub>1</sub> = 65.3 Median = 70.6 Q <sub>3</sub> = 75.4 P <sub>90</sub> = 81.2 P <sub>99</sub> = 88.5 |      | Hours of Calibration: 0         |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |               |
|   |                               |   |      | Percent Operational Time: 100.0 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |               |
| Day                                       | Hourly Period Ending At (MST) |   |      |                                 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Daily Average   | Daily Maximum |
|   | 1                             | 2   | 3    | 4                               | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20   | 21   | 22   | 23   | 24   |                 |               |
| 1-Feb                                     | 74.5                          | 74.8  | 75.6 | 75.0                            | 75.1 | 74.4 | 72.5 | 70.2 | 71.3 | 69.7 | 66.0 | 62.8 | 58.1 | 50.2 | 47.4 | 46.6 | 47.9 | 52.0 | 57.2 | 62.8 | 66.2 | 68.8 | 68.9 | 67.9 | 64.8            | 75.6          |
| 2-Feb                                     | 67.7                          | 67.1  | 66.8 | 67.0                            | 66.3 | 65.9 | 65.8 | 66.4 | 66.4 | 66.6 | 66.9 | 68.1 | 64.9 | 56.6 | 60.7 | 65.1 | 69.8 | 73.0 | 71.6 | 72.1 | 69.9 | 65.6 | 64.3 | 69.6 | 66.8            | 73.0          |
| 3-Feb                                     | 73.9                          | 75.7  | 76.3 | 77.3                            | 78.2 | 80.2 | 80.7 | 79.9 | 79.0 | 77.9 | 77.0 | 75.6 | 73.3 | 73.8 | 73.0 | 75.2 | 75.8 | 77.3 | 75.6 | 74.0 | 73.1 | 72.1 | 71.6 | 70.4 | 75.7            | 80.7          |
| 4-Feb                                     | 71.9                          | 73.5  | 74.2 | 74.3                            | 75.4 | 75.4 | 75.6 | 76.2 | 77.6 | 76.7 | 77.4 | 75.7 | 77.4 | 79.6 | 79.4 | 80.1 | 79.4 | 79.6 | 82.4 | 84.9 | 83.4 | 82.1 | 81.6 | 81.6 | 78.0            | 84.9          |
| 5-Feb                                     | 81.8                          | 81.9  | 82.2 | 83.5                            | 82.8 | 81.5 | 82.0 | 82.1 | 82.9 | 81.1 | 78.4 | 75.3 | 74.9 | 73.2 | 72.6 | 71.4 | 71.0 | 72.8 | 73.2 | 75.5 | 77.3 | 79.9 | 74.1 | 65.7 | 77.4            | 83.5          |
| 6-Feb                                     | 64.6                          | 63.2  | 63.6 | 66.8                            | 67.9 | 72.8 | 79.0 | 80.4 | 79.5 | 80.3 | 80.0 | 65.3 | 59.2 | 56.5 | 56.6 | 56.4 | 56.1 | 56.0 | 58.8 | 62.5 | 68.5 | 72.3 | 73.6 | 73.4 | 67.2            | 80.4          |
| 7-Feb                                     | 73.4                          | 73.8  | 73.7 | 73.3                            | 74.1 | 75.7 | 64.5 | 64.8 | 65.3 | 58.4 | 53.2 | 48.3 | 44.5 | 41.0 | 38.4 | 37.9 | 39.0 | 43.2 | 45.1 | 45.8 | 47.8 | 55.6 | 61.4 | 66.3 | 56.9            | 75.7          |
| 8-Feb                                     | 73.9                          | 76.5  | 78.7 | 77.8                            | 79.0 | 81.1 | 80.6 | 79.3 | 78.3 | 76.6 | 73.8 | 68.7 | 64.5 | 57.6 | 54.6 | 53.6 | 55.4 | 60.6 | 67.1 | 72.1 | 75.8 | 78.4 | 76.9 | 76.6 | 71.6            | 81.1          |
| 9-Feb                                     | 77.1                          | 78.1  | 79.0 | 79.2                            | 79.4 | 79.7 | 79.4 | 79.4 | 78.8 | 74.4 | 69.9 | 65.5 | 61.5 | 59.3 | 56.4 | 57.3 | 58.1 | 60.7 | 63.1 | 68.6 | 69.6 | 68.3 | 70.0 | 71.0 | 70.1            | 79.7          |
| 10-Feb                                    | 71.7                          | 72.2  | 74.5 | 74.2                            | 74.3 | 73.0 | 83.5 | 91.6 | 92.6 | 92.3 | 91.6 | 90.0 | 88.4 | 89.1 | 86.2 | 83.9 | 83.0 | 83.4 | 84.6 | 85.3 | 85.6 | 86.2 | 87.5 | 88.3 | 83.9            | 92.6          |
| 11-Feb                                    | 88.3                          | 88.2  | 87.9 | 87.5                            | 87.0 | 83.5 | 81.4 | 82.1 | 82.4 | 81.5 | 82.4 | 83.3 | 75.0 | 71.1 | 68.9 | 65.5 | 81.5 | 86.3 | 82.9 | 77.2 | 73.0 | 77.3 | 84.2 | 81.5 | 80.8            | 88.3          |
| 12-Feb                                    | 78.6                          | 76.7  | 76.4 | 75.3                            | 70.1 | 69.2 | 70.3 | 73.5 | 75.8 | 72.9 | 67.1 | 61.8 | 56.2 | 53.9 | 55.1 | 58.0 | 59.3 | 62.7 | 64.9 | 64.2 | 65.4 | 67.6 | 67.7 | 68.0 | 67.1            | 78.6          |
| 13-Feb                                    | 69.9                          | 73.4  | 76.2 | 71.6                            | 64.1 | 65.3 | 82.3 | 85.8 | 85.7 | 82.6 | 80.6 | 76.6 | 76.0 | 75.4 | 73.0 | 74.7 | 77.2 | 74.4 | 74.5 | 70.8 | 68.2 | 70.1 | 72.9 | 74.6 | 74.8            | 85.8          |
| 14-Feb                                    | 76.2                          | 74.2  | 74.1 | 75.7                            | 75.4 | 74.3 | 74.4 | 74.0 | 72.3 | 71.2 | 72.1 | 68.6 | 68.9 | 72.0 | 68.6 | 65.8 | 67.0 | 68.5 | 69.2 | 70.0 | 67.8 | 69.5 | 71.7 | 74.2 | 71.5            | 76.2          |
| 15-Feb                                    | 77.0                          | 77.3  | 76.6 | 75.6                            | 75.3 | 74.6 | 74.1 | 73.4 | 73.8 | 72.2 | 68.8 | 65.5 | 59.5 | 53.5 | 51.1 | 50.3 | 49.9 | 59.0 | 67.1 | 72.9 | 75.8 | 75.5 | 75.0 | 74.7 | 68.7            | 77.3          |
| 16-Feb                                    | 75.1                          | 73.7  | 72.9 | 72.8                            | 72.6 | 72.8 | 73.3 | 73.9 | 73.6 | 72.9 | 70.5 | 69.1 | 67.4 | 65.9 | 64.0 | 63.5 | 64.5 | 66.1 | 68.4 | 73.1 | 72.1 | 71.8 | 70.8 | 71.1 | 70.5            | 75.1          |
| 17-Feb                                    | 71.3                          | 72.3  | 71.5 | 71.1                            | 71.6 | 71.5 | 71.7 | 71.0 | 73.2 | 76.2 | 74.3 | 73.4 | 69.1 | 65.7 | 63.4 | 64.9 | 66.5 | 67.5 | 68.7 | 69.0 | 68.9 | 66.6 | 65.9 | 67.0 | 69.7            | 76.2          |
| 18-Feb                                    | 70.3                          | 73.2  | 73.4 | 72.8                            | 72.4 | 72.2 | 71.7 | 72.1 | 72.7 | 72.0 | 66.7 | 63.2 | 60.2 | 55.3 | 52.4 | 50.0 | 48.6 | 54.5 | 63.1 | 69.0 | 71.8 | 72.4 | 71.9 | 71.3 | 66.4            | 73.4          |
| 19-Feb                                    | 70.8                          | 70.8  | 70.1 | 70.9                            | 70.8 | 70.8 | 70.8 | 70.5 | 70.2 | 69.3 | 65.7 | 64.4 | 60.9 | 57.4 | 56.1 | 55.7 | 56.7 | 63.3 | 64.0 | 65.2 | 66.8 | 70.1 | 73.3 | 72.1 | 66.5            | 73.3          |
| 20-Feb                                    | 68.7                          | 68.4  | 68.2 | 68.4                            | 69.3 | 69.5 | 69.5 | 70.7 | 71.5 | 70.0 | 69.8 | 66.3 | 63.9 | 59.9 | 54.9 | 52.2 | 52.3 | 60.0 | 64.5 | 67.1 | 71.0 | 73.6 | 72.6 | 70.7 | 66.4            | 73.6          |
| 21-Feb                                    | 70.5                          | 70.3  | 70.6 | 71.4                            | 71.1 | 70.6 | 69.9 | 69.3 | 68.8 | 68.4 | 65.6 | 60.9 | 55.2 | 51.2 | 50.9 | 52.5 | 49.7 | 50.5 | 53.3 | 57.9 | 60.9 | 64.7 | 66.8 | 67.3 | 62.8            | 71.4          |
| 22-Feb                                    | 66.9                          | 66.9  | 66.7 | 66.2                            | 66.2 | 65.9 | 65.8 | 65.6 | 65.9 | 66.1 | 64.6 | 56.8 | 49.7 | 50.2 | 48.3 | 45.5 | 43.9 | 47.3 | 56.0 | 65.3 | 68.0 | 69.2 | 69.1 | 68.7 | 61.0            | 69.2          |
| 23-Feb                                    | 67.8                          | 67.5  | 66.5 | 66.1                            | 65.6 | 65.5 | 65.3 | 65.1 | 65.2 | 65.8 | 65.7 | 61.3 | 54.6 | 49.8 | 47.5 | 46.3 | 46.0 | 51.1 | 59.2 | 66.0 | 69.5 | 70.2 | 69.7 | 69.5 | 61.9            | 70.2          |
| 24-Feb                                    | 69.3                          | 68.5  | 68.3 | 68.2                            | 68.0 | 68.0 | 68.0 | 67.7 | 67.8 | 67.5 | 67.5 | 57.1 | 45.0 | 38.9 | 38.4 | 38.1 | 37.8 | 39.0 | 39.7 | 40.8 | 41.2 | 41.7 | 43.7 | 44.6 | 53.9            | 69.3          |
| 25-Feb                                    | 45.7                          | 49.5  | 53.9 | 57.5                            | 61.5 | 65.0 | 67.1 | 68.4 | 67.5 | 64.5 | 57.3 | 52.9 | 50.6 | 47.3 | 44.9 | 45.4 | 47.5 | 49.0 | 52.9 | 57.2 | 59.0 | 63.3 | 67.4 | 71.1 | 56.9            | 71.1          |
| 26-Feb                                    | 71.7                          | 72.5  | 73.9 | 74.4                            | 74.4 | 73.8 | 72.6 | 70.8 | 70.2 | 68.6 | 68.0 | 72.4 | 74.3 | 66.5 | 70.8 | 80.1 | 76.8 | 81.1 | 84.8 | 87.5 | 87.9 | 86.1 | 86.5 | 87.7 | 76.4            | 87.9          |
| 27-Feb                                    | 88.4                          | 88.5  | 88.3 | 88.4                            | 88.5 | 88.5 | 84.2 | 81.2 | 78.7 | 77.3 | 73.6 | 69.8 | 70.0 | 67.5 | 67.7 | 67.5 | 68.9 | 72.3 | 78.2 | 77.9 | 77.6 | 77.8 | 79.2 | 80.7 | 78.4            | 88.5          |
| 28-Feb                                    | 81.2                          | 79.4  | 78.3 | 76.8                            | 75.7 | 74.3 | 73.6 | 73.4 | 73.1 | 74.4 | 70.7 | 68.5 | 64.7 | 59.1 | 55.5 | 54.6 | 53.0 | 59.7 | 69.1 | 74.9 | 77.2 | 76.1 | 74.7 | 74.0 | 70.5            | 81.2          |
|   |                               | 72.8  | 73.1 | 73.5                            | 73.5 | 73.3 | 73.4 | 73.9 | 74.2 | 74.3 | 73.1 | 70.9 | 67.4 | 63.8 | 60.6 | 59.2 | 60.1 | 63.2 | 66.3 | 68.8 | 70.0 | 71.2 | 71.9 | 72.1 | Diurnal Average |               |
|   |                               | 88.4  | 88.5 | 88.3                            | 88.4 | 88.5 | 84.2 | 91.6 | 92.6 | 92.3 | 91.6 | 90.0 | 88.4 | 89.1 | 86.2 | 83.9 | 83.0 | 86.3 | 84.8 | 87.5 | 87.9 | 86.2 | 87.5 | 88.3 | Diurnal Maximum |               |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Relative Humidity (RH) - %**  
**Athabasca Valley - February 2023**





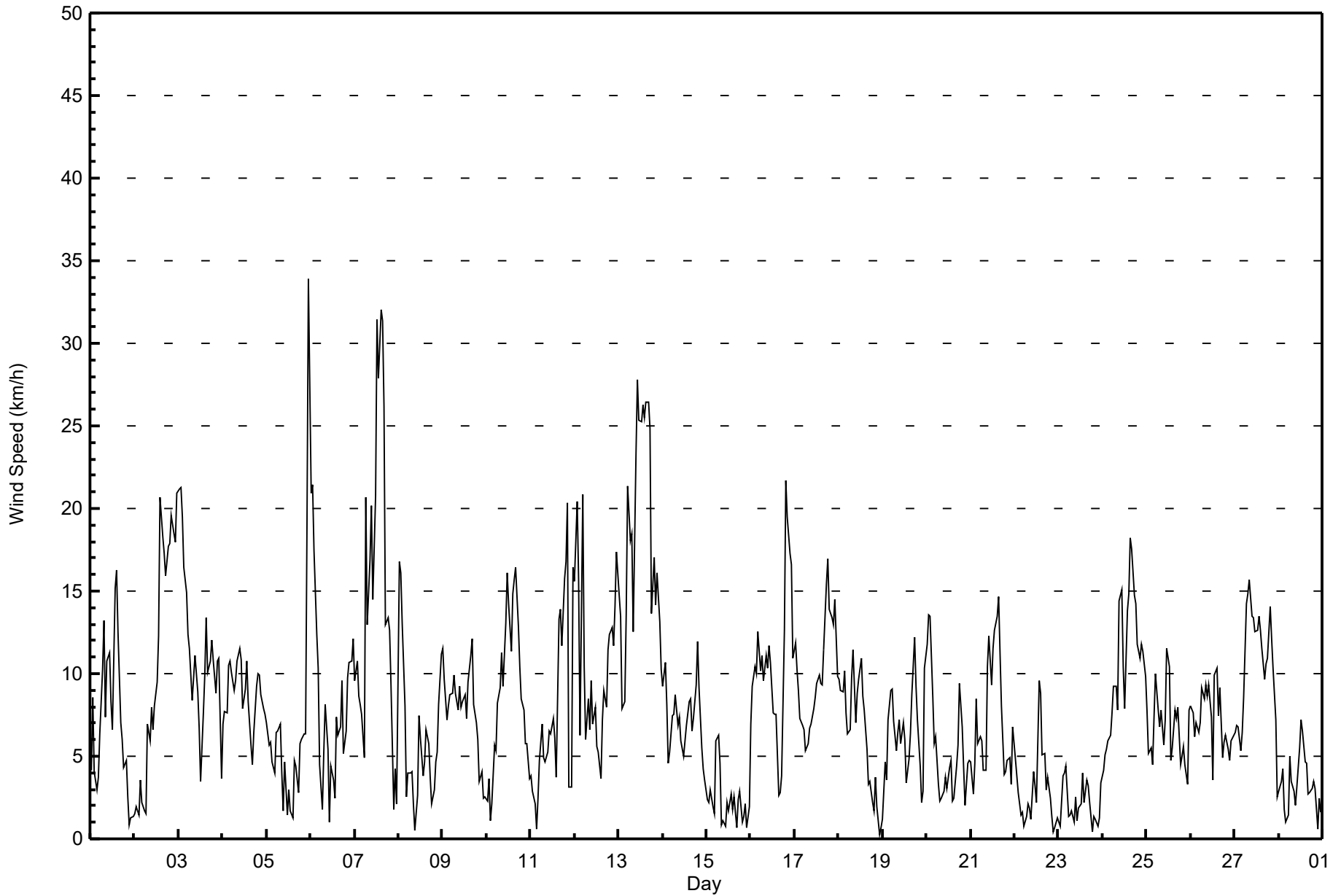
| Maximum Speed: 34 km/h on Feb 6 00:00      Maximum Daily Speed Average: 11.5 km/h on Feb 7   |                               | Hours in Service: 672<br>Hours of Data: 672<br>Hours of Missing Data: 0<br>Percent Operational Time: 100.0 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |               |               |
|--|-------------------------------|--|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-----------------|---------------|---------------|
| Minimum Speed Value: 0 km/h on Feb 18 23:00      Minimum Daily Speed Average: 0.4 km/h on Feb 15<br>Maximum Diurnal Speed Average: 4.2 km/h at hour 14      Minimum Diurnal Speed Average: 0.2 km/h at hour 4<br>Monthly Average Velocity: 1.5 km/h 328.9 deg      Percentiles: P <sub>1</sub> = 1 P <sub>10</sub> = 2 Q <sub>1</sub> = 4 Median = 7 Q <sub>3</sub> = 11 P <sub>90</sub> = 15 P <sub>99</sub> = 26 |                               |  |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |               |               |
| Day  | Hourly Period Ending At (MST) |  |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 | Daily Average | Daily Maximum |
|  | 1                             | 2  | 3     | 4     | 5     | 6     | 7     | 8     | 9     | 10    | 11    | 12    | 13    | 14    | 15    | 16    | 17    | 18    | 19    | 20    | 21    | 22    | 23    | 24              |               |               |
| 1-Feb  | WNW4                          | NNW9   | NNW4  | NW3   | N4    | NNW6  | NNW10 | NNW13 | N7    | NNW11 | NNW11 | N8    | N7    | NNW15 | NNW16 | NNW13 | NW7   | W6    | WSW4  | SW5   | SSW3  | S1    | E1    | ENE1            | NNW5.9        | NNW16         |
| 2-Feb  | S2                            | ESE2   | S1    | SSE4  | S2    | NNE2  | SW1   | SE7   | SE6   | SE8   | SE7   | SE8   | SE9   | SE12  | SE21  | SE18  | SE17  | SE16  | SE18  | SE18  | SE20  | SE19  | SE18  | SE21            | SE10.4        | SE21          |
| 3-Feb  | SE21                          | SE21   | SE20  | SE16  | SE15  | SE12  | SE12  | SE8   | SE10  | SE11  | SE9   | SE7   | NNE3  | NNW8  | NNW10 | NNW13 | N10   | NNW11 | NNW12 | NNW11 | NNW9  | NNW11 | NNW11 | NNE4            | E3.5          | SE21          |
| 4-Feb  | NNW7                          | N8   | N8    | NNW11 | NNW11 | NNW10 | NNW9  | NNW10 | NNW11 | NNW12 | NNW11 | N8    | NNW9  | NNW11 | N8    | NNW6  | N4    | N6    | NNW9  | NNW10 | NNW10 | NNW9  | NNW8  | N8              | NNW8.8        | NNW12         |
| 5-Feb  | N7                            | N6   | N6    | N5    | N4    | NNW6  | N7    | NNW7  | NNW4  | WNW2  | N5    | W1    | NNW3  | NNW2  | WSW1  | SSW5  | S4    | S3    | SW6   | SSW6  | SSW6  | NW6   | NNW19 | NW34            | NW4.3         | NW34          |
| 6-Feb  | NW21                          | WNW21  | W17   | W12   | WSW10 | WSW4  | WNW2  | NW5   | WSW8  | WSW5  | WSW1  | NNW4  | NNW4  | WNW2  | SE7   | SE6   | SSE7  | SE10  | SSE5  | SSE7  | SE10  | SE11  | SSE11 | SSE12           | SW3.2         | WNW21         |
| 7-Feb  | SSE10                         | SE11   | SE9   | SSE8  | SE8   | WNW5  | WNW21 | W13   | W17   | W20   | WSW14 | WSW21 | W31   | W28   | WNW32 | W31   | W26   | W13   | WSW13 | WSW13 | SW9   | S2    | SSW4  | S2              | W11.5         | WNW32         |
| 8-Feb  | NNW17                         | NNW16  | NNW13 | NNW8  | N3    | WSW4  | SW4   | WSW4  | SW2   | SE0   | SE3   | SE7   | SE6   | SE4   | SSE5  | SSE7  | SSE6  | SE4   | SSE2  | SW3   | SSW5  | SSW5  | SSE8  | SSE11           | SSW1.0        | NNW17         |
| 9-Feb  | SSE11                         | SSE10  | SSE7  | SSE8  | SE9   | SE9   | SE10  | SE9   | SE8   | SE9   | SE8   | SE8   | SE9   | SE7   | SE10  | SE11  | SE12  | SE8   | SE7   | E6    | SE3   | SE4   | SSE2  | SE3             | SE7.7         | SE12          |
| 10-Feb   | ESE2                          | SE4  | NE1   | NE2   | N6    | N5    | NNW8  | NNW9  | NNW11 | N9    | N13   | NNW16 | NNW14 | N11   | NNW15 | NNW16 | NNW16 | NNW13 | NNW10 | NNW8  | NNW8  | N6    | N6    | N4              | NNW8.4        | NNW16         |
| 11-Feb   | NNW4                          | NNW3   | NW2   | SE1   | E2    | SSE5  | SE7   | SSE5  | SE5   | SSE5  | SE7   | SE6   | SE7   | SE6   | SE4   | WSW13 | WSW14 | WSW12 | W16   | WNW17 | WNW20 | WNW3  | WSW3  | WSW16           | WSW3.6        | WNW20         |
| 12-Feb   | WSW16                         | WSW20  | WSW16 | WSW6  | WSW21 | WSW10 | SSW6  | SSW9  | SW7   | SW10  | SSW7  | SW8   | SSW6  | E5    | ESE4  | SE7   | SE9   | SE8   | SE11  | SE12  | SE13  | SE12  | SE14  | SE17            | S6.5          | WSW21         |
| 13-Feb   | SE15                          | SE13   | SE8   | SW8   | WSW14 | WSW21 | WSW18 | WSW18 | WSW13 | NNW23 | N28   | N25   | N25   | NNW26 | N25   | NNW26 | NNW26 | NNW25 | N14   | N17   | N14   | N16   | NNW13 | NNW10           | NNW11.5       | N28           |
| 14-Feb   | NNW9                          | NNW11  | NNW8  | NNW5  | N5    | N7    | N8    | NNW9  | NW7   | NNW7  | NNE6  | NNE5  | N6    | N7    | NNW8  | NNW9  | N7    | N7    | N9    | NNW12 | N9    | N5    | N4    | N4              | NNW7.0        | NNW12         |
| 15-Feb   | NW2                           | WNW2   | NNE3  | NE2   | E2    | SE6   | SE6   | ESE5  | NE1   | W1    | NW1   | WNW2  | NNW2  | WNW3  | N2    | NW3   | WNW1  | NW2   | W3    | W1    | NNE1  | WNW2  | ENE1  | E2              | N0.4          | SE6           |
| 16-Feb   | SE7                           | SE9  | SE10  | SE10  | SE13  | SE10  | SE11  | SE10  | SE11  | SE10  | SE12  | SE11  | SE8   | SSE8  | SSE8  | SE3   | N3    | N4    | NNW13 | NNW22 | NNW20 | N17   | NNW17 | N11             | ESE2.9        | NNW22         |
| 17-Feb   | NNW12                         | NNW10  | N9    | N7    | NNW7  | NNW7  | N5    | NNW6  | N7    | N7    | NNW8  | NNW9  | NNW9  | NNW10 | NNW9  | N9    | N11   | NNW15 | NNW17 | NNW14 | NNW13 | NNW13 | NNW14 | N10             | NNW9.9        | NNW17         |
| 18-Feb   | N10                           | N9   | N9    | NNW10 | N8    | N6    | N7    | NNW10 | NNW11 | NNW7  | NNW9  | NNW10 | NNW11 | N9    | NNW8  | NNW5  | NW3   | NNW3  | W2    | W2    | WSW4  | E2    | NNW0  | W1              | NNW6.0        | NNW11         |
| 19-Feb   | SSE1                          | SE5  | E4    | SE7   | SE9   | SE9   | SE7   | ESE5  | SE6   | ESE7  | ESE6  | N7    | N6    | NNW3  | N5    | N6    | N9    | NNW12 | N9    | NNW7  | NNW4  | NW2   | WNW3  | N10             | NE2.3         | NNW12         |
| 20-Feb   | N12                           | NNW14  | NNW14 | N9    | N6    | N6    | NNE3  | NNE2  | N2    | NW3   | NW4   | WNW3  | NNW4  | NW5   | W2    | W2    | N4    | N6    | N9    | N7    | N4    | N2    | NW5   | W5              | NNW5.1        | NNW14         |
| 21-Feb   | W5                            | WNW3   | NW5   | NNW8  | NNW6  | NNW6  | NNW6  | NNW4  | W4    | NNW10 | N12   | N9    | NNW12 | NNW13 | NNW13 | NNW15 | N11   | N8    | N4    | N4    | WSW5  | SW5   | SW3   | SW7             | NNW6.0        | NNW15         |
| 22-Feb   | SSW5                          | S4   | SSW3  | SSE1  | SE2   | SE1   | S1    | ESE2  | E2    | ENE1  | E4    | ESE3  | WSW2  | NNW10 | NNW9  | NW5   | NW5   | SW3   | W4    | SW2   | WSW1  | S0    | E1    | NNE1            | W0.6          | NNW10         |
| 23-Feb   | N1                            | NNE1   | W4    | WSW4  | WSW4  | SSW1  | WSW1  | WNW2  | NNE1  | ENE3  | NW1   | W2    | WNW2  | NW4   | NW2   | NW4   | WNW3  | W2    | SSE0  | ENE1  | ENE1  | WSW1  | SSE1  | SSW3            | WNW1.2        | WSW4          |
| 24-Feb   | SSW4                          | S5   | S5    | S6    | SSE6  | SSE8  | SSE9  | SSE9  | SSE8  | SE14  | SE15  | SE10  | S8    | SSW14 | SSE15 | S18   | SSE18 | SSE15 | S14   | SSE12 | SSE11 | SSE12 | SSE11 | S10             | SSE10.4       | SSE18         |
| 25-Feb   | S8                            | S5   | SSE6  | SSE5  | SSE7  | SE10  | SE8   | ESE7  | SE8   | ESE6  | SSW7  | SE10  | SW10  | SW5   | SSW6  | SW8   | SSW7  | SSW8  | SSE5  | SE5   | SE6   | SE5   | SE3   | SE8             | S5.3          | SW11          |
| 26-Feb   | SE8                           | SE8  | SE6   | SE7   | SE6   | SE7   | SE9   | SE8   | SSE9  | SSE9  | SSE9  | SE7   | ESE4  | E10   | E10   | ENE7  | ENE9  | NE5   | NNE6  | N6    | N5    | NE5   | N6    | N6              | ESE4.8        | E10           |
| 27-Feb   | N6                            | NNW7   | NNW7  | NNW5  | NNW6  | NNW9  | NW14  | NNW15 | NW16  | NNW13 | NNW13 | N13   | NNW13 | NNW13 | N13   | NNW11 | N10   | N11   | N11   | NNW14 | NNW12 | NNW10 | NNW7  | NW3             | NNW10.4       | NW16          |
| 28-Feb   | W3                            | W4   | SW4   | SSW2  | SSW1  | SW1   | SW5   | SW4   | W3    | NE2   | ENE3  | N5    | NNW7  | NNW7  | NW5   | NW5   | NW3   | NW3   | W3    | SW3   | SW3   | E1    | E2    | SSE2            | WNW1.6        | NNW7          |
| NNW1.0WNW0.9 NW0.8WSW0.2SSW0.7WSW0.8NNW0.8NNW1.0 W0.9 N1.2NNE1.5NNW1.9NNW3.4NNW4.2NNW3.4 NW3.1NNW2.4NNW2.3 NW2.4NNW2.9NNW1.8NNE1.6NNW1.2WNW0.5   |                               |  |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Diurnal Average |               |               |
| SE21WNW21 SE20 SE16WSW21WSW21WNW21WSW18 W17NNW23 N28 N25 W31 W28WNW32 W31NNW26NNW25 SE18NNW22WNW20 SE19WNW19 NW34  |                               |  |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Diurnal Maximum |               |               |
| All monthly, daily, and diurnal averages have been calculated using vector methods   |                               |  |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |               |               |



**Wood Buffalo Environmental Association**  
**Summary of Hour Standard Deviations**

**Wind Speed (WS) - km/h**  
**Athabasca Valley - February 2023**

| Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0<br>Maximum Value: 11 km/h on Feb 7 06:00   |                               |   |   |   |   |    |   |   |   |    |    |    |    | Hours in Service: 672<br>Hours of Data: 672<br>Hours of Missing Data: 0<br>Hours of Calibration: 0<br>Percent Operational Time: 100.0 |    |    |    |    |    |    |    |    |    |               |    |
|--|-------------------------------|---|---|---|---|----|---|---|---|----|----|----|----|---|----|----|----|----|----|----|----|----|----|---------------|----|
| Minimum Value: 0 km/h on Feb 18 17:00  |                               |   |   |   |   |    |   |   |   |    |    |    |    |   |    |    |    |    |    |    |    |    |    |               |    |
| Percentiles: P <sub>1</sub> = 1 P <sub>10</sub> = 1 Q <sub>1</sub> = 1 Median = 2 Q <sub>3</sub> = 3 P <sub>90</sub> = 4 P <sub>99</sub> = 7 |                               |   |   |   |   |    |   |   |   |    |    |    |    |   |    |    |    |    |    |    |    |    |    |               |    |
| Day  | Hourly Period Ending At (MST) |   |   |   |   |    |   |   |   |    |    |    |    |   |    |    |    |    |    |    |    |    |    | Daily Maximum |    |
|  | 1                             | 2 | 3 | 4 | 5 | 6  | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14  | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |               | 24 |
| 1-Feb  | 2                             | 2 | 2 | 1 | 1 | 1  | 4 | 3 | 2 | 2  | 2  | 3  | 2  | 4   | 3  | 2  | 3  | 1  | 2  | 2  | 2  | 2  | 2  | 1             | 4  |
| 2-Feb  | 1                             | 2 | 2 | 3 | 2 | 2  | 2 | 3 | 3 | 2  | 2  | 2  | 3  | 5   | 5  | 5  | 4  | 4  | 4  | 4  | 4  | 4  | 4  | 4             | 5  |
| 3-Feb  | 4                             | 4 | 4 | 3 | 3 | 2  | 4 | 2 | 3 | 2  | 2  | 2  | 1  | 1   | 4  | 3  | 3  | 2  | 3  | 3  | 2  | 2  | 3  | 2             | 4  |
| 4-Feb  | 3                             | 2 | 2 | 2 | 2 | 2  | 2 | 2 | 2 | 2  | 2  | 2  | 2  | 2   | 2  | 1  | 2  | 2  | 1  | 2  | 2  | 1  | 2  | 2             | 3  |
| 5-Feb  | 1                             | 1 | 1 | 2 | 1 | 1  | 2 | 2 | 3 | 1  | 3  | 1  | 2  | 2   | 2  | 3  | 2  | 1  | 2  | 2  | 2  | 3  | 9  | 6             | 9  |
| 6-Feb  | 5                             | 5 | 4 | 3 | 2 | 2  | 1 | 1 | 1 | 3  | 1  | 2  | 1  | 1   | 3  | 2  | 2  | 2  | 1  | 3  | 2  | 3  | 3  | 2             | 5  |
| 7-Feb  | 2                             | 2 | 2 | 2 | 2 | 11 | 6 | 4 | 7 | 4  | 3  | 5  | 7  | 7   | 7  | 6  | 5  | 4  | 6  | 7  | 2  | 3  | 2  | 2             | 11 |
| 8-Feb  | 3                             | 2 | 2 | 3 | 2 | 2  | 2 | 1 | 1 | 1  | 2  | 3  | 2  | 2   | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 1  | 3  | 3             | 3  |
| 9-Feb  | 3                             | 3 | 2 | 2 | 3 | 2  | 2 | 2 | 2 | 2  | 2  | 3  | 2  | 2   | 2  | 2  | 3  | 2  | 2  | 1  | 1  | 1  | 2  | 2             | 3  |
| 10-Feb   | 1                             | 2 | 1 | 1 | 2 | 2  | 2 | 2 | 2 | 3  | 3  | 3  | 3  | 2   | 3  | 3  | 3  | 2  | 2  | 2  | 2  | 1  | 1  | 1             | 3  |
| 11-Feb   | 1                             | 1 | 1 | 1 | 2 | 2  | 2 | 2 | 1 | 1  | 1  | 1  | 1  | 1   | 1  | 7  | 5  | 3  | 4  | 3  | 5  | 3  | 3  | 3             | 7  |
| 12-Feb   | 3                             | 5 | 6 | 6 | 4 | 6  | 2 | 2 | 2 | 2  | 1  | 2  | 2  | 2   | 2  | 2  | 2  | 2  | 3  | 3  | 3  | 3  | 3  | 3             | 6  |
| 13-Feb   | 3                             | 3 | 3 | 5 | 4 | 6  | 5 | 4 | 2 | 6  | 7  | 7  | 7  | 7   | 7  | 5  | 5  | 7  | 5  | 5  | 5  | 5  | 4  | 2             | 7  |
| 14-Feb   | 2                             | 2 | 3 | 2 | 2 | 1  | 2 | 1 | 1 | 1  | 1  | 1  | 1  | 1   | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 1  | 1  | 1             | 3  |
| 15-Feb   | 1                             | 1 | 1 | 1 | 2 | 2  | 2 | 2 | 1 | 1  | 1  | 1  | 1  | 1   | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 2             | 2  |
| 16-Feb   | 3                             | 2 | 2 | 3 | 3 | 3  | 3 | 3 | 3 | 3  | 3  | 2  | 2  | 2   | 2  | 2  | 1  | 1  | 8  | 3  | 5  | 4  | 5  | 3             | 8  |
| 17-Feb   | 2                             | 2 | 2 | 2 | 2 | 1  | 1 | 2 | 2 | 2  | 1  | 2  | 2  | 2   | 2  | 2  | 3  | 4  | 3  | 2  | 3  | 3  | 4  | 2             | 4  |
| 18-Feb   | 2                             | 3 | 2 | 2 | 2 | 1  | 2 | 2 | 2 | 2  | 2  | 2  | 2  | 2   | 2  | 1  | 0  | 1  | 1  | 1  | 2  | 2  | 1  | 1             | 3  |
| 19-Feb   | 2                             | 3 | 2 | 3 | 2 | 2  | 2 | 1 | 2 | 4  | 2  | 2  | 1  | 1   | 1  | 1  | 4  | 3  | 2  | 2  | 1  | 1  | 1  | 2             | 4  |
| 20-Feb   | 3                             | 3 | 2 | 2 | 1 | 2  | 1 | 1 | 1 | 1  | 1  | 1  | 2  | 1   | 1  | 0  | 2  | 1  | 2  | 1  | 1  | 2  | 1  | 1             | 3  |
| 21-Feb   | 1                             | 1 | 2 | 3 | 2 | 2  | 2 | 1 | 1 | 4  | 3  | 2  | 3  | 3   | 3  | 3  | 3  | 2  | 2  | 1  | 1  | 2  | 1  | 3             | 4  |
| 22-Feb   | 4                             | 2 | 2 | 1 | 2 | 1  | 1 | 2 | 1 | 1  | 1  | 2  | 3  | 4   | 2  | 1  | 1  | 1  | 1  | 3  | 2  | 1  | 1  | 1             | 4  |
| 23-Feb   | 1                             | 1 | 2 | 1 | 2 | 1  | 1 | 1 | 1 | 1  | 1  | 1  | 1  | 1   | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 2             | 2  |
| 24-Feb   | 1                             | 1 | 1 | 1 | 3 | 2  | 2 | 2 | 2 | 3  | 3  | 2  | 6  | 4   | 4  | 4  | 5  | 4  | 4  | 3  | 2  | 2  | 3  | 2             | 6  |
| 25-Feb   | 2                             | 2 | 2 | 2 | 1 | 1  | 2 | 2 | 2 | 1  | 3  | 3  | 3  | 4   | 2  | 3  | 3  | 2  | 1  | 1  | 2  | 1  | 2  | 3             | 4  |
| 26-Feb   | 2                             | 2 | 2 | 2 | 2 | 2  | 2 | 2 | 2 | 2  | 2  | 2  | 1  | 3   | 4  | 2  | 3  | 2  | 2  | 1  | 1  | 1  | 1  | 1             | 4  |
| 27-Feb   | 1                             | 2 | 1 | 1 | 1 | 2  | 2 | 2 | 2 | 3  | 3  | 3  | 3  | 3   | 3  | 2  | 2  | 2  | 3  | 3  | 2  | 2  | 2  | 1             | 3  |
| 28-Feb   | 1                             | 1 | 1 | 2 | 2 | 2  | 2 | 2 | 2 | 1  | 1  | 1  | 1  | 1   | 1  | 1  | 1  | 1  | 1  | 1  | 2  | 1  | 2  | 1             | 2  |
|  |                               |   |   |   |   |    |   |   |   |    |    |    |    | 5 5 6 6 4 11 6 4 7 6 7 7 7 7 7 7 5 7 8 7 5 5 9 6  |    |    |    |    |    |    |    |    |    |               |    |
| Diurnal Maximum  |                               |   |   |   |   |    |   |   |   |    |    |    |    |   |    |    |    |    |    |    |    |    |    |               |    |





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Wind Speed (WS) - km/h**  
**Athabasca Valley - February 2023**

| <b>Wind Speed Ranges (km/h)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---------------------------------|------------------------|----------|---------------------|
| 0 - 5                           | 242                    | 36.01    | 36.01               |
| 6 - 11                          | 291                    | 43.30    | 79.32               |
| 12 - 19                         | 107                    | 15.92    | 95.24               |
| 20 - 28                         | 28                     | 4.17     | 99.40               |
| 29 - 38                         | 4                      | 0.60     | 100.00              |
| > 38                            | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 672

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Wind Speed (WS) - km/h  
Athabasca Valley - February 2023**

| <b>Wind Speed<br/>Ranges (km/h)</b> | <b>Wind Direction</b> |     |    |     |    |     |     |     |    |     |    |     |    |     |    |     | <b>Totals</b> |
|-------------------------------------|-----------------------|-----|----|-----|----|-----|-----|-----|----|-----|----|-----|----|-----|----|-----|---------------|
|                                     | N                     | NNE | NE | ENE | E  | ESE | SE  | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |               |
| 0 - 5                               | 26                    | 11  | 7  | 7   | 12 | 8   | 17  | 16  | 14 | 12  | 15 | 18  | 19 | 18  | 24 | 18  | 242           |
| 6 - 11                              | 64                    | 2   | 0  | 2   | 3  | 4   | 77  | 28  | 4  | 10  | 10 | 4   | 1  | 0   | 4  | 78  | 291           |
| 12 - 19                             | 7                     | 0   | 0  | 0   | 0  | 0   | 24  | 8   | 0  | 1   | 0  | 13  | 6  | 2   | 2  | 44  | 107           |
| 20 - 28                             | 3                     | 0   | 0  | 0   | 0  | 0   | 6   | 0   | 0  | 0   | 0  | 4   | 3  | 3   | 1  | 8   | 28            |
| 29 - 38                             | 0                     | 0   | 0  | 0   | 0  | 0   | 0   | 0   | 0  | 0   | 0  | 0   | 2  | 1   | 1  | 0   | 4             |
| > 38                                | 0                     | 0   | 0  | 0   | 0  | 0   | 0   | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| <b>Totals</b>                       | 100                   | 13  | 7  | 9   | 15 | 12  | 124 | 52  | 18 | 23  | 25 | 39  | 31 | 24  | 32 | 148 | 672           |

Total Number of Valid Hours: 672

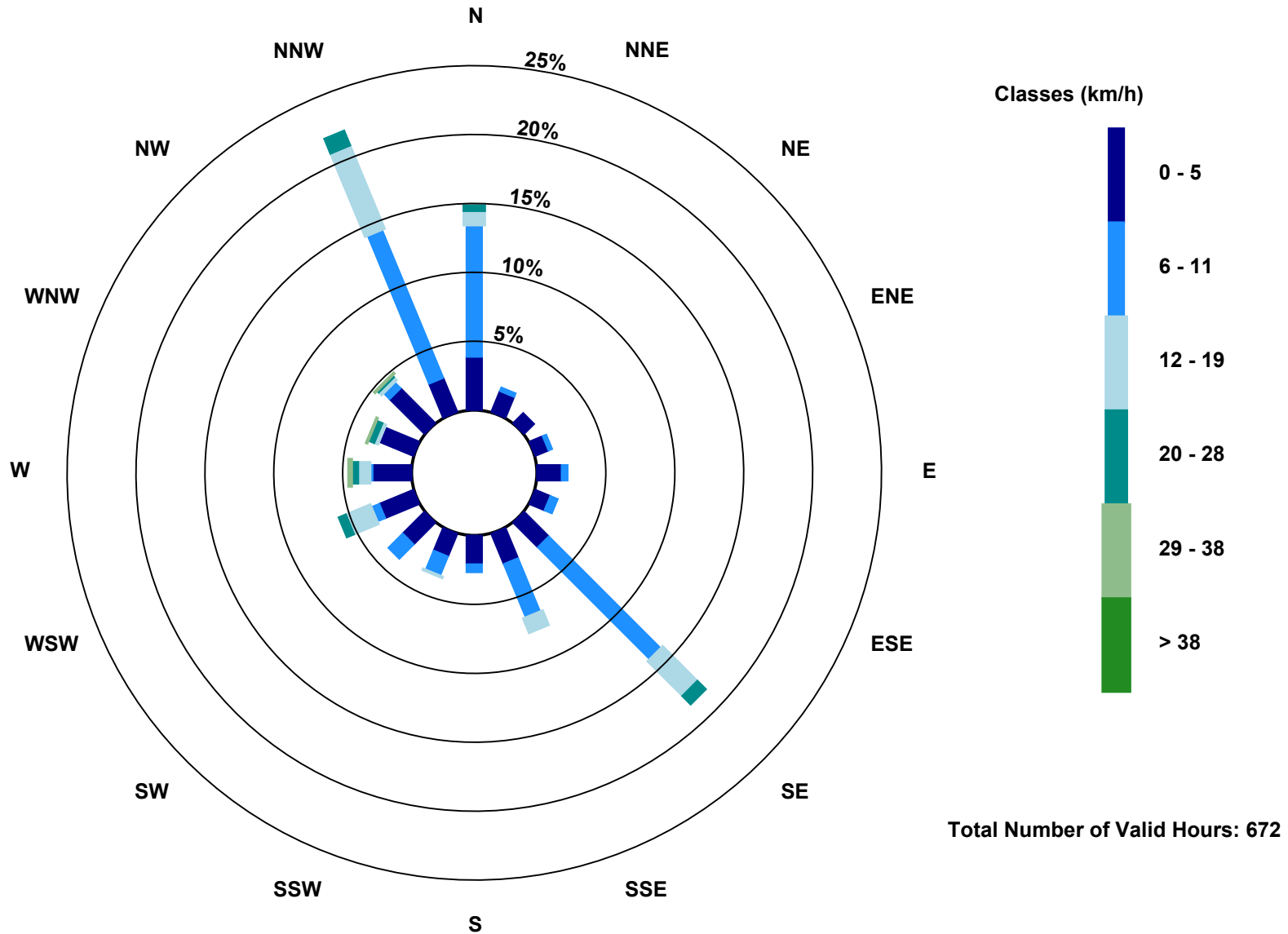
Total Number of Hours: 672





Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Wind Speed (WS) - km/h  
Athabasca Valley





**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

**Wind Direction (WD) - deg**  
**Athabasca Valley - February 2023**

|  |   |
|--|---|
| Direction of Maximum Speed: 305 deg on Feb 6 00:00<br>Direction of Maximum Daily Speed Average: 261.3 deg on Feb 7 | Hours in Service: 672<br>Hours of Data: 672<br>Hours of Missing Data: 0 |
| Direction of Minimum Speed: 343 deg on Feb 18 23:00<br>Direction of Minimum Daily Speed Average: 0.4 deg on Feb 15 | Percent Operational Time: 100.0   |
| Monthly Average Direction: 328.9 deg   |   |

| Day   | Hourly Period Ending At (MST) |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Daily Average |
|---|-------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---------------|
|   | 1                             | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19  | 20  | 21  | 22  | 23  | 24  |               |
| 1-Feb   | 288                           | 344 | 339 | 315 | 352 | 338 | 345 | 341 | 355 | 347 | 348 | 353 | 6   | 333 | 331 | 329 | 320 | 262 | 246 | 227 | 199 | 171 | 87  | 75  | 333.6         |
| 2-Feb   | 169                           | 120 | 180 | 158 | 172 | 29  | 228 | 131 | 139 | 139 | 134 | 141 | 143 | 132 | 127 | 130 | 129 | 135 | 135 | 131 | 130 | 129 | 128 | 128 | 132.7         |
| 3-Feb   | 127                           | 127 | 128 | 129 | 134 | 142 | 144 | 143 | 142 | 142 | 140 | 140 | 17  | 330 | 345 | 342 | 351 | 339 | 345 | 339 | 340 | 346 | 336 | 22  | 94.2          |
| 4-Feb   | 346                           | 350 | 349 | 348 | 345 | 344 | 346 | 343 | 342 | 347 | 347 | 352 | 346 | 338 | 353 | 335 | 4   | 353 | 339 | 343 | 347 | 336 | 341 | 350 | 345.6         |
| 5-Feb   | 349                           | 357 | 355 | 349 | 350 | 347 | 350 | 328 | 340 | 284 | 356 | 278 | 341 | 340 | 247 | 201 | 190 | 190 | 220 | 210 | 213 | 322 | 292 | 305 | 308.4         |
| 6-Feb   | 305                           | 284 | 278 | 262 | 252 | 255 | 295 | 312 | 254 | 256 | 237 | 342 | 345 | 285 | 131 | 139 | 153 | 145 | 152 | 154 | 146 | 145 | 153 | 151 | 230.9         |
| 7-Feb   | 152                           | 146 | 146 | 151 | 140 | 291 | 303 | 276 | 266 | 265 | 243 | 256 | 276 | 281 | 284 | 272 | 276 | 274 | 245 | 248 | 228 | 184 | 199 | 186 | 261.3         |
| 8-Feb   | 332                           | 330 | 336 | 334 | 10  | 244 | 231 | 244 | 217 | 141 | 126 | 144 | 142 | 132 | 154 | 151 | 147 | 146 | 164 | 214 | 196 | 193 | 159 | 153 | 199.0         |
| 9-Feb   | 154                           | 149 | 148 | 152 | 144 | 145 | 145 | 135 | 134 | 141 | 139 | 135 | 138 | 140 | 136 | 134 | 129 | 129 | 130 | 88  | 137 | 145 | 154 | 138 | 138.6         |
| 10-Feb  | 111                           | 135 | 51  | 41  | 350 | 352 | 339 | 348 | 348 | 353 | 350 | 347 | 346 | 350 | 337 | 338 | 336 | 333 | 331 | 343 | 348 | 359 | 351 | 352 | 345.8         |
| 11-Feb  | 348                           | 340 | 324 | 125 | 83  | 159 | 145 | 163 | 143 | 151 | 138 | 141 | 145 | 127 | 142 | 243 | 245 | 242 | 268 | 289 | 296 | 299 | 244 | 246 | 236.9         |
| 12-Feb  | 249                           | 248 | 248 | 242 | 247 | 237 | 212 | 213 | 214 | 223 | 206 | 217 | 206 | 82  | 103 | 145 | 138 | 132 | 133 | 134 | 132 | 130 | 138 | 146 | 191.1         |
| 13-Feb  | 139                           | 144 | 144 | 221 | 238 | 256 | 256 | 249 | 249 | 347 | 350 | 353 | 349 | 347 | 351 | 341 | 339 | 345 | 353 | 353 | 358 | 352 | 346 | 340 | 332.4         |
| 14-Feb  | 342                           | 315 | 329 | 328 | 354 | 349 | 349 | 338 | 314 | 343 | 12  | 24  | 351 | 356 | 343 | 345 | 352 | 6   | 350 | 340 | 350 | 351 | 353 | 357 | 345.3         |
| 15-Feb  | 308                           | 300 | 16  | 37  | 89  | 133 | 133 | 122 | 52  | 259 | 312 | 299 | 335 | 291 | 350 | 315 | 296 | 313 | 270 | 270 | 26  | 298 | 75  | 82  | 355.2         |
| 16-Feb  | 134                           | 138 | 142 | 142 | 143 | 139 | 136 | 135 | 140 | 137 | 141 | 136 | 141 | 155 | 147 | 133 | 7   | 10  | 336 | 334 | 342 | 349 | 348 | 351 | 101.7         |
| 17-Feb  | 330                           | 341 | 350 | 350 | 339 | 336 | 4   | 345 | 357 | 352 | 344 | 344 | 336 | 343 | 344 | 351 | 352 | 346 | 340 | 341 | 344 | 346 | 343 | 356 | 344.8         |
| 18-Feb  | 354                           | 357 | 359 | 341 | 1   | 357 | 349 | 347 | 344 | 348 | 340 | 345 | 347 | 350 | 342 | 339 | 307 | 335 | 265 | 281 | 252 | 86  | 343 | 261 | 345.0         |
| 19-Feb  | 152                           | 132 | 86  | 141 | 133 | 142 | 130 | 117 | 127 | 116 | 120 | 355 | 349 | 342 | 359 | 356 | 349 | 347 | 355 | 346 | 341 | 321 | 293 | 356 | 39.8          |
| 20-Feb  | 352                           | 345 | 342 | 358 | 4   | 1   | 13  | 22  | 8   | 316 | 318 | 286 | 333 | 325 | 279 | 276 | 352 | 1   | 350 | 350 | 356 | 356 | 307 | 281 | 342.8         |
| 21-Feb  | 267                           | 303 | 311 | 334 | 328 | 343 | 333 | 336 | 280 | 339 | 349 | 353 | 345 | 341 | 345 | 342 | 355 | 0   | 351 | 354 | 250 | 217 | 218 | 219 | 332.7         |
| 22-Feb  | 201                           | 188 | 193 | 165 | 146 | 128 | 172 | 104 | 93  | 74  | 92  | 122 | 248 | 337 | 339 | 320 | 304 | 230 | 261 | 223 | 250 | 187 | 88  | 26  | 275.7         |
| 23-Feb  | 7                             | 23  | 259 | 247 | 246 | 210 | 248 | 283 | 20  | 67  | 320 | 274 | 302 | 319 | 323 | 308 | 300 | 279 | 164 | 70  | 68  | 248 | 164 | 213 | 281.3         |
| 24-Feb  | 192                           | 188 | 179 | 173 | 160 | 157 | 156 | 150 | 149 | 144 | 141 | 137 | 182 | 192 | 167 | 169 | 165 | 163 | 169 | 163 | 159 | 156 | 155 | 175 | 162.6         |
| 25-Feb  | 180                           | 169 | 164 | 167 | 149 | 144 | 139 | 116 | 134 | 116 | 207 | 234 | 235 | 221 | 210 | 217 | 200 | 199 | 149 | 145 | 138 | 128 | 143 | 137 | 171.6         |
| 26-Feb  | 130                           | 139 | 125 | 134 | 138 | 131 | 130 | 144 | 150 | 155 | 155 | 146 | 118 | 89  | 91  | 77  | 78  | 56  | 28  | 2   | 10  | 40  | 355 | 4   | 107.5         |
| 27-Feb  | 356                           | 344 | 340 | 346 | 342 | 332 | 320 | 331 | 325 | 343 | 346 | 349 | 335 | 343 | 349 | 346 | 355 | 350 | 349 | 344 | 338 | 335 | 338 | 326 | 340.5         |
| 28-Feb  | 278                           | 261 | 222 | 205 | 209 | 226 | 234 | 236 | 274 | 50  | 76  | 349 | 337 | 341 | 320 | 321 | 305 | 311 | 272 | 232 | 214 | 87  | 85  | 150 | 290.5         |
| 309.1 294.4 311.7 241.1 200.5 246.1 283.9 300.8 277.9 352.8 12.7 342.5 327.4 336.5 344.1 318.4 328.8 336.3 323.5 330.6 332.1 13.9 344.7 293.3 |                               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |               |
| Diurnal Average   |                               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |               |

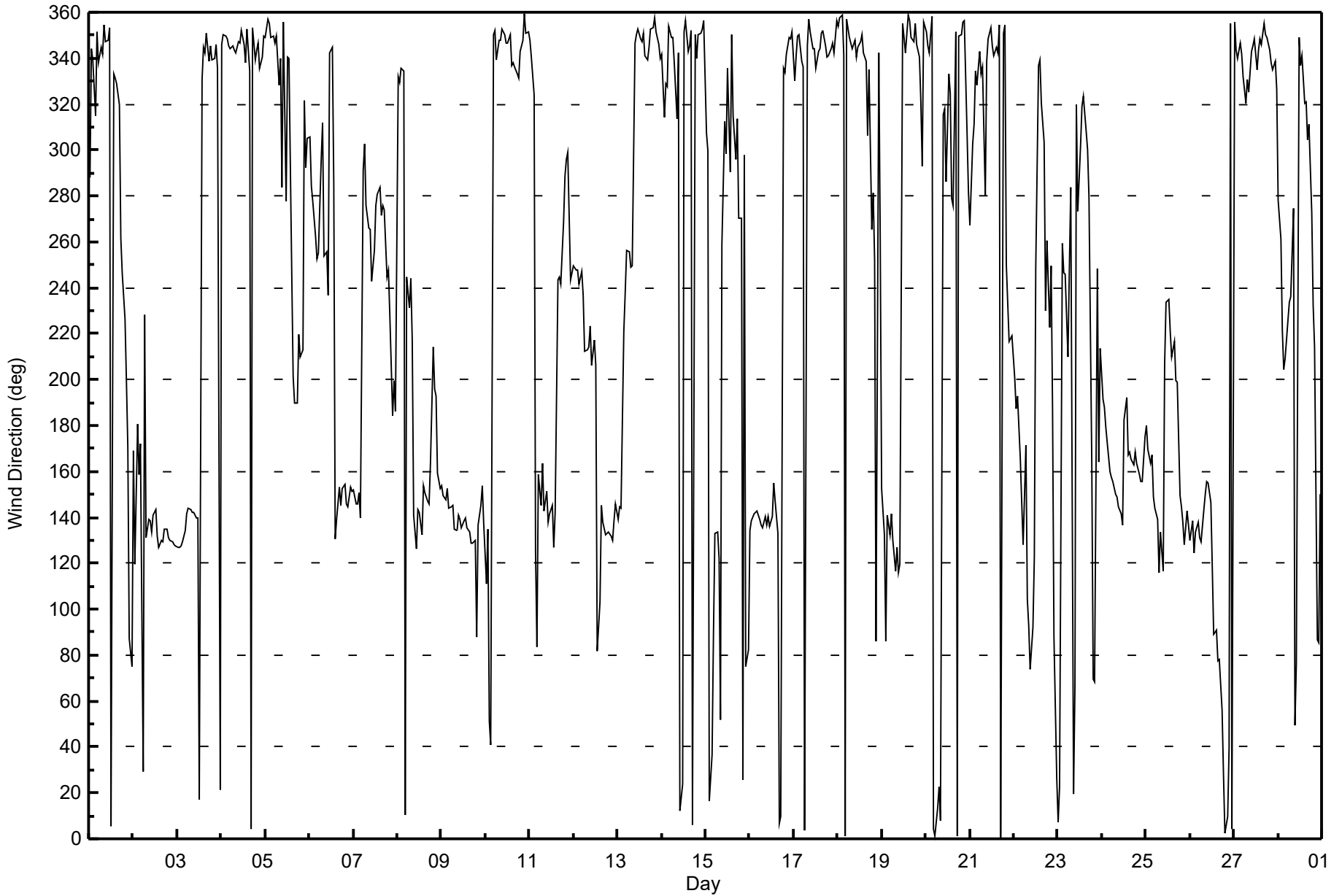
All monthly, daily, and diurnal averages have been calculated using vector methods



**Wood Buffalo Environmental Association**  
**Summary of Hour Standard Deviations**

**Wind Direction (WD) - deg**  
**Athabasca Valley - February 2023**

| Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0<br>Maximum Value: 101 deg on Feb 15 23:00<br>Minimum Value: 8 deg on Feb 8 02:00<br>Percentiles: P <sub>1</sub> = 9 P <sub>10</sub> = 12 Q <sub>1</sub> = 15 Median = 19 Q <sub>3</sub> = 30 P <sub>90</sub> = 66 P <sub>99</sub> = 90 |                               |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |     | Hours in Service: 672<br>Hours of Data: 672<br>Hours of Missing Data: 0<br>Hours of Calibration: 0<br>Percent Operational Time: 100.0 |               |
|--|-------------------------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-----|---|---------------|
| Day  | Hourly Period Ending At (MST) |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |     |   | Daily Maximum |
|  | 1                             | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23  | 24  |               |
| 1-Feb  | 37                            | 17 | 30 | 25 | 29 | 13 | 18 | 13 | 19 | 16 | 17 | 20 | 25 | 15 | 12 | 10 | 13 | 20 | 35 | 28 | 55 | 81 | 99  | 68  | 99            |
| 2-Feb  | 76                            | 73 | 81 | 63 | 80 | 72 | 89 | 38 | 47 | 21 | 32 | 25 | 19 | 18 | 15 | 15 | 15 | 15 | 14 | 14 | 12 | 12 | 12  | 11  | 89            |
| 3-Feb  | 11                            | 11 | 11 | 12 | 14 | 14 | 15 | 22 | 19 | 15 | 18 | 18 | 48 | 10 | 17 | 13 | 19 | 10 | 16 | 12 | 20 | 16 | 11  | 30  | 48            |
| 4-Feb  | 51                            | 18 | 18 | 13 | 11 | 13 | 13 | 12 | 12 | 15 | 15 | 19 | 18 | 15 | 17 | 25 | 30 | 19 | 10 | 17 | 20 | 13 | 18  | 17  | 51            |
| 5-Feb  | 17                            | 19 | 20 | 22 | 22 | 16 | 20 | 19 | 44 | 44 | 47 | 74 | 56 | 78 | 87 | 60 | 27 | 33 | 12 | 13 | 13 | 55 | 22  | 9   | 87            |
| 6-Feb  | 10                            | 14 | 15 | 12 | 10 | 26 | 65 | 20 | 10 | 64 | 82 | 47 | 33 | 48 | 26 | 19 | 20 | 15 | 22 | 21 | 18 | 17 | 18  | 14  | 82            |
| 7-Feb  | 15                            | 13 | 14 | 13 | 14 | 81 | 13 | 18 | 14 | 11 | 11 | 16 | 11 | 13 | 14 | 12 | 10 | 9  | 14 | 15 | 12 | 95 | 67  | 77  | 95            |
| 8-Feb  | 9                             | 8  | 9  | 21 | 39 | 36 | 22 | 16 | 74 | 94 | 83 | 22 | 30 | 59 | 49 | 27 | 22 | 40 | 77 | 62 | 23 | 21 | 25  | 19  | 94            |
| 9-Feb  | 17                            | 18 | 22 | 18 | 19 | 18 | 16 | 19 | 20 | 17 | 19 | 19 | 16 | 18 | 14 | 14 | 16 | 19 | 22 | 12 | 32 | 30 | 67  | 69  | 69            |
| 10-Feb   | 56                            | 51 | 74 | 51 | 24 | 22 | 14 | 16 | 16 | 27 | 18 | 17 | 16 | 19 | 14 | 12 | 9  | 9  | 12 | 14 | 15 | 19 | 17  | 22  | 74            |
| 11-Feb   | 19                            | 27 | 41 | 80 | 55 | 25 | 16 | 23 | 26 | 22 | 20 | 19 | 9  | 20 | 47 | 21 | 13 | 12 | 13 | 11 | 12 | 85 | 77  | 11  | 85            |
| 12-Feb   | 12                            | 11 | 23 | 73 | 11 | 43 | 33 | 22 | 22 | 11 | 17 | 16 | 21 | 31 | 35 | 14 | 12 | 20 | 15 | 16 | 15 | 16 | 13  | 11  | 73            |
| 13-Feb   | 13                            | 12 | 19 | 45 | 14 | 12 | 12 | 11 | 13 | 28 | 21 | 21 | 20 | 19 | 22 | 14 | 13 | 18 | 20 | 20 | 20 | 20 | 19  | 16  | 45            |
| 14-Feb   | 14                            | 15 | 16 | 28 | 19 | 17 | 16 | 10 | 11 | 15 | 23 | 31 | 20 | 21 | 12 | 14 | 18 | 19 | 19 | 12 | 17 | 14 | 16  | 24  | 31            |
| 15-Feb   | 27                            | 30 | 39 | 63 | 89 | 26 | 22 | 38 | 87 | 84 | 83 | 23 | 47 | 31 | 58 | 29 | 76 | 39 | 24 | 75 | 30 | 42 | 101 | 67  | 101           |
| 16-Feb   | 29                            | 20 | 13 | 17 | 15 | 21 | 19 | 17 | 18 | 20 | 15 | 15 | 15 | 14 | 15 | 79 | 48 | 28 | 14 | 8  | 15 | 18 | 18  | 19  | 79            |
| 17-Feb   | 11                            | 14 | 17 | 16 | 16 | 19 | 19 | 23 | 21 | 18 | 14 | 14 | 10 | 14 | 15 | 18 | 18 | 16 | 10 | 11 | 14 | 16 | 13  | 17  | 23            |
| 18-Feb   | 17                            | 19 | 19 | 14 | 20 | 19 | 20 | 17 | 14 | 14 | 13 | 14 | 16 | 16 | 14 | 17 | 21 | 14 | 54 | 62 | 23 | 89 | 95  | 88  | 95            |
| 19-Feb   | 80                            | 42 | 52 | 25 | 18 | 17 | 22 | 24 | 19 | 34 | 39 | 30 | 19 | 39 | 30 | 18 | 19 | 17 | 19 | 18 | 20 | 37 | 38  | 18  | 80            |
| 20-Feb   | 18                            | 16 | 11 | 17 | 23 | 18 | 25 | 51 | 36 | 15 | 18 | 28 | 27 | 14 | 50 | 21 | 36 | 20 | 14 | 17 | 23 | 60 | 17  | 24  | 60            |
| 21-Feb   | 28                            | 34 | 22 | 20 | 23 | 20 | 22 | 23 | 25 | 20 | 17 | 22 | 17 | 22 | 16 | 12 | 19 | 20 | 22 | 19 | 20 | 24 | 45  | 41  | 45            |
| 22-Feb   | 52                            | 46 | 66 | 66 | 77 | 84 | 78 | 78 | 69 | 73 | 35 | 59 | 94 | 22 | 13 | 16 | 12 | 31 | 34 | 85 | 85 | 93 | 86  | 62  | 94            |
| 23-Feb   | 72                            | 62 | 27 | 17 | 32 | 77 | 78 | 58 | 76 | 28 | 68 | 39 | 34 | 20 | 63 | 25 | 19 | 33 | 87 | 68 | 84 | 74 | 65  | 33  | 87            |
| 24-Feb   | 20                            | 18 | 21 | 20 | 22 | 22 | 17 | 18 | 22 | 12 | 11 | 13 | 73 | 23 | 18 | 13 | 13 | 14 | 15 | 15 | 15 | 14 | 13  | 17  | 73            |
| 25-Feb   | 17                            | 42 | 45 | 48 | 14 | 8  | 13 | 29 | 33 | 23 | 60 | 18 | 20 | 79 | 26 | 23 | 21 | 19 | 28 | 17 | 19 | 33 | 82  | 28  | 82            |
| 26-Feb   | 19                            | 21 | 22 | 23 | 24 | 19 | 17 | 18 | 14 | 16 | 12 | 17 | 42 | 18 | 20 | 20 | 13 | 24 | 27 | 16 | 19 | 29 | 16  | 19  | 42            |
| 27-Feb   | 18                            | 14 | 13 | 18 | 12 | 10 | 8  | 9  | 9  | 16 | 17 | 17 | 18 | 18 | 17 | 16 | 19 | 19 | 19 | 14 | 11 | 9  | 11  | 34  | 34            |
| 28-Feb   | 32                            | 26 | 27 | 55 | 89 | 87 | 52 | 21 | 41 | 50 | 43 | 21 | 10 | 19 | 8  | 10 | 24 | 12 | 14 | 52 | 45 | 82 | 22  | 57  | 89            |
| 80 73 81 80 89 87 89 78 87 94 83 74 94 79 87 79 76 40 87 85 85 95 101 88   |                               |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |     |   |               |
| Diurnal Maximum  |                               |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |     |   |               |





## WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY  
MONITORING PROGRAM  
MONTHLY REPORT

### **AMS08 FORT CHIPEWYAN FEBRUARY 2023**

Operations, Data Collection,  
QA/QC, Data Validation and Reporting by:  
Wood Buffalo Environmental Association  
Fort McMurray, Alberta

March 31, 2023

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - FORT CHIPEWYAN (AMS08)

FEBRUARY 2023

MONTHLY SUMMARY

| Parameter                             | Hours of Data | Hours of Calibration | Hours without Data | Operational Time | Maximum 1-Hour Value | 1-Hour Exceedances | Maximum 24-Hour Value | 24-Hour Exceedances |
|---------------------------------------|---------------|----------------------|--------------------|------------------|----------------------|--------------------|-----------------------|---------------------|
| SO2(ppb) Average                      | 630           | 31                   | 42                 | 98.36            | 4                    | 0                  | 1.9                   | 0                   |
| TRS (ppb) Average                     | 637           | 33                   | 35                 | 99.7             | 0.6                  | 0                  | 0.3                   | 0                   |
| O3(ppb) Average                       | 641           | 31                   | 31                 | 100              | 44.7                 | 0                  | 40.9                  | -                   |
| NO2(ppb) Average                      | 636           | 33                   | 36                 | 99.55            | 33.6                 | 0                  | 7.8                   | -                   |
| NO(ppb) Average                       | 636           | 33                   | 36                 | 99.55            | 13.1                 | -                  | 2.2                   | -                   |
| NOX(ppb) Average                      | 636           | 33                   | 36                 | 99.55            | 43.3                 | -                  | 10.1                  | -                   |
| PM2.5(ug/m3) Average                  | 670           | 2                    | 2                  | 100              | 18.5                 | 0                  | 5.4                   | 0                   |
| CO(ppm) Average                       | 637           | 32                   | 35                 | 99.55            | 0.1                  | 0                  | 0.1                   | -                   |
| CO2(ppm) Average                      | 638           | 31                   | 34                 | 99.55            | 450.5                | -                  | 445                   | -                   |
| Temperature 2 m (C) Average           | 672           | 0                    | 0                  | 100              | -6.6                 | -                  | -10.6                 | -                   |
| Relative Humidity (%) Average         | 672           | 0                    | 0                  | 100              | 95.2                 | -                  | 88.7                  | -                   |
| Wind Speed 10 m (km/h) Average        | 672           | 0                    | 0                  | 100              | 42                   | -                  | 22                    | -                   |
| Wind Direction 10 m (deg) Average     | 672           | 0                    | 0                  | 100              | -                    | -                  | -                     | -                   |
| Leaf Wetness (% of range) Average     | 672           | 0                    | 0                  | 100              | 4.5                  | -                  | 4.2                   | -                   |
| Global Solar Radiation (W/m2) Average | 672           | 0                    | 0                  | 100              | 508.5                | -                  | 134.9                 | -                   |

Note : Operational time includes periods of data collection and instrument calibration

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - FORT CHIPEWYAN (AMS08)  
 FEBRUARY 2023

MONTHLY SUMMARY FOR AIR QUALITY/ METEOROLOGICAL MONITORING MEASUREMENTS

| Parameter                             | Number | Mean   | StnDev | Total | Percentile |       |       |        |       |       |       |
|---------------------------------------|--------|--------|--------|-------|------------|-------|-------|--------|-------|-------|-------|
|                                       |        |        |        |       | Min        | P10   | Q1    | Median | Q3    | P90   | Max   |
| SO2(ppb) Average                      | 630    | 0.21   | 0.5    | -     | 0          | 0     | 0     | 0      | 0.2   | 0.5   | 4     |
| TRS (ppb) Average                     | 637    | 0.19   | 0.1    | -     | 0.1        | 0.1   | 0.2   | 0.2    | 0.2   | 0.2   | 0.6   |
| O3(ppb) Average                       | 641    | 34.89  | 4.1    | -     | 3.4        | 30.9  | 32.6  | 34.8   | 37.6  | 39.8  | 44.7  |
| NO2(ppb) Average                      | 636    | 1.15   | 2.4    | -     | 0          | 0     | 0.3   | 0.6    | 1.1   | 2.1   | 33.6  |
| NO(ppb) Average                       | 636    | 0.18   | 0.9    | -     | 0          | 0     | 0     | 0      | 0.1   | 0.2   | 13.1  |
| NOX(ppb) Average                      | 636    | 1.33   | 3.1    | -     | 0          | 0     | 0.3   | 0.7    | 1.2   | 2.3   | 43.3  |
| PM2.5(ug/m3) Average                  | 670    | 2.16   | 1.7    | -     | 0.4        | 0.7   | 1.1   | 1.7    | 2.6   | 3.9   | 18.5  |
| CO(ppm) Average                       | 637    | 0.03   | 0      | -     | 0          | 0     | 0     | 0      | 0     | 0.1   | 0.1   |
| CO2(ppm) Average                      | 638    | 438.3  | 4.3    | -     | 426.7      | 432   | 436.2 | 438.5  | 441.3 | 443.8 | 450.5 |
| Temperature 2 m (C) Average           | 672    | -20.17 | 6.8    | -     | -34.9      | -30.1 | -25.6 | -19.4  | -15.2 | -10.9 | -6.6  |
| Relative Humidity (%) Average         | 672    | 76.51  | 7.2    | -     | 53.7       | 67.9  | 72.8  | 77.3   | 80.9  | 84.7  | 95.2  |
| Wind Speed 10 m (km/h) Average        | 672    | 13.3   | 7      | -     | 0          | 5     | 8     | 12     | 17    | 25    | 42    |
| Wind Direction 10 m (deg) Average     | 672    | -      | -      | -     | -          | -     | -     | -      | -     | -     | -     |
| Leaf Wetness (% of range) Average     | 672    | 0.45   | 1      | -     | 0          | 0     | 0     | 0      | 0.5   | 1.1   | 4.5   |
| Global Solar Radiation (W/m2) Average | 672    | 75.34  | 128.2  | -     | 0          | 0     | 0     | 0      | 114.3 | 287.5 | 508.5 |

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - FORT CHIPEWYAN (AMS08)  
FEBRUARY 2023

OPERATIONAL NOTES

| Parameter | Period<br>Start   | Period<br>End     | Duration<br>(Hours) | Notes                                  |
|-----------|-------------------|-------------------|---------------------|--|
| SO2       | 08 Feb 2023 09:00 | 08 Feb 2023 17:00 | 9                   | Analyzer Failure - non responsive      |
| SO2       | 28 Feb 2023 16:00 | 28 Feb 2023 17:00 | 2                   | Maintenance - WBEA internal audit      |
| TRS       | 28 Feb 2023 15:00 | 28 Feb 2023 16:00 | 2                   | Maintenance - WBEA internal audit      |
| NO2       | 28 Feb 2023 15:00 | 28 Feb 2023 17:00 | 3                   | Maintenance - WBEA internal audit      |
| CO, CO2   | 03 Feb 2023 12:00 | 03 Feb 2023 14:00 | 3                   | Maintenance - verify daily QA response |

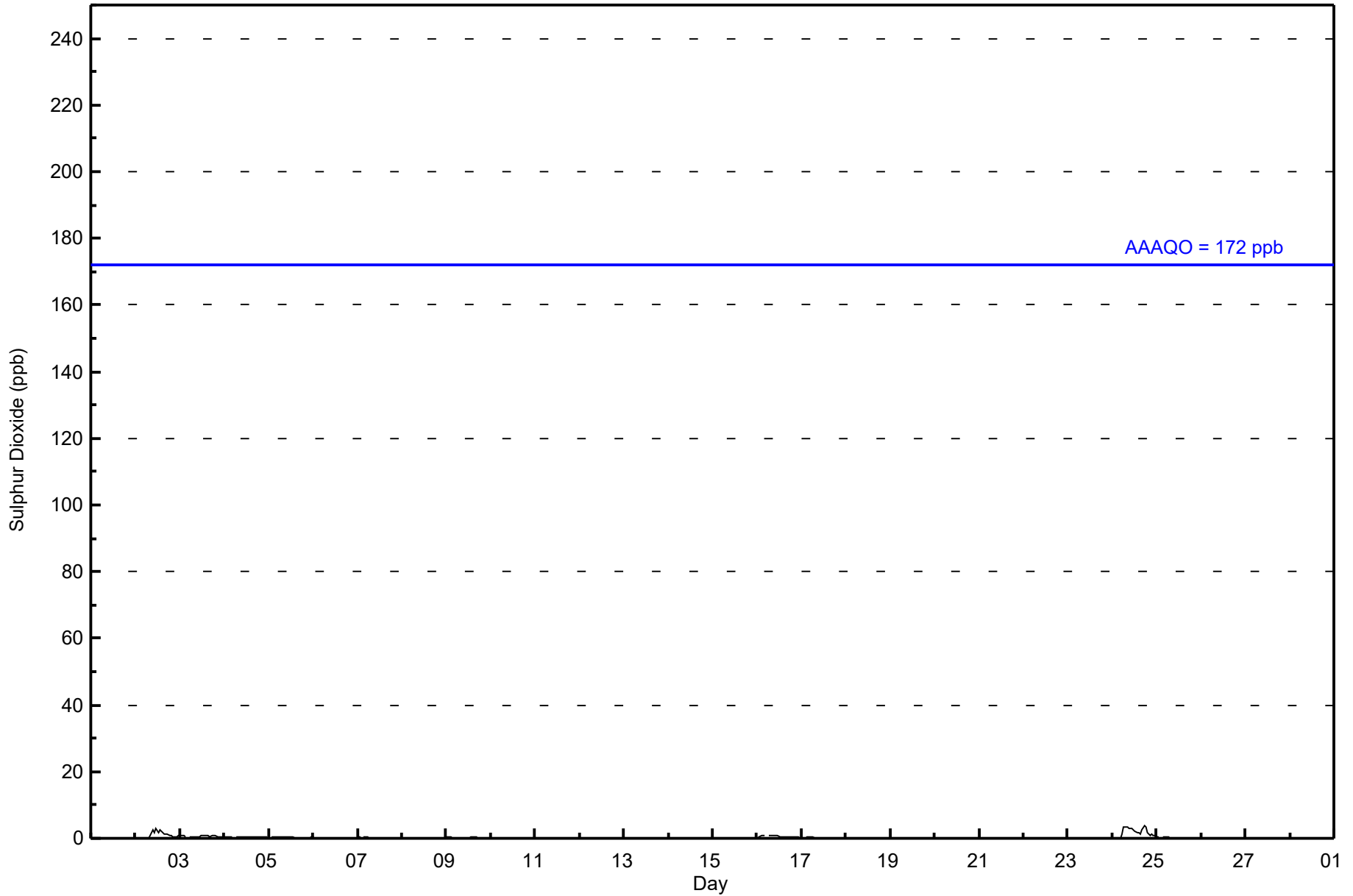






**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Sulphur Dioxide (SO<sub>2</sub>) - ppb**  
**Fort Chipewyan - February 2023**





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Sulphur Dioxide (SO<sub>2</sub>) - ppb**  
**Fort Chipewyan - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 10                            | 630                    | 100.00   | 100.00              |
| 11 - 20                           | 0                      | 0.00     | 100.00              |
| 21 - 60                           | 0                      | 0.00     | 100.00              |
| 61 - 110                          | 0                      | 0.00     | 100.00              |
| 111 - 172                         | 0                      | 0.00     | 100.00              |
| > 172                             | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 630

Total Number of Hours: 672



**Wood Buffalo Environmental Association**  
**Frequency Distribution**

**Sulphur Dioxide (SO<sub>2</sub>) - ppb**  
**Fort Chipewyan - February 2023**

| Concentration<br>Ranges (ppb) | Wind Direction |     |    |     |     |     |    |     |   |     |    |     |    |     |     |     | Totals |
|-------------------------------|----------------|-----|----|-----|-----|-----|----|-----|---|-----|----|-----|----|-----|-----|-----|--------|
|                               | N              | NNE | NE | ENE | E   | ESE | SE | SSE | S | SSW | SW | WSW | W  | WNW | NW  | NNW |        |
| 0 - 10                        | 20             | 14  | 37 | 84  | 111 | 25  | 7  | 12  | 4 | 10  | 17 | 11  | 39 | 82  | 104 | 53  | 630    |
| 11 - 20                       | 0              | 0   | 0  | 0   | 0   | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0   | 0   | 0      |
| 21 - 60                       | 0              | 0   | 0  | 0   | 0   | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0   | 0   | 0      |
| 61 - 110                      | 0              | 0   | 0  | 0   | 0   | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0   | 0   | 0      |
| 111 - 172                     | 0              | 0   | 0  | 0   | 0   | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0   | 0   | 0      |
| > 172                         | 0              | 0   | 0  | 0   | 0   | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0   | 0   | 0      |
| <b>Totals</b>                 | 20             | 14  | 37 | 84  | 111 | 25  | 7  | 12  | 4 | 10  | 17 | 11  | 39 | 82  | 104 | 53  | 630    |

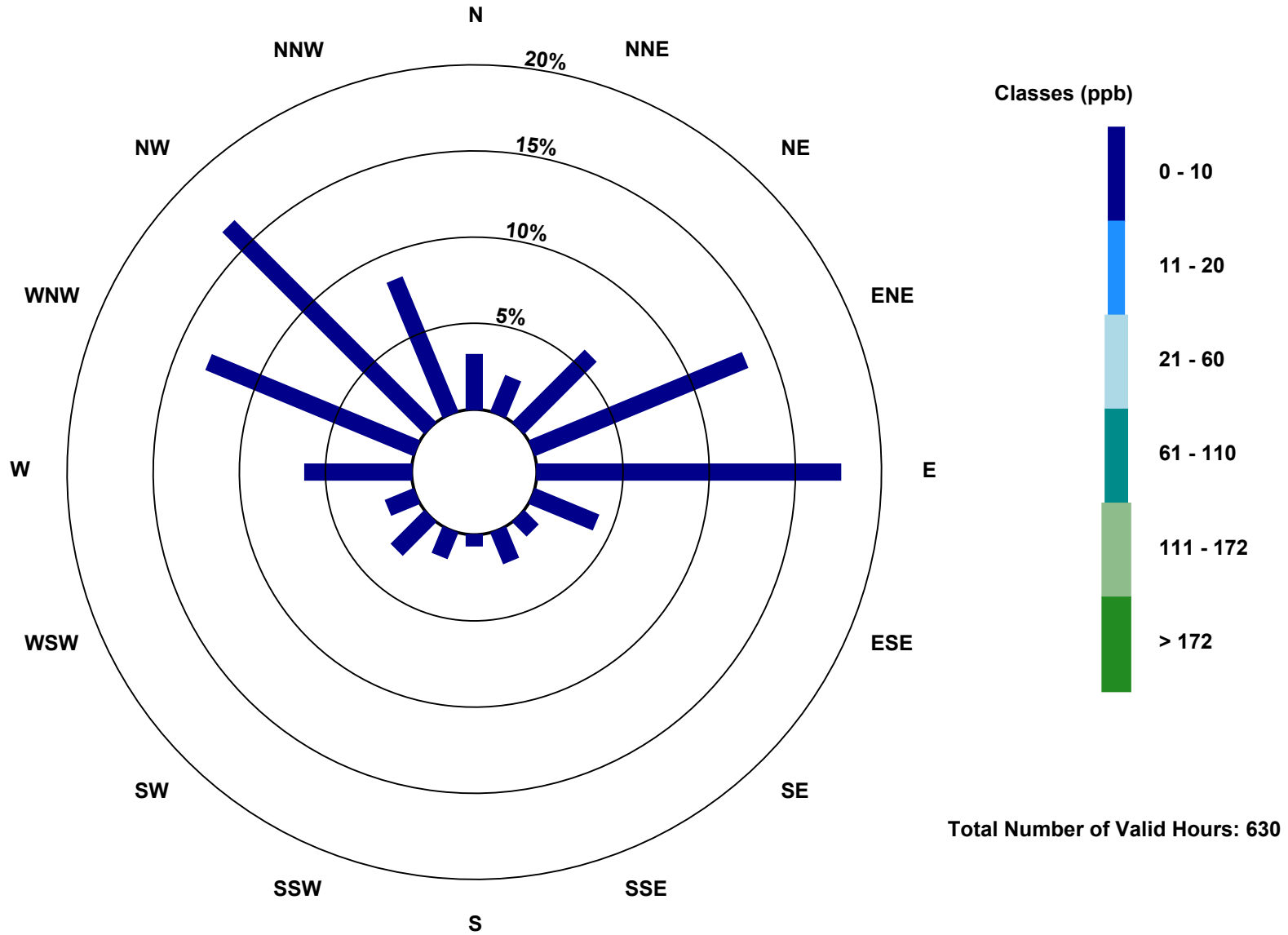
Total Number of Valid Hours: 630

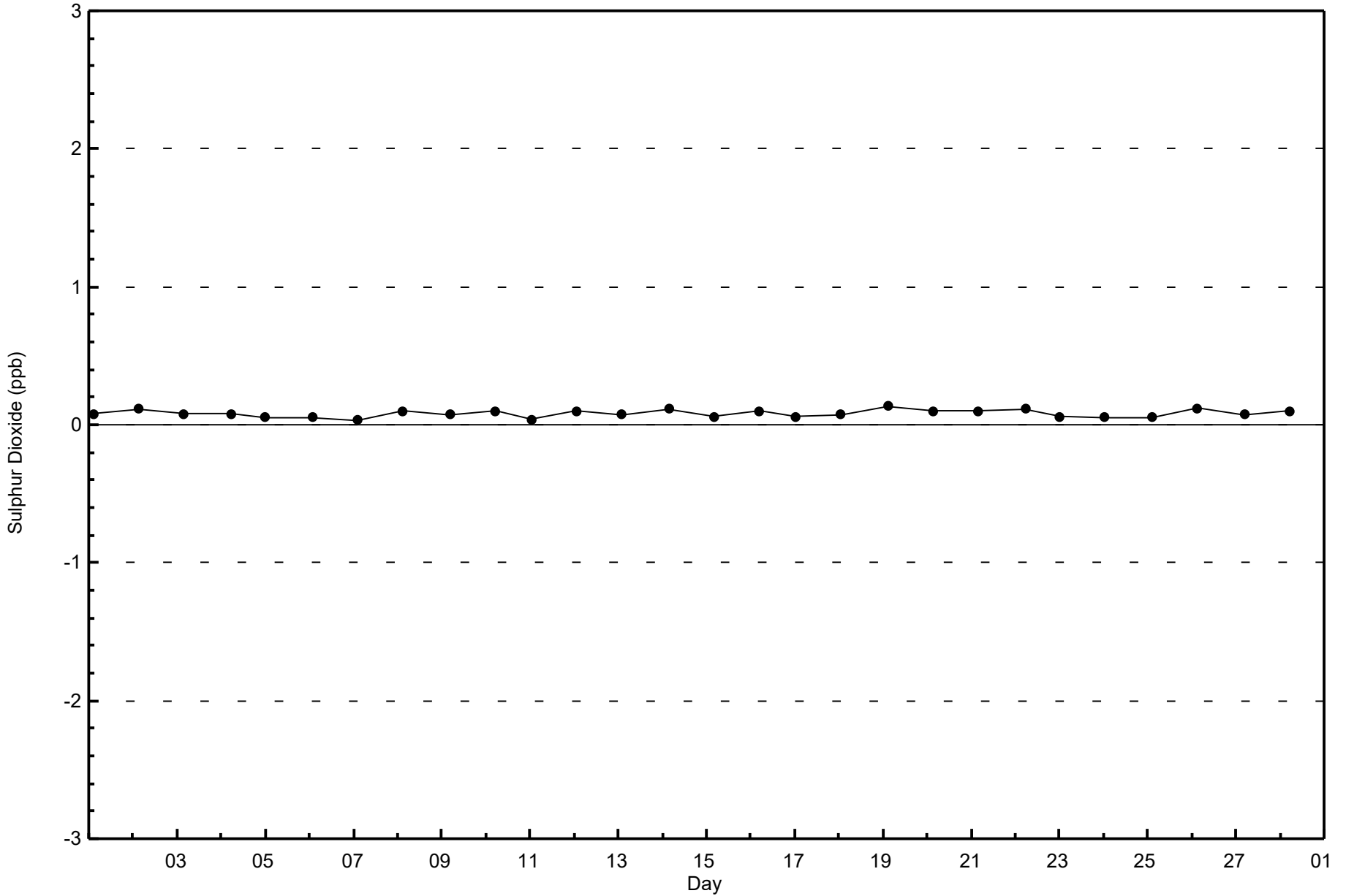
Total Number of Hours: 672

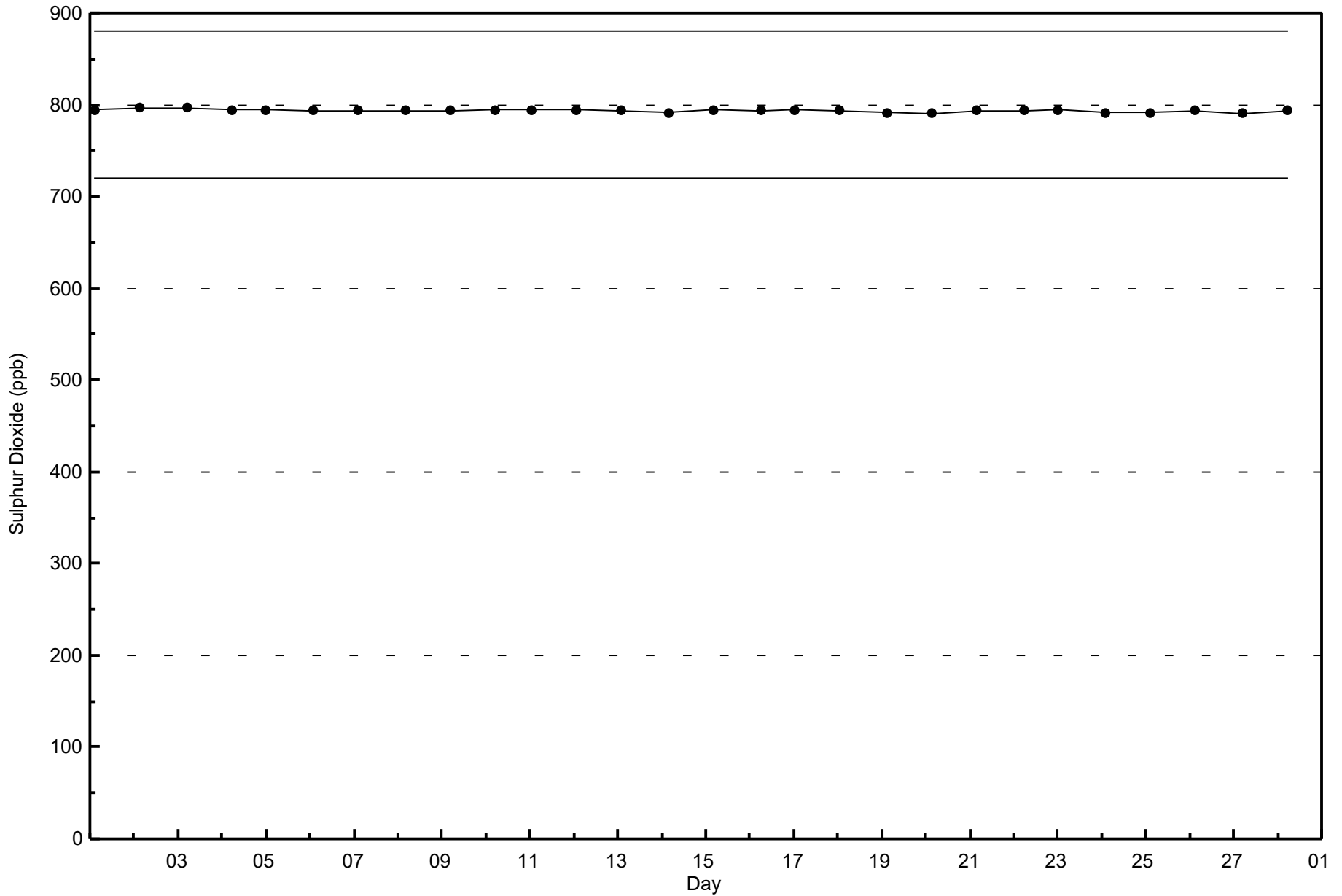


Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Sulphur Dioxide (SO<sub>2</sub>) - ppb  
Fort Chipewyan

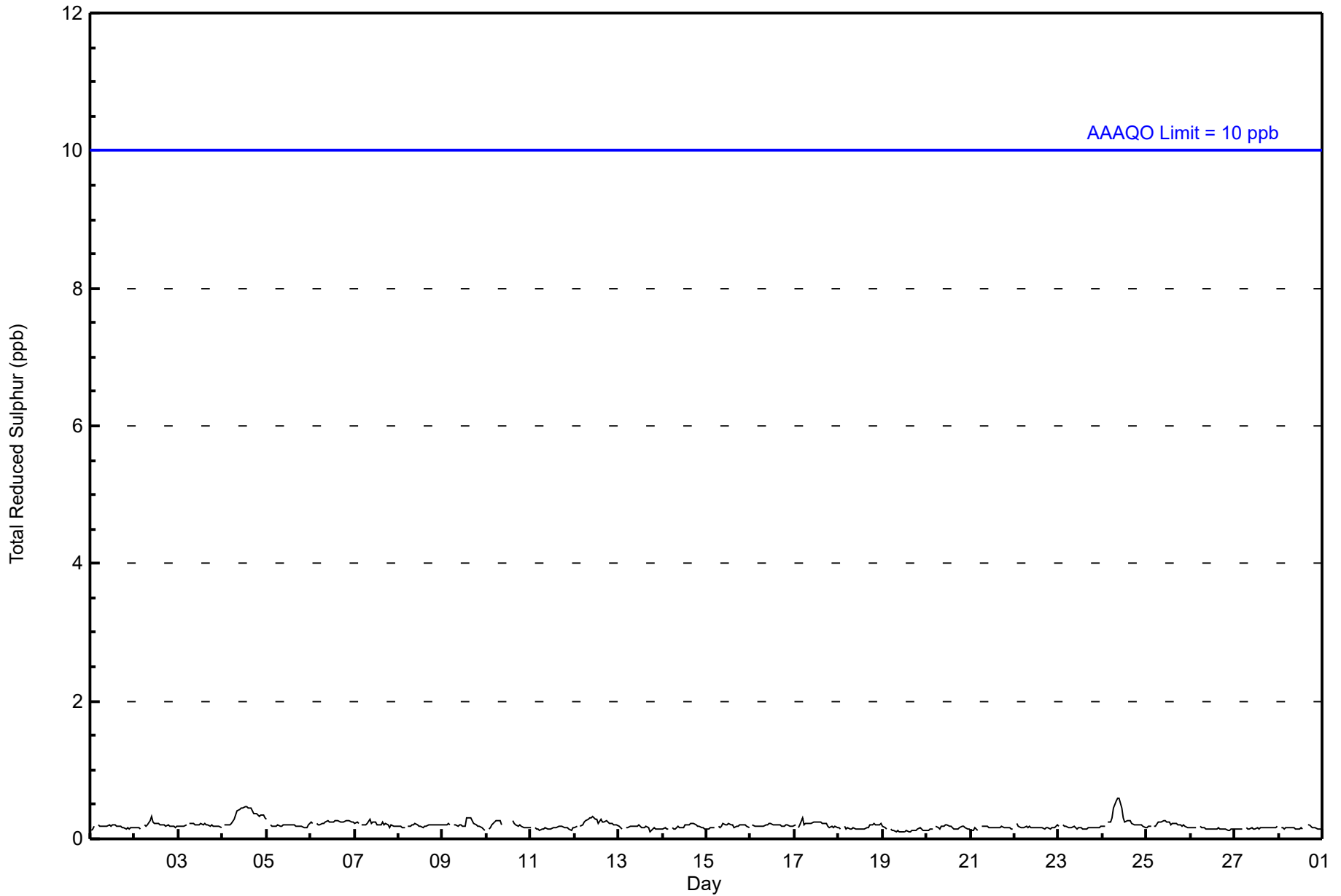














**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Total Reduced Sulphur (TRS) - ppb  
Fort Chipewyan - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 2                             | 637                    | 100.00   | 100.00              |
| 3 - 4                             | 0                      | 0.00     | 100.00              |
| 5 - 7                             | 0                      | 0.00     | 100.00              |
| 8 - 11                            | 0                      | 0.00     | 100.00              |
| > 11                              | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 637

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Total Reduced Sulphur (TRS) - ppb  
Fort Chipewyan - February 2023**

| <b>Concentration<br/>Ranges (ppb)</b> | <b>Wind Direction</b> |            |           |            |          |            |           |            |          |            |           |            |          |            |           |            | <b>Totals</b> |
|---------------------------------------|-----------------------|------------|-----------|------------|----------|------------|-----------|------------|----------|------------|-----------|------------|----------|------------|-----------|------------|---------------|
|                                       | <b>N</b>              | <b>NNE</b> | <b>NE</b> | <b>ENE</b> | <b>E</b> | <b>ESE</b> | <b>SE</b> | <b>SSE</b> | <b>S</b> | <b>SSW</b> | <b>SW</b> | <b>WSW</b> | <b>W</b> | <b>WNW</b> | <b>NW</b> | <b>NNW</b> |               |
| 0 - 2                                 | 19                    | 15         | 35        | 86         | 116      | 23         | 8         | 13         | 4        | 10         | 19        | 10         | 41       | 80         | 105       | 53         | 637           |
| 3 - 4                                 | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0             |
| 5 - 7                                 | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0             |
| 8 - 11                                | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0             |
| > 11                                  | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0             |
| <b>Totals</b>                         | 19                    | 15         | 35        | 86         | 116      | 23         | 8         | 13         | 4        | 10         | 19        | 10         | 41       | 80         | 105       | 53         | 637           |

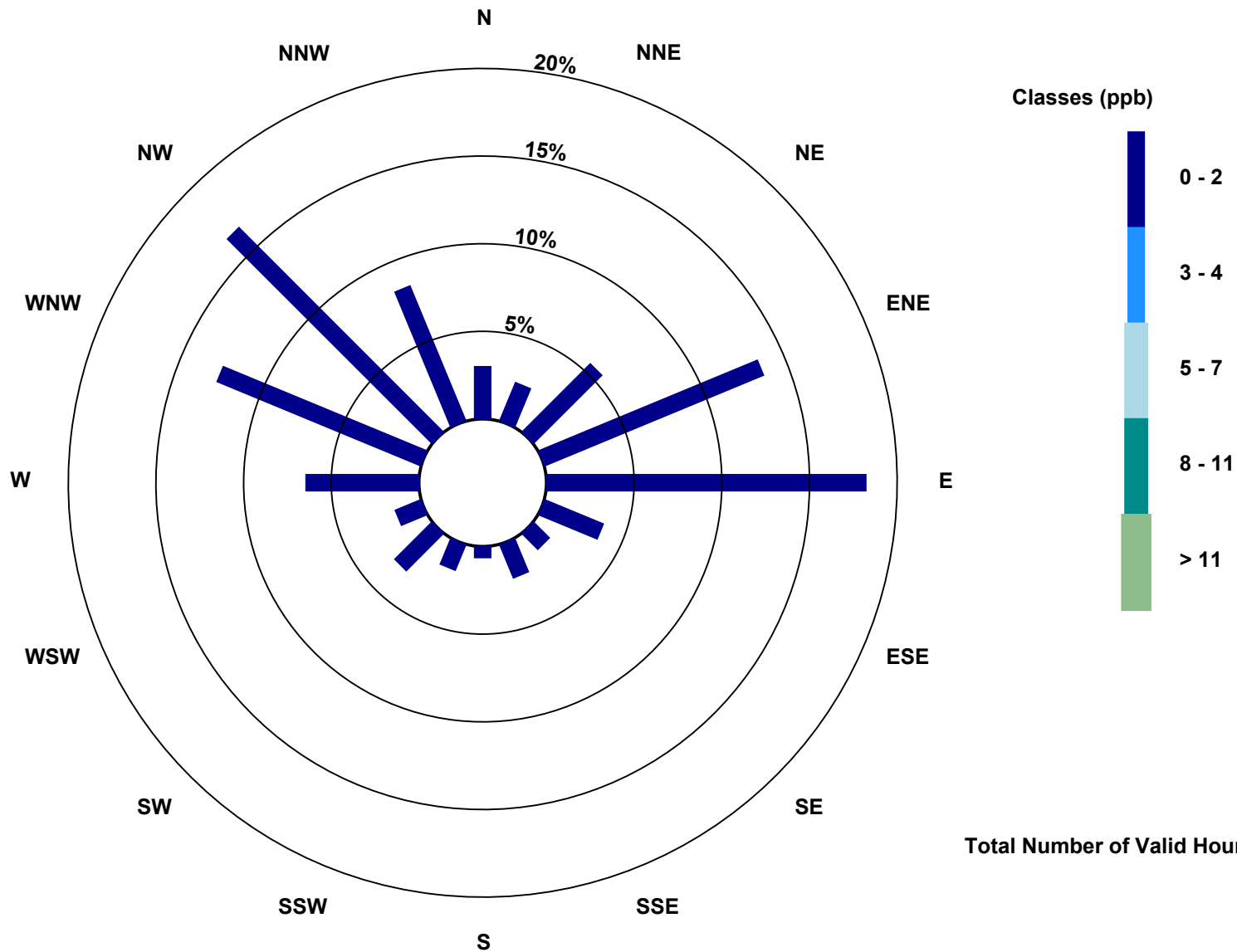
Total Number of Valid Hours: 637

Total Number of Hours: 672



Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Total Reduced Sulphur (TRS) - ppb  
Fort Chipewyan

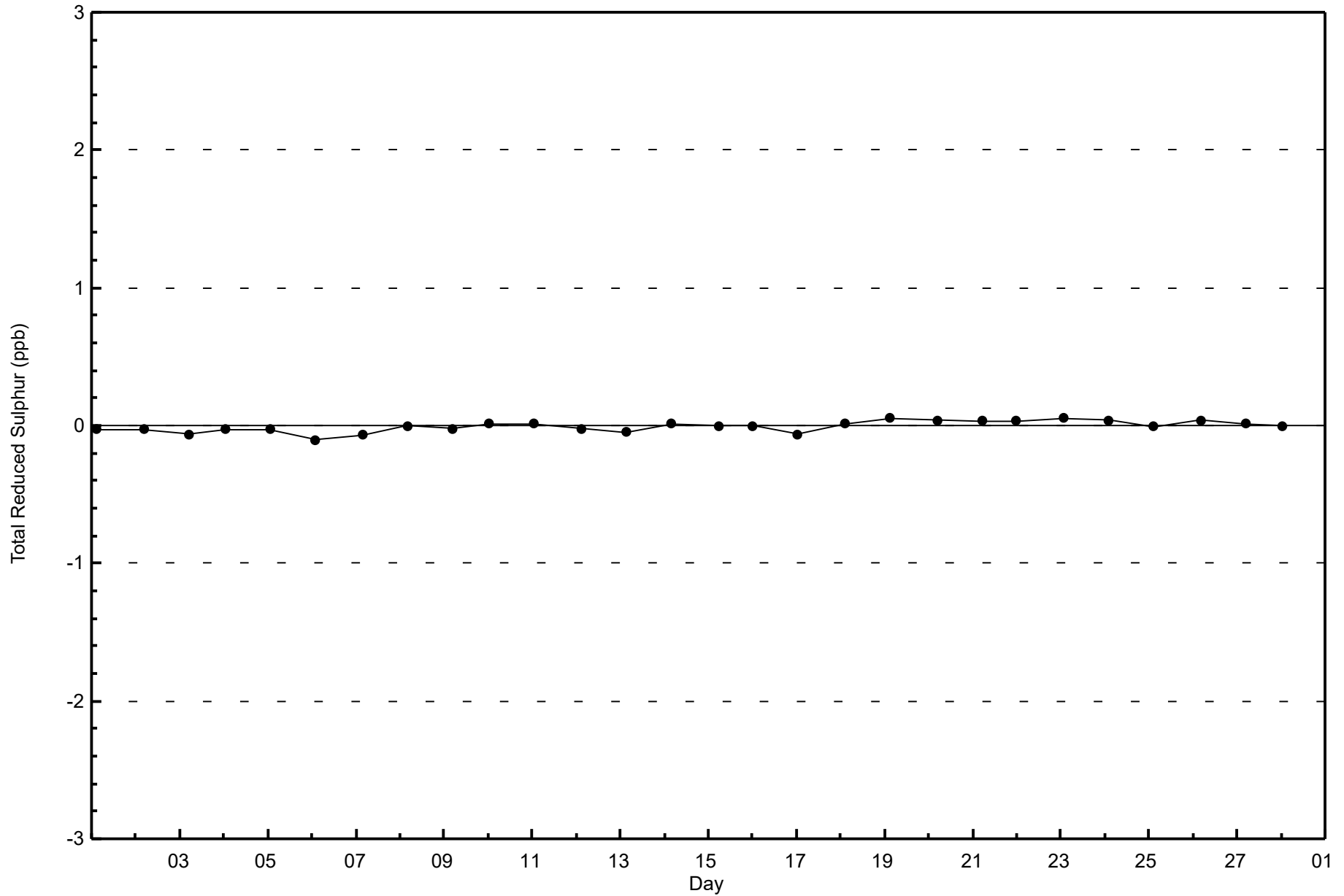


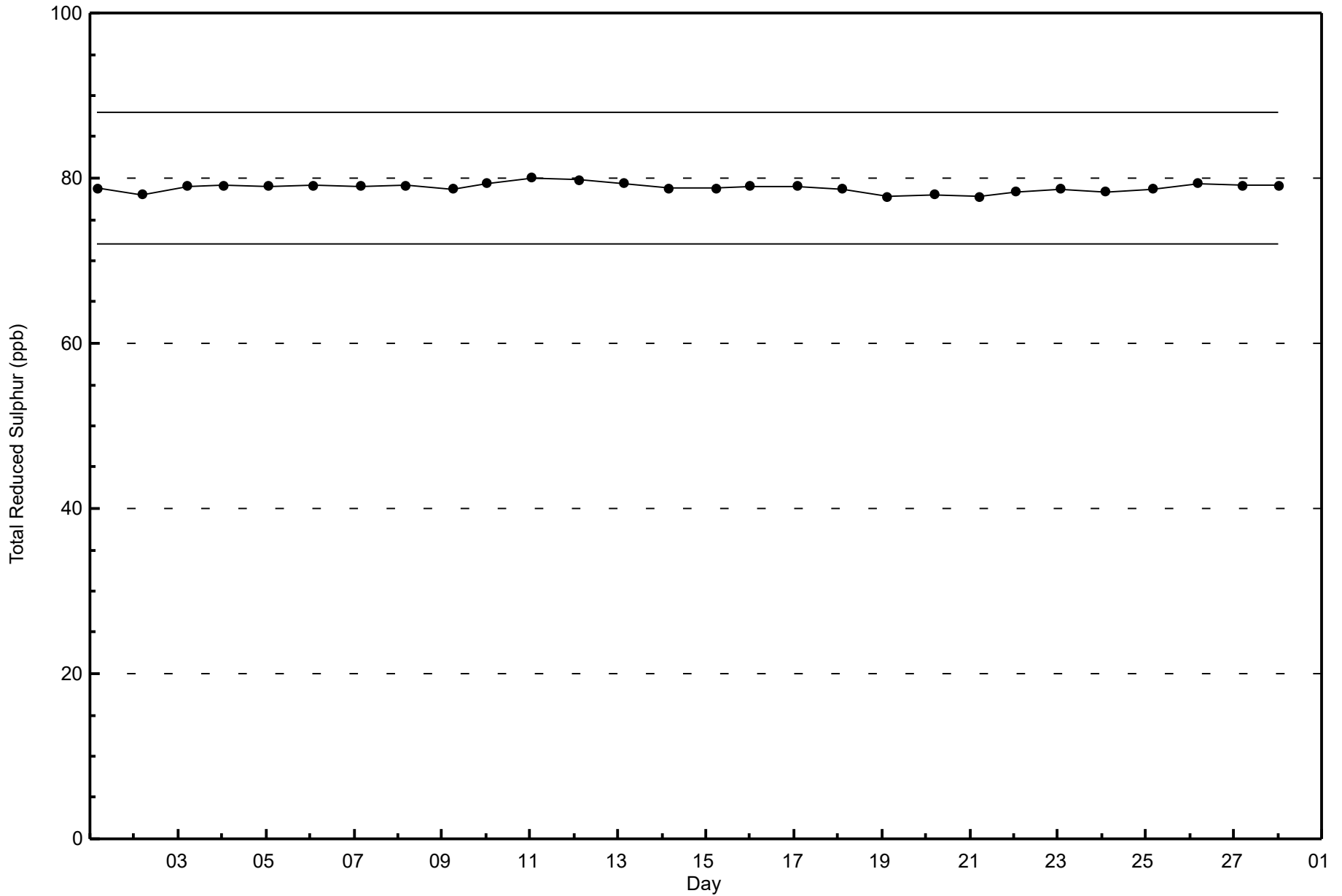
Total Number of Valid Hours: 637



Wood Buffalo Environmental Association  
Zero Responses

Total Reduced Sulphur (TRS) - ppb  
Fort Chipewyan - February 2023



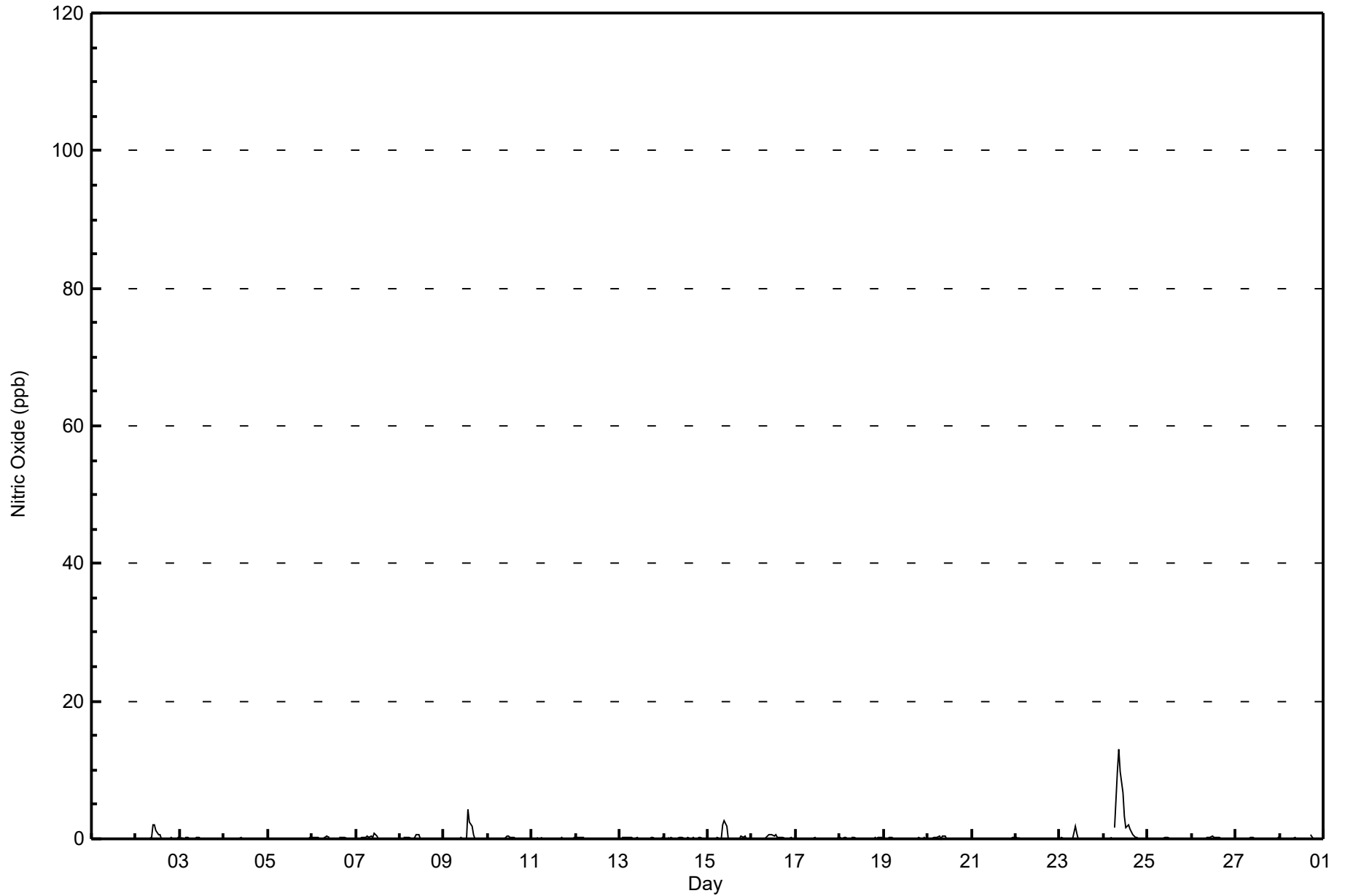






**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Nitric Oxide (NO) - ppb**  
**Fort Chipewyan - February 2023**







**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Nitric Oxide (NO) - ppb**  
**Fort Chipewyan - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 20                            | 636                    | 100.00   | 100.00              |
| 21 - 40                           | 0                      | 0.00     | 100.00              |
| 41 - 80                           | 0                      | 0.00     | 100.00              |
| 81 - 159                          | 0                      | 0.00     | 100.00              |
| > 159                             | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 636

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Nitric Oxide (NO) - ppb  
Fort Chipewyan - February 2023**

| <b>Concentration<br/>Ranges (ppb)</b> | <b>Wind Direction</b> |     |    |     |     |     |    |     |   |     |    |     |    |     |     |     | <b>Totals</b> |
|---------------------------------------|-----------------------|-----|----|-----|-----|-----|----|-----|---|-----|----|-----|----|-----|-----|-----|---------------|
|                                       | N                     | NNE | NE | ENE | E   | ESE | SE | SSE | S | SSW | SW | WSW | W  | WNW | NW  | NNW |               |
| 0 - 20                                | 20                    | 14  | 41 | 87  | 114 | 22  | 6  | 13  | 4 | 10  | 18 | 10  | 40 | 80  | 105 | 52  | 636           |
| 21 - 40                               | 0                     | 0   | 0  | 0   | 0   | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0   | 0   | 0             |
| 11 - 80                               | 0                     | 0   | 0  | 0   | 0   | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0   | 0   | 0             |
| 81 - 159                              | 0                     | 0   | 0  | 0   | 0   | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0   | 0   | 0             |
| > 159                                 | 0                     | 0   | 0  | 0   | 0   | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0   | 0   | 0             |
| <b>Totals</b>                         | 20                    | 14  | 41 | 87  | 114 | 22  | 6  | 13  | 4 | 10  | 18 | 10  | 40 | 80  | 105 | 52  | 636           |

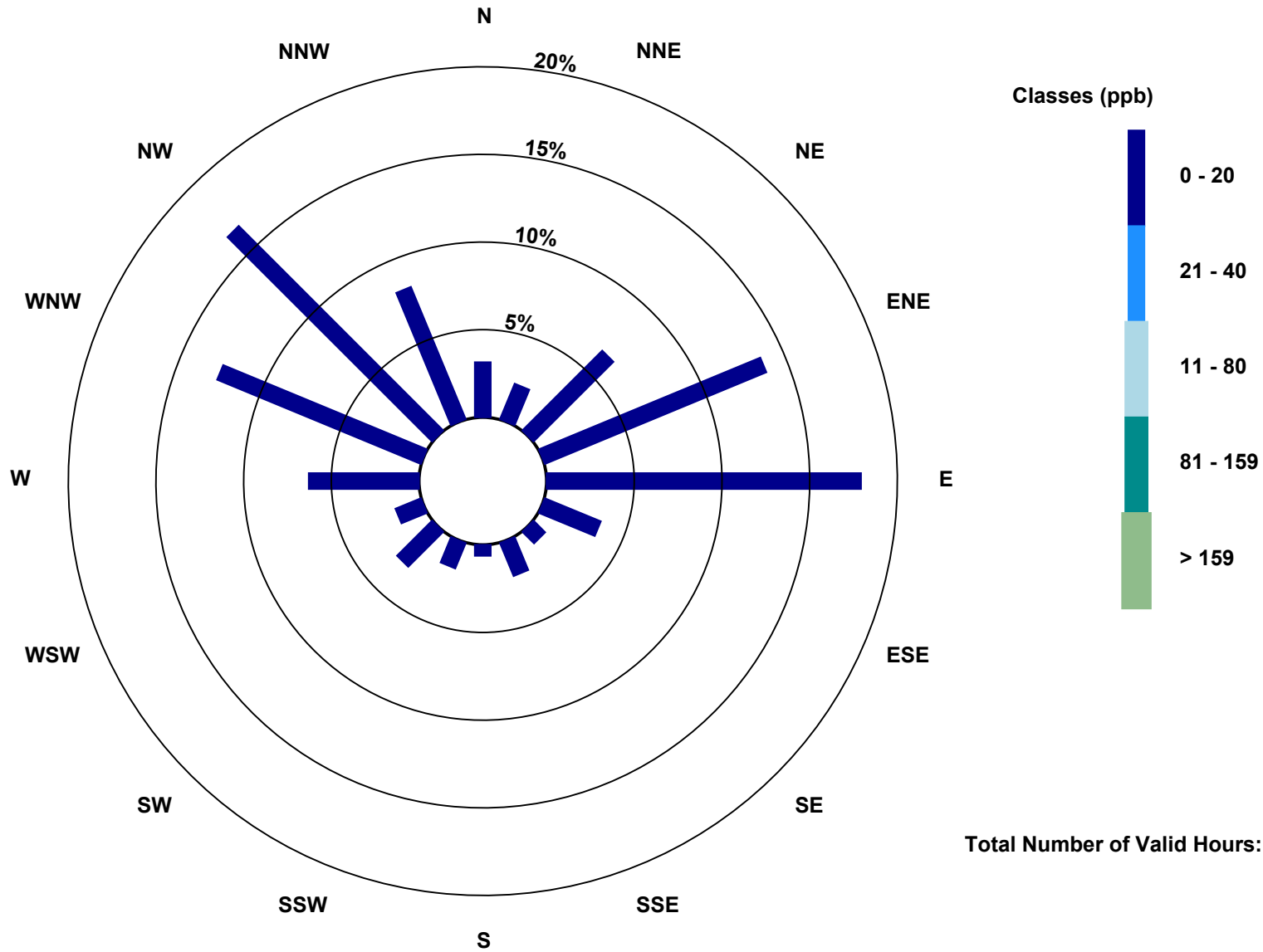
Total Number of Valid Hours: 636

Total Number of Hours: 672

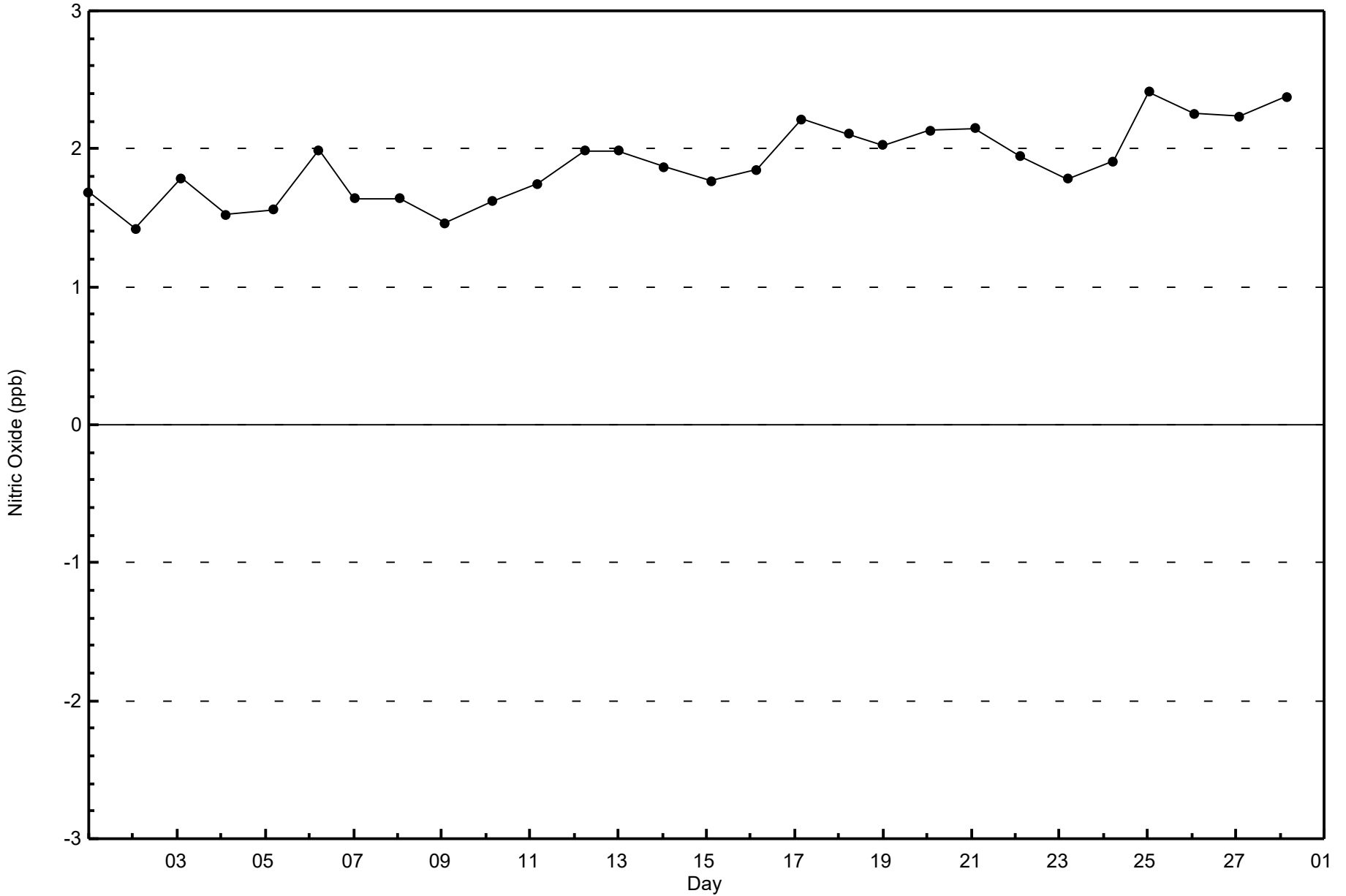


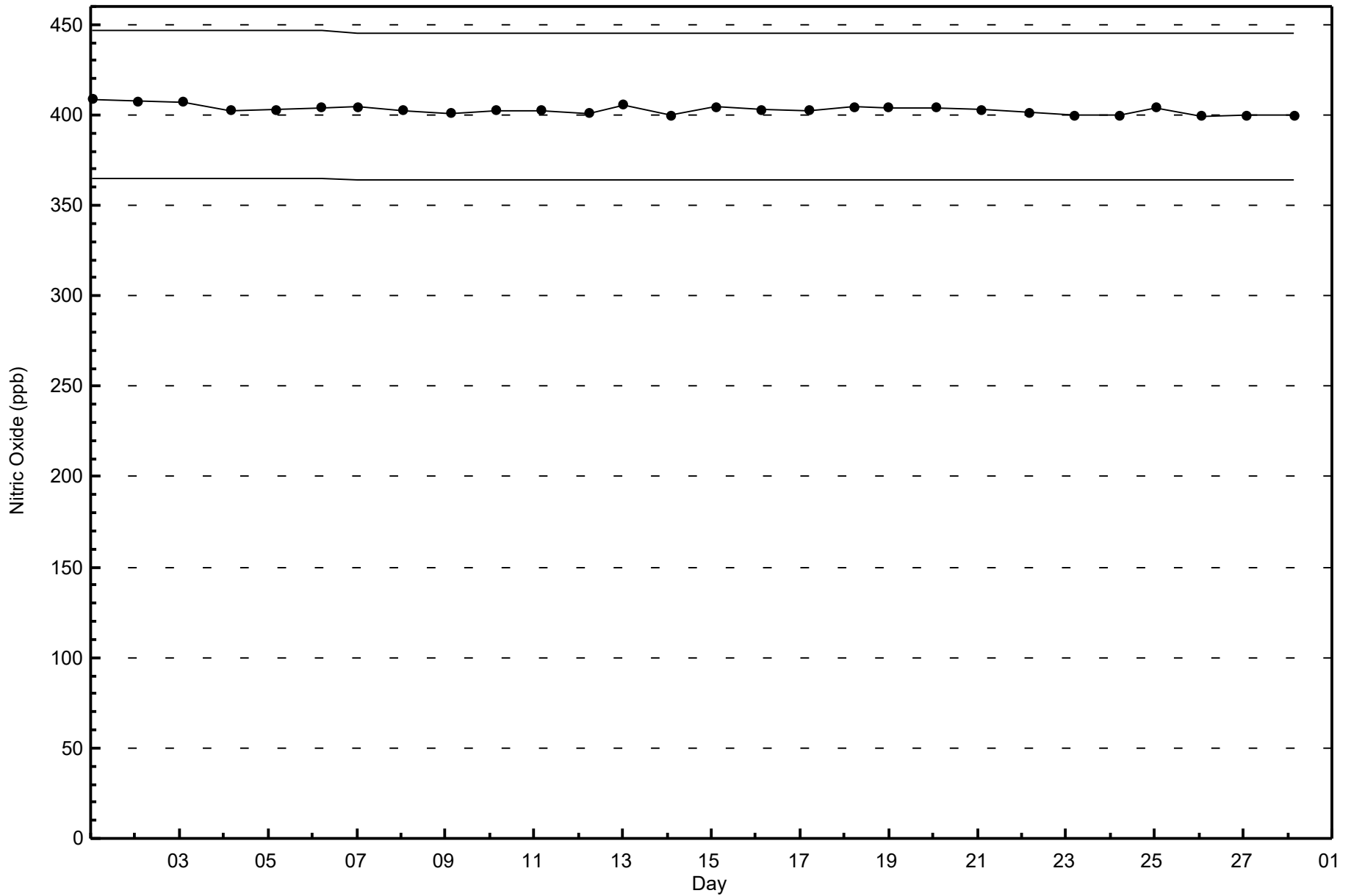
Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Nitric Oxide (NO) - ppb  
Fort Chipewyan



Total Number of Valid Hours: 636







Wood Buffalo Environmental Association

Summary of Hour Averages

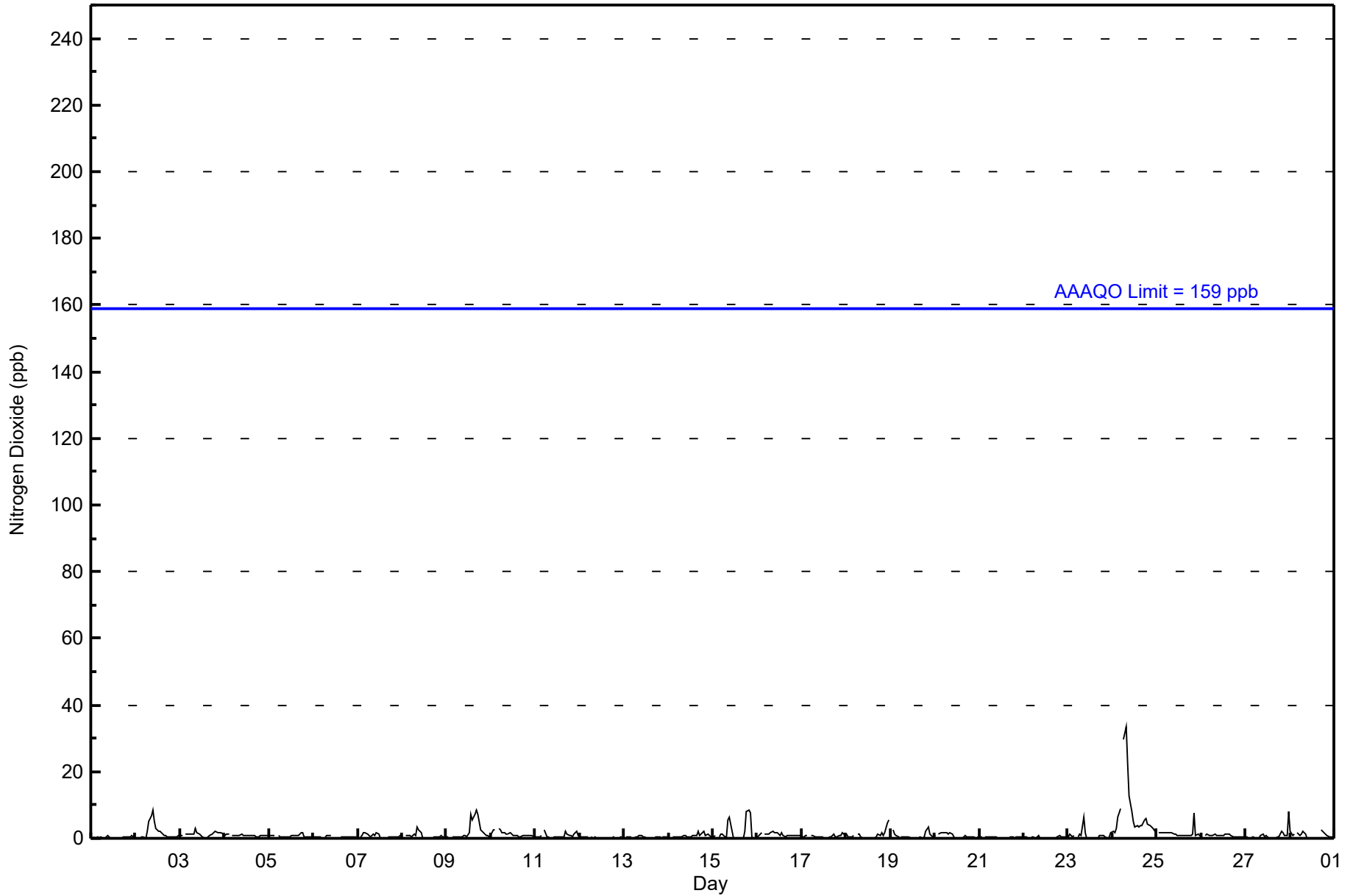
Nitrogen Dioxide (NO<sub>2</sub>) - ppb

Fort Chipewyan - February 2023

|  |  |          |                           |      |
|--|--|----------|---------------------------|------|
| Number of Exceedences (AAAQO):             | 1-hr: 0  | 24-hr: 0 | Hours in Service:         | 672  |
| Maximum Value: 33.6 ppb on Feb 24 08:00    | Maximum Daily Average: 7.8 ppb on Feb 24   |          | Hours of Data:            | 636  |
| Minimum Value: 0.0 ppb on Feb 1 12:00      | Minimum Daily Average: 0.2 ppb on Feb 12   |          | Hours of Missing Data:    | 36   |
| Maximum Diurnal Average: 2.4 ppb at hour 9 | Minimum Diurnal Average: 0.5 ppb at hour 13  |          | Hours of Calibration:     | 33   |
| Monthly Average: 1.15 ppb                  | Percentiles: P <sub>1</sub> = 0.0 P <sub>10</sub> = 0.0 Q <sub>1</sub> = 0.3 Median = 0.6 Q <sub>3</sub> = 1.1 P <sub>90</sub> = 2.1 P <sub>99</sub> = 8.4 |          | Percent Operational Time: | 99.6 |

| Day    | Hourly Period Ending At (MST) |     |     |     |     |     |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |                 | Daily Average | Daily Maximum |
|--------|-------------------------------|-----|-----|-----|-----|-----|------|------|------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----------------|---------------|---------------|
|        | 1                             | 2   | 3   | 4   | 5   | 6   | 7    | 8    | 9    | 10   | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19  | 20  | 21  | 22  | 23  | 24              |               |               |
| 1-Feb  | Z                             | 0.4 | 0.2 | 0.3 | 0.2 | 0.3 | 0.2  | 0.2  | 0.5  | 0.8  | 0.2 | 0.0 | 0.0 | 0.0 | 0.2 | 0.0 | 0.0 | 0.6 | 0.3 | 0.6 | 0.4 | 0.5 | 0.8 | 0.2             | 0.3           | 0.8           |
| 2-Feb  | 0.2                           | Z   | 0.2 | 0.6 | 0.3 | 0.2 | 2.3  | 5.1  | 6.8  | 8.5  | 4.9 | 2.8 | 2.0 | 2.1 | 1.7 | 0.9 | 0.8 | 0.5 | 0.4 | 0.6 | 0.5 | 0.5 | 0.6 | 0.8             | 1.9           | 8.5           |
| 3-Feb  | 0.8                           | 1.0 | Z   | 1.2 | 1.2 | 1.2 | 1.4  | 1.1  | 3.1  | 1.5  | 1.4 | 1.0 | 0.6 | 0.0 | 0.5 | 0.9 | 1.3 | 1.7 | 2.1 | 1.8 | 1.8 | 1.5 | 1.1 | 1.2             | 3.1           |               |
| 4-Feb  | 1.0                           | 1.1 | 1.2 | Z   | 1.0 | 0.9 | 0.8  | 0.9  | 0.9  | 1.1  | 0.8 | 0.7 | 0.7 | 0.8 | 0.9 | 1.0 | 0.7 | 0.6 | 0.6 | 0.8 | 0.7 | 0.9 | 0.9 | 1.0             | 0.9           | 1.2           |
| 5-Feb  | 1.0                           | 1.0 | 0.8 | 0.9 | Z   | 0.7 | 0.5  | 0.6  | 0.6  | 0.6  | 0.5 | 0.6 | 0.7 | 0.7 | 0.9 | 1.0 | 0.9 | 1.8 | 1.9 | 0.4 | 0.5 | 0.5 | 0.5 | 0.5             | 0.8           | 1.9           |
| 6-Feb  | 0.5                           | 0.5 | 0.4 | 0.4 | 0.4 | Z   | 0.6  | 0.7  | 0.7  | 0.7  | C   | C   | C   | C   | C   | 0.5 | 0.4 | 0.5 | 0.4 | 0.5 | 0.4 | 0.4 | 0.4 | 0.6             | 0.5           | 0.7           |
| 7-Feb  | Z                             | 0.6 | 0.7 | 1.5 | 1.7 | 1.1 | 0.7  | 0.6  | 1.3  | 0.7  | 1.7 | 1.2 | 0.2 | 0.0 | 0.0 | 0.2 | 0.5 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.4 | 0.9             | 0.7           | 1.7           |
| 8-Feb  | 0.4                           | Z   | 0.9 | 0.8 | 0.8 | 0.5 | 1.1  | 1.0  | 3.4  | 2.4  | 1.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.4 | 0.4 | 0.5 | 0.5 | 0.7 | 0.4 | 0.3             | 0.7           | 3.4           |
| 9-Feb  | 0.6                           | 0.6 | Z   | 0.5 | 0.4 | 0.4 | 0.4  | 0.4  | 0.4  | 0.7  | 0.9 | 0.4 | 1.6 | 7.3 | 5.7 | 7.0 | 8.6 | 7.1 | 2.5 | 2.2 | 1.8 | 0.8 | 0.7 | 0.5             | 2.2           | 8.6           |
| 10-Feb | 1.9                           | 2.5 | 2.6 | Z   | 3.1 | 2.5 | 1.6  | 1.7  | 1.4  | 1.2  | 1.6 | 1.2 | 0.7 | 1.0 | 1.0 | 0.6 | 0.5 | 0.8 | 0.8 | 0.8 | 0.8 | 0.7 | 0.7 | 0.6             | 1.3           | 3.1           |
| 11-Feb | 0.6                           | 0.6 | 0.5 | 0.7 | Z   | 2.7 | 0.3  | 0.3  | 0.2  | 0.2  | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.5 | 2.0 | 1.2 | 0.7 | 0.7 | 0.6 | 1.1 | 2.1 | 1.0             | 0.8           | 2.7           |
| 12-Feb | 0.6                           | 0.5 | 0.4 | 0.4 | 0.4 | Z   | 0.3  | 0.2  | 0.3  | 0.2  | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 | 0.2 | 0.3 | 0.1 | 0.1 | 0.2 | 0.4 | 0.6             | 0.2           | 0.6           |
| 13-Feb | Z                             | 0.6 | 0.4 | 0.4 | 0.2 | 0.2 | 0.5  | 0.4  | 0.7  | 1.0  | 0.4 | 0.3 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.3 | 0.3 | 0.4 | 0.2 | 0.3 | 0.3 | 0.3             | 0.3           | 1.0           |
| 14-Feb | 0.3                           | Z   | 0.4 | 0.4 | 0.5 | 0.4 | 0.4  | 0.6  | 1.0  | 1.0  | 0.6 | 0.4 | 0.5 | 0.7 | 0.8 | 0.9 | 2.0 | 0.7 | 1.6 | 2.2 | 1.0 | 1.3 | 1.0 | 0.6             | 0.8           | 2.2           |
| 15-Feb | 0.6                           | 0.8 | Z   | 0.4 | 1.4 | 1.2 | 0.5  | 0.6  | 5.6  | 6.3  | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.3 | 8.1 | 8.3 | 7.6 | 0.4 | 0.2 | 0.2             | 2.0           | 8.3           |
| 16-Feb | 0.4                           | 0.7 | 1.5 | Z   | 1.4 | 1.3 | 1.3  | 1.6  | 2.1  | 1.9  | 1.6 | 1.7 | 0.9 | 1.6 | 0.7 | 0.6 | 0.8 | 1.0 | 0.9 | 0.9 | 1.0 | 1.0 | 0.7 | 0.7             | 1.1           | 2.1           |
| 17-Feb | 0.5                           | 0.4 | 0.7 | 0.7 | Z   | 0.7 | 0.8  | 0.4  | 0.6  | 0.5  | 0.6 | 0.4 | 0.1 | 0.2 | 0.2 | 0.4 | 0.4 | 1.2 | 0.4 | 0.5 | 0.9 | 0.8 | 1.6 | 0.7             | 0.6           | 1.6           |
| 18-Feb | 1.4                           | 0.5 | 0.6 | 0.6 | 0.9 | Z   | 1.2  | 1.2  | 0.6  | 0.1  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.6 | 1.1 | 0.7 | 1.9 | 0.8 | 1.5 | 4.7 | 5.3             | 1.0           | 5.3           |
| 19-Feb | Z                             | 2.5 | 1.1 | 0.7 | 0.4 | 0.2 | 0.3  | 0.3  | 0.6  | 0.4  | 0.4 | 0.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.4 | 0.2 | 0.5 | 2.0 | 3.3 | 1.1 | 1.0 | 0.5             | 0.7           | 3.3           |
| 20-Feb | 0.7                           | Z   | 1.2 | 1.8 | 1.5 | 1.6 | 1.9  | 1.1  | 1.6  | 1.2  | 0.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.7 | 0.5 | 0.6 | 0.5 | 0.3 | 0.3 | 0.2 | 0.3             | 0.7           | 1.9           |
| 21-Feb | 0.3                           | 0.5 | Z   | 0.5 | 0.3 | 0.4 | 0.5  | 0.5  | 0.6  | 0.4  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.3 | 0.5 | 0.2 | 0.3 | 0.5 | 0.4 | 0.4             | 0.3           | 0.6           |
| 22-Feb | 0.4                           | 0.3 | 0.5 | Z   | 0.5 | 0.3 | 0.2  | 0.3  | 0.7  | 0.2  | 0.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.3 | 0.8 | 0.5 | 0.6 | 0.4 | 0.3             | 0.3           | 0.8           |
| 23-Feb | 0.3                           | 1.2 | 0.4 | 0.7 | Z   | 0.6 | 1.1  | 0.8  | 6.2  | 1.9  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.8 | 0.7 | 0.9 | 0.3 | 0.2 | 0.3 | 1.5 | 0.8             | 6.2           |               |
| 24-Feb | 2.2                           | 1.8 | 3.0 | 6.2 | 9.0 | Z   | 29.7 | 33.6 | 22.5 | 12.6 | 8.1 | 4.9 | 3.3 | 3.7 | 3.6 | 3.7 | 4.0 | 5.7 | 5.9 | 4.4 | 4.0 | 3.6 | 2.9 | 1.8             | 7.8           | 33.6          |
| 25-Feb | Z                             | 1.7 | 1.6 | 1.8 | 1.6 | 1.5 | 1.6  | 1.5  | 1.5  | 1.4  | 1.2 | 1.0 | 1.0 | 0.9 | 0.8 | 0.8 | 0.7 | 0.8 | 0.7 | 1.1 | 7.5 | 0.9 | 1.1 | 0.9             | 1.5           | 7.5           |
| 26-Feb | 1.0                           | Z   | 1.0 | 1.4 | 0.8 | 0.9 | 0.9  | 1.1  | 1.0  | 1.0  | 0.9 | 0.9 | 0.8 | 1.3 | 1.2 | 1.4 | 0.8 | 0.6 | 0.4 | 0.4 | 0.3 | 0.3 | 0.3 | 0.3             | 0.8           | 1.4           |
| 27-Feb | 0.3                           | 0.3 | Z   | 0.4 | 0.3 | 0.2 | 0.2  | 0.2  | 1.0  | 1.3  | 0.5 | 0.8 | 0.1 | 0.0 | 0.0 | 0.0 | 0.2 | 0.5 | 0.4 | 2.3 | 1.8 | 1.0 | 0.9 | 8.2             | 0.9           | 8.2           |
| 28-Feb | 2.1                           | 0.7 | 1.4 | Z   | 1.5 | 0.9 | 1.3  | 2.1  | 1.4  | 0.0  | 0.0 | 0.0 | 0.0 | 0.0 | M   | M   | M   | 2.4 | 1.6 | 1.4 | 0.9 | 0.3 | 0.3 | 0.3             | 0.9           | 2.4           |
|        |                               |     |     |     |     |     |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     | Diurnal Average |               |               |
|        |                               |     |     |     |     |     |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     | Diurnal Maximum |               |               |

Z - zerospan      C - Calibration      M - Maintenance  
 Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 159 ppb





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Nitrogen Dioxide (NO<sub>2</sub>) - ppb  
Fort Chipewyan - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 20                            | 633                    | 99.53    | 99.53               |
| 21 - 40                           | 3                      | 0.47     | 100.00              |
| 41 - 80                           | 0                      | 0.00     | 100.00              |
| 81 - 159                          | 0                      | 0.00     | 100.00              |
| > 159                             | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 636

Total Number of Hours: 672





**Wood Buffalo Environmental Association  
Frequency Distribution**

**Nitrogen Dioxide (NO<sub>2</sub>) - ppb  
Fort Chipewyan - February 2023**

| <b>Concentration<br/>Ranges (ppb)</b> | <b>Wind Direction</b> |     |    |     |     |     |    |     |   |     |    |     |    |     |     |     | <b>Totals</b> |
|---------------------------------------|-----------------------|-----|----|-----|-----|-----|----|-----|---|-----|----|-----|----|-----|-----|-----|---------------|
|                                       | N                     | NNE | NE | ENE | E   | ESE | SE | SSE | S | SSW | SW | WSW | W  | WNW | NW  | NNW |               |
| 0 - 20                                | 20                    | 14  | 41 | 87  | 114 | 20  | 5  | 13  | 4 | 10  | 18 | 10  | 40 | 80  | 105 | 52  | 633           |
| 21 - 40                               | 0                     | 0   | 0  | 0   | 0   | 2   | 1  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0   | 0   | 3             |
| 11 - 80                               | 0                     | 0   | 0  | 0   | 0   | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0   | 0   | 0             |
| 81 - 159                              | 0                     | 0   | 0  | 0   | 0   | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0   | 0   | 0             |
| > 159                                 | 0                     | 0   | 0  | 0   | 0   | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0   | 0   | 0             |
| <b>Totals</b>                         | 20                    | 14  | 41 | 87  | 114 | 22  | 6  | 13  | 4 | 10  | 18 | 10  | 40 | 80  | 105 | 52  | 636           |

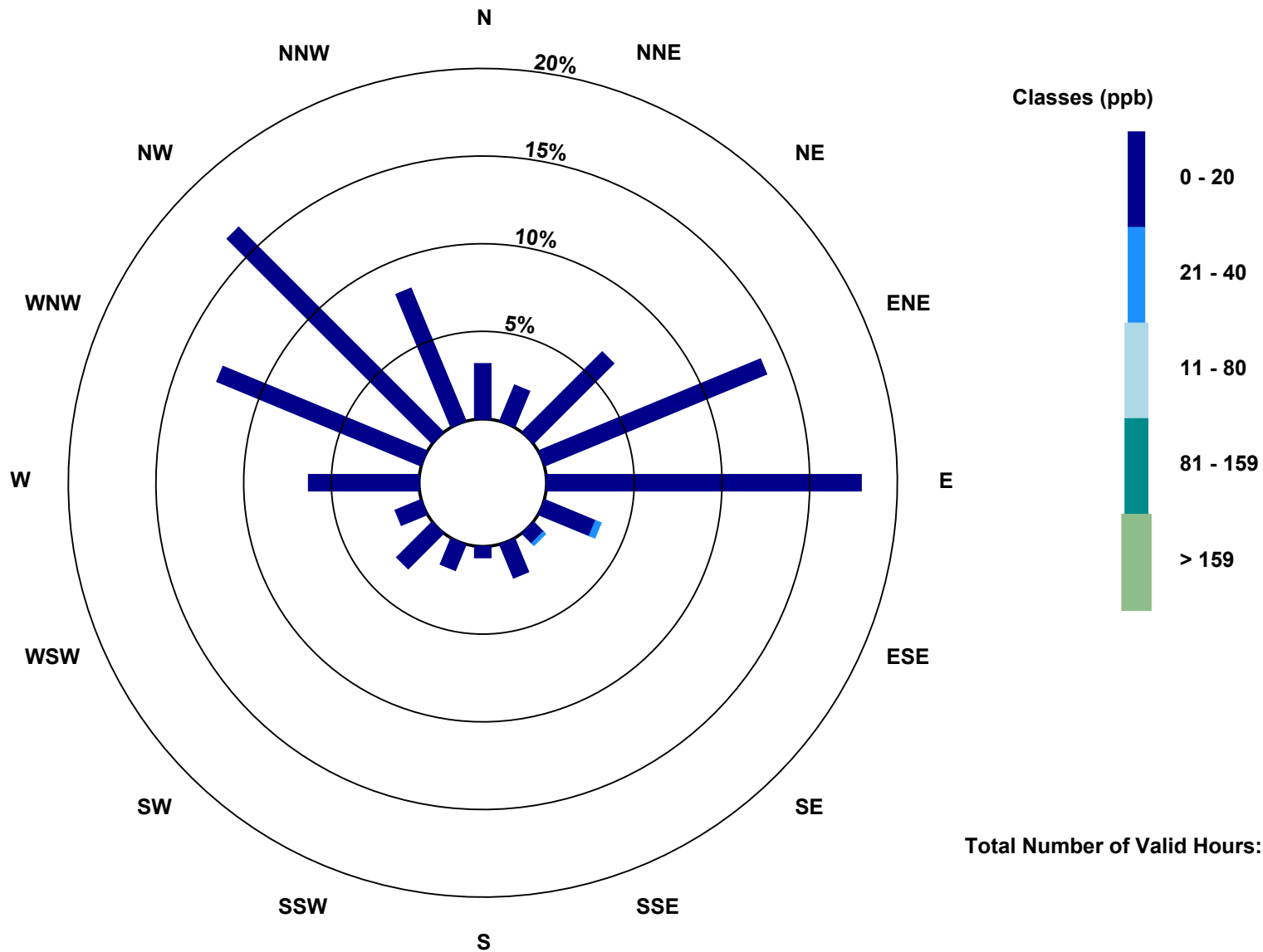
Total Number of Valid Hours: 636

Total Number of Hours: 672

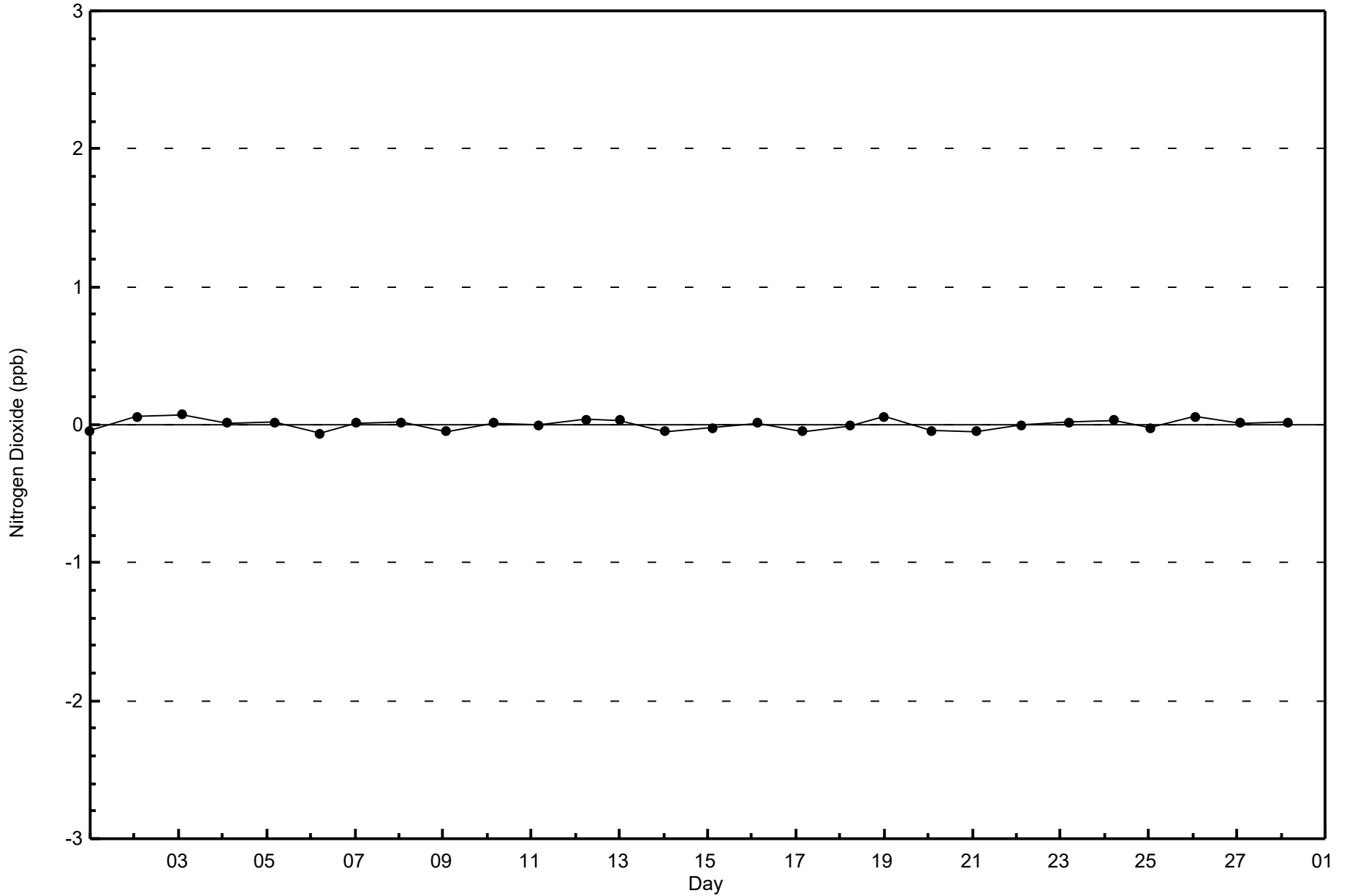


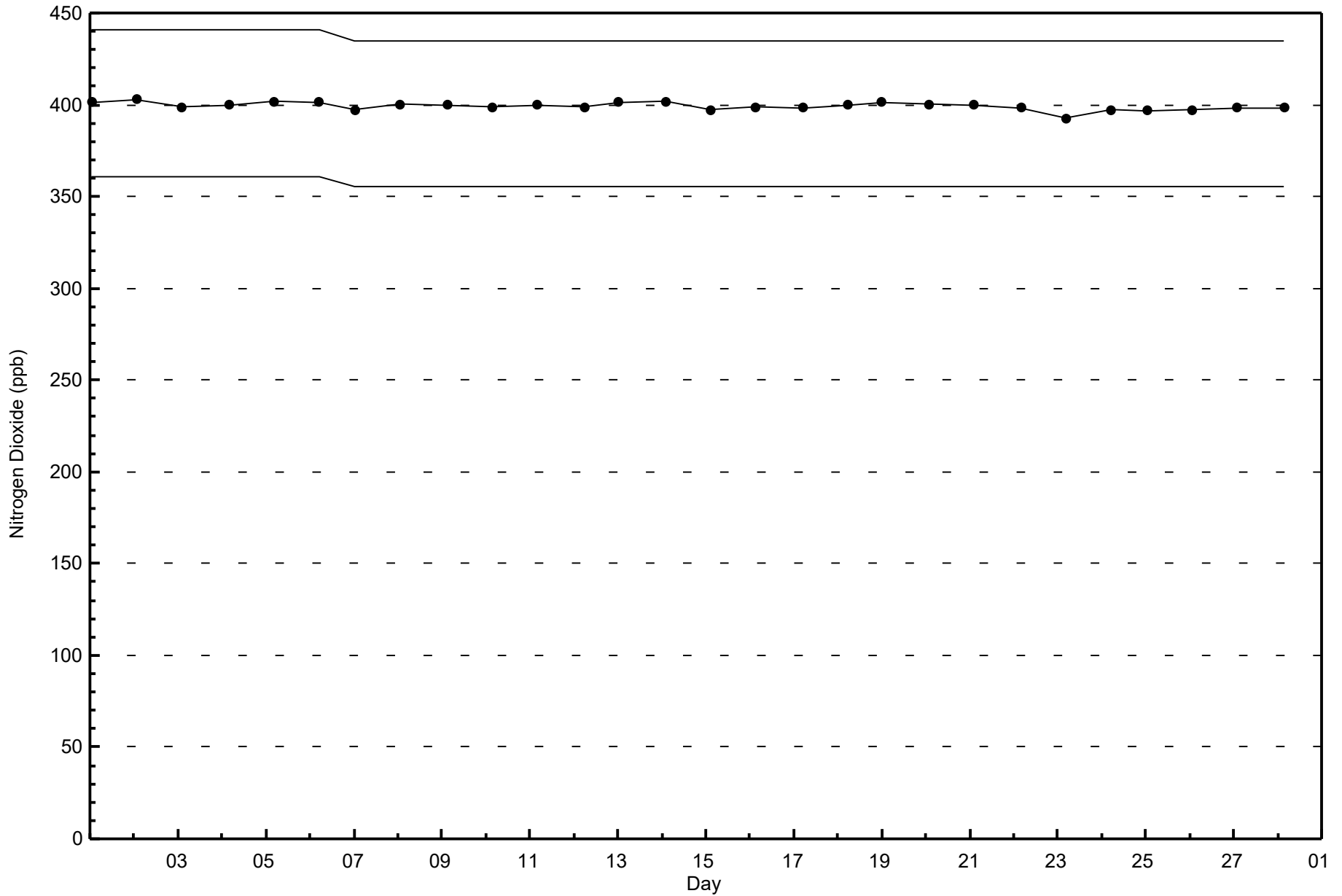
Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Nitrogen Dioxide (NO<sub>2</sub>) - ppb  
Fort Chipewyan



Total Number of Valid Hours: 636







**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

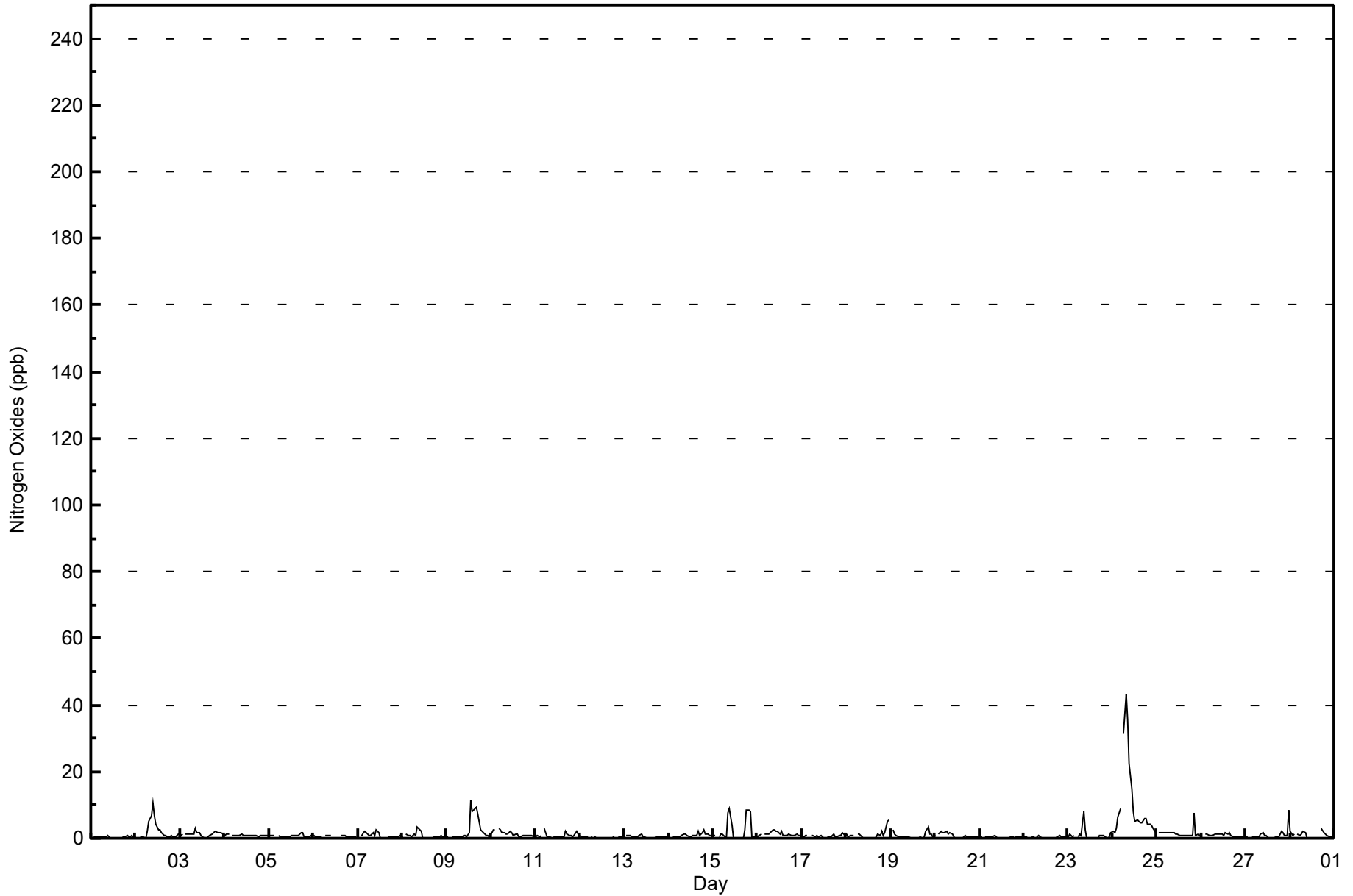
**Nitrogen Oxides (NO<sub>x</sub>) - ppb**  
**Fort Chipewyan - February 2023**

| Maximum Value: 43.3 ppb on Feb 24 08:00    |                               |     |     |     |     |     |      |      |      |      |      |     |     |      |     |     |     |     |     |     | Maximum Daily Average: 10.1 ppb on Feb 24   |     |     |     | Hours in Service: 672          |               |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|--|-------------------------------|-----|-----|-----|-----|-----|------|------|------|------|------|-----|-----|------|-----|-----|-----|-----|-----|-----|---|-----|-----|-----|--------------------------------|---------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| Minimum Value: 0.0 ppb on Feb 1 12:00      |                               |     |     |     |     |     |      |      |      |      |      |     |     |      |     |     |     |     |     |     | Minimum Daily Average: 0.3 ppb on Feb 12  |     |     |     | Hours of Data: 636             |               |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Maximum Diurnal Average: 3.1 ppb at hour 9 |                               |     |     |     |     |     |      |      |      |      |      |     |     |      |     |     |     |     |     |     | Minimum Diurnal Average: 0.6 ppb at hour 13   |     |     |     | Hours of Missing Data: 36      |               |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Monthly Average: 1.33 ppb                  |                               |     |     |     |     |     |      |      |      |      |      |     |     |      |     |     |     |     |     |     | Percentiles: P <sub>1</sub> = 0.0 P <sub>10</sub> = 0.0 Q <sub>1</sub> = 0.3 Median = 0.7 Q <sub>3</sub> = 1.2 P <sub>90</sub> = 2.3 P <sub>99</sub> = 10.0 |     |     |     | Hours of Calibration: 33       |               |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |                               |     |     |     |     |     |      |      |      |      |      |     |     |      |     |     |     |     |     |     |   |     |     |     | Percent Operational Time: 99.6 |               |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Day  | Hourly Period Ending At (MST) |     |     |     |     |     |      |      |      |      |      |     |     |      |     |     |     |     |     |     |   |     |     |     | Daily Average                  | Daily Maximum |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | 1                             | 2   | 3   | 4   | 5   | 6   | 7    | 8    | 9    | 10   | 11   | 12  | 13  | 14   | 15  | 16  | 17  | 18  | 19  | 20  | 21  | 22  | 23  | 24  |                                |               |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1-Feb                                      | Z                             | 0.4 | 0.2 | 0.3 | 0.3 | 0.3 | 0.2  | 0.2  | 0.5  | 0.9  | 0.2  | 0.0 | 0.0 | 0.0  | 0.2 | 0.0 | 0.0 | 0.6 | 0.3 | 0.6 | 0.4   | 0.5 | 0.8 | 0.2 | 0.3                            | 0.9           |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 2-Feb                                      | 0.2                           | Z   | 0.3 | 0.6 | 0.3 | 0.2 | 2.3  | 5.1  | 6.9  | 10.5 | 6.9  | 4.1 | 2.7 | 2.7  | 1.8 | 0.9 | 0.8 | 0.5 | 0.4 | 0.7 | 0.5   | 0.6 | 0.7 | 1.1 | 2.2                            | 10.5          |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 3-Feb                                      | 0.9                           | 1.2 | Z   | 1.3 | 1.3 | 1.3 | 1.4  | 1.1  | 3.1  | 1.6  | 1.7  | 1.0 | 0.6 | 0.0  | 0.5 | 0.9 | 1.3 | 1.7 | 2.1 | 1.8 | 1.8   | 1.5 | 1.1 | 1.3 | 3.1                            |               |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 4-Feb                                      | 1.0                           | 1.1 | 1.3 | Z   | 1.0 | 0.9 | 0.9  | 0.9  | 0.9  | 1.2  | 0.9  | 0.8 | 0.7 | 0.8  | 0.9 | 1.0 | 0.7 | 0.6 | 0.6 | 0.8 | 0.7   | 0.9 | 0.9 | 1.0 | 0.9                            | 1.3           |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 5-Feb                                      | 1.0                           | 1.0 | 0.8 | 0.9 | Z   | 0.7 | 0.5  | 0.6  | 0.6  | 0.6  | 0.5  | 0.6 | 0.7 | 0.7  | 0.9 | 1.0 | 0.9 | 1.8 | 1.9 | 0.4 | 0.5   | 0.5 | 0.6 | 0.7 | 0.8                            | 1.9           |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 6-Feb                                      | 0.7                           | 0.6 | 0.5 | 0.5 | 0.5 | Z   | 0.8  | 1.0  | 1.0  | 1.0  | C    | C   | C   | C    | C   | 0.8 | 0.7 | 0.7 | 0.5 | 0.6 | 0.4   | 0.4 | 0.5 | 0.6 | 0.6                            | 1.0           |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 7-Feb                                      | Z                             | 0.7 | 0.8 | 1.7 | 2.0 | 1.4 | 1.0  | 0.9  | 1.7  | 0.9  | 2.5  | 1.7 | 0.2 | 0.0  | 0.0 | 0.0 | 0.2 | 0.5 | 0.3 | 0.3 | 0.3   | 0.3 | 0.4 | 1.0 | 0.8                            | 2.5           |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 8-Feb                                      | 0.5                           | Z   | 1.1 | 0.9 | 0.9 | 0.6 | 1.2  | 1.0  | 3.6  | 3.0  | 2.3  | 0.0 | 0.0 | 0.0  | 0.0 | 0.0 | 0.0 | 0.4 | 0.4 | 0.5 | 0.5   | 0.7 | 0.4 | 0.3 | 0.8                            | 3.6           |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 9-Feb                                      | 0.6                           | 0.6 | Z   | 0.5 | 0.4 | 0.5 | 0.5  | 0.4  | 0.4  | 0.8  | 1.0  | 0.4 | 1.6 | 11.5 | 8.1 | 8.8 | 9.2 | 7.2 | 2.5 | 2.2 | 1.8   | 0.8 | 0.7 | 0.5 | 2.6                            | 11.5          |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 10-Feb                                     | 1.9                           | 2.6 | 2.7 | Z   | 3.1 | 2.5 | 1.6  | 1.7  | 1.4  | 1.3  | 2.0  | 1.6 | 0.9 | 1.2  | 1.2 | 0.6 | 0.5 | 0.8 | 0.8 | 0.8 | 0.8   | 0.7 | 0.7 | 0.6 | 1.4                            | 3.1           |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 11-Feb                                     | 0.6                           | 0.7 | 0.6 | 0.8 | Z   | 2.8 | 0.4  | 0.3  | 0.2  | 0.2  | 0.3  | 0.3 | 0.3 | 0.3  | 0.3 | 0.5 | 2.1 | 1.2 | 0.7 | 0.7 | 0.6   | 1.1 | 2.2 | 1.1 | 0.8                            | 2.8           |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 12-Feb                                     | 0.8                           | 0.6 | 0.6 | 0.6 | 0.5 | Z   | 0.3  | 0.2  | 0.3  | 0.2  | 0.1  | 0.0 | 0.0 | 0.0  | 0.0 | 0.0 | 0.2 | 0.2 | 0.3 | 0.1 | 0.1   | 0.2 | 0.4 | 0.6 | 0.3                            | 0.8           |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 13-Feb                                     | Z                             | 0.8 | 0.7 | 0.7 | 0.5 | 0.5 | 0.6  | 0.5  | 0.8  | 1.2  | 0.4  | 0.3 | 0.1 | 0.0  | 0.0 | 0.0 | 0.0 | 0.5 | 0.4 | 0.4 | 0.3   | 0.4 | 0.3 | 0.4 | 0.4                            | 1.2           |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 14-Feb                                     | 0.3                           | Z   | 0.5 | 0.5 | 0.6 | 0.5 | 0.5  | 0.7  | 1.1  | 1.2  | 0.8  | 0.4 | 0.6 | 0.9  | 0.9 | 0.9 | 2.2 | 0.7 | 1.6 | 2.3 | 1.1   | 1.3 | 1.0 | 0.7 | 0.9                            | 2.3           |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 15-Feb                                     | 0.6                           | 0.9 | Z   | 0.5 | 1.5 | 1.4 | 0.6  | 0.6  | 7.6  | 8.9  | 3.9  | 0.0 | 0.0 | 0.0  | 0.0 | 0.0 | 0.0 | 2.3 | 8.5 | 8.6 | 8.0   | 0.5 | 0.3 | 0.3 | 2.4                            | 8.9           |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 16-Feb                                     | 0.4                           | 0.7 | 1.5 | Z   | 1.4 | 1.3 | 1.3  | 1.6  | 2.4  | 2.4  | 2.2  | 2.3 | 1.3 | 2.3  | 0.9 | 0.8 | 0.9 | 1.1 | 1.0 | 1.0 | 1.0   | 1.1 | 0.8 | 0.8 | 1.3                            | 2.4           |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 17-Feb                                     | 0.5                           | 0.4 | 0.8 | 0.8 | Z   | 0.8 | 0.8  | 0.4  | 0.6  | 0.5  | 0.8  | 0.5 | 0.1 | 0.2  | 0.2 | 0.4 | 0.4 | 1.2 | 0.4 | 0.5 | 0.9   | 0.8 | 1.7 | 0.8 | 0.6                            | 1.7           |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 18-Feb                                     | 1.5                           | 0.6 | 0.7 | 0.7 | 1.0 | Z   | 1.4  | 1.4  | 0.7  | 0.1  | 0.0  | 0.0 | 0.0 | 0.0  | 0.0 | 0.0 | 0.6 | 1.1 | 0.7 | 2.0 | 0.8   | 1.6 | 4.9 | 5.4 | 1.1                            | 5.4           |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 19-Feb                                     | Z                             | 2.6 | 1.1 | 0.8 | 0.5 | 0.3 | 0.3  | 0.3  | 0.6  | 0.5  | 0.4  | 0.2 | 0.0 | 0.0  | 0.0 | 0.0 | 0.4 | 0.2 | 0.5 | 2.1 | 3.4   | 1.2 | 1.1 | 0.6 | 0.7                            | 3.4           |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 20-Feb                                     | 0.8                           | Z   | 1.3 | 2.0 | 1.7 | 1.8 | 2.3  | 1.1  | 1.9  | 1.5  | 0.3  | 0.0 | 0.0 | 0.0  | 0.0 | 0.1 | 0.7 | 0.5 | 0.6 | 0.5 | 0.3   | 0.3 | 0.2 | 0.3 | 0.8                            | 2.3           |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 21-Feb                                     | 0.4                           | 0.5 | Z   | 0.5 | 0.3 | 0.4 | 0.5  | 0.5  | 0.7  | 0.4  | 0.0  | 0.0 | 0.0 | 0.0  | 0.0 | 0.0 | 0.0 | 0.3 | 0.5 | 0.2 | 0.3   | 0.5 | 0.5 | 0.6 | 0.3                            | 0.7           |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 22-Feb                                     | 0.5                           | 0.4 | 0.6 | Z   | 0.5 | 0.3 | 0.2  | 0.3  | 0.8  | 0.2  | 0.2  | 0.0 | 0.0 | 0.0  | 0.0 | 0.0 | 0.0 | 0.1 | 0.3 | 0.8 | 0.5   | 0.6 | 0.4 | 0.3 | 0.3                            | 0.8           |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 23-Feb                                     | 0.3                           | 1.4 | 0.5 | 0.8 | Z   | 0.6 | 1.2  | 0.8  | 7.9  | 2.6  | 0.0  | 0.0 | 0.0 | 0.0  | 0.0 | 0.0 | 0.0 | 0.8 | 0.7 | 0.9 | 0.3   | 0.2 | 0.3 | 1.6 | 0.9                            | 7.9           |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 24-Feb                                     | 2.2                           | 1.8 | 3.0 | 6.3 | 9.1 | Z   | 31.4 | 43.3 | 35.6 | 22.4 | 14.8 | 8.2 | 5.0 | 5.7  | 5.0 | 4.8 | 4.6 | 5.9 | 6.0 | 4.4 | 4.0   | 3.6 | 2.9 | 1.8 | 10.1                           | 43.3          |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 25-Feb                                     | Z                             | 1.7 | 1.6 | 1.8 | 1.7 | 1.6 | 1.7  | 1.6  | 1.6  | 1.6  | 1.3  | 1.2 | 1.0 | 0.9  | 0.8 | 0.8 | 0.7 | 0.8 | 0.7 | 1.1 | 7.5   | 0.9 | 1.1 | 1.0 | 1.5                            | 7.5           |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 26-Feb                                     | 1.0                           | Z   | 1.1 | 1.4 | 0.9 | 1.0 | 1.0  | 1.2  | 1.1  | 1.2  | 1.2  | 1.2 | 1.0 | 1.5  | 1.4 | 1.6 | 0.8 | 0.6 | 0.4 | 0.4 | 0.3   | 0.3 | 0.3 | 0.3 | 0.9                            | 1.6           |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 27-Feb                                     | 0.3                           | 0.4 | Z   | 0.4 | 0.3 | 0.3 | 0.3  | 0.2  | 1.1  | 1.6  | 0.6  | 0.9 | 0.1 | 0.0  | 0.0 | 0.0 | 0.2 | 0.5 | 0.4 | 2.3 | 1.8   | 1.0 | 0.9 | 8.4 | 1.0                            | 8.4           |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 28-Feb                                     | 2.1                           | 0.7 | 1.4 | Z   | 1.5 | 0.9 | 1.3  | 2.1  | 1.5  | 0.0  | 0.0  | 0.0 | 0.0 | 0.0  | M   | M   | M   | 3.0 | 1.7 | 1.4 | 0.9   | 0.3 | 0.3 | 0.3 | 1.0                            | 3.0           |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |                               |     |     |     |     |     |      |      |      |      |      |     |     |      |     |     |     |     |     |     | 0.8 1.0 1.0 1.1 1.3 1.0 2.0 2.5 3.1 2.4 1.7 0.9 0.6 1.1 0.9 0.9 1.0 1.3 1.2 1.4 1.4 0.8 0.9 1.2   |     |     |     | Diurnal Average                |               |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |                               |     |     |     |     |     |      |      |      |      |      |     |     |      |     |     |     |     |     |     | 2.2 2.6 3.0 6.3 9.1 2.8 31.4 43.3 35.6 22.4 14.8 8.2 5.0 11.5 8.1 8.8 9.2 7.2 8.5 8.6 8.0 3.6 4.9 8.4   |     |     |     | Diurnal Maximum                |               |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Z - zerospan                               |                               |     |     |     |     |     |      |      |      |      |      |     |     |      |     |     |     |     |     |     | C - Calibration   |     |     |     | M - Maintenance                |               |  |  |  |  |  |  |  |  |  |  |  |  |  |  |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Nitrogen Oxides (NO<sub>x</sub>) - ppb**  
**Fort Chipewyan - February 2023**





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Nitrogen Oxides (NO<sub>x</sub>) - ppb  
Fort Chipewyan - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 20                            | 632                    | 99.37    | 99.37               |
| 21 - 40                           | 3                      | 0.47     | 99.84               |
| 41 - 80                           | 1                      | 0.16     | 100.00              |
| 81 - 159                          | 0                      | 0.00     | 100.00              |
| > 159                             | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 636

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Nitrogen Oxides (NO<sub>x</sub>) - ppb  
Fort Chipewyan - February 2023**

| <b>Concentration<br/>Ranges (ppb)</b> | <b>Wind Direction</b> |            |           |            |          |            |           |            |          |            |           |            |          |            |           |            | <b>Totals</b> |
|---------------------------------------|-----------------------|------------|-----------|------------|----------|------------|-----------|------------|----------|------------|-----------|------------|----------|------------|-----------|------------|---------------|
|                                       | <b>N</b>              | <b>NNE</b> | <b>NE</b> | <b>ENE</b> | <b>E</b> | <b>ESE</b> | <b>SE</b> | <b>SSE</b> | <b>S</b> | <b>SSW</b> | <b>SW</b> | <b>WSW</b> | <b>W</b> | <b>WNW</b> | <b>NW</b> | <b>NNW</b> |               |
| 0 - 20                                | 20                    | 14         | 41        | 87         | 114      | 19         | 5         | 13         | 4        | 10         | 18        | 10         | 40       | 80         | 105       | 52         | 632           |
| 21 - 40                               | 0                     | 0          | 0         | 0          | 0        | 2          | 1         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 3             |
| 11 - 80                               | 0                     | 0          | 0         | 0          | 0        | 1          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 1             |
| 81 - 159                              | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0             |
| > 159                                 | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0             |
| <b>Totals</b>                         | 20                    | 14         | 41        | 87         | 114      | 22         | 6         | 13         | 4        | 10         | 18        | 10         | 40       | 80         | 105       | 52         | 636           |

Total Number of Valid Hours: 636

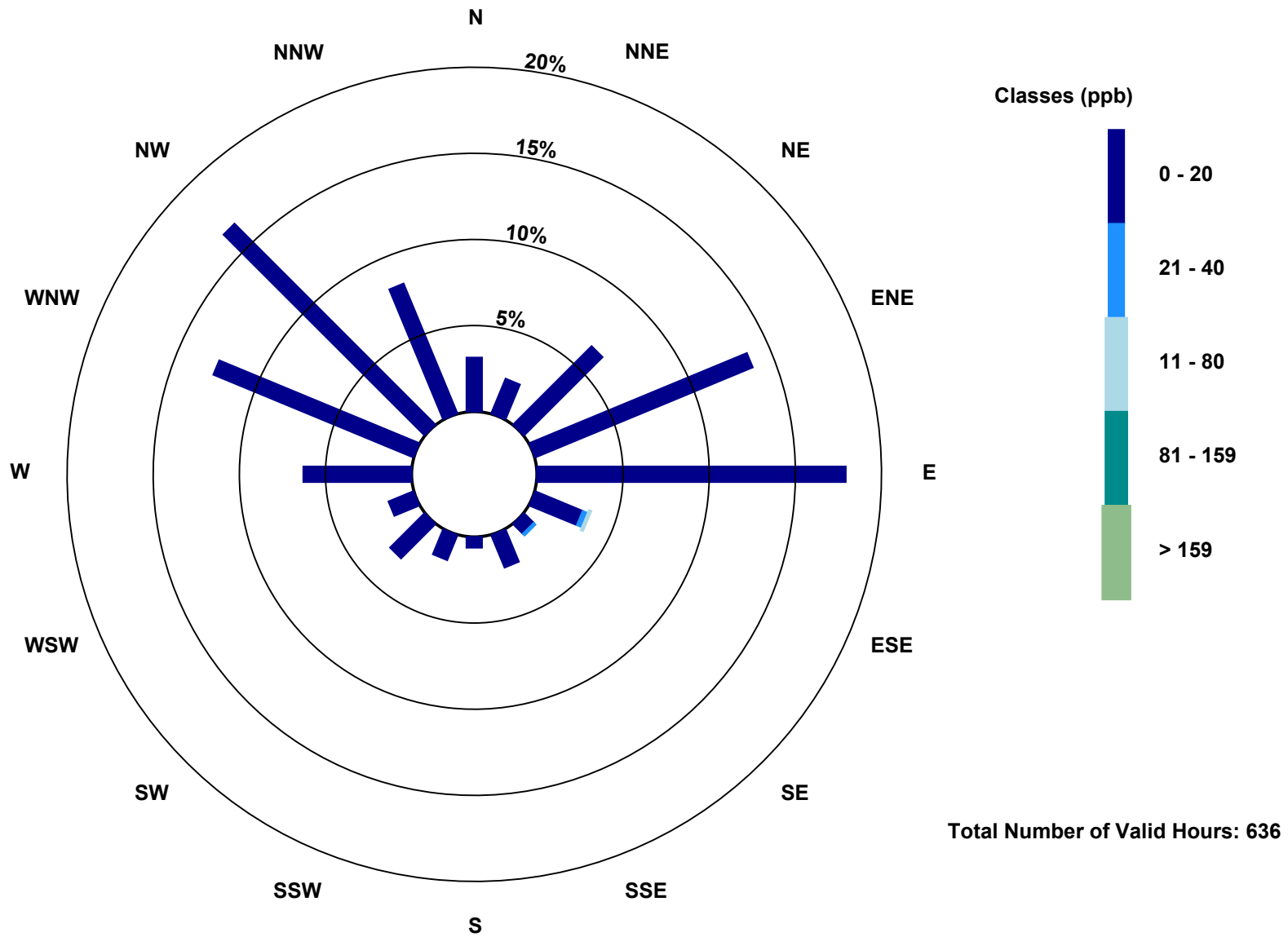
Total Number of Hours: 672

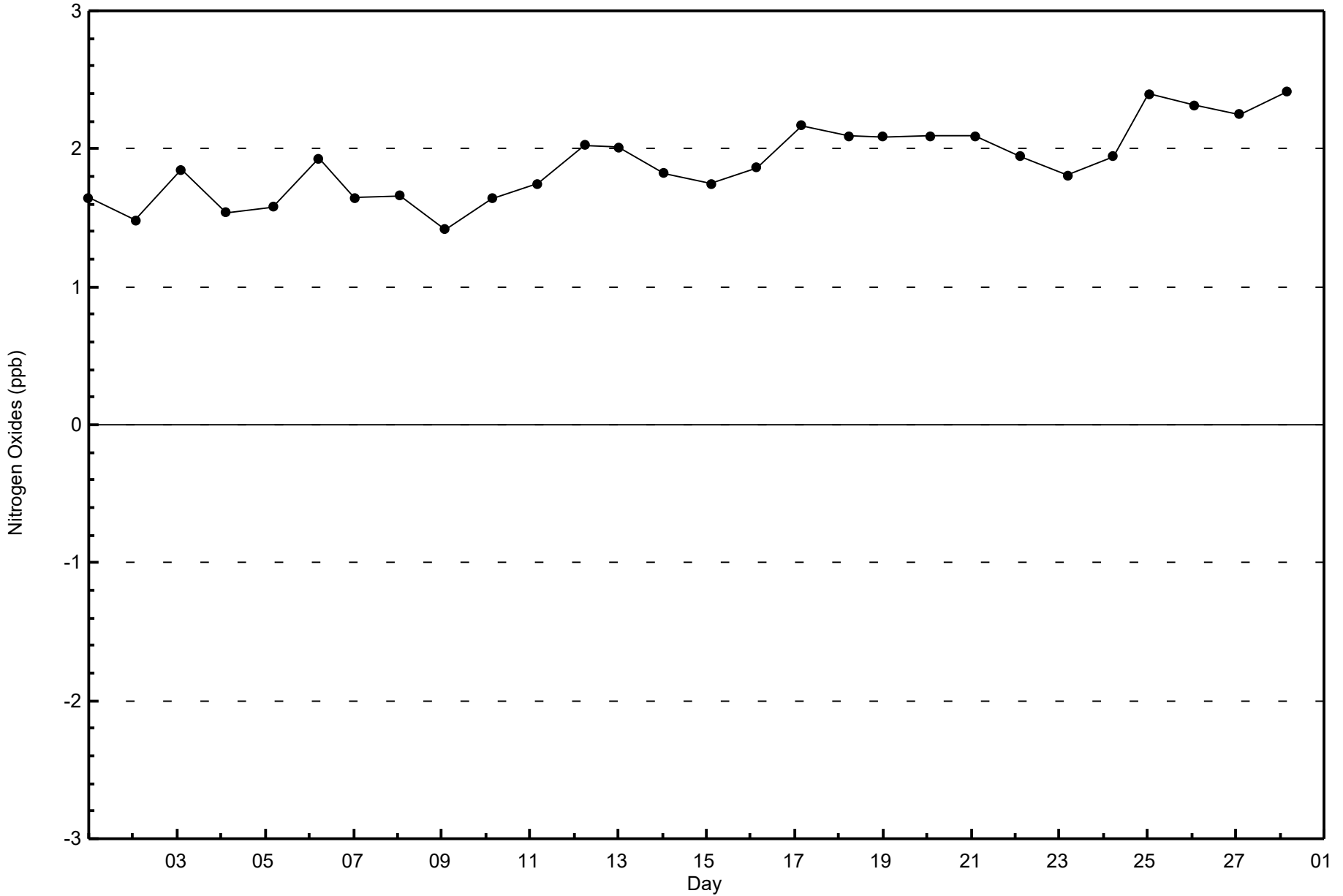


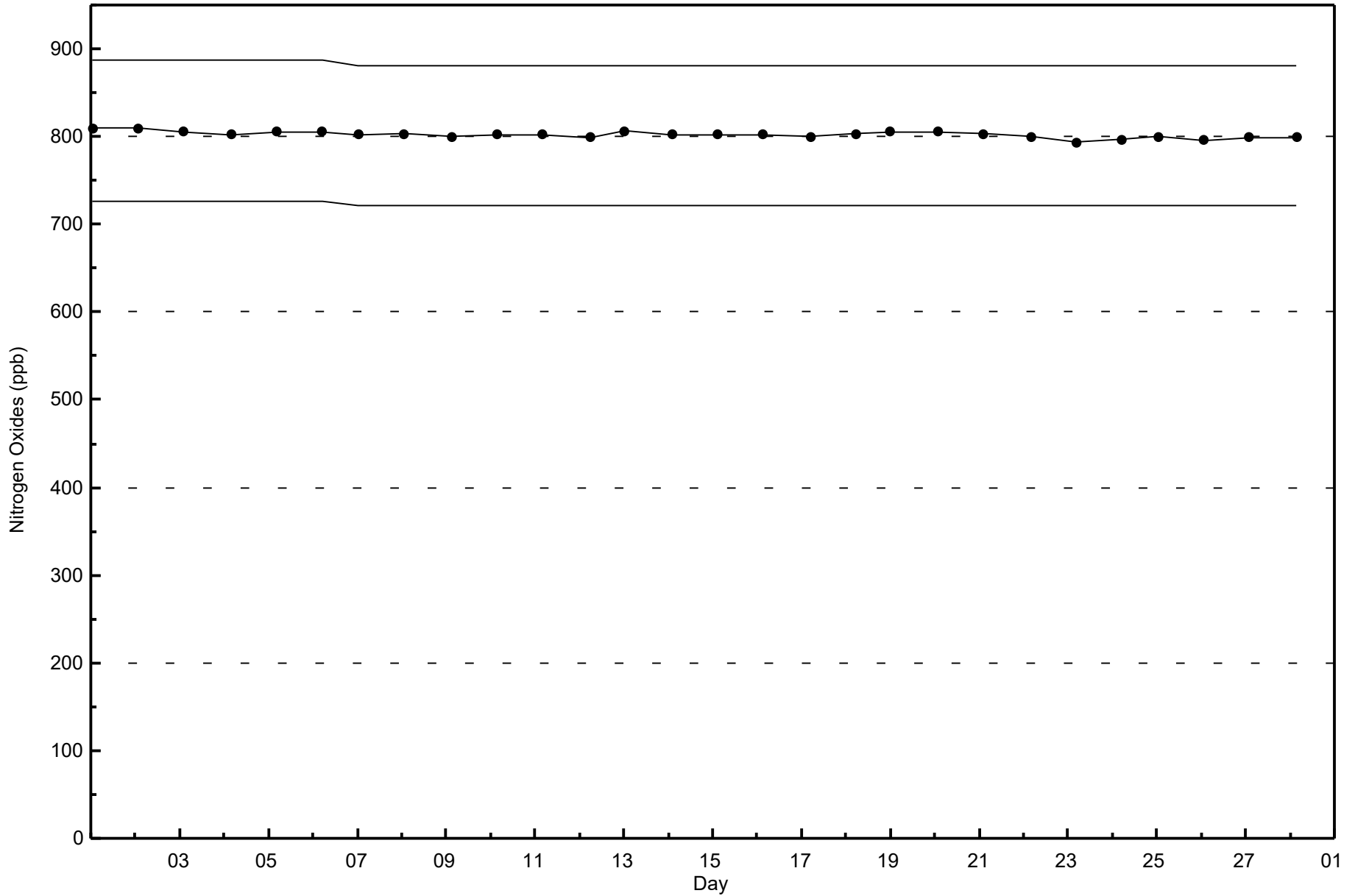


Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Nitrogen Oxides (NO<sub>x</sub>) - ppb  
Fort Chipewyan

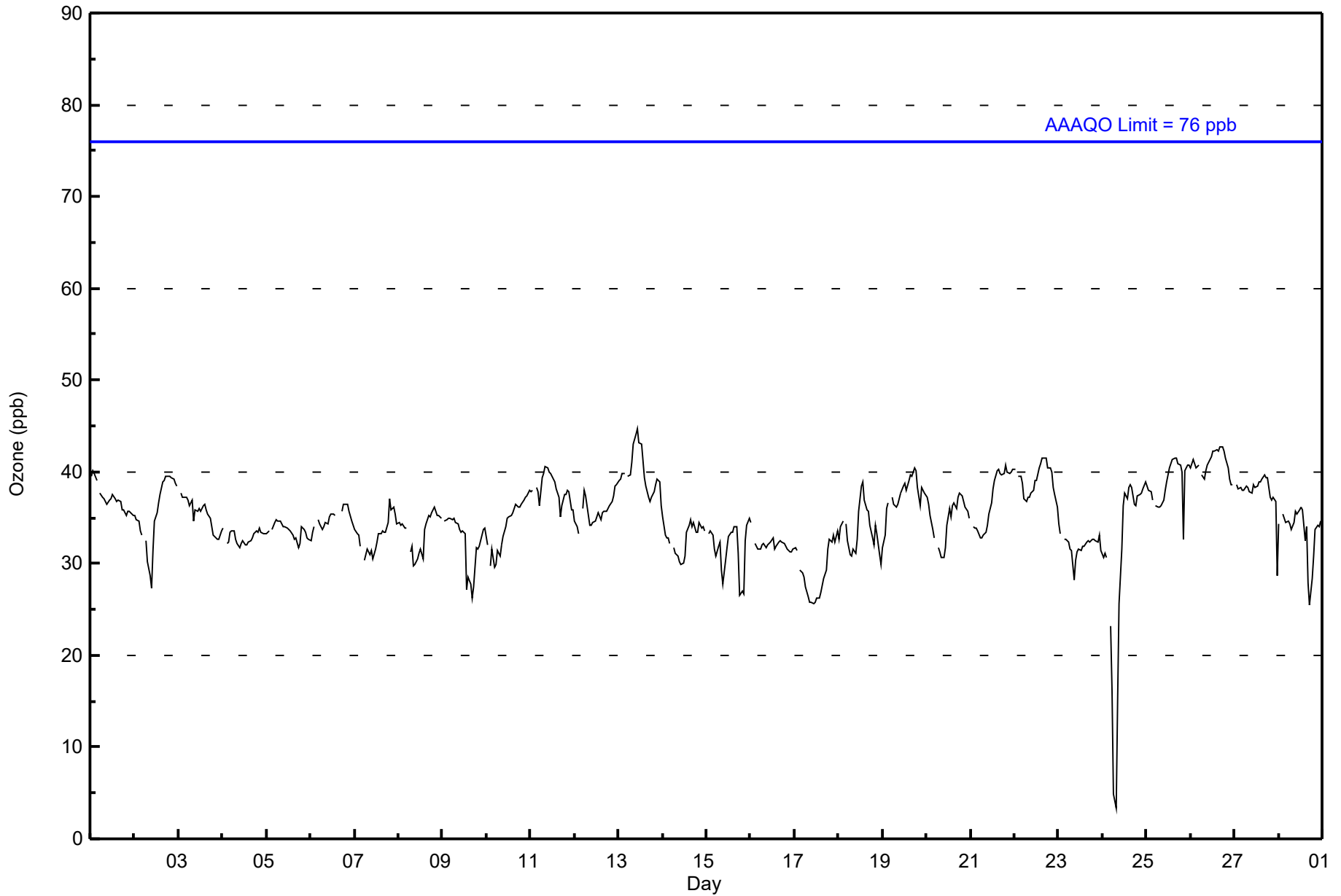








| Number of Exceedences (AAAQO):                       |                               | 1-hr: 0                                     |      | 24-hr: 0  |      | Hours in Service: |      | 672                             |      |                 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |                 |  |
|--|-------------------------------|---|------|---|------|-------------------|------|---------------------------------|------|-----------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----------------|-----------------|--|
| Maximum Value: 44.7 ppb on Feb 13 11:00              |                               | Maximum Daily Average: 40.9 ppb on Feb 26   |      | Hours of Data:  |      | 641               |      | Hours of Missing Data: 31       |      |                 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |                 |  |
| Minimum Value: 3.4 ppb on Feb 24 08:00               |                               | Minimum Daily Average: 29.0 ppb on Feb 17   |      | Hours of Calibration:   |      | 31                |      | Percent Operational Time: 100.0 |      |                 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |                 |  |
| Maximum Diurnal Average: 35.9 ppb at hour 16         |                               | Minimum Diurnal Average: 33.0 ppb at hour 8 |      | Percentiles: P <sub>1</sub> = 25.6 P <sub>10</sub> = 30.9 Q <sub>1</sub> = 32.6 Median = 34.8 Q <sub>3</sub> = 37.6 P <sub>90</sub> = 39.8 P <sub>99</sub> = 42.6 |      |                   |      |                                 |      |                 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |                 |  |
| Monthly Average: 34.89 ppb                           |                               |   |      |   |      |                   |      |                                 |      |                 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |                 |  |
| Day  | Hourly Period Ending At (MST) |   |      |   |      |                   |      |                                 |      |                 |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Daily Average   | Daily Maximum   |  |
|  | 1                             | 2   | 3    | 4   | 5    | 6                 | 7    | 8                               | 9    | 10              | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20   | 21   | 22   | 23   | 24   |                 |                 |  |
| 1-Feb  | 39.4                          | 40.1  | 39.8 | 39.1  | Z    | 37.7              | 37.2 | 37.1                            | 36.8 | 36.5            | 37.0 | 37.0 | 37.5 | 37.1 | 36.7 | 36.9 | 36.7 | 35.8 | 35.9 | 35.3 | 35.6 | 35.6 | 35.5 | 35.2 | 37.0            | 40.1            |  |
| 2-Feb  | 35.2                          | 34.8  | 34.7 | 33.5  | 33.1 | Z                 | 32.4 | 30.2                            | 28.7 | 27.2            | 31.5 | 34.7 | 35.5 | 36.6 | 37.6 | 38.9 | 39.1 | 39.4 | 39.5 | 39.6 | 39.3 | 39.2 | 38.7 | 38.4 | 35.6            | 39.6            |  |
| 3-Feb  | Z                             | 37.7  | 37.2 | 37.2  | 37.2 | 36.8              | 36.3 | 36.9                            | 34.7 | 35.9            | 35.7 | 36.1 | 35.7 | 36.2 | 36.5 | 35.9 | 35.4 | 34.9 | 34.0 | 33.1 | 32.9 | 32.6 | 32.7 | 33.6 | 35.4            | 37.7            |  |
| 4-Feb  | 33.8                          | Z   | 32.2 | 32.3  | 33.5 | 33.5              | 33.6 | 32.7                            | 32.2 | 31.7            | 32.2 | 32.4 | 32.0 | 32.1 | 32.4 | 32.4 | 32.9 | 33.2 | 33.5 | 33.9 | 33.4 | 33.3 | 33.3 | 33.3 | 32.9            | 33.9            |  |
| 5-Feb  | 33.2                          | 33.6  | Z    | 33.8  | 34.5 | 34.8              | 34.6 | 34.7                            | 34.3 | 34.0            | 34.0 | 33.8 | 32.6 | 33.5 | 33.1 | 32.7 | 32.8 | 31.8 | 32.2 | 34.0 | 33.7 | 33.4 | 32.9 | 32.7 | 33.5            | 34.8            |  |
| 6-Feb  | 32.5                          | 33.4  | 34.1 | Z   | 34.7 | 34.3              | 33.7 | 34.0                            | 34.5 | 34.4            | 35.0 | 35.4 | 35.4 | 35.2 | C    | C    | C    | 35.7 | 36.5 | 36.4 | 36.4 | 35.8 | 34.7 | 34.1 | 34.8            | 36.5            |  |
| 7-Feb  | 33.7                          | 33.3  | 33.1 | 31.9  | Z    | 30.3              | 31.0 | 31.6                            | 31.0 | 31.4            | 30.5 | 31.6 | 32.3 | 33.2 | 33.2 | 33.6 | 33.5 | 33.3 | 34.5 | 37.1 | 35.8 | 36.1 | 35.4 | 34.3 | 33.1            | 37.1            |  |
| 8-Feb  | 34.5                          | 34.1  | 34.3 | 33.9  | 33.8 | Z                 | 31.3 | 31.9                            | 29.8 | 29.9            | 30.5 | 31.2 | 31.6 | 30.5 | 33.7 | 34.3 | 35.2 | 35.1 | 35.6 | 36.2 | 35.7 | 35.2 | 35.2 | 34.9 | 33.4            | 36.2            |  |
| 9-Feb  | Z                             | 34.6  | 34.7 | 35.0  | 34.9 | 34.8              | 34.9 | 34.5                            | 34.4 | 33.7            | 33.5 | 33.6 | 33.2 | 27.1 | 28.6 | 27.8 | 26.3 | 27.4 | 31.8 | 31.6 | 31.9 | 33.2 | 33.6 | 33.9 | 32.4            | 35.0            |  |
| 10-Feb   | 32.1                          | Z   | 29.8 | 31.6  | 29.6 | 29.9              | 31.4 | 30.9                            | 32.1 | 32.9            | 34.0 | 34.9 | 35.1 | 35.2 | 35.5 | 36.1 | 36.4 | 36.1 | 36.1 | 36.5 | 36.9 | 37.3 | 37.4 | 37.9 | 34.2            | 37.9            |  |
| 11-Feb   | 37.9                          | 37.9  | Z    | 38.3  | 37.8 | 36.3              | 39.4 | 39.9                            | 40.5 | 40.4            | 40.0 | 39.8 | 39.3 | 38.8 | 38.2 | 37.2 | 35.1 | 36.3 | 37.5 | 37.6 | 38.0 | 37.9 | 35.8 | 35.9 | 38.1            | 40.5            |  |
| 12-Feb   | 34.7                          | 34.0  | 33.2 | Z   | 35.9 | 38.0              | 37.3 | 35.3                            | 34.1 | 34.2            | 34.5 | 34.6 | 35.0 | 35.6 | 34.8 | 35.5 | 35.7 | 35.7 | 36.0 | 36.3 | 36.7 | 37.4 | 38.4 | 38.6 | 35.7            | 38.6            |  |
| 13-Feb   | 39.0                          | 39.3  | 39.8 | 39.9  | Z    | 39.5              | 39.7 | 41.1                            | 43.1 | 44.1            | 44.7 | 43.2 | 43.0 | 41.2 | 39.4 | 38.5 | 37.2 | 36.8 | 37.3 | 37.9 | 38.6 | 39.1 | 38.9 | 36.4 | 39.9            | 44.7            |  |
| 14-Feb   | 35.2                          | 33.0  | 32.8 | 32.8  | 32.2 | Z                 | 31.8 | 31.1                            | 30.8 | 30.1            | 29.9 | 30.1 | 30.8 | 33.4 | 34.1 | 34.8 | 34.0 | 34.5 | 33.4 | 33.3 | 34.4 | 33.8 | 34.0 | 33.6 | 32.8            | 35.2            |  |
| 15-Feb   | Z                             | 33.2  | 33.6 | 33.0  | 31.6 | 30.8              | 31.8 | 32.3                            | 29.2 | 27.8            | 30.4 | 31.7 | 33.0 | 33.4 | 33.3 | 34.0 | 34.1 | 31.1 | 26.6 | 27.0 | 26.6 | 32.4 | 34.2 | 35.0 | 31.6            | 35.0            |  |
| 16-Feb   | 34.5                          | Z   | 32.2 | 32.0  | 31.6 | 31.5              | 32.0 | 32.1                            | 31.8 | 32.0            | 32.2 | 32.3 | 32.8 | 31.6 | 31.9 | 32.3 | 32.4 | 32.3 | 32.1 | 31.9 | 31.6 | 31.3 | 31.3 | 31.6 | 32.1            | 34.5            |  |
| 17-Feb   | 31.7                          | 31.4  | Z    | 29.4  | 28.9 | 28.5              | 27.5 | 26.4                            | 25.8 | 25.8            | 25.7 | 25.8 | 26.2 | 26.2 | 26.9 | 27.5 | 28.4 | 29.2 | 31.6 | 32.7 | 32.3 | 33.0 | 32.4 | 33.6 | 29.0            | 33.6            |  |
| 18-Feb   | 32.7                          | 34.1  | 34.6 | Z   | 34.3 | 32.5              | 30.9 | 30.9                            | 31.6 | 31.2            | 32.7 | 35.7 | 38.4 | 38.9 | 36.9 | 35.9 | 35.7 | 34.2 | 32.8 | 32.0 | 34.1 | 33.2 | 30.9 | 29.9 | 33.7            | 38.9            |  |
| 19-Feb   | 31.8                          | 33.1  | 36.0 | 36.6  | Z    | 37.3              | 36.4 | 36.1                            | 36.5 | 37.1            | 37.7 | 38.4 | 38.8 | 37.9 | 39.0 | 39.6 | 39.6 | 40.5 | 40.1 | 38.3 | 36.3 | 38.2 | 38.0 | 37.6 | 37.4            | 40.5            |  |
| 20-Feb   | 37.2                          | 36.5  | 35.3 | 33.8  | 32.7 | Z                 | 31.7 | 31.3                            | 30.7 | 30.6            | 31.7 | 34.1 | 36.0 | 35.1 | 36.2 | 36.6 | 36.0 | 37.2 | 37.6 | 37.3 | 36.7 | 36.1 | 35.7 | 35.0 | 34.8            | 37.6            |  |
| 21-Feb   | Z                             | 34.0  | 33.9 | 33.8  | 33.6 | 32.9              | 32.8 | 33.1                            | 33.5 | 34.2            | 35.3 | 36.6 | 38.1 | 39.1 | 40.2 | 40.3 | 39.9 | 39.7 | 39.9 | 40.7 | 40.0 | 39.8 | 40.0 | 40.3 | 37.0            | 40.7            |  |
| 22-Feb   | 40.3                          | Z   | 39.6 | 39.5  | 38.8 | 37.1              | 36.8 | 37.3                            | 37.1 | 37.7            | 37.9 | 39.0 | 39.1 | 40.5 | 40.9 | 41.5 | 41.5 | 41.5 | 40.4 | 40.4 | 40.0 | 38.3 | 37.5 | 36.1 | 39.1            | 41.5            |  |
| 23-Feb   | 34.3                          | 33.2  | Z    | 32.6  | 32.7 | 32.3              | 31.6 | 31.4                            | 28.3 | 30.3            | 31.2 | 31.6 | 31.5 | 31.8 | 31.9 | 32.3 | 32.5 | 32.4 | 32.6 | 32.7 | 32.4 | 32.3 | 33.2 | 31.4 | 32.0            | 34.3            |  |
| 24-Feb   | 30.6                          | 31.2  | 30.7 | Z   | 23.2 | 16.2              | 4.9  | 3.4                             | 15.0 | 25.6            | 31.5 | 36.4 | 37.7 | 37.0 | 38.3 | 38.5 | 38.3 | 36.4 | 36.2 | 37.4 | 37.5 | 37.6 | 38.1 | 38.9 | 30.5            | 38.9            |  |
| 25-Feb   | 38.4                          | 38.0  | 37.8 | 36.9  | Z    | 36.3              | 36.1 | 36.1                            | 36.2 | 36.9            | 37.9 | 38.9 | 40.4 | 40.9 | 41.4 | 41.5 | 41.5 | 40.8 | 40.8 | 39.9 | 32.7 | 40.2 | 40.8 | 40.7 | 38.7            | 41.5            |  |
| 26-Feb   | 40.5                          | 41.3  | 40.9 | 40.4  | 40.7 | Z                 | 39.6 | 39.3                            | 40.1 | 40.7            | 41.1 | 41.6 | 42.2 | 42.2 | 42.5 | 42.2 | 42.7 | 42.8 | 42.3 | 41.4 | 40.4 | 39.3 | 38.6 | 38.5 | 40.9            | 42.8            |  |
| 27-Feb   | Z                             | 38.5  | 38.2 | 38.2  | 37.9 | 38.0              | 38.4 | 38.3                            | 37.8 | 37.7            | 38.6 | 38.3 | 38.5 | 38.9 | 39.0 | 39.2 | 39.6 | 39.4 | 39.4 | 37.3 | 36.9 | 37.2 | 36.8 | 28.6 | 37.9            | 39.6            |  |
| 28-Feb   | 34.4                          | Z   | 35.4 | 35.0  | 34.5 | 34.6              | 34.3 | 33.7                            | 34.5 | 35.6            | 35.4 | 35.8 | 36.2 | 35.8 | 32.4 | 33.9 | 27.9 | 25.5 | 28.4 | 30.7 | 33.7 | 34.1 | 34.1 | 34.6 | 33.5            | 36.2            |  |
|  |                               | 35.1  | 35.2 | 35.0  | 33.8 | 33.7              | 33.2 | 33.0                            | 33.0 | 33.6            | 34.4 | 35.2 | 35.7 | 35.5 | 35.7 | 35.9 | 35.6 | 35.3 | 35.5 | 35.7 | 35.4 | 35.8 | 35.6 | 35.2 | Diurnal Average |                 |  |
|  |                               | 40.5  | 41.3 | 40.9  | 40.4 | 40.7              | 39.5 | 39.7                            | 41.1 | 43.1            | 44.1 | 44.7 | 43.2 | 43.0 | 42.2 | 42.5 | 42.2 | 42.7 | 42.8 | 42.3 | 41.4 | 40.4 | 40.2 | 40.8 | 40.7            | Diurnal Maximum |  |
| Z - zerospan   |                               |   |      |   |      |                   |      |                                 |      | C - Calibration |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |                 |  |
| Alberta Ambient Air Quality Objectives (AAAQO): 1-hr |                               |   |      |   |      |                   |      |                                 |      | 76 ppb          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |                 |  |





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Ozone (O<sub>3</sub>) - ppb**  
**Fort Chipewyan - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 20                            | 4                      | 0.62     | 0.62                |
| 21 - 50                           | 637                    | 99.38    | 100.00              |
| 51 - 82                           | 0                      | 0.00     | 100.00              |
| > 83                              | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 641

Total Number of Hours: 672



**Wood Buffalo Environmental Association**  
**Frequency Distribution**

**Ozone (O<sub>3</sub>) - ppb**  
**Fort Chipewyan - February 2023**

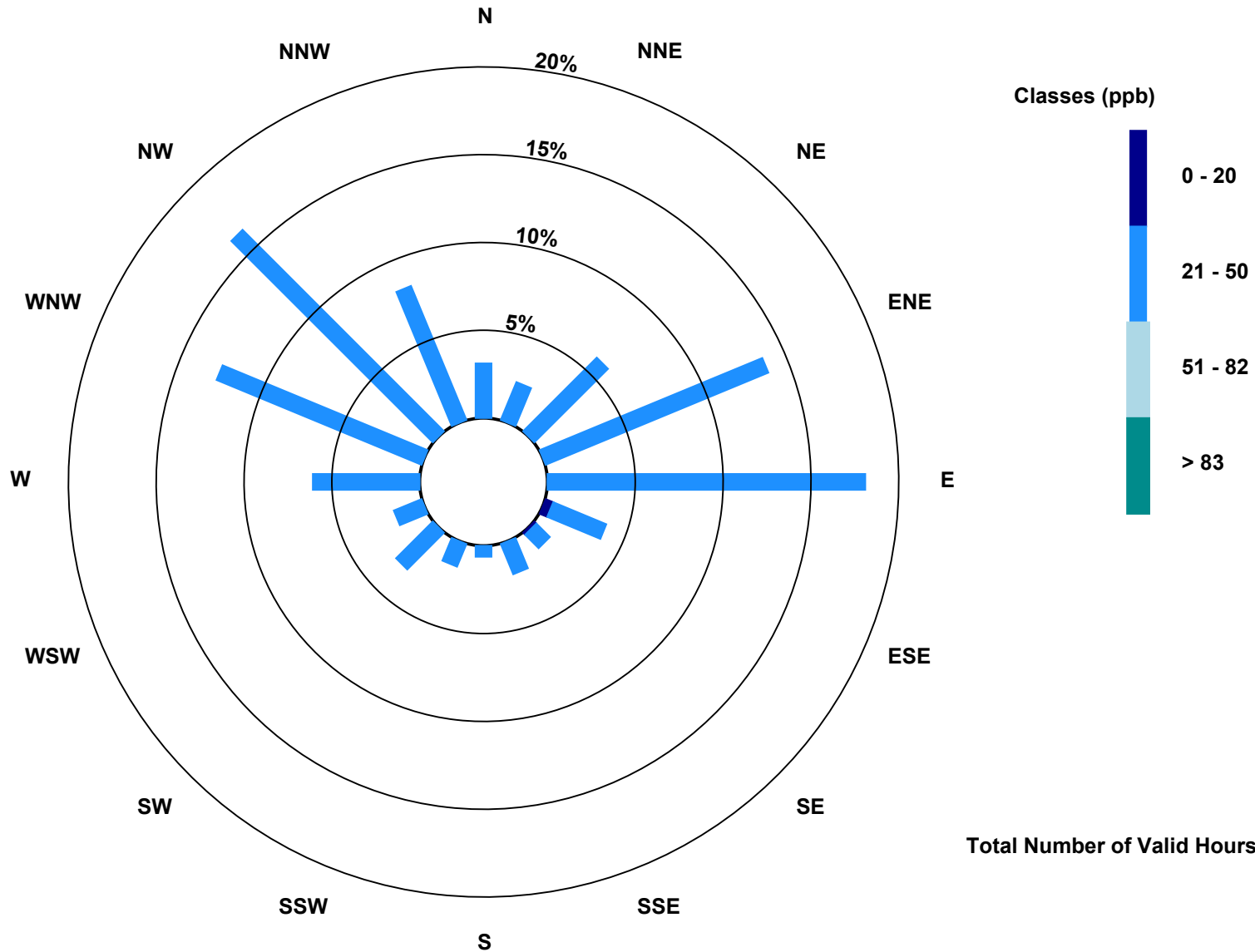
| Concentration<br>Ranges (ppb) | Wind Direction |     |    |     |     |     |    |     |   |     |    |     |    |     |     |     | Totals |
|-------------------------------|----------------|-----|----|-----|-----|-----|----|-----|---|-----|----|-----|----|-----|-----|-----|--------|
|                               | N              | NNE | NE | ENE | E   | ESE | SE | SSE | S | SSW | SW | WSW | W  | WNW | NW  | NNW |        |
| 0 - 20                        | 0              | 0   | 0  | 0   | 0   | 3   | 1  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0   | 0   | 4      |
| 21 - 50                       | 20             | 15  | 38 | 88  | 116 | 21  | 7  | 12  | 4 | 9   | 19 | 11  | 39 | 81  | 104 | 53  | 637    |
| 51 - 82                       | 0              | 0   | 0  | 0   | 0   | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0   | 0   | 0      |
| > 83                          | 0              | 0   | 0  | 0   | 0   | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0   | 0   | 0      |
| <b>Totals</b>                 | 20             | 15  | 38 | 88  | 116 | 24  | 8  | 12  | 4 | 9   | 19 | 11  | 39 | 81  | 104 | 53  | 641    |

Total Number of Valid Hours: 641  
 Total Number of Hours: 672

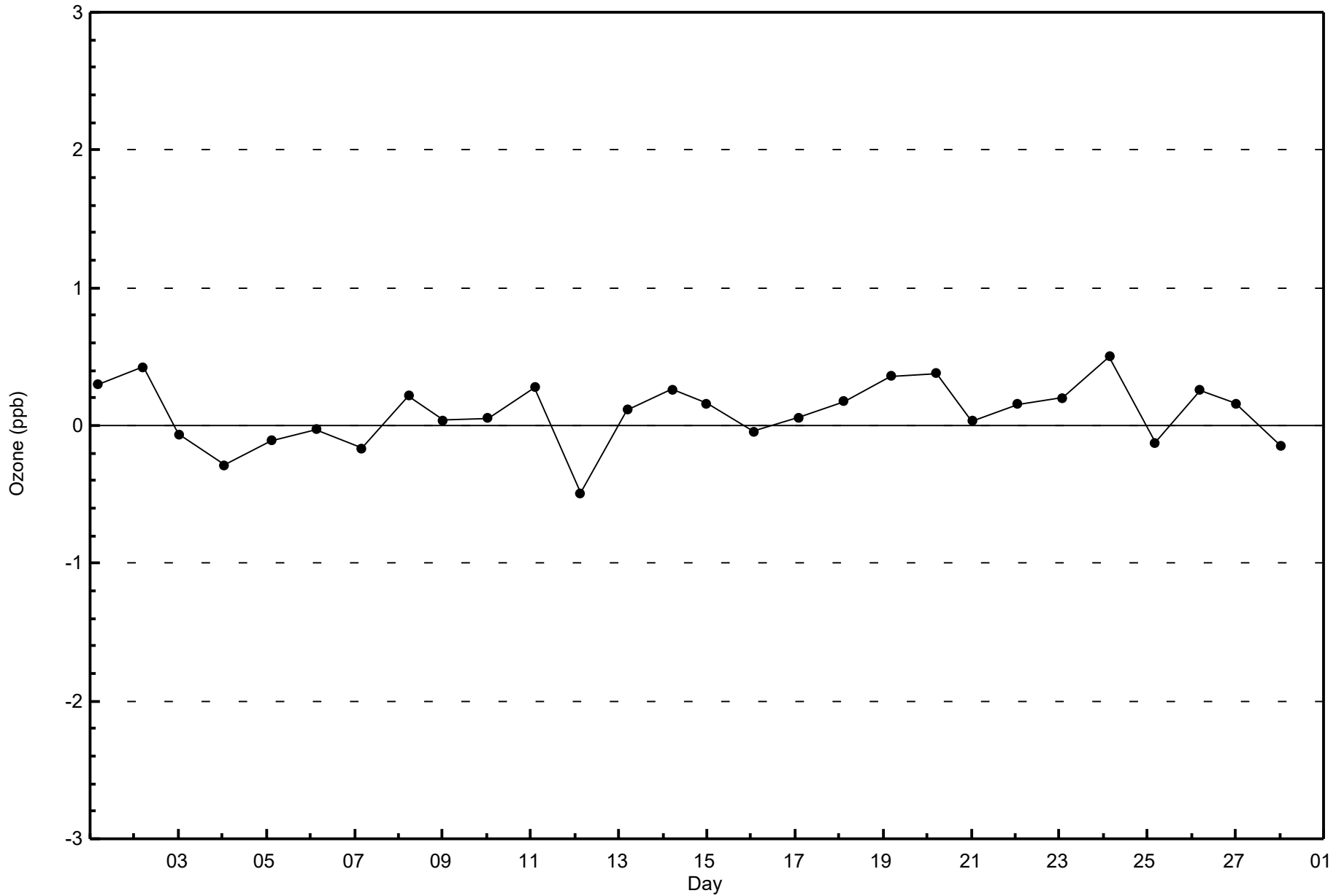


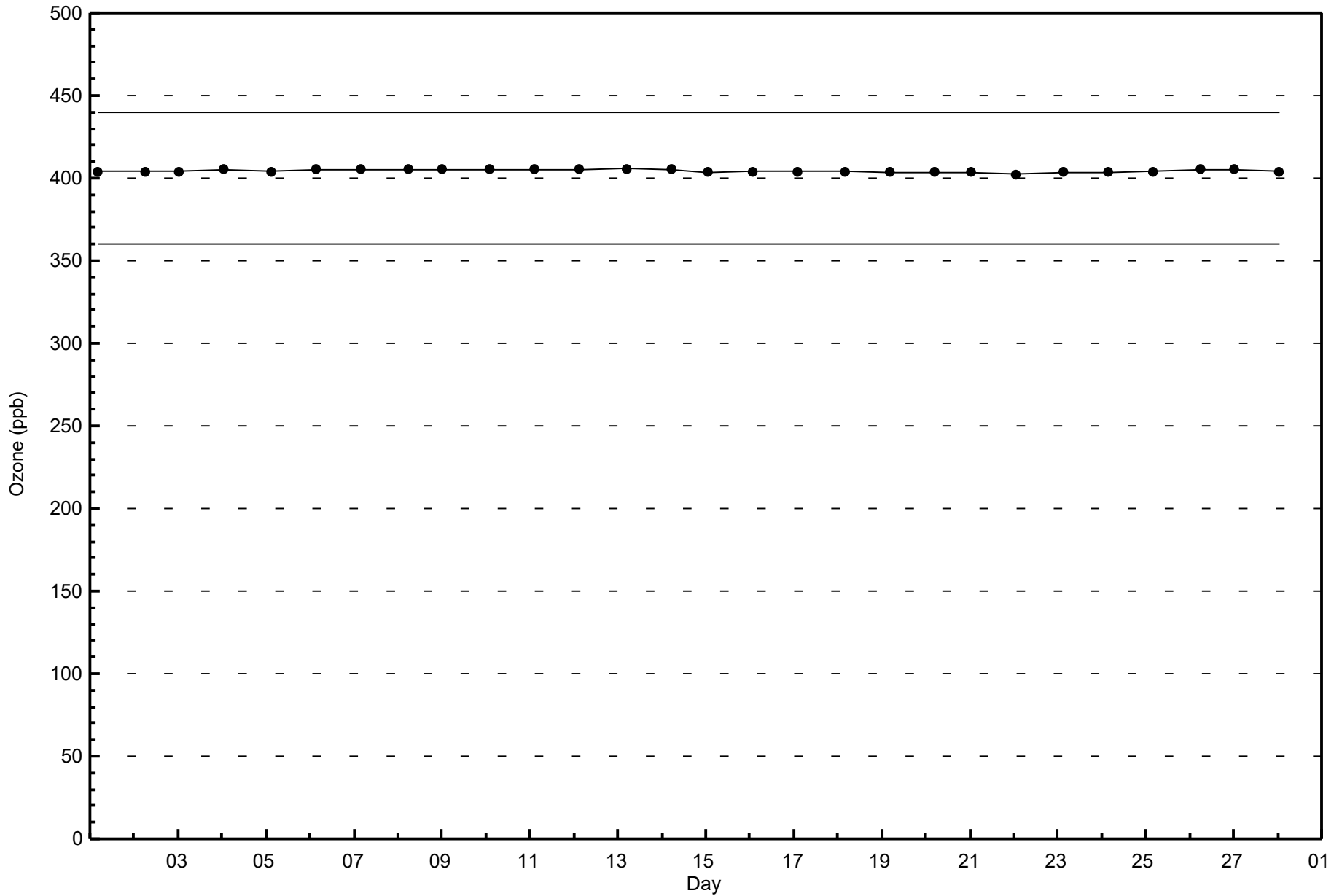
Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Ozone (O<sub>3</sub>) - ppb  
Fort Chipewyan











Wood Buffalo Environmental Association

Summary of Hour Averages

Particulate Matter 2.5 (PM<sub>2.5</sub>) - µg/m<sup>3</sup>

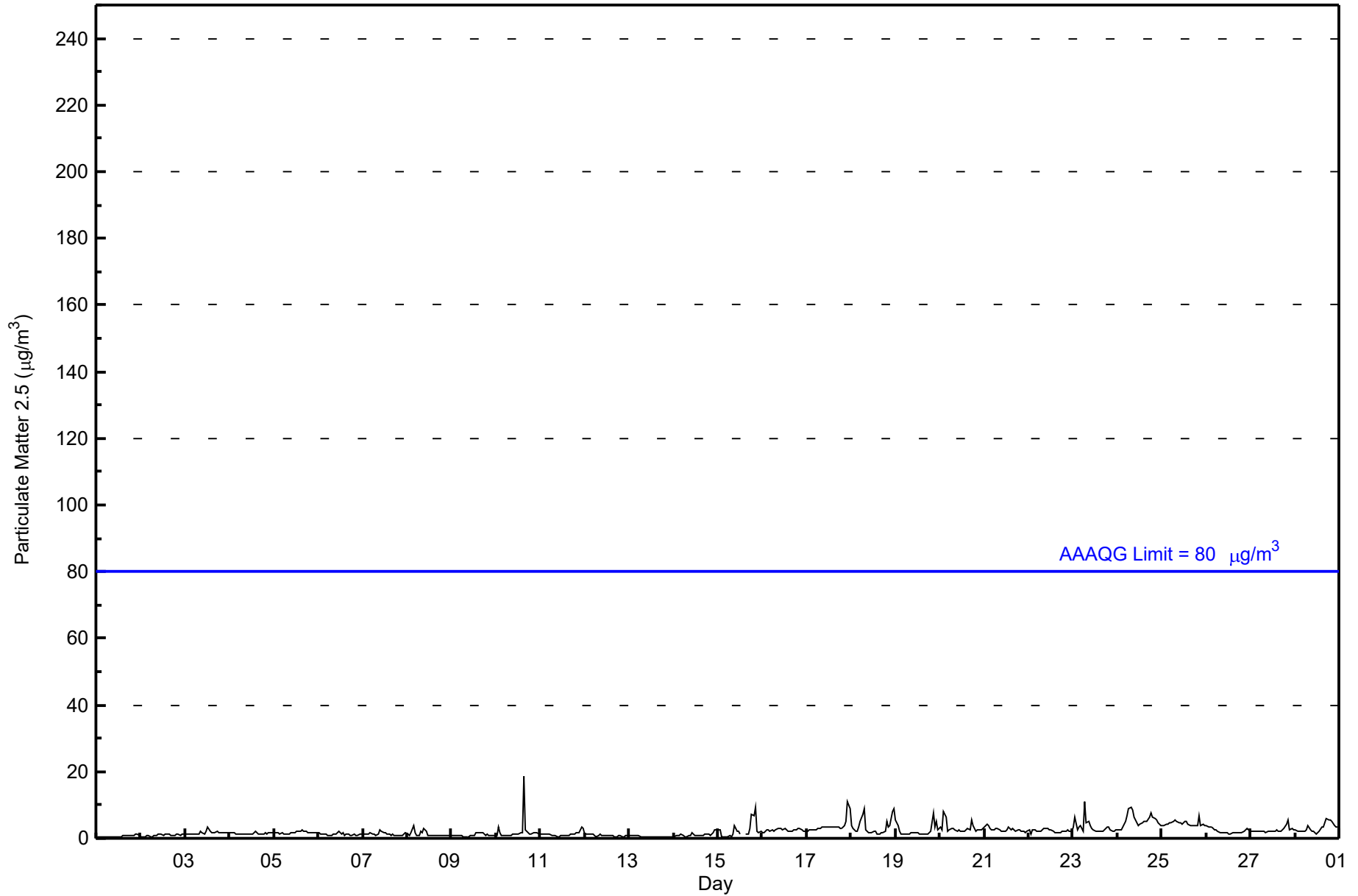
Fort Chipewyan - February 2023

| Number of Exceedences (AAAQO):   |                               | 1-hr: 0  |     | 24-hr: 0                  |     | Hours in Service: |      |     |     |     |     |     |     |     |     |      |     |       |     | 672 |     |      |     |                 |               |               |
|--|-------------------------------|--|-----|---------------------------|-----|-------------------|------|-----|-----|-----|-----|-----|-----|-----|-----|------|-----|-------|-----|-----|-----|------|-----|-----------------|---------------|---------------|
| Maximum Value: 18.5 µg/m <sup>3</sup> on Feb 10 16:00  |                               | Maximum Daily Average: 5.4 µg/m <sup>3</sup> on Feb 24   |     | Hours of Data:            |     |                   |      |     |     |     |     |     |     |     |     |      |     | 670   |     |     |     |      |     |                 |               |               |
| Minimum Value: 0.4 µg/m <sup>3</sup> on Feb 1 07:00  |                               | Minimum Daily Average: 0.5 µg/m <sup>3</sup> on Feb 13   |     | Hours of Missing Data:    |     |                   |      |     |     |     |     |     |     |     |     |      |     | 2     |     |     |     |      |     |                 |               |               |
| Maximum Diurnal Average: 2.8 µg/m <sup>3</sup> at hour 21  |                               | Minimum Diurnal Average: 1.8 µg/m <sup>3</sup> at hour 12  |     | Hours of Calibration:     |     |                   |      |     |     |     |     |     |     |     |     |      |     | 2     |     |     |     |      |     |                 |               |               |
| Monthly Average: 2.16 µg/m <sup>3</sup>  |                               | Percentiles: P <sub>1</sub> = 0.4 P <sub>10</sub> = 0.7 Q <sub>1</sub> = 1.1 Median = 1.7 Q <sub>3</sub> = 2.6 P <sub>90</sub> = 3.9 P <sub>99</sub> = 8.8 |     | Percent Operational Time: |     |                   |      |     |     |     |     |     |     |     |     |      |     | 100.0 |     |     |     |      |     |                 |               |               |
| Day  | Hourly Period Ending At (MST) |  |     |                           |     |                   |      |     |     |     |     |     |     |     |     |      |     |       |     |     |     |      |     |                 | Daily Average | Daily Maximum |
|  | 1                             | 2  | 3   | 4                         | 5   | 6                 | 7    | 8   | 9   | 10  | 11  | 12  | 13  | 14  | 15  | 16   | 17  | 18    | 19  | 20  | 21  | 22   | 23  | 24              |               |               |
| 1-Feb  | 0.5                           | 0.5  | 0.4 | 0.5                       | 0.5 | 0.5               | 0.4  | 0.5 | 0.5 | 0.4 | 0.4 | 0.5 | 0.6 | 0.6 | 0.7 | 0.7  | 0.7 | 0.7   | 0.7 | 0.8 | 0.8 | 1.3  | 1.3 | 0.8             | 0.6           | 1.3           |
| 2-Feb  | 0.5                           | 0.6  | 0.5 | 0.9                       | 0.7 | 0.6               | 0.6  | 0.6 | 0.8 | 1.1 | 1.1 | 1.2 | 1.0 | 1.2 | 1.2 | 1.1  | 1.0 | 1.0   | 1.0 | 1.1 | 1.2 | 1.0  | 1.1 | 1.2             | 0.9           | 1.2           |
| 3-Feb  | 1.3                           | 1.3  | 1.3 | 1.3                       | 1.3 | 1.4               | 1.3  | 1.3 | 2.0 | 1.5 | 1.3 | 2.1 | 3.2 | 2.2 | 1.8 | 1.8  | 1.8 | 2.3   | 1.7 | 1.9 | 1.7 | 1.7  | 1.8 | 1.9             | 1.7           | 3.2           |
| 4-Feb  | 1.7                           | 1.7  | 1.6 | 1.4                       | 1.3 | 1.4               | 1.3  | 1.2 | 1.2 | 1.3 | 1.2 | 1.3 | 1.3 | 1.6 | 2.0 | 1.4  | 1.3 | 1.3   | 1.4 | 1.6 | 1.4 | 1.6  | 1.7 | 1.7             | 1.5           | 2.0           |
| 5-Feb  | 1.8                           | 1.6  | 1.5 | 1.5                       | 1.5 | 1.4               | 1.4  | 1.4 | 1.4 | 1.4 | 1.6 | 1.7 | 1.9 | 2.0 | 2.1 | 2.2  | 2.3 | 2.3   | 1.9 | 1.6 | 1.5 | 1.5  | 1.6 | 1.7             | 1.7           | 2.3           |
| 6-Feb  | 1.5                           | 1.3  | 1.4 | 1.3                       | 1.1 | 1.0               | 0.9  | 0.8 | 1.2 | 1.3 | 1.6 | 2.2 | 1.3 | 1.9 | 1.1 | 1.3  | 1.2 | 0.9   | 0.9 | 1.1 | 1.0 | 1.0  | 1.1 | 1.2             | 1.2           | 2.2           |
| 7-Feb  | 1.2                           | 1.1  | 1.1 | 1.3                       | 1.6 | 1.2               | 1.1  | 1.0 | 1.4 | 2.5 | 2.3 | 1.8 | 1.5 | 1.3 | 1.2 | 1.0  | 1.1 | 1.0   | 1.0 | 0.9 | 0.9 | 0.9  | 1.1 | 1.8             | 1.3           | 2.5           |
| 8-Feb  | 1.1                           | 1.0  | 1.7 | 3.7                       | 1.8 | 0.9               | 0.9  | 2.0 | 1.7 | 3.1 | 2.0 | 0.9 | 0.8 | 0.8 | 0.9 | 0.8  | 0.8 | 0.8   | 0.8 | 0.9 | 0.8 | 0.8  | 0.9 | 0.8             | 1.3           | 3.7           |
| 9-Feb  | 0.8                           | 0.8  | 0.8 | 0.7                       | 0.6 | 0.7               | 0.6  | 0.6 | 0.6 | 0.6 | 0.8 | 0.8 | 0.8 | 1.7 | 1.6 | 1.6  | 1.8 | 1.6   | 1.0 | 1.1 | 1.0 | 0.8  | 0.9 | 0.9             | 1.0           | 1.8           |
| 10-Feb   | 1.0                           | 3.4  | 1.8 | 1.0                       | 0.8 | 0.7               | 0.8  | 1.0 | 1.0 | 1.1 | 1.3 | 1.3 | 1.4 | 1.5 | 1.7 | 18.5 | 2.6 | 1.5   | 1.4 | 1.4 | 1.5 | 1.6  | 1.5 | 1.4             | 2.1           | 18.5          |
| 11-Feb   | 1.4                           | 1.3  | 1.3 | 1.1                       | 1.2 | 1.1               | 0.9  | 0.7 | 0.6 | 0.6 | 0.6 | 0.7 | 0.7 | 0.8 | 0.9 | 1.0  | 1.4 | 1.3   | 1.4 | 1.5 | 1.7 | 1.8  | 3.4 | 2.9             | 1.3           | 3.4           |
| 12-Feb   | 1.2                           | 1.2  | 1.2 | 1.3                       | 1.1 | 0.7               | 0.6  | 0.7 | 1.3 | 1.0 | 1.0 | 1.1 | 0.9 | 0.8 | 0.9 | 0.6  | 0.6 | 0.6   | 0.7 | 0.7 | 0.6 | 0.6  | 0.8 | 0.9             | 0.9           | 1.3           |
| 13-Feb   | 0.8                           | 0.7  | 0.7 | 0.7                       | 0.8 | 0.7               | 0.4  | 0.4 | 0.4 | 0.5 | 0.6 | 0.4 | 0.4 | 0.5 | 0.5 | 0.6  | 0.5 | 0.4   | 0.4 | 0.4 | 0.4 | 0.4  | 0.5 | 0.6             | 0.5           | 0.8           |
| 14-Feb   | 0.5                           | 0.8  | 0.8 | 0.9                       | 1.2 | 0.7               | 0.6  | 0.6 | 0.8 | 0.8 | 1.6 | 0.9 | 1.0 | 1.0 | 0.9 | 0.8  | 0.7 | 1.2   | 1.1 | 1.4 | 1.1 | 1.9  | 2.7 | 2.6             | 1.1           | 2.7           |
| 15-Feb   | 2.6                           | 2.5  | 0.6 | 0.5                       | 0.5 | 0.5               | 0.7  | 0.6 | 1.1 | 3.9 | 2.3 | 2.1 | 1.2 | C   | C   | 1.4  | 1.4 | 2.9   | 7.1 | 6.7 | 9.5 | 2.1  | 1.7 | 2.2             | 2.4           | 9.5           |
| 16-Feb   | 1.6                           | 1.8  | 2.5 | 2.5                       | 2.3 | 2.4               | 2.2  | 2.4 | 2.8 | 2.8 | 2.8 | 2.7 | 2.9 | 2.6 | 2.3 | 2.1  | 2.3 | 2.5   | 2.7 | 3.0 | 2.8 | 2.6  | 2.3 | 2.2             | 2.5           | 3.0           |
| 17-Feb   | 2.3                           | 2.5  | 2.4 | 2.4                       | 2.4 | 2.6               | 2.8  | 3.1 | 3.3 | 3.5 | 3.3 | 3.4 | 3.3 | 3.3 | 3.3 | 3.5  | 3.6 | 3.0   | 3.0 | 3.7 | 5.1 | 11.1 | 8.8 | 3.7             | 11.1          |               |
| 18-Feb   | 3.9                           | 2.9  | 2.1 | 2.1                       | 3.2 | 4.9               | 7.0  | 8.8 | 2.6 | 1.6 | 1.8 | 1.5 | 2.1 | 2.1 | 1.5 | 1.4  | 1.6 | 1.7   | 2.2 | 5.3 | 3.2 | 3.9  | 8.2 | 8.8             | 3.5           | 8.8           |
| 19-Feb   | 5.5                           | 4.0  | 2.0 | 1.2                       | 1.2 | 1.3               | 1.4  | 1.4 | 1.7 | 1.7 | 1.6 | 1.6 | 1.6 | 1.3 | 1.3 | 1.2  | 1.2 | 1.1   | 1.6 | 2.3 | 7.7 | 3.3  | 5.0 | 2.6             | 2.3           | 7.7           |
| 20-Feb   | 3.3                           | 2.7  | 7.8 | 6.5                       | 1.9 | 2.5               | 2.8  | 3.1 | 2.6 | 2.3 | 2.5 | 2.1 | 2.1 | 1.9 | 2.4 | 3.2  | 2.5 | 5.5   | 3.7 | 2.2 | 2.4 | 2.5  | 2.6 | 2.9             | 3.1           | 7.8           |
| 21-Feb   | 3.2                           | 4.1  | 3.7 | 2.8                       | 2.5 | 2.4               | 2.9  | 2.8 | 2.3 | 2.0 | 1.9 | 2.0 | 2.4 | 3.4 | 2.6 | 3.0  | 2.3 | 2.3   | 2.5 | 2.7 | 2.1 | 2.2  | 1.9 | 2.0             | 2.6           | 4.1           |
| 22-Feb   | 2.5                           | 1.3  | 2.6 | 2.5                       | 2.3 | 2.1               | 2.2  | 2.4 | 2.8 | 2.8 | 3.1 | 2.5 | 2.3 | 2.0 | 1.9 | 1.9  | 1.9 | 1.7   | 2.1 | 2.0 | 2.1 | 2.4  | 2.1 | 2.1             | 2.2           | 3.1           |
| 23-Feb   | 3.4                           | 6.4  | 2.5 | 3.5                       | 3.7 | 2.3               | 10.9 | 4.5 | 5.2 | 3.6 | 3.2 | 2.7 | 2.3 | 2.3 | 2.3 | 2.3  | 2.3 | 2.4   | 3.2 | 3.4 | 2.7 | 2.2  | 2.1 | 2.5             | 3.4           | 10.9          |
| 24-Feb   | 2.7                           | 2.5  | 2.5 | 3.5                       | 4.9 | 7.0               | 8.7  | 9.4 | 8.5 | 6.4 | 4.8 | 3.7 | 4.0 | 4.9 | 5.2 | 5.1  | 5.3 | 6.4   | 7.4 | 6.2 | 6.0 | 5.4  | 4.6 | 3.9             | 5.4           | 9.4           |
| 25-Feb   | 3.9                           | 3.9  | 4.3 | 4.3                       | 4.5 | 4.6               | 5.3  | 5.3 | 4.9 | 4.5 | 4.5 | 4.1 | 5.0 | 4.9 | 4.3 | 3.9  | 3.9 | 3.8   | 3.8 | 3.7 | 6.7 | 3.7  | 4.2 | 3.9             | 4.4           | 6.7           |
| 26-Feb   | 3.9                           | 3.3  | 3.4 | 3.2                       | 2.6 | 2.7               | 2.1  | 1.7 | 1.9 | 1.5 | 1.5 | 1.7 | 1.3 | 1.3 | 1.7 | 1.8  | 1.6 | 1.6   | 1.7 | 1.8 | 2.2 | 2.5  | 2.9 | 2.7             | 2.2           | 3.9           |
| 27-Feb   | 2.3                           | 2.1  | 2.1 | 2.2                       | 2.3 | 2.3               | 2.1  | 2.0 | 1.9 | 2.1 | 2.3 | 2.1 | 2.1 | 2.3 | 2.4 | 2.3  | 2.0 | 2.5   | 2.9 | 4.3 | 5.7 | 2.7  | 2.8 | 2.4             | 2.5           | 5.7           |
| 28-Feb   | 2.6                           | 2.1  | 2.0 | 2.2                       | 2.1 | 1.9               | 2.5  | 4.0 | 2.7 | 2.1 | 2.1 | 1.4 | 1.6 | 2.0 | 3.5 | 3.5  | 4.8 | 5.7   | 5.6 | 5.4 | 5.2 | 3.7  | 3.5 | 3.3             | 3.2           | 5.7           |
|  |                               |  |     |                           |     |                   |      |     |     |     |     |     |     |     |     |      |     |       |     |     |     |      |     | Diurnal Average |               |               |
|  |                               |  |     |                           |     |                   |      |     |     |     |     |     |     |     |     |      |     |       |     |     |     |      |     | Diurnal Maximum |               |               |
| 2.1 2.1 2.0 2.0 1.9 1.9 2.3 2.3 2.1 2.1 2.0 1.8 1.8 1.9 1.9 2.5 1.9 2.2 2.3 2.4 2.8 2.2 2.7 2.5        |                               |  |     |                           |     |                   |      |     |     |     |     |     |     |     |     |      |     |       |     |     |     |      |     |                 |               |               |
| 5.5 6.4 7.8 6.5 4.9 7.0 10.9 9.4 8.5 6.4 4.8 4.1 5.0 4.9 5.2 18.5 5.3 6.4 7.4 6.7 9.5 5.4 11.1 8.8     |                               |  |     |                           |     |                   |      |     |     |     |     |     |     |     |     |      |     |       |     |     |     |      |     |                 |               |               |
| C - Calibration  |                               |  |     |                           |     |                   |      |     |     |     |     |     |     |     |     |      |     |       |     |     |     |      |     |                 |               |               |
| Alberta Ambient Air Quality Guideline/Objectives: 1-hr 80 µg/m <sup>3</sup> 24-hr 29 µg/m <sup>3</sup> |                               |  |     |                           |     |                   |      |     |     |     |     |     |     |     |     |      |     |       |     |     |     |      |     |                 |               |               |



Wood Buffalo Environmental Association  
Hourly Averages

Particulate Matter 2.5 (PM<sub>2.5</sub>) -  $\mu\text{g}/\text{m}^3$   
Fort Chipewyan - February 2023





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Particulate Matter 2.5 (PM<sub>2.5</sub>) -  $\mu\text{g}/\text{m}^3$**   
**Fort Chipewyan - February 2023**

| <b>Concentration Ranges (<math>\mu\text{g}/\text{m}^3</math>)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---|------------------------|----------|---------------------|
| 0 - 5   | 640                    | 95.52    | 95.52               |
| 6 - 15  | 29                     | 4.33     | 99.85               |
| 16 - 25   | 1                      | 0.15     | 100.00              |
| 26 - 80   | 0                      | 0.00     | 100.00              |
| > 81.0  | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 670

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Particulate Matter 2.5 (PM<sub>2.5</sub>) - µg/m<sup>3</sup>  
Fort Chipewyan - February 2023**

| Concentration<br>Ranges (µg/m <sup>3</sup> ) | Wind Direction |     |    |     |     |     |    |     |   |     |    |     |    |     |     |     | Totals |
|--|----------------|-----|----|-----|-----|-----|----|-----|---|-----|----|-----|----|-----|-----|-----|--------|
|  | N              | NNE | NE | ENE | E   | ESE | SE | SSE | S | SSW | SW | WSW | W  | WNW | NW  | NNW |        |
| 0 - 5  | 18             | 15  | 41 | 87  | 117 | 21  | 7  | 12  | 2 | 7   | 20 | 11  | 41 | 81  | 106 | 54  | 640    |
| 6 - 15                                       | 2              | 0   | 0  | 4   | 4   | 4   | 1  | 1   | 1 | 3   | 0  | 0   | 0  | 3   | 4   | 2   | 29     |
| 16 - 25                                      | 0              | 0   | 1  | 0   | 0   | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0   | 0   | 1      |
| 26 - 80                                      | 0              | 0   | 0  | 0   | 0   | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0   | 0   | 0      |
| > 81.0                                       | 0              | 0   | 0  | 0   | 0   | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0   | 0   | 0      |
| <b>Totals</b>                                | 20             | 15  | 42 | 91  | 121 | 25  | 8  | 13  | 3 | 10  | 20 | 11  | 41 | 84  | 110 | 56  | 670    |

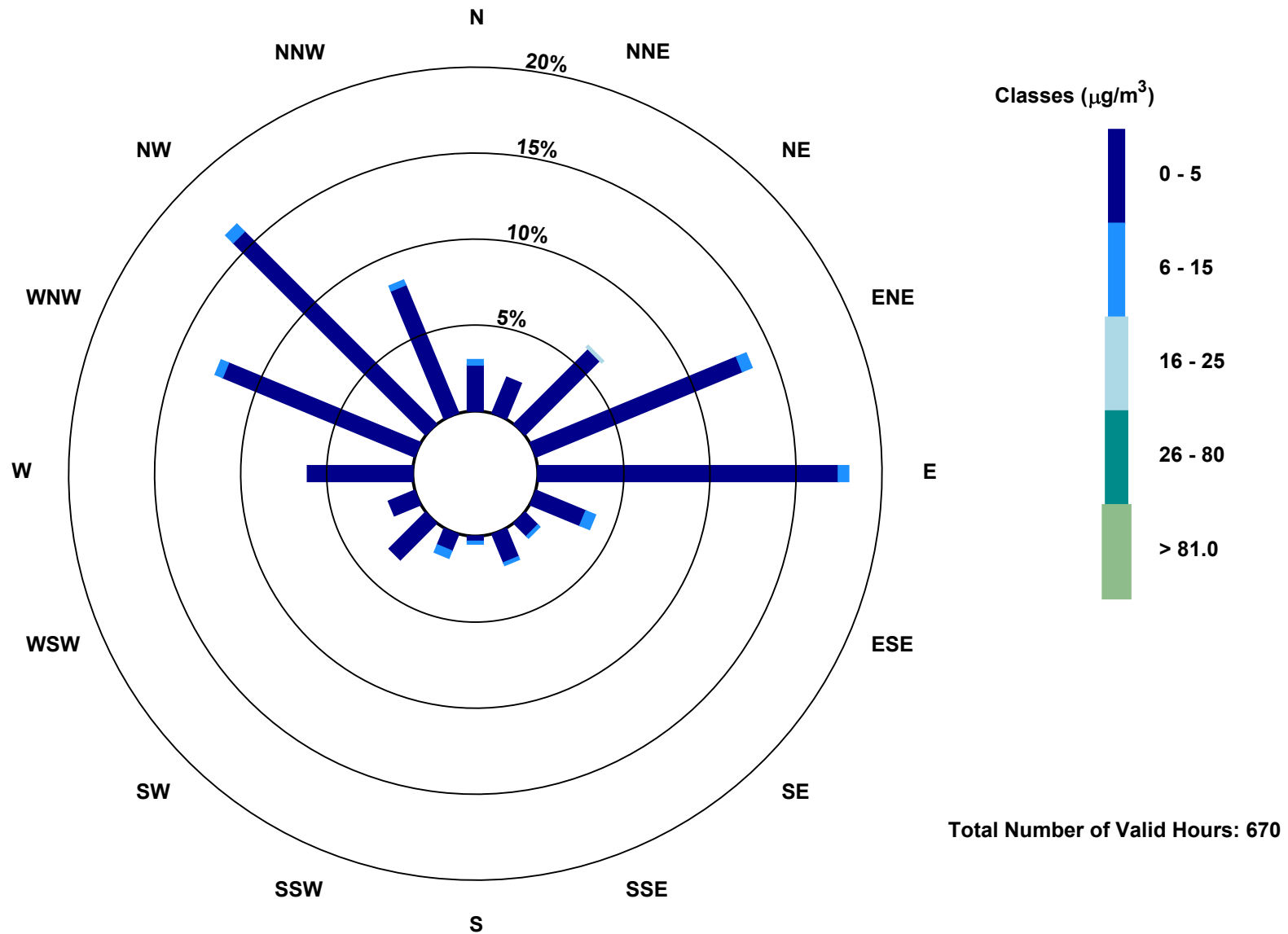
Total Number of Valid Hours: 670

Total Number of Hours: 672



Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Particulate Matter 2.5 (PM<sub>2.5</sub>) -  $\mu\text{g}/\text{m}^3$   
Fort Chipewyan





Wood Buffalo Environmental Association

Summary of Hour Averages

Carbon Monoxide (CO) - ppm  
Fort Chipewyan - February 2023

|  |  |          |                           |      |
|--|--|----------|---------------------------|------|
| Number of Exceedences (AAAQO):             | 1-hr: 0  | 24-hr: 0 | Hours in Service:         | 672  |
| Maximum Value: 0.1 ppm on Feb 15 21:00     | Maximum Daily Average: 0.1 ppm on Feb 1  |          | Hours of Data:            | 637  |
| Minimum Value: 0.0 ppm on Feb 5 14:00      | Minimum Daily Average: 0.0 ppm on Feb 26   |          | Hours of Missing Data:    | 35   |
| Maximum Diurnal Average: 0.0 ppm at hour 9 | Minimum Diurnal Average: 0.0 ppm at hour 13  |          | Hours of Calibration:     | 32   |
| Monthly Average: 0.03 ppm                  | Percentiles: P <sub>1</sub> = 0.0 P <sub>10</sub> = 0.0 Q <sub>1</sub> = 0.0 Median = 0.0 Q <sub>3</sub> = 0.0 P <sub>90</sub> = 0.1 P <sub>99</sub> = 0.1 |          | Percent Operational Time: | 99.6 |

| Day    | Hourly Period Ending At (MST) |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 | Daily Average | Daily Maximum |     |     |     |     |     |     |     |     |     |
|--------|-------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----------------|---------------|---------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|        | 1                             | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19  | 20  | 21  | 22  | 23  | 24              |               |               |     |     |     |     |     |     |     |     |     |
| 1-Feb  | 0.1                           | Z   | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1             | 0.1           | 0.1           | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| 2-Feb  | 0.1                           | 0.1 | Z   | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1             | 0.1           | 0.1           | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| 3-Feb  | 0.1                           | 0.0 | 0.1 | Z   | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | M   | M   | M   | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.0           | 0.0           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 |
| 4-Feb  | 0.0                           | 0.0 | 0.0 | 0.0 | Z   | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.0           | 0.0           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 5-Feb  | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | Z   | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.0           | 0.0           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 6-Feb  | Z                             | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.0           | 0.0           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 7-Feb  | 0.0                           | Z   | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.0           | 0.0           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 |
| 8-Feb  | 0.0                           | 0.0 | Z   | 0.1 | 0.1 | 0.0 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.0           | 0.0           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 |
| 9-Feb  | 0.0                           | 0.0 | 0.0 | Z   | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.0           | 0.0           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 10-Feb | 0.0                           | 0.0 | 0.0 | 0.0 | Z   | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.0           | 0.0           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 11-Feb | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | Z   | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.0           | 0.0           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 12-Feb | Z                             | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.0           | 0.0           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 13-Feb | 0.0                           | Z   | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.0           | 0.0           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 14-Feb | 0.0                           | 0.0 | Z   | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | C   | C   | C   | C   | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1             | 0.1           | 0.1           | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| 15-Feb | 0.0                           | 0.0 | 0.0 | Z   | 0.1 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.0           | 0.0           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 |
| 16-Feb | 0.0                           | 0.0 | 0.0 | 0.0 | Z   | 0.0 | 0.0 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.0           | 0.0           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 |
| 17-Feb | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | Z   | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.0           | 0.0           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 18-Feb | Z                             | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.1             | 0.1           | 0.1           | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| 19-Feb | 0.0                           | Z   | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.1 | 0.1             | 0.1           | 0.1           | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| 20-Feb | 0.1                           | 0.1 | Z   | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.0 | 0.1 | 0.1 | 0.1             | 0.1           | 0.1           | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| 21-Feb | 0.1                           | 0.1 | 0.1 | Z   | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.0           | 0.0           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 |
| 22-Feb | 0.0                           | 0.0 | 0.0 | 0.0 | Z   | 0.0 | 0.0 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.0           | 0.0           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 |
| 23-Feb | 0.0                           | 0.1 | 0.0 | 0.1 | 0.0 | Z   | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0             | 0.0           | 0.0           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 |
| 24-Feb | Z                             | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.0 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.0           | 0.0           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 |
| 25-Feb | 0.0                           | Z   | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.0           | 0.0           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 |
| 26-Feb | 0.0                           | 0.0 | Z   | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.0           | 0.0           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 27-Feb | 0.0                           | 0.0 | 0.0 | Z   | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.0           | 0.0           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 28-Feb | 0.0                           | 0.0 | 0.0 | 0.0 | Z   | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0             | 0.0           | 0.0           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 |
| 0.0    |                               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Diurnal Average |               |               |     |     |     |     |     |     |     |     |     |
| 0.1    |                               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Diurnal Maximum |               |               |     |     |     |     |     |     |     |     |     |

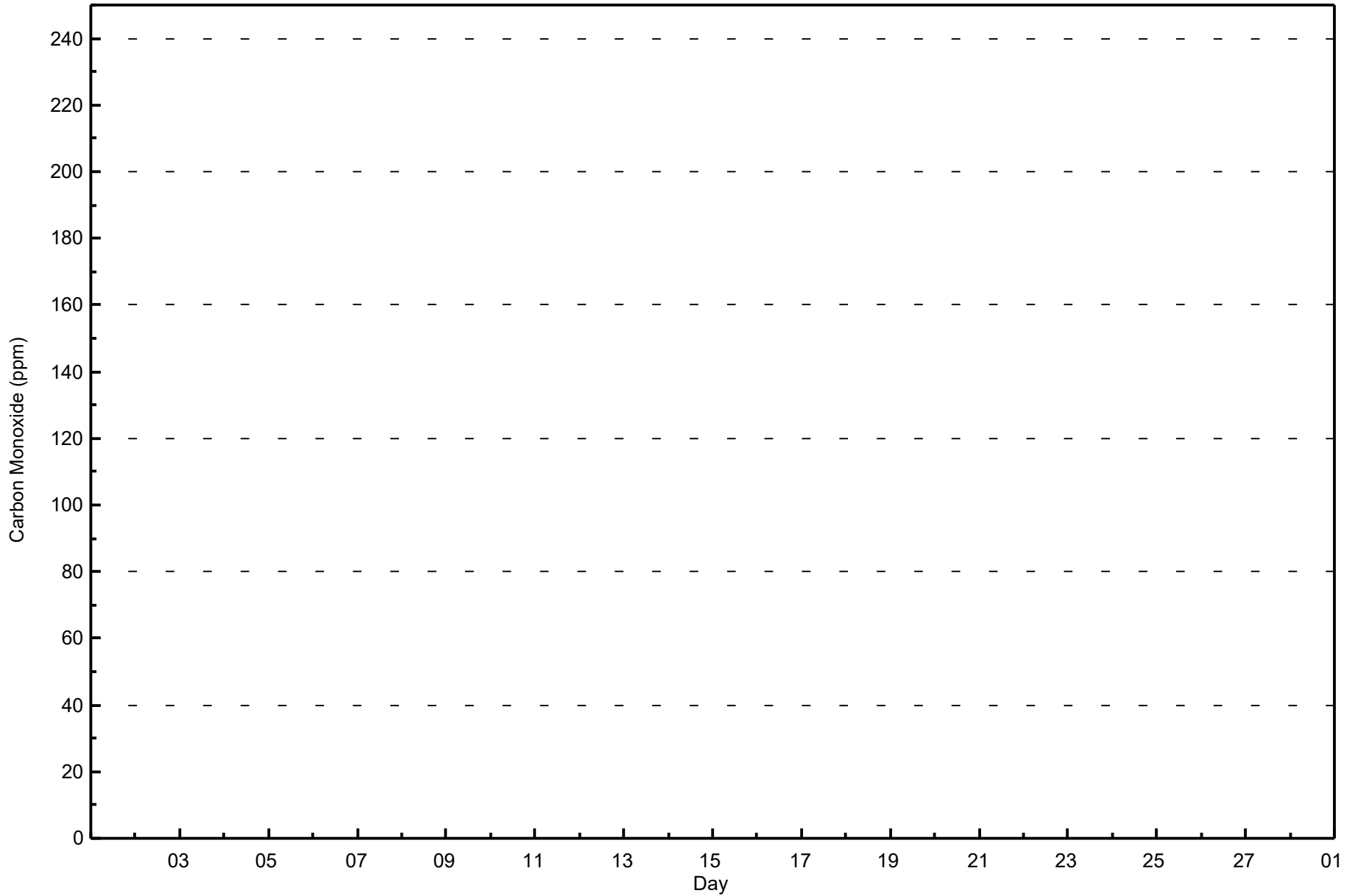
Z - zerospan      C - Calibration      M - Maintenance  
 Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 13 ppm





**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Carbon Monoxide (CO) - ppm**  
**Fort Chipewyan - February 2023**





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Carbon Monoxide (CO) - ppm**  
**Fort Chipewyan - February 2023**

| <b>Concentration Ranges (ppm)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 0.3                           | 637                    | 100.00   | 100.00              |
| 0.4 - 0.5                         | 0                      | 0.00     | 100.00              |
| 0.6 - 0.7                         | 0                      | 0.00     | 100.00              |
| 0.8 - 1.4                         | 0                      | 0.00     | 100.00              |
| 1.5 - 10                          | 0                      | 0.00     | 100.00              |
| > 10                              | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 637

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Carbon Monoxide (CO) - ppm  
Fort Chipewyan - February 2023**

| Concentration<br>Ranges (ppm) | Wind Direction |     |    |     |     |     |    |     |   |     |    |     |    |     |    |     | Totals |
|-------------------------------|----------------|-----|----|-----|-----|-----|----|-----|---|-----|----|-----|----|-----|----|-----|--------|
|                               | N              | NNE | NE | ENE | E   | ESE | SE | SSE | S | SSW | SW | WSW | W  | WNW | NW | NNW |        |
| 0 - 0.3                       | 18             | 14  | 41 | 87  | 117 | 25  | 7  | 13  | 4 | 9   | 18 | 11  | 41 | 78  | 99 | 55  | 637    |
| 0.4 - 0.5                     | 0              | 0   | 0  | 0   | 0   | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| 0.6 - 0.7                     | 0              | 0   | 0  | 0   | 0   | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| 0.8 - 1.4                     | 0              | 0   | 0  | 0   | 0   | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| 1.5 - 10                      | 0              | 0   | 0  | 0   | 0   | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| > 10                          | 0              | 0   | 0  | 0   | 0   | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| <b>Totals</b>                 | 18             | 14  | 41 | 87  | 117 | 25  | 7  | 13  | 4 | 9   | 18 | 11  | 41 | 78  | 99 | 55  | 637    |

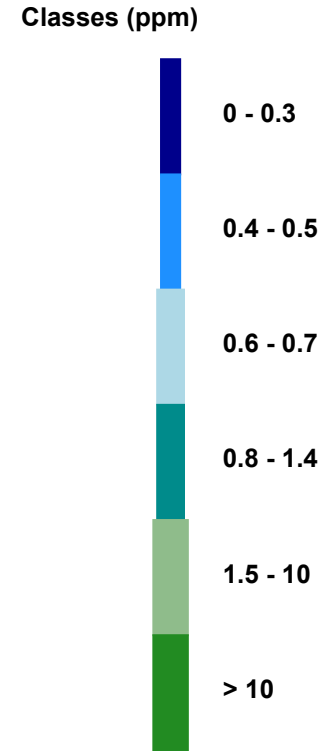
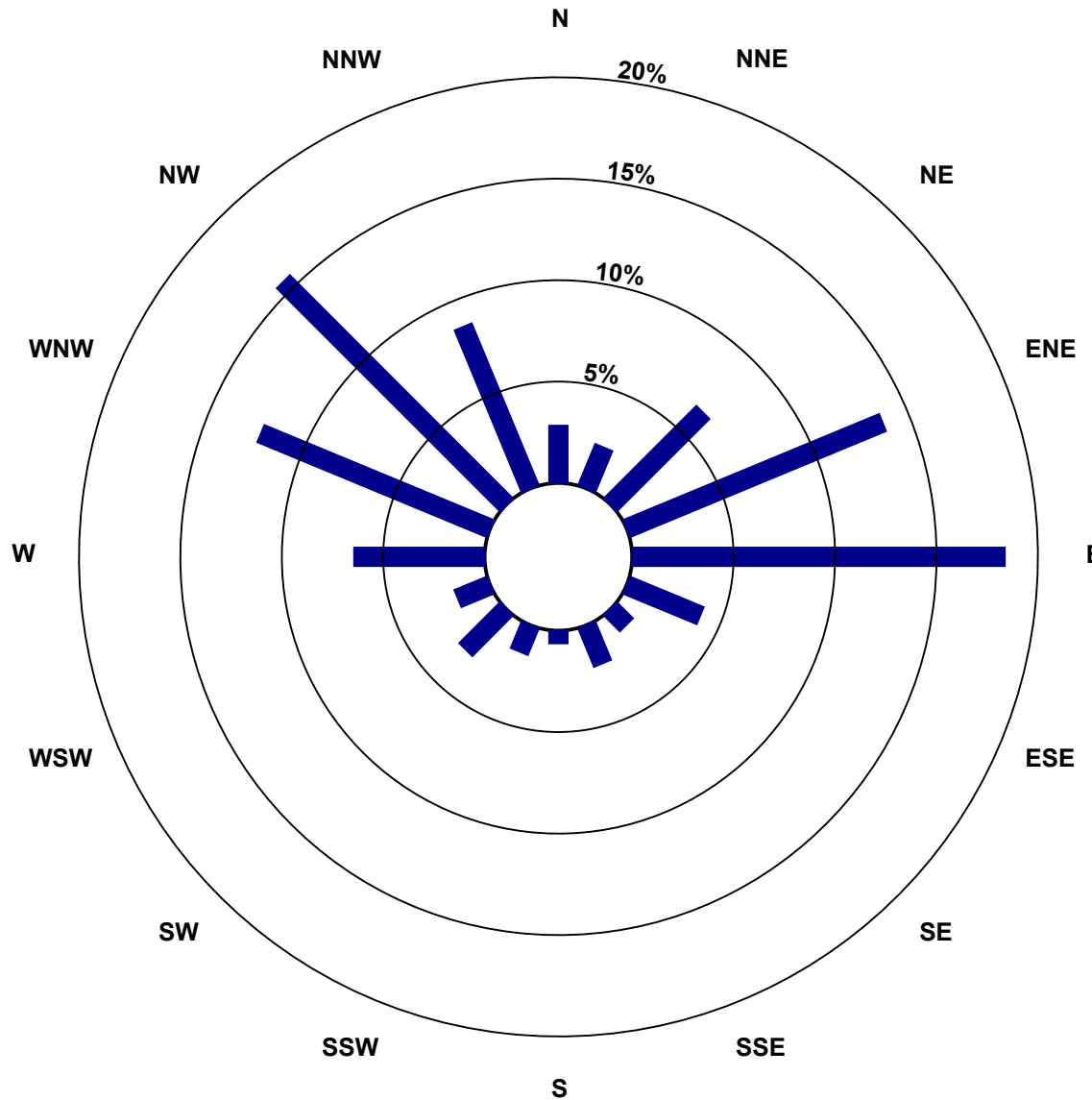
Total Number of Valid Hours: 637

Total Number of Hours: 672



Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Carbon Monoxide (CO) - ppm  
Fort Chipewyan



Total Number of Valid Hours: 637



Wood Buffalo Environmental Association

Summary of Hour Averages

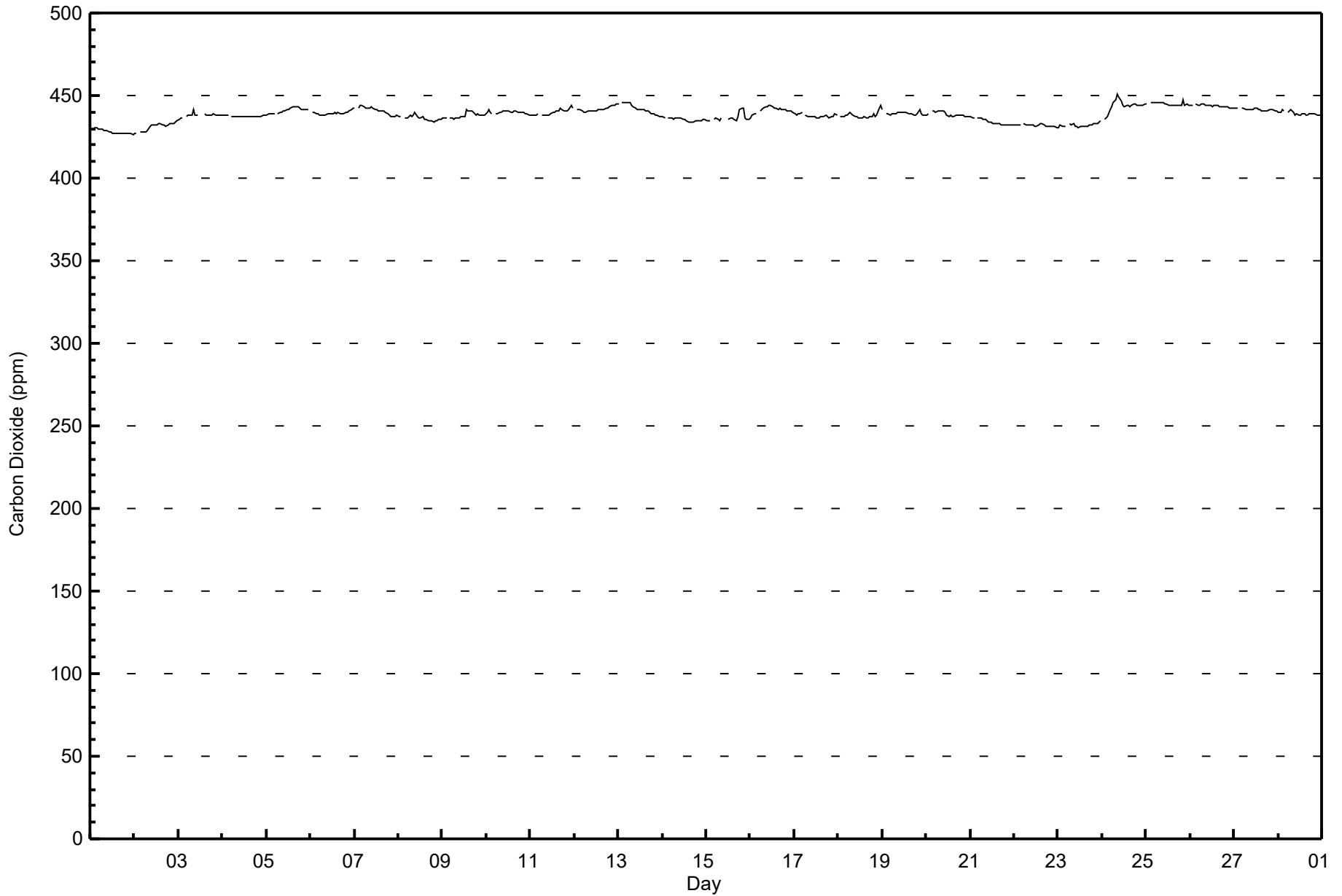
Carbon Dioxide (CO<sub>2</sub>) - ppm  
Fort Chipewyan - February 2023

| Number of Exceedences (AAAQO):  |                               | 1-hr: 0  | 24-hr: 0 | Hours in Service: |       |       |                 |       |       |       |       |       |       |       |       |       |       |       |                           |       | 672   |       |       |                 |               |               |
|---|-------------------------------|--|----------|-------------------|-------|-------|-----------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------------------------|-------|-------|-------|-------|-----------------|---------------|---------------|
| Maximum Value: 450.5 ppm on Feb 24 09:00  |                               | Maximum Daily Average: 445.0 ppm on Feb 25   |          |                   |       |       |                 |       |       |       |       |       |       |       |       |       |       |       | Hours of Data:            |       | 638   |       |       |                 |               |               |
| Minimum Value: 426.7 ppm on Feb 2 00:00   |                               | Minimum Daily Average: 428.2 ppm on Feb 1  |          |                   |       |       |                 |       |       |       |       |       |       |       |       |       |       |       | Hours of Missing Data:    |       | 34    |       |       |                 |               |               |
| Maximum Diurnal Average: 438.9 ppm at hour 9  |                               | Minimum Diurnal Average: 437.5 ppm at hour 2   |          |                   |       |       |                 |       |       |       |       |       |       |       |       |       |       |       | Hours of Calibration:     |       | 31    |       |       |                 |               |               |
| Monthly Average: 438.30 ppm   |                               | Percentiles: P <sub>1</sub> = 427.1 P <sub>10</sub> = 432.0 Q <sub>1</sub> = 436.2 Median = 438.5 Q <sub>3</sub> = 441.3 P <sub>90</sub> = 443.8 P <sub>99</sub> = 445.7 |          |                   |       |       |                 |       |       |       |       |       |       |       |       |       |       |       | Percent Operational Time: |       | 99.6  |       |       |                 |               |               |
| Day   | Hourly Period Ending At (MST) |  |          |                   |       |       |                 |       |       |       |       |       |       |       |       |       |       |       |                           |       |       |       |       |                 | Daily Average | Daily Maximum |
|   | 1                             | 2  | 3        | 4                 | 5     | 6     | 7               | 8     | 9     | 10    | 11    | 12    | 13    | 14    | 15    | 16    | 17    | 18    | 19                        | 20    | 21    | 22    | 23    | 24              |               |               |
| 1-Feb   | 431.3                         | Z  | 430.3    | 430.2             | 429.9 | 429.6 | 429.4           | 429.0 | 428.8 | 428.5 | 428.0 | 427.8 | 427.5 | 427.4 | 427.5 | 427.3 | 427.1 | 427.2 | 426.9                     | 427.1 | 427.1 | 426.9 | 427.0 | 426.7           | 428.2         | 431.3         |
| 2-Feb   | 426.7                         | 427.0  | Z        | 427.9             | 428.0 | 428.2 | 428.2           | 429.0 | 431.0 | 432.3 | 431.9 | 432.5 | 431.8 | 433.1 | 433.5 | 431.9 | 431.8 | 431.6 | 431.9                     | 432.6 | 432.7 | 433.4 | 434.1 | 435.0           | 431.1         | 435.0         |
| 3-Feb   | 435.4                         | 436.1  | 436.7    | Z                 | 437.5 | 438.0 | 438.3           | 438.2 | 441.3 | 438.5 | 438.0 | M     | M     | M     | 439.2 | 438.2 | 438.1 | 437.9 | 438.2                     | 438.6 | 438.5 | 438.4 | 438.4 | 437.9           | 438.1         | 441.3         |
| 4-Feb   | 437.8                         | 438.0  | 438.2    | 437.9             | Z     | 437.3 | 437.1           | 437.2 | 437.5 | 437.2 | 437.2 | 437.0 | 437.3 | 437.6 | 437.6 | 437.1 | 437.0 | 436.9 | 436.9                     | 437.2 | 436.9 | 437.6 | 437.9 | 438.2           | 437.4         | 438.2         |
| 5-Feb   | 438.4                         | 438.6  | 438.6    | 439.0             | 438.6 | Z     | 439.2           | 439.5 | 440.1 | 440.6 | 440.9 | 441.3 | 441.9 | 442.6 | 443.0 | 443.3 | 443.5 | 442.8 | 442.5                     | 441.9 | 441.8 | 441.8 | 441.7 | 441.1           | 441.0         | 443.5         |
| 6-Feb   | Z                             | 440.1  | 439.5    | 439.1             | 438.6 | 438.4 | 438.4           | 438.5 | 438.6 | 439.1 | 438.9 | 439.1 | 439.7 | 439.3 | 439.8 | 439.4 | 439.3 | 439.4 | 440.1                     | 440.2 | 440.9 | 441.7 | 442.0 | 439.5           | 442.0         |               |
| 7-Feb   | 442.3                         | Z  | 442.6    | 443.8             | 444.1 | 443.4 | 442.6           | 442.1 | 442.2 | 442.9 | 442.6 | 441.5 | 441.3 | 440.9 | 440.8 | 440.5 | 440.4 | 440.1 | 439.3                     | 438.0 | 437.6 | 437.2 | 437.2 | 440.9           | 444.1         |               |
| 8-Feb   | 437.0                         | 437.1  | Z        | 436.9             | 436.5 | 436.1 | 437.9           | 437.4 | 438.4 | 439.5 | 437.2 | 436.7 | 436.9 | 437.2 | 435.5 | 435.2 | 434.7 | 434.6 | 434.4                     | 434.2 | 434.6 | 435.1 | 435.2 | 435.4           | 436.3         | 439.5         |
| 9-Feb   | 436.1                         | 436.1  | 436.4    | Z                 | 436.1 | 436.2 | 436.0           | 436.1 | 436.0 | 436.7 | 437.2 | 437.1 | 437.4 | 441.9 | 440.7 | 441.1 | 440.6 | 439.5 | 438.5                     | 438.7 | 438.5 | 438.0 | 438.1 | 437.9           | 437.9         | 441.9         |
| 10-Feb  | 440.0                         | 441.3  | 440.2    | 438.8             | Z     | 439.1 | 439.3           | 439.9 | 440.0 | 440.3 | 441.0 | 440.7 | 440.5 | 440.1 | 440.0 | 440.5 | 440.3 | 439.9 | 439.9                     | 439.6 | 439.5 | 439.0 | 438.7 | 438.3           | 439.9         | 441.3         |
| 11-Feb  | 438.4                         | 438.5  | 438.1    | 438.3             | 438.8 | Z     | 437.8           | 437.8 | 437.9 | 438.1 | 438.4 | 439.0 | 439.5 | 440.0 | 440.4 | 441.0 | 442.4 | 441.5 | 441.0                     | 440.9 | 440.7 | 441.6 | 443.7 | 442.3           | 439.8         | 443.7         |
| 12-Feb  | Z                             | 441.8  | 441.7    | 441.5             | 440.6 | 440.1 | 440.2           | 440.7 | 441.1 | 440.9 | 440.7 | 440.7 | 441.0 | 441.2 | 441.8 | 441.6 | 441.7 | 442.2 | 442.8                     | 443.5 | 443.8 | 444.0 | 444.4 | 444.9           | 441.9         | 444.9         |
| 13-Feb  | 445.2                         | Z  | 445.6    | 445.8             | 445.6 | 445.5 | 445.4           | 444.3 | 443.0 | 442.1 | 441.6 | 441.4 | 441.1 | 441.2 | 441.1 | 440.7 | 440.3 | 439.9 | 439.2                     | 438.7 | 438.3 | 437.8 | 437.6 | 437.3           | 441.7         | 445.8         |
| 14-Feb  | 436.9                         | 436.8  | Z        | 436.2             | 436.1 | 436.4 | 435.8           | 436.0 | 436.2 | 436.1 | 436.2 | 435.6 | 435.4 | 434.7 | 434.2 | 434.0 | 434.1 | 434.3 | 434.5                     | 434.7 | 434.9 | 434.8 | 435.4 | 435.3           | 435.4         | 436.9         |
| 15-Feb  | 435.2                         | 434.9  | 434.5    | Z                 | 435.9 | 436.2 | 435.2           | 434.8 | 436.2 | C     | C     | C     | 435.7 | 436.4 | 436.5 | 435.4 | 434.9 | 437.0 | 441.9                     | 442.2 | 442.7 | 436.3 | 435.8 | 435.9           | 436.7         | 442.7         |
| 16-Feb  | 436.4                         | 437.9  | 438.7    | 439.3             | Z     | 440.7 | 441.2           | 442.1 | 443.0 | 443.6 | 443.9 | 444.0 | 443.5 | 442.8 | 442.2 | 441.8 | 442.0 | 441.8 | 441.7                     | 441.5 | 441.1 | 440.9 | 440.4 | 439.9           | 441.3         | 444.0         |
| 17-Feb  | 439.1                         | 438.4  | 438.8    | 439.1             | 439.7 | Z     | 438.0           | 437.6 | 437.3 | 437.0 | 437.0 | 436.9 | 436.8 | 436.7 | 436.9 | 437.0 | 437.2 | 437.9 | 436.9                     | 436.8 | 437.4 | 437.3 | 438.6 | 437.9           | 437.7         | 439.7         |
| 18-Feb  | Z                             | 437.5  | 437.3    | 437.5             | 437.8 | 438.3 | 439.7           | 439.4 | 438.0 | 437.5 | 437.1 | 436.6 | 436.2 | 436.2 | 436.9 | 436.8 | 436.7 | 437.2 | 437.1                     | 438.7 | 437.4 | 438.3 | 442.6 | 443.8           | 438.0         | 443.8         |
| 19-Feb  | 441.4                         | Z  | 439.1    | 438.8             | 438.3 | 438.7 | 439.1           | 439.3 | 439.7 | 440.0 | 440.1 | 439.7 | 439.5 | 439.7 | 439.1 | 438.7 | 439.2 | 438.1 | 438.1                     | 439.3 | 441.2 | 438.7 | 438.6 | 438.0           | 439.2         | 441.4         |
| 20-Feb  | 438.5                         | 438.7  | Z        | 440.3             | 440.5 | 440.2 | 441.0           | 440.9 | 440.6 | 440.9 | 439.7 | 438.2 | 437.6 | 437.9 | 437.6 | 437.6 | 437.9 | 438.0 | 437.9                     | 437.7 | 437.9 | 437.7 | 437.4 | 437.2           | 438.8         | 441.0         |
| 21-Feb  | 437.0                         | 436.8  | 436.7    | Z                 | 436.6 | 436.5 | 436.2           | 435.9 | 435.2 | 434.6 | 434.0 | 433.5 | 433.2 | 432.9 | 432.7 | 432.8 | 432.7 | 432.6 | 432.5                     | 432.2 | 432.1 | 432.1 | 432.0 | 431.9           | 434.0         | 437.0         |
| 22-Feb  | 431.8                         | 431.9  | 432.2    | 432.1             | Z     | 432.6 | 432.5           | 432.3 | 432.4 | 431.9 | 432.1 | 431.7 | 431.8 | 431.9 | 433.0 | 433.0 | 432.1 | 431.6 | 431.7                     | 431.6 | 431.2 | 431.2 | 430.9 | 430.9           | 431.9         | 433.0         |
| 23-Feb  | 430.9                         | 432.0  | 431.0    | 431.5             | 431.5 | Z     | 432.7           | 432.3 | 433.1 | 431.7 | 431.1 | 430.8 | 431.1 | 431.2 | 431.3 | 431.5 | 431.6 | 432.2 | 432.5                     | 433.0 | 433.0 | 433.4 | 433.7 | 434.6           | 432.1         | 434.6         |
| 24-Feb  | Z                             | 435.5  | 436.0    | 437.3             | 441.3 | 443.5 | 445.5           | 447.8 | 450.5 | 449.3 | 446.8 | 443.7 | 442.9 | 444.4 | 443.8 | 443.3 | 443.9 | 444.7 | 444.7                     | 444.2 | 444.1 | 444.3 | 444.5 | 444.5           | 443.8         | 450.5         |
| 25-Feb  | 445.0                         | Z  | 445.4    | 445.7             | 445.6 | 445.8 | 445.6           | 445.3 | 445.4 | 445.4 | 445.0 | 444.7 | 444.9 | 444.3 | 444.4 | 444.2 | 444.3 | 444.4 | 444.1                     | 444.5 | 444.8 | 444.3 | 444.5 | 444.1           | 445.0         | 447.8         |
| 26-Feb  | 444.5                         | 443.7  | Z        | 444.9             | 444.1 | 444.3 | 444.7           | 444.9 | 444.3 | 443.8 | 443.8 | 443.7 | 443.6 | 443.9 | 444.1 | 443.8 | 443.4 | 443.2 | 443.1                     | 443.0 | 442.8 | 442.8 | 442.7 | 442.6           | 443.7         | 444.9         |
| 27-Feb  | 442.5                         | 442.5  | 442.4    | Z                 | 442.1 | 442.0 | 441.8           | 441.8 | 441.7 | 441.6 | 441.6 | 442.5 | 442.2 | 441.5 | 441.2 | 440.8 | 440.6 | 440.9 | 440.6                     | 441.5 | 441.9 | 441.4 | 440.8 | 440.4           | 441.6         | 442.5         |
| 28-Feb  | 440.2                         | 440.1  | 441.1    | 440.8             | Z     | 440.2 | 440.4           | 441.4 | 439.9 | 438.4 | 438.6 | 438.3 | 438.0 | 438.8 | 438.7 | 438.1 | 438.3 | 439.3 | 439.1                     | 439.1 | 438.6 | 438.2 | 438.5 | 438.6           | 439.2         | 441.4         |
| 437.8 437.5 438.3 438.4 438.4 438.6 438.5 438.6 438.9 438.8 438.5 438.3 438.0 438.4 438.3 438.1 438.1 438.1 438.1 438.3 438.4 438.0 438.3 438.2 |                               |  |          |                   |       |       |                 |       |       |       |       |       |       |       |       |       |       |       |                           |       |       |       |       | Diurnal Average |               |               |
| 445.2 443.7 445.6 445.8 445.6 445.8 445.6 447.8 450.5 449.3 446.8 444.7 444.4 444.4 444.4 444.2 444.3 444.7 444.7 444.5 447.8 444.3 444.5 444.9 |                               |  |          |                   |       |       |                 |       |       |       |       |       |       |       |       |       |       |       |                           |       |       |       |       | Diurnal Maximum |               |               |
| Z - zerospan  |                               | C - Calibration  |          |                   |       |       | M - Maintenance |       |       |       |       |       |       |       |       |       |       |       |                           |       |       |       |       |                 |               |               |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Carbon Dioxide (CO<sub>2</sub>) - ppm**  
**Fort Chipewyan - February 2023**





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Carbon Dioxide (CO<sub>2</sub>) - ppm**  
**Fort Chipewyan - February 2023**

| <b>Concentration Ranges (ppm)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 400 - 420                         | 0                      | 0.00     | 0.00                |
| 420 - 440                         | 431                    | 67.55    | 67.55               |
| 440 - 460                         | 207                    | 32.45    | 100.00              |
| 460 - 480                         | 0                      | 0.00     | 100.00              |
| 480 - 500                         | 0                      | 0.00     | 100.00              |
| > 500                             | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 638

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Carbon Dioxide (CO<sub>2</sub>) - ppm  
Fort Chipewyan - February 2023**

| Concentration<br>Ranges (ppm) | Wind Direction |     |    |     |     |     |    |     |   |     |    |     |    |     |     |     | Totals |
|-------------------------------|----------------|-----|----|-----|-----|-----|----|-----|---|-----|----|-----|----|-----|-----|-----|--------|
|                               | N              | NNE | NE | ENE | E   | ESE | SE | SSE | S | SSW | SW | WSW | W  | WNW | NW  | NNW |        |
| 400 - 420                     | 0              | 0   | 0  | 0   | 0   | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0   | 0   | 0      |
| 420 - 440                     | 13             | 3   | 9  | 42  | 85  | 17  | 6  | 7   | 1 | 3   | 10 | 9   | 29 | 64  | 88  | 45  | 431    |
| 440 - 460                     | 5              | 11  | 32 | 45  | 32  | 8   | 1  | 5   | 3 | 6   | 8  | 2   | 11 | 15  | 13  | 10  | 207    |
| 460 - 480                     | 0              | 0   | 0  | 0   | 0   | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0   | 0   | 0      |
| 480 - 500                     | 0              | 0   | 0  | 0   | 0   | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0   | 0   | 0      |
| > 500                         | 0              | 0   | 0  | 0   | 0   | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0   | 0   | 0      |
| <b>Totals</b>                 | 18             | 14  | 41 | 87  | 117 | 25  | 7  | 12  | 4 | 9   | 18 | 11  | 40 | 79  | 101 | 55  | 638    |

Total Number of Valid Hours: 638

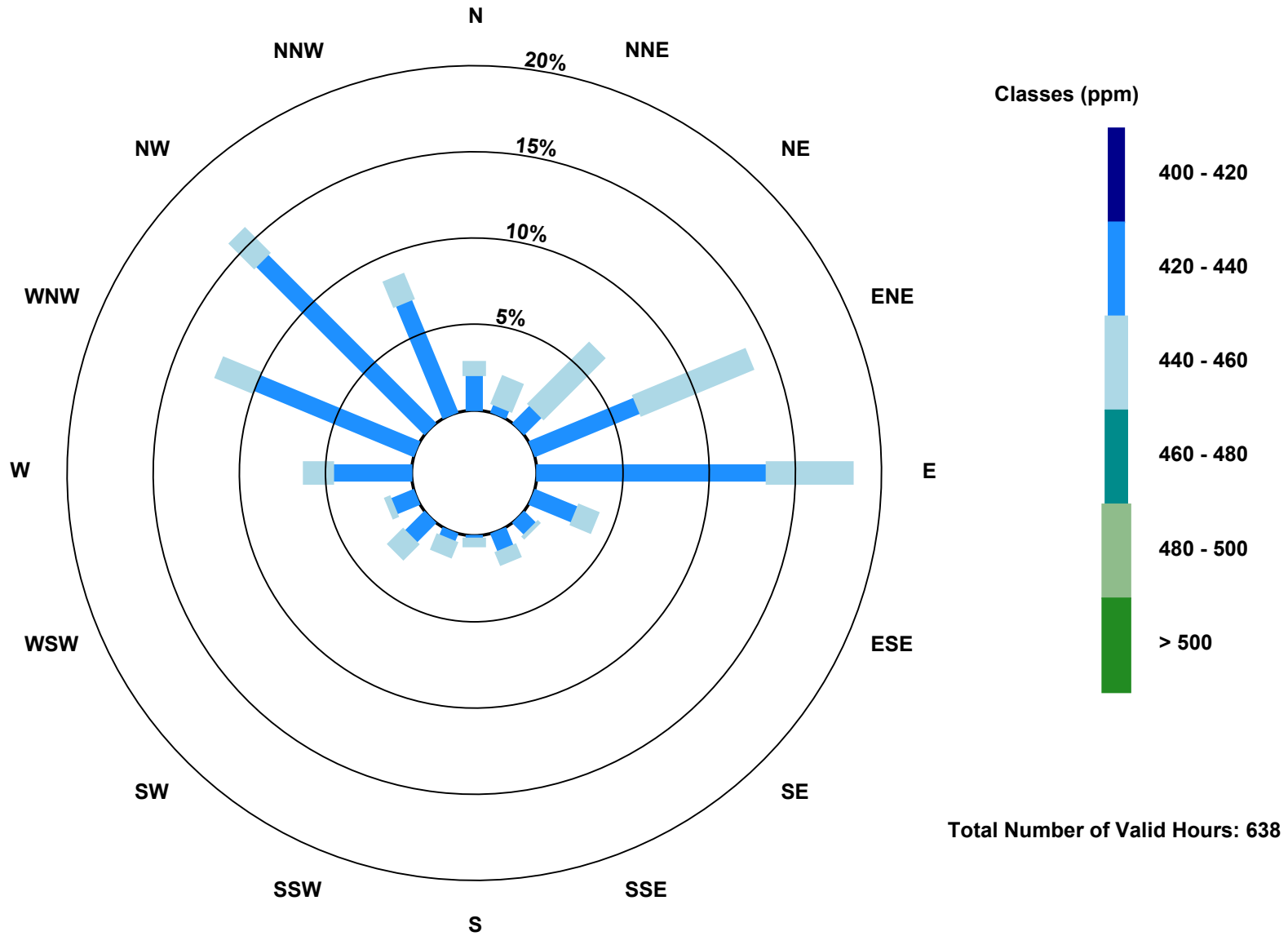
Total Number of Hours: 672





Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Carbon Dioxide (CO<sub>2</sub>) - ppm  
Fort Chipewyan





**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

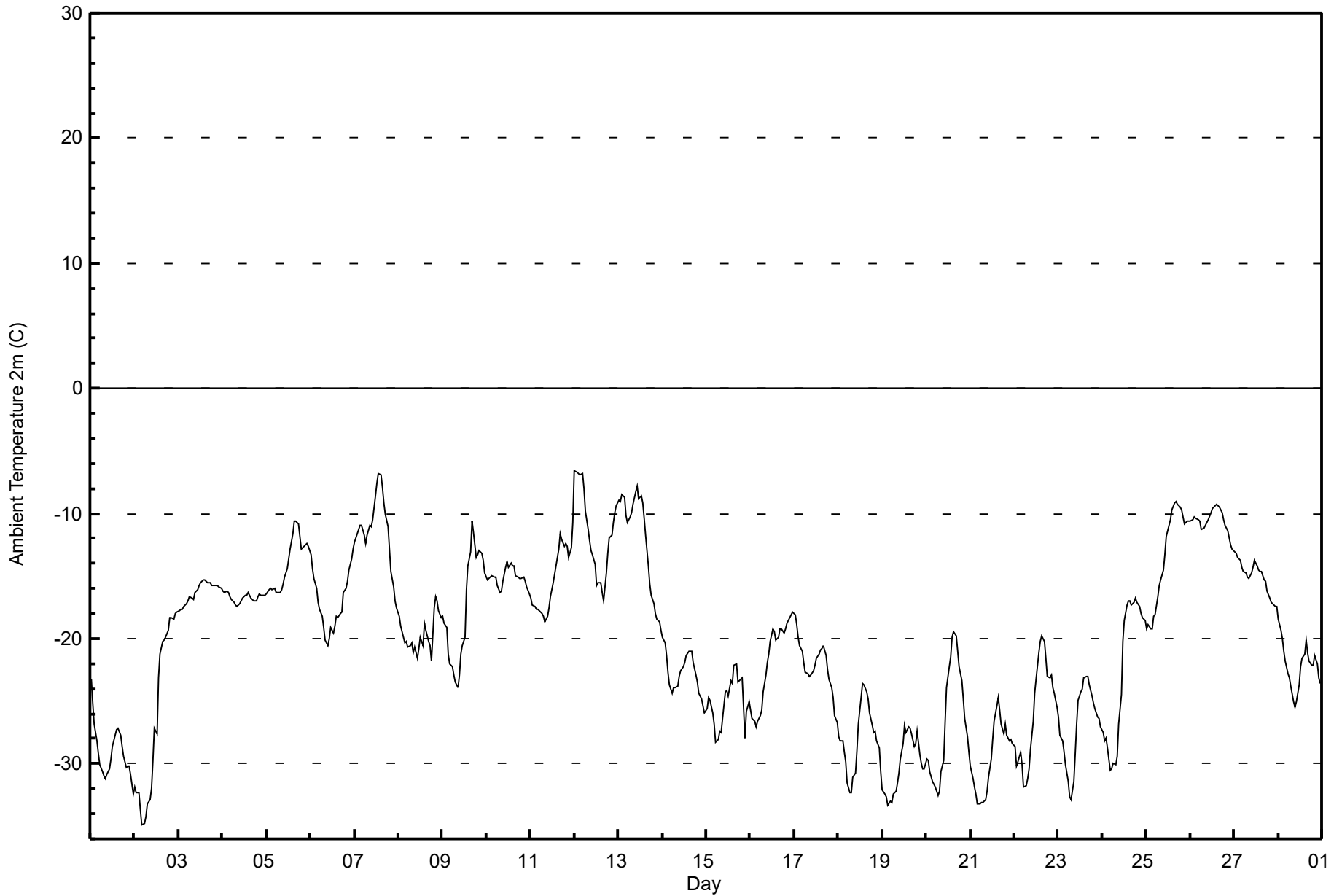
**Ambient Temperature 2m (AT 2m) - C**  
**Fort Chipewyan - February 2023**

| Maximum Value: -6.6 C on Feb 12 01:00      Maximum Daily Average: -10.6 C on Feb 26  |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Hours in Service:         | 672           |               |
|--|-------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------------------------|---------------|---------------|
| Minimum Value: -34.9 C on Feb 2 05:00      Minimum Daily Average: -30.1 C on Feb 19  |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Hours of Data:            | 672           |               |
| Maximum Diurnal Average: -17.7 C at hour 16      Minimum Diurnal Average: -22.6 C at hour 7  |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Hours of Missing Data:    | 0             |               |
| Monthly Average: -20.17 C      Percentiles: P <sub>1</sub> = -33.2 P <sub>10</sub> = -30.1 Q <sub>1</sub> = -25.6 Median = -19.4 Q <sub>3</sub> = -15.2 P <sub>90</sub> = -10.9 P <sub>99</sub> = -7.4 |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Hours of Calibration:     | 0             |               |
|  |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Percent Operational Time: | 100.0         |               |
| Day  | Hourly Period Ending At (MST) |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                           | Daily Average | Daily Maximum |
|  | 1                             | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     | 10    | 11    | 12    | 13    | 14    | 15    | 16    | 17    | 18    | 19    | 20    | 21    | 22    | 23    | 24                        |               |               |
| 1-Feb  | -23.3                         | -25.1 | -26.9 | -28.1 | -29.2 | -30.0 | -30.6 | -30.9 | -31.2 | -30.9 | -30.4 | -29.6 | -28.6 | -27.8 | -27.3 | -27.2 | -27.7 | -28.7 | -29.4 | -30.3 | -30.2 | -30.1 | -30.8 | -32.4                     | -29.0         | -23.3         |
| 2-Feb  | -31.9                         | -32.3 | -32.3 | -33.6 | -34.9 | -34.8 | -34.2 | -33.2 | -32.9 | -31.9 | -29.7 | -27.2 | -27.6 | -23.2 | -21.2 | -20.3 | -20.1 | -19.8 | -19.4 | -18.4 | -18.4 | -18.4 | -18.0 | -17.9                     | -26.3         | -17.9         |
| 3-Feb  | -17.8                         | -17.7 | -17.6 | -17.5 | -17.2 | -16.9 | -16.7 | -16.8 | -16.8 | -16.3 | -16.1 | -15.8 | -15.5 | -15.3 | -15.3 | -15.4 | -15.5 | -15.6 | -15.7 | -15.7 | -15.7 | -15.7 | -15.9 | -16.0                     | -16.3         | -15.3         |
| 4-Feb  | -16.2                         | -16.3 | -16.2 | -16.3 | -16.6 | -16.8 | -17.1 | -17.3 | -17.4 | -17.2 | -17.0 | -16.7 | -16.5 | -16.5 | -16.3 | -16.8 | -16.8 | -17.0 | -16.9 | -16.7 | -16.4 | -16.5 | -16.5 | -16.6                     | -16.7         | -16.2         |
| 5-Feb  | -16.4                         | -16.1 | -15.9 | -16.1 | -16.0 | -16.3 | -16.4 | -16.4 | -16.1 | -15.6 | -15.1 | -14.4 | -13.6 | -12.8 | -11.6 | -10.6 | -10.6 | -10.8 | -11.9 | -12.8 | -12.7 | -12.5 | -12.4 | -12.7                     | -14.0         | -10.6         |
| 6-Feb  | -13.2                         | -14.4 | -15.2 | -16.0 | -17.1 | -17.6 | -18.2 | -19.1 | -20.1 | -20.6 | -20.0 | -19.2 | -19.6 | -19.0 | -18.2 | -18.3 | -18.0 | -17.8 | -16.3 | -16.0 | -15.4 | -14.5 | -13.6 | -12.8                     | -17.1         | -12.8         |
| 7-Feb  | -12.3                         | -11.7 | -11.3 | -10.9 | -11.0 | -11.8 | -12.4 | -11.8 | -11.0 | -11.1 | -10.5 | -8.6  | -7.6  | -6.8  | -6.9  | -7.9  | -9.2  | -10.0 | -11.0 | -12.8 | -14.7 | -15.9 | -17.0 | -17.6                     | -11.3         | -6.8          |
| 8-Feb  | -18.3                         | -19.1 | -19.4 | -20.3 | -20.3 | -20.6 | -20.6 | -20.3 | -21.1 | -20.7 | -21.6 | -20.8 | -19.9 | -20.6 | -18.7 | -19.4 | -20.3 | -20.5 | -21.8 | -17.6 | -16.7 | -17.0 | -17.7 | -18.3                     | -19.6         | -16.7         |
| 9-Feb  | -18.3                         | -18.7 | -19.1 | -21.2 | -22.0 | -22.2 | -22.9 | -23.4 | -23.9 | -22.9 | -21.2 | -20.5 | -19.9 | -16.1 | -14.2 | -13.0 | -10.6 | -11.5 | -13.6 | -13.3 | -12.9 | -13.2 | -13.8 | -14.7                     | -17.6         | -10.6         |
| 10-Feb   | -15.3                         | -15.2 | -15.1 | -14.9 | -15.1 | -15.1 | -15.7 | -16.3 | -16.2 | -15.4 | -14.3 | -13.8 | -14.3 | -14.0 | -14.2 | -14.2 | -15.0 | -15.1 | -15.2 | -15.2 | -15.1 | -15.4 | -15.8 | -16.4                     | -15.1         | -13.8         |
| 11-Feb   | -16.8                         | -17.3 | -17.4 | -17.6 | -17.7 | -17.7 | -18.0 | -18.2 | -18.6 | -18.3 | -17.5 | -16.7 | -15.6 | -14.8 | -14.2 | -12.9 | -11.6 | -12.1 | -12.6 | -12.4 | -12.6 | -13.5 | -12.7 | -10.7                     | -15.3         | -10.7         |
| 12-Feb   | -6.6                          | -6.7  | -6.8  | -6.9  | -6.8  | -8.0  | -9.8  | -11.3 | -12.2 | -12.9 | -13.2 | -14.1 | -15.7 | -15.5 | -15.5 | -16.3 | -17.0 | -14.8 | -13.2 | -12.0 | -11.7 | -10.8 | -10.0 | -9.4                      | -11.6         | -6.6          |
| 13-Feb   | -8.9                          | -9.0  | -8.5  | -8.8  | -10.1 | -10.7 | -10.3 | -10.0 | -9.3  | -8.3  | -7.8  | -8.8  | -8.6  | -9.1  | -10.4 | -11.7 | -14.2 | -15.6 | -16.6 | -17.2 | -18.0 | -18.4 | -18.7 | -19.3                     | -12.0         | -7.8          |
| 14-Feb   | -19.9                         | -20.4 | -21.3 | -22.7 | -23.7 | -24.4 | -23.9 | -23.9 | -23.8 | -23.0 | -22.6 | -22.3 | -21.9 | -21.4 | -21.1 | -21.0 | -21.1 | -21.9 | -22.9 | -23.5 | -24.4 | -24.9 | -25.4 | -25.9                     | -22.8         | -19.9         |
| 15-Feb   | -25.6                         | -24.6 | -25.0 | -26.0 | -26.8 | -28.3 | -28.1 | -27.4 | -27.5 | -26.4 | -24.3 | -24.1 | -24.6 | -23.4 | -23.5 | -22.1 | -22.0 | -23.5 | -23.4 | -23.1 | -25.4 | -28.0 | -25.9 | -25.1                     | -25.2         | -22.0         |
| 16-Feb   | -25.7                         | -26.4 | -26.7 | -27.0 | -26.6 | -26.2 | -25.7 | -24.2 | -22.9 | -21.9 | -21.2 | -20.3 | -19.3 | -19.4 | -20.1 | -19.9 | -19.3 | -19.2 | -19.5 | -19.2 | -18.8 | -18.4 | -18.1 | -17.9                     | -21.8         | -17.9         |
| 17-Feb   | -18.1                         | -18.8 | -19.9 | -20.5 | -21.0 | -22.0 | -22.7 | -22.8 | -23.0 | -23.0 | -22.6 | -22.1 | -21.6 | -21.2 | -20.9 | -20.8 | -20.6 | -21.4 | -22.4 | -23.2 | -24.0 | -24.7 | -26.1 | -26.7                     | -22.1         | -18.1         |
| 18-Feb   | -27.8                         | -28.2 | -28.2 | -29.1 | -29.8 | -31.5 | -32.3 | -32.3 | -31.1 | -30.7 | -29.0 | -26.8 | -24.7 | -23.6 | -23.7 | -24.2 | -24.8 | -25.9 | -26.9 | -27.5 | -27.4 | -28.2 | -28.7 | -30.6                     | -28.0         | -23.6         |
| 19-Feb   | -32.0                         | -32.4 | -32.7 | -33.4 | -33.0 | -33.1 | -32.4 | -32.2 | -31.5 | -30.8 | -29.6 | -28.4 | -26.9 | -27.5 | -27.1 | -27.2 | -27.6 | -28.6 | -28.4 | -27.4 | -29.2 | -30.0 | -30.4 | -30.4                     | -30.1         | -26.9         |
| 20-Feb   | -29.6                         | -29.7 | -30.7 | -31.5 | -31.7 | -31.9 | -32.5 | -32.2 | -30.6 | -29.7 | -26.7 | -23.9 | -22.2 | -21.5 | -19.9 | -19.4 | -19.8 | -21.0 | -22.3 | -23.4 | -24.8 | -26.4 | -27.8 | -29.1                     | -26.6         | -19.4         |
| 21-Feb   | -30.1                         | -31.2 | -31.9 | -32.4 | -33.2 | -33.2 | -33.1 | -33.1 | -32.8 | -32.2 | -31.1 | -29.6 | -28.1 | -26.6 | -25.4 | -24.7 | -25.8 | -26.9 | -27.6 | -26.8 | -27.7 | -28.2 | -28.1 | -28.4                     | -29.5         | -24.7         |
| 22-Feb   | -28.6                         | -30.2 | -29.8 | -29.1 | -30.1 | -31.8 | -31.8 | -31.2 | -30.4 | -28.8 | -26.6 | -24.4 | -23.3 | -21.2 | -20.3 | -19.8 | -20.3 | -21.6 | -23.1 | -23.1 | -22.9 | -23.9 | -24.4 | -25.5                     | -25.9         | -19.8         |
| 23-Feb   | -26.3                         | -27.7 | -28.2 | -29.0 | -30.1 | -31.4 | -32.6 | -32.9 | -31.4 | -29.1 | -26.8 | -25.0 | -24.2 | -24.0 | -23.1 | -23.0 | -23.7 | -24.6 | -25.1 | -25.6 | -26.2 | -26.4 | -27.1 | -26.9                     | -23.0         |               |
| 24-Feb   | -27.5                         | -28.2 | -27.9 | -28.8 | -30.5 | -30.5 | -29.9 | -30.1 | -29.4 | -26.8 | -24.5 | -20.2 | -18.6 | -17.4 | -17.0 | -17.0 | -17.3 | -17.1 | -16.7 | -17.1 | -17.4 | -18.0 | -18.3 | -18.5                     | -22.7         | -16.7         |
| 25-Feb   | -19.2                         | -18.9 | -19.3 | -19.2 | -18.2 | -18.1 | -16.7 | -15.7 | -15.3 | -14.5 | -13.3 | -11.9 | -10.9 | -10.4 | -9.7  | -9.2  | -9.1  | -9.3  | -9.4  | -9.7  | -10.2 | -10.8 | -10.7 | -10.6                     | -13.3         | -9.1          |
| 26-Feb   | -10.6                         | -10.5 | -10.3 | -10.4 | -10.5 | -10.6 | -11.2 | -11.1 | -10.9 | -10.7 | -10.5 | -9.9  | -9.6  | -9.5  | -9.3  | -9.4  | -9.5  | -9.9  | -10.5 | -11.0 | -11.4 | -11.9 | -12.5 | -12.8                     | -10.6         | -9.3          |
| 27-Feb   | -13.1                         | -13.2 | -13.5 | -13.7 | -14.3 | -14.6 | -14.8 | -15.1 | -15.2 | -14.8 | -14.3 | -13.7 | -14.1 | -14.5 | -14.6 | -14.7 | -15.4 | -15.5 | -16.1 | -16.7 | -17.1 | -17.3 | -17.4 | -17.4                     | -15.0         | -13.1         |
| 28-Feb   | -18.4                         | -19.3 | -20.1 | -21.1 | -21.8 | -22.8 | -23.2 | -23.8 | -25.0 | -25.5 | -25.1 | -23.7 | -22.2 | -21.5 | -21.2 | -20.1 | -21.1 | -21.8 | -22.1 | -22.2 | -21.3 | -22.1 | -23.1 | -23.6                     | -22.2         | -18.4         |
|  |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Diurnal Average           |               |               |
|  |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Diurnal Maximum           |               |               |
|  |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                           |               |               |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Ambient Temperature 2m (AT 2m) - C**  
**Fort Chipewyan - February 2023**





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Ambient Temperature 2m (AT 2m) - C  
Fort Chipewyan - February 2023**

| <b>Concentration Ranges (C)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---------------------------------|------------------------|----------|---------------------|
| -50 - -20                       | 321                    | 47.77    | 47.77               |
| -20 - 0                         | 351                    | 52.23    | 100.00              |
| 0 - 10                          | 0                      | 0.00     | 100.00              |
| 10 - 20                         | 0                      | 0.00     | 100.00              |
| > 20                            | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 672

Total Number of Hours: 672



**Wood Buffalo Environmental Association**

**Summary of Hour Averages**

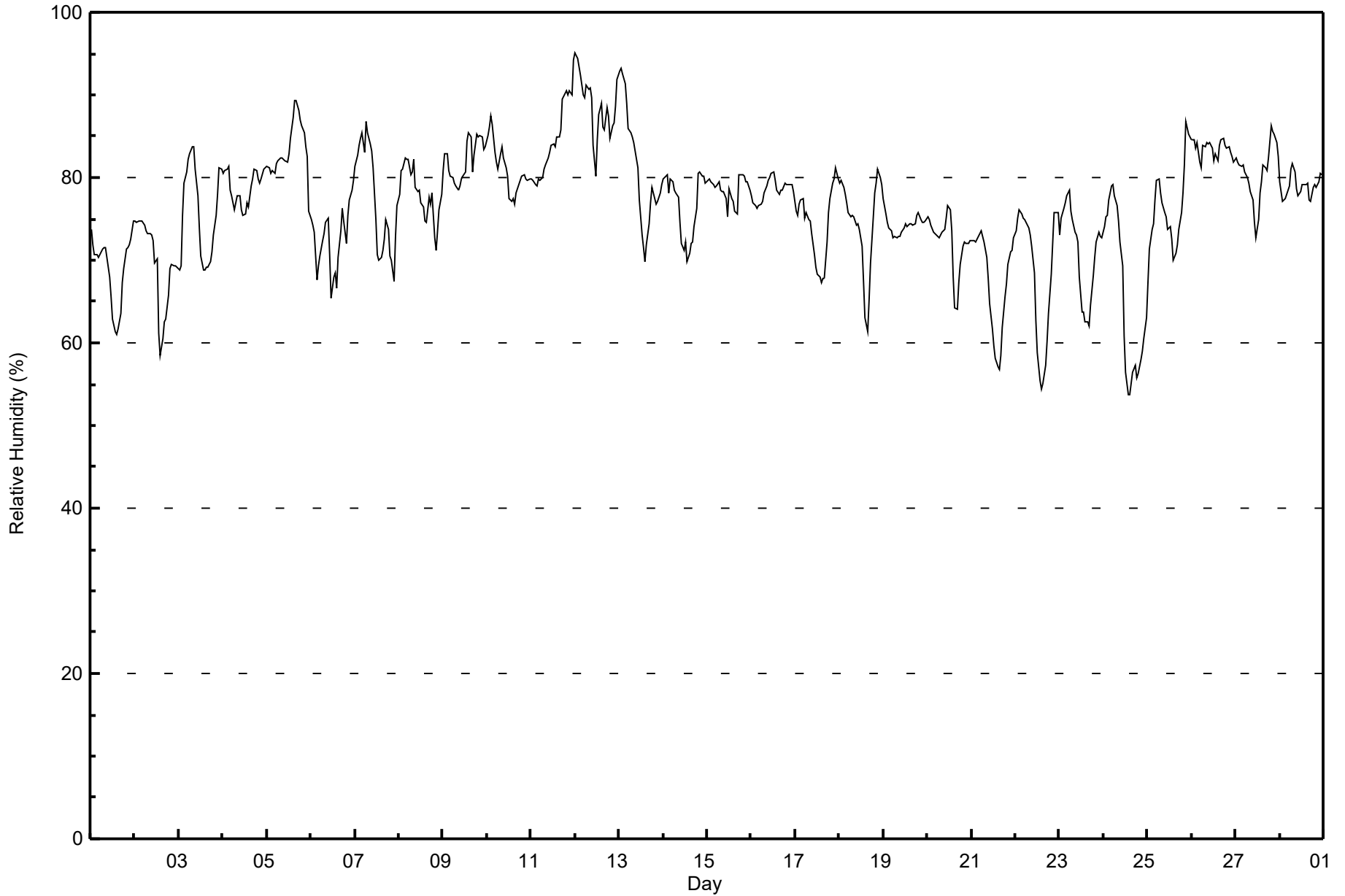
**Relative Humidity (RH) - %  
Fort Chipewyan - February 2023**

| <b>Maximum Value: 95.2 % on Feb 12 01:00</b> <b>Maximum Daily Average: 88.7 % on Feb 12</b>  |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | <b>Hours in Service: 672</b>           |      |      |               |               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
|--|-------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|--|------|------|---------------|---------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----------------|
| <b>Minimum Value: 53.7 % on Feb 24 14:00</b> <b>Minimum Daily Average: 65.7 % on Feb 24</b>  |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | <b>Hours of Data: 672</b>              |      |      |               |               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| <b>Maximum Diurnal Average: 79.0 % at hour 3</b> <b>Minimum Diurnal Average: 71.7 % at hour 15</b>   |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | <b>Hours of Missing Data: 0</b>        |      |      |               |               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| <b>Monthly Average: 76.51 %</b> <b>Percentiles: P<sub>1</sub> = 56.1 P<sub>10</sub> = 67.9 Q<sub>1</sub> = 72.8 Median = 77.3 Q<sub>3</sub> = 80.9 P<sub>90</sub> = 84.7 P<sub>99</sub> = 92.5</b> |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | <b>Hours of Calibration: 0</b>         |      |      |               |               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
|  |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | <b>Percent Operational Time: 100.0</b> |      |      |               |               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| Day  | Hourly Period Ending At (MST) |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |      |      | Daily Average | Daily Maximum |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
|  | 1                             | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20   | 21   | 22                                     | 23   | 24   |               |               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 1-Feb  | 73.7                          | 71.8 | 70.7 | 70.7 | 70.3 | 70.7 | 71.3 | 71.4 | 71.5 | 70.3 | 68.0 | 65.6 | 63.0 | 61.4 | 61.0 | 61.6 | 63.5 | 67.3 | 68.9 | 71.3 | 71.5 | 71.8                                   | 72.6 | 74.7 | 69.0          | 74.7          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 2-Feb  | 74.7                          | 74.6 | 74.8 | 74.7 | 74.8 | 74.2 | 73.5 | 73.2 | 73.3 | 73.1 | 72.4 | 69.6 | 70.1 | 61.2 | 58.4 | 60.6 | 62.5 | 62.9 | 65.7 | 68.9 | 69.5 | 69.3                                   | 69.3 | 69.2 | 69.6          | 74.8          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 3-Feb  | 68.9                          | 69.4 | 75.4 | 79.3 | 80.8 | 82.2 | 82.9 | 83.7 | 83.7 | 81.0 | 77.8 | 74.0 | 70.6 | 68.7 | 68.9 | 69.2 | 69.1 | 69.8 | 71.0 | 73.0 | 75.5 | 78.0                                   | 81.2 | 81.1 | 75.6          | 83.7          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 4-Feb  | 80.4                          | 80.9 | 81.1 | 81.3 | 78.5 | 77.8 | 76.1 | 77.0 | 77.8 | 77.8 | 76.1 | 75.4 | 75.6 | 77.0 | 76.4 | 79.1 | 79.9 | 81.1 | 80.9 | 79.8 | 79.4 | 79.8                                   | 81.0 | 81.2 | 78.8          | 81.3          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 5-Feb  | 81.4                          | 81.2 | 80.6 | 80.9 | 80.5 | 81.8 | 82.0 | 82.4 | 82.4 | 82.2 | 82.0 | 81.8 | 82.9 | 84.8 | 87.3 | 89.3 | 89.4 | 88.2 | 87.0 | 86.3 | 85.5 | 83.7                                   | 82.5 | 75.9 | 83.4          | 89.4          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 6-Feb  | 75.0                          | 74.2 | 73.4 | 67.6 | 69.4 | 70.5 | 72.4 | 73.2 | 74.6 | 75.1 | 70.6 | 65.4 | 67.9 | 68.5 | 66.6 | 70.4 | 73.5 | 76.3 | 74.7 | 72.0 | 75.5 | 77.3                                   | 78.4 | 79.7 | 72.6          | 79.7          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 7-Feb  | 81.3                          | 82.8 | 83.9 | 84.8 | 85.4 | 83.1 | 86.7 | 85.5 | 84.0 | 83.2 | 81.1 | 75.0 | 70.8 | 70.1 | 70.4 | 71.2 | 72.6 | 74.9 | 73.7 | 70.6 | 69.9 | 67.5                                   | 72.9 | 76.6 | 77.4          | 86.7          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 8-Feb  | 78.0                          | 80.8 | 81.0 | 82.3 | 82.2 | 82.2 | 80.4 | 80.7 | 82.2 | 78.8 | 78.3 | 78.5 | 76.9 | 76.5 | 74.7 | 74.6 | 77.6 | 76.8 | 78.1 | 72.8 | 71.2 | 73.6                                   | 76.0 | 77.9 | 78.0          | 82.3          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 9-Feb  | 80.9                          | 82.9 | 82.9 | 80.8 | 80.2 | 80.0 | 79.4 | 79.0 | 78.5 | 79.0 | 79.9 | 80.1 | 80.7 | 84.5 | 85.4 | 85.0 | 80.7 | 82.8 | 85.3 | 84.9 | 85.2 | 85.0                                   | 83.4 | 83.7 | 82.1          | 85.4          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 10-Feb   | 85.2                          | 86.1 | 87.4 | 86.5 | 83.1 | 81.8 | 81.1 | 82.9 | 83.7 | 82.4 | 81.2 | 80.2 | 77.5 | 77.1 | 77.5 | 76.9 | 78.1 | 79.2 | 79.7 | 80.2 | 80.3 | 79.9                                   | 79.7 | 79.9 | 81.1          | 87.4          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 11-Feb   | 79.8                          | 79.6 | 79.2 | 79.0 | 79.9 | 79.6 | 80.0 | 81.0 | 81.5 | 82.5 | 83.1 | 83.9 | 84.0 | 83.8 | 84.9 | 84.9 | 85.8 | 89.5 | 90.2 | 90.4 | 90.1 | 90.6                                   | 90.0 | 94.2 | 84.5          | 94.2          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 12-Feb   | 95.2                          | 94.4 | 93.4 | 92.4 | 90.0 | 89.6 | 91.2 | 90.6 | 90.9 | 89.6 | 83.9 | 80.1 | 84.5 | 87.6 | 89.0 | 86.1 | 85.8 | 88.4 | 87.5 | 84.7 | 86.3 | 86.6                                   | 88.6 | 91.9 | 88.7          | 95.2          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 13-Feb   | 92.9                          | 93.2 | 92.6 | 91.3 | 89.0 | 86.0 | 85.5 | 84.8 | 84.3 | 82.2 | 81.1 | 77.3 | 73.0 | 71.5 | 69.8 | 71.8 | 74.4 | 77.0 | 78.8 | 77.5 | 76.8 | 77.1                                   | 78.1 | 79.1 | 81.0          | 93.2          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 14-Feb   | 79.8                          | 80.2 | 80.3 | 78.1 | 79.9 | 79.5 | 78.4 | 78.1 | 77.6 | 74.5 | 72.1 | 71.1 | 72.3 | 69.8 | 70.9 | 72.1 | 72.2 | 74.1 | 76.3 | 80.5 | 80.7 | 80.2                                   | 80.1 | 79.4 | 76.6          | 80.7          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 15-Feb   | 79.7                          | 79.9 | 79.4 | 79.2 | 78.8 | 79.0 | 79.4 | 78.4 | 78.3 | 78.3 | 77.5 | 75.2 | 78.7 | 77.5 | 77.1 | 75.9 | 75.6 | 80.3 | 80.4 | 80.4 | 80.3 | 79.5                                   | 79.4 | 78.5 | 78.6          | 80.4          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 16-Feb   | 77.7                          | 76.9 | 76.6 | 76.3 | 76.5 | 76.8 | 77.2 | 78.1 | 79.0 | 79.6 | 80.0 | 80.5 | 80.6 | 79.6 | 78.5 | 77.9 | 78.5 | 78.5 | 79.3 | 79.2 | 79.2 | 79.2                                   | 79.1 | 78.4 | 78.5          | 80.6          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 17-Feb   | 76.0                          | 75.4 | 76.8 | 77.3 | 77.5 | 75.1 | 75.8 | 74.9 | 74.7 | 73.2 | 70.7 | 69.2 | 68.3 | 68.0 | 67.3 | 67.8 | 67.8 | 72.2 | 75.8 | 77.4 | 79.3 | 79.8                                   | 81.2 | 79.9 | 74.2          | 81.2          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 18-Feb   | 79.3                          | 79.6 | 78.8 | 77.9 | 76.9 | 75.8 | 75.2 | 75.5 | 75.3 | 74.2 | 74.4 | 73.7 | 71.7 | 67.5 | 63.0 | 61.3 | 65.2 | 69.7 | 75.3 | 78.1 | 79.3 | 81.0                                   | 80.0 | 79.2 | 74.5          | 81.0          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 19-Feb   | 77.4                          | 75.6 | 74.5 | 73.9 | 73.5 | 72.7 | 72.8 | 72.8 | 72.8 | 72.9 | 73.4 | 73.8 | 74.4 | 74.0 | 74.4 | 74.3 | 74.3 | 74.4 | 75.4 | 75.7 | 74.9 | 74.7                                   | 74.6 | 74.7 | 74.2          | 77.4          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 20-Feb   | 75.2                          | 74.9 | 74.2 | 73.5 | 73.2 | 73.1 | 72.6 | 73.1 | 73.4 | 73.7 | 75.2 | 76.5 | 76.2 | 73.5 | 68.0 | 64.2 | 64.1 | 67.2 | 69.4 | 71.7 | 72.2 | 72.1                                   | 72.0 | 72.4 | 72.1          | 76.5          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 21-Feb   | 72.4                          | 72.3 | 72.3 | 72.6 | 72.9 | 73.5 | 72.8 | 72.1 | 70.3 | 67.7 | 64.8 | 61.7 | 59.7 | 58.2 | 57.1 | 56.7 | 58.5 | 61.9 | 65.6 | 67.0 | 69.5 | 71.0                                   | 71.2 | 72.6 | 67.3          | 73.5          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 22-Feb   | 73.5                          | 75.1 | 76.1 | 75.6 | 75.0 | 74.9 | 74.3 | 74.0 | 73.0 | 71.6 | 68.4 | 62.8 | 58.8 | 55.3 | 54.4 | 55.1 | 57.4 | 60.2 | 63.6 | 68.3 | 72.0 | 75.7                                   | 75.7 | 75.7 | 68.6          | 76.1          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 23-Feb   | 73.1                          | 75.1 | 76.3 | 76.9 | 77.9 | 78.4 | 75.9 | 74.9 | 73.4 | 73.0 | 72.3 | 67.9 | 63.8 | 63.8 | 62.5 | 62.1 | 64.6 | 68.2 | 70.4 | 72.2 | 73.4 | 72.9                                   | 72.8 | 71.0 | 78.4          |               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 24-Feb   | 74.1                          | 75.2 | 75.4 | 77.3 | 79.0 | 79.1 | 77.8 | 76.6 | 74.8 | 72.2 | 69.4 | 60.9 | 56.5 | 53.7 | 53.7 | 55.0 | 56.5 | 57.2 | 55.8 | 56.3 | 58.0 | 59.0                                   | 60.5 | 63.0 | 65.7          | 79.1          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 25-Feb   | 67.2                          | 71.4 | 73.7 | 74.4 | 77.4 | 79.6 | 79.8 | 78.1 | 76.9 | 75.8 | 75.3 | 73.7 | 74.0 | 72.5 | 70.1 | 70.9 | 71.9 | 73.8 | 75.8 | 78.1 | 81.6 | 86.8                                   | 85.3 | 85.0 | 76.2          | 86.8          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 26-Feb   | 84.5                          | 84.6 | 83.6 | 84.3 | 81.8 | 81.2 | 83.9 | 83.8 | 84.2 | 84.1 | 84.3 | 83.6 | 82.1 | 82.8 | 82.1 | 83.8 | 84.5 | 84.7 | 83.8 | 83.6 | 83.7 | 83.1                                   | 82.5 | 81.9 | 83.4          | 84.7          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 27-Feb   | 82.4                          | 81.9 | 81.5 | 81.4 | 81.6 | 80.8 | 80.0 | 79.3 | 78.4 | 77.2 | 74.5 | 72.7 | 74.8 | 78.2 | 79.5 | 81.6 | 81.1 | 80.9 | 82.4 | 86.2 | 85.6 | 85.3                                   | 84.3 | 82.6 | 80.6          | 86.2          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 28-Feb   | 79.5                          | 77.1 | 77.2 | 77.4 | 78.0 | 79.0 | 81.0 | 81.7 | 80.6 | 78.6 | 77.8 | 78.3 | 79.1 | 79.2 | 79.2 | 79.3 | 77.2 | 77.2 | 78.9 | 79.2 | 78.8 | 79.5                                   | 80.5 | 80.3 | 78.9          | 81.7          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
|  |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |      | 78.5 | 78.8          | 79.0          | 78.9 | 78.7 | 78.5 | 78.6 | 78.5 | 78.3 | 77.3 | 75.9 | 73.9 | 73.2 | 72.4 | 71.7 | 72.1 | 72.9 | 74.7 | 76.0 | 76.6 | 77.3 | 77.9 | 78.3 | 78.6 | Diurnal Average |
|  |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |      | 95.2 | 94.4          | 93.4          | 92.4 | 90.0 | 89.6 | 91.2 | 90.6 | 90.9 | 89.6 | 84.3 | 83.9 | 84.5 | 87.6 | 89.0 | 89.3 | 89.4 | 89.5 | 90.2 | 90.4 | 90.1 | 90.6 | 90.0 | 94.2 | Diurnal Maximum |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Relative Humidity (RH) - %**  
**Fort Chipewyan - February 2023**





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Relative Humidity (RH) - %  
Fort Chipewyan - February 2023**

| <b>Concentration Ranges (%)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---------------------------------|------------------------|----------|---------------------|
| 0 - 20                          | 0                      | 0.00     | 0.00                |
| 20 - 40                         | 0                      | 0.00     | 0.00                |
| 40 - 60                         | 21                     | 3.13     | 3.13                |
| 60 - 80                         | 443                    | 65.92    | 69.05               |
| 80 - 100                        | 208                    | 30.95    | 100.00              |

Total Number of Valid Hours: 672

Total Number of Hours: 672



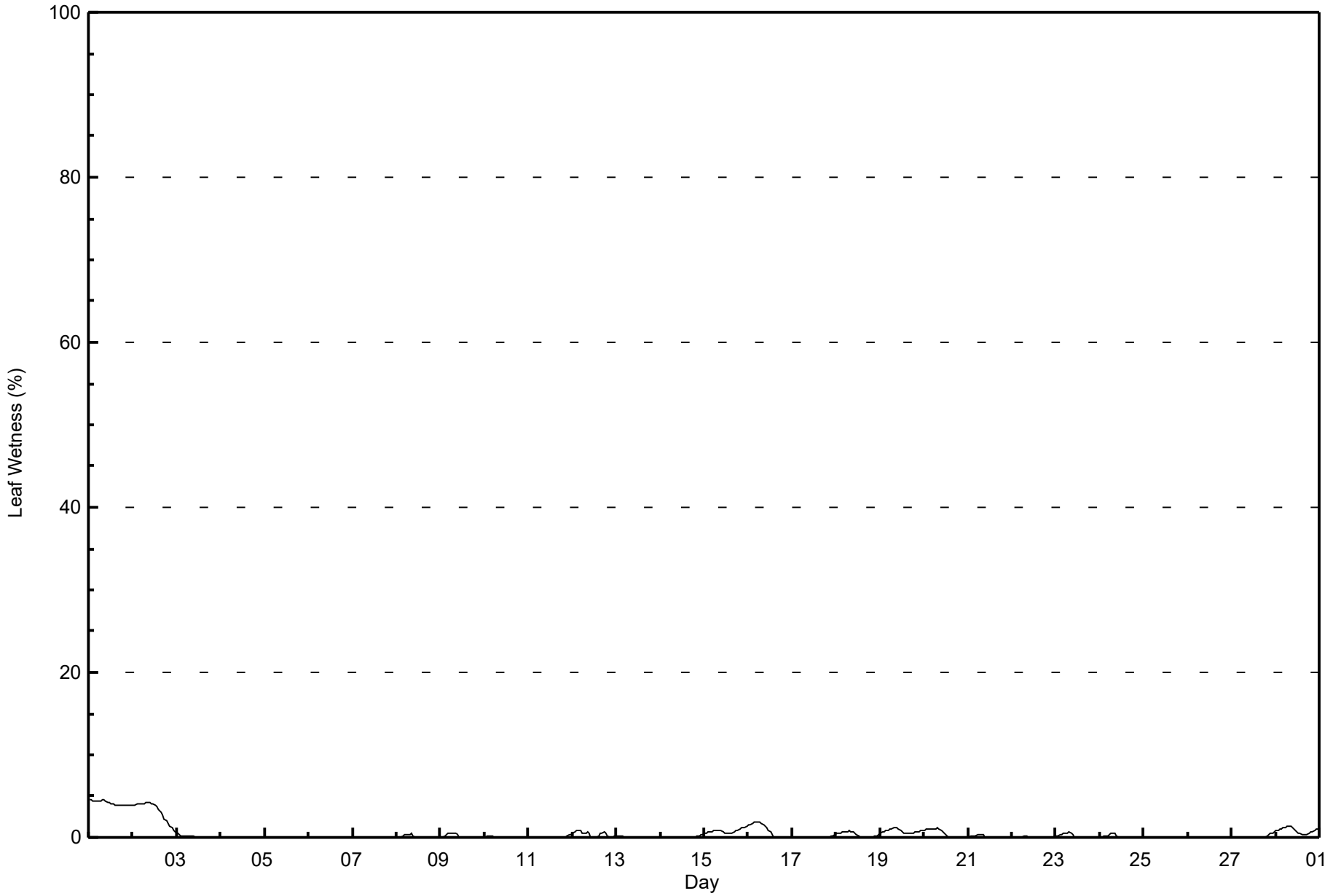
| Maximum Value: 4.5 % on Feb 1 09:00      |                               | Maximum Daily Average: 4.2 % on Feb 1  |     | Hours in Service: 672           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |               |               |
|--|-------------------------------|--|-----|---------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----------------|---------------|---------------|
| Minimum Value: 0.0 % on Feb 3 11:00      |                               | Minimum Daily Average: 0.0 % on Feb 4  |     | Hours of Data: 672              |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |               |               |
| Maximum Diurnal Average: 0.7 % at hour 8 |                               | Minimum Diurnal Average: 0.3 % at hour 20  |     | Hours of Missing Data: 0        |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |               |               |
| Monthly Average: 0.45 %                  |                               | Percentiles: P <sub>1</sub> = 0.0 P <sub>10</sub> = 0.0 Q <sub>1</sub> = 0.0 Median = 0.0 Q <sub>3</sub> = 0.5 P <sub>90</sub> = 1.1 P <sub>99</sub> = 4.5 |     | Hours of Calibration: 0         |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |               |               |
|  |                               |  |     | Percent Operational Time: 100.0 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |               |               |
| Day                                      | Hourly Period Ending At (MST) |  |     |                                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 | Daily Average | Daily Maximum |
|  | 1                             | 2  | 3   | 4                               | 5   | 6   | 7   | 8   | 9   | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19  | 20  | 21  | 22  | 23  | 24              |               |               |
| 1-Feb                                    | 4.5                           | 4.5  | 4.5 | 4.5                             | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.4 | 4.3 | 4.2 | 4.1 | 4.0 | 4.0 | 3.9 | 3.8 | 3.8 | 3.8 | 3.8 | 3.9 | 3.9 | 3.9 | 3.9             | 4.2           | 4.5           |
| 2-Feb                                    | 3.9                           | 4.0  | 4.0 | 4.0                             | 4.1 | 4.1 | 4.1 | 4.2 | 4.2 | 4.2 | 4.1 | 4.0 | 3.9 | 3.7 | 3.4 | 3.0 | 2.6 | 2.3 | 2.0 | 1.6 | 1.4 | 1.1 | 0.9 | 0.7             | 3.1           | 4.2           |
| 3-Feb                                    | 0.4                           | 0.3  | 0.2 | 0.2                             | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.1           | 0.4           |
| 4-Feb                                    | 0.0                           | 0.0  | 0.0 | 0.0                             | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.0           | 0.0           |
| 5-Feb                                    | 0.0                           | 0.0  | 0.0 | 0.0                             | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.0           | 0.0           |
| 6-Feb                                    | 0.0                           | 0.0  | 0.0 | 0.0                             | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.0           | 0.0           |
| 7-Feb                                    | 0.0                           | 0.0  | 0.0 | 0.0                             | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.0           | 0.0           |
| 8-Feb                                    | 0.0                           | 0.0  | 0.0 | 0.1                             | 0.3 | 0.4 | 0.4 | 0.4 | 0.4 | 0.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.1           | 0.4           |
| 9-Feb                                    | 0.0                           | 0.0  | 0.2 | 0.4                             | 0.5 | 0.5 | 0.6 | 0.6 | 0.6 | 0.4 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.2           | 0.6           |
| 10-Feb                                   | 0.0                           | 0.1  | 0.2 | 0.2                             | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.0           | 0.2           |
| 11-Feb                                   | 0.0                           | 0.0  | 0.0 | 0.0                             | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 | 0.3 | 0.4             | 0.0           | 0.4           |
| 12-Feb                                   | 0.6                           | 0.6  | 0.8 | 0.9                             | 0.8 | 0.6 | 0.5 | 0.6 | 0.6 | 0.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 | 0.4 | 0.5 | 0.6 | 0.5 | 0.1 | 0.0 | 0.0 | 0.0 | 0.1             | 0.4           | 0.9           |
| 13-Feb                                   | 0.1                           | 0.1  | 0.1 | 0.1                             | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.0           | 0.1           |
| 14-Feb                                   | 0.0                           | 0.0  | 0.0 | 0.0                             | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.2 | 0.3 | 0.4             | 0.0           | 0.4           |
| 15-Feb                                   | 0.4                           | 0.5  | 0.6 | 0.7                             | 0.7 | 0.8 | 0.8 | 0.9 | 0.9 | 0.9 | 0.7 | 0.5 | 0.4 | 0.5 | 0.5 | 0.6 | 0.6 | 0.8 | 0.9 | 1.0 | 1.1 | 1.2 | 1.3 | 1.4             | 0.8           | 1.4           |
| 16-Feb                                   | 1.5                           | 1.6  | 1.7 | 1.8                             | 1.9 | 1.9 | 1.8 | 1.7 | 1.6 | 1.3 | 1.1 | 0.9 | 0.6 | 0.3 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.8           | 1.9           |
| 17-Feb                                   | 0.0                           | 0.0  | 0.0 | 0.0                             | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.2 | 0.3 | 0.3             | 0.0           | 0.3           |
| 18-Feb                                   | 0.4                           | 0.5  | 0.6 | 0.6                             | 0.7 | 0.7 | 0.8 | 0.8 | 0.8 | 0.6 | 0.5 | 0.3 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.2 | 0.3             | 0.3           | 0.8           |
| 19-Feb                                   | 0.5                           | 0.6  | 0.7 | 0.8                             | 0.9 | 1.0 | 1.1 | 1.2 | 1.2 | 1.1 | 1.0 | 0.8 | 0.7 | 0.6 | 0.5 | 0.5 | 0.5 | 0.5 | 0.6 | 0.6 | 0.7 | 0.7 | 0.8 | 0.8             | 0.8           | 1.2           |
| 20-Feb                                   | 0.9                           | 0.9  | 1.0 | 1.0                             | 1.0 | 1.1 | 1.1 | 1.1 | 1.0 | 0.9 | 0.7 | 0.4 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.5           | 1.1           |
| 21-Feb                                   | 0.1                           | 0.1  | 0.1 | 0.2                             | 0.2 | 0.3 | 0.3 | 0.4 | 0.3 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.1           | 0.4           |
| 22-Feb                                   | 0.0                           | 0.0  | 0.0 | 0.0                             | 0.0 | 0.1 | 0.1 | 0.2 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1             | 0.0           | 0.2           |
| 23-Feb                                   | 0.2                           | 0.2  | 0.3 | 0.4                             | 0.5 | 0.5 | 0.6 | 0.6 | 0.5 | 0.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.2           | 0.6           |
| 24-Feb                                   | 0.0                           | 0.0  | 0.1 | 0.2                             | 0.3 | 0.4 | 0.5 | 0.5 | 0.5 | 0.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.1           | 0.5           |
| 25-Feb                                   | 0.0                           | 0.0  | 0.0 | 0.0                             | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.0           | 0.0           |
| 26-Feb                                   | 0.0                           | 0.0  | 0.0 | 0.0                             | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.0           | 0.0           |
| 27-Feb                                   | 0.0                           | 0.0  | 0.0 | 0.0                             | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 | 0.3 | 0.4 | 0.5 | 0.7             | 0.1           | 0.7           |
| 28-Feb                                   | 0.8                           | 0.9  | 0.9 | 1.0                             | 1.1 | 1.2 | 1.3 | 1.4 | 1.4 | 1.1 | 0.9 | 0.7 | 0.5 | 0.4 | 0.4 | 0.3 | 0.3 | 0.3 | 0.5 | 0.6 | 0.7 | 0.8 | 1.0 | 1.1             | 0.8           | 1.4           |
|  |                               |  |     |                                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Diurnal Average |               |               |
|  |                               |  |     |                                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Diurnal Maximum |               |               |
|  |                               |  |     |                                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |               |               |





**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Leaf Wetness (LW) - %**  
**Fort Chipewyan - February 2023**





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Leaf Wetness (LW) - %**  
**Fort Chipewyan - February 2023**

| <b>Concentration Ranges (%)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---------------------------------|------------------------|----------|---------------------|
| 0 - 0.3                         | 477                    | 70.98    | 70.98               |
| 0.4 - 0.5                       | 46                     | 6.85     | 77.83               |
| 0.6 - 0.7                       | 37                     | 5.51     | 83.33               |
| 0.8 - 1.4                       | 59                     | 8.78     | 92.11               |
| 1.5 - 10                        | 52                     | 7.74     | 99.85               |
| > 10                            | 0                      | 0.00     | 99.85               |

Total Number of Valid Hours: 672

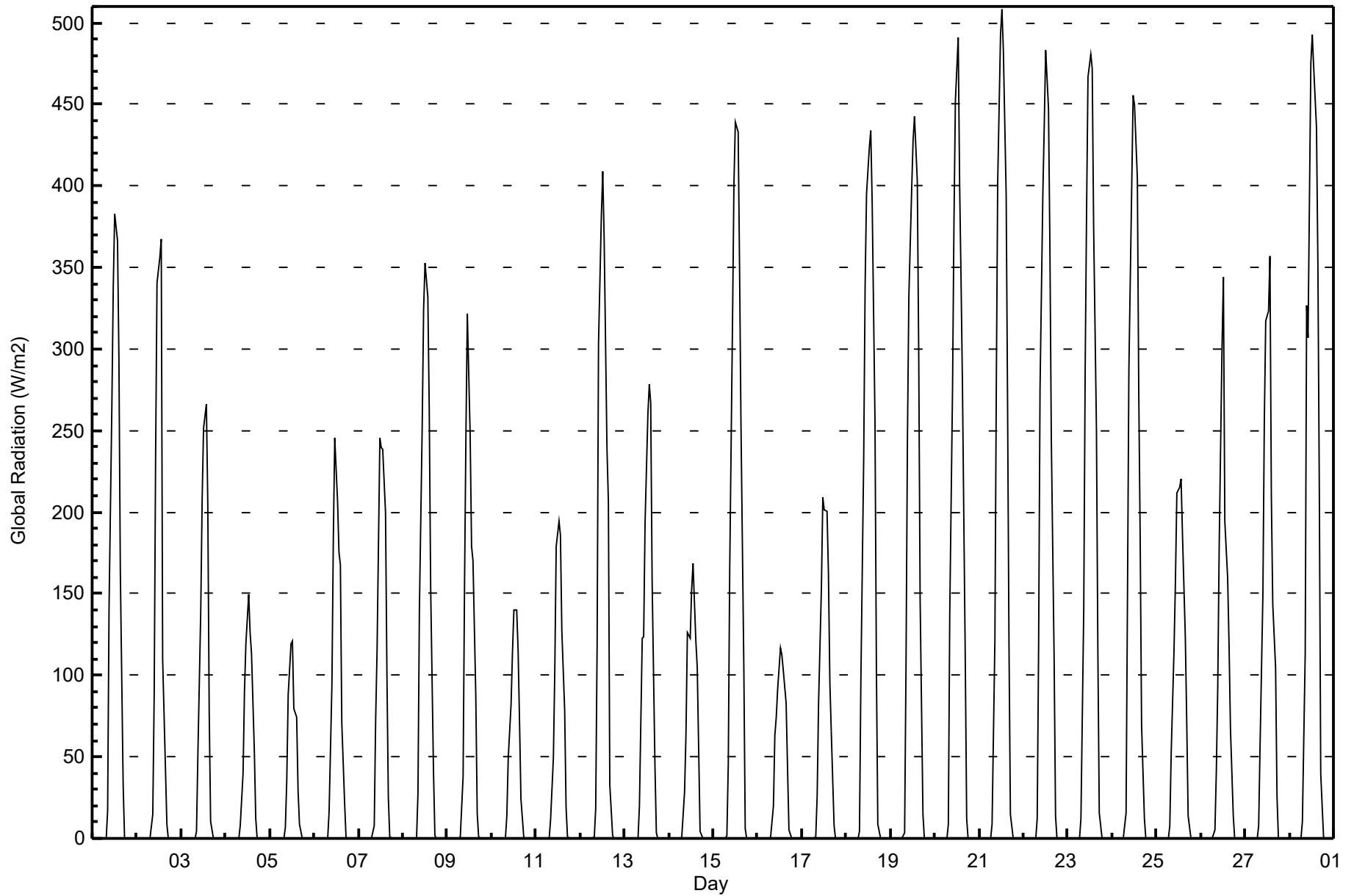
Total Number of Hours: 672



**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

**Global Radiation (GR) - W/m2**  
**Fort Chipewyan - February 2023**

| Maximum Value: 508.5 W/m2 on Feb 21 13:00      Maximum Daily Average: 134.9 W/m2 on Feb 28  |                               |     |     |     |     |     |     |      |       |       |       |       |       |       |       |       |       |      |     |     |     |     | Hours in Service:         | 672   |               |               |
|---|-------------------------------|-----|-----|-----|-----|-----|-----|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|-----|-----|-----|-----|---------------------------|-------|---------------|---------------|
| Minimum Value: 0.0 W/m2 on Feb 2 21:00      Minimum Daily Average: 23.5 W/m2 on Feb 5   |                               |     |     |     |     |     |     |      |       |       |       |       |       |       |       |       |       |      |     |     |     |     | Hours of Data:            | 672   |               |               |
| Maximum Diurnal Average: 316.4 W/m2 at hour 13      Minimum Diurnal Average: 0.0 W/m2 at hour 6   |                               |     |     |     |     |     |     |      |       |       |       |       |       |       |       |       |       |      |     |     |     |     | Hours of Missing Data:    | 0     |               |               |
| Monthly Average: 75.34 W/m2      Percentiles: P <sub>1</sub> = 0.0 P <sub>10</sub> = 0.0 Q <sub>1</sub> = 0.0 Median = 0.0 Q <sub>3</sub> = 114.3 P <sub>90</sub> = 287.5 P <sub>99</sub> = 476.7 |                               |     |     |     |     |     |     |      |       |       |       |       |       |       |       |       |       |      |     |     |     |     | Hours of Calibration:     | 0     |               |               |
|   |                               |     |     |     |     |     |     |      |       |       |       |       |       |       |       |       |       |      |     |     |     |     | Percent Operational Time: | 100.0 |               |               |
| Day   | Hourly Period Ending At (MST) |     |     |     |     |     |     |      |       |       |       |       |       |       |       |       |       |      |     |     |     |     |                           |       | Daily Average | Daily Maximum |
|   | 1                             | 2   | 3   | 4   | 5   | 6   | 7   | 8    | 9     | 10    | 11    | 12    | 13    | 14    | 15    | 16    | 17    | 18   | 19  | 20  | 21  | 22  | 23                        | 24    |               |               |
| 1-Feb   | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1  | 17.3  | 141.4 | 265.2 | 338.6 | 383.3 | 366.3 | 294.1 | 163.5 | 33.2  | 0.4  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0                       | 0.0   | 83.5          | 383.3         |
| 2-Feb   | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 14.4  | 87.8  | 233.8 | 340.8 | 356.2 | 367.7 | 110.1 | 42.1  | 8.4   | 0.1  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0                       | 0.0   | 65.1          | 367.7         |
| 3-Feb   | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 4.7   | 53.1  | 139.3 | 207.6 | 251.5 | 266.5 | 204.9 | 77.5  | 10.7  | 0.2  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0                       | 0.0   | 50.7          | 266.5         |
| 4-Feb   | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 7.6   | 40.0  | 89.6  | 119.1 | 149.2 | 125.9 | 113.6 | 53.3  | 11.9  | 0.3  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0                       | 0.0   | 29.6          | 149.2         |
| 5-Feb   | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 7.1   | 36.6  | 88.3  | 119.7 | 120.8 | 79.3  | 74.0  | 29.3  | 8.5   | 0.2  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0                       | 0.0   | 23.5          | 120.8         |
| 6-Feb   | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1  | 16.1  | 94.2  | 184.4 | 245.2 | 206.7 | 175.6 | 168.0 | 71.2  | 21.5  | 0.6  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0                       | 0.0   | 49.3          | 245.2         |
| 7-Feb   | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 8.2   | 72.2  | 115.2 | 245.9 | 239.3 | 238.9 | 200.0 | 100.7 | 25.3  | 0.9  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0                       | 0.0   | 51.9          | 245.9         |
| 8-Feb   | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.3  | 27.4  | 139.2 | 252.5 | 323.9 | 352.7 | 331.8 | 263.2 | 154.0 | 41.8  | 1.6  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0                       | 0.0   | 78.7          | 352.7         |
| 9-Feb   | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.5  | 38.3  | 154.2 | 247.2 | 321.2 | 247.2 | 179.0 | 170.1 | 87.0  | 15.5  | 0.8  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0                       | 0.0   | 60.9          | 321.2         |
| 10-Feb  | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.2  | 13.9  | 49.2  | 82.5  | 114.2 | 139.9 | 139.6 | 114.7 | 72.1  | 24.5  | 1.2  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0                       | 0.0   | 31.3          | 139.9         |
| 11-Feb  | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1  | 11.4  | 49.4  | 102.8 | 178.8 | 194.3 | 185.5 | 126.8 | 78.7  | 19.2  | 0.9  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0                       | 0.0   | 39.5          | 194.3         |
| 12-Feb  | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.5  | 18.3  | 117.7 | 303.3 | 381.6 | 408.9 | 367.3 | 238.8 | 206.6 | 33.3  | 1.7  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0                       | 0.0   | 86.6          | 408.9         |
| 13-Feb  | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.4  | 19.9  | 122.5 | 123.3 | 193.5 | 260.6 | 278.3 | 267.2 | 157.9 | 45.3  | 3.1  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0                       | 0.0   | 61.3          | 278.3         |
| 14-Feb  | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.8  | 28.8  | 63.8  | 125.9 | 123.1 | 152.5 | 168.8 | 120.9 | 104.3 | 54.7  | 4.2  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0                       | 0.0   | 39.5          | 168.8         |
| 15-Feb  | 0.1                           | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.4  | 46.0  | 164.0 | 316.9 | 401.5 | 438.9 | 432.7 | 349.6 | 253.3 | 106.1 | 6.2  | 0.1 | 0.0 | 0.0 | 0.0 | 0.0                       | 0.0   | 104.9         | 438.9         |
| 16-Feb  | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.6  | 20.1  | 62.8  | 74.4  | 91.2  | 116.4 | 112.4 | 103.2 | 82.8  | 43.1  | 4.9  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0                       | 0.0   | 29.7          | 116.4         |
| 17-Feb  | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.1  | 26.3  | 83.4  | 153.0 | 208.9 | 201.3 | 200.7 | 162.2 | 95.6  | 65.4  | 7.7  | 0.0 | 0.0 | 0.1 | 0.0 | 0.0                       | 0.0   | 50.2          | 208.9         |
| 18-Feb  | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 4.4  | 97.9  | 233.4 | 339.1 | 395.1 | 423.9 | 434.2 | 390.3 | 255.9 | 103.9 | 8.9  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0                       | 0.0   | 112.0         | 434.2         |
| 19-Feb  | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3.8  | 106.0 | 244.8 | 331.8 | 397.3 | 428.2 | 442.4 | 403.2 | 297.3 | 145.8 | 14.4 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0                       | 0.0   | 117.3         | 442.4         |
| 20-Feb  | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 8.5  | 137.6 | 277.8 | 378.3 | 452.4 | 490.7 | 401.1 | 343.2 | 278.4 | 109.8 | 12.4 | 0.2 | 0.1 | 0.0 | 0.0 | 0.0                       | 0.0   | 120.4         | 490.7         |
| 21-Feb  | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 8.4  | 121.4 | 276.4 | 403.2 | 492.6 | 508.5 | 483.5 | 393.9 | 265.7 | 118.2 | 14.6 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0                       | 0.0   | 128.6         | 508.5         |
| 22-Feb  | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 12.2 | 117.2 | 275.9 | 395.0 | 437.5 | 483.3 | 447.8 | 362.9 | 245.3 | 110.1 | 13.9 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1                       | 0.0   | 120.9         | 483.3         |
| 23-Feb  | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 12.5 | 140.9 | 287.3 | 385.0 | 467.1 | 480.6 | 472.1 | 374.7 | 250.8 | 114.6 | 15.8 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0                       | 0.0   | 125.1         | 480.6         |
| 24-Feb  | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 15.7 | 147.9 | 287.5 | 399.1 | 455.2 | 449.1 | 404.7 | 273.5 | 183.8 | 68.8  | 12.2 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0                       | 0.0   | 112.4         | 455.2         |
| 25-Feb  | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 7.6  | 53.1  | 115.6 | 158.0 | 211.8 | 215.0 | 220.7 | 185.5 | 123.3 | 72.1  | 13.8 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0                       | 0.0   | 57.4          | 220.7         |
| 26-Feb  | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 5.2  | 41.6  | 93.0  | 178.2 | 300.0 | 343.6 | 194.7 | 160.2 | 119.6 | 67.6  | 13.8 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0                       | 0.0   | 63.2          | 343.6         |
| 27-Feb  | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 7.8  | 56.8  | 149.5 | 255.3 | 317.2 | 323.7 | 356.7 | 208.9 | 143.6 | 104.7 | 25.6 | 0.3 | 0.0 | 0.0 | 0.0 | 0.0                       | 0.0   | 81.3          | 356.7         |
| 28-Feb  | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 10.3 | 113.1 | 326.7 | 306.5 | 475.2 | 492.8 | 472.8 | 435.5 | 351.4 | 213.6 | 39.5 | 0.6 | 0.0 | 0.0 | 0.0 | 0.0                       | 0.0   | 134.9         | 492.8         |
|   |                               |     |     |     |     |     |     |      |       |       |       |       |       |       |       |       |       |      |     |     |     |     | Diurnal Average           |       |               |               |
|   |                               |     |     |     |     |     |     |      |       |       |       |       |       |       |       |       |       |      |     |     |     |     | Diurnal Maximum           |       |               |               |





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Global Radiation (GR) - W/m2**  
**Fort Chipewyan - February 2023**

| <b>Concentration Ranges (W/m2)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|------------------------------------|------------------------|----------|---------------------|
| 0 - 20                             | 436                    | 64.88    | 64.88               |
| 21 - 100                           | 53                     | 7.89     | 72.77               |
| 101 - 300                          | 119                    | 17.71    | 90.48               |
| 301 - 600                          | 64                     | 9.52     | 100.00              |
| 601 - 900                          | 0                      | 0.00     | 100.00              |
| > 900                              | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 672

Total Number of Hours: 672



| Maximum Speed: 42 km/h on Feb 13 03:00<br>Minimum Speed Value: 0 km/h on Feb 18 02:00<br>Maximum Diurnal Speed Average: 5.8 km/h at hour 8<br>Monthly Average Velocity: 4.6 km/h 36.4 deg |                               | Maximum Daily Speed Average: 21.9 km/h on Feb 26<br>Minimum Daily Speed Average: 1.8 km/h on Feb 3<br>Minimum Diurnal Speed Average: 3.4 km/h at hour 17<br>Percentiles: P <sub>1</sub> = 2 P <sub>10</sub> = 5 Q <sub>1</sub> = 8 Median = 12 Q <sub>3</sub> = 17 P <sub>90</sub> = 25 P <sub>99</sub> = 33 |       | Hours in Service: 672<br>Hours of Data: 672<br>Hours of Missing Data: 0<br>Percent Operational Time: 100.0 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |               |               |      |
|---|-------------------------------|--|-------|--|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-----------------|---------------|---------------|------|
| Day   | Hourly Period Ending At (MST) |  |       |  |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 | Daily Average | Daily Maximum |      |
|   | 1                             | 2  | 3     | 4  | 5     | 6     | 7     | 8     | 9     | 10    | 11    | 12    | 13    | 14    | 15    | 16    | 17    | 18    | 19    | 20    | 21    | 22    | 23    | 24              |               |               |      |
| 1-Feb   | NW16                          | NW18   | NW21  | NW19   | NW18  | NW14  | NW12  | NW12  | NW12  | WNW11 | NW16  | WNW15 | NW18  | WNW15 | WNW14 | NW13  | WNW11 | WNW13 | WNW13 | WNW13 | NW12  | NW13  | WNW8  | SSW7            | NW13.3        | NW21          |      |
| 2-Feb   | SW6                           | SW5  | SSW9  | E7   | E10   | E10   | ESE13 | ESE13 | E16   | E18   | ESE19 | ESE21 | E22   | SE24  | ESE24 | ESE30 | ESE30 | ESE27 | SE23  | SSE28 | SSE26 | SSE25 | SSE26 | SSE27           | SE16.9        | ESE30         |      |
| 3-Feb   | SSE25                         | SE22   | SE19  | SE18   | SE16  | ESE16 | ESE14 | E10   | ENE7  | N5    | NNW7  | NW11  | NW12  | NW10  | NW9   | NW9   | NW10  | NW7   | NNW7  | NW5   | NW5   | NW4   | NNW3  | NNE4            | E1.8          | SSE25         |      |
| 4-Feb   | N3                            | NNW4   | NW3   | NNW5   | N5    | NNW5  | N5    | NNW5  | NW4   | NNW4  | N5    | NNW5  | N4    | ESE4  | ESE5  | E9    | E11   | E13   | E10   | ENE11 | E13   | ENE12 | ENE15 | ENE14           | NE5.0         | ENE15         |      |
| 5-Feb   | ENE15                         | ENE15  | ENE17 | ENE19  | ENE24 | ENE27 | ENE27 | ENE24 | ENE24 | ENE25 | ENE28 | ENE26 | ENE25 | ENE27 | ENE27 | ENE25 | NE23  | NNE10 | NNW6  | NW11  | NW14  | WNW17 | WNW18 | NW25            | NE15.5        | ENE28         |      |
| 6-Feb   | NW20                          | NW24   | NW25  | NW25   | NW20  | NW18  | NW15  | NW15  | NW9   | WNW8  | W7    | WSW6  | ESE8  | SE8   | ESE10 | E16   | E20   | E22   | E25   | E28   | E31   | E25   | E28   | ENE26           | NE6.5         | E31           |      |
| 7-Feb   | E23                           | E24  | E17   | ENE6   | WNW8  | WNW17 | WNW18 | WNW18 | WNW14 | WNW12 | WNW7  | NW8   | W4    | NNW10 | NNW12 | NNW12 | NW14  | NW10  | NNW12 | NNW13 | N11   | NNW9  | NW6   | NW7             | NNW7.2        | E24           |      |
| 8-Feb   | WNW7                          | WNW8   | NW7   | NW7  | NW9   | NNW7  | NW3   | NW3   | W3    | SSE2  | E5    | ENE6  | E8    | E8    | E12   | E11   | E11   | E12   | E14   | E22   | E23   | ENE21 | ENE23 | E26             | ENE7.1        | E26           |      |
| 9-Feb   | E24                           | E22  | E22   | E20  | E17   | E13   | E8    | E10   | E10   | E8    | E8    | E9    | E9    | ENE6  | E7    | ENE4  | NNE5  | E7    | E8    | E4    | E6    | E11   | E11   | E10             | E10.6         | E24           |      |
| 10-Feb  | E7                            | NE6  | N3    | NNE5   | NNE6  | NNE4  | ENE10 | NE10  | NE13  | NE18  | ENE17 | NE15  | NE12  | NE12  | NE12  | NE12  | NE14  | NE19  | ENE23 | ENE27 | ENE29 | ENE24 | ENE25 | ENE22           | NE14.2        | ENE29         |      |
| 11-Feb  | ENE19                         | ENE19  | NE11  | ENE10  | ENE8  | E4    | ESE8  | E12   | E18   | E17   | E14   | E15   | E16   | E17   | E15   | E14   | E9    | E10   | E8    | ESE5  | E9    | E10   | E5    | SW6             | E10.7         | ENE19         |      |
| 12-Feb  | WNW13                         | WNW13  | NW13  | NW13   | NW13  | NNW12 | NNW10 | NNW7  | NW6   | N6    | N5    | ESE4  | E13   | E17   | E16   | E16   | E16   | E21   | ENE30 | ENE33 | ENE33 | ENE31 | ENE39 | ENE38           | ENE11.1       | ENE39         |      |
| 13-Feb  | ENE36                         | ENE40  | NE42  | NE39   | NE26  | NNE28 | NNE30 | NE29  | NE30  | NNE27 | NNE18 | N15   | N14   | NNW16 | NNW18 | NNW18 | NNW20 | NNW13 | NNW9  | NNW11 | NNW14 | N9    | NNW10 | NNW11           | NNE18.8       | NE42          |      |
| 14-Feb  | N8                            | NW10   | NW11  | NW9  | WNW6  | W6    | WNW9  | WNW9  | WNW9  | WNW9  | NW9   | NW10  | WNW10 | WNW10 | WNW11 | NW9   | WNW9  | WNW8  | NW8   | WNW7  | W6    | W6    | W7    | WNW8            | WNW9          | WNW8.1        | NW11 |
| 15-Feb  | NW8                           | NNW7   | NNW6  | NNW5   | NNW5  | WNW6  | WNW4  | WNW4  | WNW5  | WNW5  | W3    | SSE2  | E5    | E5    | S3    | SW5   | SW1   | ENE6  | ENE5  | ENE7  | E8    | E12   | E15   | E18             | NE2.2         | E18           |      |
| 16-Feb  | E22                           | E24  | E22   | E22  | E25   | ENE26 | ENE28 | ENE28 | ENE25 | ENE24 | ENE25 | ENE20 | NE16  | NNE10 | NNE8  | N7    | NNW8  | NW10  | NW9   | NW9   | WNW10 | WNW11 | NW11  | NW10            | ENE11.9       | ENE28         |      |
| 17-Feb  | NNW10                         | NW10   | NW12  | NW11   | WNW12 | NW15  | NW11  | NW9   | NW8   | NW10  | NW10  | WNW10 | NW10  | NW10  | NW9   | NW8   | WNW7  | NW5   | N5    | NNW5  | NW4   | NNW5  | NNW1  | N4              | NW8.3         | NW15          |      |
| 18-Feb  | N2                            | SW0  | NNW1  | WNW2   | WNW3  | NNW5  | NW5   | NNW7  | NNW8  | NNW10 | NW10  | NW8   | NW8   | W7    | WSW10 | WSW11 | WSW9  | W7    | W7    | W4    | W4    | SSW2  | SSE1  | E7              | WNW4.2        | WSW11         |      |
| 19-Feb  | E9                            | E10  | E11   | E12  | E15   | E20   | E19   | E20   | ENE18 | ENE19 | E19   | E20   | E17   | E16   | E16   | E11   | ESE5  | E2    | ENE3  | N4    | N2    | WNW3  | WNW9  | WNW8            | E10.2         | E20           |      |
| 20-Feb  | WNW9                          | WNW11  | WNW10 | NW8  | NW8   | NW7   | WNW9  | NW11  | NW9   | WNW12 | WNW11 | NW12  | WNW10 | W11   | NW16  | NW16  | NW13  | NW13  | NNW10 | NNW9  | NNW13 | NNW10 | NNW8  | NNW11           | NW10.1        | NW16          |      |
| 21-Feb  | NNW13                         | NW11   | NW12  | NW11   | WNW13 | NW12  | NW13  | NW15  | NW12  | NW14  | NW14  | NW13  | NW14  | NW13  | NW15  | WNW15 | W15   | W15   | WNW16 | WNW15 | WNW16 | WNW21 | NW20  | WNW17           | WNW13.9       | WNW21         |      |
| 22-Feb  | WNW16                         | WNW15  | WNW15 | NW14   | WNW12 | W11   | WNW16 | WNW16 | WNW15 | W14   | WNW9  | W12   | W10   | W12   | W14   | W14   | W12   | W13   | WNW13 | NW10  | NW9   | NW9   | NNW8  | NNW9            | WNW11.6       | WNW16         |      |
| 23-Feb  | NW8                           | WNW7   | W7    | WNW10  | WNW9  | WNW8  | WNW9  | NW10  | WNW9  | WNW9  | WNW9  | W11   | W12   | W13   | WSW13 | W12   | W10   | W9    | WSW7  | WSW10 | SW12  | SW14  | SW14  | SW14            | W9.1          | SW14          |      |
| 24-Feb  | SW13                          | SW13   | SW11  | SSW7   | E5    | ESE5  | SE5   | ESE7  | SE11  | ESE7  | ESE7  | SSE18 | SSE26 | SSE26 | SSE28 | S26   | S25   | S27   | SSW28 | SSW21 | SSW19 | SSW17 | SSW16 | SSW15           | S13.7         | SSE28         |      |
| 25-Feb  | SW13                          | SW12   | SW10  | WSW9   | SW10  | W12   | W14   | W16   | W17   | W18   | W16   | W19   | W16   | W19   | W16   | W14   | W10   | W7    | SW4   | SW5   | SW3   | E5    | E9    | ENE9            | ESE8          | WSW8.0        | W19  |
| 26-Feb  | ENE8                          | E11  | ENE12 | ENE14  | ENE18 | ENE19 | NE19  | NE18  | ENE20 | ENE23 | ENE24 | ENE27 | ENE29 | ENE29 | ENE28 | NE26  | NE25  | NE26  | NE28  | NE30  | NE27  | NE26  | NE25  | NE22            | ENE21.9       | NE30          |      |
| 27-Feb  | NE21                          | NE21   | NE20  | NE20   | NE16  | NE17  | NE17  | NE18  | NNE14 | NE13  | NE15  | NE13  | E14   | E19   | E18   | E14   | E12   | E6    | E6    | NE1   | NW6   | NNW3  | NNE6  | N9              | NE12.0        | NE21          |      |
| 28-Feb  | NE10                          | ENE11  | ENE9  | ENE12  | ENE10 | ENE9  | ENE7  | ENE9  | ENE9  | E16   | E18   | E17   | E17   | E18   | E16   | E17   | E17   | ENE11 | ENE15 | ENE14 | ENE18 | ENE20 | ENE18 | E18             | ENE13.6       | ENE20         |      |
| NNE4.8 NNE4.9 NNE4.7 NNE5.5 NNE5.2 NNE5.2 NNE5.1 NNE5.8 NNE5.5 NNE5.6 NNE5.5 NE4.1 NE4.5 ENE3.8 NE3.6 NE3.4 NE3.4 NE3.6 NE3.9 NE4.2 NE4.8 NE4.7 NE5.1 NE4.9                               |                               |  |       |  |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Diurnal Average |               |               |      |
| ENE36 ENE40 NE42 NE39 NE26 NNE28 NNE30 NE29 NE30 NNE27 ENE28 ENE27 ENE29 ENE29 ENE28 ESE30 ESE30 S27 ENE30 ENE33 ENE33 ENE31 ENE39 ENE38  |                               |  |       |  |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Diurnal Maximum |               |               |      |

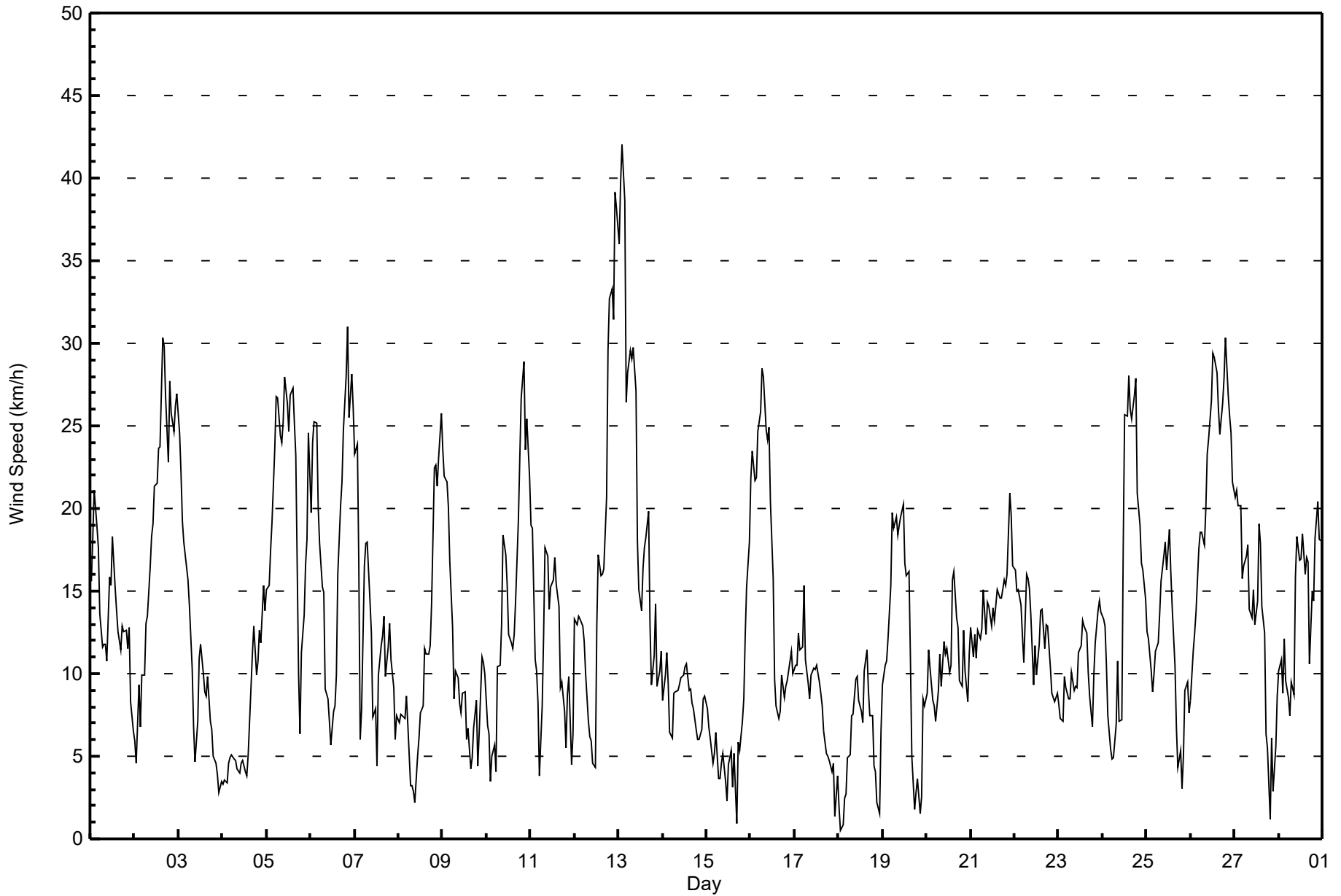
All monthly, daily, and diurnal averages have been calculated using vector methods



**Wood Buffalo Environmental Association**  
**Summary of Hour Standard Deviations**

**Wind Speed (WS) - km/h**  
**Fort Chipewyan - February 2023**

| Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0<br>Maximum Value: 8 km/h on Feb 6 03:00<br>Minimum Value: 1 km/h on Feb 15 20:00<br>Percentiles: P <sub>1</sub> = 1 P <sub>10</sub> = 1 Q <sub>1</sub> = 2 Median = 2 Q <sub>3</sub> = 3 P <sub>90</sub> = 4 P <sub>99</sub> = 7 |                               |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    | Hours in Service: 672<br>Hours of Data: 672<br>Hours of Missing Data: 0<br>Hours of Calibration: 0<br>Percent Operational Time: 100.0 |    |    |    |    |    |    |    |               |   |
|--|-------------------------------|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|---|----|----|----|----|----|----|----|---------------|---|
| Day  | Hourly Period Ending At (MST) |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |   |    |    |    |    |    |    |    | Daily Maximum |   |
|  | 1                             | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17  | 18 | 19 | 20 | 21 | 22 | 23 | 24 |               |   |
| 1-Feb  | 5                             | 5 | 6 | 5 | 5 | 4 | 4 | 3 | 4 | 3  | 4  | 4  | 5  | 5  | 4  | 4  | 2   | 2  | 2  | 2  | 2  | 2  | 3  | 2  | 6             |   |
| 2-Feb  | 2                             | 2 | 3 | 3 | 1 | 1 | 2 | 2 | 2 | 1  | 1  | 3  | 2  | 3  | 3  | 3  | 2   | 2  | 2  | 4  | 4  | 4  | 4  | 4  | 4             | 4 |
| 3-Feb  | 4                             | 3 | 3 | 2 | 2 | 1 | 1 | 2 | 1 | 2  | 2  | 4  | 4  | 3  | 3  | 3  | 2   | 2  | 2  | 1  | 1  | 1  | 2  | 2  | 4             |   |
| 4-Feb  | 1                             | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2  | 1  | 2  | 2  | 1  | 2  | 1  | 1   | 1  | 2  | 2  | 1  | 2  | 2  | 2  | 2             | 2 |
| 5-Feb  | 2                             | 2 | 3 | 3 | 4 | 3 | 3 | 3 | 4 | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 4   | 5  | 2  | 3  | 3  | 4  | 4  | 7  | 7             |   |
| 6-Feb  | 6                             | 6 | 8 | 7 | 6 | 5 | 4 | 4 | 3 | 2  | 3  | 2  | 3  | 2  | 3  | 2  | 2   | 2  | 2  | 3  | 3  | 3  | 2  | 3  | 8             |   |
| 7-Feb  | 3                             | 2 | 5 | 3 | 3 | 6 | 5 | 4 | 4 | 4  | 2  | 3  | 2  | 4  | 4  | 4  | 4   | 3  | 5  | 5  | 4  | 3  | 1  | 1  | 6             |   |
| 8-Feb  | 1                             | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 3 | 1  | 2  | 1  | 1  | 2  | 1  | 3  | 3   | 3  | 2  | 2  | 2  | 2  | 3  | 3  | 3             |   |
| 9-Feb  | 3                             | 3 | 2 | 1 | 2 | 2 | 1 | 1 | 1 | 2  | 1  | 1  | 2  | 1  | 2  | 2  | 1   | 2  | 3  | 1  | 2  | 2  | 3  | 2  | 3             |   |
| 10-Feb   | 2                             | 1 | 2 | 2 | 2 | 1 | 3 | 2 | 5 | 3  | 3  | 3  | 3  | 3  | 2  | 3  | 3   | 4  | 4  | 5  | 5  | 4  | 4  | 4  | 5             |   |
| 11-Feb   | 3                             | 4 | 4 | 2 | 2 | 2 | 1 | 3 | 1 | 1  | 2  | 2  | 1  | 2  | 2  | 2  | 2   | 1  | 2  | 1  | 2  | 1  | 2  | 3  | 4             |   |
| 12-Feb   | 3                             | 2 | 3 | 3 | 4 | 5 | 4 | 3 | 2 | 2  | 2  | 2  | 3  | 3  | 2  | 1  | 2   | 3  | 4  | 3  | 4  | 3  | 4  | 5  | 5             |   |
| 13-Feb   | 5                             | 6 | 6 | 6 | 7 | 6 | 6 | 7 | 7 | 7  | 6  | 5  | 5  | 6  | 6  | 7  | 7   | 5  | 4  | 4  | 5  | 5  | 4  | 4  | 7             |   |
| 14-Feb   | 3                             | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 3  | 3  | 3  | 2  | 3  | 3  | 2  | 2   | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 3             |   |
| 15-Feb   | 1                             | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 2   | 1  | 2  | 1  | 1  | 2  | 4  | 2  | 4             |   |
| 16-Feb   | 2                             | 3 | 3 | 3 | 2 | 2 | 3 | 3 | 3 | 3  | 3  | 3  | 3  | 3  | 2  | 3  | 3   | 3  | 2  | 3  | 2  | 2  | 3  | 3  | 3             |   |
| 17-Feb   | 3                             | 3 | 3 | 3 | 3 | 4 | 3 | 2 | 2 | 3  | 3  | 3  | 3  | 3  | 3  | 2  | 2   | 1  | 1  | 1  | 1  | 1  | 2  | 2  | 4             |   |
| 18-Feb   | 2                             | 1 | 2 | 1 | 1 | 2 | 2 | 2 | 2 | 3  | 3  | 2  | 3  | 3  | 2  | 2  | 2   | 1  | 2  | 1  | 1  | 2  | 1  | 2  | 3             |   |
| 19-Feb   | 3                             | 1 | 1 | 1 | 2 | 2 | 2 | 3 | 3 | 3  | 2  | 2  | 2  | 2  | 2  | 3  | 1   | 1  | 1  | 1  | 2  | 2  | 1  | 2  | 3             |   |
| 20-Feb   | 3                             | 2 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2  | 3  | 4  | 3  | 3  | 6  | 5  | 4   | 3  | 3  | 3  | 4  | 4  | 3  | 4  | 6             |   |
| 21-Feb   | 4                             | 3 | 3 | 3 | 3 | 3 | 4 | 4 | 4 | 4  | 4  | 4  | 4  | 4  | 5  | 4  | 3   | 3  | 3  | 3  | 3  | 4  | 4  | 3  | 5             |   |
| 22-Feb   | 3                             | 2 | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 2   | 3  | 2  | 2  | 1  | 2  | 2  | 2  | 3             |   |
| 23-Feb   | 2                             | 2 | 1 | 1 | 2 | 2 | 2 | 1 | 1 | 2  | 3  | 3  | 3  | 3  | 3  | 3  | 3   | 2  | 1  | 3  | 2  | 2  | 1  | 2  | 3             |   |
| 24-Feb   | 2                             | 2 | 2 | 3 | 2 | 1 | 1 | 2 | 2 | 2  | 2  | 5  | 3  | 4  | 3  | 4  | 3   | 4  | 4  | 3  | 2  | 2  | 1  | 1  | 5             |   |
| 25-Feb   | 1                             | 2 | 2 | 1 | 1 | 1 | 3 | 3 | 3 | 4  | 4  | 4  | 5  | 4  | 4  | 3  | 3   | 1  | 1  | 2  | 3  | 1  | 2  | 2  | 5             |   |
| 26-Feb   | 2                             | 2 | 1 | 2 | 2 | 3 | 2 | 2 | 3 | 3  | 3  | 4  | 4  | 4  | 5  | 5  | 4   | 4  | 5  | 5  | 4  | 4  | 4  | 4  | 5             |   |
| 27-Feb   | 4                             | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 3 | 3  | 4  | 3  | 4  | 2  | 2  | 1  | 1   | 1  | 1  | 1  | 3  | 2  | 2  | 2  | 4             |   |
| 28-Feb   | 2                             | 2 | 2 | 2 | 1 | 1 | 2 | 1 | 2 | 2  | 1  | 1  | 2  | 2  | 1  | 1  | 2   | 1  | 3  | 2  | 4  | 2  | 2  | 2  | 4             |   |
|  |                               |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    | 6 6 8 7 7 6 6 7 7 7 7 6 5 5 6 6 7 7 5 5 5 5 5 4 7   |    |    |    |    |    |    |    |               |   |
|  |                               |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    | Diurnal Maximum   |    |    |    |    |    |    |    |               |   |







**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Wind Speed (WS) - km/h  
Fort Chipewyan - February 2023**

| <b>Wind Speed Ranges (km/h)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---------------------------------|------------------------|----------|---------------------|
| 0 - 5                           | 86                     | 12.80    | 12.80               |
| 6 - 11                          | 242                    | 36.01    | 48.81               |
| 12 - 19                         | 220                    | 32.74    | 81.55               |
| 20 - 28                         | 104                    | 15.48    | 97.02               |
| 29 - 38                         | 16                     | 2.38     | 99.40               |
| > 38                            | 4                      | 0.60     | 100.00              |

Total Number of Valid Hours: 672

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Wind Speed (WS) - km/h  
Fort Chipewyan - February 2023**

| <b>Wind Speed<br/>Ranges (km/h)</b> | <b>Wind Direction</b> |     |    |     |     |     |    |     |   |     |    |     |    |     |     |     | <b>Totals</b> |
|-------------------------------------|-----------------------|-----|----|-----|-----|-----|----|-----|---|-----|----|-----|----|-----|-----|-----|---------------|
|                                     | N                     | NNE | NE | ENE | E   | ESE | SE | SSE | S | SSW | SW | WSW | W  | WNW | NW  | NNW |               |
| 0 - 5                               | 13                    | 4   | 1  | 3   | 9   | 6   | 1  | 3   | 1 | 1   | 6  | 1   | 5  | 7   | 10  | 15  | 86            |
| 6 - 11                              | 6                     | 5   | 4  | 21  | 40  | 8   | 1  | 0   | 0 | 3   | 6  | 7   | 17 | 45  | 51  | 28  | 242           |
| 12 - 19                             | 1                     | 3   | 19 | 22  | 47  | 6   | 3  | 1   | 0 | 4   | 8  | 3   | 19 | 31  | 41  | 12  | 220           |
| 20 - 28                             | 0                     | 2   | 13 | 34  | 25  | 3   | 3  | 9   | 3 | 2   | 0  | 0   | 0  | 1   | 8   | 1   | 104           |
| 29 - 38                             | 0                     | 1   | 3  | 9   | 1   | 2   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0   | 0   | 16            |
| > 38                                | 0                     | 0   | 2  | 2   | 0   | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0   | 0   | 4             |
| <b>Totals</b>                       | 20                    | 15  | 42 | 91  | 122 | 25  | 8  | 13  | 4 | 10  | 20 | 11  | 41 | 84  | 110 | 56  | 672           |

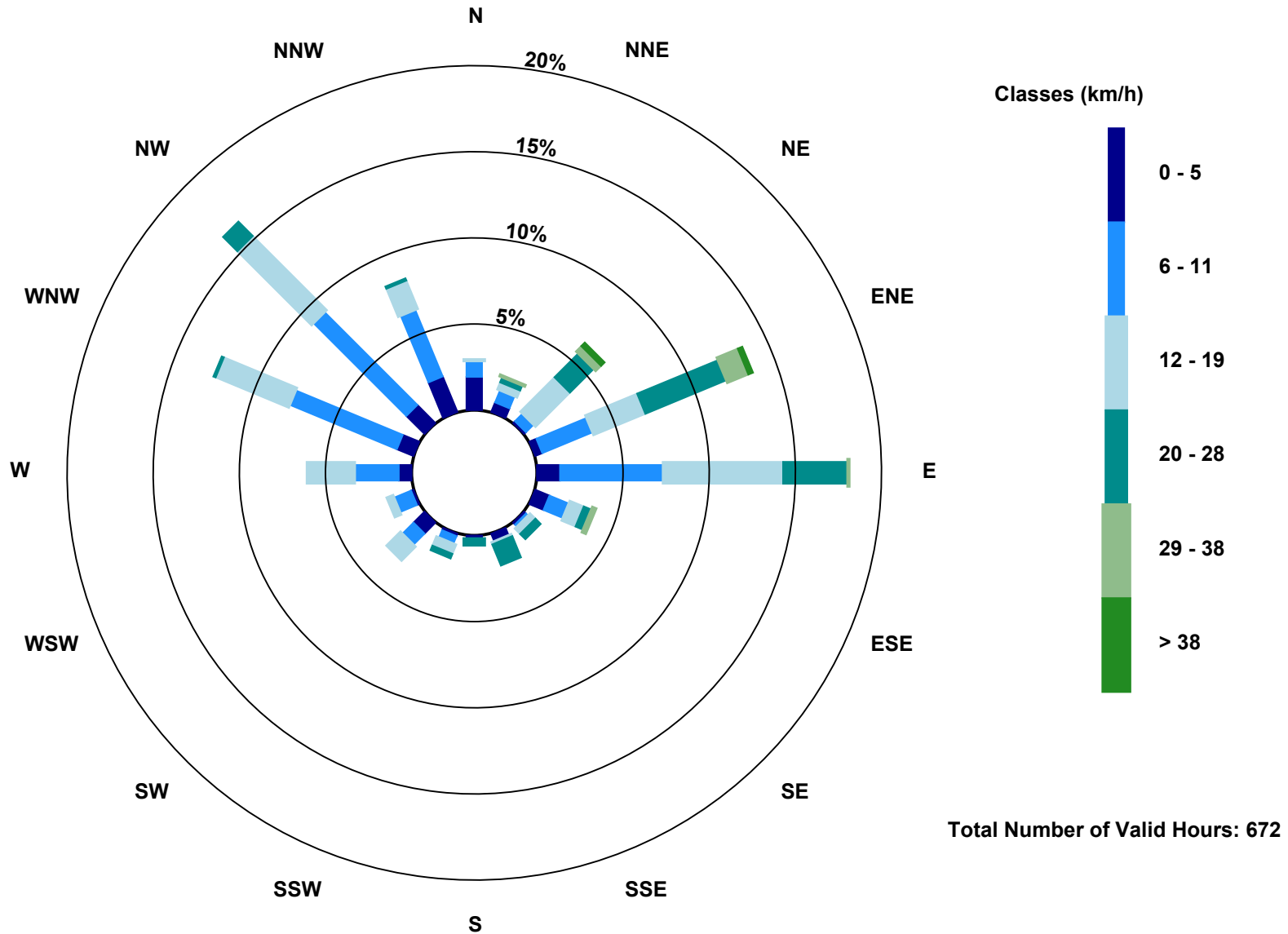
Total Number of Valid Hours: 672

Total Number of Hours: 672



Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Wind Speed (WS) - km/h  
Fort Chipewyan





**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

**Wind Direction (WD) - deg**  
**Fort Chipewyan - February 2023**

| Direction of Maximum Speed: 56 deg on Feb 13 03:00                                 |                               |      |      |      |      |      |      |      |      |      |  |      |      |      |      |      |      |      |      |      |      |      | Hours in Service: 672           |      |               |       |
|--|-------------------------------|------|------|------|------|------|------|------|------|------|--|------|------|------|------|------|------|------|------|------|------|------|---------------------------------|------|---------------|-------|
| Direction of Maximum Daily Speed Average: 57.1 deg on Feb 26                       |                               |      |      |      |      |      |      |      |      |      |  |      |      |      |      |      |      |      |      |      |      |      | Hours of Data: 672              |      |               |       |
| Direction of Minimum Speed: 230 deg on Feb 18 02:00                                |                               |      |      |      |      |      |      |      |      |      | Direction of Minimum Daily Speed Average: 1.8 deg on Feb 3 |      |      |      |      |      |      |      |      |      |      |      | Hours of Missing Data: 0        |      |               |       |
| Monthly Average Direction: 36.4 deg  |                               |      |      |      |      |      |      |      |      |      |  |      |      |      |      |      |      |      |      |      |      |      | Percent Operational Time: 100.0 |      |               |       |
| Day  | Hourly Period Ending At (MST) |      |      |      |      |      |      |      |      |      |  |      |      |      |      |      |      |      |      |      |      |      |                                 |      | Daily Average |       |
|  | 1                             | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20   | 21   | 22   | 23                              | 24   |               |       |
| 1-Feb  | 310                           | 313  | 319  | 321  | 321  | 321  | 320  | 312  | 312  | 300  | 310  | 301  | 308  | 301  | 294  | 307  | 295  | 303  | 300  | 301  | 304  | 308  | 298                             | 212  | 307.6         |       |
| 2-Feb  | 221                           | 215  | 208  | 97   | 84   | 86   | 105  | 103  | 89   | 93   | 102  | 112  | 92   | 126  | 119  | 118  | 119  | 111  | 126  | 152  | 148  | 148  | 154                             | 154  | 124.3         |       |
| 3-Feb  | 152                           | 146  | 144  | 133  | 129  | 120  | 104  | 84   | 64   | 356  | 333  | 315  | 316  | 316  | 306  | 311  | 326  | 328  | 313  | 326  | 305  | 333  | 29                              | 98.7 |               |       |
| 4-Feb  | 352                           | 348  | 319  | 342  | 1    | 348  | 349  | 345  | 326  | 341  | 350  | 337  | 1    | 105  | 111  | 95   | 90   | 86   | 77   | 82   | 71   | 69   | 66                              | 55.0 |               |       |
| 5-Feb  | 66                            | 62   | 69   | 64   | 71   | 70   | 72   | 70   | 70   | 70   | 73   | 70   | 60   | 66   | 59   | 57   | 56   | 31   | 346  | 317  | 306  | 303  | 296                             | 309  | 53.4          |       |
| 6-Feb  | 309                           | 314  | 318  | 317  | 313  | 310  | 305  | 310  | 305  | 284  | 280  | 244  | 117  | 142  | 123  | 88   | 95   | 84   | 86   | 80   | 85   | 84   | 80                              | 78   | 36.8          |       |
| 7-Feb  | 81                            | 82   | 83   | 67   | 286  | 300  | 286  | 288  | 293  | 293  | 298  | 308  | 275  | 327  | 328  | 331  | 321  | 320  | 327  | 328  | 351  | 340  | 321                             | 307  | 328.8         |       |
| 8-Feb  | 295                           | 294  | 307  | 313  | 326  | 330  | 313  | 314  | 271  | 148  | 79   | 73   | 79   | 91   | 80   | 93   | 92   | 84   | 89   | 81   | 79   | 78   | 78                              | 83   | 70.2          |       |
| 9-Feb  | 83                            | 87   | 88   | 93   | 96   | 101  | 97   | 92   | 89   | 85   | 87   | 85   | 86   | 66   | 85   | 58   | 22   | 83   | 83   | 79   | 81   | 91   | 85                              | 88   | 86.5          |       |
| 10-Feb   | 79                            | 53   | 1    | 18   | 12   | 23   | 75   | 45   | 53   | 50   | 58   | 54   | 42   | 56   | 48   | 39   | 44   | 52   | 58   | 57   | 57   | 59   | 60                              | 57   | 52.9          |       |
| 11-Feb   | 59                            | 59   | 50   | 64   | 66   | 81   | 103  | 99   | 93   | 97   | 93   | 88   | 86   | 87   | 94   | 93   | 82   | 99   | 101  | 108  | 100  | 86   | 95                              | 236  | 85.4          |       |
| 12-Feb   | 289                           | 289  | 309  | 306  | 323  | 330  | 335  | 332  | 323  | 353  | 3  | 115  | 82   | 82   | 86   | 89   | 87   | 81   | 77   | 77   | 76   | 74   | 72                              | 69   | 58.3          |       |
| 13-Feb   | 59                            | 58   | 56   | 51   | 34   | 32   | 32   | 34   | 34   | 31   | 18   | 11   | 1    | 346  | 338  | 337  | 338  | 337  | 337  | 330  | 336  | 349  | 336                             | 340  | 22.9          |       |
| 14-Feb   | 351                           | 320  | 316  | 322  | 301  | 265  | 287  | 289  | 290  | 309  | 312  | 294  | 291  | 302  | 318  | 303  | 295  | 308  | 273  | 285  | 273  | 273  | 280                             | 291  | 291           | 300.1 |
| 15-Feb   | 314                           | 334  | 340  | 345  | 334  | 302  | 302  | 293  | 284  | 289  | 281  | 162  | 93   | 95   | 189  | 230  | 236  | 75   | 74   | 74   | 83   | 85   | 86                              | 85   | 46.0          |       |
| 16-Feb   | 82                            | 81   | 87   | 85   | 79   | 77   | 76   | 76   | 72   | 68   | 66   | 60   | 52   | 19   | 17   | 358  | 337  | 323  | 319  | 314  | 291  | 297  | 306                             | 318  | 57.2          |       |
| 17-Feb   | 327                           | 326  | 312  | 309  | 303  | 312  | 308  | 311  | 310  | 304  | 307  | 298  | 310  | 314  | 304  | 308  | 299  | 317  | 353  | 344  | 310  | 329  | 336                             | 350  | 313.2         |       |
| 18-Feb   | 354                           | 230  | 347  | 283  | 290  | 330  | 322  | 334  | 335  | 336  | 322  | 316  | 316  | 266  | 252  | 240  | 258  | 262  | 272  | 266  | 265  | 212  | 157                             | 80   | 293.2         |       |
| 19-Feb   | 80                            | 79   | 85   | 83   | 89   | 86   | 82   | 80   | 76   | 76   | 80   | 84   | 85   | 91   | 85   | 87   | 112  | 92   | 57   | 352  | 1    | 282  | 292                             | 290  | 79.9          |       |
| 20-Feb   | 296                           | 293  | 295  | 320  | 314  | 306  | 297  | 304  | 308  | 297  | 287  | 310  | 289  | 261  | 311  | 314  | 313  | 320  | 330  | 340  | 342  | 346  | 338                             | 329  | 310.9         |       |
| 21-Feb   | 328                           | 320  | 315  | 306  | 299  | 305  | 312  | 319  | 315  | 314  | 315  | 312  | 315  | 311  | 308  | 290  | 273  | 280  | 287  | 290  | 288  | 298  | 304                             | 301  | 303.6         |       |
| 22-Feb   | 299                           | 294  | 298  | 305  | 293  | 280  | 288  | 288  | 288  | 277  | 282  | 266  | 264  | 263  | 263  | 261  | 265  | 266  | 288  | 314  | 320  | 318  | 332                             | 333  | 287.6         |       |
| 23-Feb   | 323                           | 295  | 266  | 284  | 284  | 291  | 292  | 306  | 297  | 293  | 298  | 274  | 263  | 264  | 255  | 259  | 263  | 261  | 254  | 238  | 232  | 227  | 222                             | 225  | 265.7         |       |
| 24-Feb   | 234                           | 228  | 219  | 204  | 85   | 102  | 135  | 114  | 124  | 117  | 111  | 167  | 168  | 165  | 166  | 177  | 174  | 185  | 194  | 201  | 201  | 204  | 211                             | 213  | 181.4         |       |
| 25-Feb   | 219                           | 223  | 234  | 238  | 233  | 230  | 259  | 270  | 268  | 266  | 265  | 268  | 275  | 279  | 273  | 279  | 271  | 236  | 226  | 219  | 81   | 84   | 73                              | 104  | 255.5         |       |
| 26-Feb   | 78                            | 81   | 76   | 68   | 67   | 64   | 54   | 55   | 61   | 63   | 62   | 62   | 66   | 62   | 57   | 54   | 52   | 51   | 51   | 51   | 48   | 47   | 44                              | 42   | 57.1          |       |
| 27-Feb   | 41                            | 45   | 42   | 44   | 37   | 35   | 38   | 36   | 31   | 36   | 48   | 46   | 79   | 87   | 82   | 83   | 83   | 81   | 94   | 45   | 305  | 338  | 15                              | 10   | 49.4          |       |
| 28-Feb   | 34                            | 58   | 69   | 59   | 63   | 63   | 58   | 65   | 78   | 93   | 94   | 96   | 94   | 92   | 93   | 86   | 84   | 70   | 63   | 61   | 74   | 78   | 78                              | 79   | 77.3          |       |
| 30.4   | 30.6                          | 22.1 | 24.3 | 21.5 | 19.7 | 22.7 | 20.2 | 25.8 | 27.5 | 31.7 | 37.5   | 45.8 | 57.6 | 51.2 | 47.6 | 47.0 | 46.7 | 51.0 | 45.5 | 50.0 | 50.4 | 51.4 | 49.0                            |      |               |       |
| Diurnal Average  |                               |      |      |      |      |      |      |      |      |      |  |      |      |      |      |      |      |      |      |      |      |      |                                 |      |               |       |
| All monthly, daily, and diurnal averages have been calculated using vector methods |                               |      |      |      |      |      |      |      |      |      |  |      |      |      |      |      |      |      |      |      |      |      |                                 |      |               |       |



**Wood Buffalo Environmental Association**  
**Summary of Hour Standard Deviations**

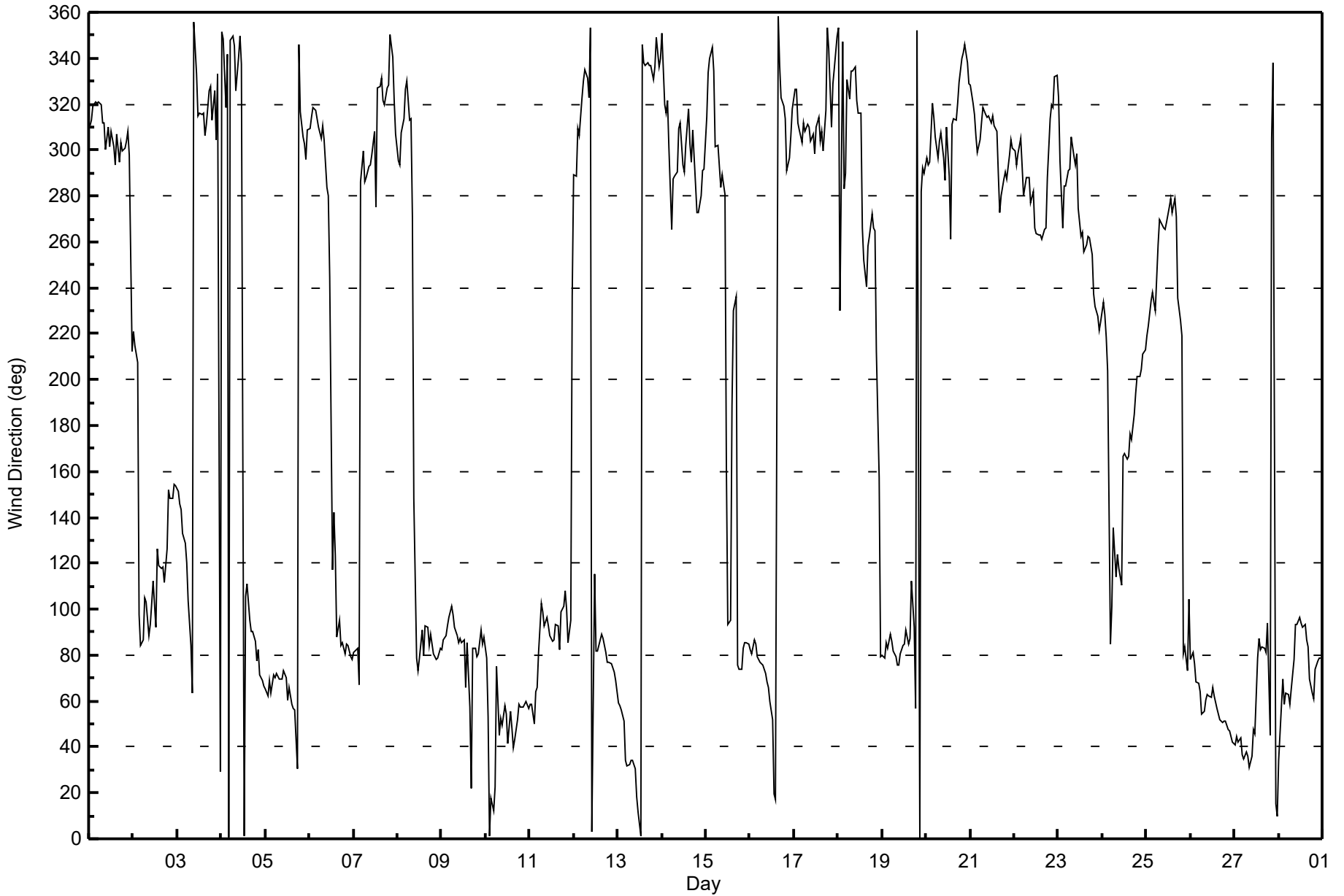
**Wind Direction (WD) - deg**  
**Fort Chipewyan - February 2023**

| Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0<br>Maximum Value: 83 deg on Feb 18 01:00   |                               |    |    |    |    |    |    |    |    |    |    |    |    | Hours in Service: 672<br>Hours of Data: 672<br>Hours of Missing Data: 0<br>Hours of Calibration: 0<br>Percent Operational Time: 100.0 |    |    |    |    |    |    |    |    |    |               |    |
|--|-------------------------------|----|----|----|----|----|----|----|----|----|----|----|----|---|----|----|----|----|----|----|----|----|----|---------------|----|
| Minimum Value: 3 deg on Feb 28 11:00   |                               |    |    |    |    |    |    |    |    |    |    |    |    |   |    |    |    |    |    |    |    |    |    |               |    |
| Percentiles: P <sub>1</sub> = 4 P <sub>10</sub> = 6 Q <sub>1</sub> = 8 Median = 13 Q <sub>3</sub> = 19 P <sub>90</sub> = 26 P <sub>99</sub> = 66 |                               |    |    |    |    |    |    |    |    |    |    |    |    |   |    |    |    |    |    |    |    |    |    |               |    |
| Day  | Hourly Period Ending At (MST) |    |    |    |    |    |    |    |    |    |    |    |    |   |    |    |    |    |    |    |    |    |    | Daily Maximum |    |
|  | 1                             | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 | 14  | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |               | 24 |
| 1-Feb  | 16                            | 16 | 16 | 17 | 19 | 20 | 19 | 18 | 17 | 16 | 16 | 17 | 16 | 20  | 18 | 16 | 14 | 12 | 12 | 12 | 11 | 10 | 26 | 13            | 26 |
| 2-Feb  | 12                            | 11 | 11 | 41 | 7  | 10 | 13 | 9  | 8  | 5  | 6  | 15 | 7  | 9   | 10 | 7  | 4  | 4  | 11 | 9  | 8  | 8  | 10 | 9             | 41 |
| 3-Feb  | 9                             | 8  | 9  | 8  | 8  | 6  | 7  | 11 | 10 | 27 | 27 | 20 | 21 | 23  | 20 | 16 | 25 | 21 | 21 | 23 | 26 | 28 | 26 | 28            |    |
| 4-Feb  | 25                            | 21 | 18 | 18 | 18 | 17 | 18 | 20 | 20 | 31 | 32 | 36 | 45 | 26  | 29 | 6  | 7  | 7  | 9  | 7  | 10 | 7  | 8  | 9             | 45 |
| 5-Feb  | 8                             | 8  | 8  | 8  | 7  | 6  | 6  | 8  | 7  | 7  | 6  | 8  | 8  | 7   | 7  | 7  | 8  | 31 | 29 | 20 | 14 | 15 | 15 | 16            | 31 |
| 6-Feb  | 16                            | 16 | 18 | 17 | 16 | 15 | 14 | 15 | 17 | 16 | 46 | 39 | 21 | 24  | 29 | 17 | 14 | 4  | 6  | 5  | 5  | 6  | 5  | 6             | 46 |
| 7-Feb  | 7                             | 5  | 9  | 42 | 21 | 20 | 15 | 14 | 14 | 24 | 21 | 25 | 49 | 24  | 26 | 23 | 18 | 21 | 23 | 23 | 24 | 22 | 16 | 10            | 49 |
| 8-Feb  | 14                            | 9  | 14 | 9  | 10 | 14 | 45 | 56 | 72 | 49 | 27 | 10 | 8  | 12  | 4  | 13 | 12 | 9  | 8  | 5  | 5  | 6  | 7  | 5             | 72 |
| 9-Feb  | 7                             | 8  | 6  | 5  | 4  | 5  | 5  | 6  | 5  | 14 | 10 | 7  | 13 | 13  | 21 | 46 | 26 | 28 | 11 | 20 | 17 | 6  | 7  | 6             | 46 |
| 10-Feb   | 14                            | 11 | 56 | 20 | 22 | 25 | 18 | 10 | 14 | 9  | 11 | 12 | 14 | 17  | 17 | 15 | 12 | 10 | 9  | 9  | 9  | 9  | 8  | 9             | 56 |
| 11-Feb   | 10                            | 9  | 21 | 13 | 16 | 57 | 13 | 8  | 5  | 5  | 8  | 7  | 6  | 5   | 5  | 6  | 8  | 9  | 12 | 8  | 10 | 12 | 32 | 48            | 57 |
| 12-Feb   | 14                            | 12 | 15 | 15 | 19 | 24 | 25 | 26 | 24 | 25 | 33 | 63 | 7  | 4   | 5  | 4  | 5  | 7  | 5  | 5  | 6  | 5  | 6  | 8             | 63 |
| 13-Feb   | 8                             | 8  | 8  | 8  | 14 | 13 | 12 | 13 | 13 | 14 | 21 | 21 | 24 | 22  | 21 | 22 | 21 | 23 | 25 | 24 | 23 | 24 | 26 | 26            | 26 |
| 14-Feb   | 24                            | 20 | 16 | 21 | 23 | 15 | 14 | 12 | 14 | 19 | 20 | 23 | 16 | 18  | 21 | 20 | 16 | 12 | 11 | 10 | 7  | 10 | 9  | 11            | 24 |
| 15-Feb   | 10                            | 15 | 16 | 18 | 17 | 13 | 16 | 15 | 14 | 9  | 31 | 50 | 18 | 12  | 50 | 14 | 79 | 8  | 10 | 5  | 6  | 7  | 9  | 4             | 79 |
| 16-Feb   | 4                             | 5  | 6  | 7  | 5  | 5  | 5  | 5  | 7  | 8  | 8  | 9  | 10 | 21  | 19 | 24 | 22 | 18 | 17 | 15 | 15 | 15 | 15 | 20            | 24 |
| 17-Feb   | 21                            | 22 | 16 | 16 | 16 | 15 | 16 | 15 | 17 | 18 | 21 | 18 | 22 | 23  | 21 | 18 | 19 | 16 | 14 | 16 | 9  | 16 | 60 | 25            | 60 |
| 18-Feb   | 83                            | 76 | 66 | 40 | 45 | 37 | 35 | 14 | 18 | 19 | 17 | 16 | 25 | 49  | 18 | 12 | 13 | 14 | 9  | 13 | 19 | 59 | 66 | 8             | 83 |
| 19-Feb   | 9                             | 5  | 7  | 6  | 6  | 6  | 5  | 7  | 8  | 7  | 6  | 6  | 8  | 7   | 6  | 10 | 14 | 66 | 40 | 15 | 72 | 33 | 8  | 8             | 72 |
| 20-Feb   | 11                            | 6  | 5  | 11 | 14 | 8  | 9  | 17 | 21 | 11 | 14 | 18 | 29 | 25  | 20 | 17 | 17 | 16 | 22 | 20 | 20 | 26 | 27 | 22            | 29 |
| 21-Feb   | 20                            | 18 | 15 | 13 | 13 | 15 | 16 | 17 | 19 | 18 | 18 | 19 | 19 | 20  | 19 | 16 | 15 | 12 | 11 | 12 | 12 | 13 | 12 | 12            | 20 |
| 22-Feb   | 12                            | 10 | 13 | 13 | 15 | 14 | 11 | 12 | 13 | 15 | 20 | 15 | 18 | 14  | 14 | 16 | 12 | 13 | 12 | 15 | 12 | 12 | 17 | 17            | 20 |
| 23-Feb   | 18                            | 13 | 9  | 10 | 11 | 15 | 9  | 6  | 10 | 14 | 20 | 26 | 18 | 17  | 18 | 16 | 16 | 13 | 16 | 11 | 10 | 9  | 8  | 9             | 26 |
| 24-Feb   | 9                             | 8  | 10 | 20 | 27 | 21 | 21 | 13 | 16 | 16 | 26 | 11 | 7  | 8   | 8  | 7  | 7  | 8  | 7  | 7  | 7  | 8  | 6  | 6             | 27 |
| 25-Feb   | 7                             | 11 | 11 | 11 | 9  | 7  | 18 | 12 | 13 | 13 | 14 | 16 | 14 | 15  | 15 | 16 | 24 | 20 | 9  | 26 | 36 | 7  | 12 | 22            | 36 |
| 26-Feb   | 11                            | 5  | 7  | 6  | 7  | 8  | 7  | 8  | 8  | 8  | 8  | 9  | 8  | 8   | 8  | 8  | 9  | 9  | 9  | 9  | 9  | 9  | 10 | 11            | 11 |
| 27-Feb   | 10                            | 10 | 10 | 10 | 13 | 13 | 11 | 12 | 14 | 15 | 15 | 15 | 19 | 5   | 4  | 4  | 3  | 9  | 18 | 66 | 20 | 46 | 33 | 14            | 66 |
| 28-Feb   | 27                            | 12 | 11 | 8  | 9  | 11 | 11 | 6  | 8  | 4  | 3  | 4  | 6  | 4   | 4  | 4  | 3  | 7  | 7  | 6  | 7  | 5  | 5  | 4             | 27 |
| 83   | 76                            | 66 | 42 | 45 | 57 | 45 | 56 | 72 | 49 | 46 | 63 | 49 | 49 | 50  | 46 | 79 | 66 | 40 | 66 | 72 | 59 | 66 | 48 |               |    |
| Diurnal Maximum  |                               |    |    |    |    |    |    |    |    |    |    |    |    |   |    |    |    |    |    |    |    |    |    |               |    |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Wind Direction (WD) - deg**  
**Fort Chipewyan - February 2023**





## WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY  
MONITORING PROGRAM  
MONTHLY REPORT

### **AMS09 BARGE LANDING FEBRUARY 2023**

Operations, Data Collection,  
QA/QC, Data Validation and Reporting by:  
Wood Buffalo Environmental Association  
Fort McMurray, Alberta

March 31, 2023

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - BARGE LANDING (AMS09)  
 FEBRUARY 2023

MONTHLY SUMMARY

| Parameter                          | Hours of Data | Hours of Calibration | Hours without Data | Operational Time | Maximum 1-Hour Value | 1-Hour Exceedances | Maximum 24-Hour Value | 24-Hour Exceedances |
|------------------------------------|---------------|----------------------|--------------------|------------------|----------------------|--------------------|-----------------------|---------------------|
| SO2 (ppb) Average                  | 635           | 32                   | 37                 | 99.26            | 19.7                 | 0                  | 5.8                   | 0                   |
| TRS(ppb) Average                   | 630           | 37                   | 42                 | 99.26            | 3.7                  | 0                  | 1.5                   | 0                   |
| THC(ppm) Average                   | 635           | 32                   | 37                 | 99.26            | 4.3                  | -                  | 3                     | -                   |
| NMHC(ppm) Average                  | 635           | 32                   | 37                 | 99.26            | 0.586                | -                  | 0.091                 | -                   |
| CH4(ppm) Average                   | 635           | 32                   | 37                 | 99.26            | 4.1                  | -                  | 2.9                   | -                   |
| NO2 (ppb) Average                  | 635           | 33                   | 37                 | 99.4             | 52.9                 | 0                  | 37.8                  | -                   |
| NO (ppb) Average                   | 635           | 33                   | 37                 | 99.4             | 168.3                | -                  | 51.9                  | -                   |
| NOX (ppb) Average                  | 635           | 33                   | 37                 | 99.4             | 216.6                | -                  | 85.7                  | -                   |
| PM2.5(ug/m3) Average               | 665           | 2                    | 7                  | 99.26            | 41.6                 | 0                  | 17.3                  | 0                   |
| Temperature (C) Average            | 672           | 0                    | 0                  | 100              | 3.8                  | -                  | -1.9                  | -                   |
| Relative Humidity (%) Average      | 672           | 0                    | 0                  | 100              | 93.4                 | -                  | 88.1                  | -                   |
| Barometric Pressure (inHg) Average | 672           | 0                    | 0                  | 100              | 29.7                 | -                  | 29.7                  | -                   |
| Wind Speed 20 m (km/h) Average     | 671           | 0                    | 1                  | 99.85            | 30                   | -                  | 17                    | -                   |
| Wind Direction 20 m (deg) Average  | 671           | 0                    | 1                  | 99.85            | -                    | -                  | -                     | -                   |

Note : Operational time includes periods of data collection and instrument calibration



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - BARGE LANDING (AMS09)  
 FEBRUARY 2023

MONTHLY SUMMARY FOR AIR QUALITY/ METEOROLOGICAL MONITORING MEASUREMENTS

| Parameter                          | Number | Mean   | StnDev | Total | Percentile |       |       |        |      |      |       |
|------------------------------------|--------|--------|--------|-------|------------|-------|-------|--------|------|------|-------|
|                                    |        |        |        |       | Min        | P10   | Q1    | Median | Q3   | P90  | Max   |
| SO2 (ppb) Average                  | 635    | 1.03   | 2.3    | -     | 0          | 0     | 0.2   | 0.3    | 0.7  | 2.3  | 19.7  |
| TRS(ppb) Average                   | 630    | 0.63   | 0.4    | -     | 0.3        | 0.3   | 0.4   | 0.5    | 0.7  | 1.1  | 3.7   |
| THC(ppm) Average                   | 635    | 2.22   | 0.3    | -     | 1.9        | 2     | 2     | 2.1    | 2.3  | 2.6  | 4.3   |
| NMHC(ppm) Average                  | 635    | 0.021  | 0.058  | -     | 0          | 0     | 0     | 0      | 0    | 0.1  | 0.586 |
| CH4(ppm) Average                   | 635    | 2.2    | 0.3    | -     | 1.9        | 2     | 2     | 2.1    | 2.3  | 2.5  | 4.1   |
| NO2 (ppb) Average                  | 635    | 21.06  | 12.7   | -     | 0.3        | 4.9   | 9.8   | 20.1   | 31.6 | 38.2 | 52.9  |
| NO (ppb) Average                   | 635    | 18.85  | 27.7   | -     | 0          | 0.1   | 0.6   | 6.5    | 24.9 | 56.9 | 168.3 |
| NOX (ppb) Average                  | 635    | 39.92  | 38.2   | -     | 0.3        | 5.9   | 12.7  | 27.8   | 56   | 93.9 | 216.6 |
| PM2.5(ug/m3) Average               | 665    | 8.38   | 6      | -     | 0.5        | 3.1   | 4.3   | 7      | 10.3 | 17   | 41.6  |
| Temperature (C) Average            | 672    | -16.22 | 9.1    | -     | -36.3      | -29.6 | -22.8 | -15.5  | -9.4 | -4.9 | 3.8   |
| Relative Humidity (%) Average      | 672    | 72.56  | 10.4   | -     | 43.2       | 57.7  | 67.6  | 73.2   | 79.8 | 85.2 | 93.4  |
| Barometric Pressure (inHg) Average | 672    | 28.87  | 0.4    | -     | 28         | 28.5  | 28.6  | 28.8   | 29.1 | 29.4 | 29.7  |
| Wind Speed 20 m (km/h) Average     | 671    | 8.4    | 5      | -     | 0          | 3     | 5     | 7      | 11   | 15   | 30    |
| Wind Direction 20 m (deg) Average  | 671    | -      | -      | -     | -          | -     | -     | -      | -    | -    | -     |

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - BARGE LANDING (AMS09)  
FEBRUARY 2023

OPERATIONAL NOTES

| Parameter                    | Period Start      | Period End        | Duration (Hours) | Notes                             |
|------------------------------|-------------------|-------------------|------------------|-----------------------------------|
| SO2, TRS,THC/NMHC/CH4, PM2.5 | 10 Feb 2023 16:00 | 10 Feb 2023 20:00 | 5                | Station power failure             |
| NO2                          | 10 Feb 2023 16:00 | 10 Feb 2023 19:00 | 4                | Station power failure             |
| Wind Speed, Wind Direction   | 22 Feb 2023 23:00 | 22 Feb 2023 23:00 | 1                | Flat line in sensor output signal |



Wood Buffalo Environmental Association

Summary of Hour Averages

Sulphur Dioxide (SO<sub>2</sub>) - ppb  
Barge Landing - February 2023

|   |   |          |                           |      |
|---|---|----------|---------------------------|------|
| Number of Exceedences (AAAQO):              | 1-hr: 0   | 24-hr: 0 | Hours in Service:         | 672  |
| Maximum Value: 19.7 ppb on Feb 8 17:00      | Maximum Daily Average: 5.8 ppb on Feb 24  |          | Hours of Data:            | 635  |
| Minimum Value: 0.0 ppb on Feb 1 17:00       | Minimum Daily Average: 0.0 ppb on Feb 13  |          | Hours of Missing Data:    | 37   |
| Maximum Diurnal Average: 1.9 ppb at hour 14 | Minimum Diurnal Average: 0.5 ppb at hour 5  |          | Hours of Calibration:     | 32   |
| Monthly Average: 1.03 ppb                   | Percentiles: P <sub>1</sub> = 0.0 P <sub>10</sub> = 0.0 Q <sub>1</sub> = 0.2 Median = 0.3 Q <sub>3</sub> = 0.7 P <sub>90</sub> = 2.3 P <sub>99</sub> = 11.9 |          | Percent Operational Time: | 99.3 |

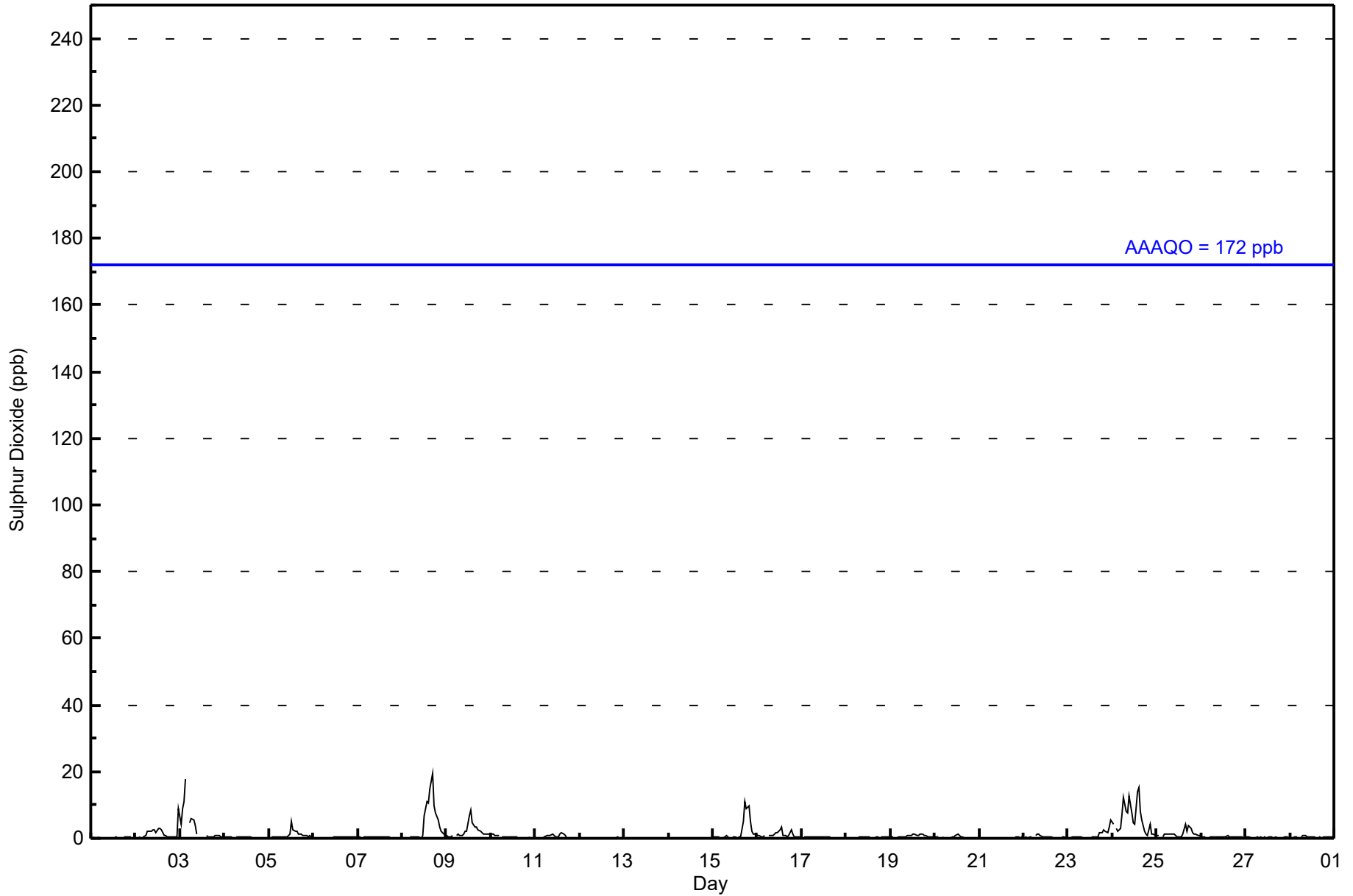
| Day    | Hourly Period Ending At (MST) |     |      |      |     |     |      |     |     |      |     |     |     |      |      |      |      |      |     |     |     |     |     |     | Daily Average | Daily Maximum |      |     |     |      |     |     |      |     |     |     |      |      |      |      |      |     |     |     |     |     |     |                 |
|--------|-------------------------------|-----|------|------|-----|-----|------|-----|-----|------|-----|-----|-----|------|------|------|------|------|-----|-----|-----|-----|-----|-----|---------------|---------------|------|-----|-----|------|-----|-----|------|-----|-----|-----|------|------|------|------|------|-----|-----|-----|-----|-----|-----|-----------------|
|        | 1                             | 2   | 3    | 4    | 5   | 6   | 7    | 8   | 9   | 10   | 11  | 12  | 13  | 14   | 15   | 16   | 17   | 18   | 19  | 20  | 21  | 22  | 23  | 24  |               |               |      |     |     |      |     |     |      |     |     |     |      |      |      |      |      |     |     |     |     |     |     |                 |
| 1-Feb  | 0.2                           | 0.2 | Z    | 0.2  | 0.2 | 0.2 | 0.0  | 0.0 | 0.1 | 0.0  | 0.0 | 0.2 | 0.2 | 0.6  | 0.1  | 0.1  | 0.0  | 0.0  | 0.3 | 0.4 | 0.3 | 0.3 | 0.1 | 0.1 | 0.2           | 0.6           |      |     |     |      |     |     |      |     |     |     |      |      |      |      |      |     |     |     |     |     |     |                 |
| 2-Feb  | 0.0                           | 0.1 | 0.3  | Z    | 0.4 | 0.9 | 2.3  | 2.3 | 2.1 | 2.7  | 2.4 | 1.7 | 3.1 | 3.1  | 2.4  | 1.0  | 0.8  | 0.6  | 0.4 | 0.4 | 0.4 | 0.5 | 0.6 | 9.1 | 1.6           | 9.1           |      |     |     |      |     |     |      |     |     |     |      |      |      |      |      |     |     |     |     |     |     |                 |
| 3-Feb  | 4.2                           | 9.0 | 11.1 | 17.8 | Z   | 4.6 | 6.0  | 5.7 | 3.8 | 1.4  | C   | C   | C   | C    | 0.9  | 0.6  | 0.4  | 0.5  | 0.6 | 0.7 | 0.7 | 0.6 | 0.6 | 0.5 | 3.7           | 17.8          |      |     |     |      |     |     |      |     |     |     |      |      |      |      |      |     |     |     |     |     |     |                 |
| 4-Feb  | 0.5                           | 0.5 | 0.6  | 0.6  | 0.5 | Z   | 0.4  | 0.3 | 0.3 | 0.3  | 0.4 | 0.4 | 0.3 | 0.3  | 0.3  | 0.2  | 0.2  | 0.1  | 0.1 | 0.1 | 0.0 | 0.1 | 0.0 | 0.0 | 0.3           | 0.6           |      |     |     |      |     |     |      |     |     |     |      |      |      |      |      |     |     |     |     |     |     |                 |
| 5-Feb  | Z                             | 0.2 | 0.3  | 0.2  | 0.3 | 0.3 | 0.4  | 0.3 | 0.2 | 0.3  | 0.6 | 1.1 | 5.1 | 2.7  | 1.9  | 2.0  | 1.3  | 1.1  | 0.9 | 0.8 | 0.8 | 0.5 | 0.8 | 0.6 | 1.0           | 5.1           |      |     |     |      |     |     |      |     |     |     |      |      |      |      |      |     |     |     |     |     |     |                 |
| 6-Feb  | 0.3                           | Z   | 0.2  | 0.2  | 0.1 | 0.2 | 0.1  | 0.1 | 0.2 | 0.2  | 0.2 | 0.2 | 0.2 | 0.3  | 0.3  | 0.3  | 0.3  | 0.4  | 0.4 | 0.3 | 0.5 | 0.5 | 0.6 | 0.6 | 0.3           | 0.6           |      |     |     |      |     |     |      |     |     |     |      |      |      |      |      |     |     |     |     |     |     |                 |
| 7-Feb  | 0.6                           | 0.6 | Z    | 0.6  | 0.4 | 0.5 | 0.4  | 0.4 | 0.4 | 0.5  | 0.5 | 0.5 | 0.5 | 0.4  | 0.3  | 0.3  | 0.3  | 0.2  | 0.2 | 0.2 | 0.1 | 0.2 | 0.0 | 0.1 | 0.4           | 0.6           |      |     |     |      |     |     |      |     |     |     |      |      |      |      |      |     |     |     |     |     |     |                 |
| 8-Feb  | 0.1                           | 0.1 | 0.2  | Z    | 0.2 | 0.3 | 0.4  | 0.5 | 0.5 | 0.2  | 0.2 | 0.8 | 6.9 | 11.0 | 10.5 | 14.7 | 19.7 | 9.6  | 7.7 | 5.6 | 3.5 | 2.0 | 1.6 | 1.0 | 4.2           | 19.7          |      |     |     |      |     |     |      |     |     |     |      |      |      |      |      |     |     |     |     |     |     |                 |
| 9-Feb  | 0.7                           | 0.5 | 0.5  | 1.0  | Z   | 0.9 | 1.1  | 0.9 | 1.0 | 1.3  | 2.1 | 2.3 | 6.8 | 8.3  | 4.8  | 3.5  | 3.4  | 2.7  | 2.2 | 1.7 | 1.4 | 1.5 | 1.2 | 1.2 | 2.2           | 8.3           |      |     |     |      |     |     |      |     |     |     |      |      |      |      |      |     |     |     |     |     |     |                 |
| 10-Feb | 1.3                           | 1.2 | 0.8  | 0.7  | 0.7 | Z   | 0.3  | 0.3 | 0.2 | 0.2  | 0.4 | 0.3 | 0.4 | 0.4  | 0.4  | PF   | PF   | PF   | PF  | PF  | 0.2 | 0.2 | 0.1 | 0.2 | 0.5           | 1.3           |      |     |     |      |     |     |      |     |     |     |      |      |      |      |      |     |     |     |     |     |     |                 |
| 11-Feb | Z                             | 0.2 | 0.2  | 0.1  | 0.2 | 0.4 | 0.9  | 0.7 | 0.7 | 1.1  | 0.7 | 0.4 | 0.5 | 1.1  | 1.8  | 1.4  | 0.7  | 0.1  | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.5           | 1.8           |      |     |     |      |     |     |      |     |     |     |      |      |      |      |      |     |     |     |     |     |     |                 |
| 12-Feb | 0.0                           | Z   | 0.0  | 0.0  | 0.0 | 0.0 | 0.0  | 0.0 | 0.0 | 0.0  | 0.0 | 0.0 | 0.0 | 0.0  | 0.0  | 0.0  | 0.0  | 0.2  | 0.0 | 0.2 | 0.2 | 0.1 | 0.0 | 0.0 | 0.0           | 0.2           |      |     |     |      |     |     |      |     |     |     |      |      |      |      |      |     |     |     |     |     |     |                 |
| 13-Feb | 0.0                           | 0.0 | Z    | 0.1  | 0.0 | 0.0 | 0.0  | 0.0 | 0.0 | 0.0  | 0.0 | 0.0 | 0.0 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0 | 0.0 | 0.1 | 0.1 | 0.1 | 0.1 | 0.0           | 0.1           |      |     |     |      |     |     |      |     |     |     |      |      |      |      |      |     |     |     |     |     |     |                 |
| 14-Feb | 0.1                           | 0.1 | 0.1  | Z    | 0.2 | 0.2 | 0.1  | 0.1 | 0.1 | 0.1  | 0.1 | 0.1 | 0.1 | 0.1  | 0.1  | 0.2  | 0.1  | 0.1  | 0.1 | 0.1 | 0.2 | 0.0 | 0.1 | 0.1 | 0.1           | 0.2           |      |     |     |      |     |     |      |     |     |     |      |      |      |      |      |     |     |     |     |     |     |                 |
| 15-Feb | 0.3                           | 0.4 | 0.3  | 0.3  | Z   | 0.1 | 0.5  | 0.7 | 0.2 | 0.0  | 0.0 | 0.2 | 0.3 | 0.2  | 0.3  | 0.5  | 5.0  | 11.1 | 8.9 | 9.8 | 5.0 | 2.1 | 1.5 | 1.4 | 2.1           | 11.1          |      |     |     |      |     |     |      |     |     |     |      |      |      |      |      |     |     |     |     |     |     |                 |
| 16-Feb | 0.9                           | 0.7 | 0.6  | 0.5  | 0.8 | Z   | 1.1  | 0.7 | 0.7 | 1.2  | 1.6 | 1.6 | 2.8 | 3.6  | 1.0  | 0.7  | 0.6  | 0.8  | 2.5 | 1.3 | 0.6 | 0.5 | 0.6 | 0.6 | 1.1           | 3.6           |      |     |     |      |     |     |      |     |     |     |      |      |      |      |      |     |     |     |     |     |     |                 |
| 17-Feb | Z                             | 0.6 | 0.5  | 0.4  | 0.4 | 0.3 | 0.4  | 0.3 | 0.4 | 0.4  | 0.4 | 0.4 | 0.5 | 0.3  | 0.3  | 0.3  | 0.1  | 0.2  | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.1 | 0.3           | 0.6           |      |     |     |      |     |     |      |     |     |     |      |      |      |      |      |     |     |     |     |     |     |                 |
| 18-Feb | 0.0                           | Z   | 0.1  | 0.1  | 0.0 | 0.0 | 0.0  | 0.2 | 0.6 | 0.5  | 0.3 | 0.3 | 0.3 | 0.2  | 0.2  | 0.2  | 0.3  | 0.3  | 0.2 | 0.3 | 0.4 | 0.4 | 0.5 | 0.4 | 0.2           | 0.6           |      |     |     |      |     |     |      |     |     |     |      |      |      |      |      |     |     |     |     |     |     |                 |
| 19-Feb | 0.4                           | 0.3 | Z    | 0.2  | 0.3 | 0.3 | 0.4  | 0.6 | 0.5 | 0.7  | 0.8 | 1.0 | 1.2 | 1.1  | 0.8  | 1.0  | 1.3  | 1.1  | 0.7 | 0.8 | 0.4 | 0.3 | 0.3 | 0.3 | 0.6           | 1.3           |      |     |     |      |     |     |      |     |     |     |      |      |      |      |      |     |     |     |     |     |     |                 |
| 20-Feb | 0.4                           | 0.5 | 0.3  | Z    | 0.2 | 0.2 | 0.2  | 0.2 | 0.2 | 0.4  | 0.6 | 1.0 | 1.4 | 0.9  | 0.4  | 0.4  | 0.2  | 0.1  | 0.0 | 0.0 | 0.1 | 0.1 | 0.0 | 0.1 | 0.3           | 1.4           |      |     |     |      |     |     |      |     |     |     |      |      |      |      |      |     |     |     |     |     |     |                 |
| 21-Feb | 0.0                           | 0.1 | 0.1  | 0.0  | Z   | 0.0 | 0.1  | 0.1 | 0.0 | 0.1  | 0.1 | 0.1 | 0.1 | 0.1  | 0.1  | 0.1  | 0.1  | 0.1  | 0.1 | 0.0 | 0.3 | 0.5 | 0.2 | 0.3 | 0.1           | 0.5           |      |     |     |      |     |     |      |     |     |     |      |      |      |      |      |     |     |     |     |     |     |                 |
| 22-Feb | 0.1                           | 0.3 | 0.1  | 0.4  | 0.5 | Z   | 0.7  | 1.1 | 1.1 | 0.8  | 0.4 | 0.6 | 0.5 | 0.4  | 0.3  | 0.3  | 0.2  | 0.2  | 0.0 | 0.0 | 0.2 | 0.3 | 0.3 | 0.1 | 0.4           | 1.1           |      |     |     |      |     |     |      |     |     |     |      |      |      |      |      |     |     |     |     |     |     |                 |
| 23-Feb | Z                             | 0.1 | 0.3  | 0.3  | 0.3 | 0.4 | 0.4  | 0.5 | 0.0 | 0.0  | 0.0 | 0.0 | 0.1 | 0.4  | 0.4  | 0.3  | 0.6  | 1.6  | 1.7 | 2.5 | 1.9 | 1.5 | 3.4 | 5.7 | 1.0           | 5.7           |      |     |     |      |     |     |      |     |     |     |      |      |      |      |      |     |     |     |     |     |     |                 |
| 24-Feb | 4.3                           | Z   | 3.0  | 2.3  | 3.1 | 7.4 | 12.4 | 8.2 | 7.8 | 12.5 | 7.7 | 4.7 | 4.4 | 14.0 | 15.2 | 8.0  | 5.6  | 2.1  | 1.3 | 0.7 | 4.3 | 1.3 | 1.5 | 0.7 | 5.8           | 15.2          |      |     |     |      |     |     |      |     |     |     |      |      |      |      |      |     |     |     |     |     |     |                 |
| 25-Feb | 0.7                           | 0.8 | Z    | 0.6  | 1.1 | 1.2 | 1.4  | 1.4 | 1.3 | 1.1  | 0.7 | 0.4 | 0.3 | 0.5  | 1.4  | 4.4  | 2.2  | 3.8  | 2.9 | 1.6 | 1.1 | 1.1 | 1.0 | 0.8 | 1.4           | 4.4           |      |     |     |      |     |     |      |     |     |     |      |      |      |      |      |     |     |     |     |     |     |                 |
| 26-Feb | 0.6                           | 0.5 | 0.3  | Z    | 0.5 | 0.4 | 0.4  | 0.4 | 0.4 | 0.6  | 0.6 | 0.6 | 0.6 | 0.6  | 0.7  | 0.5  | 0.4  | 0.3  | 0.3 | 0.3 | 0.2 | 0.3 | 0.2 | 0.2 | 0.4           | 0.7           |      |     |     |      |     |     |      |     |     |     |      |      |      |      |      |     |     |     |     |     |     |                 |
| 27-Feb | 0.2                           | 0.3 | 0.2  | 0.2  | Z   | 0.2 | 0.2  | 0.1 | 0.3 | 0.2  | 0.2 | 0.2 | 0.3 | 0.3  | 0.3  | 0.2  | 0.3  | 0.2  | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2           | 0.2           | 0.3  |     |     |      |     |     |      |     |     |     |      |      |      |      |      |     |     |     |     |     |     |                 |
| 28-Feb | 0.2                           | 0.2 | 0.2  | 0.4  | 0.3 | Z   | 0.6  | 1.0 | 0.8 | 0.3  | 0.3 | 0.3 | 0.2 | 0.3  | 0.2  | 0.2  | 0.3  | 0.2  | 0.2 | 0.5 | 0.3 | 0.4 | 0.5 | 0.5 | 0.4           | 1.0           |      |     |     |      |     |     |      |     |     |     |      |      |      |      |      |     |     |     |     |     |     |                 |
|        |                               |     |      |      |     |     |      |     |     |      |     |     |     |      |      |      |      |      |     |     |     |     |     | 0.7 | 0.7           | 0.9           | 1.2  | 0.5 | 0.8 | 1.1  | 1.0 | 0.8 | 1.0  | 0.8 | 0.7 | 1.4 | 1.9  | 1.6  | 1.5  | 1.6  | 1.4  | 1.2 | 1.1 | 0.8 | 0.6 | 0.6 | 0.9 | Diurnal Average |
|        |                               |     |      |      |     |     |      |     |     |      |     |     |     |      |      |      |      |      |     |     |     |     |     | 4.3 | 9.0           | 11.1          | 17.8 | 3.1 | 7.4 | 12.4 | 8.2 | 7.8 | 12.5 | 7.7 | 4.7 | 6.9 | 14.0 | 15.2 | 14.7 | 19.7 | 11.1 | 8.9 | 9.8 | 5.0 | 2.1 | 3.4 | 9.1 | Diurnal Maximum |

Z - zerospan      C - Calibration      PF - Power Failure  
 Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 172 ppb    24-hr 48 ppb



Wood Buffalo Environmental Association  
Hourly Averages

Sulphur Dioxide (SO<sub>2</sub>) - ppb  
Barge Landing - February 2023





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Sulphur Dioxide (SO<sub>2</sub>) - ppb**  
**Barge Landing - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 10                            | 625                    | 98.43    | 98.43               |
| 11 - 20                           | 10                     | 1.57     | 100.00              |
| 21 - 60                           | 0                      | 0.00     | 100.00              |
| 61 - 110                          | 0                      | 0.00     | 100.00              |
| 111 - 172                         | 0                      | 0.00     | 100.00              |
| > 172                             | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 635

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Sulphur Dioxide (SO<sub>2</sub>) - ppb  
Barge Landing - February 2023**

| <b>Concentration<br/>Ranges (ppb)</b> | <b>Wind Direction</b> |     |    |     |    |     |    |     |    |     |    |     |    |     |    |     | <b>Totals</b> |
|---------------------------------------|-----------------------|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|---------------|
|                                       | N                     | NNE | NE | ENE | E  | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |               |
| 0 - 10                                | 58                    | 93  | 51 | 38  | 10 | 7   | 26 | 55  | 67 | 37  | 23 | 35  | 19 | 11  | 27 | 67  | 624           |
| 11 - 20                               | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 4   | 4  | 1   | 0  | 1   | 0  | 0   | 0  | 0   | 10            |
| 21 - 60                               | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| 61 - 110                              | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| 111 - 172                             | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| > 172                                 | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| <b>Totals</b>                         | 58                    | 93  | 51 | 38  | 10 | 7   | 26 | 59  | 71 | 38  | 23 | 36  | 19 | 11  | 27 | 67  | 634           |

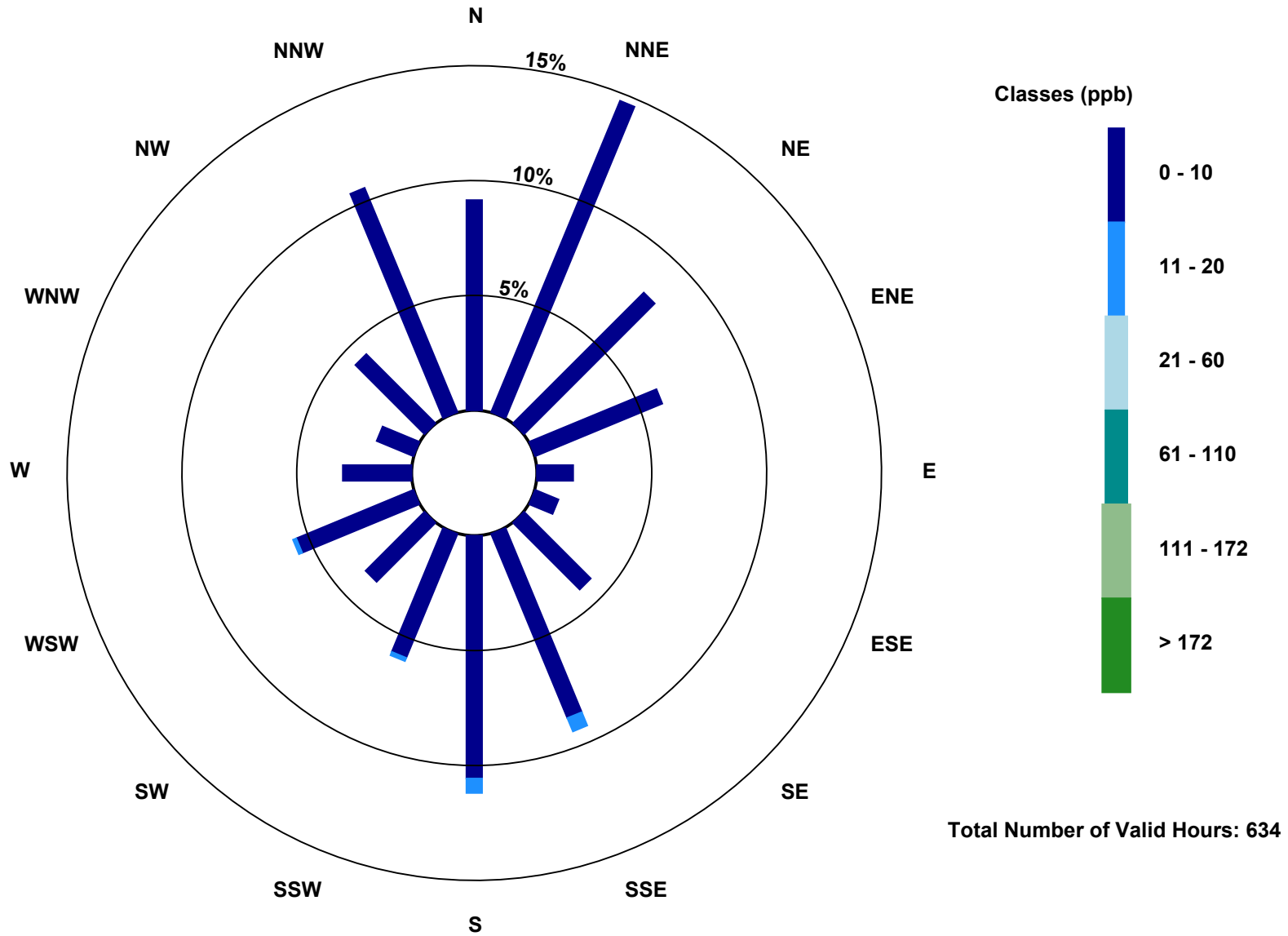
Total Number of Valid Hours: 634

Total Number of Hours: 672

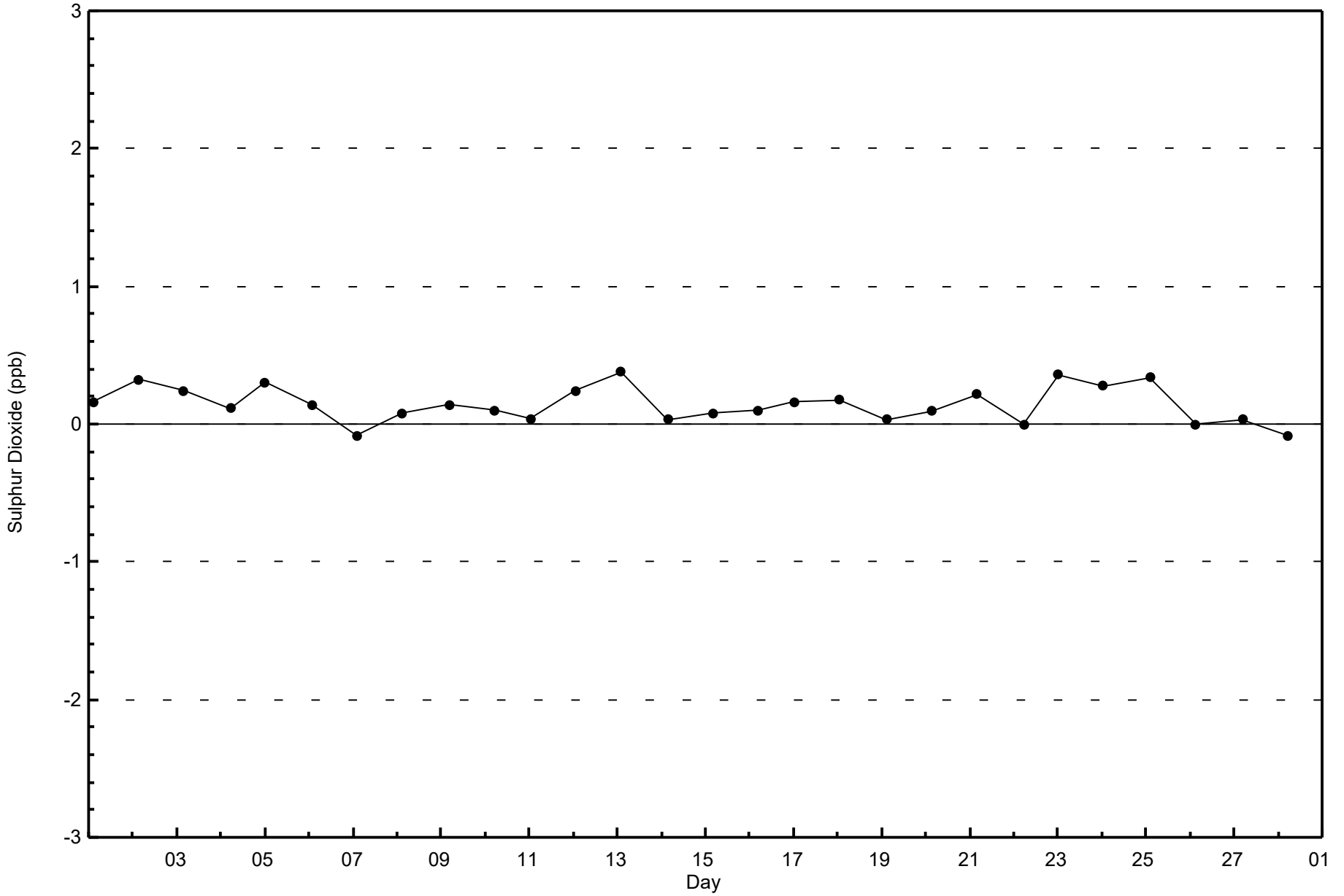


Wood Buffalo Environmental Association  
Wind Rose Feb 2023

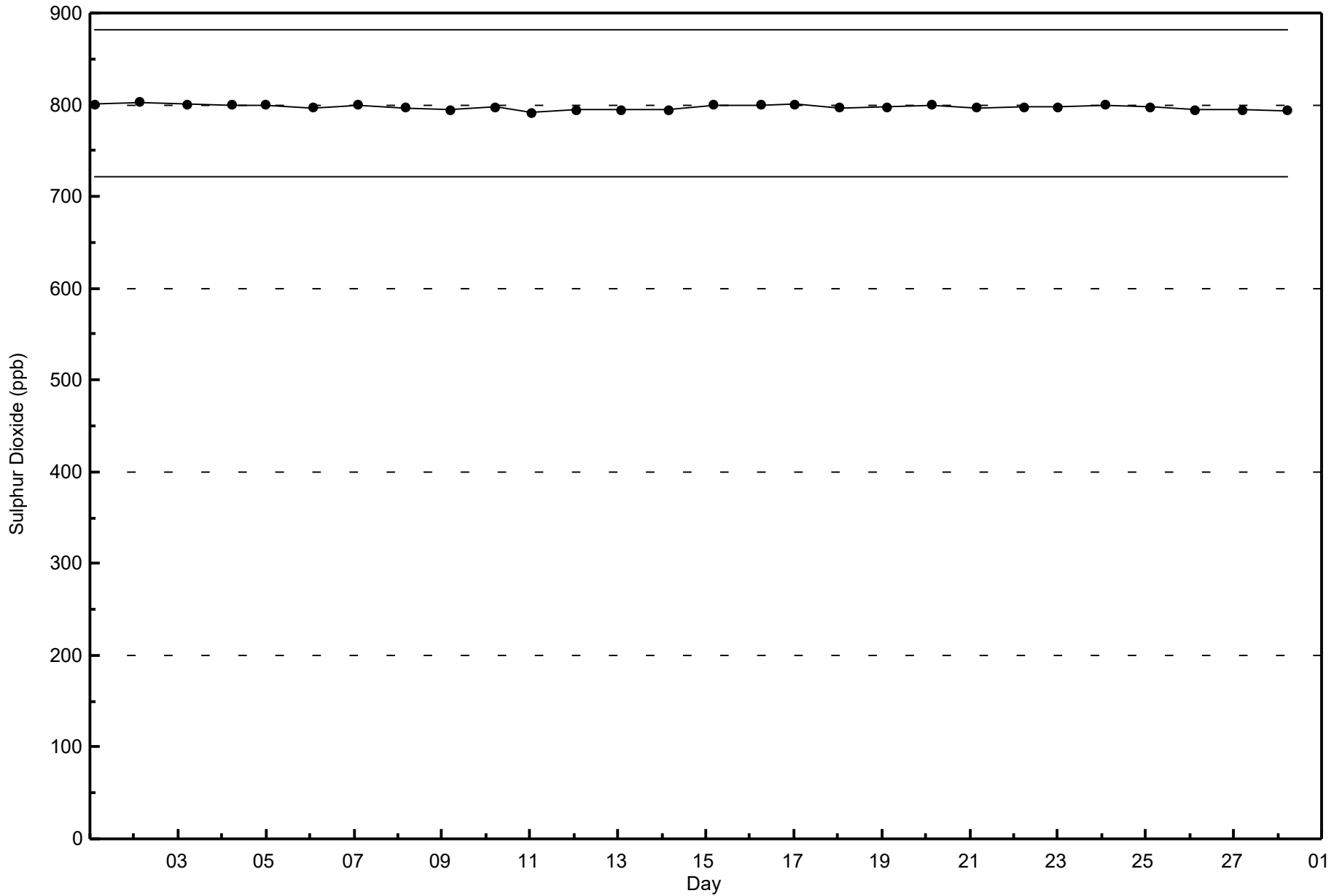
Sulphur Dioxide (SO<sub>2</sub>) - ppb  
Barge Landing



Total Number of Valid Hours: 634









Wood Buffalo Environmental Association

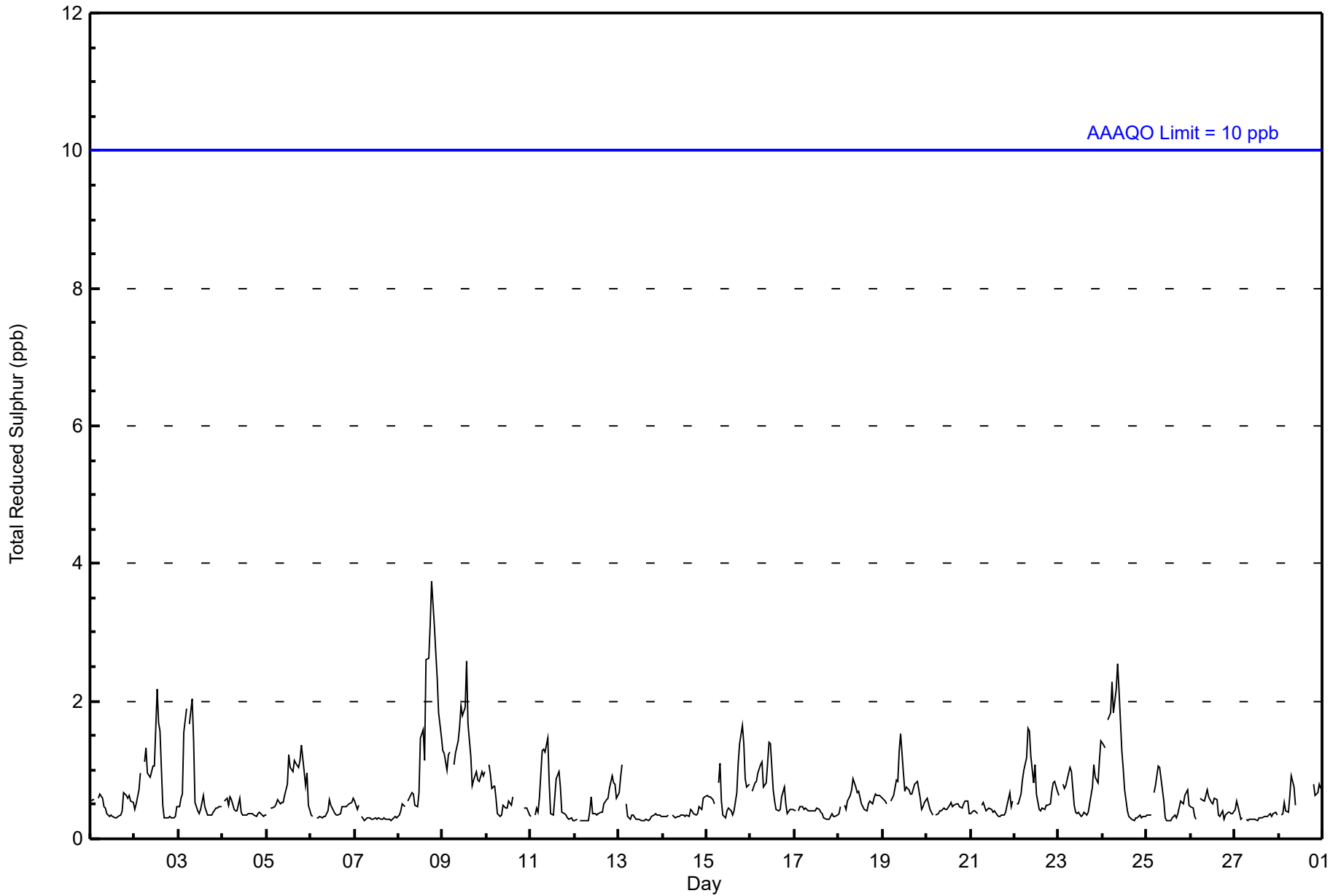
Summary of Hour Averages

Total Reduced Sulphur (TRS) - ppb

Barge Landing - February 2023

| Number of Exceedences (AAAQO):             |                               | 1-hr: 0  |     | 24-hr: 0 |     | Hours in Service: |     |     |     |     |     |     |     |     |     |                           |     |      |     | 672 |     |     |     |                 |               |                 |     |     |
|--|-------------------------------|--|-----|----------|-----|-------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|---------------------------|-----|------|-----|-----|-----|-----|-----|-----------------|---------------|-----------------|-----|-----|
| Maximum Value: 3.7 ppb on Feb 8 19:00      |                               | Maximum Daily Average: 1.5 ppb on Feb 8  |     |          |     |                   |     |     |     |     |     |     |     |     |     | Hours of Data:            |     | 630  |     |     |     |     |     |                 |               |                 |     |     |
| Minimum Value: 0.3 ppb on Feb 12 08:00     |                               | Minimum Daily Average: 0.3 ppb on Feb 7  |     |          |     |                   |     |     |     |     |     |     |     |     |     | Hours of Missing Data:    |     | 42   |     |     |     |     |     |                 |               |                 |     |     |
| Maximum Diurnal Average: 0.8 ppb at hour 8 |                               | Minimum Diurnal Average: 0.5 ppb at hour 1   |     |          |     |                   |     |     |     |     |     |     |     |     |     | Hours of Calibration:     |     | 37   |     |     |     |     |     |                 |               |                 |     |     |
| Monthly Average: 0.63 ppb                  |                               | Percentiles: P <sub>1</sub> = 0.3 P <sub>10</sub> = 0.3 Q <sub>1</sub> = 0.4 Median = 0.5 Q <sub>3</sub> = 0.7 P <sub>90</sub> = 1.1 P <sub>99</sub> = 2.6 |     |          |     |                   |     |     |     |     |     |     |     |     |     | Percent Operational Time: |     | 99.3 |     |     |     |     |     |                 |               |                 |     |     |
| Day  | Hourly Period Ending At (MST) |  |     |          |     |                   |     |     |     |     |     |     |     |     |     |                           |     |      |     |     |     |     |     |                 | Daily Average | Daily Maximum   |     |     |
|  | 1                             | 2  | 3   | 4        | 5   | 6                 | 7   | 8   | 9   | 10  | 11  | 12  | 13  | 14  | 15  | 16                        | 17  | 18   | 19  | 20  | 21  | 22  | 23  | 24              |               |                 |     |     |
| 1-Feb                                      | 0.6                           | 0.6  | 0.6 | Z        | 0.6 | 0.7               | 0.6 | 0.5 | 0.4 | 0.4 | 0.3 | 0.4 | 0.3 | 0.3 | 0.3 | 0.3                       | 0.3 | 0.4  | 0.7 | 0.6 | 0.6 | 0.6 | 0.5 | 0.5             | 0.5           | 0.7             | 0.8 | 2.2 |
| 2-Feb                                      | 0.4                           | 0.5  | 0.7 | 1.0      | Z   | 1.1               | 1.3 | 1.0 | 0.9 | 1.0 | 1.1 | 1.1 | 2.2 | 1.7 | 1.6 | 0.5                       | 0.3 | 0.3  | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3             | 0.5           | 0.7             | 2.0 | 0.6 |
| 3-Feb                                      | 0.5                           | 0.6  | 0.7 | 1.5      | 1.9 | Z                 | 1.7 | 2.0 | 1.4 | 0.5 | 0.4 | 0.4 | 0.4 | 0.6 | 0.5 | 0.4                       | 0.3 | 0.4  | 0.3 | 0.4 | 0.4 | 0.4 | 0.4 | 0.5             | 0.5           | 0.4             | 0.6 | 1.4 |
| 4-Feb                                      | Z                             | 0.6  | 0.6 | 0.5      | 0.6 | 0.6               | 0.4 | 0.4 | 0.4 | 0.6 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4                       | 0.4 | 0.3  | 0.3 | 0.3 | 0.4 | 0.4 | 0.4 | 0.3             | 0.3           | 0.4             | 0.6 | 1.1 |
| 5-Feb                                      | 0.3                           | Z  | 0.4 | 0.4      | 0.5 | 0.5               | 0.6 | 0.5 | 0.5 | 0.5 | 0.6 | 0.8 | 1.2 | 1.0 | 1.0 | 1.1                       | 1.1 | 1.0  | 1.1 | 1.4 | 1.0 | 0.8 | 1.0 | 0.5             | 0.4           | 0.6             | 1.7 | 0.9 |
| 6-Feb                                      | 0.3                           | 0.3  | Z   | 0.3      | 0.3 | 0.3               | 0.3 | 0.3 | 0.3 | 0.4 | 0.6 | 0.5 | 0.4 | 0.4 | 0.4 | 0.3                       | 0.4 | 0.5  | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.6             | 0.4           | 0.6             | 1.5 | 0.6 |
| 7-Feb                                      | 0.6                           | 0.4  | 0.5 | Z        | 0.3 | 0.3               | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3                       | 0.3 | 0.3  | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3             | 0.3           | 0.3             | 0.3 | 0.6 |
| 8-Feb                                      | 0.3                           | 0.4  | 0.5 | 0.5      | Z   | 0.5               | 0.6 | 0.7 | 0.7 | 0.5 | 0.5 | 0.7 | 1.5 | 1.6 | 1.1 | 2.6                       | 2.6 | 3.1  | 3.7 | 3.1 | 2.7 | 2.3 | 1.8 | 1.5             | 1.3           | 2.6             | 1.1 |     |
| 9-Feb                                      | 1.3                           | 1.2  | 1.0 | 1.2      | 1.3 | Z                 | 1.1 | 1.2 | 1.4 | 1.6 | 1.9 | 1.8 | 1.9 | 2.6 | 1.7 | 1.2                       | 0.8 | 0.9  | 1.0 | 0.9 | 0.8 | 1.0 | 0.9 | 1.0             | 1.3           | 2.6             | 1.1 |     |
| 10-Feb                                     | Z                             | 1.1  | 0.9 | 0.7      | 0.8 | 0.6               | 0.4 | 0.3 | 0.3 | 0.5 | 0.4 | 0.4 | 0.6 | 0.5 | 0.6 | PF                        | PF  | PF   | PF  | PF  | 0.4 | 0.4 | 0.4 | 0.3             | 0.5           | 1.1             | 0.9 |     |
| 11-Feb                                     | 0.3                           | Z  | 0.3 | 0.4      | 0.4 | 0.6               | 1.3 | 1.3 | 1.3 | 1.5 | 0.8 | 0.4 | 0.3 | 0.6 | 0.9 | 1.0                       | 0.8 | 0.4  | 0.4 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3             | 0.6           | 1.5             | 0.9 |     |
| 12-Feb                                     | 0.3                           | 0.3  | Z   | 0.3      | 0.3 | 0.3               | 0.3 | 0.3 | 0.4 | 0.6 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4                       | 0.5 | 0.6  | 0.6 | 0.7 | 0.9 | 0.8 | 0.8 | 0.6             | 0.5           | 0.9             | 0.6 |     |
| 13-Feb                                     | 0.7                           | 0.9  | 1.1 | Z        | 0.5 | 0.3               | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3                       | 0.3 | 0.3  | 0.3 | 0.4 | 0.4 | 0.3 | 0.4 | 0.3             | 0.4           | 1.1             | 0.6 |     |
| 14-Feb                                     | 0.3                           | 0.3  | 0.3 | 0.3      | Z   | 0.4               | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.4                       | 0.4 | 0.4  | 0.3 | 0.4 | 0.5 | 0.4 | 0.6 | 0.6             | 0.4           | 0.6             | 0.6 |     |
| 15-Feb                                     | 0.6                           | 0.6  | 0.6 | 0.6      | 0.5 | Z                 | 0.8 | 1.1 | 0.5 | 0.3 | 0.3 | 0.4 | 0.4 | 0.4 | 0.3 | 0.4                       | 0.7 | 1.1  | 1.4 | 1.7 | 1.4 | 0.9 | 0.8 | 0.8             | 0.7           | 1.7             | 0.6 |     |
| 16-Feb                                     | Z                             | 0.7  | 0.8 | 0.8      | 1.0 | 1.1               | 1.1 | 0.8 | 0.8 | 1.1 | 1.4 | 1.4 | 0.7 | 0.6 | 0.4 | 0.4                       | 0.4 | 0.6  | 0.8 | 0.5 | 0.4 | 0.4 | 0.4 | 0.4             | 0.7           | 1.4             | 0.6 |     |
| 17-Feb                                     | 0.4                           | Z  | 0.4 | 0.5      | 0.5 | 0.4               | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.5 | 0.4 | 0.4 | 0.4                       | 0.3 | 0.3  | 0.3 | 0.3 | 0.4 | 0.3 | 0.3 | 0.3             | 0.4           | 0.5             | 0.5 |     |
| 18-Feb                                     | 0.4                           | 0.5  | Z   | 0.5      | 0.4 | 0.6               | 0.6 | 0.7 | 0.9 | 0.8 | 0.7 | 0.7 | 0.5 | 0.5 | 0.4 | 0.4                       | 0.5 | 0.6  | 0.5 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6             | 0.6           | 0.6             | 0.9 |     |
| 19-Feb                                     | 0.6                           | 0.6  | 0.5 | Z        | 0.5 | 0.6               | 0.6 | 0.9 | 0.8 | 1.3 | 1.5 | 1.0 | 0.7 | 0.8 | 0.7 | 0.7                       | 0.7 | 0.8  | 0.8 | 0.8 | 0.6 | 0.4 | 0.5 | 0.5             | 0.7           | 1.5             | 0.6 |     |
| 20-Feb                                     | 0.6                           | 0.5  | 0.4 | 0.4      | Z   | 0.3               | 0.4 | 0.4 | 0.4 | 0.5 | 0.4 | 0.4 | 0.5 | 0.5 | 0.5 | 0.5                       | 0.5 | 0.5  | 0.5 | 0.4 | 0.5 | 0.6 | 0.5 | 0.4             | 0.5           | 0.6             | 0.6 |     |
| 21-Feb                                     | 0.4                           | 0.4  | 0.4 | 0.4      | 0.4 | Z                 | 0.5 | 0.5 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.3                       | 0.3 | 0.3  | 0.3 | 0.4 | 0.5 | 0.7 | 0.5 | 0.5             | 0.4           | 0.7             | 0.7 |     |
| 22-Feb                                     | Z                             | 0.5  | 0.5 | 0.6      | 0.9 | 1.0               | 1.2 | 1.6 | 1.6 | 1.2 | 0.8 | 1.1 | 0.7 | 0.4 | 0.4 | 0.4                       | 0.4 | 0.5  | 0.5 | 0.5 | 0.7 | 0.8 | 0.8 | 0.7             | 0.8           | 1.6             | 0.6 |     |
| 23-Feb                                     | 0.6                           | Z  | 0.8 | 0.7      | 0.8 | 1.0               | 1.0 | 1.0 | 0.5 | 0.4 | 0.4 | 0.4 | 0.3 | 0.3 | 0.4 | 0.4                       | 0.4 | 0.5  | 0.8 | 1.1 | 0.9 | 0.8 | 1.1 | 1.4             | 0.7           | 1.4             |     |     |
| 24-Feb                                     | 1.4                           | 1.3  | Z   | 1.7      | 1.8 | 2.3               | 1.8 | 2.2 | 2.5 | 2.2 | 1.3 | 1.0 | 0.7 | 0.4 | 0.3 | 0.3                       | 0.3 | 0.3  | 0.3 | 0.3 | 0.4 | 0.3 | 0.3 | 0.3             | 1.0           | 2.5             | 0.6 |     |
| 25-Feb                                     | 0.3                           | 0.3  | 0.3 | Z        | 0.7 | 0.8               | 1.1 | 1.0 | 0.9 | 0.5 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3                       | 0.3 | 0.4  | 0.6 | 0.5 | 0.5 | 0.6 | 0.7 | 0.5             | 0.5           | 1.1             | 0.6 |     |
| 26-Feb                                     | 0.5                           | 0.4  | 0.3 | 0.3      | Z   | 0.6               | 0.6 | 0.5 | 0.6 | 0.7 | 0.6 | 0.5 | 0.5 | 0.6 | 0.6 | 0.4                       | 0.3 | 0.4  | 0.3 | 0.3 | 0.4 | 0.4 | 0.4 | 0.4             | 0.5           | 0.7             | 0.6 |     |
| 27-Feb                                     | 0.4                           | 0.6  | 0.5 | 0.3      | 0.3 | Z                 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3                       | 0.3 | 0.3  | 0.3 | 0.4 | 0.3 | 0.4 | 0.4 | 0.3             | 0.3           | 0.6             | 0.6 |     |
| 28-Feb                                     | Z                             | 0.3  | 0.4 | 0.5      | 0.4 | 0.4               | 0.6 | 0.9 | 0.8 | 0.5 | C   | C   | C   | C   | C   | C                         | C   | C    | C   | C   | 0.8 | 0.6 | 0.7 | 0.8             | 0.7           | --              | 0.9 |     |
|  |                               |  |     |          |     |                   |     |     |     |     |     |     |     |     |     |                           |     |      |     |     |     |     |     | Diurnal Average |               | Diurnal Maximum |     |     |
|  |                               |  |     |          |     |                   |     |     |     |     |     |     |     |     |     |                           |     |      |     |     |     |     |     | 0.5             |               | 1.4             |     |     |
|  |                               |  |     |          |     |                   |     |     |     |     |     |     |     |     |     |                           |     |      |     |     |     |     |     | 0.6             |               | 1.3             |     |     |
|  |                               |  |     |          |     |                   |     |     |     |     |     |     |     |     |     |                           |     |      |     |     |     |     |     | 0.6             |               | 1.1             |     |     |
|  |                               |  |     |          |     |                   |     |     |     |     |     |     |     |     |     |                           |     |      |     |     |     |     |     | 0.6             |               | 1.7             |     |     |
|  |                               |  |     |          |     |                   |     |     |     |     |     |     |     |     |     |                           |     |      |     |     |     |     |     | 0.7             |               | 1.9             |     |     |
|  |                               |  |     |          |     |                   |     |     |     |     |     |     |     |     |     |                           |     |      |     |     |     |     |     | 0.7             |               | 2.3             |     |     |
|  |                               |  |     |          |     |                   |     |     |     |     |     |     |     |     |     |                           |     |      |     |     |     |     |     | 0.7             |               | 1.8             |     |     |
|  |                               |  |     |          |     |                   |     |     |     |     |     |     |     |     |     |                           |     |      |     |     |     |     |     | 0.8             |               | 2.2             |     |     |
|  |                               |  |     |          |     |                   |     |     |     |     |     |     |     |     |     |                           |     |      |     |     |     |     |     | 0.7             |               | 2.5             |     |     |
|  |                               |  |     |          |     |                   |     |     |     |     |     |     |     |     |     |                           |     |      |     |     |     |     |     | 0.7             |               | 2.2             |     |     |
|  |                               |  |     |          |     |                   |     |     |     |     |     |     |     |     |     |                           |     |      |     |     |     |     |     | 0.7             |               | 1.9             |     |     |
|  |                               |  |     |          |     |                   |     |     |     |     |     |     |     |     |     |                           |     |      |     |     |     |     |     | 0.6             |               | 1.8             |     |     |
|  |                               |  |     |          |     |                   |     |     |     |     |     |     |     |     |     |                           |     |      |     |     |     |     |     | 0.6             |               | 2.2             |     |     |
|  |                               |  |     |          |     |                   |     |     |     |     |     |     |     |     |     |                           |     |      |     |     |     |     |     | 0.6             |               | 2.6             |     |     |
|  |                               |  |     |          |     |                   |     |     |     |     |     |     |     |     |     |                           |     |      |     |     |     |     |     | 0.6             |               | 1.7             |     |     |
|  |                               |  |     |          |     |                   |     |     |     |     |     |     |     |     |     |                           |     |      |     |     |     |     |     | 0.6             |               | 2.6             |     |     |
|  |                               |  |     |          |     |                   |     |     |     |     |     |     |     |     |     |                           |     |      |     |     |     |     |     | 0.6             |               | 2.6             |     |     |
|  |                               |  |     |          |     |                   |     |     |     |     |     |     |     |     |     |                           |     |      |     |     |     |     |     | 0.5             |               | 3.1             |     |     |
|  |                               |  |     |          |     |                   |     |     |     |     |     |     |     |     |     |                           |     |      |     |     |     |     |     | 0.6             |               | 3.7             |     |     |
|  |                               |  |     |          |     |                   |     |     |     |     |     |     |     |     |     |                           |     |      |     |     |     |     |     | 0.7             |               | 3.1             |     |     |
|  |                               |  |     |          |     |                   |     |     |     |     |     |     |     |     |     |                           |     |      |     |     |     |     |     | 0.6             |               | 2.7             |     |     |
|  |                               |  |     |          |     |                   |     |     |     |     |     |     |     |     |     |                           |     |      |     |     |     |     |     | 0.6             |               | 2.3             |     |     |
|  |                               |  |     |          |     |                   |     |     |     |     |     |     |     |     |     |                           |     |      |     |     |     |     |     | 0.6             |               | 1.8             |     |     |
|  |                               |  |     |          |     |                   |     |     |     |     |     |     |     |     |     |                           |     |      |     |     |     |     |     | 0.6             |               | 1.5             |     |     |

Z - zerospan      C - Calibration      PF - Power Failure  
 Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 10 ppb    24-hr 3 ppb





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Total Reduced Sulphur (TRS) - ppb  
Barge Landing - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 2                             | 622                    | 98.73    | 98.73               |
| 3 - 4                             | 8                      | 1.27     | 100.00              |
| 5 - 7                             | 0                      | 0.00     | 100.00              |
| 8 - 11                            | 0                      | 0.00     | 100.00              |
| > 11                              | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 630

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Total Reduced Sulphur (TRS) - ppb  
Barge Landing - February 2023**

| <b>Concentration<br/>Ranges (ppb)</b> | <b>Wind Direction</b> |     |    |     |    |     |    |     |    |     |    |     |    |     |    |     | <b>Totals</b> |
|---------------------------------------|-----------------------|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|---------------|
|                                       | N                     | NNE | NE | ENE | E  | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |               |
| 0 - 2                                 | 57                    | 90  | 47 | 38  | 9  | 7   | 25 | 65  | 69 | 34  | 22 | 32  | 21 | 10  | 28 | 67  | 621           |
| 3 - 4                                 | 0                     | 0   | 0  | 1   | 1  | 0   | 0  | 1   | 1  | 1   | 0  | 1   | 0  | 0   | 1  | 1   | 8             |
| 5 - 7                                 | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| 8 - 11                                | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| > 11                                  | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| <b>Totals</b>                         | 57                    | 90  | 47 | 39  | 10 | 7   | 25 | 66  | 70 | 35  | 22 | 33  | 21 | 10  | 29 | 68  | 629           |

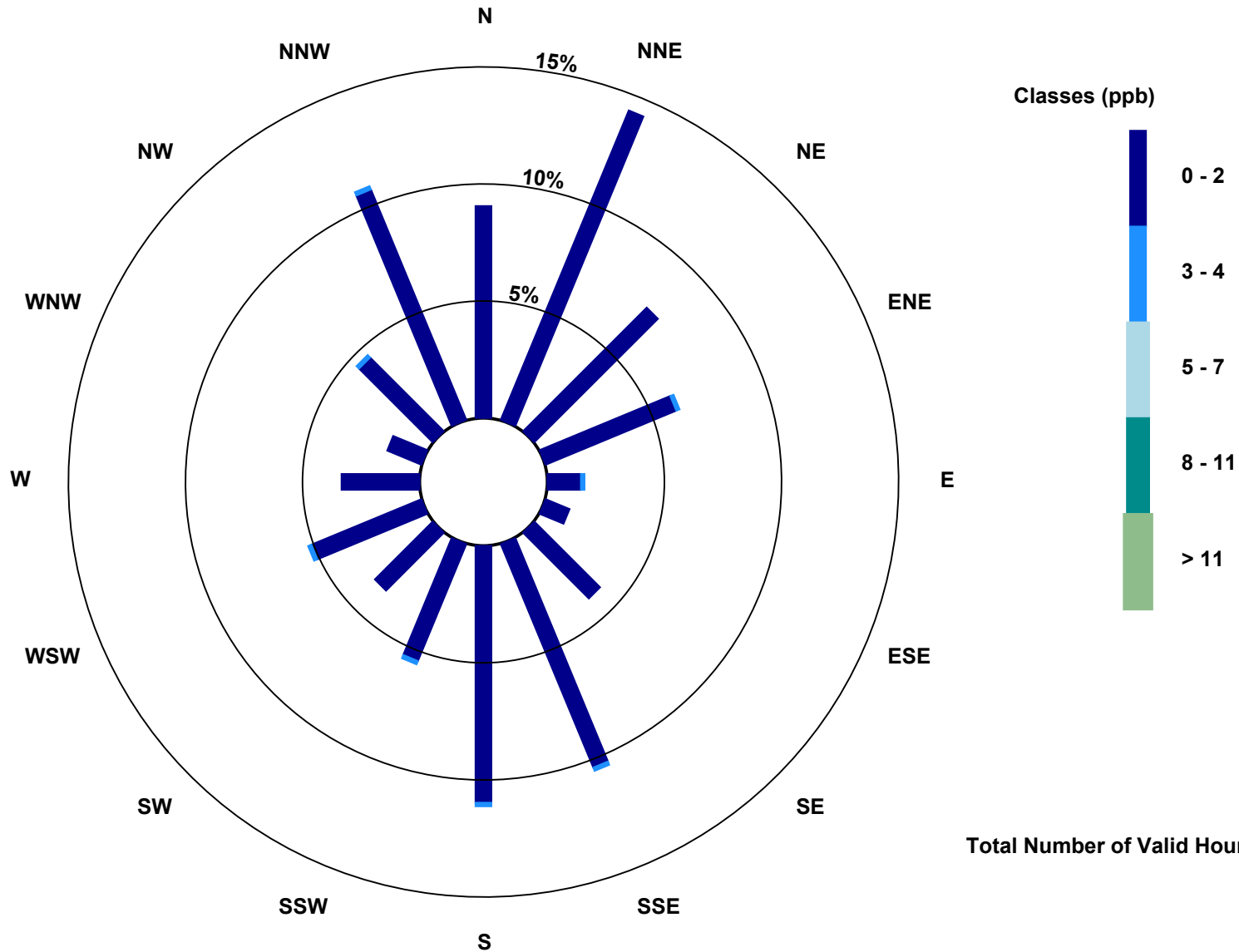
Total Number of Valid Hours: 629

Total Number of Hours: 672

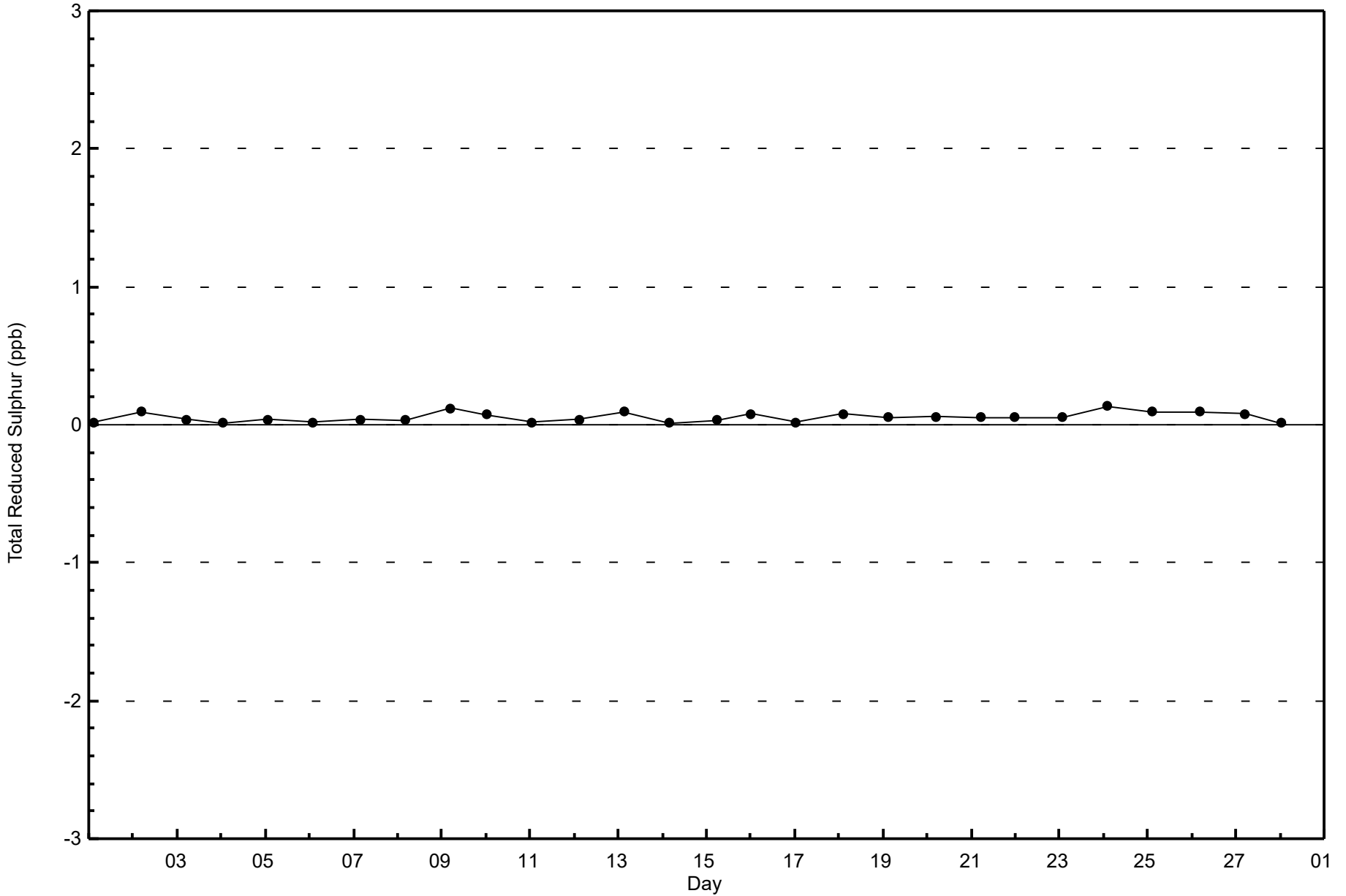


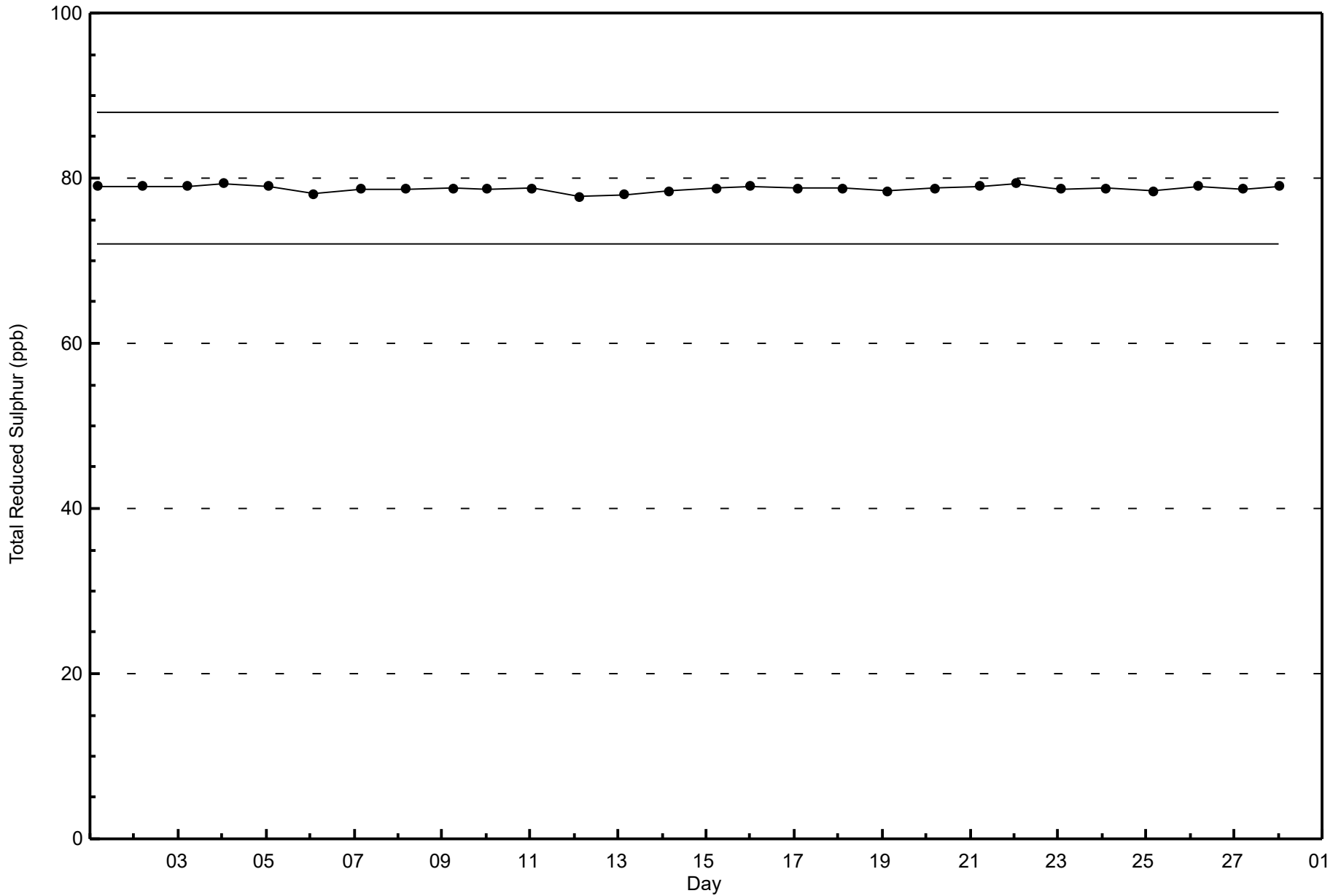
Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Total Reduced Sulphur (TRS) - ppb  
Barge Landing



Total Number of Valid Hours: 629









**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

**Total Hydrocarbons (THC) - ppm**  
**Barge Landing - February 2023**

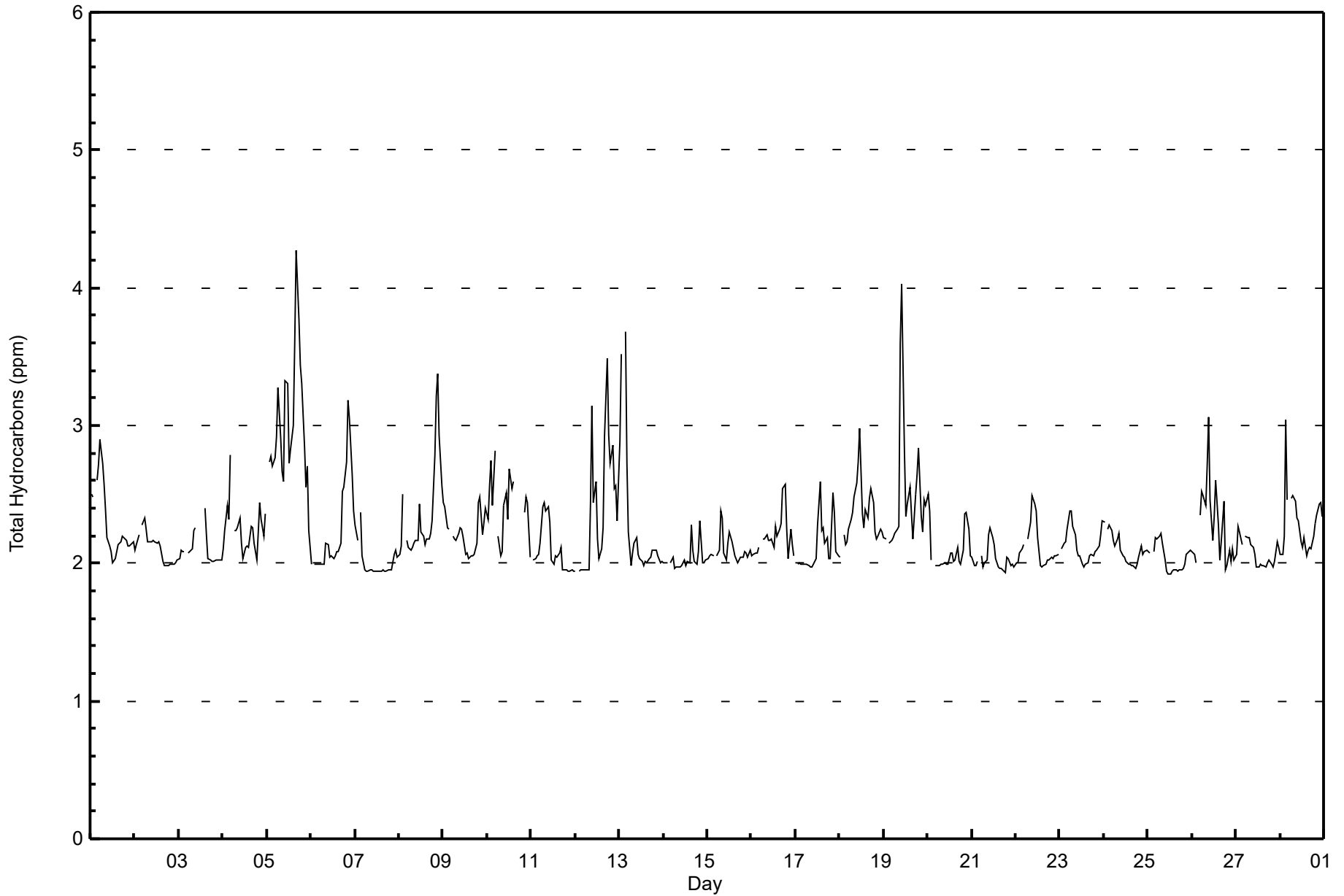
| Maximum Value: 4.3 ppm on Feb 5 17:00       |                               | Maximum Daily Average: 3.0 ppm on Feb 5  |     | Hours in Service: 672          |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |               |               |
|---|-------------------------------|--|-----|--------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----------------|---------------|---------------|
| Minimum Value: 1.9 ppm on Feb 25 13:00      |                               | Minimum Daily Average: 2.0 ppm on Feb 7  |     | Hours of Data: 635             |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |               |               |
| Maximum Diurnal Average: 2.3 ppm at hour 10 |                               | Minimum Diurnal Average: 2.2 ppm at hour 13  |     | Hours of Missing Data: 37      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |               |               |
| Monthly Average: 2.22 ppm                   |                               | Percentiles: P <sub>1</sub> = 1.9 P <sub>10</sub> = 2.0 Q <sub>1</sub> = 2.0 Median = 2.1 Q <sub>3</sub> = 2.3 P <sub>90</sub> = 2.6 P <sub>99</sub> = 3.5 |     | Hours of Calibration: 32       |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |               |               |
|   |                               |  |     | Percent Operational Time: 99.3 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |               |               |
| Day   | Hourly Period Ending At (MST) |  |     |                                |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 | Daily Average | Daily Maximum |
|   | 1                             | 2  | 3   | 4                              | 5   | 6   | 7   | 8   | 9   | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19  | 20  | 21  | 22  | 23  | 24              |               |               |
| 1-Feb                                       | 2.5                           | 2.5  | Z   | 2.6                            | 2.7 | 2.9 | 2.7 | 2.6 | 2.4 | 2.2 | 2.1 | 2.1 | 2.0 | 2.0 | 2.1 | 2.1 | 2.2 | 2.2 | 2.2 | 2.2 | 2.1 | 2.1 | 2.1 | 2.2             | 2.3           | 2.9           |
| 2-Feb                                       | 2.1                           | 2.1  | 2.2 | Z                              | 2.3 | 2.3 | 2.3 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.1 | 2.2 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0             | 2.0           | 2.3           |
| 3-Feb                                       | 2.0                           | 2.1  | 2.1 | 2.1                            | Z   | 2.1 | 2.1 | 2.1 | 2.2 | 2.3 | C   | C   | C   | C   | 2.4 | 2.2 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0             | 2.4           |               |
| 4-Feb                                       | 2.1                           | 2.2  | 2.4 | 2.3                            | 2.8 | Z   | 2.1 | 2.2 | 2.2 | 2.3 | 2.3 | 2.1 | 2.0 | 2.1 | 2.1 | 2.1 | 2.3 | 2.3 | 2.1 | 2.0 | 2.2 | 2.4 | 2.3 | 2.2             | 2.8           |               |
| 5-Feb                                       | Z                             | 2.7  | 2.8 | 2.7                            | 2.8 | 2.9 | 3.3 | 2.9 | 2.7 | 2.6 | 3.3 | 3.3 | 2.7 | 2.8 | 3.0 | 3.6 | 4.3 | 3.8 | 3.4 | 3.3 | 2.8 | 2.5 | 2.7 | 2.2             | 4.3           |               |
| 6-Feb                                       | 2.0                           | Z  | 2.0 | 2.0                            | 2.0 | 2.0 | 2.0 | 2.0 | 2.1 | 2.1 | 2.0 | 2.1 | 2.0 | 2.1 | 2.1 | 2.1 | 2.1 | 2.5 | 2.6 | 2.7 | 3.2 | 3.1 | 2.6 | 2.4             | 3.2           |               |
| 7-Feb                                       | 2.3                           | 2.2  | Z   | 2.4                            | 2.0 | 2.0 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 2.0 | 1.9 | 2.1 | 2.1             | 2.4           |               |
| 8-Feb                                       | 2.1                           | 2.1  | 2.5 | Z                              | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | 2.4 | 2.2 | 2.2 | 2.1 | 2.2 | 2.2 | 2.2 | 2.3 | 2.8 | 3.2 | 3.4 | 2.9 | 2.6             | 3.4           |               |
| 9-Feb                                       | 2.4                           | 2.4  | 2.3 | 2.2                            | Z   | 2.2 | 2.2 | 2.2 | 2.2 | 2.3 | 2.3 | 2.2 | 2.1 | 2.1 | 2.0 | 2.1 | 2.1 | 2.1 | 2.1 | 2.4 | 2.5 | 2.2 | 2.3 | 2.4             | 2.5           |               |
| 10-Feb                                      | 2.3                           | 2.6  | 2.7 | 2.4                            | 2.8 | Z   | 2.2 | 2.1 | 2.1 | 2.4 | 2.5 | 2.3 | 2.7 | 2.5 | 2.6 | PF  | PF  | PF  | PF  | PF  | 2.4 | 2.5 | 2.4 | 2.0             | 2.8           |               |
| 11-Feb                                      | Z                             | 2.0  | 2.0 | 2.1                            | 2.1 | 2.1 | 2.4 | 2.4 | 2.4 | 2.4 | 2.3 | 2.0 | 2.0 | 2.1 | 2.0 | 2.1 | 2.1 | 2.0 | 1.9 | 2.0 | 1.9 | 1.9 | 1.9 | 1.9             | 2.4           |               |
| 12-Feb                                      | 1.9                           | Z  | 1.9 | 1.9                            | 1.9 | 2.0 | 2.0 | 2.0 | 2.4 | 3.1 | 2.4 | 2.6 | 2.2 | 2.0 | 2.1 | 2.3 | 2.9 | 3.5 | 2.9 | 2.7 | 2.9 | 2.5 | 2.6 | 2.3             | 3.5           |               |
| 13-Feb                                      | 2.9                           | 3.5  | Z   | 3.7                            | 2.7 | 2.2 | 2.0 | 2.1 | 2.1 | 2.2 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1 | 2.1 | 2.1 | 2.0 | 2.0 | 2.0             | 3.7           |               |
| 14-Feb                                      | 2.0                           | 2.0  | 2.0 | Z                              | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.3 | 2.1 | 2.0 | 2.0 | 2.1 | 2.3 | 2.0 | 2.0 | 2.0             | 2.3           |               |
| 15-Feb                                      | 2.0                           | 2.1  | 2.1 | 2.1                            | Z   | 2.1 | 2.1 | 2.4 | 2.3 | 2.1 | 2.0 | 2.1 | 2.2 | 2.2 | 2.1 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1 | 2.1 | 2.0 | 2.1             | 2.4           |               |
| 16-Feb                                      | 2.1                           | 2.1  | 2.1 | 2.1                            | 2.1 | Z   | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.1 | 2.3 | 2.2 | 2.2 | 2.3 | 2.5 | 2.6 | 2.2 | 2.0 | 2.2 | 2.1 | 2.1             | 2.6           |               |
| 17-Feb                                      | Z                             | 2.0  | 2.0 | 2.0                            | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.3 | 2.6 | 2.2 | 2.3 | 2.1 | 2.2 | 2.0 | 2.0 | 2.5 | 2.4 | 2.1 | 2.1             | 2.6           |               |
| 18-Feb                                      | 2.0                           | Z  | 2.2 | 2.1                            | 2.2 | 2.2 | 2.3 | 2.4 | 2.5 | 2.6 | 2.7 | 3.0 | 2.4 | 2.3 | 2.4 | 2.3 | 2.5 | 2.5 | 2.4 | 2.2 | 2.2 | 2.2 | 2.3 | 2.2             | 3.0           |               |
| 19-Feb                                      | 2.2                           | 2.2  | Z   | 2.1                            | 2.2 | 2.2 | 2.2 | 2.2 | 2.3 | 3.6 | 4.0 | 2.8 | 2.3 | 2.4 | 2.5 | 2.4 | 2.2 | 2.5 | 2.6 | 2.8 | 2.3 | 2.2 | 2.5 | 2.4             | 4.0           |               |
| 20-Feb                                      | 2.5                           | 2.4  | 2.0 | Z                              | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1 | 2.1 | 2.0 | 2.0 | 2.1 | 2.0 | 2.0 | 2.1 | 2.4 | 2.4 | 2.2 | 2.1             | 2.5           |               |
| 21-Feb                                      | 2.0                           | 2.0  | 2.0 | 2.0                            | Z   | 2.1 | 2.0 | 2.0 | 2.0 | 2.2 | 2.3 | 2.2 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 1.9 | 1.9 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0             | 2.3           |               |
| 22-Feb                                      | 2.0                           | 2.0  | 2.1 | 2.1                            | 2.1 | Z   | 2.2 | 2.2 | 2.3 | 2.5 | 2.4 | 2.4 | 2.2 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1 | 2.1 | 2.1             | 2.5           |               |
| 23-Feb                                      | Z                             | 2.1  | 2.1 | 2.2                            | 2.3 | 2.4 | 2.4 | 2.3 | 2.2 | 2.1 | 2.1 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.3             | 2.4           |               |
| 24-Feb                                      | 2.3                           | Z  | 2.2 | 2.3                            | 2.2 | 2.2 | 2.1 | 2.2 | 2.2 | 2.1 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1 | 2.1 | 2.1 | 2.1             | 2.3           |               |
| 25-Feb                                      | 2.1                           | 2.1  | Z   | 2.1                            | 2.2 | 2.2 | 2.2 | 2.2 | 2.1 | 2.0 | 1.9 | 1.9 | 1.9 | 1.9 | 2.0 | 2.0 | 1.9 | 1.9 | 2.0 | 2.0 | 2.0 | 2.1 | 2.1 | 2.1             | 2.2           |               |
| 26-Feb                                      | 2.1                           | 2.1  | 2.0 | Z                              | 2.3 | 2.5 | 2.5 | 2.4 | 2.7 | 3.1 | 2.5 | 2.2 | 2.3 | 2.6 | 2.3 | 2.0 | 2.2 | 2.4 | 1.9 | 2.0 | 2.1 | 2.0 | 2.1 | 2.0             | 3.1           |               |
| 27-Feb                                      | 2.1                           | 2.3  | 2.2 | 2.1                            | Z   | 2.2 | 2.2 | 2.2 | 2.1 | 2.1 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.2 | 2.1             | 2.3           |               |
| 28-Feb                                      | 2.1                           | 2.1  | 2.2 | 3.0                            | 2.5 | Z   | 2.5 | 2.5 | 2.5 | 2.3 | 2.3 | 2.2 | 2.1 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.3 | 2.3 | 2.4 | 2.4 | 2.3             | 3.0           |               |
|   |                               |  |     |                                |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Diurnal Average |               |               |
|   |                               |  |     |                                |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Diurnal Maximum |               |               |
|   |                               |  |     |                                |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | 2.2 2.9         |               |               |
|   |                               |  |     |                                |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | 2.2 3.5         |               |               |
|   |                               |  |     |                                |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | 2.2 2.8         |               |               |
|   |                               |  |     |                                |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | 2.3 3.7         |               |               |
|   |                               |  |     |                                |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | 2.3 2.8         |               |               |
|   |                               |  |     |                                |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | 2.2 2.9         |               |               |
|   |                               |  |     |                                |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | 2.2 3.3         |               |               |
|   |                               |  |     |                                |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | 2.2 2.9         |               |               |
|   |                               |  |     |                                |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | 2.3 2.7         |               |               |
|   |                               |  |     |                                |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | 2.3 3.6         |               |               |
|   |                               |  |     |                                |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | 2.3 4.0         |               |               |
|   |                               |  |     |                                |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | 2.3 3.3         |               |               |
|   |                               |  |     |                                |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | 2.2 2.7         |               |               |
|   |                               |  |     |                                |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | 2.2 2.8         |               |               |
|   |                               |  |     |                                |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | 2.2 3.0         |               |               |
|   |                               |  |     |                                |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | 2.2 3.6         |               |               |
|   |                               |  |     |                                |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | 2.2 4.3         |               |               |
|   |                               |  |     |                                |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | 2.2 3.8         |               |               |
|   |                               |  |     |                                |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | 2.2 3.4         |               |               |
|   |                               |  |     |                                |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | 2.2 3.3         |               |               |
|   |                               |  |     |                                |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | 2.3 3.2         |               |               |
|   |                               |  |     |                                |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | 2.2 3.4         |               |               |
|   |                               |  |     |                                |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | 2.2 2.9         |               |               |
|   |                               |  |     |                                |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | 2.2 2.6         |               |               |
|   |                               |  |     |                                |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |               |               |

Z - zerospan      C - Calibration      PF - Power Failure



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Total Hydrocarbons (THC) - ppm**  
**Barge Landing - February 2023**





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Total Hydrocarbons (THC) - ppm**  
**Barge Landing - February 2023**

| <b>Concentration Ranges (ppm)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 2.0                           | 205                    | 32.28    | 32.28               |
| 2.1 - 3.0                         | 411                    | 64.72    | 97.01               |
| 3.1 - 10.0                        | 19                     | 2.99     | 100.00              |
| > 10.0                            | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 635

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Total Hydrocarbons (THC) - ppm  
Barge Landing - February 2023**

| <b>Concentration<br/>Ranges (ppm)</b> | <b>Wind Direction</b> |     |    |     |    |     |    |     |    |     |    |     |    |     |    |     | <b>Totals</b> |
|---------------------------------------|-----------------------|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|---------------|
|                                       | N                     | NNE | NE | ENE | E  | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |               |
| 0 - 2.0                               | 13                    | 30  | 28 | 27  | 5  | 4   | 7  | 21  | 17 | 6   | 5  | 26  | 10 | 1   | 1  | 4   | 205           |
| 2.1 - 3.0                             | 45                    | 62  | 23 | 10  | 4  | 3   | 18 | 37  | 51 | 30  | 16 | 9   | 9  | 10  | 24 | 59  | 410           |
| 3.1 - 10.0                            | 0                     | 1   | 0  | 1   | 1  | 0   | 1  | 1   | 3  | 2   | 2  | 1   | 0  | 0   | 2  | 4   | 19            |
| > 10.0                                | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| <b>Totals</b>                         | 58                    | 93  | 51 | 38  | 10 | 7   | 26 | 59  | 71 | 38  | 23 | 36  | 19 | 11  | 27 | 67  | 634           |

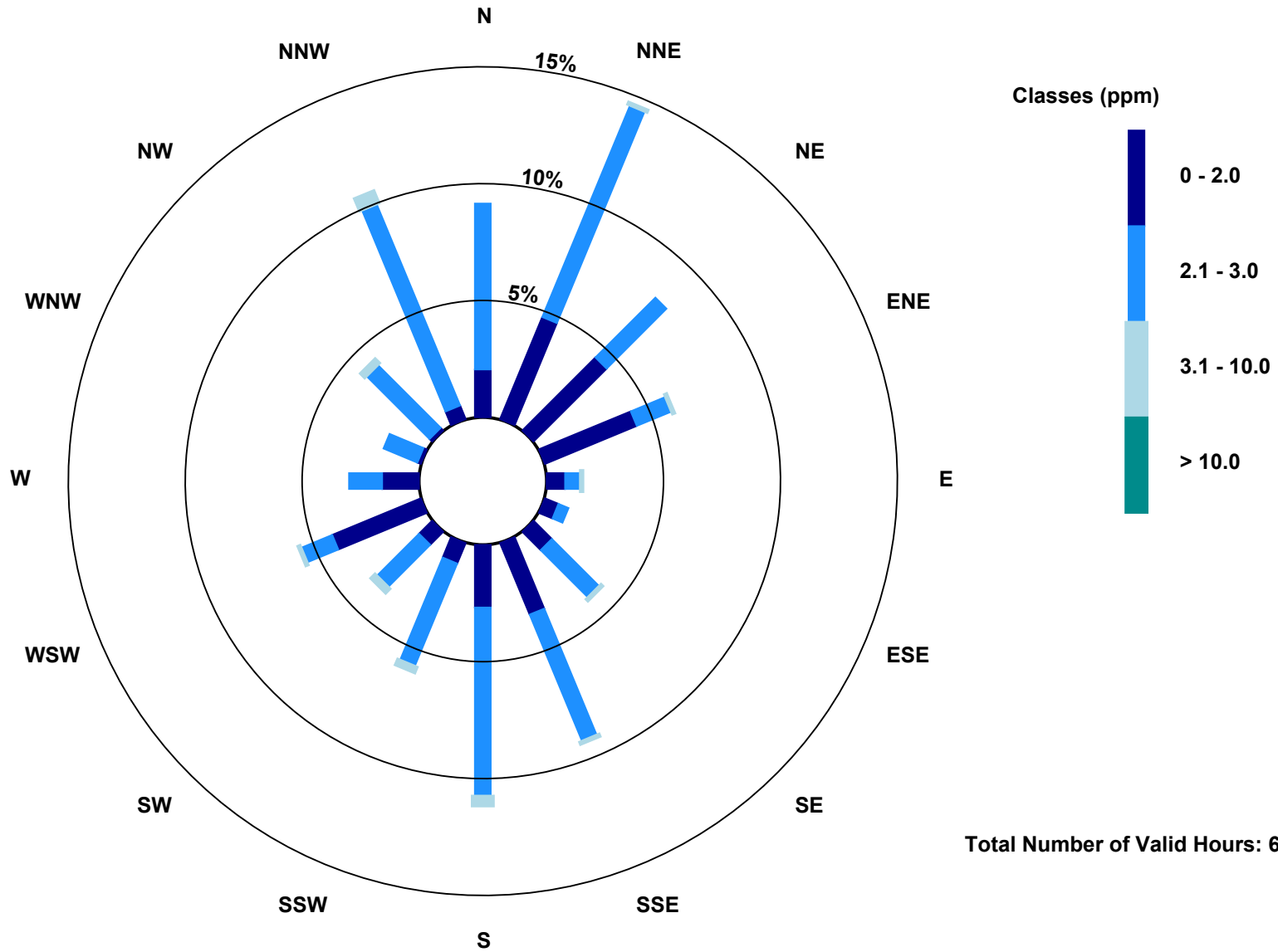
Total Number of Valid Hours: 634

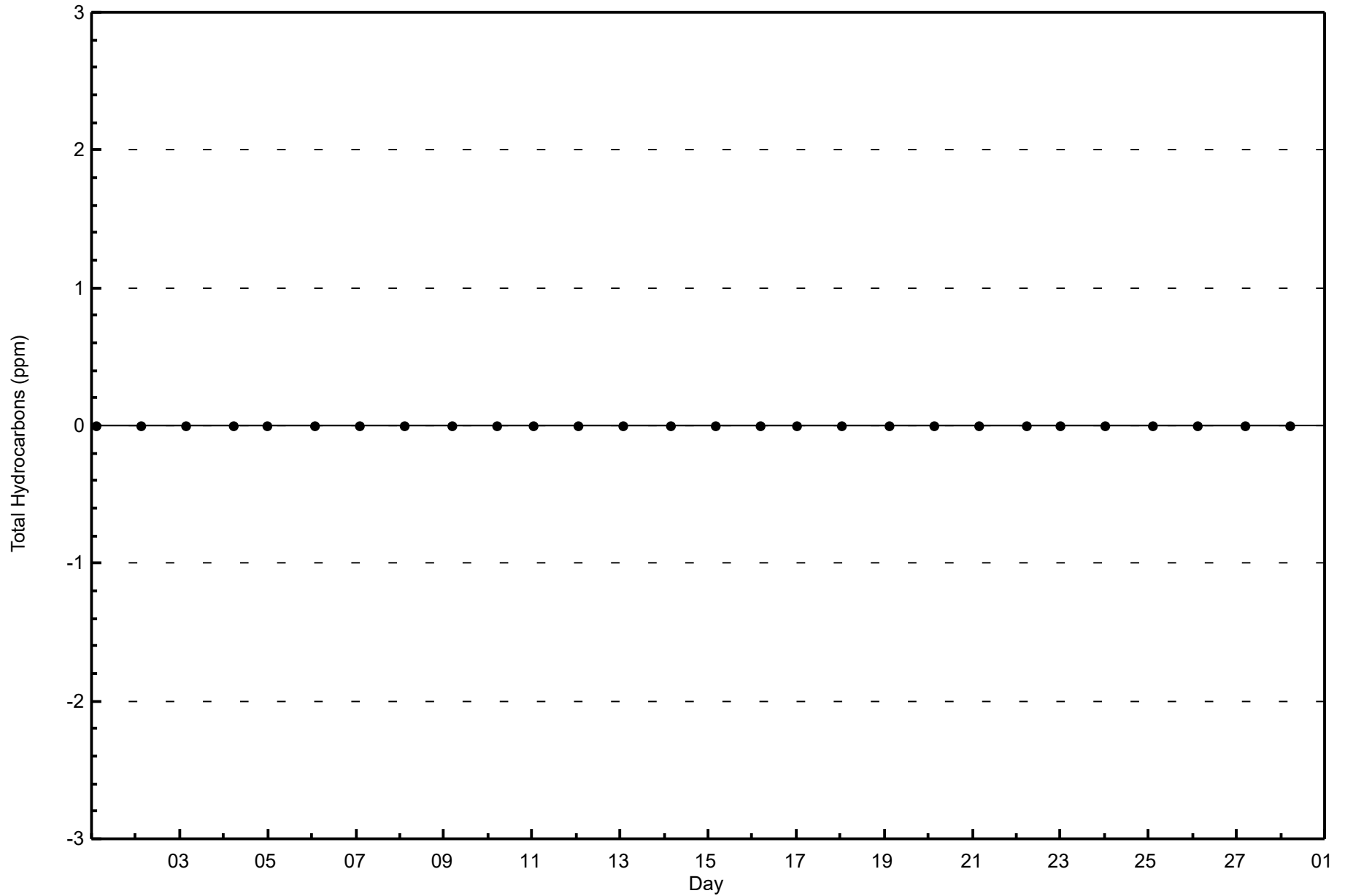
Total Number of Hours: 672

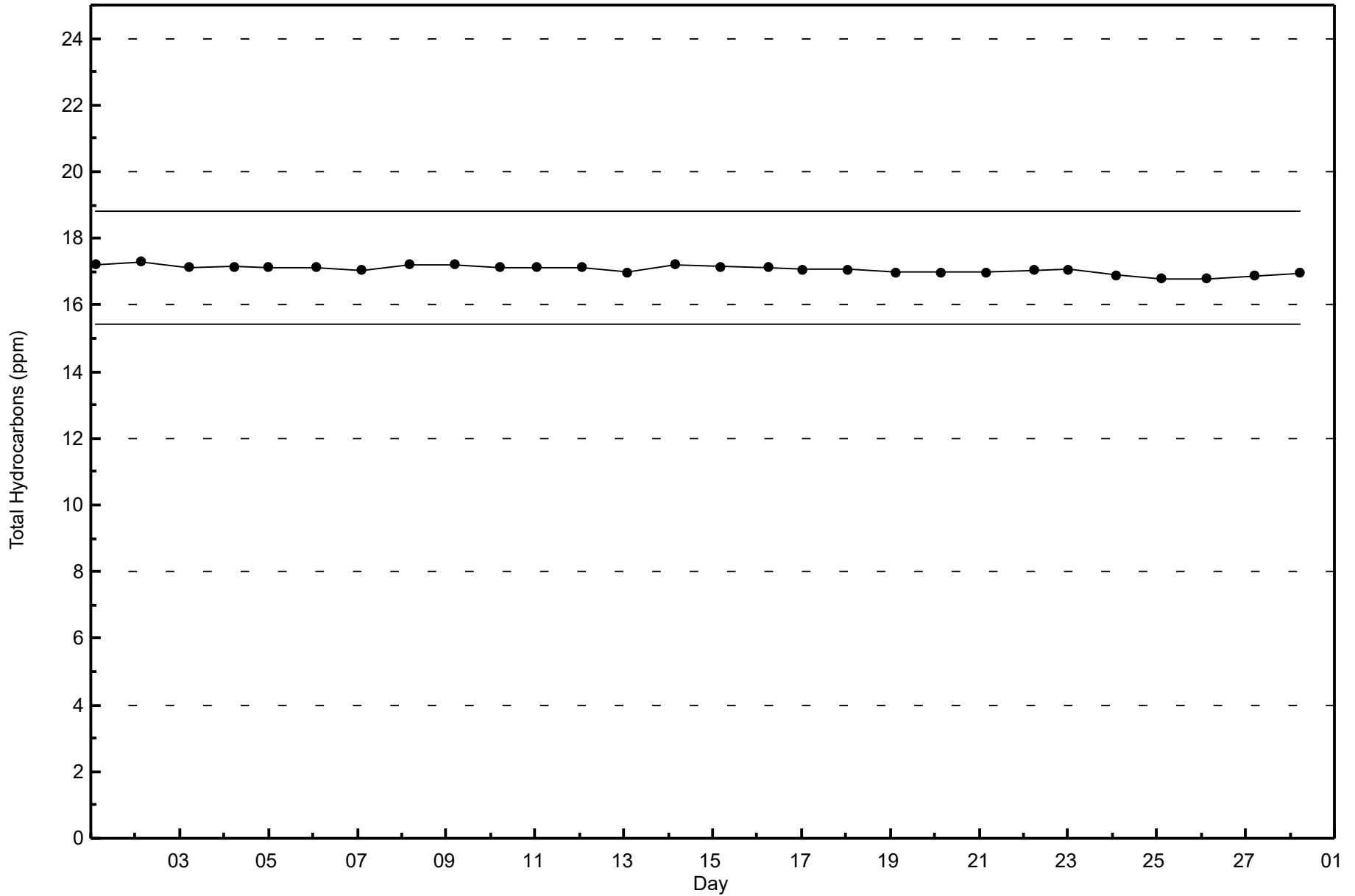


Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Total Hydrocarbons (THC) - ppm  
Barge Landing



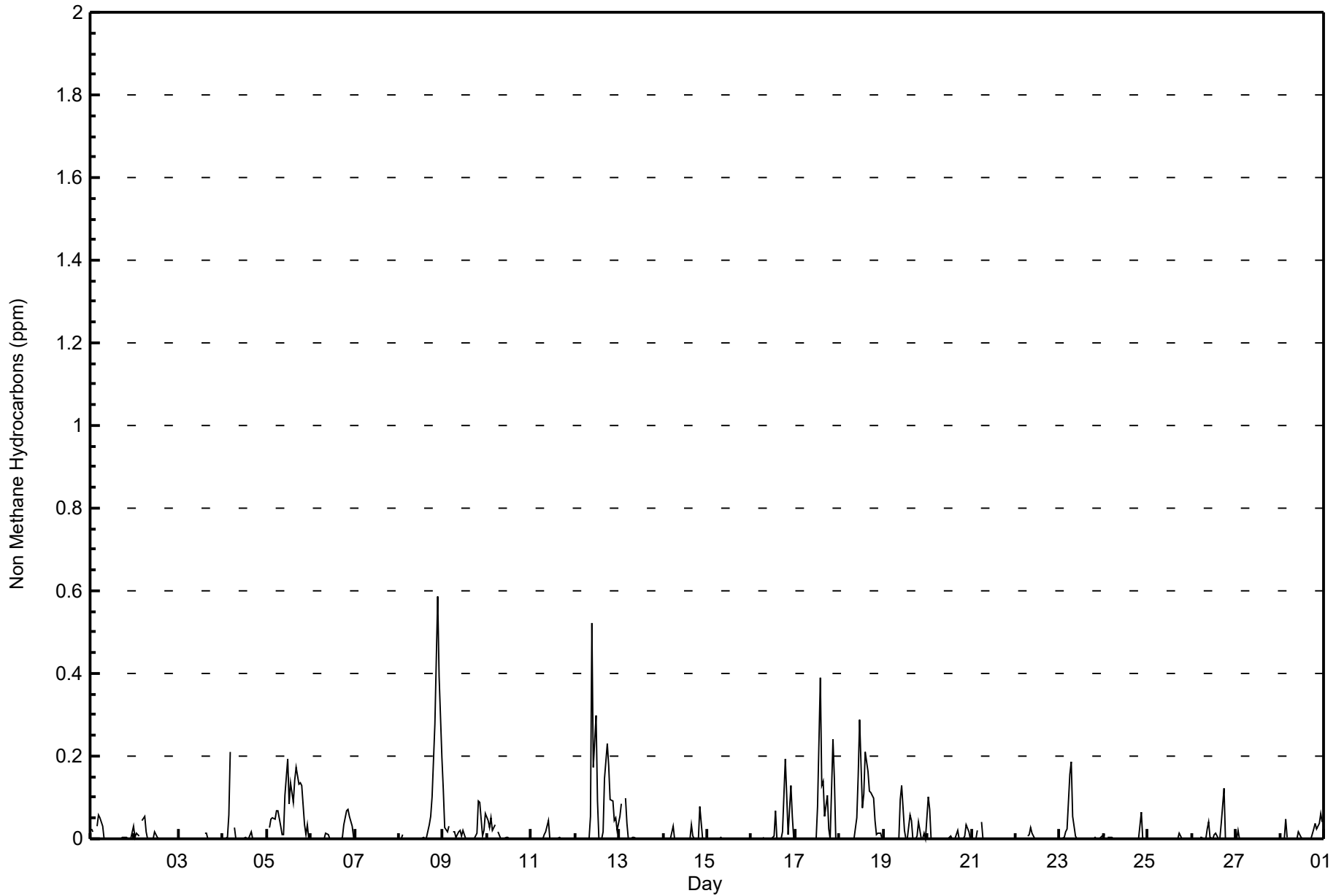






| Maximum Value: 0.586 ppm on Feb 8 22:00       |                               | Maximum Daily Average: 0.091 ppm on Feb 8  |       | Hours in Service: 672          |       |                    |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |               |                 |  |
|---|-------------------------------|--|-------|--------------------------------|-------|--------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------------|-----------------|--|
| Minimum Value: 0.000 ppm on Feb 1 09:00       |                               | Minimum Daily Average: 0.000 ppm on Feb 7  |       | Hours of Data: 635             |       |                    |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |               |                 |  |
| Maximum Diurnal Average: 0.041 ppm at hour 21 |                               | Minimum Diurnal Average: 0.004 ppm at hour 8   |       | Hours of Missing Data: 37      |       |                    |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |               |                 |  |
| Monthly Average: 0.021 ppm                    |                               | Percentiles: P <sub>1</sub> = 0.0 P <sub>10</sub> = 0.0 Q <sub>1</sub> = 0.0 Median = 0.0 Q <sub>3</sub> = 0.0 P <sub>90</sub> = 0.1 P <sub>99</sub> = 0.3 |       | Hours of Calibration: 32       |       |                    |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |               |                 |  |
|   |                               |  |       | Percent Operational Time: 99.3 |       |                    |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |               |                 |  |
| Day   | Hourly Period Ending At (MST) |  |       |                                |       |                    |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Daily Average | Daily Maximum   |  |
|   | 1                             | 2  | 3     | 4                              | 5     | 6                  | 7     | 8     | 9     | 10    | 11    | 12    | 13    | 14    | 15    | 16    | 17    | 18    | 19    | 20    | 21    | 22    | 23    | 24    |               |                 |  |
| 1-Feb   | 0.022                         | 0.018  | Z     | 0.031                          | 0.058 | 0.052              | 0.029 | 0.001 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.002 | 0.004 | 0.003 | 0.000 | 0.000 | 0.000 | 0.031 | 0.011         | 0.058           |  |
| 2-Feb   | 0.003                         | 0.012  | 0.006 | Z                              | 0.044 | 0.054              | 0.016 | 0.000 | 0.000 | 0.000 | 0.001 | 0.017 | 0.004 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.007         | 0.054           |  |
| 3-Feb   | 0.000                         | 0.000  | 0.000 | 0.000                          | Z     | 0.000              | 0.000 | 0.000 | 0.000 | 0.000 | C     | C     | C     | C     | 0.014 | 0.012 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.001         | 0.014           |  |
| 4-Feb   | 0.000                         | 0.002  | 0.005 | 0.058                          | Z     | 0.209              | Z     | 0.026 | 0.000 | 0.000 | 0.000 | 0.000 | 0.002 | 0.000 | 0.000 | 0.017 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.014         | 0.209           |  |
| 5-Feb   | Z                             | 0.028  | 0.047 | 0.050                          | 0.047 | 0.067              | 0.067 | 0.030 | 0.011 | 0.011 | 0.104 | 0.192 | 0.086 | 0.135 | 0.088 | 0.143 | 0.174 | 0.131 | 0.137 | 0.130 | 0.032 | 0.009 | 0.032 | 0.000 | 0.076         | 0.192           |  |
| 6-Feb   | 0.000                         | Z  | 0.000 | 0.000                          | 0.000 | 0.000              | 0.000 | 0.000 | 0.015 | 0.011 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.003 | 0.033 | 0.068 | 0.073 | 0.054 | 0.030 | 0.003 | 0.013         | 0.073           |  |
| 7-Feb   | 0.000                         | 0.000  | Z     | 0.001                          | 0.000 | 0.000              | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.001 | 0.000 | 0.000 | 0.000         | 0.001           |  |
| 8-Feb   | 0.000                         | 0.000  | 0.009 | Z                              | 0.000 | 0.000              | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.002 | 0.000 | 0.002 | 0.033 | 0.055 | 0.101 | 0.280 | 0.435 | 0.586 | 0.393 | 0.197 | 0.091         | 0.586           |  |
| 9-Feb   | 0.118                         | 0.026  | 0.018 | 0.030                          | Z     | 0.018              | 0.018 | 0.005 | 0.018 | 0.022 | 0.008 | 0.019 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.014 | 0.090 | 0.087 | 0.007 | 0.020 | 0.060 | 0.025         | 0.118           |  |
| 10-Feb  | 0.046                         | 0.027  | 0.051 | 0.021                          | 0.032 | Z                  | 0.017 | 0.000 | 0.000 | 0.000 | 0.002 | 0.004 | 0.000 | 0.000 | 0.000 | PF    | PF    | PF    | PF    | PF    | 0.000 | 0.000 | 0.000 | 0.000 | 0.011         | 0.051           |  |
| 11-Feb  | Z                             | 0.000  | 0.000 | 0.000                          | 0.000 | 0.000              | 0.000 | 0.010 | 0.017 | 0.043 | 0.000 | 0.000 | 0.000 | 0.000 | 0.004 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.003         | 0.043           |  |
| 12-Feb  | 0.000                         | Z  | 0.000 | 0.000                          | 0.000 | 0.000              | 0.000 | 0.000 | 0.054 | 0.522 | 0.173 | 0.298 | 0.090 | 0.000 | 0.000 | 0.018 | 0.146 | 0.229 | 0.175 | 0.095 | 0.091 | 0.046 | 0.051 | 0.019 | 0.087         | 0.522           |  |
| 13-Feb  | 0.054                         | 0.085  | Z     | 0.097                          | 0.037 | 0.000              | 0.000 | 0.003 | 0.004 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.002 | 0.000 | 0.000 | 0.000 | 0.012         | 0.097           |  |
| 14-Feb  | 0.000                         | 0.000  | 0.000 | Z                              | 0.000 | 0.029              | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.033 | 0.006 | 0.000 | 0.000 | 0.000 | 0.000 | 0.078 | 0.000 | 0.000 | 0.006         | 0.078           |  |
| 15-Feb  | 0.000                         | 0.000  | 0.000 | 0.000                          | Z     | 0.000              | 0.000 | 0.002 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000         | 0.002           |  |
| 16-Feb  | 0.000                         | 0.000  | 0.000 | 0.000                          | 0.000 | Z                  | 0.002 | 0.000 | 0.000 | 0.000 | 0.000 | 0.001 | 0.007 | 0.067 | 0.000 | 0.000 | 0.001 | 0.016 | 0.192 | 0.105 | 0.009 | 0.130 | 0.055 | 0.000 | 0.025         | 0.192           |  |
| 17-Feb  | Z                             | 0.000  | 0.000 | 0.000                          | 0.000 | 0.000              | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.079 | 0.389 | 0.127 | 0.138 | 0.056 | 0.103 | 0.024 | 0.000 | 0.240 | 0.146 | 0.000 | 0.000 | 0.000 | 0.057         | 0.389           |  |
| 18-Feb  | 0.000                         | Z  | 0.000 | 0.000                          | 0.000 | 0.000              | 0.000 | 0.000 | 0.000 | 0.051 | 0.153 | 0.289 | 0.075 | 0.109 | 0.211 | 0.164 | 0.116 | 0.113 | 0.098 | 0.045 | 0.011 | 0.015 | 0.012 | 0.000 | 0.064         | 0.289           |  |
| 19-Feb  | 0.000                         | 0.000  | Z     | 0.000                          | 0.000 | 0.000              | 0.000 | 0.000 | 0.001 | 0.094 | 0.129 | 0.022 | 0.000 | 0.001 | 0.058 | 0.042 | 0.001 | 0.000 | 0.007 | 0.040 | 0.001 | 0.000 | 0.013 | 0.000 | 0.018         | 0.129           |  |
| 20-Feb  | 0.101                         | 0.070  | 0.000 | Z                              | 0.000 | 0.000              | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.005 | 0.000 | 0.000 | 0.000 | 0.021 | 0.000 | 0.000 | 0.000 | 0.008 | 0.036 | 0.017 | 0.000 | 0.011         | 0.101           |  |
| 21-Feb  | 0.000                         | 0.000  | 0.000 | 0.022                          | Z     | 0.040              | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.003         | 0.040           |  |
| 22-Feb  | 0.000                         | 0.000  | 0.000 | 0.000                          | 0.000 | Z                  | 0.008 | 0.009 | 0.028 | 0.013 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.003         | 0.028           |  |
| 23-Feb  | Z                             | 0.000  | 0.002 | 0.019                          | 0.023 | 0.157              | 0.188 | 0.053 | 0.008 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.002 | 0.001 | 0.000 | 0.003 | 0.007 | 0.020         | 0.188           |  |
| 24-Feb  | 0.011                         | Z  | 0.002 | 0.004                          | 0.002 | 0.000              | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.065 | 0.000 | 0.000 | 0.004         | 0.065           |  |
| 25-Feb  | 0.000                         | 0.000  | Z     | 0.000                          | 0.000 | 0.000              | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.014 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.001         | 0.014           |  |
| 26-Feb  | 0.000                         | 0.000  | 0.000 | Z                              | 0.003 | 0.002              | 0.000 | 0.000 | 0.025 | 0.040 | 0.003 | 0.000 | 0.009 | 0.012 | 0.000 | 0.000 | 0.038 | 0.121 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.011         | 0.121           |  |
| 27-Feb  | 0.000                         | 0.019  | 0.000 | 0.000                          | Z     | 0.000              | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.001         | 0.019           |  |
| 28-Feb  | 0.000                         | 0.000  | 0.001 | 0.048                          | 0.004 | Z                  | 0.000 | 0.000 | 0.000 | 0.000 | 0.015 | 0.005 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.024 | 0.037 | 0.024 | 0.037 | 0.059 | 0.042 | 0.013         | 0.059           |  |
|   |                               | 0.015  | 0.012 | 0.006                          | 0.017 | 0.020              | 0.018 | 0.013 | 0.004 | 0.006 | 0.029 | 0.022 | 0.031 | 0.013 | 0.026 | 0.018 | 0.021 | 0.022 | 0.029 | 0.030 | 0.033 | 0.041 | 0.038 | 0.025 | 0.013         | Diurnal Average |  |
|   |                               | 0.118  | 0.085 | 0.051                          | 0.097 | 0.209              | 0.157 | 0.188 | 0.053 | 0.054 | 0.522 | 0.173 | 0.298 | 0.090 | 0.389 | 0.211 | 0.164 | 0.174 | 0.229 | 0.192 | 0.280 | 0.435 | 0.586 | 0.393 | 0.197         | Diurnal Maximum |  |
| Z - zerspan                                   |                               | C - Calibration  |       |                                |       | PF - Power Failure |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |               |                 |  |







**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Non Methane Hydrocarbons (NMHC) - ppm  
Barge Landing - February 2023**

| <b>Concentration Ranges (ppm)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 0.005                         | 455                    | 71.65    | 71.65               |
| 0.006 - 0.05                      | 109                    | 17.17    | 88.82               |
| 0.06 - 0.1                        | 49                     | 7.72     | 96.54               |
| > 0.1                             | 22                     | 3.46     | 100.00              |

Total Number of Valid Hours: 635

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Non Methane Hydrocarbons (NMHC) - ppm  
Barge Landing - February 2023**

| <b>Concentration<br/>Ranges (ppm)</b> | <b>Wind Direction</b> |     |    |     |    |     |    |     |    |     |    |     |    |     |    |     | <b>Totals</b> |
|---------------------------------------|-----------------------|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|---------------|
|                                       | N                     | NNE | NE | ENE | E  | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |               |
| 0 - 0.005                             | 41                    | 57  | 36 | 31  | 9  | 6   | 23 | 43  | 51 | 28  | 18 | 31  | 14 | 6   | 15 | 45  | 454           |
| 0.006 - 0.05                          | 13                    | 13  | 10 | 3   | 0  | 1   | 2  | 13  | 10 | 6   | 4  | 3   | 5  | 3   | 9  | 14  | 109           |
| 0.06 - 0.1                            | 3                     | 14  | 5  | 2   | 0  | 0   | 1  | 3   | 6  | 3   | 0  | 1   | 0  | 2   | 3  | 6   | 49            |
| > 0.1                                 | 1                     | 9   | 0  | 2   | 1  | 0   | 0  | 0   | 4  | 1   | 1  | 1   | 0  | 0   | 0  | 2   | 22            |
| <b>Totals</b>                         | 58                    | 93  | 51 | 38  | 10 | 7   | 26 | 59  | 71 | 38  | 23 | 36  | 19 | 11  | 27 | 67  | 634           |

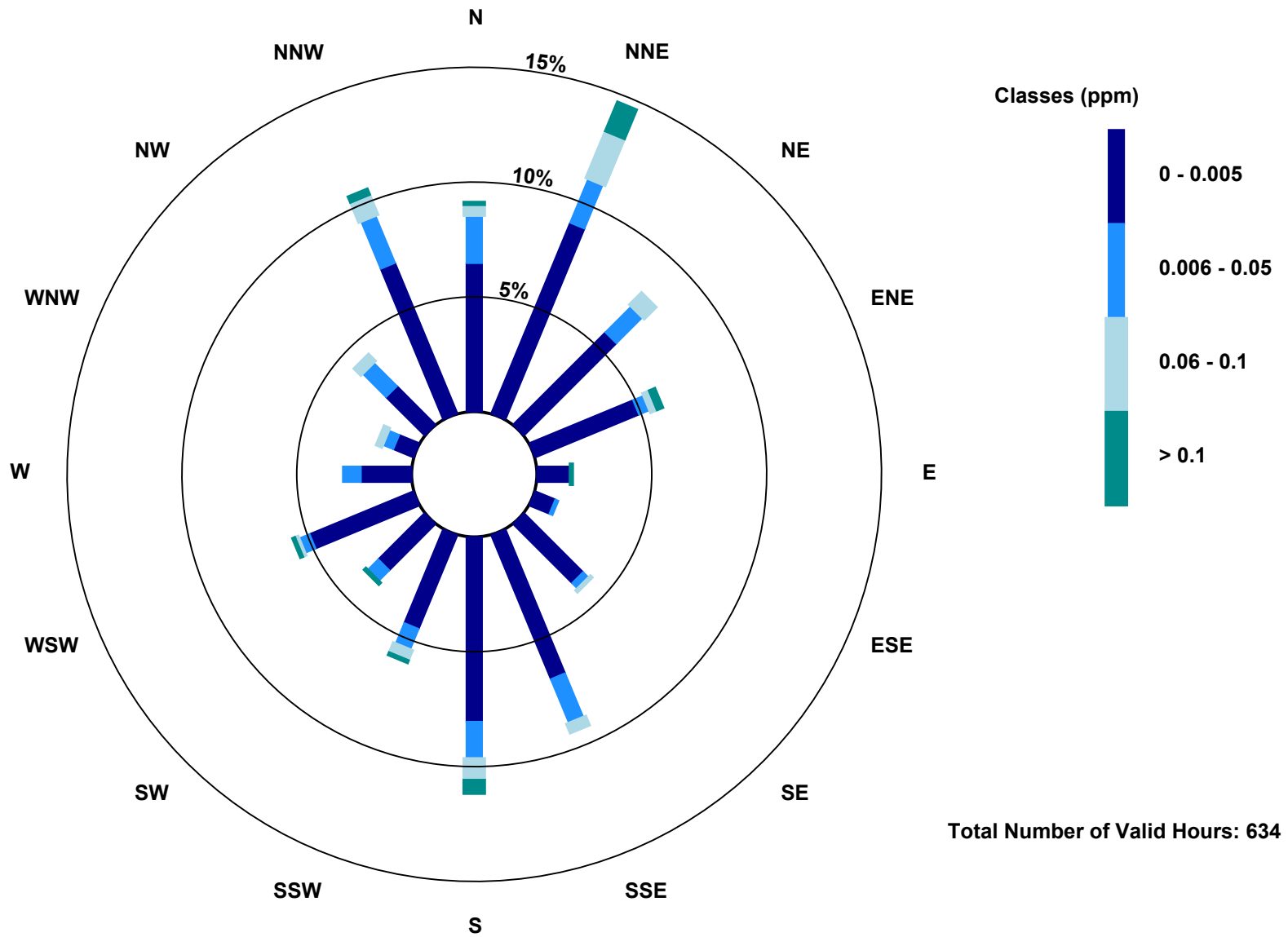
Total Number of Valid Hours: 634

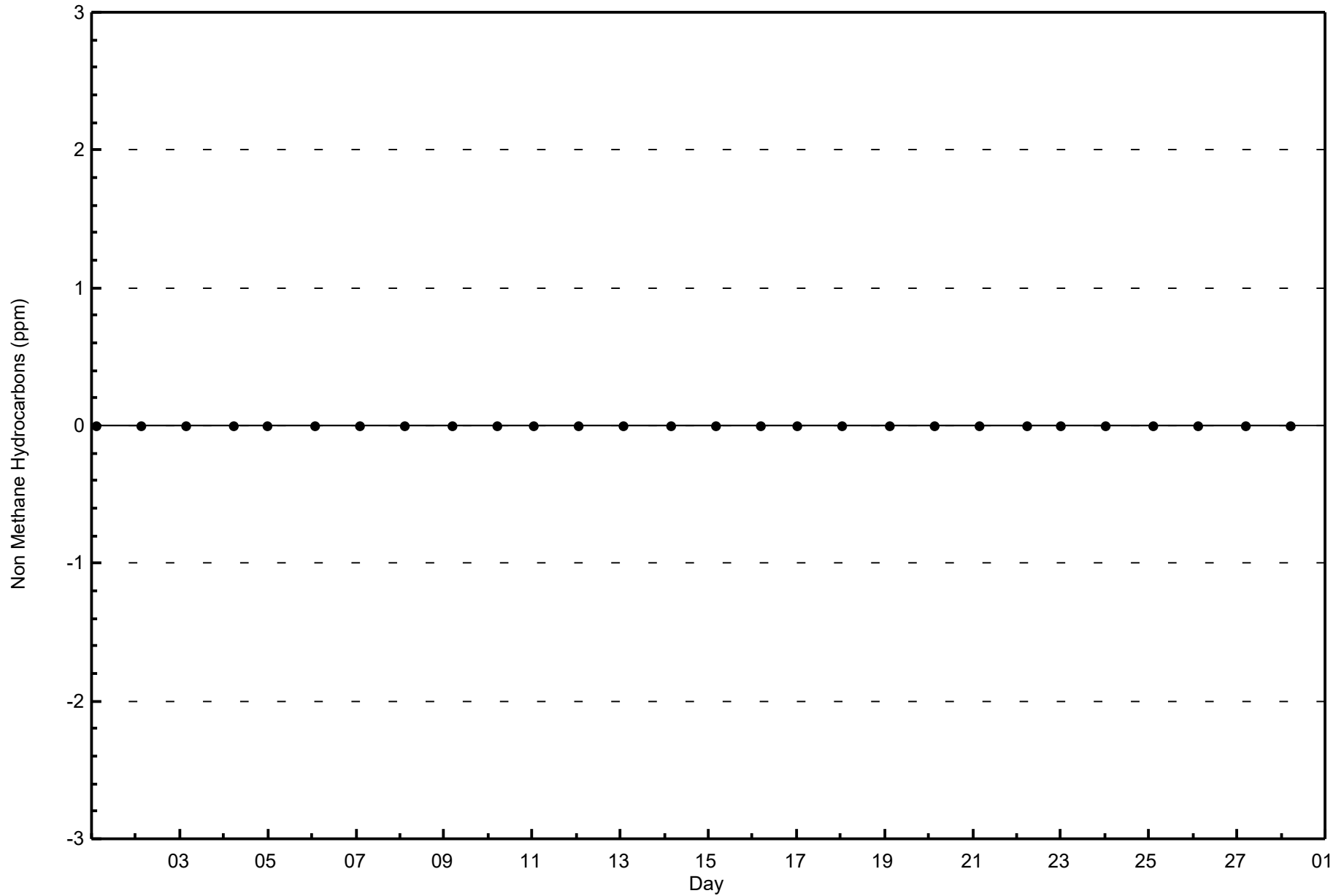
Total Number of Hours: 672

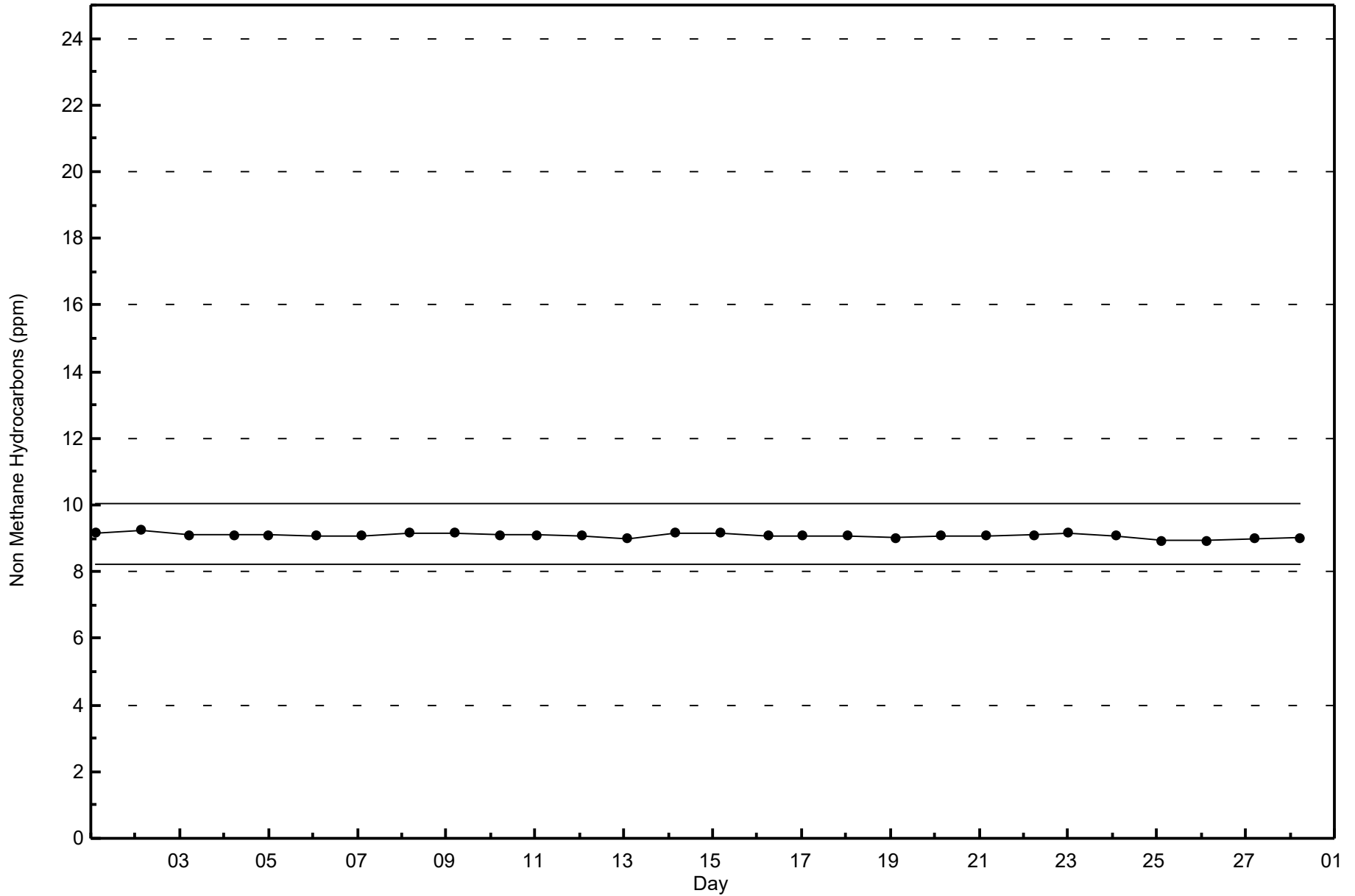


Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Non Methane Hydrocarbons (NMHC) - ppm  
Barge Landing

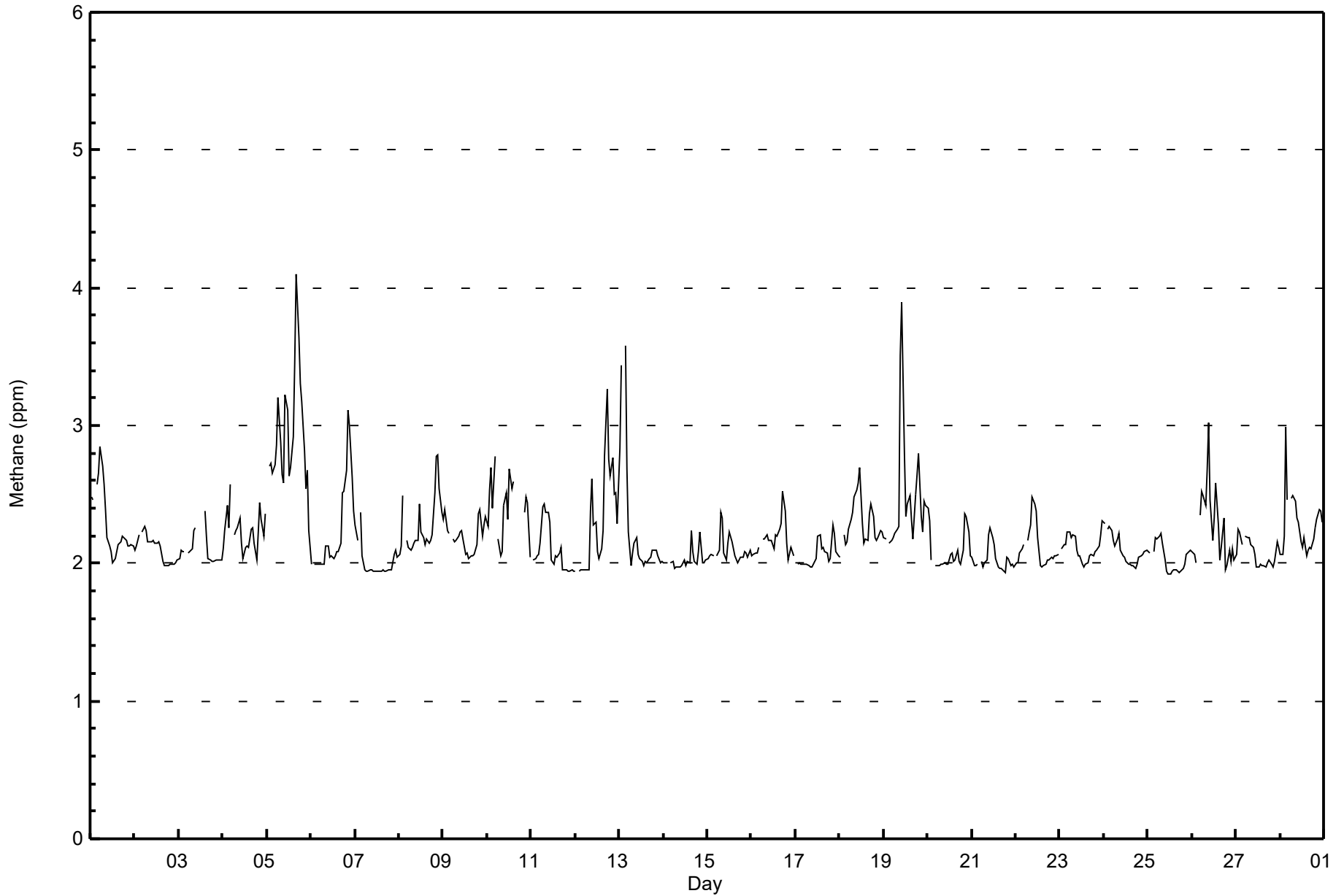








| Number of Exceedences (AAAQO):              |                               | 1-hr: 0  |                 | 24-hr: 0                  |     | Hours in Service:  |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     | 672 |     |                 |               |               |
|---|-------------------------------|--|-----------------|---------------------------|-----|--------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|-----|-----|-----|-----------------|---------------|---------------|
| Maximum Value: 4.1 ppm on Feb 5 17:00       |                               | Maximum Daily Average: 2.9 ppm on Feb 5  |                 | Hours of Data:            |     |                    |     |     |     |     |     |     |     |     |     |     |     |     |     | 635  |     |     |     |                 |               |               |
| Minimum Value: 1.9 ppm on Feb 25 13:00      |                               | Minimum Daily Average: 2.0 ppm on Feb 7  |                 | Hours of Missing Data:    |     |                    |     |     |     |     |     |     |     |     |     |     |     |     |     | 37   |     |     |     |                 |               |               |
| Maximum Diurnal Average: 2.3 ppm at hour 10 |                               | Minimum Diurnal Average: 2.1 ppm at hour 15  |                 | Hours of Calibration:     |     |                    |     |     |     |     |     |     |     |     |     |     |     |     |     | 32   |     |     |     |                 |               |               |
| Monthly Average: 2.20 ppm                   |                               | Percentiles: P <sub>1</sub> = 1.9 P <sub>10</sub> = 2.0 Q <sub>1</sub> = 2.0 Median = 2.1 Q <sub>3</sub> = 2.3 P <sub>90</sub> = 2.5 P <sub>99</sub> = 3.4 |                 | Percent Operational Time: |     |                    |     |     |     |     |     |     |     |     |     |     |     |     |     | 99.3 |     |     |     |                 |               |               |
| Day   | Hourly Period Ending At (MST) |  |                 |                           |     |                    |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |                 | Daily Average | Daily Maximum |
|   | 1                             | 2  | 3               | 4                         | 5   | 6                  | 7   | 8   | 9   | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19  | 20   | 21  | 22  | 23  | 24              |               |               |
| 1-Feb                                       | 2.5                           | 2.5  | Z               | 2.6                       | 2.7 | 2.8                | 2.7 | 2.6 | 2.4 | 2.2 | 2.1 | 2.1 | 2.0 | 2.0 | 2.1 | 2.1 | 2.2 | 2.2 | 2.2 | 2.2  | 2.1 | 2.1 | 2.1 | 2.1             | 2.3           | 2.8           |
| 2-Feb                                       | 2.1                           | 2.1  | 2.2             | Z                         | 2.2 | 2.3                | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.1 | 2.1 | 2.2 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0  | 2.0 | 2.0 | 2.0 | 2.0             | 2.1           | 2.3           |
| 3-Feb                                       | 2.0                           | 2.1  | 2.1             | 2.1                       | Z   | 2.1                | 2.1 | 2.1 | 2.2 | 2.3 | C   | C   | C   | C   | 2.4 | 2.2 | 2.0 | 2.0 | 2.0 | 2.0  | 2.0 | 2.0 | 2.0 | 2.0             | 2.1           | 2.4           |
| 4-Feb                                       | 2.1                           | 2.2  | 2.4             | 2.3                       | 2.6 | Z                  | 2.2 | 2.2 | 2.3 | 2.3 | 2.1 | 2.0 | 2.1 | 2.1 | 2.1 | 2.2 | 2.3 | 2.1 | 2.0 | 2.2  | 2.4 | 2.3 | 2.2 | 2.4             | 2.6           |               |
| 5-Feb                                       | Z                             | 2.7  | 2.7             | 2.7                       | 2.7 | 2.9                | 3.2 | 2.9 | 2.6 | 2.6 | 3.2 | 3.1 | 2.6 | 2.7 | 2.9 | 3.5 | 4.1 | 3.6 | 3.3 | 3.2  | 2.8 | 2.5 | 2.7 | 2.2             | 4.1           |               |
| 6-Feb                                       | 2.0                           | Z  | 2.0             | 2.0                       | 2.0 | 2.0                | 2.0 | 2.0 | 2.1 | 2.1 | 2.0 | 2.1 | 2.0 | 2.1 | 2.1 | 2.1 | 2.1 | 2.5 | 2.5 | 2.7  | 3.1 | 3.0 | 2.6 | 2.4             | 3.1           |               |
| 7-Feb                                       | 2.3                           | 2.2  | Z               | 2.4                       | 2.0 | 2.0                | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 2.0  | 1.9 | 2.1 | 2.1 | 2.0             | 2.4           |               |
| 8-Feb                                       | 2.1                           | 2.1  | 2.5             | Z                         | 2.2 | 2.1                | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | 2.4 | 2.2 | 2.2 | 2.1 | 2.2 | 2.1 | 2.2 | 2.2 | 2.2  | 2.5 | 2.8 | 2.8 | 2.5             | 2.4           | 2.8           |
| 9-Feb                                       | 2.3                           | 2.4  | 2.2             | 2.2                       | Z   | 2.2                | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.1 | 2.1 | 2.0 | 2.1 | 2.1 | 2.1 | 2.1 | 2.4  | 2.4 | 2.2 | 2.3 | 2.3             | 2.4           |               |
| 10-Feb                                      | 2.3                           | 2.5  | 2.7             | 2.4                       | 2.8 | Z                  | 2.2 | 2.1 | 2.1 | 2.4 | 2.5 | 2.3 | 2.7 | 2.5 | 2.6 | PF  | PF  | PF  | PF  | PF   | 2.4 | 2.5 | 2.4 | 2.0             | 2.8           |               |
| 11-Feb                                      | Z                             | 2.0  | 2.0             | 2.1                       | 2.1 | 2.1                | 2.4 | 2.4 | 2.4 | 2.4 | 2.3 | 2.0 | 2.0 | 2.1 | 2.0 | 2.1 | 2.1 | 2.0 | 1.9 | 2.0  | 1.9 | 1.9 | 1.9 | 1.9             | 2.4           |               |
| 12-Feb                                      | 1.9                           | Z  | 1.9             | 1.9                       | 1.9 | 2.0                | 2.0 | 2.0 | 2.4 | 2.6 | 2.3 | 2.3 | 2.1 | 2.0 | 2.1 | 2.2 | 2.8 | 3.3 | 2.8 | 2.6  | 2.8 | 2.5 | 2.5 | 2.3             | 3.3           |               |
| 13-Feb                                      | 2.8                           | 3.4  | Z               | 3.6                       | 2.7 | 2.2                | 2.0 | 2.1 | 2.1 | 2.2 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1 | 2.1  | 2.1 | 2.0 | 2.0 | 2.0             | 3.6           |               |
| 14-Feb                                      | 2.0                           | 2.0  | 2.0             | Z                         | 2.0 | 2.0                | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.2 | 2.1 | 2.0 | 2.0 | 2.1  | 2.2 | 2.0 | 2.0 | 2.0             | 2.2           |               |
| 15-Feb                                      | 2.0                           | 2.1  | 2.1             | 2.1                       | Z   | 2.1                | 2.1 | 2.4 | 2.3 | 2.1 | 2.0 | 2.1 | 2.2 | 2.2 | 2.1 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0  | 2.1 | 2.1 | 2.0 | 2.1             | 2.4           |               |
| 16-Feb                                      | 2.1                           | 2.1  | 2.1             | 2.1                       | 2.1 | Z                  | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.1 | 2.2 | 2.2 | 2.2 | 2.3 | 2.5 | 2.4 | 2.1  | 2.0 | 2.1 | 2.1 | 2.1             | 2.5           |               |
| 17-Feb                                      | Z                             | 2.0  | 2.0             | 2.0                       | 2.0 | 2.0                | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.2 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.0 | 2.0  | 2.3 | 2.2 | 2.1 | 2.1             | 2.3           |               |
| 18-Feb                                      | 2.0                           | Z  | 2.2             | 2.1                       | 2.2 | 2.2                | 2.3 | 2.4 | 2.5 | 2.5 | 2.6 | 2.7 | 2.3 | 2.1 | 2.2 | 2.2 | 2.4 | 2.4 | 2.3 | 2.2  | 2.2 | 2.2 | 2.2 | 2.2             | 2.7           |               |
| 19-Feb                                      | 2.2                           | 2.2  | Z               | 2.1                       | 2.2 | 2.2                | 2.2 | 2.2 | 2.3 | 3.5 | 3.9 | 2.8 | 2.3 | 2.4 | 2.5 | 2.3 | 2.2 | 2.5 | 2.6 | 2.8  | 2.3 | 2.2 | 2.4 | 2.4             | 3.9           |               |
| 20-Feb                                      | 2.4                           | 2.3  | 2.0             | Z                         | 2.0 | 2.0                | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1 | 2.1 | 2.0 | 2.0 | 2.1 | 2.0 | 2.0 | 2.1  | 2.4 | 2.3 | 2.2 | 2.1             | 2.4           |               |
| 21-Feb                                      | 2.0                           | 2.0  | 2.0             | 2.0                       | Z   | 2.0                | 2.0 | 2.0 | 2.0 | 2.2 | 2.3 | 2.2 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 1.9 | 1.9 | 2.0  | 2.0 | 2.0 | 2.0 | 2.0             | 2.3           |               |
| 22-Feb                                      | 2.0                           | 2.0  | 2.1             | 2.1                       | 2.1 | Z                  | 2.2 | 2.2 | 2.3 | 2.5 | 2.4 | 2.4 | 2.2 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0  | 2.0 | 2.1 | 2.1 | 2.1             | 2.5           |               |
| 23-Feb                                      | Z                             | 2.1  | 2.1             | 2.1                       | 2.2 | 2.2                | 2.2 | 2.2 | 2.2 | 2.1 | 2.1 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1 | 2.1 | 2.1 | 2.1  | 2.1 | 2.1 | 2.2 | 2.3             | 2.3           |               |
| 24-Feb                                      | 2.3                           | Z  | 2.2             | 2.3                       | 2.2 | 2.2                | 2.1 | 2.2 | 2.2 | 2.1 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0  | 2.1 | 2.1 | 2.1 | 2.1             | 2.3           |               |
| 25-Feb                                      | 2.1                           | 2.1  | Z               | 2.1                       | 2.2 | 2.2                | 2.2 | 2.2 | 2.1 | 2.0 | 1.9 | 1.9 | 1.9 | 1.9 | 2.0 | 2.0 | 1.9 | 1.9 | 2.0 | 2.0  | 2.0 | 2.1 | 2.1 | 2.1             | 2.2           |               |
| 26-Feb                                      | 2.1                           | 2.1  | 2.0             | Z                         | 2.3 | 2.5                | 2.5 | 2.4 | 2.7 | 3.0 | 2.5 | 2.2 | 2.3 | 2.6 | 2.3 | 2.0 | 2.1 | 2.3 | 1.9 | 2.0  | 2.1 | 2.0 | 2.1 | 2.0             | 3.0           |               |
| 27-Feb                                      | 2.1                           | 2.2  | 2.2             | 2.1                       | Z   | 2.2                | 2.2 | 2.2 | 2.1 | 2.1 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0  | 2.0 | 2.0 | 2.2 | 2.1             | 2.2           |               |
| 28-Feb                                      | 2.1                           | 2.1  | 2.2             | 3.0                       | 2.5 | Z                  | 2.5 | 2.5 | 2.5 | 2.3 | 2.3 | 2.2 | 2.1 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.3  | 2.3 | 2.4 | 2.4 | 2.3             | 3.0           |               |
|   |                               |  |                 |                           |     |                    |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     | Diurnal Average |               |               |
|   |                               |  |                 |                           |     |                    |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     | Diurnal Maximum |               |               |
|   |                               |  |                 |                           |     |                    |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     | 2.1             |               |               |
|   |                               |  |                 |                           |     |                    |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     | 2.4             |               |               |
| Z - zerospan                                |                               |  | C - Calibration |                           |     | PF - Power Failure |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |                 |               |               |







**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Methane (CH<sub>4</sub>) - ppm  
Barge Landing - February 2023**

| <b>Concentration Ranges (ppm)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 2.0                           | 206                    | 32.44    | 32.44               |
| 2.1 - 3.0                         | 415                    | 65.35    | 97.80               |
| 3.1 - 10.0                        | 14                     | 2.20     | 100.00              |
| > 10.0                            | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 635

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Methane (CH<sub>4</sub>) - ppm  
Barge Landing - February 2023**

| Concentration<br>Ranges (ppm) | Wind Direction |     |    |     |    |     |    |     |    |     |    |     |    |     |    |     | Totals |
|-------------------------------|----------------|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|--------|
|                               | N              | NNE | NE | ENE | E  | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |        |
| 0 - 2.0                       | 13             | 30  | 29 | 27  | 5  | 4   | 7  | 21  | 17 | 6   | 5  | 26  | 10 | 1   | 1  | 4   | 206    |
| 2.1 - 3.0                     | 45             | 63  | 22 | 10  | 5  | 3   | 18 | 37  | 52 | 30  | 17 | 9   | 9  | 10  | 24 | 60  | 414    |
| 3.1 - 10.0                    | 0              | 0   | 0  | 1   | 0  | 0   | 1  | 1   | 2  | 2   | 1  | 1   | 0  | 0   | 2  | 3   | 14     |
| > 10.0                        | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| <b>Totals</b>                 | 58             | 93  | 51 | 38  | 10 | 7   | 26 | 59  | 71 | 38  | 23 | 36  | 19 | 11  | 27 | 67  | 634    |

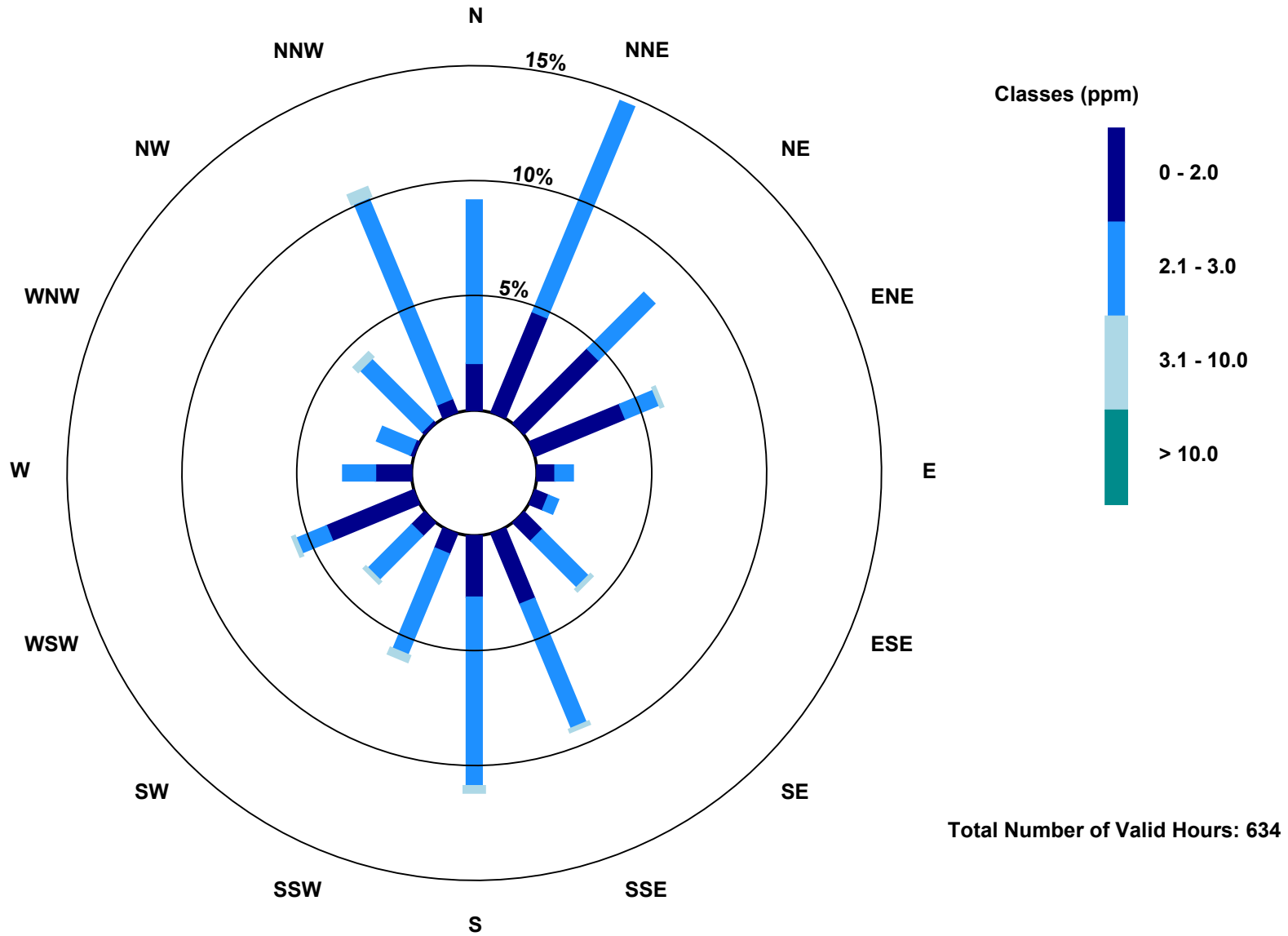
Total Number of Valid Hours: 634

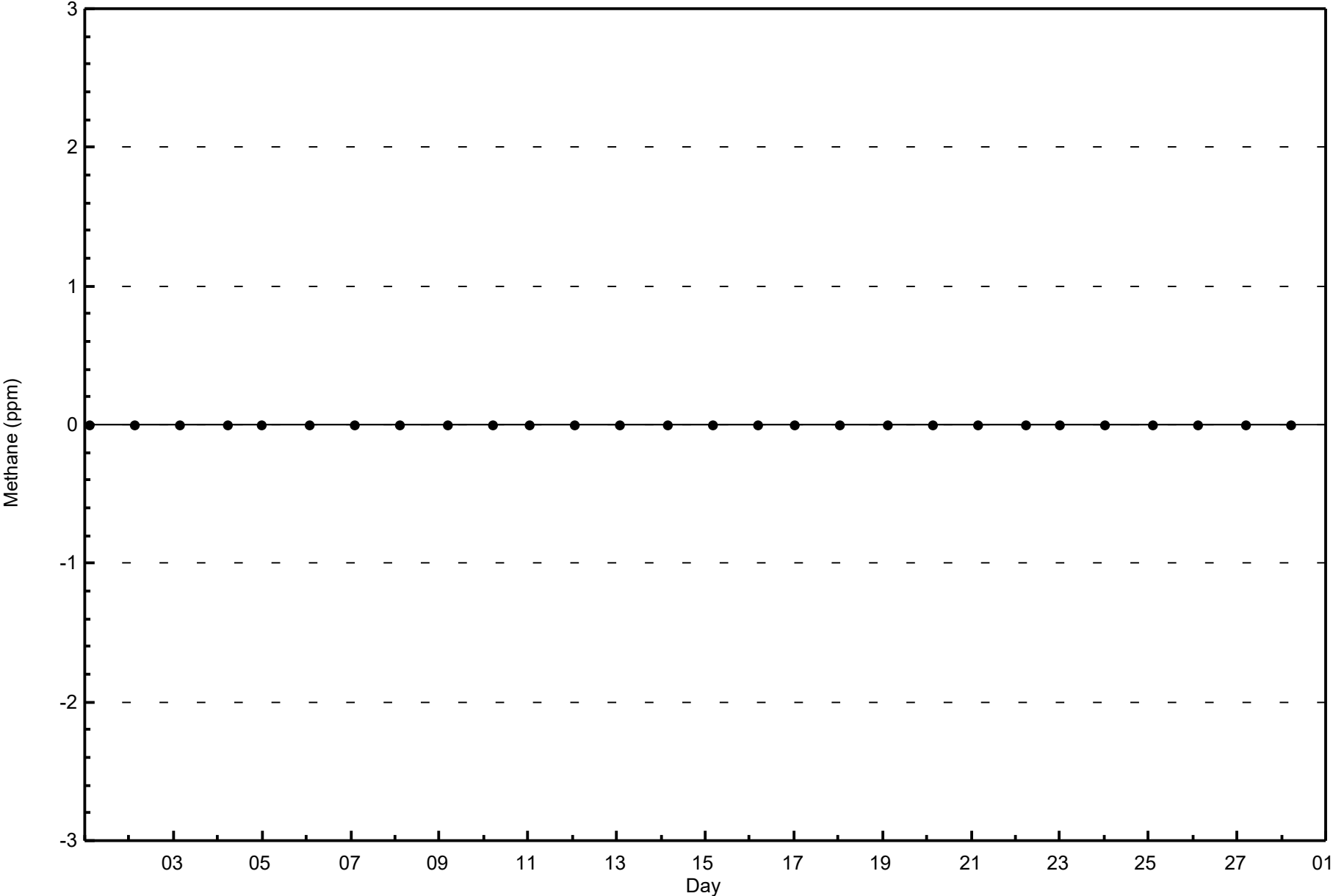
Total Number of Hours: 672

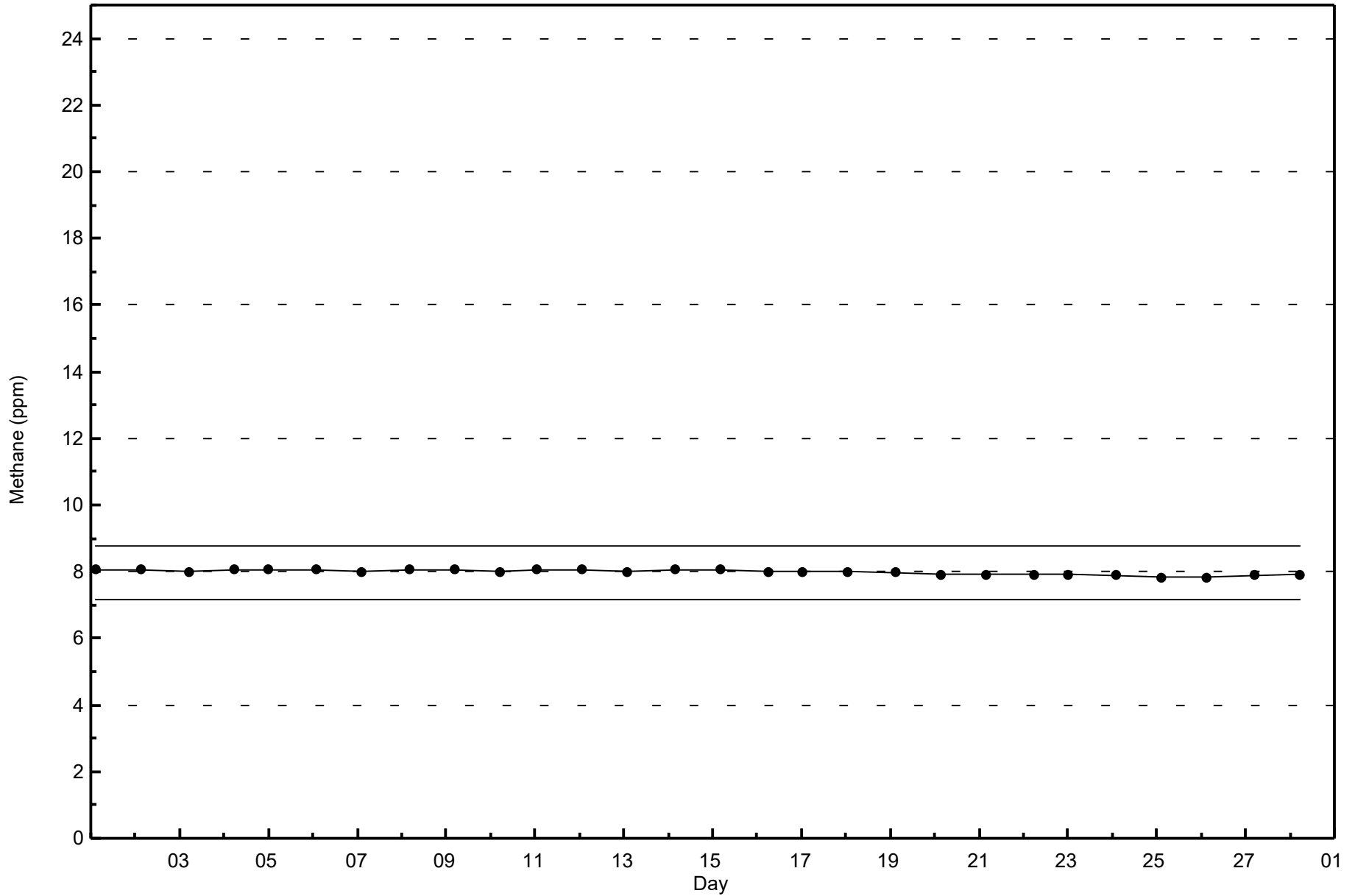


Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Methane (CH<sub>4</sub>) - ppm  
Barge Landing









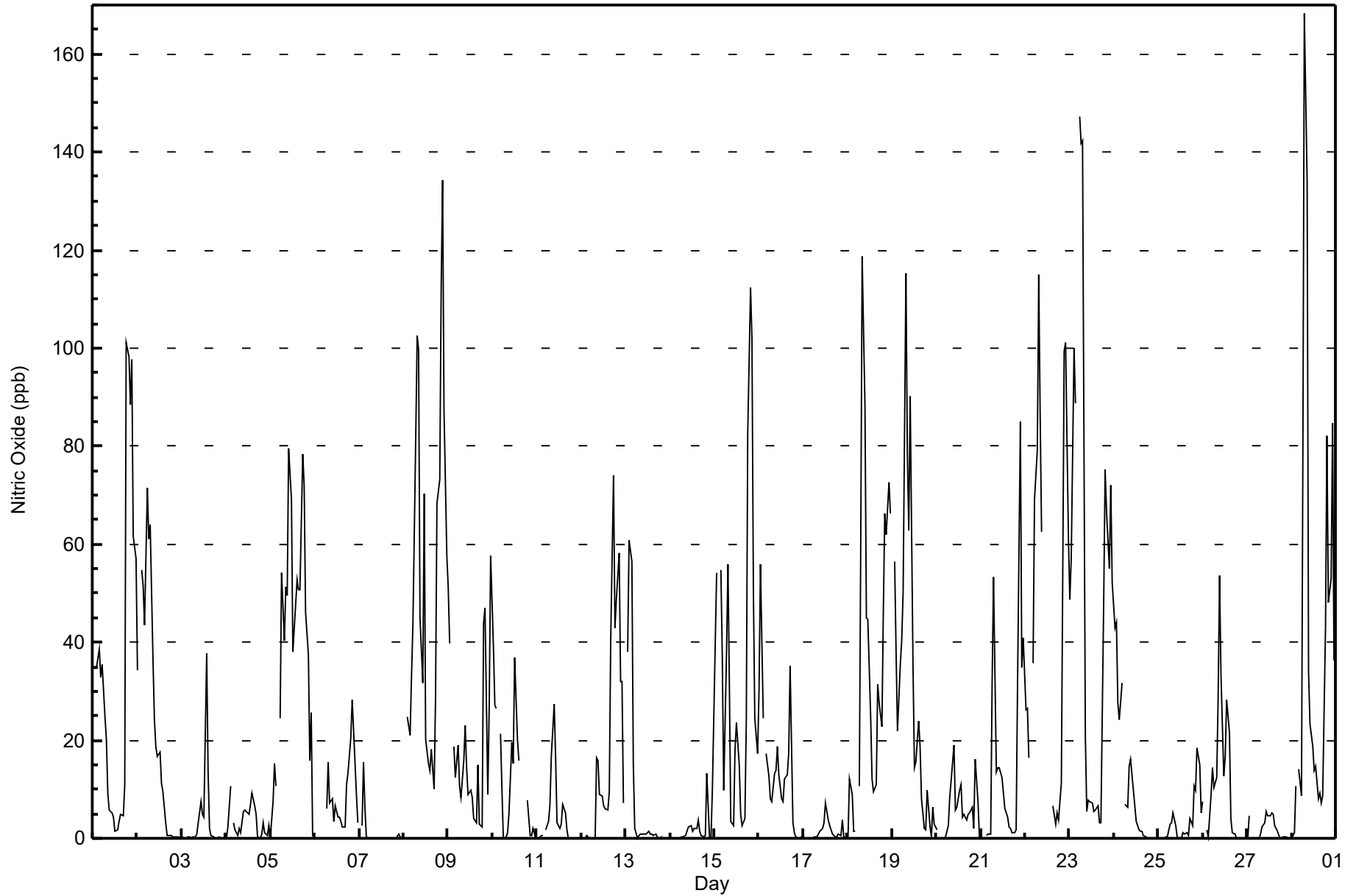
Wood Buffalo Environmental Association

Summary of Hour Averages

Nitric Oxide (NO) - ppb

Barge Landing - February 2023

| Maximum Value: 168.3 ppb on Feb 28 08:00    |                               | Maximum Daily Average: 51.9 ppb on Feb 8   |      | Hours in Service: 672          |      |                    |       |       |       |       |      |      |      |      |      |      |      |      |       |       |       |       |       |       |               |                 |  |
|---|-------------------------------|--|------|--------------------------------|------|--------------------|-------|-------|-------|-------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|-------|---------------|-----------------|--|
| Minimum Value: 0.0 ppb on Feb 6 01:00       |                               | Minimum Daily Average: 1.1 ppb on Feb 7  |      | Hours of Data: 635             |      |                    |       |       |       |       |      |      |      |      |      |      |      |      |       |       |       |       |       |       |               |                 |  |
| Maximum Diurnal Average: 36.1 ppb at hour 8 |                               | Minimum Diurnal Average: 7.3 ppb at hour 16  |      | Hours of Missing Data: 37      |      |                    |       |       |       |       |      |      |      |      |      |      |      |      |       |       |       |       |       |       |               |                 |  |
| Monthly Average: 18.85 ppb                  |                               | Percentiles: P <sub>1</sub> = 0.0 P <sub>10</sub> = 0.1 Q <sub>1</sub> = 0.6 Median = 6.5 Q <sub>3</sub> = 24.9 P <sub>90</sub> = 56.9 P <sub>99</sub> = 117.5 |      | Hours of Calibration: 33       |      |                    |       |       |       |       |      |      |      |      |      |      |      |      |       |       |       |       |       |       |               |                 |  |
|   |                               |  |      | Percent Operational Time: 99.4 |      |                    |       |       |       |       |      |      |      |      |      |      |      |      |       |       |       |       |       |       |               |                 |  |
| Day   | Hourly Period Ending At (MST) |  |      |                                |      |                    |       |       |       |       |      |      |      |      |      |      |      |      |       |       |       |       |       |       | Daily Average | Daily Maximum   |  |
|   | 1                             | 2  | 3    | 4                              | 5    | 6                  | 7     | 8     | 9     | 10    | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19    | 20    | 21    | 22    | 23    | 24    |               |                 |  |
| 1-Feb                                       | Z                             | 34.7   | 34.8 | 38.6                           | 32.8 | 35.4               | 24.9  | 20.0  | 9.2   | 5.7   | 5.3  | 4.4  | 1.4  | 1.8  | 3.5  | 4.9  | 4.7  | 11.0 | 101.3 | 98.1  | 88.4  | 97.7  | 61.6  | 57.2  | 33.8          | 101.3           |  |
| 2-Feb                                       | 34.1                          | Z  | 54.7 | 51.5                           | 43.6 | 71.4               | 61.0  | 64.1  | 36.3  | 24.1  | 18.7 | 16.6 | 17.5 | 11.3 | 9.5  | 3.3  | 0.6  | 0.4  | 0.5   | 0.3   | 0.3   | 0.2   | 0.2   | 0.0   | 22.6          | 71.4            |  |
| 3-Feb                                       | 0.0                           | 0.2  | Z    | 0.3                            | 0.2  | 0.1                | 0.4   | 0.3   | 0.8   | 3.2   | 7.4  | 4.9  | 4.3  | 37.6 | 13.6 | 1.9  | 0.6  | 0.2  | 0.1   | 0.1   | 0.2   | 0.0   | 0.0   | 0.0   | 3.3           | 37.6            |  |
| 4-Feb                                       | 0.0                           | 2.2  | 10.6 | Z                              | 3.2  | 1.7                | 0.5   | 2.1   | 1.2   | 5.5   | 5.7  | 5.6  | 5.0  | 7.0  | 9.2  | 6.8  | 5.0  | 0.4  | 0.1   | 0.8   | 3.1   | 1.2   | 0.6   | 2.7   | 3.5           | 10.6            |  |
| 5-Feb                                       | 0.1                           | 7.6  | 15.3 | 10.7                           | Z    | 24.4               | 54.1  | 40.4  | 51.3  | 49.6  | 79.6 | 69.1 | 38.1 | 43.0 | 52.7 | 50.6 | 50.7 | 78.3 | 72.0  | 46.0  | 37.5  | 15.7  | 25.5  | 0.6   | 39.7          | 79.6            |  |
| 6-Feb                                       | 0.0                           | 0.0  | 0.0  | 0.0                            | 0.0  | Z                  | 6.1   | 15.5  | 7.1   | 8.1   | 3.5  | 6.7  | 4.4  | 4.3  | 3.5  | 2.3  | 2.3  | 11.0 | 13.2  | 20.4  | 28.4  | 22.0  | 9.0   | 3.3   | 7.4           | 28.4            |  |
| 7-Feb                                       | Z                             | 2.5  | 15.7 | 6.4                            | 0.2  | 0.0                | 0.0   | 0.0   | 0.0   | 0.0   | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0   | 0.0   | 0.0   | 0.9   | 0.2   | 0.1   | 1.1           | 15.7            |  |
| 8-Feb                                       | 0.1                           | Z  | 24.8 | 21.0                           | 33.1 | 43.9               | 82.2  | 102.6 | 99.8  | 45.0  | 31.6 | 70.4 | 20.2 | 15.4 | 13.9 | 18.2 | 10.1 | 28.5 | 68.2  | 73.3  | 112.4 | 134.2 | 87.2  | 57.7  | 51.9          | 134.2           |  |
| 9-Feb                                       | 50.9                          | 39.9   | Z    | 18.7                           | 12.5 | 19.1               | 10.6  | 8.4   | 15.8  | 23.1  | 14.3 | 8.9  | 9.7  | 8.4  | 4.1  | 3.1  | 15.0 | 3.0  | 2.4   | 43.8  | 47.1  | 8.8   | 26.7  | 57.6  | 19.6          | 57.6            |  |
| 10-Feb                                      | 38.9                          | 27.0   | 26.4 | Z                              | 21.3 | 10.2               | 0.1   | 0.1   | 1.2   | 5.0   | 19.5 | 15.2 | 36.8 | 20.0 | 15.8 | PF   | PF   | PF   | PF    | 7.6   | 0.5   | 0.5   | 2.0   | 0.1   | 13.1          | 38.9            |  |
| 11-Feb                                      | 0.0                           | 0.1  | 0.7  | 0.5                            | Z    | 1.8                | 3.6   | 6.8   | 16.9  | 27.5  | 16.3 | 3.1  | 1.9  | 2.7  | 6.8  | 5.2  | 1.9  | 0.0  | 0.0   | 0.0   | 0.0   | 0.1   | 0.0   | 0.0   | 4.2           | 27.5            |  |
| 12-Feb                                      | 0.0                           | 0.0  | 0.0  | 0.5                            | 0.0  | Z                  | 0.1   | 0.0   | 16.5  | 15.7  | 9.1  | 8.6  | 6.7  | 6.1  | 5.9  | 9.4  | 40.3 | 74.0 | 43.1  | 48.6  | 58.2  | 31.9  | 32.1  | 7.1   | 18.0          | 74.0            |  |
| 13-Feb                                      | Z                             | 38.1   | 60.8 | 56.6                           | 15.3 | 2.1                | 0.0   | 0.6   | 0.8   | 1.0   | 0.9  | 1.0  | 1.5  | 1.0  | 0.9  | 0.7  | 0.9  | 0.2  | 0.1   | 0.2   | 0.1   | 0.1   | 0.0   | 0.0   | 7.9           | 60.8            |  |
| 14-Feb                                      | 0.0                           | Z  | 0.0  | 0.1                            | 0.0  | 0.1                | 0.2   | 0.2   | 0.5   | 1.3   | 2.2  | 2.6  | 1.6  | 2.1  | 1.9  | 3.8  | 1.4  | 0.5  | 0.3   | 0.5   | 13.2  | 0.1   | 0.1   | 10.5  | 1.9           | 13.2            |  |
| 15-Feb                                      | 39.9                          | 54.1   | Z    | 54.9                           | 36.9 | 9.7                | 38.0  | 55.8  | 31.5  | 3.6   | 2.7  | 18.2 | 23.6 | 15.0 | 4.8  | 2.7  | 4.0  | 24.1 | 82.6  | 112.4 | 101.6 | 50.7  | 24.6  | 17.3  | 35.2          | 112.4           |  |
| 16-Feb                                      | 30.2                          | 55.9   | 24.6 | Z                              | 17.2 | 12.7               | 7.9   | 7.5   | 13.3  | 13.8  | 18.6 | 12.8 | 8.1  | 7.5  | 12.1 | 13.0 | 17.1 | 35.1 | 3.1   | 1.3   | 0.3   | 0.1   | 0.1   | 0.3   | 13.6          | 55.9            |  |
| 17-Feb                                      | 0.1                           | 0.0  | 0.0  | 0.1                            | Z    | 0.1                | 0.2   | 0.3   | 0.7   | 1.3   | 2.0  | 3.2  | 7.2  | 3.6  | 2.7  | 1.7  | 0.9  | 0.3  | 0.2   | 0.7   | 0.5   | 3.7   | 0.4   | 0.1   | 1.3           | 7.2             |  |
| 18-Feb                                      | 0.4                           | 12.1   | 8.8  | 1.5                            | 1.3  | Z                  | 10.5  | 60.3  | 118.6 | 87.9  | 44.8 | 44.5 | 24.9 | 12.1 | 9.5  | 10.8 | 31.4 | 27.7 | 22.9  | 46.3  | 66.2  | 62.1  | 72.7  | 66.4  | 36.7          | 118.6           |  |
| 19-Feb                                      | Z                             | 56.6   | 38.4 | 22.0                           | 35.4 | 40.3               | 50.3  | 115.2 | 78.3  | 63.0  | 90.2 | 35.2 | 14.5 | 15.6 | 24.1 | 18.6 | 8.1  | 2.1  | 1.9   | 9.8   | 2.5   | 0.4   | 6.5   | 2.8   | 31.8          | 115.2           |  |
| 20-Feb                                      | 1.8                           | Z  | 0.0  | 0.1                            | 0.0  | 0.4                | 2.7   | 8.4   | 11.7  | 19.1  | 5.7  | 6.3  | 9.9  | 10.9 | 4.3  | 4.9  | 3.8  | 4.8  | 5.2   | 6.5   | 2.0   | 16.2  | 7.4   | 0.2   | 5.8           | 19.1            |  |
| 21-Feb                                      | 0.1                           | 0.1  | Z    | 0.4                            | 0.8  | 0.9                | 31.8  | 53.2  | 13.5  | 14.5  | 14.4 | 12.5 | 9.1  | 6.1  | 4.2  | 2.2  | 2.0  | 1.2  | 1.1   | 1.7   | 31.3  | 84.9  | 34.8  | 40.9  | 15.7          | 84.9            |  |
| 22-Feb                                      | 26.3                          | 26.6   | 16.5 | Z                              | 35.8 | 69.1               | 79.1  | 114.8 | 86.6  | 62.6  | C    | C    | C    | C    | C    | 6.6  | 2.8  | 5.1  | 3.8   | 11.3  | 54.0  | 99.4  | 101.3 | 61.5  | 47.9          | 114.8           |  |
| 23-Feb                                      | 48.7                          | 57.1   | 99.9 | 88.6                           | Z    | 147.1              | 141.7 | 142.3 | 20.9  | 5.4   | 7.7  | 7.5  | 7.3  | 5.5  | 5.9  | 6.8  | 3.3  | 3.1  | 48.7  | 75.3  | 66.5  | 54.9  | 71.9  | 52.3  | 50.8          | 147.1           |  |
| 24-Feb                                      | 43.0                          | 44.0   | 27.6 | 24.3                           | 31.7 | Z                  | 7.0   | 6.4   | 14.6  | 16.2  | 9.7  | 6.6  | 3.3  | 1.7  | 1.3  | 1.3  | 0.6  | 0.4  | 0.1   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 10.4          | 44.0            |  |
| 25-Feb                                      | Z                             | 0.0  | 0.1  | 0.1                            | 0.2  | 0.4                | 2.9   | 3.3   | 5.2   | 2.7   | 0.3  | 0.1  | 0.1  | 1.2  | 1.0  | 1.2  | 0.7  | 4.0  | 2.5   | 10.6  | 9.9   | 18.6  | 15.0  | 5.3   | 3.7           | 18.6            |  |
| 26-Feb                                      | 7.6                           | Z  | 1.8  | 0.4                            | 9.0  | 14.4               | 10.5  | 12.5  | 28.9  | 53.5  | 33.4 | 12.6 | 16.6 | 28.1 | 21.7 | 3.9  | 1.3  | 0.9  | 0.0   | 0.1   | 0.1   | 0.1   | 0.1   | 0.1   | 11.2          | 53.5            |  |
| 27-Feb                                      | 0.1                           | 4.6  | Z    | 0.0                            | 0.0  | 0.0                | 0.0   | 0.7   | 2.3   | 3.3   | 5.4  | 4.5  | 4.5  | 5.2  | 4.9  | 2.7  | 1.3  | 0.5  | 0.1   | 0.4   | 0.4   | 0.2   | 0.0   | 0.0   | 1.8           | 5.4             |  |
| 28-Feb                                      | 0.1                           | 1.1  | 10.7 | Z                              | 14.1 | 8.6                | 80.2  | 168.3 | 134.0 | 34.1  | 23.3 | 18.8 | 13.8 | 14.7 | 8.2  | 9.2  | 7.1  | 8.7  | 42.9  | 82.2  | 48.2  | 53.1  | 84.8  | 36.3  | 39.2          | 168.3           |  |
|   |                               | 14.0   | 20.2 | 20.5                           | 17.3 | 14.4               | 21.4  | 25.2  | 36.1  | 29.2  | 21.3 | 17.5 | 14.8 | 10.8 | 10.7 | 9.1  | 7.3  | 8.1  | 12.1  | 19.1  | 24.9  | 27.6  | 27.1  | 23.8  | 17.2          | Diurnal Average |  |
|   |                               | 50.9   | 57.1 | 99.9                           | 88.6 | 43.6               | 147.1 | 141.7 | 168.3 | 134.0 | 87.9 | 90.2 | 70.4 | 38.1 | 43.0 | 52.7 | 50.6 | 50.7 | 78.3  | 101.3 | 112.4 | 112.4 | 134.2 | 101.3 | 66.4          | Diurnal Maximum |  |
| Z - zerspan                                 |                               | C - Calibration  |      |                                |      | PF - Power Failure |       |       |       |       |      |      |      |      |      |      |      |      |       |       |       |       |       |       |               |                 |  |





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Nitric Oxide (NO) - ppb  
Barge Landing - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 20                            | 457                    | 71.97    | 71.97               |
| 21 - 40                           | 72                     | 11.34    | 83.31               |
| 41 - 80                           | 75                     | 11.81    | 95.12               |
| 81 - 159                          | 30                     | 4.72     | 99.84               |
| > 159                             | 1                      | 0.16     | 100.00              |

Total Number of Valid Hours: 635

Total Number of Hours: 672





**Wood Buffalo Environmental Association  
Frequency Distribution**

**Nitric Oxide (NO) - ppb  
Barge Landing - February 2023**

| <b>Concentration<br/>Ranges (ppb)</b> | <b>Wind Direction</b> |     |    |     |    |     |    |     |    |     |    |     |    |     |    |     | <b>Totals</b> |
|---------------------------------------|-----------------------|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|---------------|
|                                       | N                     | NNE | NE | ENE | E  | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |               |
| 0 - 20                                | 47                    | 82  | 45 | 31  | 7  | 4   | 12 | 37  | 40 | 27  | 15 | 28  | 16 | 6   | 15 | 45  | 457           |
| 21 - 40                               | 7                     | 6   | 4  | 2   | 0  | 2   | 2  | 8   | 16 | 1   | 3  | 2   | 3  | 1   | 6  | 9   | 72            |
| 11 - 80                               | 4                     | 2   | 2  | 3   | 1  | 1   | 8  | 14  | 12 | 6   | 3  | 2   | 1  | 1   | 2  | 13  | 75            |
| 81 - 159                              | 0                     | 1   | 1  | 2   | 2  | 0   | 3  | 3   | 5  | 0   | 1  | 2   | 1  | 1   | 3  | 4   | 29            |
| > 159                                 | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 1  | 0   | 1             |
| <b>Totals</b>                         | 58                    | 91  | 52 | 38  | 10 | 7   | 25 | 62  | 73 | 34  | 22 | 34  | 21 | 9   | 27 | 71  | 634           |

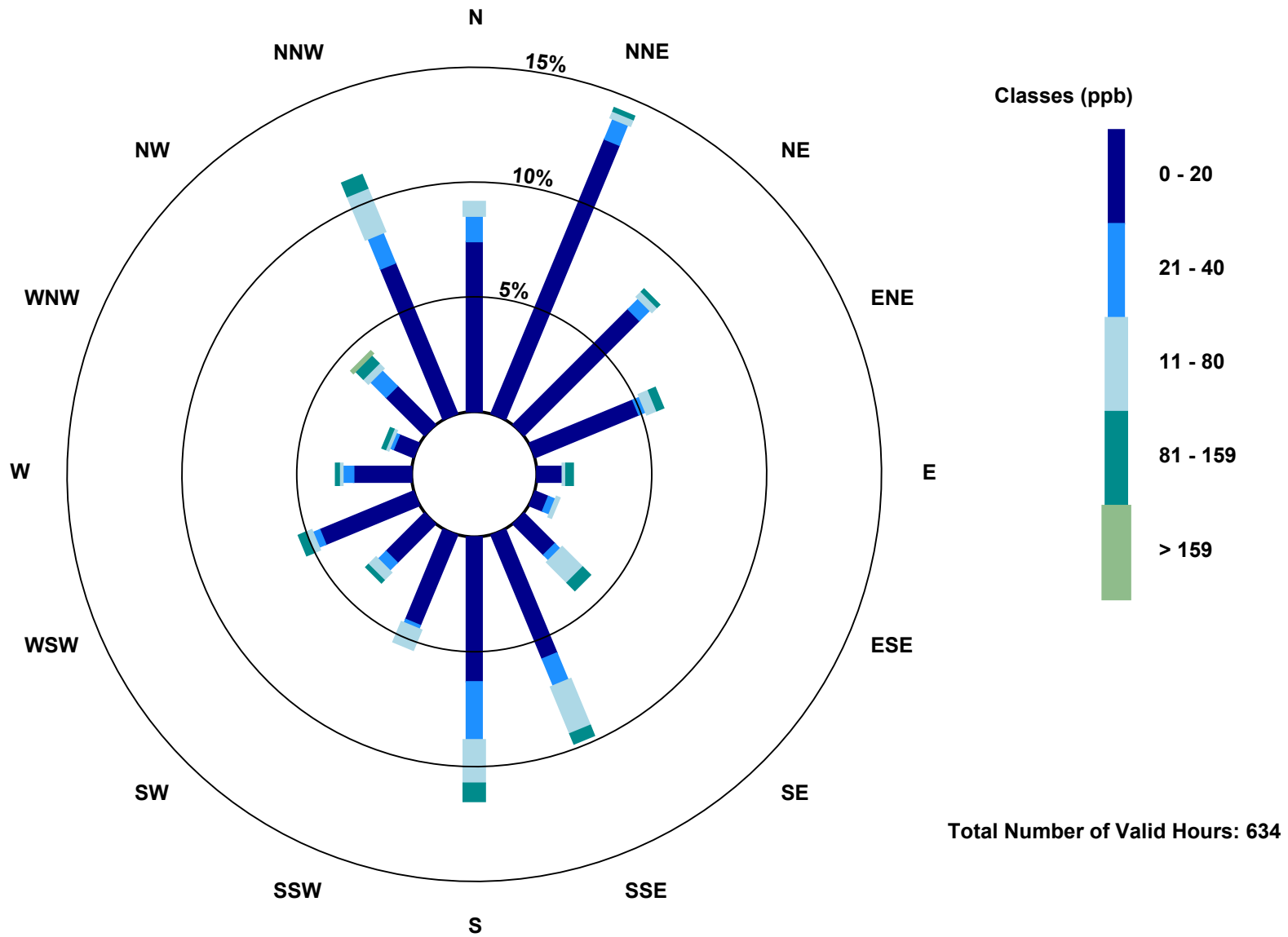
Total Number of Valid Hours: 634

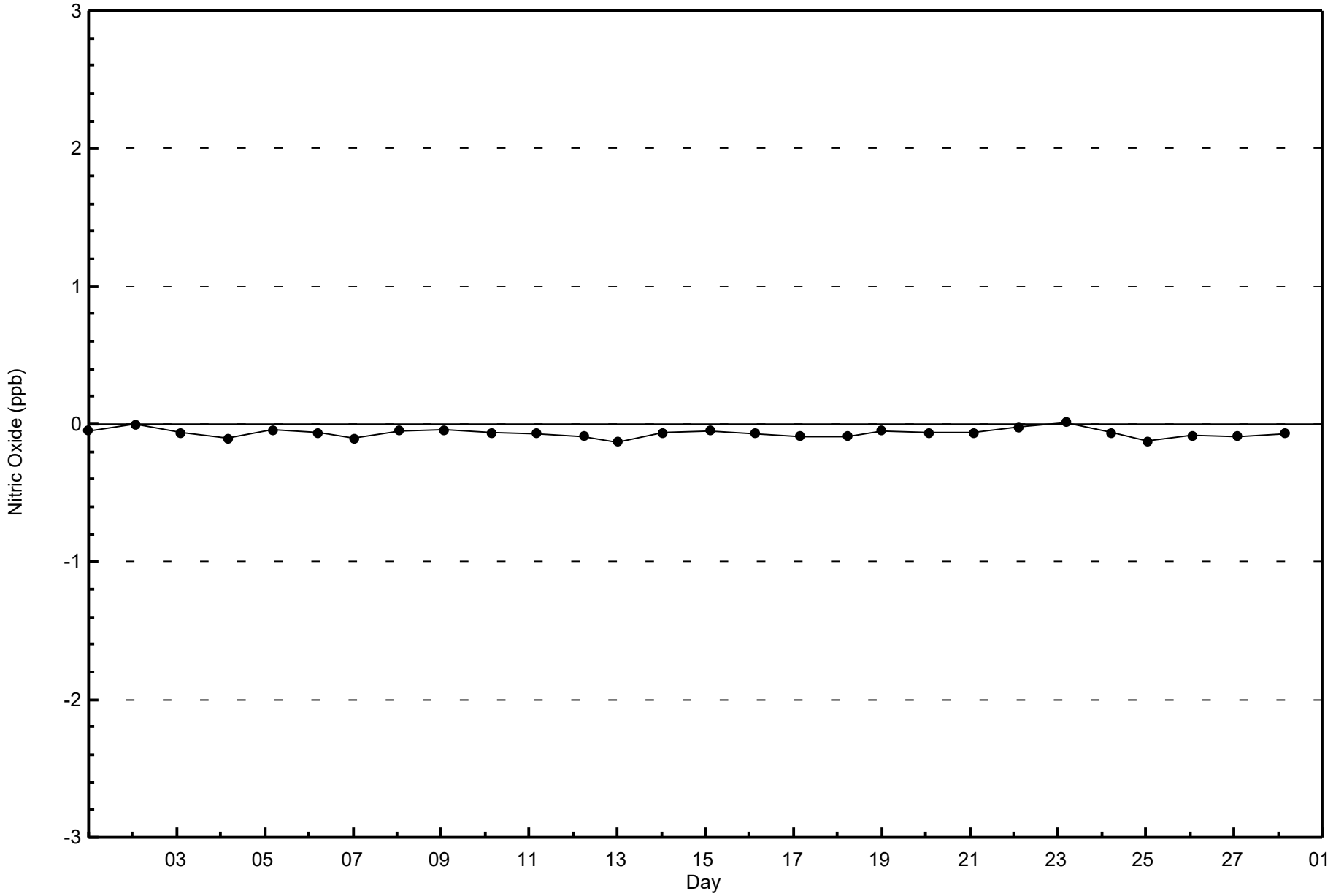
Total Number of Hours: 672

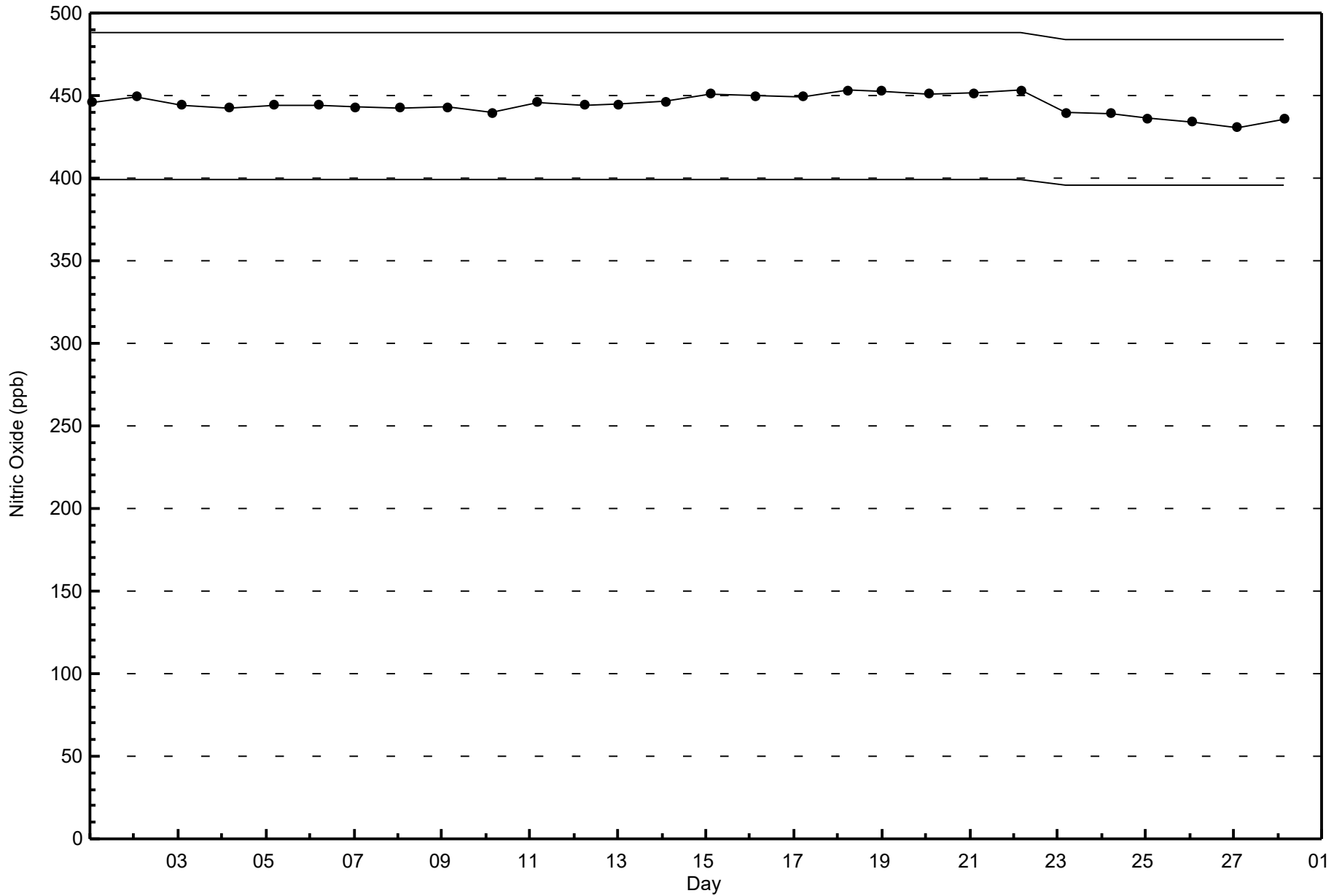


Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Nitric Oxide (NO) - ppb  
Barge Landing









**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

**Nitrogen Dioxide (NO<sub>2</sub>) - ppb**  
**Barge Landing - February 2023**

|  |  |          |                           |      |
|--|--|----------|---------------------------|------|
| Number of Exceedences (AAAQO):               | 1-hr: 0  | 24-hr: 0 | Hours in Service:         | 672  |
| Maximum Value: 52.9 ppb on Feb 1 20:00       | Maximum Daily Average: 37.8 ppb on Feb 22  |          | Hours of Data:            | 635  |
| Minimum Value: 0.3 ppb on Feb 7 17:00        | Minimum Daily Average: 5.8 ppb on Feb 7  |          | Hours of Missing Data:    | 37   |
| Maximum Diurnal Average: 26.3 ppb at hour 21 | Minimum Diurnal Average: 12.3 ppb at hour 13   |          | Hours of Calibration:     | 33   |
| Monthly Average: 21.06 ppb                   | Percentiles: P <sub>1</sub> = 0.4 P <sub>10</sub> = 4.9 Q <sub>1</sub> = 9.8 Median = 20.1 Q <sub>3</sub> = 31.6 P <sub>90</sub> = 38.2 P <sub>99</sub> = 48.1 |          | Percent Operational Time: | 99.4 |

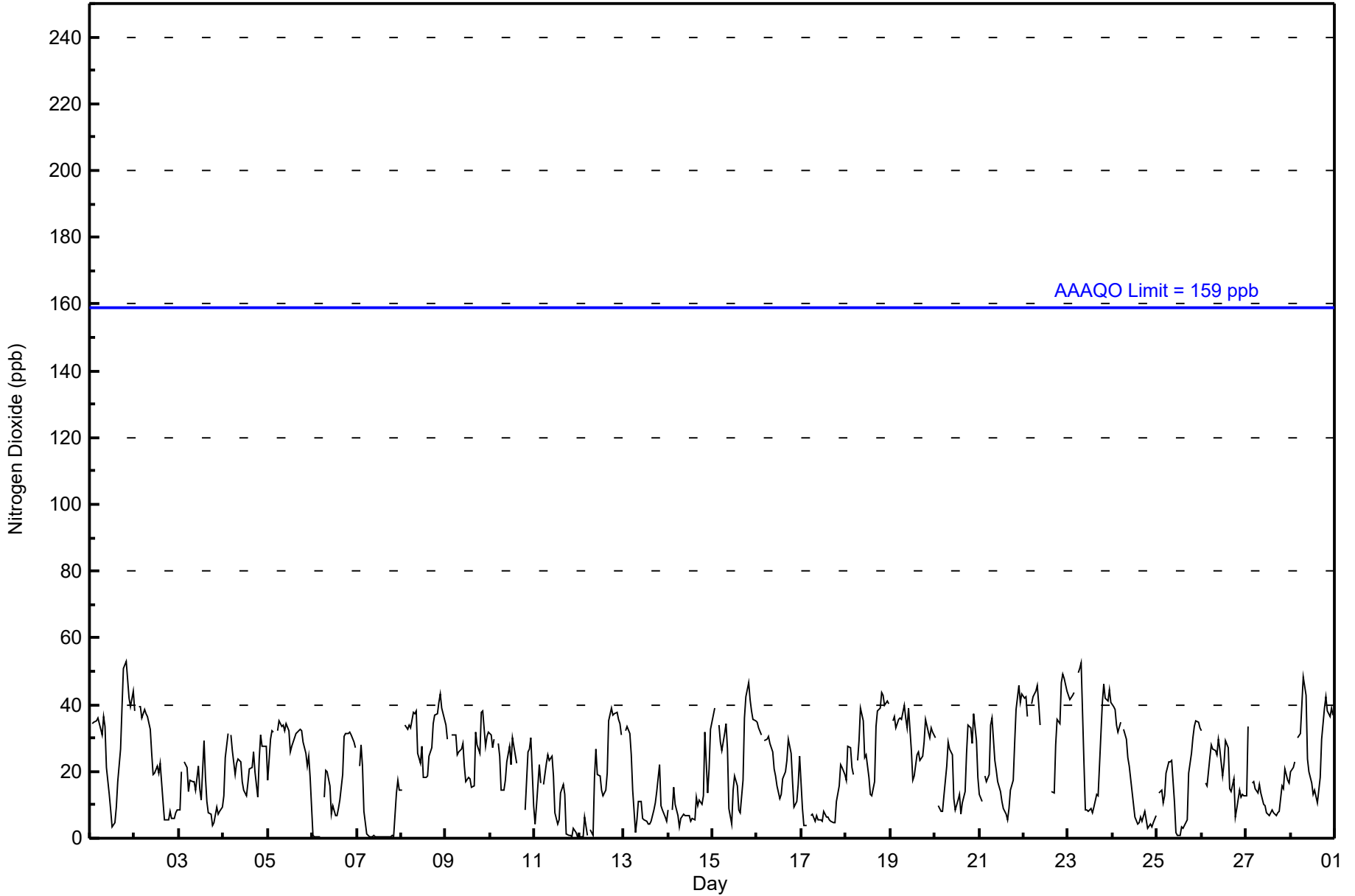
| Day    | Hourly Period Ending At (MST) |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Daily Average | Daily Maximum |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
|--------|-------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|---------------|---------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----------------|--|
|        | 1                             | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20   | 21   | 22   | 23   | 24   |               |               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 1-Feb  | Z                             | 34.4 | 34.9 | 35.1 | 36.1 | 34.2 | 31.1 | 36.4 | 33.5 | 21.1 | 13.0 | 8.6  | 3.2  | 4.7  | 9.4  | 16.9 | 26.8 | 38.9 | 51.0 | 52.9 | 47.5 | 41.8 | 39.6 | 44.0 | 30.2          | 52.9          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 2-Feb  | 38.2                          | Z    | 39.5 | 39.3 | 36.1 | 38.4 | 37.3 | 36.4 | 32.8 | 25.3 | 19.1 | 19.3 | 21.7 | 19.5 | 22.4 | 11.0 | 5.4  | 5.4  | 5.4  | 8.2  | 5.9  | 5.9  | 7.5  | 8.4  | 21.2          | 39.5          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 3-Feb  | 8.3                           | 20.1 | Z    | 22.7 | 21.2 | 14.1 | 17.2 | 17.0 | 17.1 | 14.4 | 21.7 | 14.7 | 11.6 | 29.3 | 18.1 | 11.0 | 7.7  | 7.2  | 3.7  | 4.6  | 9.3  | 7.0  | 7.9  | 9.5  | 13.7          | 29.3          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 4-Feb  | 12.6                          | 24.2 | 31.2 | Z    | 30.8 | 26.1 | 18.9 | 22.4 | 23.7 | 22.9 | 17.1 | 14.2 | 12.8 | 16.7 | 20.7 | 21.2 | 26.0 | 19.8 | 12.4 | 23.8 | 31.0 | 27.7 | 27.4 | 27.4 | 22.2          | 31.2          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 5-Feb  | 17.4                          | 29.5 | 32.1 | 31.6 | Z    | 32.3 | 35.0 | 33.3 | 33.9 | 32.0 | 34.4 | 32.3 | 25.8 | 27.5 | 30.2 | 31.2 | 31.6 | 32.7 | 32.0 | 28.9 | 25.4 | 21.8 | 24.7 | 18.3 | 29.3          | 35.0          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 6-Feb  | 0.7                           | 0.5  | 0.5  | 0.6  | 0.6  | Z    | 12.4 | 20.4 | 20.0 | 15.7 | 7.2  | 9.8  | 6.9  | 6.7  | 8.7  | 11.4 | 19.0 | 30.7 | 31.4 | 31.5 | 31.7 | 30.8 | 28.9 | 27.3 | 15.4          | 31.7          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 7-Feb  | Z                             | 21.8 | 27.9 | 21.8 | 8.1  | 1.1  | 0.7  | 0.6  | 0.6  | 0.7  | 0.6  | 0.6  | 0.5  | 0.4  | 0.4  | 0.4  | 0.3  | 0.4  | 0.5  | 0.8  | 0.4  | 13.4 | 17.4 | 14.3 | 5.8           | 27.9          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 8-Feb  | 14.3                          | Z    | 33.8 | 32.8 | 33.8 | 33.1 | 37.6 | 37.4 | 38.1 | 25.4 | 22.5 | 27.7 | 18.3 | 18.2 | 18.7 | 24.4 | 27.2 | 34.2 | 37.0 | 37.4 | 40.5 | 43.2 | 39.0 | 35.6 | 30.9          | 43.2          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 9-Feb  | 33.7                          | 29.5 | Z    | 30.8 | 30.8 | 30.9 | 24.9 | 25.9 | 26.6 | 28.4 | 21.5 | 17.1 | 18.1 | 18.0 | 15.4 | 15.7 | 31.7 | 28.0 | 25.6 | 37.6 | 38.2 | 27.5 | 30.4 | 31.6 | 26.9          | 38.2          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 10-Feb | 30.9                          | 27.3 | 29.5 | Z    | 28.5 | 24.4 | 14.2 | 14.4 | 17.4 | 22.7 | 27.7 | 21.9 | 30.1 | 24.9 | 22.4 | PF   | PF   | PF   | PF   | 8.3  | 25.7 | 26.7 | 30.2 | 9.8  | 23.0          | 30.9          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 11-Feb | 4.4                           | 9.7  | 22.1 | 16.5 | Z    | 16.0 | 22.3 | 24.8 | 23.3 | 24.7 | 18.8 | 7.7  | 4.1  | 5.7  | 13.7 | 16.0 | 13.2 | 1.2  | 0.9  | 0.8  | 0.5  | 3.1  | 1.6  | 0.5  | 10.9          | 24.8          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 12-Feb | 0.4                           | 0.3  | 0.4  | 6.3  | 0.9  | Z    | 2.7  | 0.9  | 18.4 | 26.7 | 19.1 | 18.5 | 14.3 | 12.7 | 14.2 | 19.6 | 35.1 | 38.8 | 36.7 | 37.3 | 37.6 | 35.4 | 34.2 | 30.8 | 19.2          | 38.8          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 13-Feb | Z                             | 32.2 | 33.5 | 31.5 | 24.9 | 14.6 | 1.7  | 5.5  | 10.9 | 11.2 | 6.1  | 5.4  | 5.2  | 4.4  | 4.4  | 4.9  | 8.5  | 10.4 | 14.0 | 21.9 | 9.9  | 8.5  | 6.4  | 5.1  | 12.2          | 33.5          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 14-Feb | 8.5                           | Z    | 8.5  | 15.1 | 10.3 | 6.6  | 3.5  | 5.9  | 7.2  | 6.7  | 6.9  | 6.7  | 4.9  | 5.9  | 5.5  | 12.1 | 9.9  | 11.3 | 10.0 | 12.7 | 31.6 | 13.5 | 20.6 | 32.5 | 11.1          | 32.5          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 15-Feb | 37.0                          | 39.1 | Z    | 33.7 | 28.9 | 26.1 | 31.2 | 34.5 | 26.8 | 8.9  | 4.4  | 14.4 | 18.8 | 15.5 | 8.6  | 7.7  | 17.4 | 36.0 | 42.4 | 46.6 | 41.7 | 38.2 | 35.7 | 35.0 | 27.3          | 46.6          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 16-Feb | 34.6                          | 33.2 | 30.8 | Z    | 29.2 | 29.6 | 30.3 | 28.5 | 25.9 | 20.6 | 18.5 | 15.8 | 11.8 | 13.0 | 18.0 | 19.9 | 23.5 | 29.7 | 25.3 | 17.1 | 9.2  | 10.9 | 16.0 | 24.7 | 22.4          | 34.6          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 17-Feb | 9.1                           | 3.7  | 4.0  | 3.7  | Z    | 6.9  | 7.4  | 5.2  | 6.9  | 5.5  | 5.4  | 5.0  | 7.9  | 6.4  | 6.2  | 5.5  | 5.2  | 4.5  | 4.5  | 11.1 | 15.6 | 21.9 | 21.1 | 18.9 | 8.3           | 21.9          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 18-Feb | 17.5                          | 27.6 | 27.3 | 21.3 | 19.0 | Z    | 23.4 | 29.1 | 39.1 | 35.1 | 24.1 | 24.9 | 18.2 | 13.1 | 12.8 | 16.8 | 33.4 | 38.1 | 39.0 | 43.8 | 42.7 | 40.0 | 40.9 | 40.1 | 29.0          | 43.8          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 19-Feb | Z                             | 35.2 | 36.4 | 33.2 | 35.7 | 35.9 | 35.6 | 39.7 | 36.2 | 33.2 | 39.0 | 26.3 | 17.3 | 18.8 | 25.0 | 25.8 | 23.2 | 24.5 | 28.8 | 35.5 | 31.9 | 30.1 | 33.0 | 31.8 | 31.0          | 39.7          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 20-Feb | 29.9                          | Z    | 9.7  | 8.0  | 8.0  | 12.6 | 21.8 | 28.7 | 26.8 | 25.2 | 11.7 | 8.6  | 11.3 | 13.0 | 7.3  | 10.4 | 14.0 | 25.5 | 33.8 | 33.1 | 28.3 | 37.3 | 29.3 | 18.2 | 19.7          | 37.3          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 21-Feb | 13.1                          | 11.2 | Z    | 18.7 | 17.1 | 19.1 | 34.1 | 36.2 | 23.1 | 20.2 | 16.9 | 13.9 | 11.1 | 9.0  | 7.1  | 5.7  | 9.0  | 14.5 | 17.4 | 28.5 | 38.4 | 45.9 | 40.8 | 43.1 | 21.5          | 45.9          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 22-Feb | 42.0                          | 42.5 | 36.3 | Z    | 40.2 | 42.4 | 44.2 | 45.6 | 40.3 | 33.8 | C    | C    | C    | C    | C    | 14.1 | 13.6 | 27.9 | 35.5 | 34.5 | 46.4 | 49.3 | 47.7 | 43.9 | 37.8          | 49.3          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 23-Feb | 42.6                          | 41.5 | 42.9 | 43.5 | Z    | 49.4 | 50.7 | 52.4 | 22.4 | 8.6  | 8.3  | 8.1  | 8.8  | 7.6  | 9.2  | 13.0 | 12.7 | 22.0 | 40.6 | 46.3 | 42.1 | 41.0 | 44.7 | 40.7 | 30.4          | 52.4          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 24-Feb | 39.3                          | 38.6 | 34.1 | 31.6 | 34.9 | Z    | 32.5 | 29.8 | 24.3 | 21.5 | 13.8 | 10.2 | 6.3  | 4.2  | 4.5  | 6.3  | 5.1  | 7.9  | 5.6  | 3.1  | 4.1  | 3.4  | 4.5  | 6.7  | 16.2          | 39.3          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 25-Feb | Z                             | 13.4 | 14.6 | 10.8 | 12.9 | 19.4 | 23.0 | 22.7 | 23.3 | 10.8 | 1.5  | 0.8  | 0.7  | 3.6  | 3.0  | 4.6  | 5.6  | 19.4 | 25.4 | 30.2 | 33.6 | 35.2 | 34.7 | 32.9 | 16.6          | 35.2          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 26-Feb | 32.1                          | Z    | 16.4 | 15.6 | 24.0 | 27.8 | 26.8 | 26.1 | 24.8 | 29.7 | 26.5 | 18.7 | 22.6 | 29.1 | 27.1 | 15.0 | 13.9 | 17.8 | 6.4  | 9.1  | 14.6 | 12.3 | 13.0 | 12.7 | 20.1          | 32.1          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 27-Feb | 12.6                          | 33.4 | Z    | 16.5 | 16.9 | 14.7 | 13.4 | 16.3 | 13.4 | 10.0 | 9.9  | 7.8  | 6.9  | 7.5  | 8.5  | 7.7  | 6.7  | 7.5  | 7.9  | 15.5 | 14.7 | 20.9 | 17.5 | 16.6 | 13.2          | 33.4          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 28-Feb | 19.8                          | 21.3 | 22.7 | Z    | 30.2 | 31.2 | 39.7 | 48.3 | 42.8 | 23.9 | 19.9 | 16.4 | 13.1 | 14.4 | 10.7 | 14.4 | 18.4 | 29.8 | 38.8 | 42.5 | 38.1 | 36.6 | 38.8 | 36.8 | 28.2          | 48.3          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
|        |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 21.7 | 24.8          | 24.7          | 22.6 | 23.3 | 24.5 | 24.1 | 25.9 | 24.3 | 20.2 | 16.1 | 13.9 | 12.3 | 13.0 | 13.0 | 13.4 | 16.4 | 20.9 | 22.7 | 25.1 | 26.3 | 26.0 | 26.2 | 24.9 | Diurnal Average |  |
|        |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 42.6 | 42.5          | 42.9          | 43.5 | 40.2 | 49.4 | 50.7 | 52.4 | 42.8 | 35.1 | 39.0 | 32.3 | 30.1 | 29.3 | 30.2 | 31.2 | 35.1 | 38.9 | 51.0 | 52.9 | 47.5 | 49.3 | 47.7 | 44.0 | Diurnal Maximum |  |

Z - zerospan      C - Calibration      PF - Power Failure  
 Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 159 ppb



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Nitrogen Dioxide (NO<sub>2</sub>) - ppb**  
**Barge Landing - February 2023**





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Nitrogen Dioxide (NO<sub>2</sub>) - ppb  
Barge Landing - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 20                            | 320                    | 50.39    | 50.39               |
| 21 - 40                           | 274                    | 43.15    | 93.54               |
| 41 - 80                           | 41                     | 6.46     | 100.00              |
| 81 - 159                          | 0                      | 0.00     | 100.00              |
| > 159                             | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 635

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Nitrogen Dioxide (NO<sub>2</sub>) - ppb  
Barge Landing - February 2023**

| <b>Concentration<br/>Ranges (ppb)</b> | <b>Wind Direction</b> |     |    |     |    |     |    |     |    |     |    |     |    |     |    |     | <b>Totals</b> |
|---------------------------------------|-----------------------|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|---------------|
|                                       | N                     | NNE | NE | ENE | E  | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |               |
| 0 - 20                                | 26                    | 68  | 40 | 27  | 5  | 1   | 3  | 24  | 29 | 16  | 12 | 27  | 14 | 4   | 4  | 20  | 320           |
| 21 - 40                               | 31                    | 21  | 10 | 11  | 4  | 6   | 16 | 34  | 36 | 15  | 9  | 4   | 6  | 4   | 21 | 46  | 274           |
| 11 - 80                               | 1                     | 2   | 2  | 0   | 1  | 0   | 6  | 4   | 8  | 3   | 1  | 3   | 1  | 1   | 2  | 5   | 40            |
| 81 - 159                              | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| > 159                                 | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| <b>Totals</b>                         | 58                    | 91  | 52 | 38  | 10 | 7   | 25 | 62  | 73 | 34  | 22 | 34  | 21 | 9   | 27 | 71  | 634           |

Total Number of Valid Hours: 634

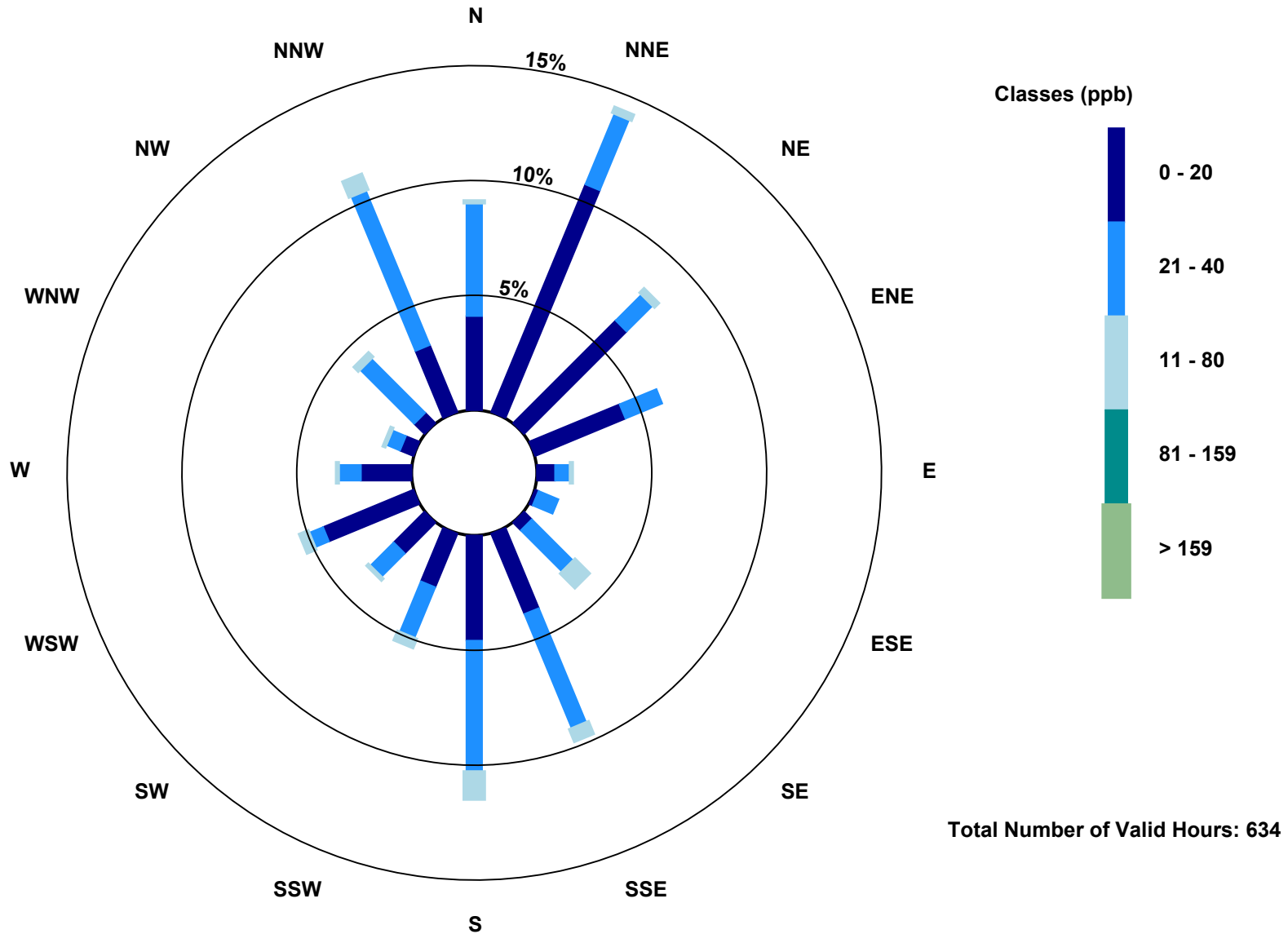
Total Number of Hours: 672

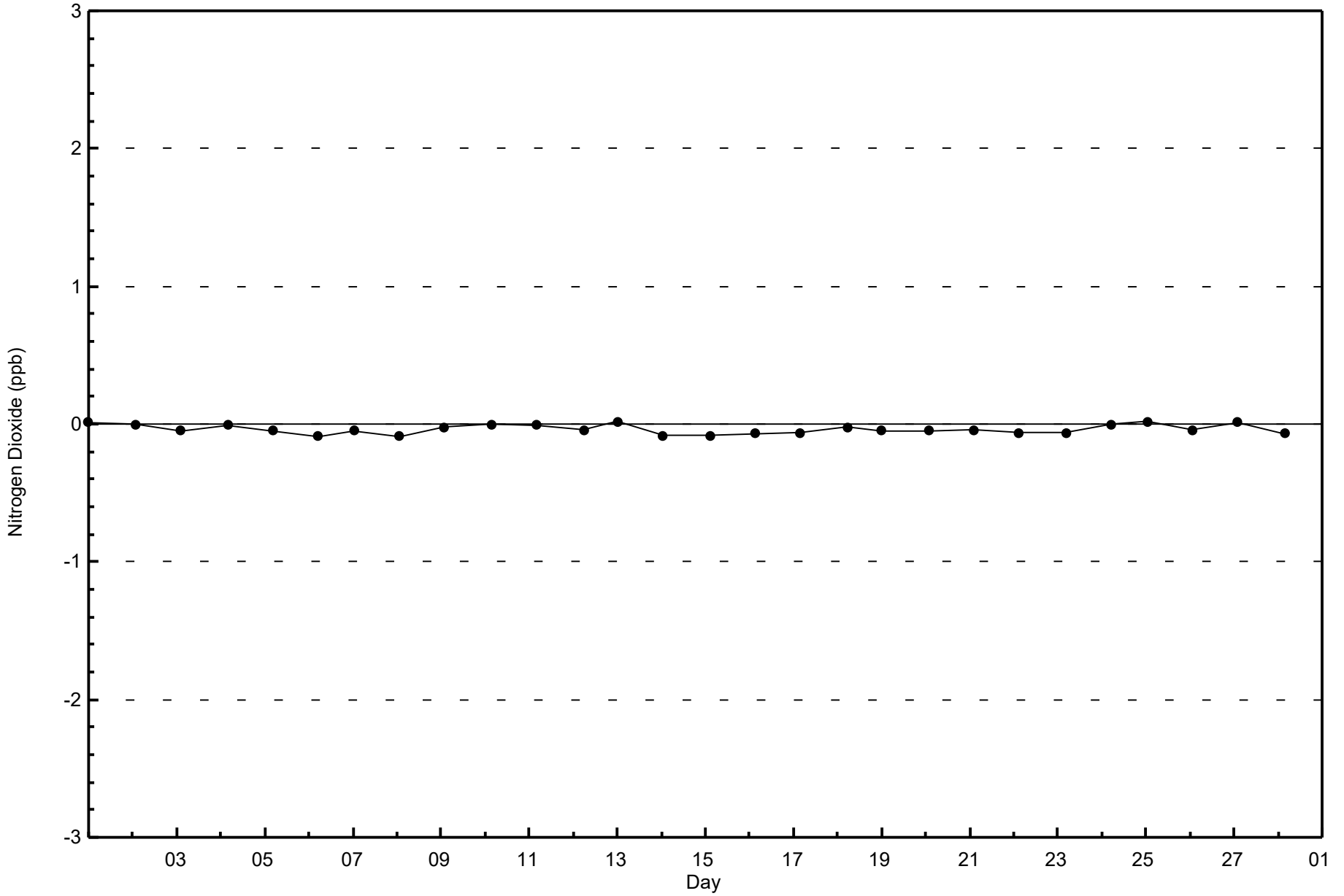


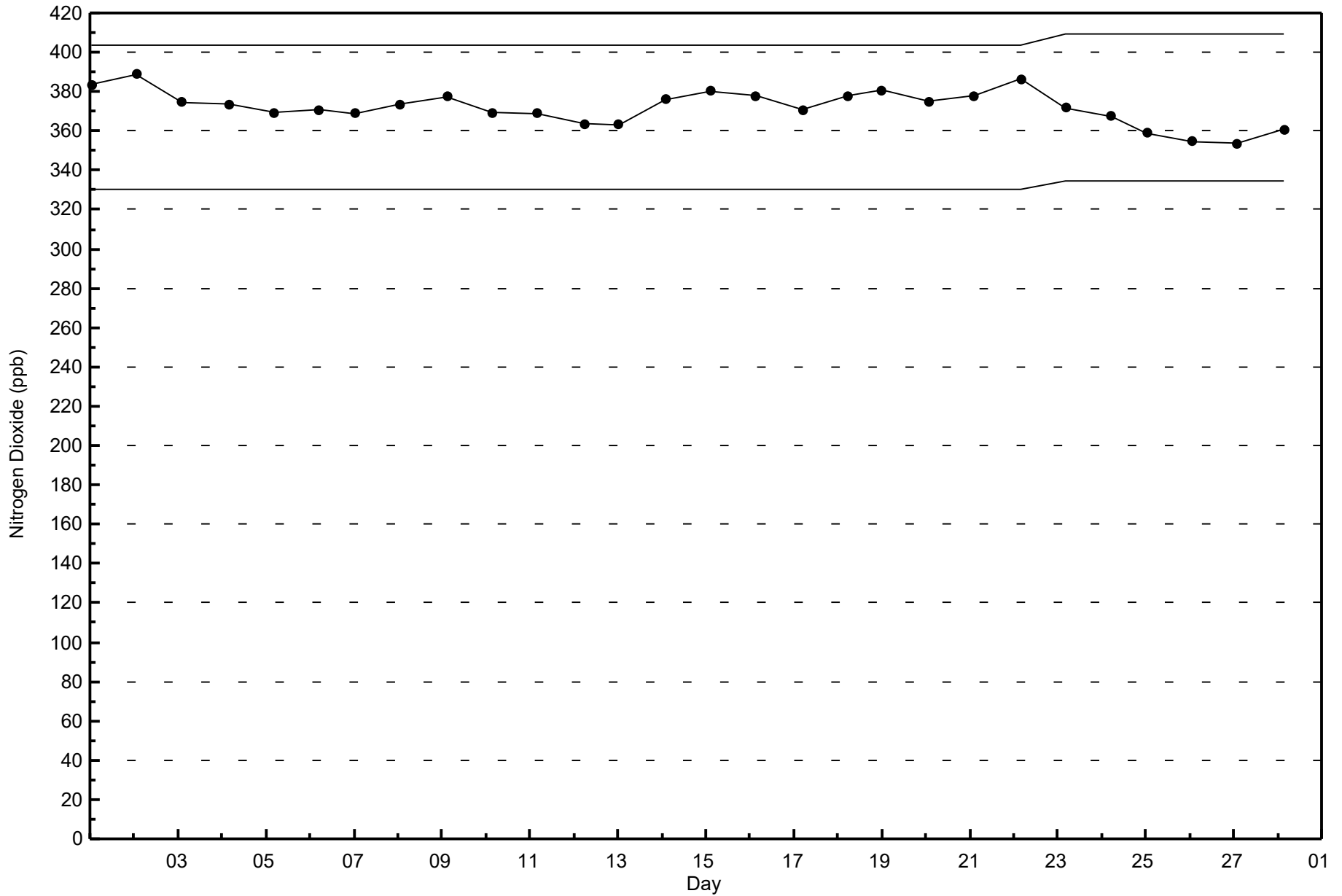


Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Nitrogen Dioxide (NO<sub>2</sub>) - ppb  
Barge Landing





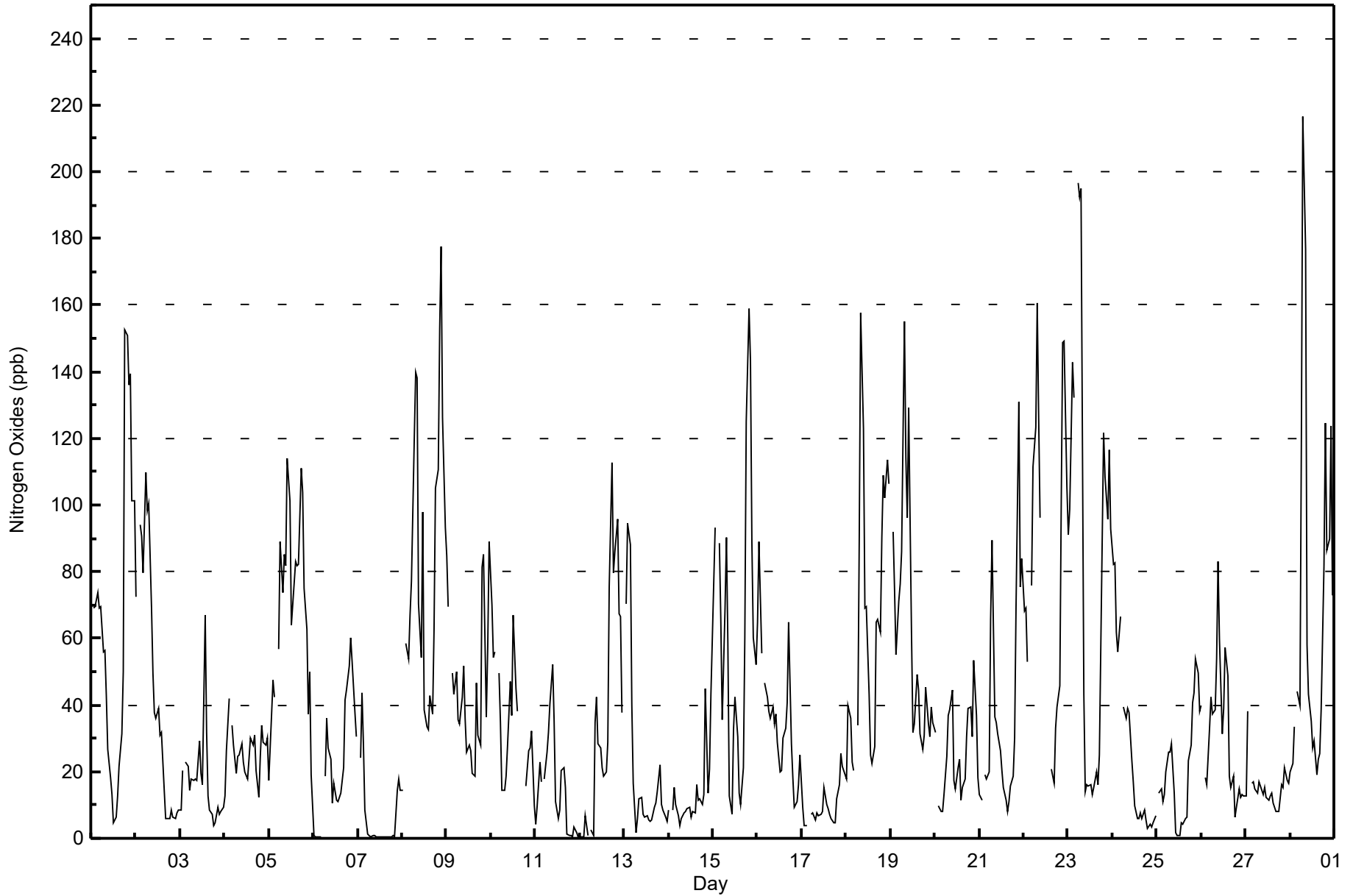




**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

**Nitrogen Oxides (NO<sub>x</sub>) - ppb**  
**Barge Landing - February 2023**

| Maximum Value: 216.6 ppb on Feb 28 08:00      Maximum Daily Average: 85.7 ppb on Feb 22  |                               |      |       |       |      |       |       |       |       |       |       |       |      |      |      |      |      |       |       |       |       | Hours in Service: 672          |       |       |               |               |
|--|-------------------------------|------|-------|-------|------|-------|-------|-------|-------|-------|-------|-------|------|------|------|------|------|-------|-------|-------|-------|--------------------------------|-------|-------|---------------|---------------|
| Minimum Value: 0.3 ppb on Feb 7 17:00      Minimum Daily Average: 6.9 ppb on Feb 7   |                               |      |       |       |      |       |       |       |       |       |       |       |      |      |      |      |      |       |       |       |       | Hours of Data: 635             |       |       |               |               |
| Maximum Diurnal Average: 61.9 ppb at hour 8      Minimum Diurnal Average: 20.7 ppb at hour 16  |                               |      |       |       |      |       |       |       |       |       |       |       |      |      |      |      |      |       |       |       |       | Hours of Missing Data: 37      |       |       |               |               |
| Monthly Average: 39.92 ppb      Percentiles: P <sub>1</sub> = 0.4 P <sub>10</sub> = 5.9 Q <sub>1</sub> = 12.7 Median = 27.8 Q <sub>3</sub> = 56.0 P <sub>90</sub> = 93.9 P <sub>99</sub> = 159.9 |                               |      |       |       |      |       |       |       |       |       |       |       |      |      |      |      |      |       |       |       |       | Hours of Calibration: 33       |       |       |               |               |
|  |                               |      |       |       |      |       |       |       |       |       |       |       |      |      |      |      |      |       |       |       |       | Percent Operational Time: 99.4 |       |       |               |               |
| Day  | Hourly Period Ending At (MST) |      |       |       |      |       |       |       |       |       |       |       |      |      |      |      |      |       |       |       |       |                                |       |       | Daily Average | Daily Maximum |
|  | 1                             | 2    | 3     | 4     | 5    | 6     | 7     | 8     | 9     | 10    | 11    | 12    | 13   | 14   | 15   | 16   | 17   | 18    | 19    | 20    | 21    | 22                             | 23    | 24    |               |               |
| 1-Feb  | Z                             | 69.1 | 69.7  | 73.7  | 68.9 | 69.6  | 56.0  | 56.4  | 42.7  | 26.8  | 18.3  | 13.0  | 4.6  | 6.5  | 12.9 | 21.8 | 31.5 | 49.9  | 152.3 | 151.0 | 135.9 | 139.5                          | 101.2 | 101.2 | 64.0          | 152.3         |
| 2-Feb  | 72.3                          | Z    | 94.2  | 90.8  | 79.7 | 109.8 | 98.3  | 100.5 | 69.1  | 49.4  | 37.8  | 35.9  | 39.2 | 30.8 | 31.9 | 14.3 | 6.0  | 5.8   | 5.9   | 8.5   | 6.2   | 6.1                            | 7.7   | 8.4   | 43.9          | 109.8         |
| 3-Feb  | 8.3                           | 20.3 | Z     | 23.0  | 21.4 | 14.2  | 17.6  | 17.3  | 17.9  | 17.6  | 29.1  | 19.6  | 15.9 | 66.9 | 31.7 | 12.9 | 8.3  | 7.4   | 3.8   | 4.7   | 9.5   | 7.0                            | 7.9   | 9.5   | 17.0          | 66.9          |
| 4-Feb  | 12.6                          | 26.4 | 41.8  | Z     | 34.0 | 27.8  | 19.4  | 24.5  | 24.9  | 28.4  | 22.8  | 19.8  | 17.8 | 23.7 | 29.9 | 28.0 | 31.0 | 20.2  | 12.5  | 24.6  | 34.1  | 28.9                           | 28.0  | 30.1  | 25.7          | 41.8          |
| 5-Feb  | 17.5                          | 37.1 | 47.4  | 42.3  | Z    | 56.7  | 89.1  | 73.7  | 85.2  | 81.6  | 114.0 | 101.4 | 63.9 | 70.5 | 82.9 | 81.8 | 82.3 | 111.0 | 104.0 | 74.9  | 62.9  | 37.5                           | 50.2  | 18.9  | 69.0          | 114.0         |
| 6-Feb  | 0.7                           | 0.5  | 0.5   | 0.6   | 0.6  | Z     | 18.5  | 35.9  | 27.1  | 23.8  | 10.7  | 16.5  | 11.3 | 11.0 | 12.2 | 13.7 | 21.3 | 41.7  | 44.6  | 51.9  | 60.1  | 52.8                           | 37.9  | 30.6  | 22.8          | 60.1          |
| 7-Feb  | Z                             | 24.3 | 43.6  | 28.2  | 8.3  | 1.1   | 0.7   | 0.6   | 0.6   | 0.7   | 0.6   | 0.6   | 0.5  | 0.4  | 0.4  | 0.4  | 0.3  | 0.4   | 0.5   | 0.8   | 0.4   | 14.3                           | 17.6  | 14.4  | 6.9           | 43.6          |
| 8-Feb  | 14.4                          | Z    | 58.6  | 53.8  | 66.9 | 77.0  | 119.8 | 140.0 | 137.9 | 70.4  | 54.1  | 98.1  | 38.5 | 33.6 | 32.6 | 42.6 | 37.3 | 62.7  | 105.2 | 110.7 | 152.9 | 177.4                          | 126.2 | 93.3  | 82.8          | 177.4         |
| 9-Feb  | 84.6                          | 69.4 | Z     | 49.5  | 43.3 | 50.0  | 35.5  | 34.3  | 42.4  | 51.5  | 35.8  | 26.0  | 27.8 | 26.4 | 19.5 | 18.8 | 46.7 | 31.0  | 28.0  | 81.4  | 85.3  | 36.3                           | 57.1  | 89.2  | 46.5          | 89.2          |
| 10-Feb   | 69.8                          | 54.3 | 55.9  | Z     | 49.8 | 34.6  | 14.3  | 14.5  | 18.6  | 27.7  | 47.2  | 37.1  | 66.9 | 44.9 | 38.2 | PF   | PF   | PF    | PF    | 15.9  | 26.2  | 27.2                           | 32.2  | 9.9   | 36.1          | 69.8          |
| 11-Feb   | 4.4                           | 9.8  | 22.8  | 17.0  | Z    | 17.8  | 25.9  | 31.6  | 40.2  | 52.2  | 35.1  | 10.8  | 6.0  | 8.4  | 20.5 | 21.2 | 15.1 | 1.2   | 0.9   | 0.8   | 0.5   | 3.2                            | 1.6   | 0.5   | 15.1          | 52.2          |
| 12-Feb   | 0.4                           | 0.3  | 0.4   | 6.8   | 0.9  | Z     | 2.8   | 0.9   | 34.9  | 42.4  | 28.2  | 27.1  | 21.0 | 18.8 | 20.1 | 29.0 | 75.4 | 112.9 | 79.8  | 85.9  | 95.8  | 67.3                           | 66.3  | 37.9  | 37.2          | 112.9         |
| 13-Feb   | Z                             | 70.3 | 94.3  | 88.1  | 40.2 | 16.7  | 1.7   | 6.1   | 11.7  | 12.2  | 7.0   | 6.4   | 6.7  | 5.4  | 5.3  | 5.6  | 9.4  | 10.6  | 14.1  | 22.1  | 10.0  | 8.6                            | 6.4   | 5.1   | 20.2          | 94.3          |
| 14-Feb   | 8.5                           | Z    | 8.5   | 15.2  | 10.3 | 6.7   | 3.7   | 6.1   | 7.7   | 8.0   | 9.1   | 9.3   | 6.5  | 8.0  | 7.4  | 15.9 | 11.3 | 11.8  | 10.3  | 13.2  | 44.8  | 13.6                           | 20.7  | 43.0  | 13.0          | 44.8          |
| 15-Feb   | 76.9                          | 93.2 | Z     | 88.6  | 65.8 | 35.8  | 69.2  | 90.3  | 58.3  | 12.5  | 7.1   | 32.6  | 42.4 | 30.5 | 13.4 | 10.4 | 21.4 | 60.1  | 125.0 | 159.0 | 143.3 | 88.9                           | 60.3  | 52.3  | 62.5          | 159.0         |
| 16-Feb   | 64.8                          | 89.1 | 55.4  | Z     | 46.4 | 42.3  | 38.2  | 36.0  | 39.2  | 34.4  | 37.1  | 28.6  | 19.9 | 20.5 | 30.1 | 32.9 | 40.6 | 64.8  | 28.4  | 18.4  | 9.5   | 11.0                           | 16.1  | 25.0  | 36.0          | 89.1          |
| 17-Feb   | 9.2                           | 3.7  | 4.0   | 3.8   | Z    | 7.0   | 7.6   | 5.5   | 7.6   | 6.8   | 7.4   | 8.2   | 15.1 | 10.0 | 8.9  | 7.2  | 6.1  | 4.8   | 4.7   | 11.8  | 16.1  | 25.6                           | 21.5  | 19.0  | 9.6           | 25.6          |
| 18-Feb   | 17.9                          | 39.7 | 36.1  | 22.8  | 20.3 | Z     | 33.9  | 89.4  | 157.7 | 123.0 | 68.9  | 69.4  | 43.1 | 25.2 | 22.3 | 27.6 | 64.8 | 65.8  | 61.9  | 90.1  | 108.9 | 102.1                          | 113.6 | 106.5 | 65.7          | 157.7         |
| 19-Feb   | Z                             | 91.8 | 74.8  | 55.2  | 71.1 | 76.2  | 85.9  | 154.9 | 114.5 | 96.2  | 129.2 | 61.5  | 31.8 | 34.4 | 49.1 | 44.4 | 31.3 | 26.6  | 30.7  | 45.3  | 34.4  | 30.5                           | 39.5  | 34.6  | 62.8          | 154.9         |
| 20-Feb   | 31.7                          | Z    | 9.7   | 8.1   | 8.0  | 13.0  | 24.5  | 37.1  | 38.5  | 44.3  | 17.4  | 14.9  | 21.2 | 23.9 | 11.6 | 15.3 | 17.8 | 30.3  | 39.0  | 39.6  | 30.3  | 53.5                           | 36.7  | 18.4  | 25.4          | 53.5          |
| 21-Feb   | 13.2                          | 11.3 | Z     | 19.1  | 17.9 | 20.0  | 65.9  | 89.4  | 36.6  | 34.7  | 31.3  | 26.4  | 20.2 | 15.1 | 11.3 | 7.9  | 11.0 | 15.7  | 18.5  | 30.2  | 69.7  | 130.8                          | 75.6  | 84.0  | 37.2          | 130.8         |
| 22-Feb   | 68.3                          | 69.1 | 52.8  | Z     | 76.0 | 111.5 | 123.3 | 160.4 | 126.9 | 96.4  | Z     | C     | C    | C    | C    | 20.7 | 16.4 | 33.0  | 39.3  | 45.8  | 100.4 | 148.7                          | 149.0 | 105.4 | 85.7          | 160.4         |
| 23-Feb   | 91.3                          | 98.6 | 142.8 | 132.1 | Z    | 196.5 | 192.4 | 194.7 | 43.3  | 14.0  | 16.0  | 15.6  | 16.1 | 13.1 | 15.1 | 19.8 | 16.0 | 25.1  | 89.3  | 121.6 | 108.6 | 95.9                           | 116.6 | 93.0  | 81.2          | 196.5         |
| 24-Feb   | 82.3                          | 82.6 | 61.7  | 55.9  | 66.6 | Z     | 39.5  | 36.2  | 38.9  | 37.7  | 23.5  | 16.8  | 9.6  | 5.9  | 5.8  | 7.6  | 5.7  | 8.3   | 5.7   | 3.1   | 4.1   | 3.4                            | 4.5   | 6.7   | 26.6          | 82.6          |
| 25-Feb   | Z                             | 13.4 | 14.7  | 10.9  | 13.1 | 19.8  | 25.9  | 26.0  | 28.5  | 13.5  | 1.8   | 0.9   | 0.8  | 4.8  | 4.0  | 5.8  | 6.3  | 23.4  | 27.9  | 40.8  | 43.5  | 53.8                           | 49.7  | 38.2  | 20.3          | 53.8          |
| 26-Feb   | 39.7                          | Z    | 18.2  | 16.0  | 33.0 | 42.2  | 37.3  | 38.6  | 53.7  | 83.2  | 59.9  | 31.3  | 39.2 | 57.2 | 48.8 | 18.9 | 15.2 | 18.7  | 6.4   | 9.2   | 14.7  | 12.4                           | 13.1  | 12.8  | 31.3          | 83.2          |
| 27-Feb   | 12.7                          | 38.0 | Z     | 16.5  | 16.9 | 14.7  | 13.4  | 17.0  | 15.7  | 13.3  | 15.3  | 12.3  | 11.4 | 12.7 | 13.4 | 10.4 | 8.0  | 8.0   | 8.0   | 15.9  | 15.1  | 21.1                           | 17.5  | 16.6  | 15.0          | 38.0          |
| 28-Feb   | 19.9                          | 22.4 | 33.4  | Z     | 44.3 | 39.8  | 119.9 | 216.6 | 176.8 | 58.0  | 43.2  | 35.2  | 26.9 | 29.1 | 18.9 | 23.6 | 25.5 | 38.5  | 81.7  | 124.7 | 86.3  | 89.7                           | 123.6 | 73.1  | 67.4          | 216.6         |
|  |                               |      |       |       |      |       |       |       |       |       |       |       |      |      |      |      |      |       |       |       |       | Diurnal Average                |       |       |               |               |
|  |                               |      |       |       |      |       |       |       |       |       |       |       |      |      |      |      |      |       |       |       |       | Diurnal Maximum                |       |       |               |               |
|  |                               |      |       |       |      |       |       |       |       |       |       |       |      |      |      |      |      |       |       |       |       |                                |       |       |               |               |
| Z - zerspan      C - Calibration      PF - Power Failure   |                               |      |       |       |      |       |       |       |       |       |       |       |      |      |      |      |      |       |       |       |       |                                |       |       |               |               |





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Nitrogen Oxides (NO<sub>x</sub>) - ppb  
Barge Landing - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 20                            | 266                    | 41.89    | 41.89               |
| 21 - 40                           | 154                    | 24.25    | 66.14               |
| 41 - 80                           | 117                    | 18.43    | 84.57               |
| 81 - 159                          | 90                     | 14.17    | 98.74               |
| > 159                             | 7                      | 1.10     | 99.84               |

Total Number of Valid Hours: 635

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Nitrogen Oxides (NO<sub>x</sub>) - ppb  
Barge Landing - February 2023**

| <b>Concentration<br/>Ranges (ppb)</b> | <b>Wind Direction</b> |            |           |            |           |            |           |            |           |            |           |            |           |            |           |            | <b>Totals</b> |
|---------------------------------------|-----------------------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|---------------|
|                                       | <b>N</b>              | <b>NNE</b> | <b>NE</b> | <b>ENE</b> | <b>E</b>  | <b>ESE</b> | <b>SE</b> | <b>SSE</b> | <b>S</b>  | <b>SSW</b> | <b>SW</b> | <b>WSW</b> | <b>W</b>  | <b>WNW</b> | <b>NW</b> | <b>NNW</b> |               |
| 0 - 20                                | 21                    | 56         | 32        | 25         | 5         | 1          | 2         | 22         | 21        | 10         | 9         | 26         | 12        | 3          | 4         | 17         | 266           |
| 21 - 40                               | 22                    | 21         | 12        | 5          | 1         | 2          | 6         | 13         | 14        | 14         | 6         | 2          | 3         | 2          | 7         | 24         | 154           |
| 41 - 80                               | 12                    | 11         | 5         | 4          | 1         | 3          | 6         | 13         | 21        | 5          | 3         | 2          | 4         | 2          | 10        | 15         | 117           |
| 81 - 159                              | 3                     | 3          | 3         | 3          | 3         | 1          | 11        | 13         | 15        | 5          | 4         | 2          | 2         | 2          | 4         | 15         | 89            |
| > 159                                 | 0                     | 0          | 0         | 0          | 0         | 0          | 0         | 1          | 2         | 0          | 0         | 2          | 0         | 0          | 2         | 0          | 7             |
| <b>Totals</b>                         | <b>58</b>             | <b>91</b>  | <b>52</b> | <b>37</b>  | <b>10</b> | <b>7</b>   | <b>25</b> | <b>62</b>  | <b>73</b> | <b>34</b>  | <b>22</b> | <b>34</b>  | <b>21</b> | <b>9</b>   | <b>27</b> | <b>71</b>  | <b>633</b>    |

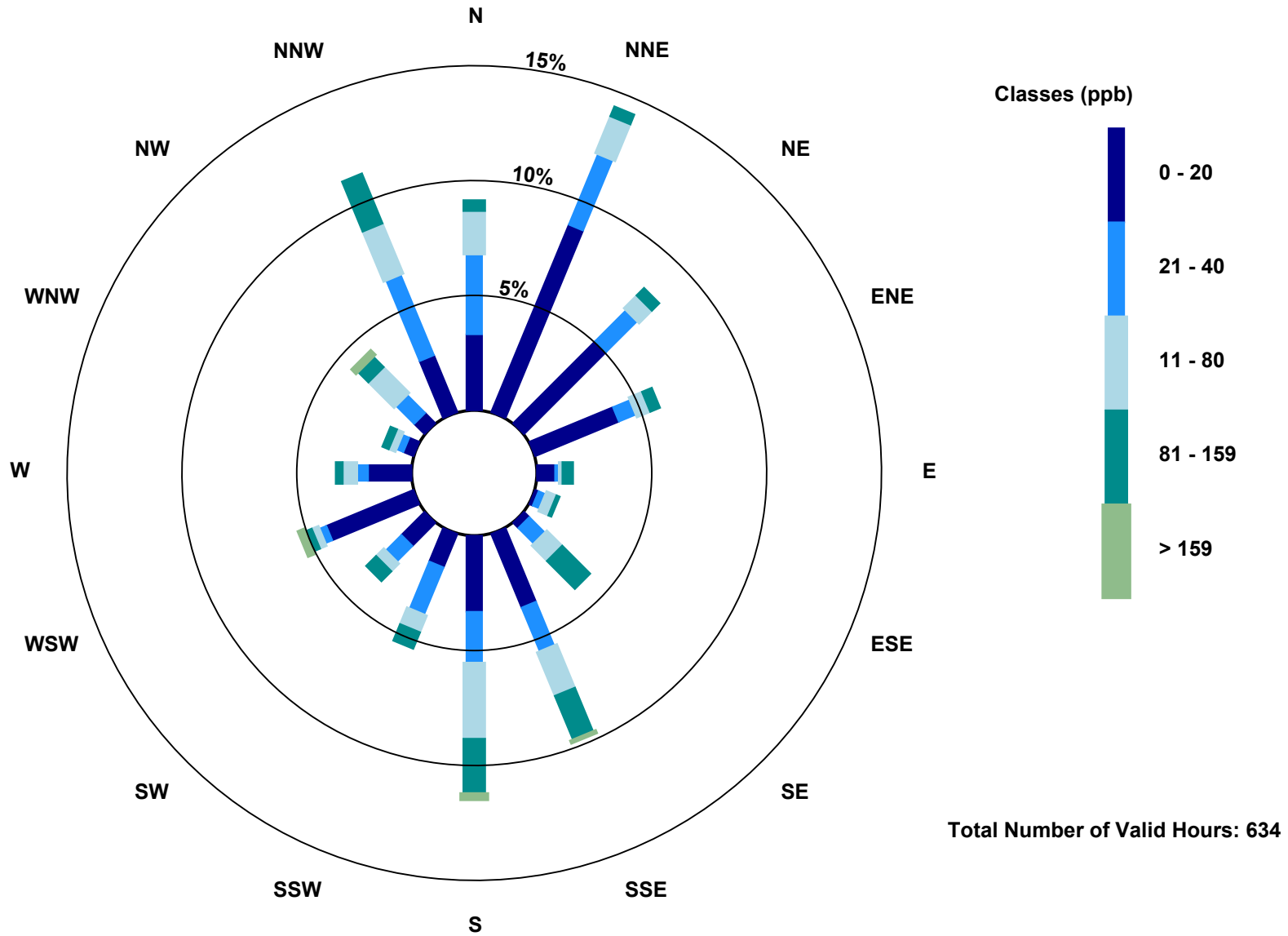
Total Number of Valid Hours: 634

Total Number of Hours: 672

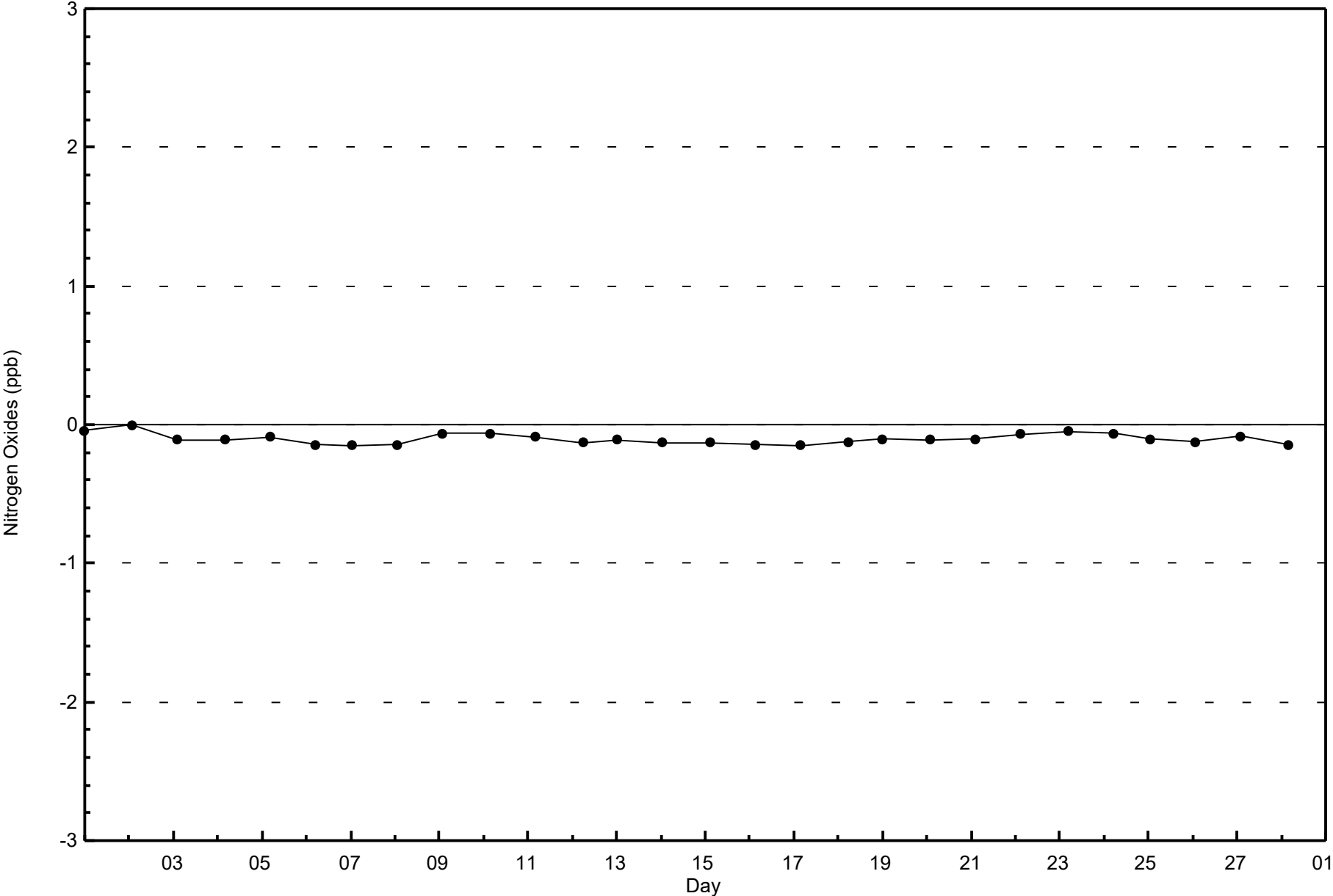


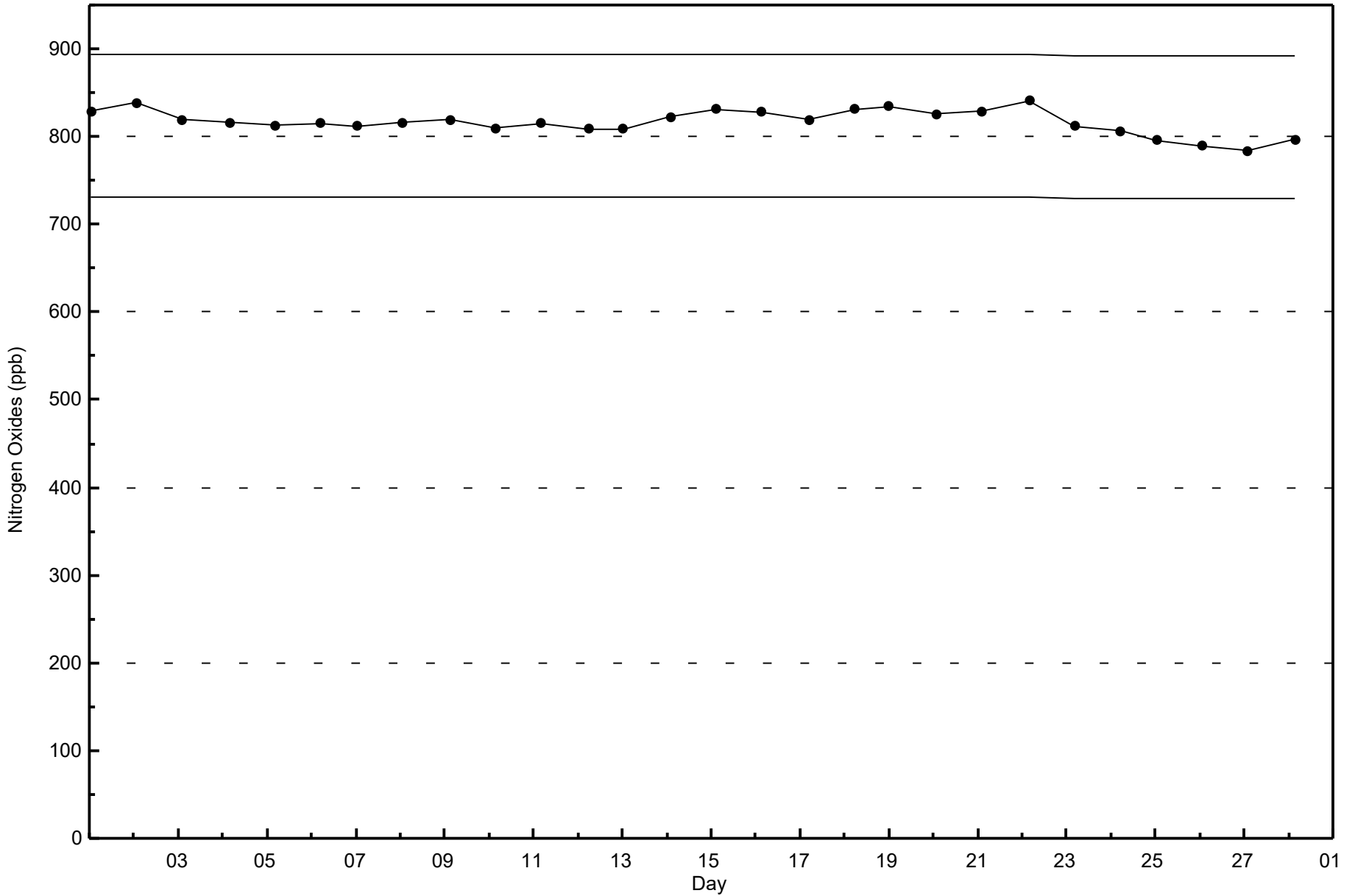
Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Nitrogen Oxides (NO<sub>x</sub>) - ppb  
Barge Landing







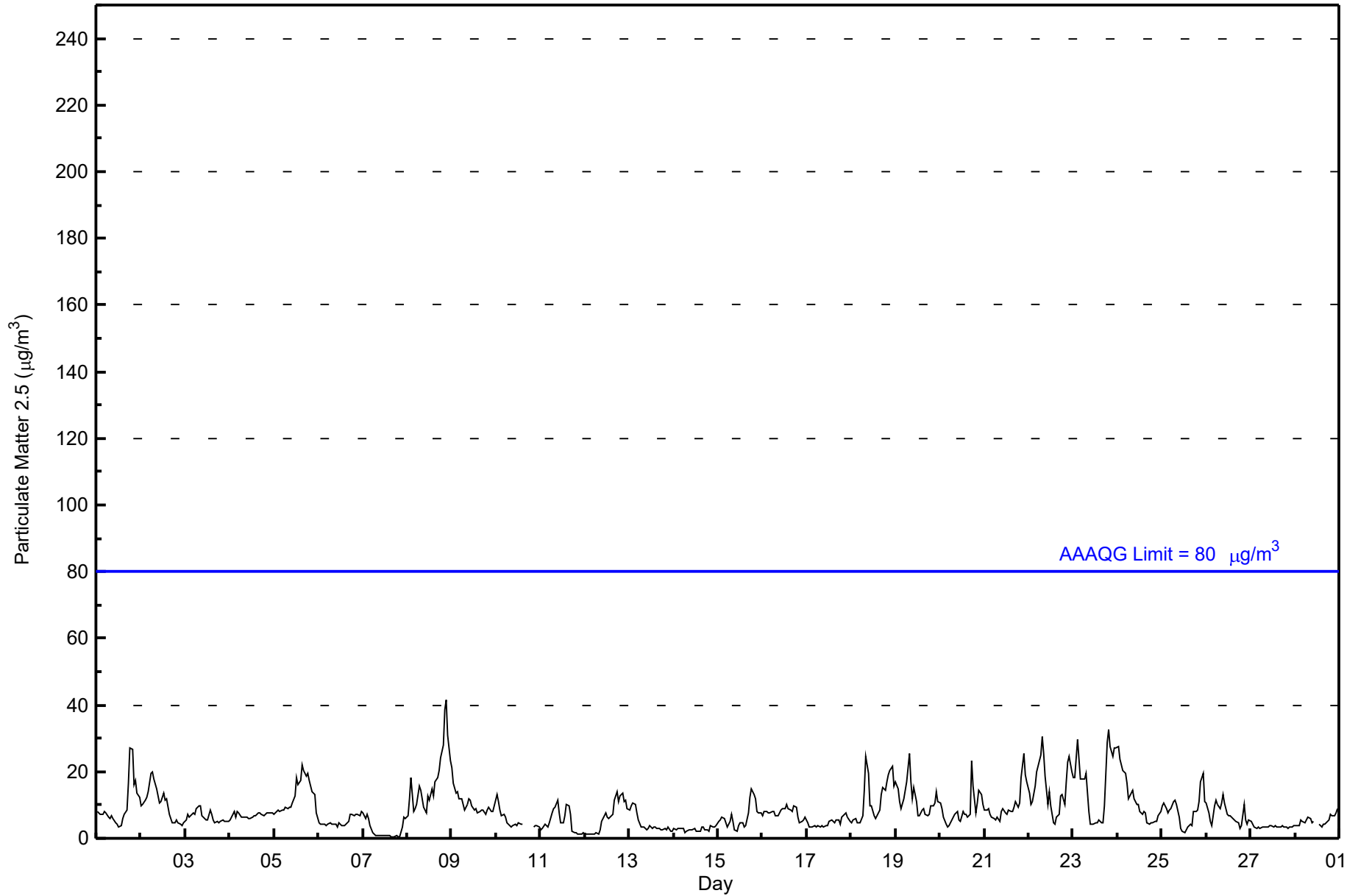




Summary of Hour Averages

Barge Landing - February 2023

| Number of Exceedences (AAAQO):  |                               | 1-hr: 0   | 24-hr: 0 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                           |      | Hours in Service: | 672  |      |                            |               |               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
|---|-------------------------------|---|----------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|---------------------------|------|-------------------|------|------|----------------------------|---------------|---------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----------------|
| Maximum Value: 41.6 µg/m <sup>3</sup> on Feb 8 22:00                        |                               | Maximum Daily Average: 17.3 µg/m <sup>3</sup> on Feb 8  |          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Hours of Data:            | 665  |                   |      |      |                            |               |               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| Minimum Value: 0.5 µg/m <sup>3</sup> on Feb 7 21:00                         |                               | Minimum Daily Average: 2.5 µg/m <sup>3</sup> on Feb 7   |          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Hours of Missing Data:    | 7    |                   |      |      |                            |               |               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| Maximum Diurnal Average: 11.0 µg/m <sup>3</sup> at hour 22                  |                               | Minimum Diurnal Average: 6.4 µg/m <sup>3</sup> at hour 14   |          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Hours of Calibration:     | 2    |                   |      |      |                            |               |               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| Monthly Average: 8.38 µg/m <sup>3</sup>                                     |                               | Percentiles: P <sub>1</sub> = 0.7 P <sub>10</sub> = 3.1 Q <sub>1</sub> = 4.3 Median = 7.0 Q <sub>3</sub> = 10.3 P <sub>90</sub> = 17.0 P <sub>99</sub> = 28.2 |          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Percent Operational Time: | 99.3 |                   |      |      |                            |               |               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| Day   | Hourly Period Ending At (MST) |   |          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                           |      |                   |      |      |                            | Daily Average | Daily Maximum |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
|   | 1                             | 2   | 3        | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19                        | 20   | 21                | 22   | 23   | 24                         |               |               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 1-Feb   | 8.0                           | 7.5   | 7.0      | 7.2  | 7.9  | 7.7  | 6.4  | 6.0  | 6.9  | 5.8  | 4.7  | 4.2  | 3.2  | 3.6  | 6.0  | 7.1  | 8.6  | 16.7 | 27.0                      | 26.5 | 16.2              | 17.2 | 13.6 | 12.4                       | 9.9           | 27.0          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 2-Feb   | 9.7                           | 10.4  | 11.5     | 12.2 | 14.2 | 19.4 | 19.9 | 18.0 | 14.8 | 12.5 | 10.5 | 11.1 | 13.5 | 11.6 | 11.8 | 7.1  | 5.9  | 4.6  | 4.6                       | 5.5  | 4.7               | 4.4  | 4.0  | 4.5                        | 10.3          | 19.9          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 3-Feb   | 5.4                           | 7.0   | 6.5      | 7.0  | 7.7  | 7.4  | 8.9  | 9.6  | 9.9  | 6.7  | 6.0  | 5.7  | 5.4  | 8.6  | 7.4  | 5.4  | 4.8  | 4.9  | 4.6                       | 4.9  | 5.4               | 5.2  | 5.3  | 5.1                        | 6.5           | 9.9           |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 4-Feb   | 5.6                           | 6.5   | 8.0      | 6.6  | 8.3  | 7.7  | 6.5  | 6.5  | 6.2  | 6.2  | 5.7  | 5.7  | 6.2  | 6.7  | 6.9  | 7.6  | 7.4  | 7.3  | 6.8                       | 7.2  | 7.6               | 7.5  | 7.6  | 7.6                        | 6.9           | 8.3           |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 5-Feb   | 7.3                           | 7.9   | 8.5      | 8.2  | 8.6  | 8.7  | 9.5  | 8.9  | 9.3  | 9.3  | 10.8 | 12.7 | 18.3 | 16.1 | 17.6 | 21.9 | 20.3 | 18.8 | 19.5                      | 17.3 | 14.2              | 13.6 | 13.3 | 7.6                        | 12.8          | 21.9          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 6-Feb   | 4.6                           | 4.4   | 4.3      | 4.1  | 3.9  | 4.3  | 4.8  | 4.2  | 4.4  | 4.2  | 3.5  | 4.5  | 3.9  | 3.8  | 3.9  | 4.1  | 5.1  | 7.2  | 7.2                       | 6.9  | 7.3               | 7.0  | 6.9  | 8.1                        | 5.1           | 8.1           |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 7-Feb   | 7.8                           | 5.8   | 7.0      | 6.1  | 3.8  | 1.9  | 1.1  | 0.9  | 0.9  | 0.8  | 0.9  | 0.8  | 0.8  | 0.7  | 0.7  | 0.6  | 0.5  | 0.5  | 0.7                       | 0.5  | 0.5               | 3.5  | 6.5  | 5.8                        | 2.5           | 7.8           |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 8-Feb   | 6.9                           | 11.8  | 18.1     | 7.9  | 8.7  | 10.3 | 15.8 | 14.2 | 12.0 | 9.2  | 7.7  | 12.8 | 11.3 | 14.6 | 12.8 | 16.8 | 18.3 | 20.3 | 24.1                      | 27.8 | 38.8              | 41.6 | 30.9 | 23.3                       | 17.3          | 41.6          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 9-Feb   | 21.4                          | 16.6  | 13.5     | 13.9 | 12.0 | 11.9 | 10.1 | 8.3  | 10.1 | 11.9 | 11.3 | 9.6  | 8.6  | 8.9  | 7.7  | 7.9  | 8.3  | 8.5  | 7.3                       | 8.5  | 9.4               | 8.1  | 8.1  | 9.7                        | 10.5          | 21.4          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 10-Feb  | 13.0                          | 11.0  | 8.4      | 6.6  | 7.1  | 6.5  | 4.5  | 3.6  | 3.4  | 4.0  | 4.2  | 3.9  | 4.7  | 4.2  | 4.2  | PF   | PF   | PF   | PF                        | PF   | 3.6               | 3.7  | 3.9  | 3.4                        | 5.5           | 13.0          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 11-Feb  | 2.5                           | 3.1   | 4.0      | 3.8  | 3.6  | 4.7  | 7.6  | 8.7  | 9.4  | 11.4 | 7.7  | 4.6  | 4.6  | 6.7  | 10.4 | 9.7  | 7.1  | 2.2  | 1.8                       | 1.6  | 1.1               | 1.2  | 1.2  | 1.8                        | 5.0           | 11.4          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 12-Feb  | 1.3                           | 1.1   | 1.1      | 1.5  | 1.2  | 1.4  | 1.5  | 1.4  | 2.5  | 5.2  | 5.9  | 7.5  | 6.5  | 6.1  | 6.9  | 7.1  | 11.6 | 13.9 | 10.8                      | 12.8 | 13.6              | 11.2 | 11.3 | 9.0                        | 6.3           | 13.9          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 13-Feb  | 8.5                           | 9.7   | 10.6     | 10.3 | 7.6  | 5.4  | 3.5  | 3.6  | 3.2  | 2.4  | 3.2  | 3.7  | 3.1  | 3.4  | 3.2  | 2.9  | 2.9  | 2.7  | 2.4                       | 3.1  | 2.6               | 3.2  | 2.3  | 2.0                        | 4.4           | 10.6          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 14-Feb  | 2.9                           | 2.6   | 2.8      | 2.9  | 2.8  | 2.8  | 1.9  | 2.2  | 2.5  | 2.5  | 2.6  | 2.8  | 2.3  | 2.3  | 2.0  | 3.3  | 3.3  | 2.6  | 2.7                       | 2.2  | 3.9               | 3.4  | 3.4  | 3.8                        | 2.8           | 3.9           |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 15-Feb  | 5.0                           | 5.6   | 6.1      | 6.0  | 4.9  | 3.5  | 4.9  | 7.1  | 4.9  | 2.4  | 2.2  | 3.9  | 4.9  | 4.5  | 3.5  | 3.7  | 7.5  | 12.2 | 14.7                      | 13.2 | 11.9              | 8.2  | 7.5  | 7.8                        | 6.5           | 14.7          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 16-Feb  | 7.0                           | 7.9   | 8.0      | 7.6  | 7.7  | 8.1  | 8.1  | 6.8  | 6.9  | 7.7  | 8.5  | 9.1  | 8.9  | 10.0 | 9.1  | 8.3  | 7.9  | 9.7  | 9.4                       | 6.5  | 4.6               | 5.0  | 5.6  | 6.4                        | 7.7           | 10.0          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 17-Feb  | 4.6                           | 3.6   | 3.3      | 3.4  | 3.6  | 3.5  | 3.7  | 3.3  | 3.9  | 3.5  | 3.8  | 3.6  | 5.3  | 5.5  | 5.0  | 4.9  | 5.6  | 5.6  | 4.4                       | 6.4  | 7.1               | 7.7  | 6.4  | 5.1                        | 4.7           | 7.7           |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 18-Feb  | 4.6                           | 5.6   | 5.8      | 4.8  | 4.5  | 4.8  | 7.0  | 14.3 | 24.6 | 19.4 | 9.9  | 9.6  | 6.7  | 5.9  | 6.8  | 8.3  | 13.0 | 15.1 | 14.3                      | 17.0 | 19.0              | 20.5 | 21.7 | 15.6                       | 11.6          | 24.6          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 19-Feb  | 17.1                          | 14.8  | 11.0     | 8.7  | 12.0 | 14.5 | 17.0 | 25.5 | 17.0 | 11.9 | 15.1 | 10.9 | 6.7  | 6.6  | 8.6  | 8.8  | 7.4  | 6.7  | 7.0                       | 9.8  | 9.6               | 10.5 | 13.8 | 11.0                       | 11.7          | 25.5          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 20-Feb  | 10.6                          | 8.7   | 6.3      | 4.3  | 3.6  | 3.8  | 5.5  | 6.3  | 7.2  | 7.9  | 5.6  | 5.3  | 8.0  | 7.3  | 7.1  | 6.2  | 7.3  | 23.3 | 15.5                      | 7.8  | 10.7              | 14.5 | 13.3 | 10.1                       | 8.6           | 23.3          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 21-Feb  | 8.4                           | 8.6   | 9.1      | 7.3  | 6.4  | 6.1  | 5.5  | 6.4  | 5.2  | 8.0  | 8.8  | 7.8  | 7.4  | 8.7  | 8.1  | 8.1  | 9.4  | 10.8 | 9.2                       | 10.7 | 18.3              | 25.3 | 19.1 | 17.1                       | 10.0          | 25.3          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 22-Feb  | 13.4                          | 10.2  | 11.0     | 15.5 | 20.0 | 21.7 | 25.2 | 30.5 | 25.3 | 18.7 | 10.2 | 14.2 | 9.7  | 4.7  | 4.3  | 6.3  | 7.3  | 12.6 | 13.2                      | 10.0 | 17.0              | 23.0 | 24.5 | 20.1                       | 15.4          | 30.5          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 23-Feb  | 18.3                          | 18.1  | 29.8     | 23.6 | 17.6 | 17.7 | 17.8 | 19.3 | 8.2  | 4.1  | 4.1  | 4.4  | 4.5  | 4.5  | 5.6  | 4.5  | 4.6  | 9.6  | 28.8                      | 32.5 | 27.7              | 24.4 | 27.0 | 27.0                       | 16.0          | 32.5          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 24-Feb  | 27.7                          | 23.7  | 21.9     | 20.3 | 19.5 | 16.6 | 11.7 | 13.5 | 14.3 | 11.8 | 10.2 | 10.2 | 8.2  | 7.3  | 8.0  | 7.4  | 4.6  | 4.2  | 4.8                       | 4.5  | 5.1               | 5.2  | 6.8  | 8.2                        | 11.5          | 27.7          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 25-Feb  | 9.8                           | 10.4  | 9.0      | 7.4  | 8.4  | 9.0  | 10.9 | 11.4 | 10.0 | 6.3  | 2.8  | 2.0  | 1.9  | 2.5  | 3.3  | 4.4  | 3.7  | 8.2  | 8.1                       | 8.4  | 11.2              | 17.0 | 19.3 | 10.9                       | 8.2           | 19.3          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 26-Feb  | 10.7                          | 7.8   | 4.9      | 4.0  | 9.9  | 11.4 | 10.0 | 8.9  | 10.5 | 13.1 | 10.6 | 7.1  | 6.7  | 6.7  | 5.9  | 5.6  | 5.0  | 4.5  | 2.9                       | 3.9  | 10.1              | 5.4  | 4.3  | 5.3                        | 7.3           | 13.1          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 27-Feb  | 5.1                           | 4.4   | 3.5      | 3.1  | 3.2  | 3.1  | 3.2  | 3.3  | 3.6  | 3.5  | 3.7  | 3.6  | 3.4  | 3.6  | 3.4  | 3.6  | 3.3  | 3.9  | 3.5                       | 3.4  | 3.1               | 3.3  | 3.5  | 3.7                        | 3.5           | 5.1           |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 28-Feb  | 3.7                           | 3.7   | 3.7      | 5.4  | 5.2  | 4.7  | 5.5  | 6.2  | 6.1  | 4.6  | 5.3  | C    | C    | 4.1  | 3.5  | 4.2  | 4.4  | 4.6  | 5.5                       | 7.2  | 6.9               | 6.6  | 7.6  | 9.0                        | 5.4           | 9.0           |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
|   |                               |   |          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                           |      |                   |      |      | 9.0                        | 8.5           | 8.7           | 7.8  | 8.0  | 8.2  | 8.5  | 9.2  | 8.7  | 7.7  | 6.6  | 6.7  | 6.5  | 6.4  | 6.6  | 6.9  | 7.2  | 8.9  | 9.7  | 9.8  | 10.4 | 11.0 | 10.7 | 9.3  | Diurnal Average |
|   |                               |   |          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                           |      |                   |      |      | 27.7                       | 23.7          | 29.8          | 23.6 | 20.0 | 21.7 | 25.2 | 30.5 | 25.3 | 19.4 | 15.1 | 14.2 | 18.3 | 16.1 | 17.6 | 21.9 | 20.3 | 23.3 | 28.8 | 32.5 | 38.8 | 41.6 | 30.9 | 27.0 | Diurnal Maximum |
| C - Calibration   |                               |   |          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                           |      |                   |      |      | PF - Power Failure         |               |               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| Alberta Ambient Air Quality Guideline/Objectives: 1-hr 80 µg/m <sup>3</sup> |                               |   |          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                           |      |                   |      |      | 24-hr 29 µg/m <sup>3</sup> |               |               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Particulate Matter 2.5 (PM<sub>2.5</sub>) -  $\mu\text{g}/\text{m}^3$   
Barge Landing - February 2023**

| <b>Concentration Ranges (<math>\mu\text{g}/\text{m}^3</math>)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---|------------------------|----------|---------------------|
| 0 - 5   | 247                    | 37.14    | 37.14               |
| 6 - 15  | 339                    | 50.98    | 88.12               |
| 16 - 25   | 65                     | 9.77     | 97.89               |
| 26 - 80   | 14                     | 2.11     | 100.00              |
| > 81.0  | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 665

Total Number of Hours: 672



**Wood Buffalo Environmental Association**  
**Frequency Distribution**

**Particulate Matter 2.5 (PM<sub>2.5</sub>) - μg/m<sup>3</sup>**  
**Barge Landing - February 2023**

| Concentration<br>Ranges (μg/m <sup>3</sup> ) | Wind Direction |     |    |     |    |     |    |     |    |     |    |     |    |     |    |     | Totals |
|--|----------------|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|--------|
|  | N              | NNE | NE | ENE | E  | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |        |
| 0 - 5  | 24             | 50  | 24 | 27  | 5  | 3   | 2  | 16  | 10 | 7   | 7  | 29  | 13 | 4   | 6  | 20  | 247    |
| 6 - 15                                       | 34             | 42  | 25 | 7   | 3  | 2   | 18 | 38  | 49 | 25  | 15 | 2   | 7  | 6   | 21 | 45  | 339    |
| 16 - 25                                      | 2              | 1   | 2  | 5   | 2  | 2   | 3  | 11  | 15 | 4   | 0  | 5   | 1  | 1   | 2  | 8   | 64     |
| 26 - 80                                      | 0              | 1   | 0  | 1   | 1  | 0   | 3  | 2   | 2  | 2   | 1  | 0   | 1  | 0   | 0  | 0   | 14     |
| > 81.0                                       | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| <b>Totals</b>                                | 60             | 94  | 51 | 40  | 11 | 7   | 26 | 67  | 76 | 38  | 23 | 36  | 22 | 11  | 29 | 73  | 664    |

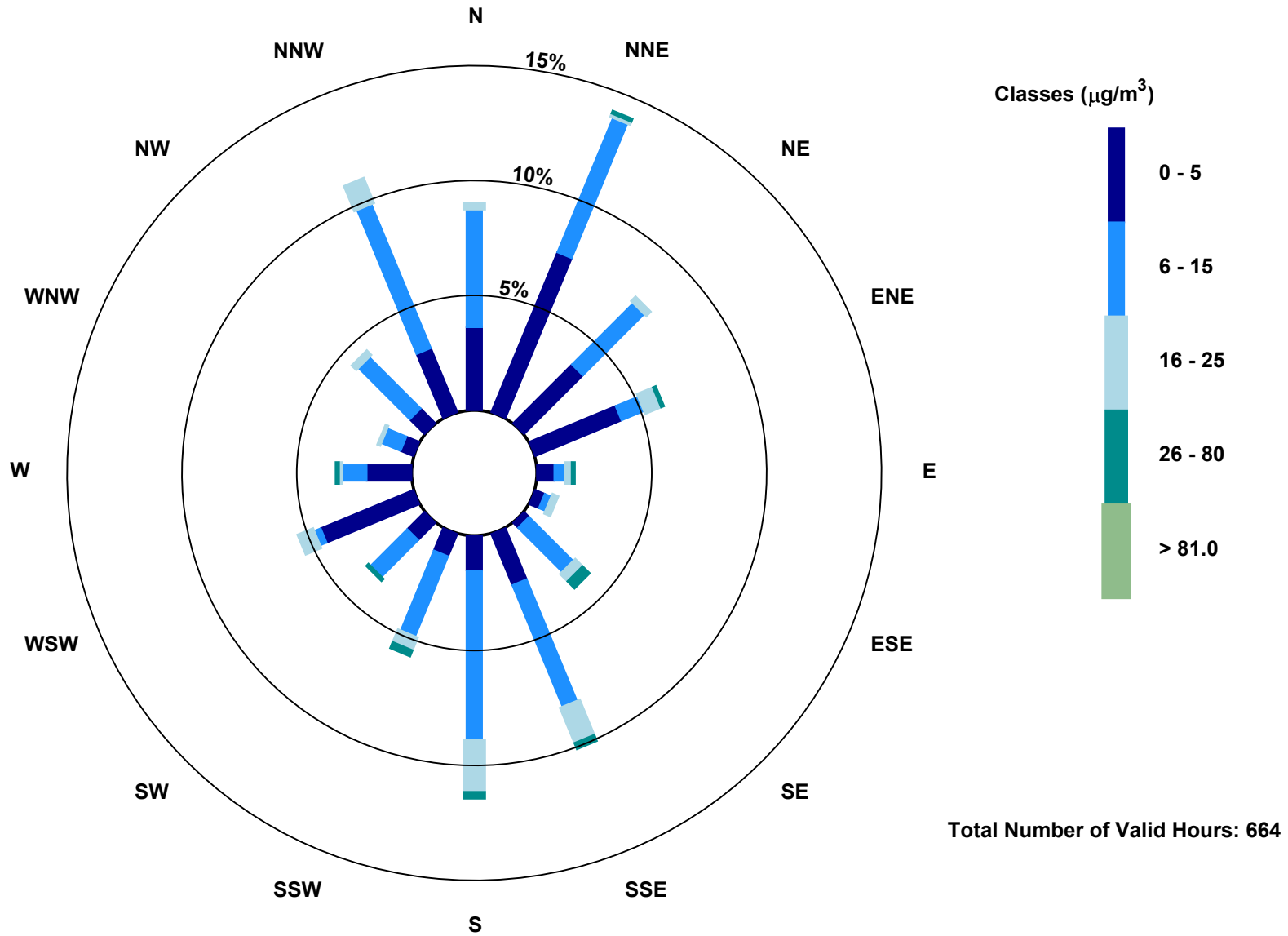
Total Number of Valid Hours: 664

Total Number of Hours: 672



Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Particulate Matter 2.5 (PM<sub>2.5</sub>) -  $\mu\text{g}/\text{m}^3$   
Barge Landing





**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

**Ambient Temperature (AT) - C**  
**Barge Landing - February 2023**

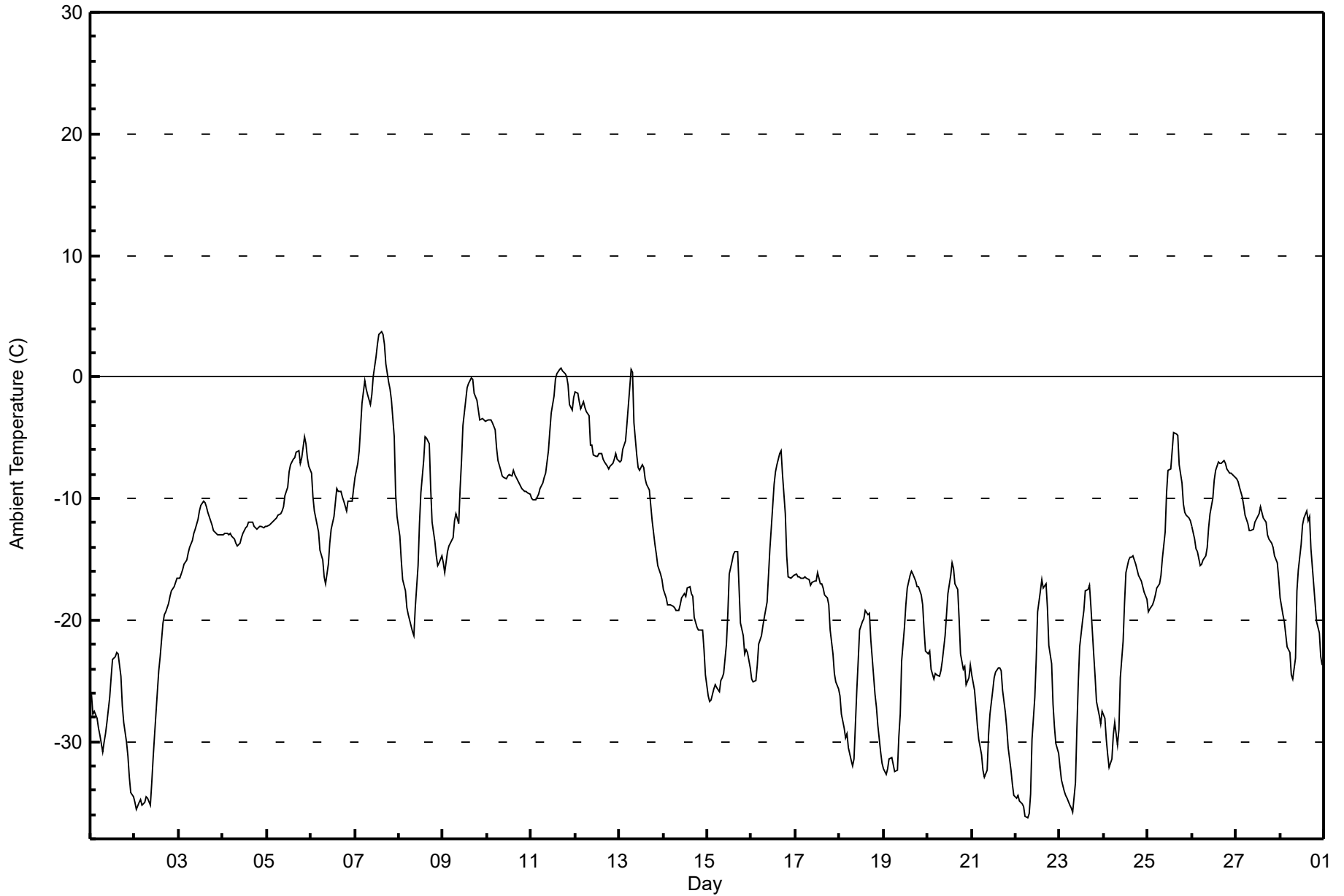
| Maximum Value: 3.8 C on Feb 7 15:00         |                               | Maximum Daily Average: -1.9 C on Feb 7   |       | Hours in Service: 672           |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |               |               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
|---|-------------------------------|--|-------|---------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------------|---------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-----------------|
| Minimum Value: -36.3 C on Feb 22 07:00      |                               | Minimum Daily Average: -28.4 C on Feb 21   |       | Hours of Data: 672              |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |               |               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| Maximum Diurnal Average: -11.5 C at hour 15 |                               | Minimum Diurnal Average: -19.5 C at hour 8   |       | Hours of Missing Data: 0        |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |               |               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| Monthly Average: -16.22 C                   |                               | Percentiles: P <sub>1</sub> = -35.3 P <sub>10</sub> = -29.6 Q <sub>1</sub> = -22.8 Median = -15.5 Q <sub>3</sub> = -9.4 P <sub>90</sub> = -4.9 P <sub>99</sub> = 0.8 |       | Hours of Calibration: 0         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |               |               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
|   |                               |  |       | Percent Operational Time: 100.0 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |               |               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| Day   | Hourly Period Ending At (MST) |  |       |                                 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Daily Average | Daily Maximum |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
|   | 1                             | 2  | 3     | 4                               | 5     | 6     | 7     | 8     | 9     | 10    | 11    | 12    | 13    | 14    | 15    | 16    | 17    | 18    | 19    | 20    | 21    | 22    | 23    | 24    |               |               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 1-Feb                                       | -26.1                         | -27.7  | -27.6 | -28.1                           | -28.9 | -29.5 | -30.9 | -30.1 | -29.3 | -28.4 | -26.4 | -24.8 | -23.3 | -23.0 | -22.6 | -22.7 | -24.6 | -27.1 | -28.5 | -30.1 | -31.2 | -32.9 | -34.2 | -34.6 | -28.0         | -22.6         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 2-Feb                                       | -35.0                         | -35.6  | -35.0 | -34.8                           | -35.3 | -35.0 | -34.5 | -34.6 | -35.3 | -33.4 | -31.3 | -29.5 | -25.9 | -24.2 | -23.0 | -20.3 | -19.6 | -19.3 | -18.6 | -18.1 | -17.6 | -17.3 | -16.9 | -16.6 | -26.9         | -16.6         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 3-Feb                                       | -16.5                         | -16.3  | -15.9 | -15.5                           | -15.0 | -14.5 | -14.0 | -13.4 | -12.9 | -12.5 | -11.7 | -11.0 | -10.5 | -10.2 | -10.3 | -10.7 | -11.2 | -11.8 | -12.2 | -12.6 | -12.8 | -13.0 | -12.9 | -13.0 | -12.9         | -10.2         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 4-Feb                                       | -12.9                         | -12.8  | -12.8 | -13.0                           | -12.9 | -13.1 | -13.4 | -13.7 | -13.9 | -13.7 | -13.2 | -12.9 | -12.5 | -12.3 | -12.0 | -12.0 | -12.0 | -12.3 | -12.5 | -12.4 | -12.3 | -12.3 | -12.4 | -12.3 | -12.7         | -12.0         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 5-Feb                                       | -12.3                         | -12.2  | -12.1 | -11.9                           | -11.8 | -11.6 | -11.4 | -11.3 | -11.0 | -10.7 | -9.7  | -9.1  | -7.8  | -7.3  | -6.8  | -6.6  | -6.2  | -6.1  | -7.1  | -6.6  | -4.9  | -5.5  | -6.7  | -7.3  | -8.9          | -4.9          |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 6-Feb                                       | -8.0                          | -9.9   | -11.0 | -12.2                           | -12.7 | -14.3 | -15.1 | -16.4 | -17.0 | -15.4 | -13.7 | -12.5 | -11.5 | -10.4 | -9.2  | -9.4  | -9.4  | -9.9  | -10.3 | -11.1 | -10.3 | -10.2 | -10.2 | -9.2  | -11.6         | -8.0          |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 7-Feb                                       | -8.3                          | -7.1   | -6.1  | -4.1                            | -2.1  | -0.3  | -1.1  | -1.5  | -2.3  | -1.5  | 0.0   | 1.7   | 2.7   | 3.4   | 3.8   | 3.5   | 2.7   | 1.0   | -0.4  | -1.0  | -1.9  | -4.9  | -9.7  | -11.5 | -1.9          | 3.8           |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 8-Feb                                       | -13.1                         | -15.1  | -16.7 | -17.6                           | -19.0 | -19.5 | -20.4 | -20.9 | -21.3 | -19.0 | -15.5 | -12.0 | -9.6  | -6.9  | -4.9  | -5.0  | -5.5  | -9.1  | -12.0 | -13.6 | -14.7 | -15.5 | -15.3 | -14.7 | -14.0         | -4.9          |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 9-Feb                                       | -15.3                         | -16.1  | -14.4 | -13.9                           | -13.7 | -13.2 | -11.8 | -11.3 | -12.0 | -9.2  | -6.9  | -4.0  | -1.9  | -0.9  | -0.6  | -0.1  | -0.2  | -1.4  | -1.9  | -2.7  | -3.6  | -3.4  | -3.6  | -3.7  | -6.9          | -0.1          |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 10-Feb                                      | -3.6                          | -3.6   | -3.5  | -3.8                            | -4.4  | -5.8  | -6.9  | -7.7  | -8.1  | -8.2  | -8.4  | -8.1  | -8.0  | -8.1  | -7.7  | -8.0  | -8.3  | -8.7  | -8.9  | -9.2  | -9.4  | -9.5  | -9.5  | -9.7  | -7.4          | -3.5          |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 11-Feb                                      | -10.0                         | -10.2  | -10.1 | -9.9                            | -9.6  | -9.2  | -8.7  | -8.3  | -7.9  | -6.0  | -4.4  | -2.9  | -1.6  | -0.2  | 0.3   | 0.6   | 0.7   | 0.5   | 0.3   | 0.1   | -0.7  | -2.3  | -2.7  | -1.6  | -4.3          | 0.7           |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 12-Feb                                      | -1.2                          | -1.3   | -2.0  | -2.6                            | -2.1  | -2.5  | -2.9  | -3.2  | -5.7  | -5.7  | -6.4  | -6.6  | -6.5  | -6.3  | -6.4  | -6.7  | -7.0  | -7.4  | -7.5  | -7.4  | -7.1  | -6.8  | -6.3  | -6.8  | -5.2          | -1.2          |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 13-Feb                                      | -7.0                          | -6.9   | -6.0  | -5.3                            | -3.8  | -2.4  | 0.6   | 0.3   | -3.7  | -6.4  | -7.4  | -7.7  | -7.3  | -7.5  | -8.4  | -8.8  | -9.2  | -10.6 | -11.8 | -13.8 | -14.6 | -15.5 | -16.2 | -16.7 | -8.2          | 0.6           |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 14-Feb                                      | -17.5                         | -18.2  | -18.8 | -18.7                           | -18.8 | -18.9 | -19.0 | -19.2 | -19.3 | -18.7 | -18.2 | -17.8 | -18.1 | -17.4 | -17.3 | -17.8 | -18.0 | -19.8 | -20.6 | -20.8 | -20.8 | -20.9 | -22.4 | -24.6 | -19.2         | -17.3         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 15-Feb                                      | -26.3                         | -26.7  | -26.6 | -25.6                           | -25.3 | -25.5 | -25.9 | -24.9 | -24.8 | -24.4 | -22.0 | -19.4 | -16.3 | -15.2 | -14.6 | -14.4 | -14.4 | -17.4 | -20.2 | -21.3 | -22.8 | -22.4 | -22.7 | -24.0 | -21.8         | -14.4         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 16-Feb                                      | -24.8                         | -25.1  | -25.0 | -23.7                           | -22.0 | -21.3 | -20.5 | -19.8 | -18.5 | -16.3 | -14.1 | -12.4 | -8.9  | -7.8  | -7.2  | -6.3  | -6.1  | -8.1  | -11.3 | -14.7 | -16.5 | -16.5 | -16.4 | -16.4 | -15.8         | -6.1          |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 17-Feb                                      | -16.2                         | -16.4  | -16.5 | -16.5                           | -16.5 | -16.5 | -16.6 | -16.7 | -17.1 | -16.9 | -16.8 | -16.7 | -16.1 | -17.0 | -17.1 | -17.3 | -17.9 | -18.2 | -18.8 | -20.9 | -22.8 | -24.4 | -25.0 | -25.6 | -18.4         | -16.1         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 18-Feb                                      | -26.3                         | -27.7  | -28.9 | -29.7                           | -29.4 | -30.5 | -31.6 | -32.0 | -31.4 | -25.8 | -23.4 | -20.8 | -20.1 | -19.9 | -19.2 | -19.6 | -19.4 | -21.6 | -24.6 | -26.1 | -27.2 | -28.7 | -30.8 | -31.8 | -26.1         | -19.2         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 19-Feb                                      | -32.2                         | -32.7  | -32.3 | -31.4                           | -31.4 | -31.9 | -32.4 | -32.3 | -29.6 | -27.7 | -23.4 | -20.6 | -18.7 | -17.4 | -16.3 | -16.0 | -16.2 | -16.8 | -17.2 | -17.3 | -18.0 | -18.8 | -20.8 | -22.5 | -23.9         | -16.0         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 20-Feb                                      | -22.7                         | -22.5  | -24.0 | -24.8                           | -24.5 | -24.5 | -24.6 | -24.2 | -23.4 | -21.3 | -19.5 | -17.8 | -16.4 | -15.3 | -15.7 | -17.0 | -17.5 | -19.9 | -22.8 | -24.0 | -23.9 | -25.3 | -24.8 | -23.7 | -21.7         | -15.3         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 21-Feb                                      | -24.5                         | -25.8  | -27.1 | -28.6                           | -29.8 | -31.1 | -32.4 | -32.9 | -32.4 | -29.5 | -27.7 | -25.8 | -24.7 | -24.3 | -23.9 | -23.9 | -24.2 | -25.8 | -27.6 | -28.9 | -30.5 | -32.3 | -33.5 | -34.4 | -28.4         | -23.9         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 22-Feb                                      | -34.6                         | -34.4  | -34.9 | -35.1                           | -35.4 | -36.1 | -36.3 | -35.9 | -34.3 | -29.8 | -26.4 | -23.2 | -19.3 | -17.6 | -16.6 | -17.4 | -17.0 | -19.0 | -22.1 | -23.6 | -27.0 | -28.7 | -30.1 | -31.0 | -27.7         | -16.6         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 23-Feb                                      | -32.1                         | -33.2  | -34.1 | -34.4                           | -34.7 | -35.2 | -35.4 | -35.8 | -33.4 | -29.0 | -25.2 | -22.2 | -20.1 | -19.2 | -17.6 | -17.5 | -17.1 | -18.9 | -22.7 | -24.7 | -26.7 | -27.8 | -28.6 | -27.5 | -27.2         | -17.1         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 24-Feb                                      | -28.1                         | -29.8  | -31.1 | -32.1                           | -31.4 | -29.4 | -28.4 | -30.3 | -29.0 | -24.7 | -21.7 | -18.6 | -16.1 | -15.0 | -14.8 | -14.8 | -14.7 | -15.4 | -15.8 | -16.3 | -16.8 | -17.2 | -17.7 | -18.3 | -22.0         | -14.7         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 25-Feb                                      | -19.3                         | -19.1  | -18.7 | -18.4                           | -17.9 | -17.4 | -17.0 | -16.3 | -15.0 | -12.8 | -9.5  | -7.7  | -7.6  | -6.1  | -4.6  | -4.6  | -4.8  | -7.3  | -8.8  | -10.5 | -11.2 | -11.4 | -11.7 | -11.9 | -12.1         | -4.6          |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 26-Feb                                      | -12.3                         | -13.4  | -14.2 | -14.4                           | -15.5 | -15.4 | -15.0 | -14.7 | -14.0 | -12.5 | -11.3 | -10.0 | -8.6  | -7.7  | -7.0  | -7.1  | -7.1  | -6.9  | -7.1  | -7.5  | -7.9  | -8.0  | -8.0  | -8.2  | -10.6         | -6.9          |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 27-Feb                                      | -8.4                          | -8.6   | -9.0  | -9.9                            | -10.6 | -11.4 | -12.0 | -12.6 | -12.7 | -12.6 | -11.9 | -11.8 | -11.2 | -10.6 | -11.1 | -11.7 | -12.0 | -13.0 | -13.3 | -13.7 | -14.0 | -14.7 | -15.3 | -16.6 | -12.0         | -8.4          |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
| 28-Feb                                      | -18.2                         | -19.6  | -20.2 | -21.1                           | -22.2 | -22.7 | -24.5 | -24.9 | -23.2 | -17.6 | -15.8 | -13.8 | -12.2 | -11.6 | -11.0 | -11.8 | -11.4 | -14.2 | -17.1 | -18.6 | -20.1 | -21.1 | -23.0 | -23.7 | -18.3         | -11.0         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
|   |                               |  |       |                                 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | -18.3 | -18.9         | -19.1         | -19.2 | -19.2 | -19.2 | -19.4 | -19.5 | -19.2 | -17.5 | -15.8 | -14.2 | -12.8 | -12.0 | -11.5 | -11.6 | -11.7 | -13.0 | -14.3 | -15.3 | -16.0 | -16.7 | -17.4 | -17.8 | Diurnal Average |
|   |                               |  |       |                                 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | -1.2  | -1.3          | -2.0          | -2.6  | -2.1  | -0.3  | 0.6   | 0.3   | -2.3  | -1.5  | 0.0   | 1.7   | 2.7   | 3.4   | 3.8   | 3.5   | 2.7   | 1.0   | 0.3   | 0.1   | -0.7  | -2.3  | -2.7  | -1.6  | Diurnal Maximum |





**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Ambient Temperature (AT) - C**  
**Barge Landing - February 2023**





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Ambient Temperature (AT) - C  
Barge Landing - February 2023**

| <b>Concentration Ranges (C)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---------------------------------|------------------------|----------|---------------------|
| -50 - -20                       | 211                    | 31.40    | 31.40               |
| -20 - 0                         | 446                    | 66.37    | 97.77               |
| 0 - 10                          | 15                     | 2.23     | 100.00              |
| 10 - 20                         | 0                      | 0.00     | 100.00              |
| > 20                            | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 672

Total Number of Hours: 672



**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

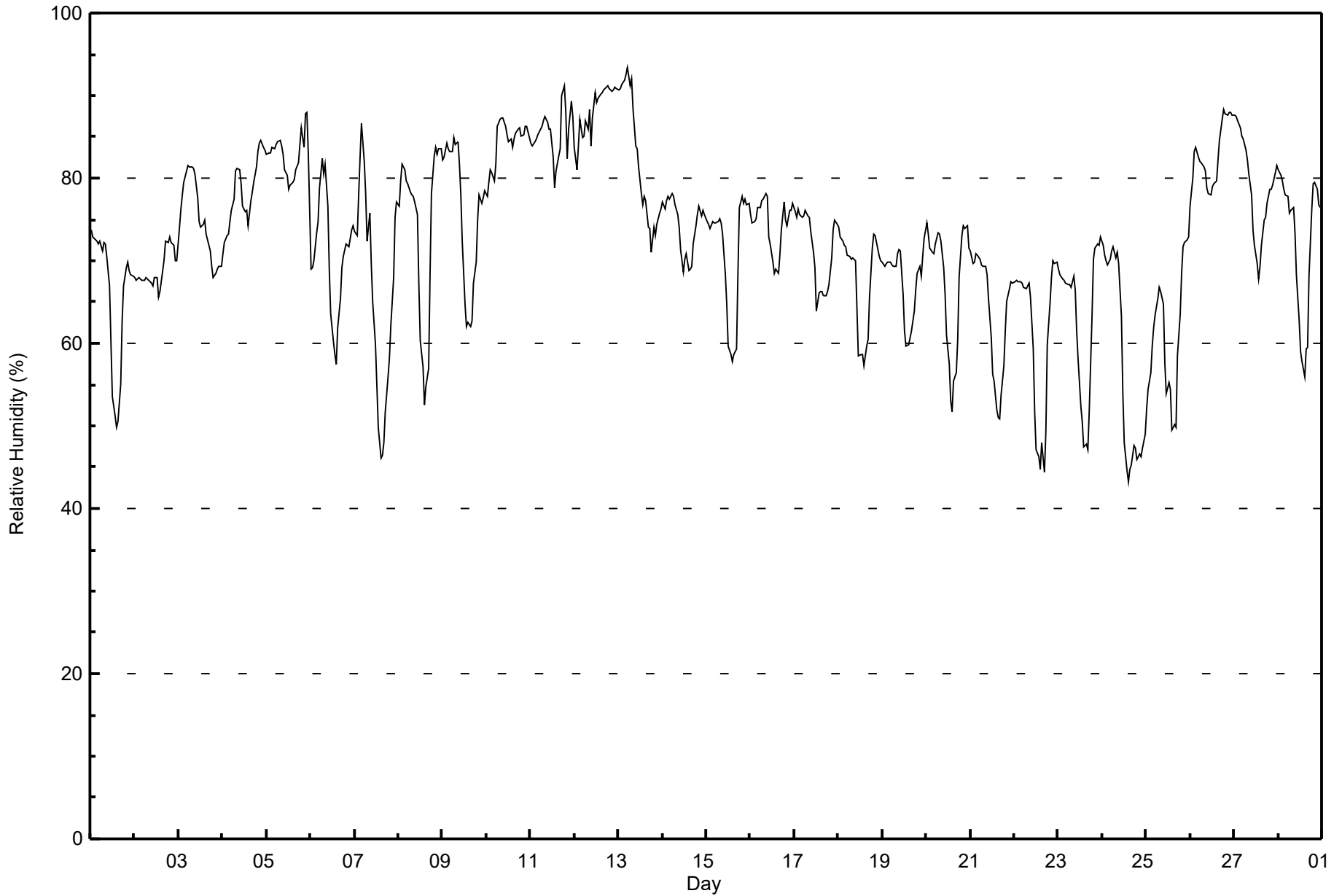
**Relative Humidity (RH) - %**  
**Barge Landing - February 2023**

| Maximum Value: 93.4 % on Feb 13 06:00      Maximum Daily Average: 88.1 % on Feb 12   |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Hours in Service: 672<br>Hours of Data: 672  |      |                 |               |               |
|--|-------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|--|------|-----------------|---------------|---------------|
| Minimum Value: 43.2 % on Feb 24 15:00      Minimum Daily Average: 57.5 % on Feb 24<br>Maximum Diurnal Average: 77.1 % at hour 7      Minimum Diurnal Average: 63.2 % at hour 15<br>Monthly Average: 72.56 %      Percentiles: P <sub>1</sub> = 46.1 P <sub>10</sub> = 57.7 Q <sub>1</sub> = 67.6 Median = 73.2 Q <sub>3</sub> = 79.8 P <sub>90</sub> = 85.2 P <sub>99</sub> = 91.2 |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Hours of Missing Data: 0<br>Hours of Calibration: 0<br>Percent Operational Time: 100.0 |      |                 |               |               |
| Day  | Hourly Period Ending At (MST) |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |      |                 | Daily Average | Daily Maximum |
|  | 1                             | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20   | 21   | 22   | 23   | 24              |               |               |
| 1-Feb  | 73.8                          | 72.8 | 72.8 | 72.4 | 72.0 | 72.3 | 71.1 | 72.2 | 72.1 | 70.5 | 67.0 | 60.2 | 53.5 | 51.2 | 49.9 | 50.5 | 55.0 | 62.7 | 67.0 | 69.1 | 69.8 | 68.8   | 68.2 | 68.1            | 66.0          | 73.8          |
| 2-Feb  | 68.0                          | 67.5 | 68.0 | 67.7 | 67.6 | 67.7 | 67.9 | 67.7 | 67.5 | 67.3 | 66.9 | 68.0 | 67.9 | 65.6 | 66.4 | 68.9 | 70.2 | 72.3 | 72.2 | 72.9 | 72.2 | 71.8   | 70.0 | 70.1            | 68.8          | 72.9          |
| 3-Feb  | 74.1                          | 76.3 | 77.9 | 79.5 | 80.9 | 81.5 | 81.4 | 81.4 | 81.2 | 80.5 | 77.6 | 74.7 | 74.1 | 74.3 | 74.9 | 73.2 | 72.5 | 71.2 | 69.4 | 68.0 | 68.4 | 68.9   | 69.3 | 69.3            | 75.0          | 81.5          |
| 4-Feb  | 70.8                          | 72.2 | 73.1 | 73.1 | 74.8 | 76.0 | 77.5 | 80.8 | 81.2 | 81.1 | 79.4 | 76.6 | 75.8 | 76.0 | 74.2 | 77.2 | 78.3 | 79.6 | 81.4 | 83.2 | 84.2 | 84.6   | 83.8 | 83.4            | 78.3          | 84.6          |
| 5-Feb  | 83.0                          | 83.0 | 83.1 | 83.7 | 83.5 | 84.1 | 84.5 | 84.6 | 83.9 | 82.9 | 81.0 | 80.4 | 78.6 | 79.1 | 79.5 | 79.8 | 81.0 | 81.8 | 84.2 | 86.2 | 83.8 | 87.8   | 88.0 | 83.1            | 82.9          | 88.0          |
| 6-Feb  | 69.0                          | 69.1 | 69.9 | 73.4 | 74.8 | 78.8 | 82.4 | 80.4 | 81.7 | 76.6 | 69.0 | 63.6 | 60.2 | 58.7 | 57.5 | 61.9 | 65.4 | 69.1 | 70.6 | 72.0 | 71.8 | 71.6   | 73.8 | 74.2            | 70.6          | 82.4          |
| 7-Feb  | 73.5                          | 73.0 | 78.0 | 82.6 | 86.6 | 82.0 | 78.2 | 72.3 | 75.8 | 69.7 | 65.1 | 59.8 | 54.9 | 49.9 | 46.2 | 46.5 | 48.0 | 51.7 | 55.9 | 58.3 | 62.2 | 68.0   | 75.2 | 77.1            | 66.3          | 86.6          |
| 8-Feb  | 76.7                          | 79.7 | 81.8 | 81.0 | 79.7 | 79.3 | 78.4 | 78.0 | 77.8 | 77.1 | 75.7 | 67.0 | 60.4 | 57.1 | 52.5 | 54.7 | 57.0 | 68.2 | 78.1 | 82.8 | 83.8 | 82.9   | 83.5 | 83.6            | 74.0          | 83.8          |
| 9-Feb  | 82.2                          | 82.5 | 84.2 | 83.5 | 83.2 | 83.3 | 84.9 | 84.0 | 84.4 | 81.7 | 78.0 | 72.3 | 64.7 | 62.0 | 62.6 | 62.0 | 62.7 | 67.3 | 69.8 | 74.9 | 77.9 | 77.0   | 77.6 | 78.6            | 75.9          | 84.9          |
| 10-Feb   | 77.8                          | 79.4 | 81.1 | 80.7 | 79.7 | 81.7 | 86.3 | 87.2 | 87.3 | 87.3 | 86.3 | 85.2 | 84.4 | 84.7 | 83.7 | 84.8 | 85.4 | 85.9 | 86.2 | 85.0 | 85.3 | 86.3   | 86.2 | 84.8            | 84.3          | 87.3          |
| 11-Feb   | 84.3                          | 84.0 | 84.4 | 84.7 | 85.3 | 85.6 | 86.3 | 86.9 | 87.5 | 86.7 | 86.0 | 86.0 | 82.6 | 78.8 | 80.9 | 82.7 | 83.6 | 89.9 | 91.3 | 87.9 | 82.4 | 85.9   | 89.3 | 87.5            | 85.4          | 91.3          |
| 12-Feb   | 83.8                          | 81.0 | 84.0 | 87.1 | 84.9 | 85.1 | 86.9 | 86.0 | 88.4 | 83.9 | 87.2 | 90.4 | 89.1 | 89.6 | 90.1 | 90.4 | 90.7 | 91.1 | 91.2 | 90.9 | 90.6 | 90.7   | 90.9 | 90.8            | 88.1          | 91.2          |
| 13-Feb   | 90.7                          | 90.9 | 91.4 | 91.9 | 92.6 | 93.4 | 91.3 | 92.1 | 88.5 | 83.8 | 83.6 | 81.4 | 78.1 | 76.7 | 77.8 | 77.3 | 74.1 | 73.9 | 71.0 | 74.0 | 73.1 | 74.4   | 75.8 | 76.3            | 82.2          | 93.4          |
| 14-Feb   | 77.1                          | 76.4 | 77.3 | 77.8 | 77.4 | 78.1 | 77.7 | 76.8 | 75.6 | 74.1 | 71.3 | 68.6 | 70.2 | 70.9 | 68.8 | 69.0 | 69.3 | 72.0 | 74.2 | 75.6 | 76.6 | 75.5   | 76.1 | 75.7            | 74.3          | 78.1          |
| 15-Feb   | 74.7                          | 74.4 | 73.8 | 74.7 | 74.6 | 74.5 | 74.7 | 75.1 | 74.6 | 73.3 | 68.4 | 64.7 | 59.6 | 58.7 | 57.7 | 58.6 | 59.2 | 68.6 | 76.4 | 77.8 | 76.9 | 77.5   | 76.7 | 76.9            | 70.9          | 77.8          |
| 16-Feb   | 75.7                          | 74.6 | 74.7 | 75.1 | 76.5 | 76.4 | 77.4 | 77.4 | 78.2 | 77.8 | 72.9 | 72.0 | 69.8 | 68.5 | 69.0 | 68.4 | 70.8 | 73.7 | 77.1 | 74.9 | 74.3 | 76.1   | 76.2 | 77.0            | 74.4          | 78.2          |
| 17-Feb   | 75.9                          | 75.3 | 76.3 | 75.6 | 75.2 | 75.5 | 76.2 | 75.4 | 75.3 | 73.5 | 71.0 | 69.1 | 63.9 | 66.0 | 66.2 | 66.2 | 65.8 | 65.7 | 66.3 | 67.2 | 70.4 | 73.7   | 74.9 | 74.5            | 71.5          | 76.3          |
| 18-Feb   | 74.0                          | 73.0 | 72.4 | 71.8 | 71.6 | 70.6 | 70.4 | 70.1 | 70.4 | 69.9 | 64.2 | 58.4 | 58.6 | 58.6 | 57.4 | 59.7 | 60.6 | 65.5 | 71.6 | 73.2 | 73.0 | 72.2   | 70.5 | 70.0            | 67.8          | 74.0          |
| 19-Feb   | 69.8                          | 69.2 | 69.6 | 69.9 | 69.8 | 69.4 | 69.3 | 69.3 | 70.9 | 71.3 | 71.2 | 65.9 | 61.6 | 59.6 | 59.8 | 60.6 | 61.6 | 63.9 | 66.5 | 68.5 | 69.4 | 68.2   | 70.6 | 72.7            | 67.4          | 72.7          |
| 20-Feb   | 74.6                          | 73.2 | 71.5 | 71.0 | 70.9 | 72.0 | 73.3 | 73.2 | 72.4 | 69.1 | 66.0 | 60.9 | 57.5 | 53.1 | 51.8 | 55.5 | 56.5 | 60.4 | 68.0 | 73.0 | 74.3 | 74.0   | 74.2 | 71.6            | 67.4          | 74.6          |
| 21-Feb   | 71.2                          | 69.6 | 69.8 | 70.8 | 70.7 | 70.1 | 69.6 | 69.4 | 69.4 | 68.4 | 65.5 | 60.7 | 56.3 | 55.5 | 51.9 | 51.1 | 50.9 | 53.7 | 57.2 | 61.4 | 65.1 | 66.7   | 67.5 | 67.3            | 63.7          | 71.2          |
| 22-Feb   | 67.5                          | 67.7 | 67.5 | 67.5 | 67.3 | 66.9 | 66.7 | 66.9 | 67.3 | 65.7 | 59.4 | 51.7 | 47.2 | 46.2 | 44.8 | 47.9 | 44.4 | 49.3 | 59.8 | 64.9 | 68.0 | 69.9   | 69.7 | 69.8            | 61.0          | 69.9          |
| 23-Feb   | 69.0                          | 68.3 | 67.8 | 67.7 | 67.4 | 67.2 | 67.1 | 66.8 | 68.2 | 66.5 | 61.5 | 58.1 | 52.5 | 50.6 | 47.5 | 47.9 | 47.1 | 51.8 | 63.3 | 70.2 | 71.5 | 72.1   | 71.8 | 72.9            | 63.1          | 72.9          |
| 24-Feb   | 71.8                          | 70.7 | 70.0 | 69.4 | 70.3 | 71.2 | 71.7 | 70.4 | 71.0 | 69.7 | 63.2 | 53.9 | 47.9 | 44.6 | 43.2 | 44.8 | 45.2 | 47.6 | 47.2 | 46.0 | 46.6 | 46.3   | 47.3 | 49.1            | 57.5          | 71.8          |
| 25-Feb   | 52.0                          | 54.5 | 56.4 | 59.7 | 61.9 | 63.5 | 65.4 | 66.7 | 66.3 | 64.7 | 57.7 | 53.9 | 55.3 | 54.4 | 49.4 | 50.1 | 49.9 | 58.4 | 63.5 | 68.5 | 71.7 | 72.3   | 72.5 | 72.9            | 60.9          | 72.9          |
| 26-Feb   | 76.6                          | 80.0 | 83.3 | 83.8 | 82.5 | 82.0 | 81.9 | 81.4 | 80.9 | 78.9 | 78.1 | 77.9 | 79.0 | 79.3 | 79.6 | 82.2 | 84.6 | 87.1 | 88.2 | 87.8 | 87.6 | 87.9   | 88.0 | 87.7            | 82.8          | 88.2          |
| 27-Feb   | 87.7                          | 87.5 | 87.0 | 86.1 | 85.1 | 84.7 | 83.4 | 82.2 | 80.6 | 77.9 | 73.8 | 71.9 | 69.7 | 67.8 | 69.2 | 71.9 | 74.9 | 75.2 | 76.9 | 78.7 | 78.7 | 79.1   | 80.6 | 81.5            | 78.8          | 87.7          |
| 28-Feb   | 81.0                          | 80.4 | 79.7 | 78.6 | 77.9 | 77.8 | 75.8 | 76.0 | 76.5 | 73.4 | 68.3 | 62.7 | 58.9 | 57.7 | 56.0 | 59.3 | 59.4 | 68.2 | 76.3 | 79.3 | 79.5 | 78.7   | 76.8 | 76.5            | 72.3          | 81.0          |
| 75.2 75.2 75.9 76.5 76.6 76.8 77.1 76.8 77.0 75.1 72.0 68.4 65.4 64.1 63.2 64.4 65.1 68.8 72.2 74.0 74.6 75.3 75.9 75.8  |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |      | Diurnal Average |               |               |
| 90.7 90.9 91.4 91.9 92.6 93.4 91.3 92.1 88.5 87.3 87.2 90.4 89.1 89.6 90.1 90.4 90.7 91.1 91.3 90.9 90.6 90.7 90.9 90.8  |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |      | Diurnal Maximum |               |               |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Relative Humidity (RH) - %**  
**Barge Landing - February 2023**





**Wood Buffalo Environmental Association**

**Summary of Hour Averages**

**Barometric Pressure (BP) - inHg**

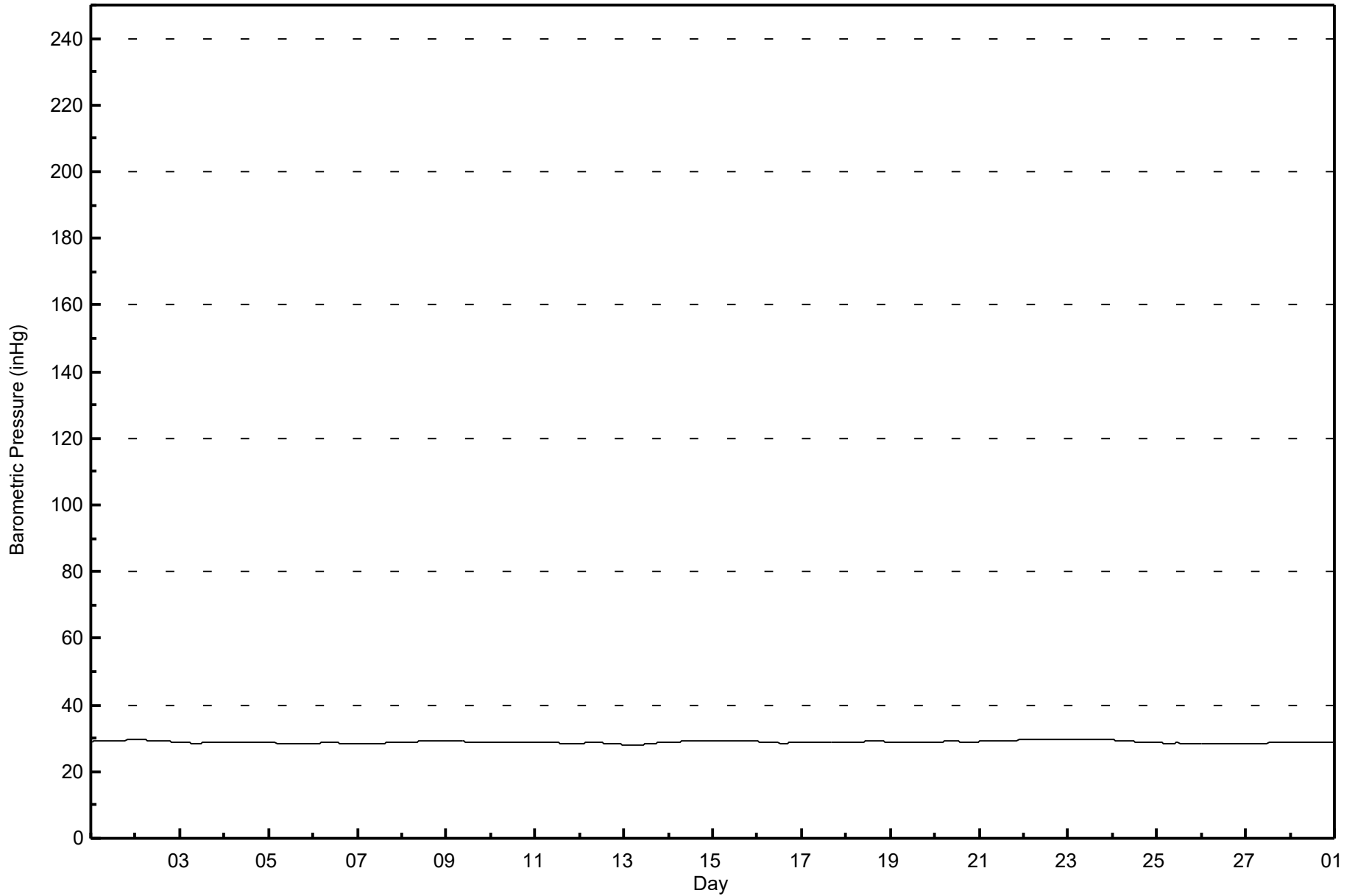
**Barge Landing - February 2023**

| Maximum Value: 29.7 inHg on Feb 23 10:00      Maximum Daily Average: 29.7 inHg on Feb 23   |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Hours in Service: 672           |      |                 |               |               |      |
|--|-------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|---------------------------------|------|-----------------|---------------|---------------|------|
| Minimum Value: 28.0 inHg on Feb 13 06:00      Minimum Daily Average: 28.3 inHg on Feb 13   |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Hours of Data: 672              |      |                 |               |               |      |
| Maximum Diurnal Average: 28.9 inHg at hour 11      Minimum Diurnal Average: 28.9 inHg at hour 17   |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Hours of Missing Data: 0        |      |                 |               |               |      |
| Monthly Average: 28.87 inHg      Percentiles: P <sub>1</sub> = 28.1 P <sub>10</sub> = 28.5 Q <sub>1</sub> = 28.6 Median = 28.8 Q <sub>3</sub> = 29.1 P <sub>90</sub> = 29.4 P <sub>99</sub> = 29.7 |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Hours of Calibration: 0         |      |                 |               |               |      |
|  |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Percent Operational Time: 100.0 |      |                 |               |               |      |
| Day  | Hourly Period Ending At (MST) |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                                 |      |                 | Daily Average | Daily Maximum |      |
|  | 1                             | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20   | 21   | 22                              | 23   | 24              |               |               |      |
| 1-Feb  | 29.0                          | 29.0 | 29.0 | 29.1 | 29.1 | 29.1 | 29.2 | 29.2 | 29.2 | 29.3 | 29.3 | 29.3 | 29.3 | 29.4 | 29.4 | 29.4 | 29.4 | 29.4 | 29.4 | 29.5 | 29.5 | 29.5                            | 29.5 | 29.5            | 29.5          | 29.3          | 29.5 |
| 2-Feb  | 29.5                          | 29.5 | 29.5 | 29.5 | 29.5 | 29.5 | 29.4 | 29.4 | 29.4 | 29.4 | 29.4 | 29.3 | 29.3 | 29.2 | 29.2 | 29.1 | 29.1 | 29.1 | 29.0 | 29.0 | 28.9 | 28.9                            | 28.9 | 28.8            | 28.8          | 29.2          | 29.5 |
| 3-Feb  | 28.8                          | 28.8 | 28.7 | 28.7 | 28.6 | 28.6 | 28.6 | 28.6 | 28.6 | 28.6 | 28.6 | 28.6 | 28.6 | 28.6 | 28.6 | 28.6 | 28.7 | 28.7 | 28.7 | 28.7 | 28.7 | 28.7                            | 28.7 | 28.7            | 28.7          | 28.6          | 28.8 |
| 4-Feb  | 28.7                          | 28.7 | 28.7 | 28.7 | 28.7 | 28.7 | 28.7 | 28.7 | 28.8 | 28.8 | 28.8 | 28.8 | 28.8 | 28.8 | 28.8 | 28.8 | 28.8 | 28.8 | 28.8 | 28.8 | 28.8 | 28.7                            | 28.7 | 28.7            | 28.7          | 28.7          | 28.8 |
| 5-Feb  | 28.7                          | 28.7 | 28.7 | 28.6 | 28.6 | 28.6 | 28.5 | 28.5 | 28.5 | 28.5 | 28.4 | 28.4 | 28.4 | 28.4 | 28.3 | 28.3 | 28.3 | 28.3 | 28.3 | 28.3 | 28.3 | 28.3                            | 28.4 | 28.5            | 28.4          | 28.7          | 28.7 |
| 6-Feb  | 28.5                          | 28.5 | 28.6 | 28.6 | 28.6 | 28.6 | 28.6 | 28.6 | 28.7 | 28.7 | 28.7 | 28.7 | 28.6 | 28.6 | 28.6 | 28.6 | 28.5 | 28.5 | 28.5 | 28.5 | 28.4 | 28.4                            | 28.4 | 28.4            | 28.6          | 28.6          | 28.7 |
| 7-Feb  | 28.4                          | 28.4 | 28.4 | 28.4 | 28.4 | 28.4 | 28.5 | 28.5 | 28.5 | 28.6 | 28.6 | 28.6 | 28.6 | 28.6 | 28.6 | 28.6 | 28.6 | 28.6 | 28.6 | 28.7 | 28.7 | 28.7                            | 28.7 | 28.8            | 28.6          | 28.8          | 28.8 |
| 8-Feb  | 28.8                          | 28.8 | 28.9 | 28.9 | 28.9 | 28.9 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | 29.1 | 29.1 | 29.1 | 29.1 | 29.1 | 29.1 | 29.1 | 29.1 | 29.1 | 29.1 | 29.1                            | 29.1 | 29.1            | 29.0          | 29.1          | 29.1 |
| 9-Feb  | 29.1                          | 29.1 | 29.1 | 29.1 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | 28.9 | 28.9 | 28.9 | 28.9 | 28.9 | 28.8 | 28.8                            | 28.8 | 28.8            | 29.0          | 29.1          | 29.1 |
| 10-Feb   | 28.8                          | 28.8 | 28.8 | 28.8 | 28.8 | 28.8 | 28.8 | 28.7 | 28.7 | 28.7 | 28.7 | 28.7 | 28.7 | 28.7 | 28.7 | 28.7 | 28.7 | 28.7 | 28.7 | 28.7 | 28.7 | 28.7                            | 28.7 | 28.7            | 28.7          | 28.7          | 28.8 |
| 11-Feb   | 28.7                          | 28.7 | 28.7 | 28.7 | 28.7 | 28.7 | 28.7 | 28.7 | 28.7 | 28.7 | 28.7 | 28.6 | 28.6 | 28.6 | 28.6 | 28.5 | 28.5 | 28.5 | 28.5 | 28.6 | 28.6 | 28.6                            | 28.6 | 28.6            | 28.6          | 28.6          | 28.7 |
| 12-Feb   | 28.6                          | 28.6 | 28.6 | 28.6 | 28.6 | 28.6 | 28.6 | 28.6 | 28.6 | 28.6 | 28.6 | 28.6 | 28.6 | 28.6 | 28.6 | 28.5 | 28.5 | 28.5 | 28.4 | 28.4 | 28.3 | 28.2                            | 28.2 | 28.1            | 28.5          | 28.6          | 28.6 |
| 13-Feb   | 28.1                          | 28.1 | 28.0 | 28.0 | 28.0 | 28.0 | 28.0 | 28.0 | 28.1 | 28.1 | 28.2 | 28.2 | 28.3 | 28.3 | 28.4 | 28.4 | 28.5 | 28.6 | 28.6 | 28.7 | 28.7 | 28.7                            | 28.8 | 28.8            | 28.3          | 28.8          | 28.8 |
| 14-Feb   | 28.8                          | 28.9 | 28.9 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | 29.1 | 29.1 | 29.1 | 29.1 | 29.1 | 29.1 | 29.1 | 29.1 | 29.1 | 29.2 | 29.2 | 29.2 | 29.2                            | 29.2 | 29.2            | 29.1          | 29.2          | 29.2 |
| 15-Feb   | 29.2                          | 29.2 | 29.2 | 29.2 | 29.2 | 29.2 | 29.2 | 29.2 | 29.2 | 29.2 | 29.2 | 29.2 | 29.2 | 29.2 | 29.2 | 29.2 | 29.2 | 29.1 | 29.1 | 29.1 | 29.1 | 29.1                            | 29.1 | 29.1            | 29.2          | 29.2          | 29.2 |
| 16-Feb   | 29.0                          | 29.0 | 29.0 | 28.9 | 28.9 | 28.9 | 28.8 | 28.8 | 28.7 | 28.7 | 28.6 | 28.6 | 28.6 | 28.6 | 28.5 | 28.5 | 28.6 | 28.6 | 28.7 | 28.7 | 28.8 | 28.8                            | 28.8 | 28.8            | 28.7          | 29.0          | 29.0 |
| 17-Feb   | 28.8                          | 28.8 | 28.9 | 28.9 | 28.9 | 28.9 | 28.9 | 28.9 | 28.9 | 28.9 | 28.9 | 28.9 | 28.9 | 28.9 | 28.9 | 28.9 | 28.9 | 28.9 | 28.9 | 28.9 | 28.9 | 28.9                            | 28.9 | 28.9            | 28.9          | 28.9          | 28.9 |
| 18-Feb   | 28.9                          | 28.9 | 28.9 | 28.9 | 28.9 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | 29.1 | 29.1 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0                            | 29.0 | 29.0            | 29.0          | 29.0          | 29.1 |
| 19-Feb   | 29.0                          | 28.9 | 28.9 | 28.9 | 28.9 | 28.8 | 28.8 | 28.8 | 28.8 | 28.8 | 28.8 | 28.8 | 28.7 | 28.7 | 28.7 | 28.7 | 28.8 | 28.8 | 28.8 | 28.8 | 28.8 | 28.8                            | 28.9 | 28.9            | 28.8          | 29.0          | 29.0 |
| 20-Feb   | 28.9                          | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0                            | 29.0 | 29.0            | 29.0          | 29.0          | 29.0 |
| 21-Feb   | 29.0                          | 29.1 | 29.1 | 29.1 | 29.1 | 29.1 | 29.2 | 29.2 | 29.2 | 29.3 | 29.3 | 29.3 | 29.3 | 29.3 | 29.3 | 29.4 | 29.4 | 29.4 | 29.4 | 29.4 | 29.4 | 29.5                            | 29.5 | 29.5            | 29.3          | 29.5          | 29.5 |
| 22-Feb   | 29.5                          | 29.5 | 29.5 | 29.5 | 29.5 | 29.5 | 29.5 | 29.5 | 29.6 | 29.6 | 29.6 | 29.6 | 29.6 | 29.6 | 29.6 | 29.6 | 29.6 | 29.6 | 29.6 | 29.6 | 29.6 | 29.6                            | 29.6 | 29.7            | 29.6          | 29.7          | 29.7 |
| 23-Feb   | 29.7                          | 29.7 | 29.7 | 29.7 | 29.7 | 29.7 | 29.7 | 29.7 | 29.7 | 29.7 | 29.7 | 29.7 | 29.7 | 29.7 | 29.7 | 29.6 | 29.6 | 29.6 | 29.6 | 29.6 | 29.6 | 29.6                            | 29.5 | 29.5            | 29.5          | 29.7          | 29.7 |
| 24-Feb   | 29.5                          | 29.4 | 29.4 | 29.4 | 29.3 | 29.3 | 29.3 | 29.3 | 29.2 | 29.2 | 29.1 | 29.1 | 29.0 | 29.0 | 28.9 | 28.9 | 28.8 | 28.8 | 28.7 | 28.7 | 28.7 | 28.7                            | 28.7 | 28.6            | 29.0          | 29.5          | 29.5 |
| 25-Feb   | 28.6                          | 28.6 | 28.6 | 28.6 | 28.6 | 28.6 | 28.6 | 28.6 | 28.6 | 28.6 | 28.6 | 28.6 | 28.6 | 28.6 | 28.6 | 28.5 | 28.5 | 28.5 | 28.5 | 28.5 | 28.5 | 28.5                            | 28.5 | 28.5            | 28.6          | 28.6          | 28.6 |
| 26-Feb   | 28.5                          | 28.5 | 28.5 | 28.5 | 28.5 | 28.5 | 28.4 | 28.4 | 28.4 | 28.4 | 28.4 | 28.4 | 28.4 | 28.4 | 28.4 | 28.4 | 28.4 | 28.4 | 28.4 | 28.4 | 28.4 | 28.4                            | 28.4 | 28.4            | 28.4          | 28.4          | 28.5 |
| 27-Feb   | 28.4                          | 28.5 | 28.5 | 28.5 | 28.5 | 28.5 | 28.5 | 28.5 | 28.6 | 28.6 | 28.6 | 28.6 | 28.6 | 28.6 | 28.6 | 28.6 | 28.7 | 28.7 | 28.7 | 28.7 | 28.7 | 28.7                            | 28.7 | 28.7            | 28.6          | 28.8          | 28.8 |
| 28-Feb   | 28.8                          | 28.8 | 28.8 | 28.8 | 28.8 | 28.8 | 28.9 | 28.9 | 28.9 | 28.9 | 28.9 | 28.9 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0                            | 29.0 | 29.0            | 28.9          | 29.0          | 29.0 |
| 28.9   |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                                 |      | Diurnal Average |               |               |      |
| 29.7   |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                                 |      | Diurnal Maximum |               |               |      |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Barometric Pressure (BP) - inHg**  
**Barge Landing - February 2023**





|  |   |                                |
|--|---|--------------------------------|
| Maximum Speed: 30 km/h on Feb 13 14:00             | Maximum Daily Speed Average: 14.5 km/h on Feb 24  | Hours in Service: 672          |
| Minimum Speed Value: 0 km/h on Feb 19 11:00        | Minimum Daily Speed Average: 0.6 km/h on Feb 16   | Hours of Data: 671             |
| Maximum Diurnal Speed Average: 3.5 km/h at hour 18 | Minimum Diurnal Speed Average: 0.2 km/h at hour 1   | Hours of Missing Data: 1       |
| Monthly Average Velocity: 1.0 km/h 24.0 deg        | Percentiles: P <sub>1</sub> = 1 P <sub>10</sub> = 3 Q <sub>1</sub> = 5 Median = 7 Q <sub>3</sub> = 11 P <sub>90</sub> = 15 P <sub>99</sub> = 25 | Percent Operational Time: 99.9 |

| Day  | Hourly Period Ending At (MST) |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Daily Average | Daily Maximum |
|--|-------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------------|---------------|
|  | 1                             | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     | 10    | 11    | 12    | 13    | 14    | 15    | 16    | 17    | 18    | 19    | 20    | 21    | 22    | 23    | 24    |               |               |
| 1-Feb  | NNW6                          | W3    | NW3   | WNW4  | NNW7  | N11   | NNW10 | N7    | N9    | NNW6  | NW6   | WNW4  | NNW7  | N8    | NE6   | ENE7  | E7    | ENE5  | SW2   | W6    | WNW6  | NNW5  | SW3   | SSW6  | NNW3.7        | N11           |
| 2-Feb  | SSW8                          | S10   | S10   | SSE9  | SSE7  | SSE8  | SSE10 | SSE7  | S6    | S6    | SSW6  | SW6   | SW2   | W3    | SSE2  | SSE13 | SSE20 | SSE18 | SSE20 | SSE20 | SSE21 | SSE18 | SSE18 | SSE18 | SSE10.5       | SSE21         |
| 3-Feb  | SSE17                         | SSE17 | SSE15 | SSE14 | SSE13 | S12   | SSE12 | S9    | SSW5  | SW6   | S3    | W1    | NNW7  | N7    | NNE10 | NNE9  | NE11  | NE11  | ENE12 | ENE9  | ENE7  | ENE7  | ENE5  | N4    | SE4.0         | SSE17         |
| 4-Feb  | N4                            | N4    | NNE5  | NNE8  | NNE9  | NE8   | N8    | NNW9  | NNW8  | NNW8  | N9    | NNE10 | NNE9  | NNE9  | NNE7  | N5    | NW6   | NNW7  | NNW7  | NNW5  | NNW5  | NW7   | NW6   | NNW4  | N6.4          | NNE10         |
| 5-Feb  | NNW4                          | N3    | W2    | NW2   | WNW3  | NNW5  | NW5   | NW6   | NNW3  | NW4   | S4    | SW3   | SSE5  | SSW5  | S6    | SSW5  | SSW4  | S5    | SE8   | SSE9  | SW7   | W6    | NNW14 | NW9   | W1.6          | NNW14         |
| 6-Feb  | W14                           | W15   | WSW16 | WSW12 | WSW13 | WSW8  | WSW8  | S2    | NNE8  | NE5   | ENE8  | ENE9  | ENE8  | NNE5  | N4    | N3    | N5    | NNW8  | NW5   | WNW6  | NW4   | SW3   | SW8   | SSW6  | WNW3.1        | WSW16         |
| 7-Feb  | SSW7                          | SSW9  | S11   | SSW8  | SW8   | W21   | WSW16 | WSW14 | WSW17 | WSW19 | SW15  | SW16  | WSW24 | WSW26 | W26   | W25   | W17   | WSW15 | WSW9  | WSW9  | WNW11 | N11   | N14   | N15   | WSW11.9       | WSW26         |
| 8-Feb  | NNE12                         | N8    | ENE3  | SSE3  | S5    | SSE5  | E4    | NE3   | NW2   | NNW2  | SSE2  | S5    | S8    | S10   | SSE7  | SSW5  | WSW3  | NW2   | NNW3  | ENE3  | E2    | S7    | S9    | S10   | SSE1.9        | NNE12         |
| 9-Feb  | S10                           | S9    | SSE11 | S12   | SSE12 | S10   | SSW14 | SSW13 | SSW14 | SSE11 | S11   | S13   | S11   | S12   | SSE13 | SSE11 | S7    | NNW7  | N4    | ENE4  | NNE2  | WSW3  | ESE1  | SSE6  | S7.6          | SSW14         |
| 10-Feb   | W1                            | N8    | NNW9  | NNW10 | N10   | NNE14 | NNE10 | NNE12 | NNE12 | NNW9  | NNE9  | NNE10 | NNE10 | N9    | N8    | N10   | N10   | NNE9  | NNE9  | N10   | NNW6  | NNW5  | N3    | E7    | N8.3          | NNE14         |
| 11-Feb   | ENE4                          | E4    | ESE3  | SE6   | SSE5  | SSE6  | SSE6  | SSE3  | S6    | S7    | SSW8  | S11   | SSW13 | S11   | SSE9  | SSW6  | SW11  | WSW14 | W10   | W12   | W10   | WSW8  | WSW14 | WSW18 | SSW5.9        | WSW18         |
| 12-Feb   | WSW23                         | W16   | WSW12 | SSW6  | WSW6  | WSW7  | W4    | NW7   | NNE6  | NNE7  | NNE11 | NNE7  | NE6   | NNE5  | NNE5  | NNE6  | N6    | NNW7  | NNW5  | NNW5  | WNW3  | ENE1  | NNW3  | NW6   | NW3.6         | WSW23         |
| 13-Feb   | NW5                           | NW9   | SSE1  | WSW5  | SSW9  | SW8   | WSW15 | NW10  | NNE20 | N22   | N25   | N27   | N27   | N30   | N29   | N26   | N25   | NNE19 | NNE17 | NNE11 | NNE19 | NNE17 | NNE20 | NNE18 | N14.1         | N30           |
| 14-Feb   | NNE15                         | NNE17 | NNE14 | N8    | NNE8  | NE7   | ENE9  | ENE8  | ENE7  | ENE5  | ENE6  | NE6   | NE5   | ENE6  | NE8   | NNE9  | NE8   | NE10  | NE7   | NNW4  | NNE6  | ENE6  | ENE4  | E4    | NE7.1         | NNE17         |
| 15-Feb   | SE5                           | SE6   | SSE8  | SE6   | SSE5  | SSW5  | S4    | SW5   | W6    | WSW5  | WSW4  | W5    | WSW5  | SSW7  | SW6   | SSW6  | S7    | SE8   | SE7   | SSE6  | SE8   | SE8   | S4    | SE3   | S4.3          | SSE8          |
| 16-Feb   | SE6                           | S4    | S4    | SSW4  | SSW3  | NNW2  | WNW1  | SW3   | SSW6  | S7    | SSW7  | SW7   | SSW9  | SSW10 | SSW8  | SW5   | NNE4  | NNE12 | NNE15 | NE17  | NE12  | NNE10 | NNE6  | NNE5  | ESE0.6        | NE17          |
| 17-Feb   | ENE5                          | ENE7  | ENE6  | ENE6  | ENE4  | E3    | ENE5  | ENE9  | NE9   | NE7   | NE9   | NNE10 | NNE12 | NNE13 | NNE13 | NNE14 | NNE17 | NNE14 | NE15  | NE14  | NNE10 | N9    | NNW9  | NNW10 | NNE8.7        | NNE17         |
| 18-Feb   | NNW10                         | NNW8  | NNW7  | NNW6  | NNW7  | NW8   | NNW9  | N5    | NW3   | ENE2  | N2    | ENE3  | NE5   | N6    | NNE6  | NNE6  | NNE5  | NE8   | NE8   | NE8   | NE1   | N1    | NNE3  | ESE2  | N4.4          | NNW10         |
| 19-Feb   | SE4                           | SE4   | S3    | SW3   | S2    | SE1   | NNW3  | NNW5  | E3    | NNW8  | ENE0  | NNE4  | N3    | NNW5  | NW6   | NW7   | NW9   | NW8   | NNW9  | NNW9  | N9    | NNW11 | N8    | NNE9  | NNW3.9        | NNW11         |
| 20-Feb   | NNE8                          | NNE8  | E9    | E7    | SSW1  | SE3   | SSE5  | SE7   | ESE3  | SE4   | SSW1  | NE5   | NE8   | ENE11 | NE12  | NE12  | NE10  | ENE9  | ENE8  | N4    | NNW8  | N8    | N12   | NNE19 | NE5.7         | NNE19         |
| 21-Feb   | NNE14                         | NNE17 | N9    | NNE9  | NE9   | NE9   | NNE3  | W3    | N4    | NNW5  | WNW5  | N4    | NE9   | NNE13 | NNE14 | NNE14 | NNE12 | NE10  | NE14  | NE7   | WSW1  | S4    | S3    | S7    | NNE6.3        | NNE17         |
| 22-Feb   | S9                            | S9    | S6    | S7    | SSE8  | SSE8  | SSE9  | SSE9  | SSE7  | SSE4  | SSW3  | SSW2  | SW3   | NE3   | ENE5  | NE7   | NE5   | NE3   | N3    | NNW6  | N2    | NNW1  | UO    | WSW2  | SSE2.6        | SSE9          |
| 23-Feb   | NNW5                          | NNW5  | NNE1  | NNW2  | W0    | S2    | WSW3  | WSW5  | NW4   | WNW1  | WSW2  | WSW4  | ENE5  | NE6   | ENE4  | SSE7  | S7    | SSE8  | SE8   | SE6   | SE8   | S6    | SSW8  | SSW9  | S1.9          | SSW9          |
| 24-Feb   | SSE10                         | S9    | S7    | S8    | S10   | SSE12 | SSE15 | SSE10 | SSE14 | S15   | S14   | SSE18 | S17   | S20   | S22   | S18   | S17   | S16   | S18   | S18   | S18   | S17   | S16   | S15   | S14.5         | S22           |
| 25-Feb   | S14                           | S12   | S11   | S11   | SSE9  | S8    | SSE9  | SE7   | S6    | SSW6  | WSW7  | SW10  | SW9   | S9    | SSE12 | SSE12 | SSE9  | SE9   | SE9   | SSE7  | SE8   | ESE9  | SE7   | SE4   | SSE7.6        | S14           |
| 26-Feb   | SE7                           | E6    | ESE9  | SSE2  | N4    | NE4   | N7    | NE5   | NE4   | NNW4  | NNW6  | NNW7  | NNW8  | N11   | N13   | NNE14 | NNE12 | NNE13 | NE8   | NE11  | NNE14 | NE13  | NNE13 | NE13  | NNE6.9        | NNE14         |
| 27-Feb   | NNE11                         | N9    | N11   | NNW14 | NNW14 | NNW14 | NNW14 | N13   | N12   | N15   | NNE17 | NNE17 | NNE14 | NNE16 | NNE17 | NNE14 | NE11  | NNE15 | NNE14 | NNE13 | NNE15 | NNE11 | NNW9  | N9    | N12.6         | NNE17         |
| 28-Feb   | NNW8                          | NNW8  | N6    | WNW3  | NW4   | NW6   | NNW5  | NW3   | NW2   | NNW3  | NNE4  | NE6   | NE7   | NE7   | NE6   | NNE5  | NNE3  | NE3   | NNW2  | SE4   | SSE6  | S5    | S7    | SSE7  | NNE2.0        | NNW8          |
| N0.2NNW0.5 SSE1.2 S1.4SSW1.3SSW0.8WSW1.1 NW0.5NNE0.9 NW1.0NNW1.0 N1.1 N1.6 N2.3NNE2.7 NNE2.6 NNE2.7 NNE3.5 NE3.2 NE2.3NNE2.1 NNE1.4 N1.3 NE0.7 |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |               |               |
| WSW23 SSE17 WSW16 SSE14 NNW14 W21 WSW16 WSW14 NNE20 N22 N25 N27 N27 N30 N29 N26 N25 NNE19 SSE20 SSE20 SSE21 SSE18 NNE20 NNE19                  |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |               |               |
| Diurnal Average  |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |               |               |
| Diurnal Maximum  |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |               |               |

UO - Unstable Operation  
 All monthly, daily, and diurnal averages have been calculated using vector methods



**Wood Buffalo Environmental Association**  
**Summary of Hour Standard Deviations**

**Wind Speed 20 m (WS20m) - km/h**  
**Barge Landing - February 2023**

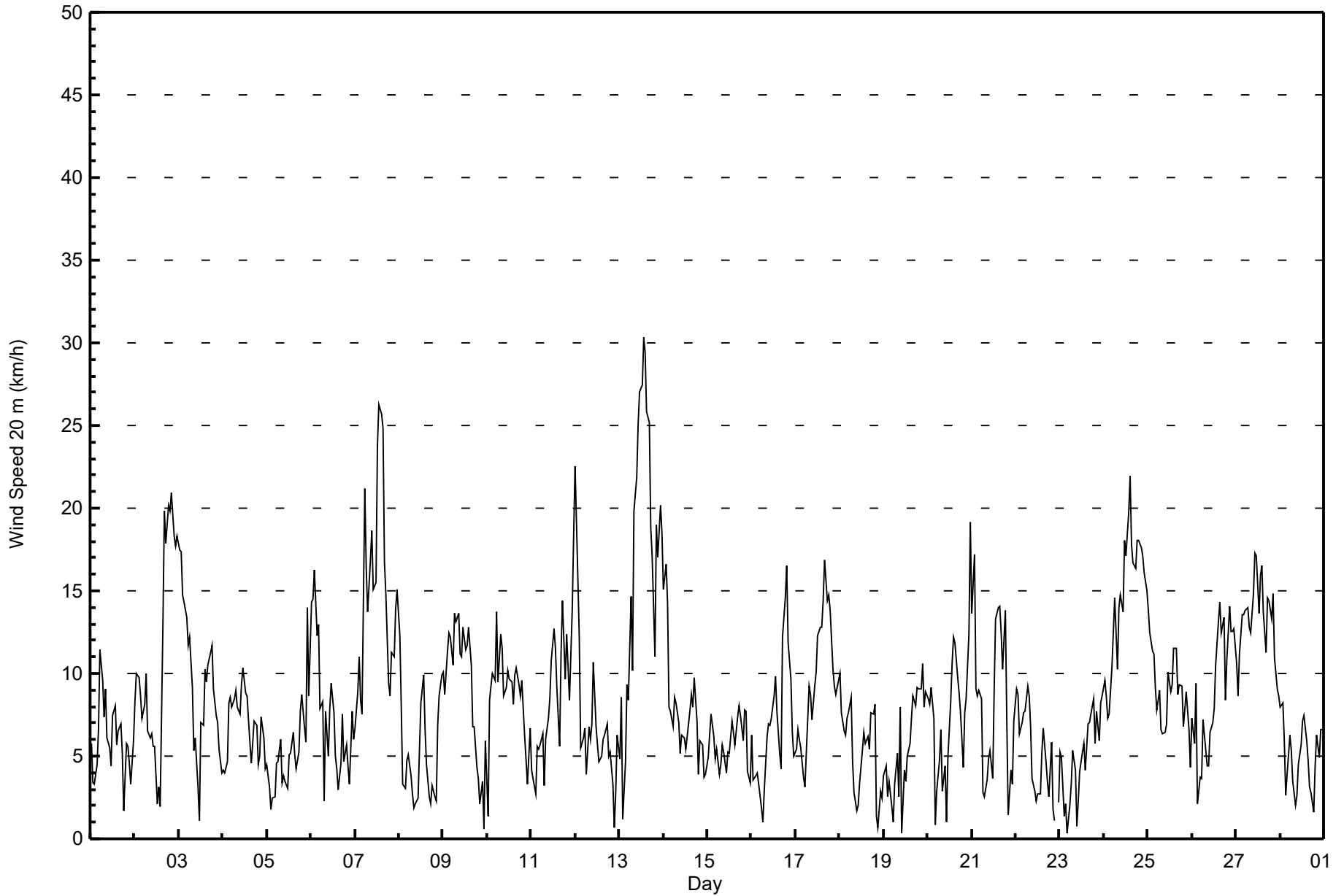
| Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0<br>Maximum Value: 9 km/h on Feb 13 14:00<br>Minimum Value: 0 km/h on Feb 28 08:00<br>Percentiles: P <sub>1</sub> = 1 P <sub>10</sub> = 1 Q <sub>1</sub> = 1 Median = 2 Q <sub>3</sub> = 3 P <sub>90</sub> = 4 P <sub>99</sub> = 7 |                               |   |   |   |   |   |   |   |   |    |    |    |    | Hours in Service: 672<br>Hours of Data: 671<br>Hours of Missing Data: 1<br>Hours of Calibration: 0<br>Percent Operational Time: 99.9 |    |    |    |    |    |    |    |    |    |    |               |
|---|-------------------------------|---|---|---|---|---|---|---|---|----|----|----|----|--|----|----|----|----|----|----|----|----|----|----|---------------|
| Day   | Hourly Period Ending At (MST) |   |   |   |   |   |   |   |   |    |    |    |    |  |    |    |    |    |    |    |    |    |    |    | Daily Maximum |
|   | 1                             | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14   | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |               |
| 1-Feb   | 3                             | 1 | 1 | 1 | 2 | 2 | 2 | 1 | 2 | 1  | 2  | 2  | 3  | 3  | 1  | 2  | 2  | 2  | 2  | 1  | 1  | 1  | 1  | 2  | 3             |
| 2-Feb   | 2                             | 2 | 2 | 2 | 1 | 1 | 2 | 2 | 1 | 1  | 1  | 2  | 1  | 1  | 2  | 6  | 5  | 4  | 5  | 5  | 5  | 4  | 4  | 4  | 6             |
| 3-Feb   | 4                             | 4 | 4 | 3 | 3 | 3 | 3 | 3 | 1 | 2  | 2  | 1  | 2  | 2  | 2  | 2  | 3  | 2  | 3  | 2  | 2  | 2  | 1  | 1  | 4             |
| 4-Feb   | 1                             | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2  | 3  | 3  | 2  | 2  | 2  | 1  | 1  | 1  | 1  | 2  | 1  | 2  | 1  | 2  | 3             |
| 5-Feb   | 1                             | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2  | 1  | 1  | 1  | 2  | 2  | 1  | 2  | 1  | 1  | 2  | 2  | 1  | 5  | 5  | 5             |
| 6-Feb   | 4                             | 5 | 6 | 2 | 2 | 2 | 2 | 3 | 4 | 3  | 2  | 2  | 2  | 2  | 2  | 1  | 2  | 2  | 1  | 2  | 1  | 2  | 1  | 1  | 6             |
| 7-Feb   | 2                             | 2 | 2 | 3 | 5 | 7 | 3 | 3 | 3 | 3  | 4  | 4  | 5  | 7  | 7  | 7  | 5  | 3  | 3  | 3  | 2  | 4  | 3  | 3  | 7             |
| 8-Feb   | 3                             | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1  | 1  | 3  | 3  | 2  | 2  | 1  | 2  | 1  | 1  | 2  | 1  | 1  | 1  | 1  | 3             |
| 9-Feb   | 2                             | 2 | 1 | 2 | 1 | 1 | 3 | 3 | 3 | 2  | 2  | 3  | 3  | 3  | 3  | 2  | 4  | 2  | 2  | 2  | 1  | 2  | 1  | 1  | 4             |
| 10-Feb  | 1                             | 1 | 2 | 2 | 2 | 4 | 2 | 3 | 3 | 2  | 2  | 3  | 3  | 3  | 2  | 2  | 3  | 2  | 2  | 2  | 2  | 1  | 1  | 2  | 4             |
| 11-Feb  | 1                             | 1 | 2 | 1 | 1 | 1 | 1 | 2 | 2 | 2  | 2  | 3  | 4  | 3  | 2  | 2  | 5  | 4  | 2  | 4  | 4  | 2  | 3  | 3  | 5             |
| 12-Feb  | 4                             | 5 | 4 | 3 | 3 | 3 | 3 | 2 | 2 | 3  | 3  | 2  | 1  | 1  | 1  | 1  | 2  | 1  | 2  | 1  | 2  | 2  | 2  | 3  | 5             |
| 13-Feb  | 2                             | 3 | 2 | 2 | 3 | 3 | 4 | 3 | 5 | 6  | 7  | 8  | 8  | 9  | 8  | 8  | 7  | 6  | 4  | 4  | 5  | 5  | 5  | 5  | 9             |
| 14-Feb  | 5                             | 4 | 4 | 2 | 2 | 2 | 2 | 2 | 2 | 1  | 1  | 1  | 1  | 2  | 2  | 2  | 2  | 1  | 3  | 1  | 2  | 2  | 1  | 1  | 5             |
| 15-Feb  | 1                             | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1  | 1  | 1  | 2  | 2  | 2  | 2  | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 2             |
| 16-Feb  | 1                             | 2 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2  | 3  | 2  | 3  | 3  | 2  | 1  | 2  | 3  | 3  | 4  | 3  | 2  | 2  | 2  | 4             |
| 17-Feb  | 1                             | 1 | 1 | 2 | 1 | 1 | 2 | 2 | 2 | 2  | 2  | 2  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 2  | 2  | 1  | 1  | 3             |
| 18-Feb  | 1                             | 2 | 1 | 1 | 1 | 1 | 2 | 3 | 1 | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 2  | 2  | 1  | 1  | 2  | 3             |
| 19-Feb  | 2                             | 2 | 2 | 1 | 1 | 1 | 2 | 1 | 1 | 3  | 2  | 1  | 2  | 2  | 2  | 2  | 2  | 1  | 1  | 1  | 2  | 3  | 4  | 2  | 4             |
| 20-Feb  | 2                             | 2 | 2 | 2 | 1 | 1 | 2 | 1 | 2 | 2  | 2  | 2  | 2  | 2  | 3  | 3  | 2  | 1  | 1  | 1  | 1  | 2  | 4  | 5  | 5             |
| 21-Feb  | 4                             | 4 | 3 | 2 | 2 | 2 | 2 | 1 | 2 | 2  | 1  | 2  | 3  | 3  | 3  | 4  | 2  | 2  | 1  | 3  | 1  | 1  | 2  | 1  | 4             |
| 22-Feb  | 1                             | 1 | 2 | 2 | 1 | 1 | 1 | 2 | 1 | 1  | 1  | 1  | 2  | 1  | 2  | 2  | 2  | 1  | 1  | 1  | 2  | 1  | 1  | 1  | 2             |
| 23-Feb  | 3                             | 2 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1  | 1  | 1  | 2  | 2  | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 2  | 3             |
| 24-Feb  | 2                             | 3 | 1 | 2 | 2 | 2 | 3 | 1 | 4 | 3  | 3  | 4  | 4  | 5  | 5  | 5  | 4  | 6  | 5  | 5  | 4  | 4  | 4  | 4  | 6             |
| 25-Feb  | 3                             | 3 | 2 | 2 | 2 | 1 | 2 | 2 | 1 | 1  | 3  | 2  | 2  | 3  | 3  | 3  | 2  | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 3             |
| 26-Feb  | 1                             | 2 | 2 | 2 | 2 | 1 | 2 | 1 | 1 | 1  | 1  | 1  | 2  | 3  | 3  | 3  | 3  | 3  | 2  | 3  | 4  | 3  | 2  | 3  | 4             |
| 27-Feb  | 2                             | 2 | 3 | 3 | 4 | 3 | 5 | 4 | 4 | 4  | 4  | 4  | 3  | 4  | 4  | 3  | 3  | 3  | 4  | 3  | 3  | 2  | 2  | 1  | 5             |
| 28-Feb  | 1                             | 1 | 2 | 1 | 1 | 1 | 1 | 0 | 1 | 1  | 1  | 1  | 2  | 2  | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 2             |
|   | 5                             | 5 | 6 | 3 | 5 | 7 | 5 | 4 | 5 | 6  | 7  | 8  | 8  | 9  | 8  | 8  | 7  | 6  | 6  | 5  | 5  | 5  | 5  | 5  |               |
| Diurnal Maximum   |                               |   |   |   |   |   |   |   |   |    |    |    |    |  |    |    |    |    |    |    |    |    |    |    |               |
| UO - Unstable Operation   |                               |   |   |   |   |   |   |   |   |    |    |    |    |  |    |    |    |    |    |    |    |    |    |    |               |





**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Wind Speed 20 m (WS20m) - km/h**  
**Barge Landing - February 2023**





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Wind Speed 20 m (WS20m) - km/h  
Barge Landing - February 2023**

| <b>Wind Speed Ranges (km/h)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---------------------------------|------------------------|----------|---------------------|
| 0 - 5                           | 205                    | 30.55    | 30.55               |
| 6 - 11                          | 319                    | 47.54    | 78.09               |
| 12 - 19                         | 125                    | 18.63    | 96.72               |
| 20 - 28                         | 20                     | 2.98     | 99.70               |
| 29 - 38                         | 2                      | 0.30     | 100.00              |
| > 38                            | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 671

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Wind Speed 20 m (WS20m) - km/h  
Barge Landing - February 2023**

| <b>Wind Speed<br/>Ranges (km/h)</b> | <b>Wind Direction</b> |     |    |     |    |     |    |     |    |     |    |     |    |     |    |     | <b>Totals</b> |
|-------------------------------------|-----------------------|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|---------------|
|                                     | N                     | NNE | NE | ENE | E  | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |               |
| 0 - 5                               | 20                    | 15  | 13 | 18  | 6  | 5   | 8  | 12  | 16 | 12  | 10 | 12  | 9  | 8   | 13 | 28  | 205           |
| 6 - 11                              | 28                    | 37  | 31 | 21  | 5  | 2   | 18 | 32  | 40 | 22  | 11 | 8   | 5  | 3   | 16 | 40  | 319           |
| 12 - 19                             | 7                     | 42  | 9  | 1   | 0  | 0   | 0  | 19  | 18 | 4   | 2  | 13  | 5  | 0   | 0  | 5   | 125           |
| 20 - 28                             | 6                     | 2   | 0  | 0   | 0  | 0   | 0  | 4   | 2  | 0   | 0  | 3   | 3  | 0   | 0  | 0   | 20            |
| 29 - 38                             | 2                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 2             |
| > 38                                | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| <b>Totals</b>                       | 63                    | 96  | 53 | 40  | 11 | 7   | 26 | 67  | 76 | 38  | 23 | 36  | 22 | 11  | 29 | 73  | 671           |

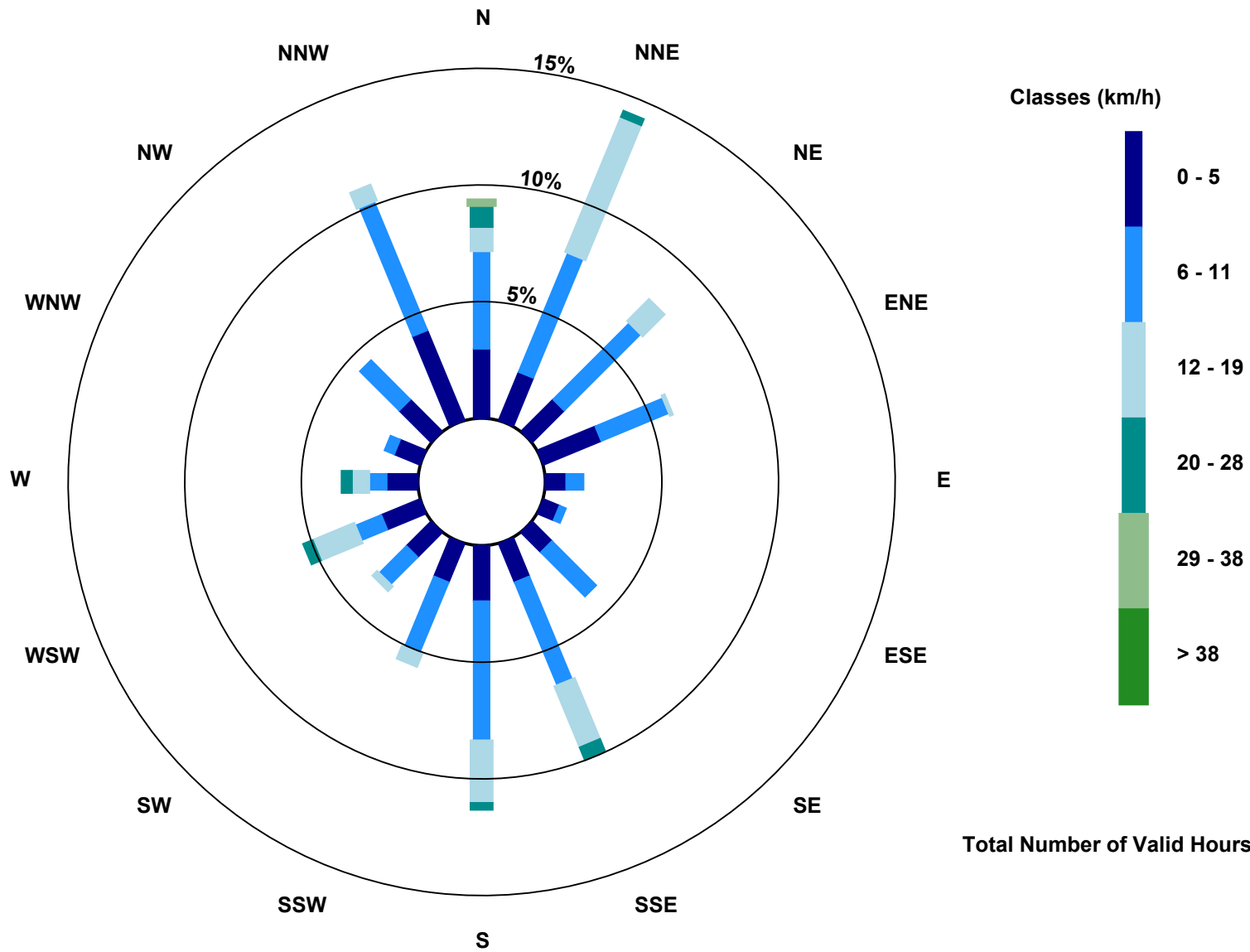
Total Number of Valid Hours: 671

Total Number of Hours: 672



Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Wind Speed 20 m (WS20m) - km/h  
Barge Landing





Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Direction 20 m (WD20m) - deg

Barge Landing - February 2023

|   |                                |
|---|--------------------------------|
| Direction of Maximum Speed: 357 deg on Feb 13 14:00           | Hours in Service: 672          |
| Direction of Maximum Daily Speed Average: 176.5 deg on Feb 24 | Hours of Data: 671             |
| Direction of Minimum Speed: 61 deg on Feb 19 11:00            | Hours of Missing Data: 1       |
| Direction of Minimum Daily Speed Average: 0.6 deg on Feb 16   | Percent Operational Time: 99.9 |
| Monthly Average Direction: 24.0 deg                           |                                |

| Day   | Hourly Period Ending At (MST) |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Daily Average |
|---|-------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---------------|
|   | 1                             | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19  | 20  | 21  | 22  | 23  | 24  |               |
| 1-Feb   | 344                           | 281 | 305 | 291 | 331 | 350 | 342 | 4   | 2   | 329 | 318 | 282 | 332 | 352 | 37  | 73  | 80  | 70  | 222 | 270 | 293 | 334 | 235 | 196 | 339.2         |
| 2-Feb   | 194                           | 169 | 170 | 149 | 166 | 163 | 159 | 168 | 174 | 176 | 205 | 218 | 225 | 276 | 158 | 149 | 149 | 154 | 153 | 153 | 153 | 154 | 151 | 154 | 160.7         |
| 3-Feb   | 159                           | 163 | 167 | 167 | 168 | 169 | 168 | 176 | 192 | 220 | 183 | 268 | 330 | 4   | 26  | 29  | 46  | 50  | 65  | 65  | 59  | 60  | 78  | 9   | 124.2         |
| 4-Feb   | 6                             | 6   | 27  | 25  | 27  | 45  | 8   | 340 | 344 | 348 | 7   | 13  | 13  | 15  | 20  | 2   | 322 | 335 | 339 | 339 | 344 | 324 | 326 | 333 | 359.8         |
| 5-Feb   | 327                           | 357 | 260 | 323 | 301 | 348 | 324 | 321 | 340 | 309 | 189 | 223 | 157 | 195 | 182 | 208 | 200 | 184 | 143 | 156 | 214 | 277 | 342 | 314 | 259.9         |
| 6-Feb   | 281                           | 265 | 254 | 246 | 240 | 242 | 247 | 170 | 21  | 54  | 72  | 65  | 62  | 17  | 5   | 353 | 352 | 338 | 323 | 301 | 326 | 234 | 214 | 204 | 282.4         |
| 7-Feb   | 196                           | 208 | 188 | 198 | 230 | 265 | 258 | 254 | 244 | 237 | 235 | 234 | 243 | 258 | 265 | 268 | 265 | 258 | 251 | 256 | 283 | 349 | 6   | 10  | 255.8         |
| 8-Feb   | 12                            | 357 | 63  | 154 | 175 | 165 | 101 | 43  | 326 | 327 | 163 | 188 | 182 | 171 | 165 | 193 | 248 | 324 | 331 | 74  | 98  | 191 | 177 | 172 | 162.6         |
| 9-Feb   | 172                           | 184 | 168 | 177 | 167 | 178 | 198 | 196 | 194 | 168 | 170 | 170 | 176 | 170 | 167 | 165 | 170 | 344 | 3   | 61  | 25  | 255 | 118 | 162 | 175.7         |
| 10-Feb  | 260                           | 349 | 348 | 347 | 0   | 18  | 12  | 17  | 16  | 348 | 13  | 22  | 14  | 357 | 4   | 355 | 3   | 18  | 13  | 1   | 344 | 344 | 2   | 83  | 6.1           |
| 11-Feb  | 75                            | 97  | 106 | 131 | 157 | 153 | 156 | 155 | 173 | 178 | 194 | 191 | 192 | 176 | 167 | 198 | 232 | 255 | 265 | 273 | 280 | 240 | 238 | 245 | 210.9         |
| 12-Feb  | 256                           | 262 | 255 | 205 | 243 | 237 | 267 | 315 | 26  | 17  | 29  | 25  | 38  | 27  | 25  | 31  | 355 | 338 | 330 | 333 | 301 | 69  | 338 | 320 | 313.2         |
| 13-Feb  | 306                           | 324 | 149 | 239 | 207 | 224 | 258 | 311 | 16  | 1   | 355 | 358 | 3   | 357 | 352 | 354 | 9   | 17  | 18  | 20  | 32  | 23  | 23  | 23  | 0.3           |
| 14-Feb  | 18                            | 12  | 18  | 9   | 12  | 45  | 57  | 62  | 69  | 71  | 77  | 56  | 36  | 57  | 39  | 29  | 40  | 46  | 55  | 336 | 28  | 68  | 64  | 85  | 38.6          |
| 15-Feb  | 124                           | 141 | 150 | 142 | 165 | 198 | 190 | 231 | 260 | 245 | 248 | 260 | 247 | 210 | 216 | 192 | 170 | 146 | 140 | 159 | 137 | 140 | 171 | 141 | 177.7         |
| 16-Feb  | 138                           | 174 | 180 | 193 | 210 | 335 | 282 | 220 | 192 | 190 | 197 | 219 | 196 | 201 | 199 | 215 | 22  | 12  | 21  | 38  | 44  | 32  | 20  | 15  | 102.4         |
| 17-Feb  | 72                            | 74  | 73  | 70  | 63  | 84  | 77  | 65  | 50  | 49  | 36  | 30  | 26  | 21  | 26  | 24  | 23  | 25  | 38  | 41  | 15  | 2   | 341 | 334 | 32.9          |
| 18-Feb  | 345                           | 342 | 342 | 337 | 338 | 326 | 337 | 351 | 306 | 68  | 357 | 77  | 46  | 10  | 17  | 22  | 13  | 44  | 52  | 55  | 54  | 4   | 17  | 123 | 7.8           |
| 19-Feb  | 134                           | 136 | 176 | 232 | 169 | 130 | 338 | 348 | 88  | 338 | 61  | 21  | 352 | 335 | 323 | 320 | 317 | 316 | 336 | 341 | 359 | 343 | 356 | 20  | 343.5         |
| 20-Feb  | 29                            | 24  | 91  | 93  | 193 | 146 | 152 | 124 | 123 | 135 | 194 | 38  | 54  | 60  | 50  | 37  | 34  | 58  | 58  | 353 | 342 | 356 | 2   | 17  | 44.8          |
| 21-Feb  | 21                            | 13  | 4   | 32  | 55  | 45  | 29  | 276 | 351 | 337 | 290 | 353 | 35  | 32  | 30  | 28  | 25  | 40  | 50  | 42  | 251 | 186 | 183 | 186 | 27.0          |
| 22-Feb  | 183                           | 174 | 189 | 173 | 167 | 163 | 164 | 163 | 156 | 168 | 207 | 205 | 228 | 48  | 69  | 48  | 46  | 44  | 354 | 338 | 9   | 335 | UO  | 241 | 158.7         |
| 23-Feb  | 330                           | 341 | 26  | 342 | 261 | 170 | 239 | 240 | 305 | 291 | 244 | 243 | 63  | 45  | 76  | 160 | 176 | 168 | 143 | 125 | 131 | 170 | 195 | 204 | 171.6         |
| 24-Feb  | 167                           | 169 | 174 | 175 | 169 | 161 | 167 | 165 | 159 | 171 | 179 | 162 | 173 | 181 | 181 | 179 | 184 | 172 | 190 | 185 | 184 | 184 | 187 | 188 | 176.5         |
| 25-Feb  | 177                           | 182 | 181 | 172 | 166 | 177 | 149 | 137 | 179 | 200 | 251 | 236 | 230 | 182 | 157 | 158 | 152 | 136 | 143 | 147 | 142 | 116 | 131 | 132 | 167.8         |
| 26-Feb  | 132                           | 98  | 121 | 161 | 358 | 53  | 358 | 51  | 48  | 339 | 336 | 332 | 337 | 0   | 10  | 15  | 15  | 32  | 56  | 43  | 31  | 36  | 32  | 41  | 28.6          |
| 27-Feb  | 31                            | 4   | 349 | 342 | 344 | 345 | 348 | 354 | 359 | 358 | 20  | 23  | 21  | 20  | 24  | 25  | 34  | 25  | 25  | 18  | 21  | 13  | 345 | 349 | 9.4           |
| 28-Feb  | 336                           | 347 | 352 | 292 | 316 | 325 | 327 | 323 | 326 | 342 | 19  | 43  | 51  | 54  | 50  | 33  | 26  | 42  | 339 | 144 | 154 | 170 | 188 | 160 | 15.1          |
| 3.3 329.3 167.6 176.8 195.4 212.4 237.5 320.0 14.5 318.2 343.0 0.9 10.1 11.0 28.7 25.5 27.2 31.2 47.4 39.2 33.4 31.2 8.2 41.3 |                               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |               |
| Diurnal Average   |                               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |               |

UO - Unstable Operation

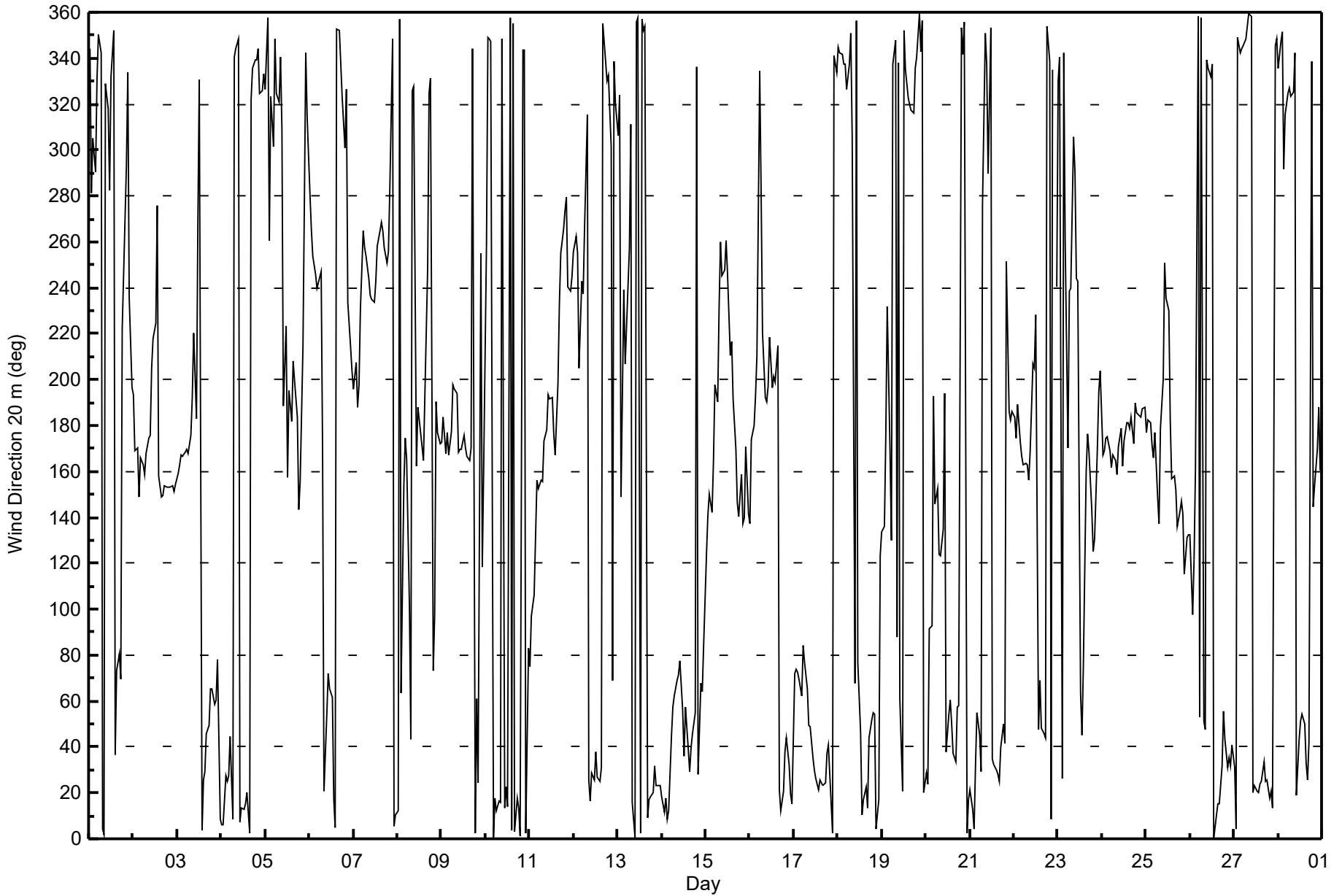
All monthly, daily, and diurnal averages have been calculated using vector methods



**Wood Buffalo Environmental Association**  
**Summary of Hour Standard Deviations**

**Wind Direction 20 m (WD20m) - deg**  
**Barge Landing - February 2023**

| Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0<br>Maximum Value: 100 deg on Feb 19 11:00<br>Minimum Value: 4 deg on Feb 18 01:00<br>Percentiles: P <sub>1</sub> = 6 P <sub>10</sub> = 10 Q <sub>1</sub> = 13 Median = 17 Q <sub>3</sub> = 25 P <sub>90</sub> = 42 P <sub>99</sub> = 88 |                               |    |    |    |    |    |    |    |    |    |     |    |    |    |    |    |    |    | Hours in Service: 672<br>Hours of Data: 671<br>Hours of Missing Data: 1<br>Hours of Calibration: 0<br>Percent Operational Time: 99.9 |    |    |    |    |                 |               |
|---|-------------------------------|----|----|----|----|----|----|----|----|----|-----|----|----|----|----|----|----|----|--|----|----|----|----|-----------------|---------------|
| Day   | Hourly Period Ending At (MST) |    |    |    |    |    |    |    |    |    |     |    |    |    |    |    |    |    |  |    |    |    |    |                 | Daily Maximum |
|   | 1                             | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11  | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19   | 20 | 21 | 22 | 23 | 24              |               |
| 1-Feb   | 23                            | 34 | 50 | 16 | 13 | 14 | 13 | 15 | 16 | 13 | 22  | 42 | 24 | 32 | 23 | 15 | 10 | 20 | 86   | 24 | 15 | 38 | 30 | 23              | 86            |
| 2-Feb   | 14                            | 17 | 14 | 7  | 11 | 9  | 8  | 7  | 22 | 18 | 22  | 19 | 69 | 33 | 67 | 16 | 12 | 13 | 13   | 13 | 13 | 14 | 12 | 12              | 69            |
| 3-Feb   | 12                            | 13 | 14 | 13 | 14 | 15 | 13 | 16 | 25 | 20 | 51  | 89 | 18 | 21 | 16 | 17 | 14 | 14 | 15   | 16 | 18 | 16 | 20 | 40              | 89            |
| 4-Feb   | 17                            | 21 | 29 | 13 | 13 | 14 | 23 | 15 | 14 | 19 | 18  | 17 | 18 | 17 | 16 | 27 | 16 | 14 | 14   | 18 | 25 | 16 | 18 | 16              | 29            |
| 5-Feb   | 16                            | 24 | 61 | 34 | 25 | 26 | 20 | 21 | 38 | 32 | 47  | 54 | 31 | 48 | 42 | 38 | 29 | 24 | 11   | 27 | 31 | 41 | 23 | 30              | 61            |
| 6-Feb   | 15                            | 20 | 13 | 11 | 9  | 12 | 15 | 64 | 37 | 51 | 21  | 15 | 16 | 34 | 41 | 41 | 27 | 11 | 13   | 15 | 13 | 42 | 8  | 12              | 64            |
| 7-Feb   | 16                            | 22 | 16 | 28 | 40 | 14 | 12 | 15 | 9  | 11 | 15  | 17 | 13 | 15 | 15 | 15 | 14 | 12 | 20   | 22 | 11 | 45 | 17 | 16              | 45            |
| 8-Feb   | 12                            | 11 | 40 | 39 | 7  | 13 | 39 | 26 | 49 | 56 | 49  | 36 | 30 | 21 | 32 | 38 | 36 | 28 | 27   | 33 | 59 | 10 | 7  | 7               | 59            |
| 9-Feb   | 8                             | 12 | 12 | 7  | 5  | 11 | 16 | 21 | 18 | 12 | 12  | 14 | 16 | 17 | 14 | 9  | 28 | 24 | 33   | 33 | 68 | 26 | 89 | 19              | 89            |
| 10-Feb  | 72                            | 14 | 19 | 15 | 17 | 15 | 14 | 13 | 16 | 15 | 17  | 13 | 16 | 21 | 22 | 19 | 17 | 13 | 18   | 19 | 18 | 25 | 43 | 19              | 72            |
| 11-Feb  | 14                            | 20 | 12 | 6  | 13 | 14 | 13 | 52 | 17 | 26 | 21  | 19 | 19 | 20 | 13 | 33 | 23 | 14 | 14   | 16 | 21 | 15 | 11 | 12              | 52            |
| 12-Feb  | 12                            | 15 | 19 | 37 | 52 | 57 | 65 | 37 | 35 | 25 | 14  | 25 | 21 | 21 | 22 | 15 | 19 | 16 | 20   | 14 | 27 | 90 | 38 | 37              | 90            |
| 13-Feb  | 42                            | 23 | 88 | 43 | 19 | 34 | 17 | 43 | 17 | 21 | 21  | 22 | 21 | 22 | 19 | 19 | 19 | 17 | 14   | 20 | 13 | 17 | 14 | 14              | 88            |
| 14-Feb  | 16                            | 19 | 15 | 19 | 16 | 17 | 14 | 15 | 16 | 18 | 20  | 21 | 18 | 20 | 21 | 16 | 14 | 6  | 34   | 20 | 21 | 20 | 23 | 21              | 34            |
| 15-Feb  | 11                            | 19 | 11 | 11 | 10 | 10 | 21 | 15 | 14 | 16 | 21  | 18 | 27 | 38 | 32 | 38 | 14 | 16 | 8  | 11 | 9  | 6  | 30 | 23              | 38            |
| 16-Feb  | 12                            | 46 | 17 | 24 | 23 | 86 | 79 | 71 | 20 | 18 | 26  | 19 | 26 | 17 | 23 | 24 | 77 | 15 | 15   | 14 | 15 | 15 | 25 | 19              | 86            |
| 17-Feb  | 20                            | 15 | 13 | 15 | 22 | 31 | 25 | 15 | 17 | 20 | 15  | 14 | 15 | 12 | 11 | 12 | 12 | 11 | 14   | 10 | 13 | 13 | 7  | 7               | 31            |
| 18-Feb  | 4                             | 10 | 9  | 8  | 11 | 22 | 12 | 20 | 16 | 47 | 46  | 39 | 30 | 18 | 22 | 15 | 14 | 10 | 9  | 8  | 77 | 94 | 17 | 40              | 94            |
| 19-Feb  | 9                             | 14 | 40 | 16 | 50 | 56 | 49 | 12 | 60 | 27 | 100 | 33 | 49 | 35 | 26 | 17 | 12 | 10 | 9  | 9  | 14 | 13 | 25 | 14              | 100           |
| 20-Feb  | 12                            | 16 | 11 | 11 | 81 | 42 | 36 | 6  | 33 | 32 | 88  | 40 | 20 | 15 | 18 | 14 | 13 | 8  | 8  | 31 | 9  | 12 | 17 | 17              | 88            |
| 21-Feb  | 14                            | 16 | 19 | 17 | 16 | 13 | 62 | 49 | 46 | 25 | 21  | 59 | 22 | 14 | 15 | 16 | 12 | 21 | 7  | 9  | 71 | 14 | 20 | 10              | 71            |
| 22-Feb  | 6                             | 9  | 11 | 11 | 7  | 6  | 10 | 13 | 10 | 31 | 36  | 62 | 66 | 72 | 28 | 20 | 20 | 15 | 52   | 18 | 86 | 68 | UO | 40              | 86            |
| 23-Feb  | 46                            | 18 | 61 | 41 | 96 | 74 | 33 | 17 | 17 | 49 | 34  | 29 | 45 | 25 | 71 | 24 | 17 | 9  | 10   | 7  | 5  | 25 | 10 | 14              | 96            |
| 24-Feb  | 8                             | 10 | 8  | 11 | 9  | 9  | 9  | 7  | 10 | 13 | 18  | 12 | 21 | 20 | 17 | 18 | 18 | 13 | 18   | 16 | 16 | 16 | 16 | 16              | 21            |
| 25-Feb  | 15                            | 15 | 18 | 11 | 9  | 16 | 23 | 29 | 18 | 25 | 24  | 18 | 22 | 34 | 21 | 13 | 15 | 10 | 14   | 15 | 9  | 9  | 15 | 13              | 34            |
| 26-Feb  | 13                            | 14 | 16 | 81 | 46 | 16 | 20 | 15 | 27 | 15 | 13  | 15 | 16 | 20 | 18 | 14 | 16 | 16 | 20   | 22 | 14 | 14 | 12 | 13              | 81            |
| 27-Feb  | 13                            | 19 | 18 | 17 | 17 | 17 | 20 | 19 | 20 | 20 | 14  | 13 | 16 | 14 | 12 | 14 | 16 | 13 | 14   | 13 | 12 | 14 | 17 | 10              | 20            |
| 28-Feb  | 13                            | 16 | 7  | 41 | 29 | 14 | 6  | 14 | 34 | 26 | 20  | 23 | 20 | 18 | 23 | 20 | 20 | 15 | 59   | 13 | 5  | 21 | 9  | 7               | 59            |
| 72 46 88 81 96 86 79 71 60 56 100 89 69 72 71 41 77 28 86 33 86 94 89 40  |                               |    |    |    |    |    |    |    |    |    |     |    |    |    |    |    |    |    |  |    |    |    |    | Diurnal Maximum |               |
| UO - Unstable Operation   |                               |    |    |    |    |    |    |    |    |    |     |    |    |    |    |    |    |    |  |    |    |    |    |                 |               |





## WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY  
MONITORING PROGRAM  
MONTHLY REPORT

### **AMS11 LOWER CAMP FEBRUARY 2023**

Operations, Data Collection,  
QA/QC, Data Validation and Reporting by:  
Wood Buffalo Environmental Association  
Fort McMurray, Alberta

March 31, 2023



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - LOWER CAMP (AMS11)  
FEBRUARY 2023

MONTHLY SUMMARY

| Parameter                          | Hours of<br>Data | Hours of<br>Calibration | Hours<br>without Data | Operational<br>Time | Maximum<br>1-Hour Value | 1-Hour<br>Exceedances | Maximum<br>24-Hour Value | 24-Hour<br>Exceedances |
|------------------------------------|------------------|-------------------------|-----------------------|---------------------|-------------------------|-----------------------|--------------------------|------------------------|
| SO2 (ppb) Average                  | 638              | 32                      | 34                    | 99.7                | 77.5                    | 0                     | 8.8                      | 0                      |
| H2S (ppb) Average                  | 639              | 33                      | 33                    | 100                 | 9.4                     | 0                     | 1.8                      | 0                      |
| THC (ppm) Average                  | 638              | 32                      | 34                    | 99.7                | 3.8                     | -                     | 3                        | -                      |
| CH4(ppm) Average                   | 638              | 32                      | 34                    | 99.7                | 3.7                     | -                     | 2.9                      | -                      |
| NMHC(ppm) Average                  | 638              | 32                      | 34                    | 99.7                | 0.291                   | -                     | 0.055                    | -                      |
| Temperature (C) Average            | 672              | 0                       | 0                     | 100                 | 4.1                     | -                     | -1.2                     | -                      |
| Relative Humidity (%) Average      | 672              | 0                       | 0                     | 100                 | 92.6                    | -                     | 85.2                     | -                      |
| Barometric Pressure (inHg) Average | 672              | 0                       | 0                     | 100                 | 30                      | -                     | 29.9                     | -                      |
| Wind Speed 10 m (km/h) Average     | 669              | 0                       | 3                     | 99.55               | 32                      | -                     | 17                       | -                      |
| Wind Direction 10 m (deg) Average  | 669              | 0                       | 3                     | 99.55               | -                       | -                     | -                        | -                      |

Note : Operational time includes periods of data collection and instrument calibration

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - LOWER CAMP (AMS11)  
 FEBRUARY 2023

MONTHLY SUMMARY FOR AIR QUALITY/ METEOROLOGICAL MONITORING MEASUREMENTS

| Parameter                          | Number | Mean   | StnDev | Total | Percentile |       |       |        |      |      |       |
|------------------------------------|--------|--------|--------|-------|------------|-------|-------|--------|------|------|-------|
|                                    |        |        |        |       | Min        | P10   | Q1    | Median | Q3   | P90  | Max   |
| SO2 (ppb) Average                  | 638    | 2.48   | 6.9    | -     | 0          | 0     | 0.2   | 0.4    | 1.4  | 5.7  | 77.5  |
| H2S (ppb) Average                  | 639    | 0.6    | 0.8    | -     | 0          | 0.1   | 0.2   | 0.4    | 0.8  | 1.3  | 9.4   |
| THC (ppm) Average                  | 638    | 2.28   | 0.2    | -     | 2          | 2.1   | 2.1   | 2.2    | 2.4  | 2.6  | 3.8   |
| CH4(ppm) Average                   | 638    | 2.27   | 0.2    | -     | 2          | 2.1   | 2.1   | 2.2    | 2.4  | 2.5  | 3.7   |
| NMHC(ppm) Average                  | 638    | 0.013  | 0.031  | -     | 0          | 0     | 0     | 0      | 0    | 0.1  | 0.291 |
| Temperature 2 m (C) Average        | 672    | -16.08 | 9.8    | -     | -38.2      | -30.5 | -23.4 | -15.1  | -8.7 | -4   | 4.1   |
| Relative Humidity (%) Average      | 672    | 74.4   | 9.1    | -     | 43.4       | 62.1  | 70.3  | 75.1   | 80.3 | 85   | 92.6  |
| Barometric Pressure (inHg) Average | 672    | 29.07  | 0.4    | -     | 28.2       | 28.7  | 28.8  | 29     | 29.3 | 29.6 | 30    |
| Wind Speed 10 m (km/h) Average     | 669    | 7.5    | 6      | -     | 0          | 1     | 3     | 6      | 10   | 15   | 32    |
| Wind Direction 10 m (deg) Average  | 669    | -      | -      | -     | -          | -     | -     | -      | -    | -    | -     |

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - LOWER CAMP (AMS11)  
FEBRUARY 2023

OPERATIONAL NOTES

| Parameter                                  | Period<br>Start   | Period<br>End     | Duration<br>(Hours) | Notes   |
|--|-------------------|-------------------|---------------------|---|
| SO <sub>2</sub> , THC/NMHC/CH <sub>4</sub> | 08 Feb 2023 14:00 | 08 Feb 2023 15:00 | 2                   | Maintenance - sample manifold cleaned             |
| Wind Speed, Wind Direction                 | 23 Feb 2023 09:00 | 23 Feb 2023 09:00 | 1                   | Flat line in sensor output signal - Sensor frozen |
| Wind Speed, Wind Direction                 | 28 Feb 2023 22:00 | 28 Feb 2023 23:00 | 2                   | Flat line in sensor output signal - Sensor frozen |



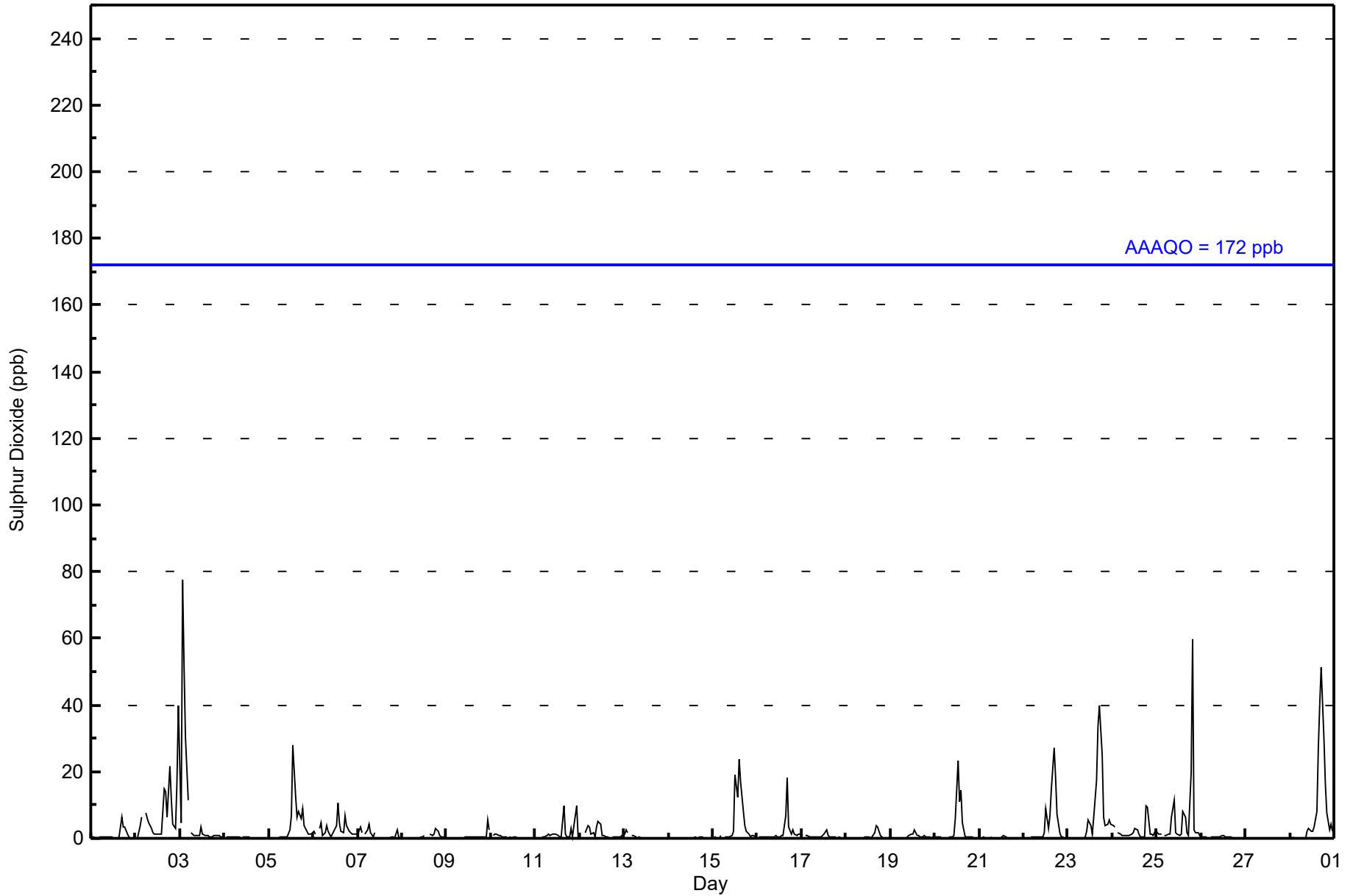
**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

**Sulphur Dioxide (SO<sub>2</sub>) - ppb**  
**Lower Camp - February 2023**

|   |   |          |                           |      |
|---|---|----------|---------------------------|------|
| Number of Exceedences (AAAQO):              | 1-hr: 0   | 24-hr: 0 | Hours in Service:         | 672  |
| Maximum Value: 77.5 ppb on Feb 3 02:00      | Maximum Daily Average: 8.8 ppb on Feb 28  |          | Hours of Data:            | 638  |
| Minimum Value: 0.0 ppb on Feb 1 23:00       | Minimum Daily Average: 0.0 ppb on Feb 27  |          | Hours of Missing Data:    | 34   |
| Maximum Diurnal Average: 6.1 ppb at hour 17 | Minimum Diurnal Average: 0.7 ppb at hour 9  |          | Hours of Calibration:     | 32   |
| Monthly Average: 2.48 ppb                   | Percentiles: P <sub>1</sub> = 0.0 P <sub>10</sub> = 0.0 Q <sub>1</sub> = 0.2 Median = 0.4 Q <sub>3</sub> = 1.4 P <sub>90</sub> = 5.7 P <sub>99</sub> = 37.4 |          | Percent Operational Time: | 99.7 |

| Day  | Hourly Period Ending At (MST) |      |      |      |      |     |     |     |     |      |     |     |      |      |      |      |      |      |      |      |     |      |      |                 | Daily Average | Daily Maximum |     |
|--|-------------------------------|------|------|------|------|-----|-----|-----|-----|------|-----|-----|------|------|------|------|------|------|------|------|-----|------|------|-----------------|---------------|---------------|-----|
|  | 1                             | 2    | 3    | 4    | 5    | 6   | 7   | 8   | 9   | 10   | 11  | 12  | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20   | 21  | 22   | 23   | 24              |               |               |     |
| 1-Feb  | 0.3                           | 0.3  | 0.2  | Z    | 0.3  | 0.4 | 0.3 | 0.3 | 0.2 | 0.3  | 0.3 | 0.2 | 0.1  | 0.1  | 0.1  | 0.5  | 6.2  | 3.2  | 3.4  | 1.2  | 0.5 | 0.1  | 0.0  | 0.0             | 0.8           | 6.2           |     |
| 2-Feb  | 0.0                           | 0.2  | 3.9  | 6.2  | Z    | 7.5 | 6.1 | 4.8 | 3.0 | 1.8  | 1.2 | 1.2 | 1.1  | 1.2  | 14.7 | 13.9 | 6.3  | 21.6 | 11.7 | 4.2  | 3.1 | 17.1 | 39.6 | 7.5             | 39.6          |               |     |
| 3-Feb  | 4.8                           | 77.5 | 52.6 | 30.6 | 11.5 | Z   | 1.7 | 0.9 | 0.7 | 0.7  | 0.8 | 3.4 | 1.4  | 0.9  | 1.0  | 1.0  | 0.6  | 0.5  | 0.7  | 0.7  | 0.7 | 0.6  | 0.6  | 0.5             | 8.5           | 77.5          |     |
| 4-Feb  | Z                             | 0.4  | 0.4  | 0.4  | 0.4  | 0.4 | 0.4 | 0.3 | 0.2 | 0.2  | 0.3 | 0.3 | 0.2  | 0.2  | 0.2  | 0.2  | 0.2  | 0.2  | 0.2  | 0.2  | 0.1 | 0.1  | 0.1  | 0.1             | 0.2           | 0.4           |     |
| 5-Feb  | 0.1                           | Z    | 0.2  | 0.1  | 0.2  | 0.1 | 0.2 | 0.3 | 0.3 | 0.4  | 0.6 | 2.7 | 6.9  | 28.2 | 12.6 | 6.4  | 7.9  | 6.0  | 8.7  | 3.8  | 2.3 | 1.4  | 1.4  | 1.3             | 4.0           | 28.2          |     |
| 6-Feb  | 2.0                           | 1.3  | Z    | 2.9  | 4.6  | 0.8 | 1.8 | 3.8 | 2.3 | 0.4  | 1.3 | 2.0 | 3.6  | 10.7 | 4.7  | 2.2  | 1.8  | 6.9  | 4.0  | 1.9  | 1.7 | 1.4  | 1.4  | 1.2             | 2.8           | 10.7          |     |
| 7-Feb  | 1.3                           | 3.3  | 1.8  | Z    | 1.2  | 2.6 | 4.4 | 1.9 | 0.4 | 1.5  | C   | C   | C    | C    | 0.1  | 0.0  | 0.1  | 0.0  | 0.3  | 0.2  | 0.0 | 2.7  | 0.4  | 0.0             | 1.2           | 4.4           |     |
| 8-Feb  | 0.0                           | 0.0  | 0.0  | 0.0  | Z    | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 0.2 | 0.3 | 0.9  | M    | M    | 1.2  | 0.8  | 1.2  | 3.0  | 2.0  | 0.8 | 0.5  | 0.4  | 0.3             | 0.6           | 3.0           |     |
| 9-Feb  | 0.2                           | 0.2  | 0.2  | 0.2  | 0.2  | Z   | 0.2 | 0.1 | 0.2 | 0.2  | 0.2 | 0.3 | 0.5  | 0.6  | 0.4  | 0.5  | 0.5  | 0.6  | 0.4  | 0.5  | 0.4 | 0.4  | 5.5  | 2.7             | 0.7           | 5.5           |     |
| 10-Feb   | Z                             | 0.8  | 1.3  | 1.1  | 0.9  | 0.8 | 0.6 | 0.4 | 0.2 | 0.2  | 0.2 | 0.2 | 0.3  | 0.2  | 0.2  | 0.2  | 0.2  | 0.2  | 0.1  | 0.2  | 0.2 | 0.1  | 0.2  | 0.1             | 0.4           | 1.3           |     |
| 11-Feb   | 0.1                           | Z    | 0.1  | 0.1  | 0.3  | 0.5 | 0.8 | 1.1 | 0.8 | 1.4  | 1.5 | 1.2 | 0.7  | 0.5  | 0.4  | 9.7  | 1.2  | 0.5  | 0.3  | 3.2  | 0.6 | 3.7  | 9.9  | 0.4             | 1.7           | 9.9           |     |
| 12-Feb   | 0.2                           | 0.2  | Z    | 1.6  | 3.9  | 3.3 | 1.3 | 1.8 | 0.3 | 3.3  | 5.2 | 4.3 | 0.9  | 0.6  | 0.6  | 0.4  | 0.2  | 0.1  | 0.3  | 0.3  | 0.4 | 0.4  | 0.3  | 1.1             | 1.3           | 5.2           |     |
| 13-Feb   | 1.4                           | 2.6  | 1.7  | Z    | 1.0  | 0.7 | 0.3 | 0.2 | 0.3 | 0.1  | 0.2 | 0.1 | 0.1  | 0.2  | 0.1  | 0.0  | 0.1  | 0.1  | 0.1  | 0.1  | 0.1 | 0.0  | 0.0  | 0.1             | 0.4           | 2.6           |     |
| 14-Feb   | 0.0                           | 0.0  | 0.1  | 0.1  | Z    | 0.1 | 0.0 | 0.0 | 0.0 | 0.1  | 0.0 | 0.1 | 0.2  | 0.1  | 0.3  | 0.1  | 0.2  | 0.3  | 0.3  | 0.1  | 0.2 | 0.1  | 0.1  | 0.1             | 0.1           | 0.1           | 0.3 |
| 15-Feb   | 0.1                           | 0.5  | 0.1  | 0.1  | 1.0  | Z   | 0.4 | 0.3 | 0.5 | 0.3  | 1.0 | 2.0 | 19.1 | 12.5 | 23.9 | 17.1 | 8.0  | 3.6  | 2.2  | 1.2  | 0.6 | 1.0  | 0.8  | 0.5             | 4.2           | 23.9          |     |
| 16-Feb   | Z                             | 0.4  | 0.3  | 0.3  | 0.3  | 0.3 | 0.4 | 0.4 | 0.4 | 0.5  | 0.6 | 0.5 | 0.4  | 0.7  | 0.9  | 6.7  | 18.2 | 3.5  | 1.5  | 2.5  | 1.1 | 0.9  | 1.1  | 1.1             | 1.9           | 18.2          |     |
| 17-Feb   | 0.9                           | Z    | 0.8  | 0.7  | 0.6  | 0.6 | 0.6 | 0.5 | 0.4 | 0.5  | 0.5 | 0.7 | 1.3  | 2.7  | 1.0  | 0.6  | 0.4  | 0.4  | 0.3  | 0.2  | 0.2 | 0.1  | 0.0  | 0.1             | 0.6           | 2.7           |     |
| 18-Feb   | 0.1                           | 0.0  | Z    | 0.0  | 0.0  | 0.0 | 0.0 | 0.0 | 0.0 | 0.2  | 0.4 | 0.5 | 0.2  | 0.1  | 0.2  | 1.8  | 3.8  | 3.4  | 0.8  | 0.4  | 0.1 | 0.0  | 0.0  | 0.0             | 0.5           | 3.8           |     |
| 19-Feb   | 0.0                           | 0.0  | 0.0  | Z    | 0.0  | 0.0 | 0.1 | 0.1 | 0.1 | 0.3  | 0.9 | 1.2 | 1.2  | 2.5  | 0.9  | 0.8  | 0.6  | 0.6  | 0.8  | 0.5  | 0.3 | 0.5  | 0.2  | 0.3             | 0.5           | 2.5           |     |
| 20-Feb   | 0.3                           | 0.4  | 0.4  | 0.3  | Z    | 0.2 | 0.1 | 0.1 | 0.2 | 0.4  | 0.9 | 5.9 | 23.3 | 11.0 | 14.5 | 4.8  | 0.6  | 0.6  | 0.3  | 0.3  | 0.3 | 0.1  | 0.1  | 0.1             | 2.8           | 23.3          |     |
| 21-Feb   | 0.1                           | 0.1  | 0.3  | 0.2  | 0.2  | Z   | 0.3 | 0.1 | 0.1 | 0.2  | 0.1 | 0.2 | 0.5  | 0.6  | 0.3  | 0.2  | 0.2  | 0.1  | 0.1  | 0.1  | 0.1 | 0.0  | 0.0  | 0.0             | 0.2           | 0.6           |     |
| 22-Feb   | Z                             | 0.1  | 0.1  | 0.1  | 0.2  | 0.3 | 0.3 | 0.4 | 0.4 | 0.4  | 0.5 | 1.7 | 8.8  | 2.9  | 6.6  | 14.7 | 27.3 | 18.2 | 7.0  | 1.7  | 0.6 | 0.3  | 0.2  | 0.1             | 4.0           | 27.3          |     |
| 23-Feb   | 0.1                           | Z    | 0.1  | 0.1  | 0.1  | 0.0 | 0.0 | 0.0 | 0.1 | 0.3  | 2.1 | 5.4 | 3.8  | 1.2  | 6.3  | 17.4 | 33.6 | 39.7 | 24.9 | 6.3  | 3.9 | 4.3  | 5.6  | 4.1             | 6.9           | 39.7          |     |
| 24-Feb   | 3.9                           | 3.3  | Z    | 1.8  | 1.5  | 1.0 | 0.9 | 0.7 | 0.7 | 0.7  | 1.3 | 1.9 | 2.8  | 2.6  | 1.2  | 0.5  | 0.6  | 0.4  | 9.7  | 9.4  | 1.4 | 1.1  | 0.9  | 2.5             | 2.2           | 9.7           |     |
| 25-Feb   | 1.8                           | 1.1  | 1.1  | Z    | 0.8  | 0.8 | 1.2 | 1.1 | 6.3 | 11.3 | 1.8 | 1.2 | 0.8  | 1.2  | 8.1  | 6.4  | 1.7  | 0.9  | 19.8 | 59.8 | 2.7 | 1.6  | 1.5  | 0.8             | 5.8           | 59.8          |     |
| 26-Feb   | 0.6                           | 0.4  | 0.3  | 0.3  | Z    | 0.4 | 0.3 | 0.3 | 0.4 | 0.4  | 0.5 | 0.7 | 0.7  | 0.5  | 0.4  | 0.4  | 0.2  | 0.2  | 0.2  | 0.2  | 0.1 | 0.1  | 0.1  | 0.1             | 0.3           | 0.7           |     |
| 27-Feb   | 0.2                           | 0.2  | 0.2  | 0.2  | 0.1  | Z   | 0.1 | 0.1 | 0.0 | 0.0  | 0.0 | 0.0 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0 | 0.0  | 0.0  | 0.0             | 0.0           | 0.2           |     |
| 28-Feb   | Z                             | 0.6  | 0.0  | 0.0  | 0.0  | 0.0 | 0.0 | 0.0 | 0.0 | 2.1  | 3.1 | 1.9 | 2.2  | 3.5  | 8.2  | 27.2 | 40.5 | 51.5 | 29.6 | 16.3 | 7.4 | 2.5  | 4.1  | 2.3             | 8.8           | 51.5          |     |
| 0.8 3.9 2.8 2.1 1.3 0.9 0.8 0.7 0.7 1.0 1.0 1.5 3.0 3.3 3.5 4.8 6.1 5.3 5.0 4.5 1.1 1.0 1.9 2.1                |                               |      |      |      |      |     |     |     |     |      |     |     |      |      |      |      |      |      |      |      |     |      |      | Diurnal Average |               |               |     |
| 4.8 77.5 52.6 30.6 11.5 7.5 6.1 4.8 6.3 11.3 5.2 5.9 23.3 28.2 23.9 27.2 40.5 51.5 29.6 59.8 7.4 4.3 17.1 39.6 |                               |      |      |      |      |     |     |     |     |      |     |     |      |      |      |      |      |      |      |      |     |      |      | Diurnal Maximum |               |               |     |

Z - zerospan      C - Calibration      M - Maintenance  
 Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 172 ppb    24-hr 48 ppb





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Sulphur Dioxide (SO<sub>2</sub>) - ppb**  
**Lower Camp - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 10                            | 602                    | 94.36    | 94.36               |
| 11 - 20                           | 19                     | 2.98     | 97.34               |
| 21 - 60                           | 16                     | 2.51     | 99.84               |
| 61 - 110                          | 1                      | 0.16     | 100.00              |
| 111 - 172                         | 0                      | 0.00     | 100.00              |
| > 172                             | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 638

Total Number of Hours: 672



**Wood Buffalo Environmental Association**  
**Frequency Distribution**

**Sulphur Dioxide (SO<sub>2</sub>) - ppb**  
**Lower Camp - February 2023**

| Concentration<br>Ranges (ppb) | Wind Direction |     |    |     |   |     |     |     |   |     |    |     |    |     |     |     | Totals |
|-------------------------------|----------------|-----|----|-----|---|-----|-----|-----|---|-----|----|-----|----|-----|-----|-----|--------|
|                               | N              | NNE | NE | ENE | E | ESE | SE  | SSE | S | SSW | SW | WSW | W  | WNW | NW  | NNW |        |
| 0 - 10                        | 86             | 33  | 10 | 10  | 8 | 28  | 99  | 19  | 8 | 0   | 2  | 13  | 35 | 53  | 99  | 96  | 599    |
| 11 - 20                       | 0              | 0   | 1  | 0   | 1 | 2   | 7   | 2   | 0 | 0   | 1  | 3   | 0  | 1   | 1   | 0   | 19     |
| 21 - 60                       | 0              | 0   | 0  | 1   | 0 | 1   | 7   | 0   | 0 | 0   | 0  | 2   | 3  | 1   | 0   | 1   | 16     |
| 61 - 110                      | 0              | 0   | 0  | 0   | 0 | 0   | 1   | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0   | 0   | 1      |
| 111 - 172                     | 0              | 0   | 0  | 0   | 0 | 0   | 0   | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0   | 0   | 0      |
| > 172                         | 0              | 0   | 0  | 0   | 0 | 0   | 0   | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0   | 0   | 0      |
| <b>Totals</b>                 | 86             | 33  | 11 | 11  | 9 | 31  | 114 | 21  | 8 | 0   | 3  | 18  | 38 | 55  | 100 | 97  | 635    |

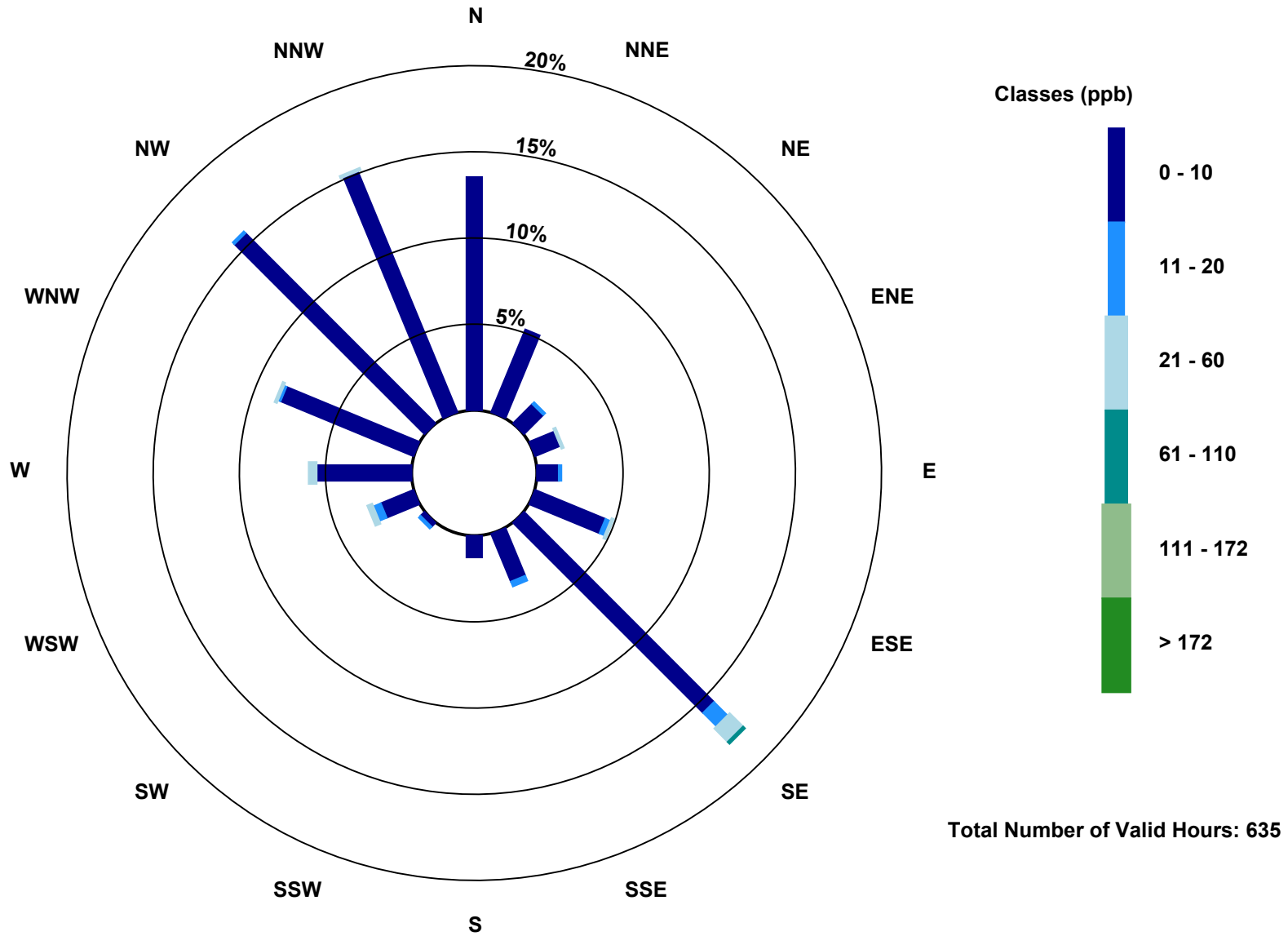
Total Number of Valid Hours: 635

Total Number of Hours: 672

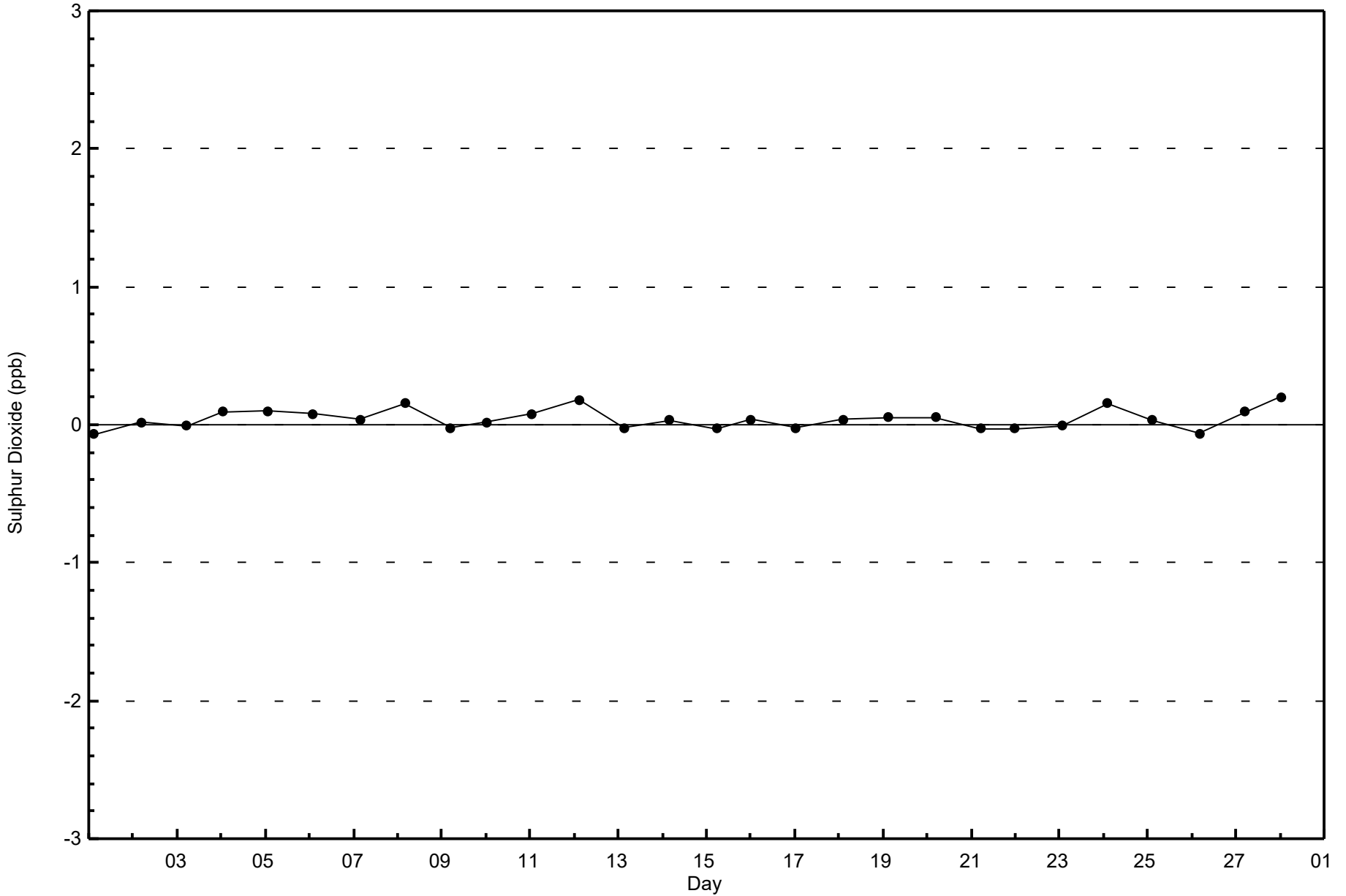


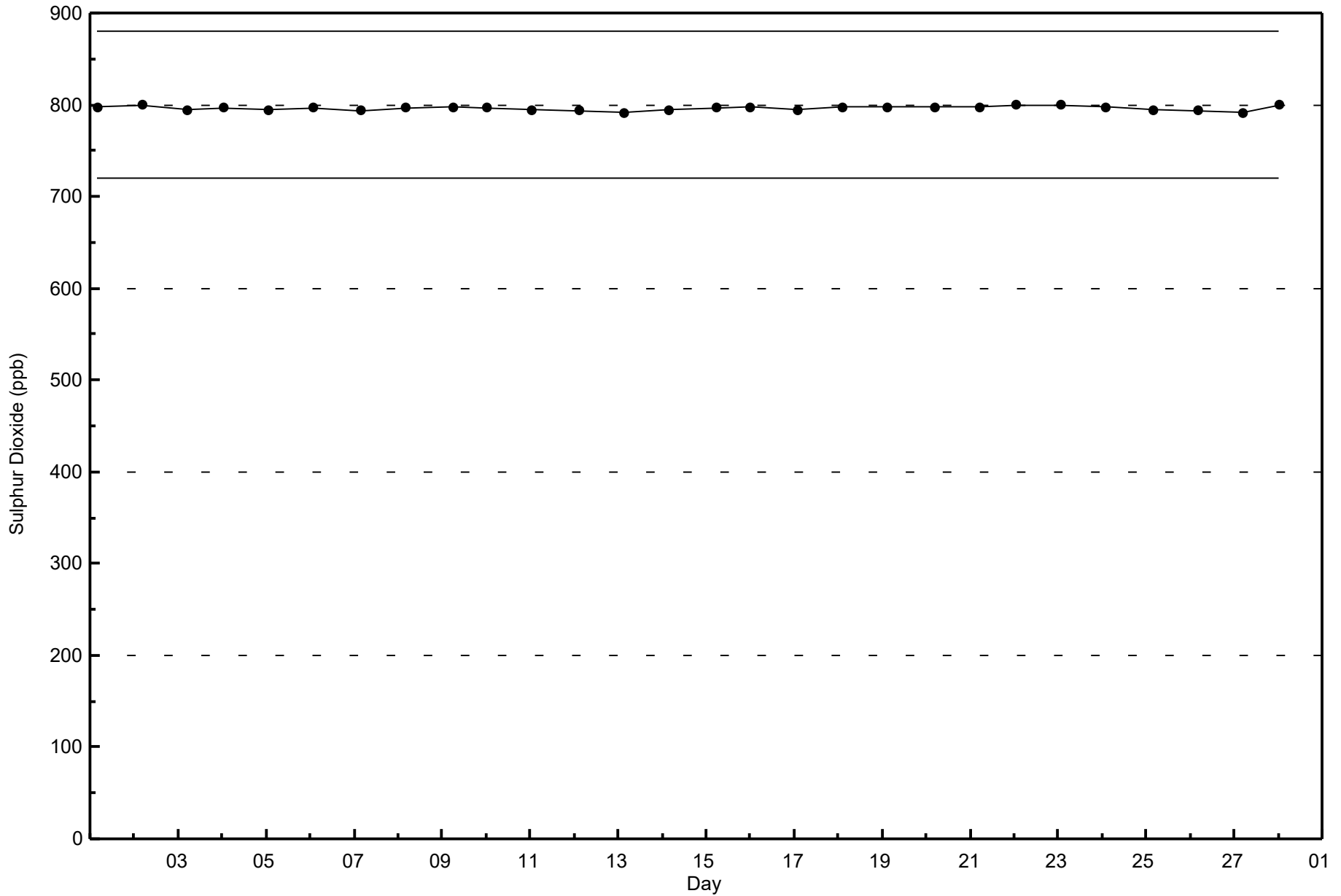
Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Sulphur Dioxide (SO<sub>2</sub>) - ppb  
Lower Camp











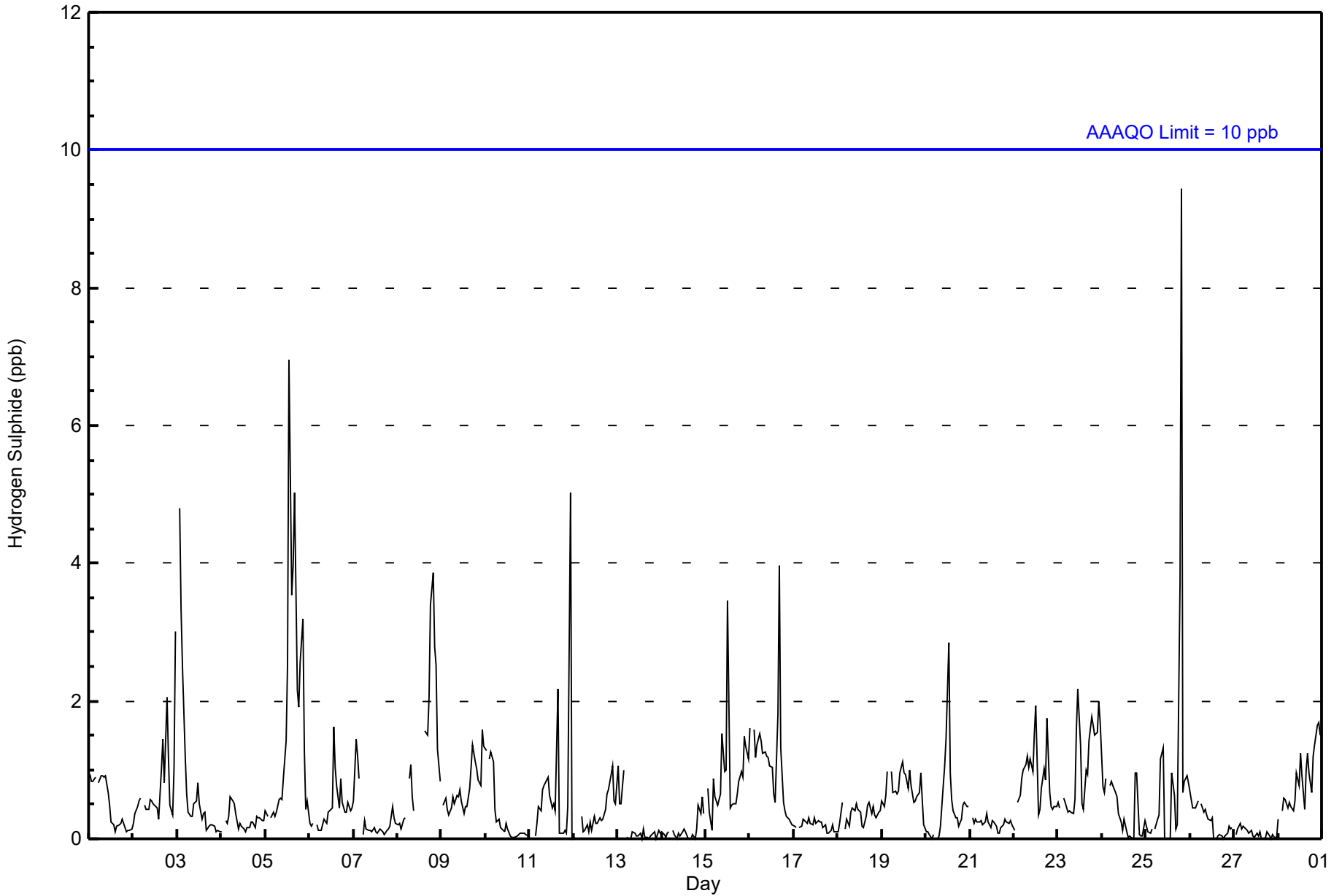
Wood Buffalo Environmental Association

Summary of Hour Averages

Hydrogen Sulphide (H<sub>2</sub>S) - ppb

Lower Camp - February 2023

| Number of Exceedences (AAAQO):  |                               | 1-hr: 0  |     | 24-hr: 0                        |     | Hours in Service: 672 |     |     |     |     |     |     |     |     |     |     |     |       |     | 672 |     |     |     |                 |               |               |     |
|---|-------------------------------|--|-----|---------------------------------|-----|-----------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-------|-----|-----|-----|-----|-----|-----------------|---------------|---------------|-----|
| Maximum Value: 9.4 ppb on Feb 25 20:00  |                               | Maximum Daily Average: 1.8 ppb on Feb 5  |     | Hours of Data: 639              |     |                       |     |     |     |     |     |     |     |     |     |     |     | 639   |     |     |     |     |     |                 |               |               |     |
| Minimum Value: 0.0 ppb on Feb 11 01:00  |                               | Minimum Daily Average: 0.1 ppb on Feb 27   |     | Hours of Missing Data: 33       |     |                       |     |     |     |     |     |     |     |     |     |     |     | 33    |     |     |     |     |     |                 |               |               |     |
| Maximum Diurnal Average: 1.0 ppb at hour 20   |                               | Minimum Diurnal Average: 0.4 ppb at hour 1   |     | Hours of Calibration: 33        |     |                       |     |     |     |     |     |     |     |     |     |     |     | 33    |     |     |     |     |     |                 |               |               |     |
| Monthly Average: 0.60 ppb   |                               | Percentiles: P <sub>1</sub> = 0.0 P <sub>10</sub> = 0.1 Q <sub>1</sub> = 0.2 Median = 0.4 Q <sub>3</sub> = 0.8 P <sub>90</sub> = 1.3 P <sub>99</sub> = 3.9 |     | Percent Operational Time: 100.0 |     |                       |     |     |     |     |     |     |     |     |     |     |     | 100.0 |     |     |     |     |     |                 |               |               |     |
| Day   | Hourly Period Ending At (MST) |  |     |                                 |     |                       |     |     |     |     |     |     |     |     |     |     |     |       |     |     |     |     |     |                 | Daily Average | Daily Maximum |     |
|   | 1                             | 2  | 3   | 4                               | 5   | 6                     | 7   | 8   | 9   | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18    | 19  | 20  | 21  | 22  | 23  | 24              |               |               |     |
| 1-Feb   | 0.9                           | 0.8  | 0.8 | 0.9                             | Z   | 0.8                   | 0.9 | 0.9 | 0.9 | 0.9 | 0.7 | 0.5 | 0.3 | 0.2 | 0.1 | 0.2 | 0.2 | 0.2   | 0.3 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1             | 0.5           | 0.9           |     |
| 2-Feb   | 0.2                           | 0.4  | 0.5 | 0.6                             | 0.6 | Z                     | 0.5 | 0.4 | 0.4 | 0.6 | 0.6 | 0.5 | 0.5 | 0.4 | 0.3 | 1.0 | 1.4 | 0.8   | 2.1 | 1.2 | 0.5 | 0.3 | 1.0 | 3.0             | 0.8           | 3.0           |     |
| 3-Feb   | Z                             | 4.8  | 3.3 | 2.5                             | 1.2 | 0.7                   | 0.4 | 0.3 | 0.3 | 0.5 | 0.5 | 0.8 | 0.5 | 0.3 | 0.4 | 0.4 | 0.1 | 0.2   | 0.2 | 0.2 | 0.2 | 0.1 | 0.1 | 0.1             | 0.8           | 4.8           |     |
| 4-Feb   | 0.1                           | Z  | 0.3 | 0.2                             | 0.3 | 0.6                   | 0.5 | 0.5 | 0.4 | 0.2 | 0.2 | 0.2 | 0.2 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2   | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3             | 0.3           | 0.6           | 0.6 |
| 5-Feb   | 0.4                           | 0.3  | Z   | 0.3                             | 0.4 | 0.3                   | 0.4 | 0.6 | 0.6 | 0.6 | 0.9 | 1.4 | 2.5 | 7.0 | 3.5 | 4.0 | 5.0 | 2.2   | 1.9 | 2.6 | 3.2 | 1.3 | 0.4 | 0.5             | 1.8           | 7.0           |     |
| 6-Feb   | 0.2                           | 0.2  | 0.2 | Z                               | 0.2 | 0.1                   | 0.1 | 0.2 | 0.3 | 0.2 | 0.4 | 0.4 | 0.5 | 1.6 | 1.0 | 0.8 | 0.5 | 0.9   | 0.5 | 0.4 | 0.4 | 0.5 | 0.4 | 0.4             | 0.5           | 1.6           |     |
| 7-Feb   | 0.5                           | 1.5  | 1.2 | 0.9                             | Z   | 0.1                   | 0.3 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1   | 0.1 | 0.1 | 0.2 | 0.5 | 0.3 | 0.2             | 0.3           | 1.5           |     |
| 8-Feb   | 0.2                           | 0.2  | 0.1 | 0.3                             | 0.3 | Z                     | 0.9 | 1.1 | 0.6 | 0.4 | C   | C   | C   | C   | C   | 1.6 | 1.5 | 2.1   | 3.4 | 3.9 | 2.8 | 2.5 | 1.3 | 0.8             | 1.3           | 3.9           |     |
| 9-Feb   | Z                             | 0.5  | 0.6 | 0.4                             | 0.4 | 0.4                   | 0.6 | 0.5 | 0.6 | 0.6 | 0.7 | 0.6 | 0.4 | 0.5 | 0.5 | 0.7 | 1.0 | 1.4   | 1.1 | 1.0 | 0.9 | 0.8 | 1.6 | 1.3             | 0.7           | 1.6           |     |
| 10-Feb  | 1.3                           | Z  | 1.2 | 1.3                             | 1.1 | 0.4                   | 0.2 | 0.3 | 0.2 | 0.1 | 0.1 | 0.2 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0   | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.0             | 0.3           | 1.3           |     |
| 11-Feb  | 0.0                           | 0.0  | Z   | 0.0                             | 0.2 | 0.5                   | 0.4 | 0.7 | 0.8 | 0.9 | 0.9 | 0.6 | 0.5 | 0.5 | 0.4 | 2.2 | 0.1 | 0.1   | 0.1 | 0.1 | 0.1 | 0.5 | 5.0 | 0.0             | 0.6           | 5.0           |     |
| 12-Feb  | 0.0                           | 0.0  | 0.0 | Z                               | 0.3 | 0.1                   | 0.1 | 0.2 | 0.1 | 0.2 | 0.1 | 0.3 | 0.2 | 0.2 | 0.3 | 0.3 | 0.3 | 0.4   | 0.6 | 0.7 | 0.9 | 1.1 | 0.6 | 0.5             | 0.3           | 1.1           |     |
| 13-Feb  | 1.1                           | 0.5  | 0.5 | 1.0                             | Z   | 0.0                   | 0.0 | 0.0 | 0.1 | 0.1 | 0.0 | 0.0 | 0.1 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0   | 0.0 | 0.1 | 0.1 | 0.0 | 0.1 | 0.1             | 0.2           | 1.1           |     |
| 14-Feb  | 0.1                           | 0.1  | 0.0 | 0.1                             | 0.1 | Z                     | 0.1 | 0.1 | 0.0 | 0.1 | 0.0 | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.1   | 0.0 | 0.1 | 0.5 | 0.4 | 0.6 | 0.4             | 0.1           | 0.6           |     |
| 15-Feb  | Z                             | 0.7  | 0.4 | 0.1                             | 0.9 | 0.6                   | 0.5 | 0.6 | 0.6 | 1.5 | 1.0 | 1.0 | 3.5 | 0.4 | 0.5 | 0.5 | 0.5 | 0.7   | 0.8 | 1.0 | 0.9 | 1.5 | 1.4 | 1.2             | 0.9           | 3.5           |     |
| 16-Feb  | 1.6                           | Z  | 1.6 | 1.2                             | 1.4 | 1.5                   | 1.4 | 1.2 | 1.3 | 1.2 | 1.2 | 1.1 | 1.0 | 0.6 | 0.5 | 1.8 | 4.0 | 1.3   | 0.5 | 0.4 | 0.3 | 0.3 | 0.2 | 0.2             | 1.1           | 4.0           |     |
| 17-Feb  | 0.2                           | 0.2  | Z   | 0.2                             | 0.2 | 0.3                   | 0.3 | 0.2 | 0.3 | 0.2 | 0.2 | 0.3 | 0.2 | 0.3 | 0.2 | 0.3 | 0.2 | 0.2   | 0.1 | 0.1 | 0.1 | 0.2 | 0.1 | 0.1             | 0.2           | 0.3           |     |
| 18-Feb  | 0.1                           | 0.2  | 0.5 | Z                               | 0.1 | 0.3                   | 0.2 | 0.4 | 0.4 | 0.4 | 0.5 | 0.4 | 0.4 | 0.2 | 0.2 | 0.3 | 0.5 | 0.5   | 0.4 | 0.5 | 0.3 | 0.3 | 0.4 | 0.4             | 0.3           | 0.5           |     |
| 19-Feb  | 0.5                           | 0.5  | 0.6 | 1.0                             | Z   | 1.0                   | 0.7 | 0.7 | 0.7 | 0.7 | 0.9 | 1.1 | 1.0 | 0.9 | 0.7 | 1.0 | 0.8 | 0.5   | 0.5 | 0.6 | 0.7 | 1.0 | 0.6 | 0.2             | 0.7           | 1.1           |     |
| 20-Feb  | 0.1                           | 0.1  | 0.1 | 0.0                             | 0.1 | Z                     | 0.0 | 0.0 | 0.2 | 0.8 | 1.1 | 1.5 | 2.8 | 1.0 | 0.6 | 0.4 | 0.3 | 0.3   | 0.2 | 0.3 | 0.5 | 0.5 | 0.5 | 0.5             | 0.5           | 2.8           |     |
| 21-Feb  | Z                             | 0.3  | 0.2 | 0.3                             | 0.3 | 0.2                   | 0.3 | 0.2 | 0.2 | 0.4 | 0.2 | 0.2 | 0.3 | 0.2 | 0.2 | 0.1 | 0.1 | 0.2   | 0.2 | 0.3 | 0.2 | 0.2 | 0.3 | 0.2             | 0.2           | 0.4           |     |
| 22-Feb  | 0.1                           | Z  | 0.5 | 0.6                             | 0.9 | 1.0                   | 1.1 | 1.2 | 1.0 | 1.2 | 1.0 | 1.5 | 1.9 | 0.3 | 0.4 | 0.7 | 1.0 | 0.8   | 1.7 | 0.7 | 0.5 | 0.4 | 0.5 | 0.5             | 0.9           | 1.9           |     |
| 23-Feb  | 0.5                           | 0.5  | Z   | 0.6                             | 0.5 | 0.4                   | 0.4 | 0.4 | 0.4 | 0.6 | 1.6 | 2.2 | 1.4 | 0.5 | 0.4 | 1.0 | 0.9 | 1.4   | 1.8 | 1.6 | 1.5 | 1.6 | 2.0 | 1.7             | 1.0           | 2.2           |     |
| 24-Feb  | 0.7                           | 0.7  | 0.9 | Z                               | 0.8 | 0.8                   | 0.8 | 0.7 | 0.6 | 0.4 | 0.3 | 0.1 | 0.3 | 0.1 | 0.0 | 0.1 | 0.0 | 0.0   | 1.0 | 1.0 | 0.1 | 0.0 | 0.0 | 0.3             | 0.4           | 1.0           |     |
| 25-Feb  | 0.2                           | 0.1  | 0.1 | 0.1                             | Z   | 0.1                   | 0.3 | 0.4 | 1.2 | 1.3 | 0.0 | 0.0 | 0.0 | 0.0 | 1.0 | 0.6 | 0.1 | 0.2   | 3.7 | 9.4 | 0.7 | 0.8 | 0.9 | 0.8             | 1.0           | 9.4           |     |
| 26-Feb  | 0.7                           | 0.4  | 0.4 | 0.5                             | 0.6 | Z                     | 0.5 | 0.4 | 0.4 | 0.3 | 0.3 | 0.3 | 0.3 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0   | 0.0 | 0.0 | 0.1 | 0.2 | 0.1 | 0.2             | 0.3           | 0.7           |     |
| 27-Feb  | Z                             | 0.1  | 0.2 | 0.2                             | 0.2 | 0.2                   | 0.1 | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 | 0.1 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0   | 0.1 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0             | 0.1           | 0.2           |     |
| 28-Feb  | 0.3                           | Z  | 0.4 | 0.6                             | 0.6 | 0.4                   | 0.5 | 0.5 | 0.4 | 0.6 | 1.0 | 0.8 | 1.2 | 0.9 | 0.4 | 1.0 | 1.2 | 1.0   | 0.7 | 1.2 | 1.4 | 1.6 | 1.7 | 1.5             | 0.9           | 1.7           |     |
| 0.4 0.6 0.6 0.6 0.5 0.5 0.4 0.5 0.5 0.5 0.5 0.5 0.6 0.8 0.6 0.5 0.7 0.7 0.6 0.8 1.0 0.6 0.6 0.7 0.6 |                               |  |     |                                 |     |                       |     |     |     |     |     |     |     |     |     |     |     |       |     |     |     |     |     | Diurnal Average |               |               |     |
| 1.6 4.8 3.3 2.5 1.4 1.5 1.4 1.2 1.3 1.5 1.6 2.2 3.5 7.0 3.5 4.0 5.0 2.2 3.7 9.4 3.2 2.5 5.0 3.0     |                               |  |     |                                 |     |                       |     |     |     |     |     |     |     |     |     |     |     |       |     |     |     |     |     | Diurnal Maximum |               |               |     |
| Z - zerospan C - Calibration  |                               |  |     |                                 |     |                       |     |     |     |     |     |     |     |     |     |     |     |       |     |     |     |     |     |                 |               |               |     |
| Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 10 ppb 24-hr 3 ppb                             |                               |  |     |                                 |     |                       |     |     |     |     |     |     |     |     |     |     |     |       |     |     |     |     |     |                 |               |               |     |





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Hydrogen Sulphide (H<sub>2</sub>S) - ppb  
Lower Camp - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 2                             | 619                    | 96.87    | 96.87               |
| 3 - 4                             | 15                     | 2.35     | 99.22               |
| 5 - 7                             | 4                      | 0.63     | 99.84               |
| 8 - 11                            | 1                      | 0.16     | 100.00              |
| > 11                              | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 639

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Hydrogen Sulphide (H<sub>2</sub>S) - ppb  
Lower Camp - February 2023**

| <b>Concentration<br/>Ranges (ppb)</b> | <b>Wind Direction</b> |           |           |           |          |           |            |           |          |          |          |           |           |           |            |            | <b>Totals</b> |
|---------------------------------------|-----------------------|-----------|-----------|-----------|----------|-----------|------------|-----------|----------|----------|----------|-----------|-----------|-----------|------------|------------|---------------|
|                                       | N                     | NNE       | NE        | ENE       | E        | ESE       | SE         | SSE       | S        | SSW      | SW       | WSW       | W         | WNW       | NW         | NNW        |               |
| 0 - 2                                 | 82                    | 30        | 12        | 10        | 8        | 29        | 104        | 23        | 7        | 0        | 3        | 16        | 39        | 55        | 99         | 99         | 616           |
| 3 - 4                                 | 0                     | 0         | 0         | 1         | 1        | 1         | 4          | 1         | 1        | 0        | 0        | 1         | 0         | 0         | 3          | 2          | 15            |
| 5 - 7                                 | 1                     | 0         | 0         | 0         | 0        | 0         | 1          | 0         | 0        | 0        | 0        | 1         | 0         | 0         | 0          | 1          | 4             |
| 8 - 11                                | 0                     | 0         | 0         | 0         | 0        | 1         | 0          | 0         | 0        | 0        | 0        | 0         | 0         | 0         | 0          | 0          | 1             |
| > 11                                  | 0                     | 0         | 0         | 0         | 0        | 0         | 0          | 0         | 0        | 0        | 0        | 0         | 0         | 0         | 0          | 0          | 0             |
| <b>Totals</b>                         | <b>83</b>             | <b>30</b> | <b>12</b> | <b>11</b> | <b>9</b> | <b>31</b> | <b>109</b> | <b>24</b> | <b>8</b> | <b>0</b> | <b>3</b> | <b>18</b> | <b>39</b> | <b>55</b> | <b>102</b> | <b>102</b> | <b>636</b>    |

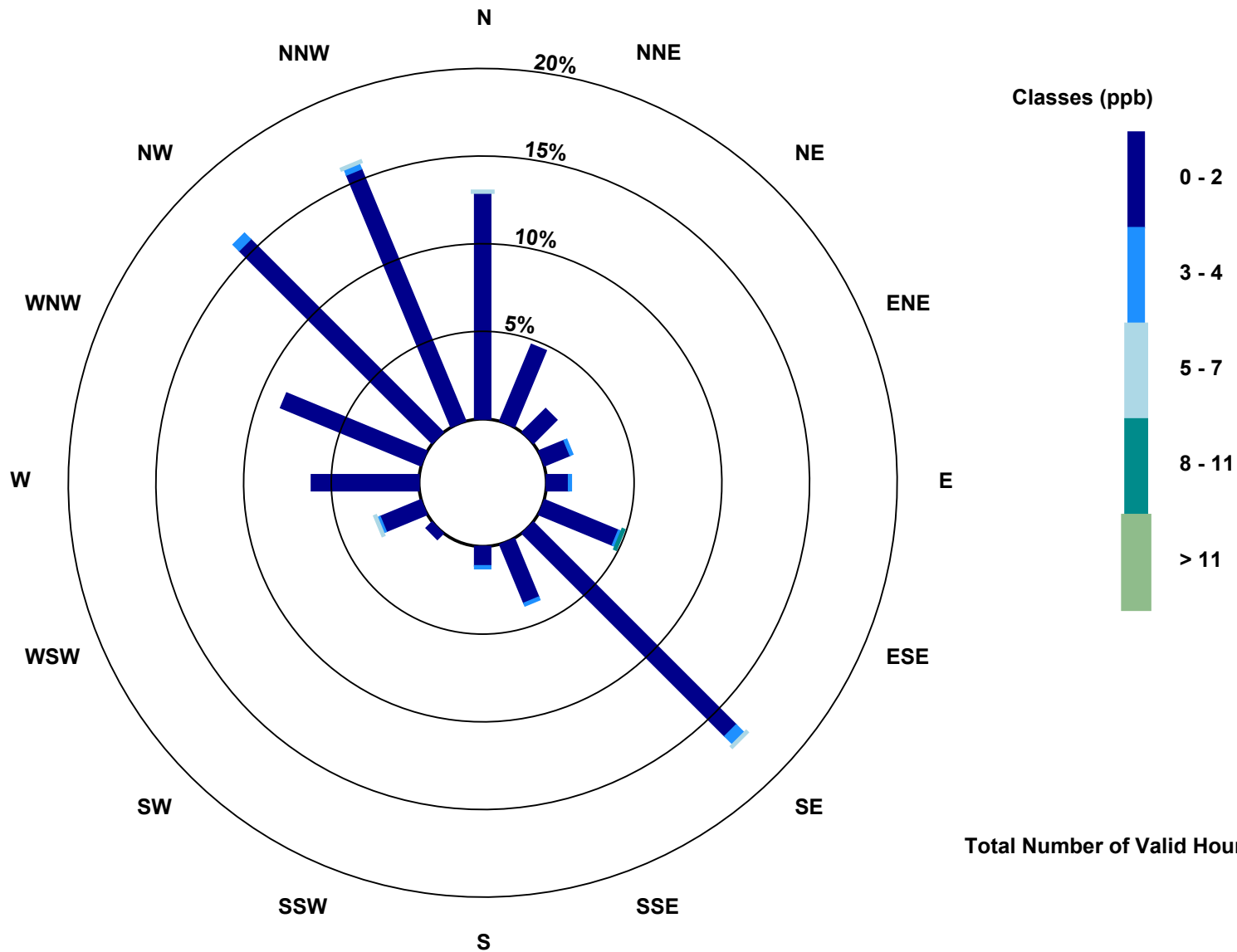
Total Number of Valid Hours: 636

Total Number of Hours: 672

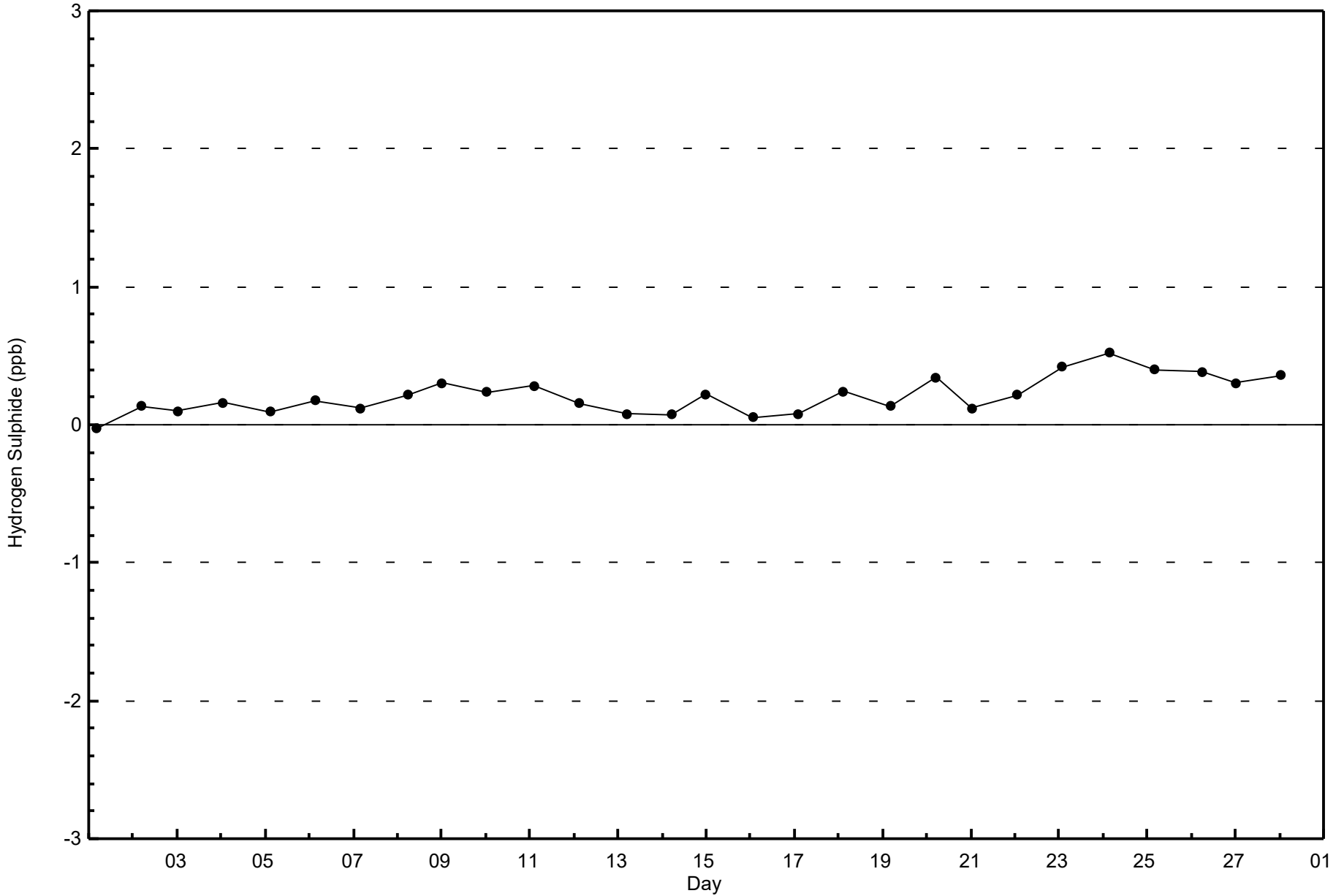


Wood Buffalo Environmental Association  
Wind Rose Feb 2023

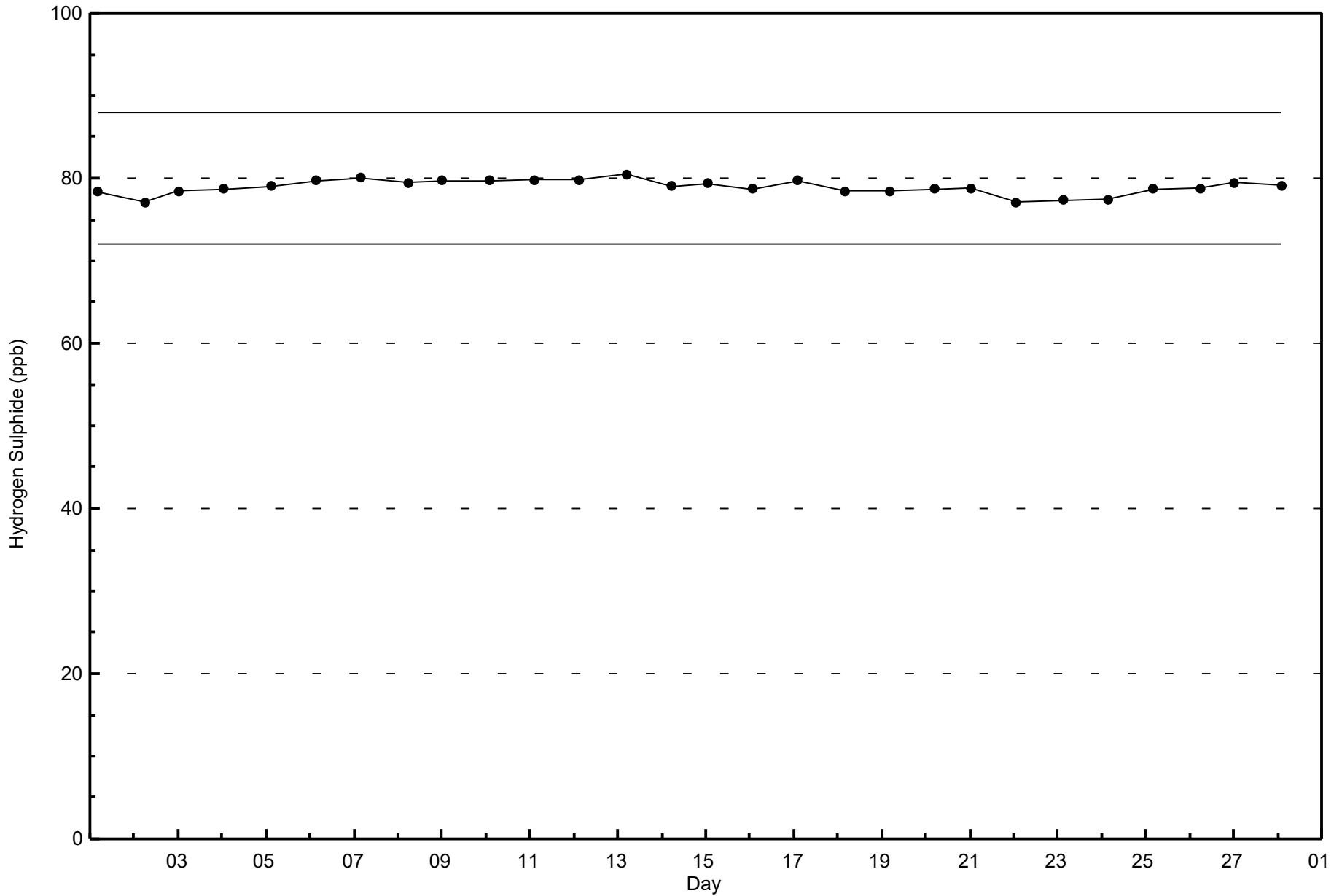
Hydrogen Sulphide (H<sub>2</sub>S) - ppb  
Lower Camp



Total Number of Valid Hours: 636









**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

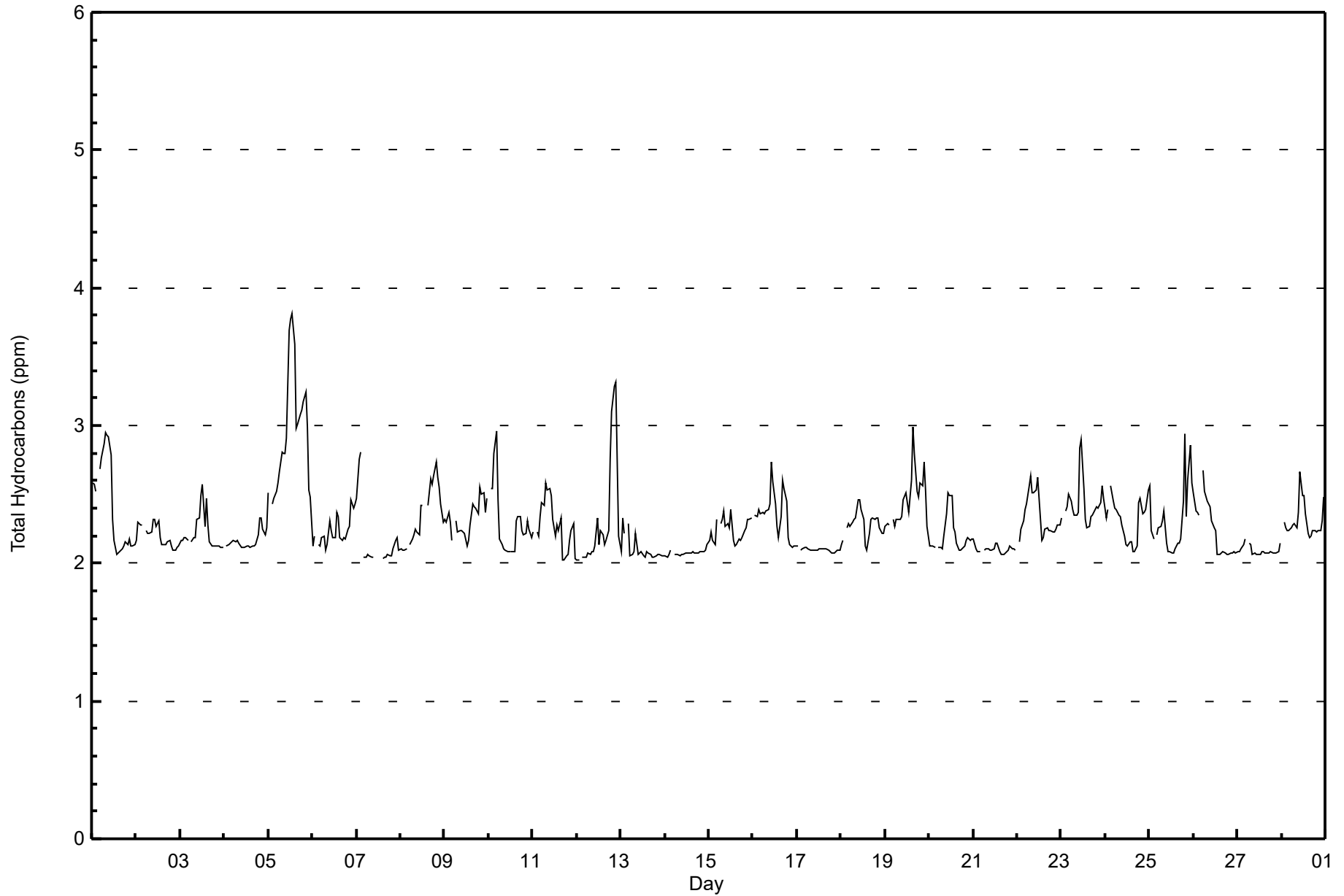
**Total Hydrocarbons (THC) - ppm**  
**Lower Camp - February 2023**

| Maximum Value: 3.8 ppm on Feb 5 14:00  |                               | Maximum Daily Average: 3.0 ppm on Feb 5  |     | Hours in Service: 672          |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |               |               |
|--|-------------------------------|--|-----|--------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----------------|---------------|---------------|
| Minimum Value: 2.0 ppm on Feb 12 02:00   |                               | Minimum Daily Average: 2.1 ppm on Feb 14   |     | Hours of Data: 638             |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |               |               |
| Maximum Diurnal Average: 2.4 ppm at hour 12  |                               | Minimum Diurnal Average: 2.2 ppm at hour 15  |     | Hours of Missing Data: 34      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |               |               |
| Monthly Average: 2.28 ppm  |                               | Percentiles: P <sub>1</sub> = 2.0 P <sub>10</sub> = 2.1 Q <sub>1</sub> = 2.1 Median = 2.2 Q <sub>3</sub> = 2.4 P <sub>90</sub> = 2.6 P <sub>99</sub> = 3.2 |     | Hours of Calibration: 32       |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |               |               |
|  |                               |  |     | Percent Operational Time: 99.7 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |               |               |
| Day  | Hourly Period Ending At (MST) |  |     |                                |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 | Daily Average | Daily Maximum |
|  | 1                             | 2  | 3   | 4                              | 5   | 6   | 7   | 8   | 9   | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19  | 20  | 21  | 22  | 23  | 24              |               |               |
| 1-Feb  | 2.6                           | 2.6  | 2.5 | Z                              | 2.7 | 2.8 | 2.9 | 2.9 | 2.9 | 2.9 | 2.8 | 2.3 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.1 | 2.2 | 2.1 | 2.1 | 2.1             | 2.4           | 2.9           |
| 2-Feb  | 2.2                           | 2.3  | 2.3 | 2.3                            | Z   | 2.2 | 2.2 | 2.2 | 2.2 | 2.3 | 2.3 | 2.3 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1             | 2.2           | 2.3           |
| 3-Feb  | 2.2                           | 2.2  | 2.2 | 2.2                            | 2.2 | Z   | 2.2 | 2.2 | 2.2 | 2.3 | 2.3 | 2.5 | 2.6 | 2.3 | 2.5 | 2.3 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1             | 2.2           | 2.6           |
| 4-Feb  | Z                             | 2.1  | 2.1 | 2.2                            | 2.2 | 2.2 | 2.2 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.3 | 2.3 | 2.2 | 2.2 | 2.3             | 2.2           | 2.3           |
| 5-Feb  | 2.5                           | Z  | 2.4 | 2.5                            | 2.5 | 2.6 | 2.7 | 2.8 | 2.8 | 2.8 | 2.9 | 3.7 | 3.8 | 3.8 | 3.6 | 3.0 | 3.0 | 3.1 | 3.1 | 3.2 | 3.2 | 3.0 | 2.5 | 2.5             | 3.0           | 3.8           |
| 6-Feb  | 2.1                           | 2.2  | Z   | 2.1                            | 2.1 | 2.2 | 2.2 | 2.1 | 2.1 | 2.3 | 2.2 | 2.2 | 2.2 | 2.4 | 2.3 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.3 | 2.5 | 2.4 | 2.4             | 2.2           | 2.5           |
| 7-Feb  | 2.5                           | 2.8  | 2.8 | Z                              | 2.0 | 2.0 | 2.1 | 2.1 | 2.0 | 2.0 | C   | C   | C   | C   | 2.0 | 2.0 | 2.0 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | 2.1             | 2.2           | 2.8           |
| 8-Feb  | 2.1                           | 2.1  | 2.1 | 2.1                            | Z   | 2.1 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.4 | 2.4 | M   | M   | 2.4 | 2.6 | 2.6 | 2.6 | 2.7 | 2.6 | 2.6 | 2.4 | 2.3             | 2.3           | 2.7           |
| 9-Feb  | 2.3                           | 2.3  | 2.4 | 2.3                            | 2.2 | Z   | 2.3 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.1 | 2.2 | 2.3 | 2.4 | 2.4 | 2.4 | 2.4 | 2.6 | 2.5 | 2.5 | 2.4 | 2.5             | 2.3           | 2.6           |
| 10-Feb   | Z                             | 2.5  | 2.5 | 2.8                            | 3.0 | 2.5 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.3 | 2.3 | 2.3 | 2.2 | 2.2 | 2.2 | 2.3 | 2.3 | 2.2             | 2.3           | 3.0           |
| 11-Feb   | 2.2                           | Z  | 2.2 | 2.2                            | 2.3 | 2.4 | 2.4 | 2.6 | 2.5 | 2.5 | 2.5 | 2.3 | 2.2 | 2.3 | 2.2 | 2.3 | 2.0 | 2.0 | 2.1 | 2.1 | 2.2 | 2.2 | 2.3 | 2.0             | 2.3           | 2.6           |
| 12-Feb   | 2.0                           | 2.0  | Z   | 2.0                            | 2.0 | 2.0 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.3 | 2.1 | 2.2 | 2.2 | 2.1 | 2.2 | 2.2 | 2.8 | 3.1 | 3.3 | 3.3 | 2.8 | 2.2             | 2.3           | 3.3           |
| 13-Feb   | 2.1                           | 2.3  | 2.2 | Z                              | 2.3 | 2.1 | 2.1 | 2.1 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.0 | 2.1 | 2.1 | 2.1 | 2.0 | 2.0 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1             | 2.1           | 2.3           |
| 14-Feb   | 2.1                           | 2.0  | 2.1 | 2.1                            | Z   | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1             | 2.1           | 2.1           |
| 15-Feb   | 2.2                           | 2.2  | 2.2 | 2.1                            | 2.3 | Z   | 2.3 | 2.3 | 2.4 | 2.3 | 2.3 | 2.4 | 2.2 | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | 2.2 | 2.2 | 2.3 | 2.3 | 2.3 | 2.3             | 2.2           | 2.4           |
| 16-Feb   | Z                             | 2.3  | 2.3 | 2.4                            | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.7 | 2.6 | 2.4 | 2.3 | 2.2 | 2.3 | 2.6 | 2.5 | 2.4 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1             | 2.4           | 2.7           |
| 17-Feb   | 2.1                           | Z  | 2.1 | 2.1                            | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1             | 2.1           | 2.1           |
| 18-Feb   | 2.1                           | 2.2  | Z   | 2.3                            | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.5 | 2.5 | 2.4 | 2.3 | 2.1 | 2.1 | 2.2 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.2 | 2.2             | 2.3           | 2.5           |
| 19-Feb   | 2.3                           | 2.3  | 2.3 | Z                              | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.5 | 2.5 | 2.4 | 2.4 | 2.6 | 3.0 | 2.8 | 2.5 | 2.5 | 2.6 | 2.6 | 2.7 | 2.5 | 2.3             | 2.5           | 3.0           |
| 20-Feb   | 2.1                           | 2.1  | 2.1 | 2.1                            | Z   | 2.1 | 2.1 | 2.1 | 2.2 | 2.4 | 2.5 | 2.5 | 2.5 | 2.3 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | 2.2 | 2.2             | 2.2           | 2.5           |
| 21-Feb   | 2.2                           | 2.1  | 2.1 | 2.1                            | 2.1 | Z   | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1             | 2.1           | 2.2           |
| 22-Feb   | Z                             | 2.2  | 2.2 | 2.3                            | 2.4 | 2.4 | 2.6 | 2.6 | 2.5 | 2.5 | 2.5 | 2.6 | 2.5 | 2.2 | 2.2 | 2.3 | 2.3 | 2.2 | 2.2 | 2.2 | 2.2 | 2.3 | 2.3 | 2.3             | 2.3           | 2.6           |
| 23-Feb   | 2.3                           | Z  | 2.4 | 2.4                            | 2.5 | 2.5 | 2.4 | 2.3 | 2.4 | 2.4 | 2.8 | 2.9 | 2.5 | 2.3 | 2.3 | 2.3 | 2.3 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.6 | 2.5             | 2.4           | 2.9           |
| 24-Feb   | 2.3                           | 2.4  | Z   | 2.6                            | 2.5 | 2.4 | 2.4 | 2.3 | 2.3 | 2.3 | 2.2 | 2.1 | 2.1 | 2.2 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.4 | 2.5 | 2.4 | 2.4 | 2.5             | 2.3           | 2.6           |
| 25-Feb   | 2.6                           | 2.2  | 2.2 | Z                              | 2.2 | 2.3 | 2.3 | 2.3 | 2.4 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.5 | 2.9 | 2.3 | 2.6 | 2.9             | 2.3           | 2.9           |
| 26-Feb   | 2.5                           | 2.4  | 2.4 | 2.4                            | Z   | 2.7 | 2.5 | 2.4 | 2.4 | 2.4 | 2.3 | 2.3 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1             | 2.2           | 2.7           |
| 27-Feb   | 2.1                           | 2.1  | 2.1 | 2.1                            | 2.2 | Z   | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1             | 2.1           | 2.2           |
| 28-Feb   | Z                             | 2.3  | 2.3 | 2.2                            | 2.2 | 2.3 | 2.3 | 2.3 | 2.3 | 2.4 | 2.7 | 2.5 | 2.5 | 2.4 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.3 | 2.5             | 2.3           | 2.7           |
|  |                               |  |     |                                |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Diurnal Average |               |               |
|  |                               |  |     |                                |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Diurnal Maximum |               |               |
|  |                               |  |     |                                |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |               |               |
| Z - zerospan                      C - Calibration                      M - Maintenance |                               |  |     |                                |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |               |               |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Total Hydrocarbons (THC) - ppm**  
**Lower Camp - February 2023**





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Total Hydrocarbons (THC) - ppm**  
**Lower Camp - February 2023**

| <b>Concentration Ranges (ppm)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 2.0                           | 19                     | 2.98     | 2.98                |
| 2.1 - 3.0                         | 608                    | 95.30    | 98.28               |
| 3.1 - 10.0                        | 11                     | 1.72     | 100.00              |
| > 10.0                            | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 638

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Total Hydrocarbons (THC) - ppm  
Lower Camp - February 2023**

| <b>Concentration<br/>Ranges (ppm)</b> | <b>Wind Direction</b> |     |    |     |   |     |     |     |   |     |    |     |    |     |     |     | <b>Totals</b> |
|---------------------------------------|-----------------------|-----|----|-----|---|-----|-----|-----|---|-----|----|-----|----|-----|-----|-----|---------------|
|                                       | N                     | NNE | NE | ENE | E | ESE | SE  | SSE | S | SSW | SW | WSW | W  | WNW | NW  | NNW |               |
| 0 - 2.0                               | 4                     | 0   | 0  | 0   | 0 | 0   | 0   | 0   | 0 | 0   | 0  | 3   | 8  | 4   | 0   | 0   | 19            |
| 2.1 - 3.0                             | 81                    | 33  | 11 | 11  | 9 | 30  | 113 | 21  | 7 | 0   | 3  | 15  | 30 | 49  | 99  | 93  | 605           |
| 3.1 - 10.0                            | 1                     | 0   | 0  | 0   | 0 | 1   | 1   | 0   | 1 | 0   | 0  | 0   | 0  | 2   | 1   | 4   | 11            |
| > 10.0                                | 0                     | 0   | 0  | 0   | 0 | 0   | 0   | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0   | 0   | 0             |
| <b>Totals</b>                         | 86                    | 33  | 11 | 11  | 9 | 31  | 114 | 21  | 8 | 0   | 3  | 18  | 38 | 55  | 100 | 97  | 635           |

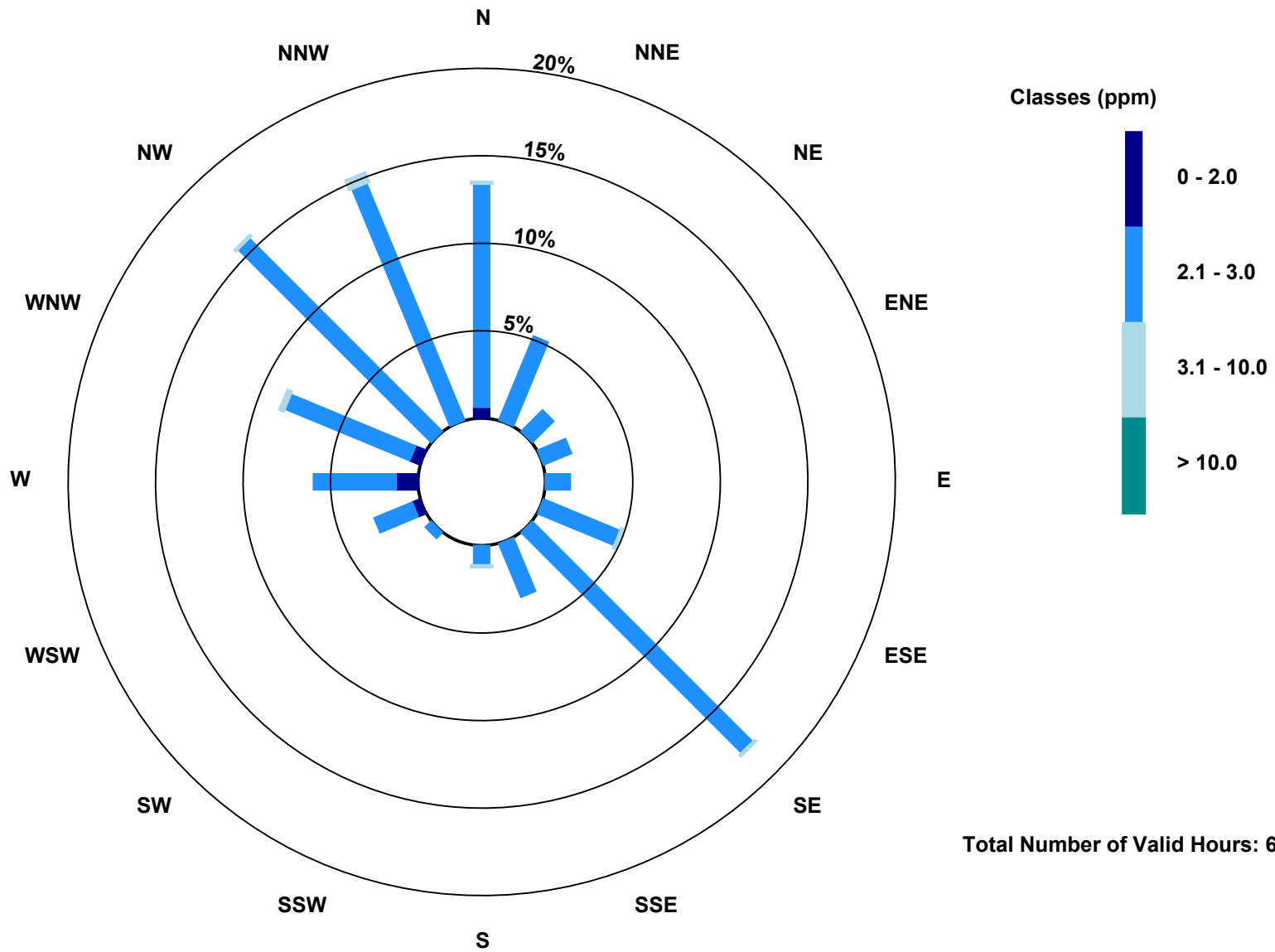
Total Number of Valid Hours: 635

Total Number of Hours: 672

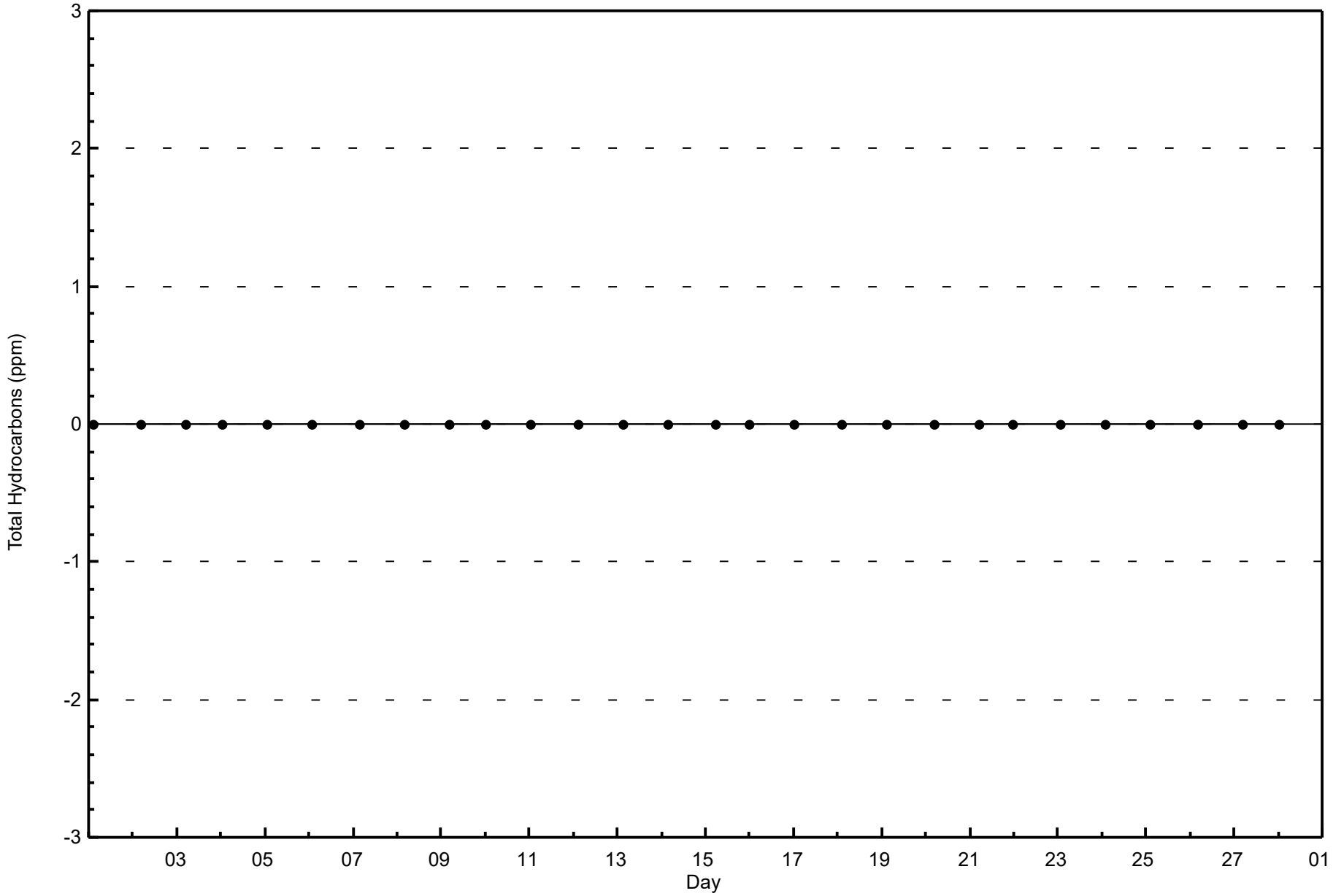


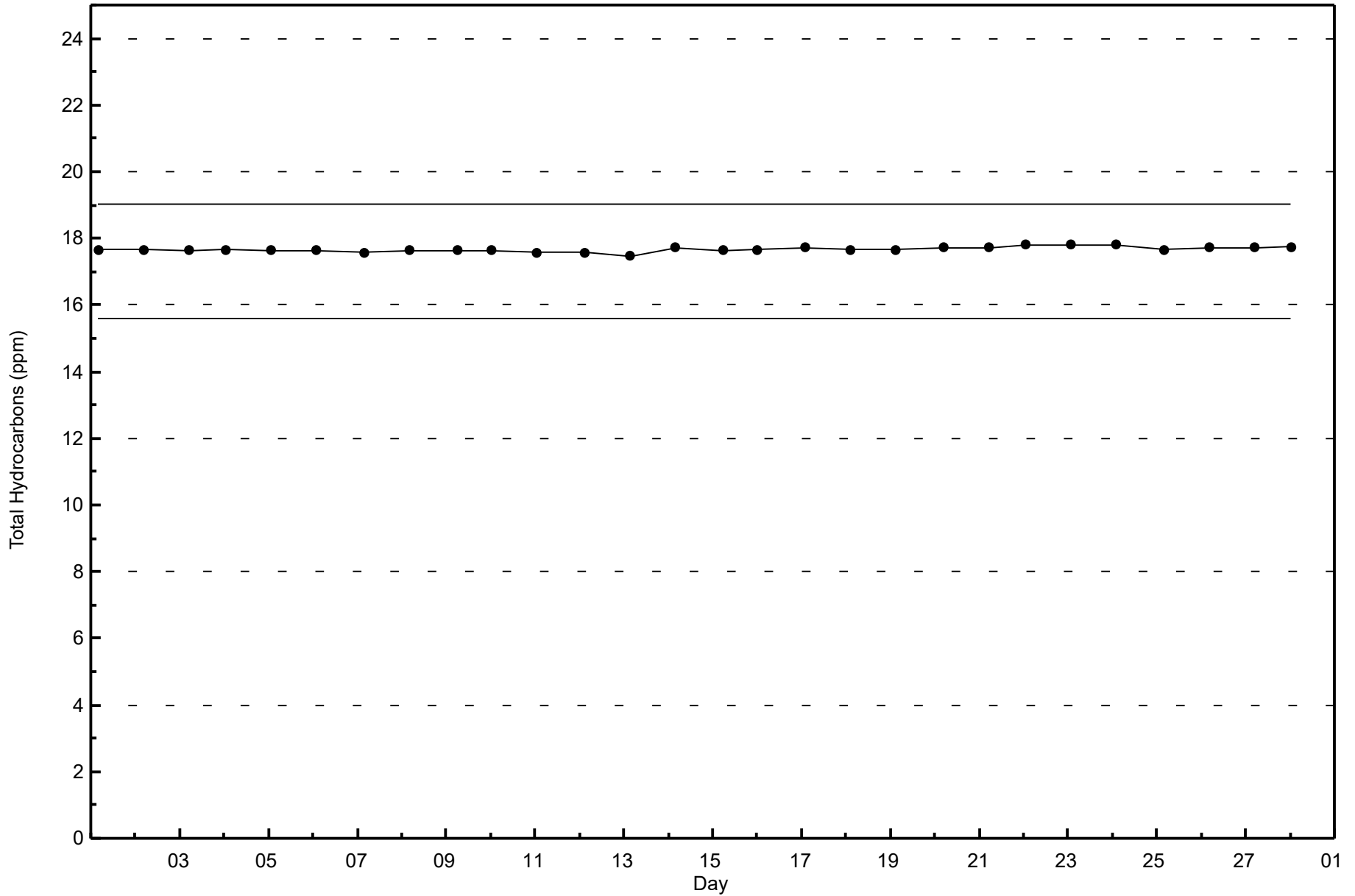
Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Total Hydrocarbons (THC) - ppm  
Lower Camp



Total Number of Valid Hours: 635









Wood Buffalo Environmental Association

Summary of Hour Averages

Methane (CH<sub>4</sub>) - ppm

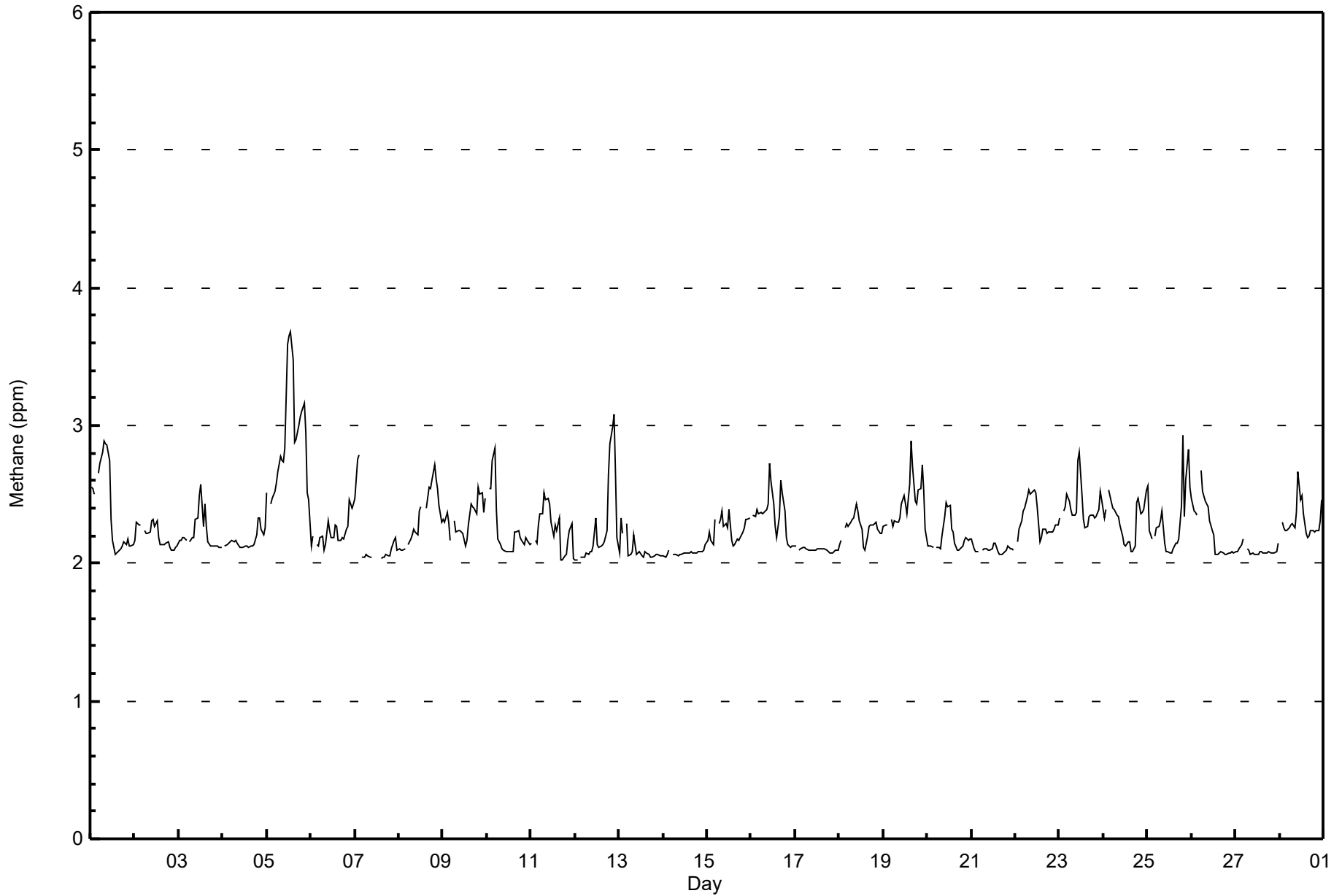
Lower Camp - February 2023

| Number of Exceedences (AAAQO):              |                               | 1-hr: 0  |     | 24-hr: 0                  |     | Hours in Service: |     |     |     |     |     |     |     |     |     |     |     |      |     | 672 |     |     |     |                 |               |               |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |
|---|-------------------------------|--|-----|---------------------------|-----|-------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|-----|-----|-----|-----|-----|-----------------|---------------|---------------|-----|-----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----------------|-----------------|
| Maximum Value: 3.7 ppm on Feb 5 14:00       |                               | Maximum Daily Average: 2.9 ppm on Feb 5  |     | Hours of Data:            |     |                   |     |     |     |     |     |     |     |     |     |     |     | 638  |     |     |     |     |     |                 |               |               |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |
| Minimum Value: 2.0 ppm on Feb 12 02:00      |                               | Minimum Daily Average: 2.1 ppm on Feb 14   |     | Hours of Missing Data:    |     |                   |     |     |     |     |     |     |     |     |     |     |     | 34   |     |     |     |     |     |                 |               |               |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |
| Maximum Diurnal Average: 2.3 ppm at hour 12 |                               | Minimum Diurnal Average: 2.2 ppm at hour 15  |     | Hours of Calibration:     |     |                   |     |     |     |     |     |     |     |     |     |     |     | 32   |     |     |     |     |     |                 |               |               |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |
| Monthly Average: 2.27 ppm                   |                               | Percentiles: P <sub>1</sub> = 2.0 P <sub>10</sub> = 2.1 Q <sub>1</sub> = 2.1 Median = 2.2 Q <sub>3</sub> = 2.4 P <sub>90</sub> = 2.5 P <sub>99</sub> = 3.1 |     | Percent Operational Time: |     |                   |     |     |     |     |     |     |     |     |     |     |     | 99.7 |     |     |     |     |     |                 |               |               |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |
| Day   | Hourly Period Ending At (MST) |  |     |                           |     |                   |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |     |     |                 | Daily Average | Daily Maximum |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |
|   | 1                             | 2  | 3   | 4                         | 5   | 6                 | 7   | 8   | 9   | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18   | 19  | 20  | 21  | 22  | 23  | 24              |               |               |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |
| 1-Feb                                       | 2.6                           | 2.5  | 2.5 | Z                         | 2.7 | 2.7               | 2.8 | 2.9 | 2.9 | 2.9 | 2.8 | 2.3 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1  | 2.2 | 2.1 | 2.2 | 2.1 | 2.1 | 2.1             | 2.4           | 2.9           |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |
| 2-Feb                                       | 2.2                           | 2.3  | 2.3 | 2.3                       | Z   | 2.2               | 2.2 | 2.2 | 2.2 | 2.3 | 2.3 | 2.3 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2  | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1             | 2.1           | 2.3           |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |
| 3-Feb                                       | 2.2                           | 2.2  | 2.2 | 2.2                       | 2.2 | Z                 | 2.2 | 2.2 | 2.2 | 2.3 | 2.3 | 2.5 | 2.6 | 2.3 | 2.4 | 2.3 | 2.2 | 2.1  | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1             | 2.1           | 2.6           |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |
| 4-Feb                                       | Z                             | 2.1  | 2.1 | 2.2                       | 2.2 | 2.2               | 2.2 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1  | 2.2 | 2.3 | 2.3 | 2.2 | 2.2 | 2.3             | 2.3           |               |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |
| 5-Feb                                       | 2.5                           | Z  | 2.4 | 2.5                       | 2.5 | 2.6               | 2.7 | 2.8 | 2.7 | 2.7 | 2.8 | 3.6 | 3.6 | 3.7 | 3.5 | 2.9 | 2.9 | 3.0  | 3.1 | 3.1 | 3.2 | 3.0 | 2.5 | 2.5             | 3.7           |               |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |
| 6-Feb                                       | 2.1                           | 2.2  | Z   | 2.1                       | 2.1 | 2.2               | 2.2 | 2.1 | 2.1 | 2.3 | 2.2 | 2.2 | 2.2 | 2.3 | 2.3 | 2.2 | 2.2 | 2.2  | 2.2 | 2.2 | 2.3 | 2.5 | 2.4 | 2.4             | 2.5           |               |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |
| 7-Feb                                       | 2.5                           | 2.8  | 2.8 | Z                         | 2.0 | 2.0               | 2.1 | 2.1 | 2.0 | 2.0 | C   | C   | C   | C   | 2.0 | 2.0 | 2.0 | 2.1  | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | 2.1             | 2.8           |               |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |
| 8-Feb                                       | 2.1                           | 2.1  | 2.1 | 2.1                       | Z   | 2.1               | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.4 | 2.4 | M   | M   | 2.4 | 2.6 | 2.5  | 2.6 | 2.7 | 2.6 | 2.5 | 2.4 | 2.3             | 2.7           |               |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |
| 9-Feb                                       | 2.3                           | 2.3  | 2.4 | 2.3                       | 2.2 | Z                 | 2.3 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.1 | 2.2 | 2.3 | 2.4 | 2.4 | 2.4  | 2.4 | 2.6 | 2.5 | 2.5 | 2.4 | 2.5             | 2.6           |               |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |
| 10-Feb                                      | Z                             | 2.5  | 2.5 | 2.7                       | 2.8 | 2.4               | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | 2.2  | 2.2 | 2.2 | 2.1 | 2.2 | 2.2 | 2.1             | 2.8           |               |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |
| 11-Feb                                      | 2.2                           | Z  | 2.2 | 2.1                       | 2.3 | 2.4               | 2.4 | 2.5 | 2.5 | 2.5 | 2.4 | 2.3 | 2.2 | 2.3 | 2.2 | 2.3 | 2.0 | 2.0  | 2.1 | 2.1 | 2.2 | 2.2 | 2.3 | 2.0             | 2.5           |               |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |
| 12-Feb                                      | 2.0                           | 2.0  | Z   | 2.0                       | 2.0 | 2.0               | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.3 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.2  | 2.6 | 2.9 | 3.0 | 3.1 | 2.7 | 2.2             | 3.1           |               |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |
| 13-Feb                                      | 2.1                           | 2.3  | 2.2 | Z                         | 2.3 | 2.1               | 2.1 | 2.1 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.0 | 2.1 | 2.1 | 2.1 | 2.0  | 2.0 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1             | 2.3           |               |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |
| 14-Feb                                      | 2.1                           | 2.0  | 2.1 | 2.1                       | Z   | 2.1               | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1  | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1             | 2.1           |               |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |
| 15-Feb                                      | 2.2                           | 2.2  | 2.2 | 2.1                       | 2.3 | Z                 | 2.3 | 2.3 | 2.4 | 2.3 | 2.3 | 2.4 | 2.2 | 2.1 | 2.1 | 2.1 | 2.2 | 2.2  | 2.2 | 2.2 | 2.3 | 2.3 | 2.3 | 2.3             | 2.4           |               |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |
| 16-Feb                                      | Z                             | 2.3  | 2.3 | 2.4                       | 2.4 | 2.4               | 2.4 | 2.4 | 2.4 | 2.4 | 2.7 | 2.6 | 2.4 | 2.3 | 2.2 | 2.3 | 2.6 | 2.5  | 2.4 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1             | 2.7           |               |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |
| 17-Feb                                      | 2.1                           | Z  | 2.1 | 2.1                       | 2.1 | 2.1               | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1  | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1             | 2.1           |               |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |
| 18-Feb                                      | 2.1                           | 2.2  | Z   | 2.3                       | 2.3 | 2.3               | 2.3 | 2.3 | 2.3 | 2.4 | 2.4 | 2.3 | 2.3 | 2.1 | 2.1 | 2.2 | 2.3 | 2.3  | 2.3 | 2.3 | 2.3 | 2.3 | 2.2 | 2.2             | 2.4           |               |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |
| 19-Feb                                      | 2.3                           | 2.3  | 2.3 | Z                         | 2.3 | 2.3               | 2.3 | 2.3 | 2.3 | 2.3 | 2.4 | 2.5 | 2.4 | 2.4 | 2.6 | 2.9 | 2.7 | 2.5  | 2.4 | 2.5 | 2.5 | 2.7 | 2.5 | 2.3             | 2.9           |               |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |
| 20-Feb                                      | 2.1                           | 2.1  | 2.1 | 2.1                       | Z   | 2.1               | 2.1 | 2.1 | 2.2 | 2.3 | 2.4 | 2.4 | 2.4 | 2.2 | 2.2 | 2.1 | 2.1 | 2.1  | 2.1 | 2.1 | 2.2 | 2.2 | 2.2 | 2.2             | 2.4           |               |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |
| 21-Feb                                      | 2.2                           | 2.1  | 2.1 | 2.1                       | 2.1 | Z                 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1  | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1             | 2.2           |               |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |
| 22-Feb                                      | Z                             | 2.2  | 2.2 | 2.3                       | 2.4 | 2.4               | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.4 | 2.2 | 2.2 | 2.2 | 2.3 | 2.2  | 2.2 | 2.2 | 2.2 | 2.3 | 2.3 | 2.3             | 2.5           |               |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |
| 23-Feb                                      | 2.3                           | Z  | 2.4 | 2.4                       | 2.5 | 2.5               | 2.4 | 2.3 | 2.4 | 2.4 | 2.7 | 2.8 | 2.5 | 2.3 | 2.3 | 2.3 | 2.3 | 2.4  | 2.3 | 2.3 | 2.3 | 2.4 | 2.5 | 2.5             | 2.8           |               |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |
| 24-Feb                                      | 2.3                           | 2.4  | Z   | 2.5                       | 2.4 | 2.4               | 2.4 | 2.3 | 2.3 | 2.3 | 2.2 | 2.1 | 2.1 | 2.2 | 2.2 | 2.1 | 2.1 | 2.1  | 2.1 | 2.4 | 2.5 | 2.4 | 2.4 | 2.5             | 2.5           |               |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |
| 25-Feb                                      | 2.6                           | 2.2  | 2.2 | Z                         | 2.2 | 2.3               | 2.3 | 2.3 | 2.4 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2  | 2.4 | 2.9 | 2.3 | 2.6 | 2.8 | 2.6             | 2.9           |               |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |
| 26-Feb                                      | 2.5                           | 2.4  | 2.4 | 2.3                       | Z   | 2.7               | 2.5 | 2.4 | 2.4 | 2.4 | 2.3 | 2.2 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1  | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1             | 2.7           |               |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |
| 27-Feb                                      | 2.1                           | 2.1  | 2.1 | 2.1                       | 2.2 | Z                 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1  | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1             | 2.2           |               |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |
| 28-Feb                                      | Z                             | 2.3  | 2.3 | 2.2                       | 2.2 | 2.3               | 2.3 | 2.3 | 2.3 | 2.4 | 2.7 | 2.5 | 2.5 | 2.4 | 2.2 | 2.2 | 2.2 | 2.2  | 2.2 | 2.2 | 2.2 | 2.2 | 2.3 | 2.5             | 2.7           |               |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |
|   |                               |  |     |                           |     |                   |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |     |     | 2.2             | 2.3           | 2.3           | 2.2 | 2.3             | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.3 | 2.3 | 2.3 | 2.3 | 2.2 | Diurnal Average |                 |
|   |                               |  |     |                           |     |                   |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |     |     | 2.6             | 2.8           | 2.8           | 2.7 | 2.8             | 2.7 | 2.8 | 2.9 | 2.9 | 2.9 | 2.8 | 3.6 | 3.6 | 3.7 | 3.5 | 2.9 | 2.9 | 3.0 | 3.1 | 3.1 | 3.2 | 3.1 | 2.8 | 2.6             | Diurnal Maximum |
| Z - zerospan                                |                               |  |     |                           |     |                   |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |     |     | C - Calibration |               |               |     | M - Maintenance |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Methane (CH<sub>4</sub>) - ppm**  
**Lower Camp - February 2023**





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Methane (CH<sub>4</sub>) - ppm  
Lower Camp - February 2023**

| <b>Concentration Ranges (ppm)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 2.0                           | 19                     | 2.98     | 2.98                |
| 2.1 - 3.0                         | 611                    | 95.77    | 98.75               |
| 3.1 - 10.0                        | 8                      | 1.25     | 100.00              |
| > 10.0                            | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 638

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Methane (CH<sub>4</sub>) - ppm  
Lower Camp - February 2023**

| Concentration<br>Ranges (ppm) | Wind Direction |     |    |     |   |     |     |     |   |     |    |     |    |     |     |     | Totals |
|-------------------------------|----------------|-----|----|-----|---|-----|-----|-----|---|-----|----|-----|----|-----|-----|-----|--------|
|                               | N              | NNE | NE | ENE | E | ESE | SE  | SSE | S | SSW | SW | WSW | W  | WNW | NW  | NNW |        |
| 0 - 2.0                       | 4              | 0   | 0  | 0   | 0 | 0   | 0   | 0   | 0 | 0   | 0  | 3   | 8  | 4   | 0   | 0   | 19     |
| 2.1 - 3.0                     | 81             | 33  | 11 | 11  | 9 | 30  | 113 | 21  | 7 | 0   | 3  | 15  | 30 | 50  | 99  | 95  | 608    |
| 3.1 - 10.0                    | 1              | 0   | 0  | 0   | 0 | 1   | 1   | 0   | 1 | 0   | 0  | 0   | 0  | 1   | 1   | 2   | 8      |
| > 10.0                        | 0              | 0   | 0  | 0   | 0 | 0   | 0   | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0   | 0   | 0      |
| <b>Totals</b>                 | 86             | 33  | 11 | 11  | 9 | 31  | 114 | 21  | 8 | 0   | 3  | 18  | 38 | 55  | 100 | 97  | 635    |

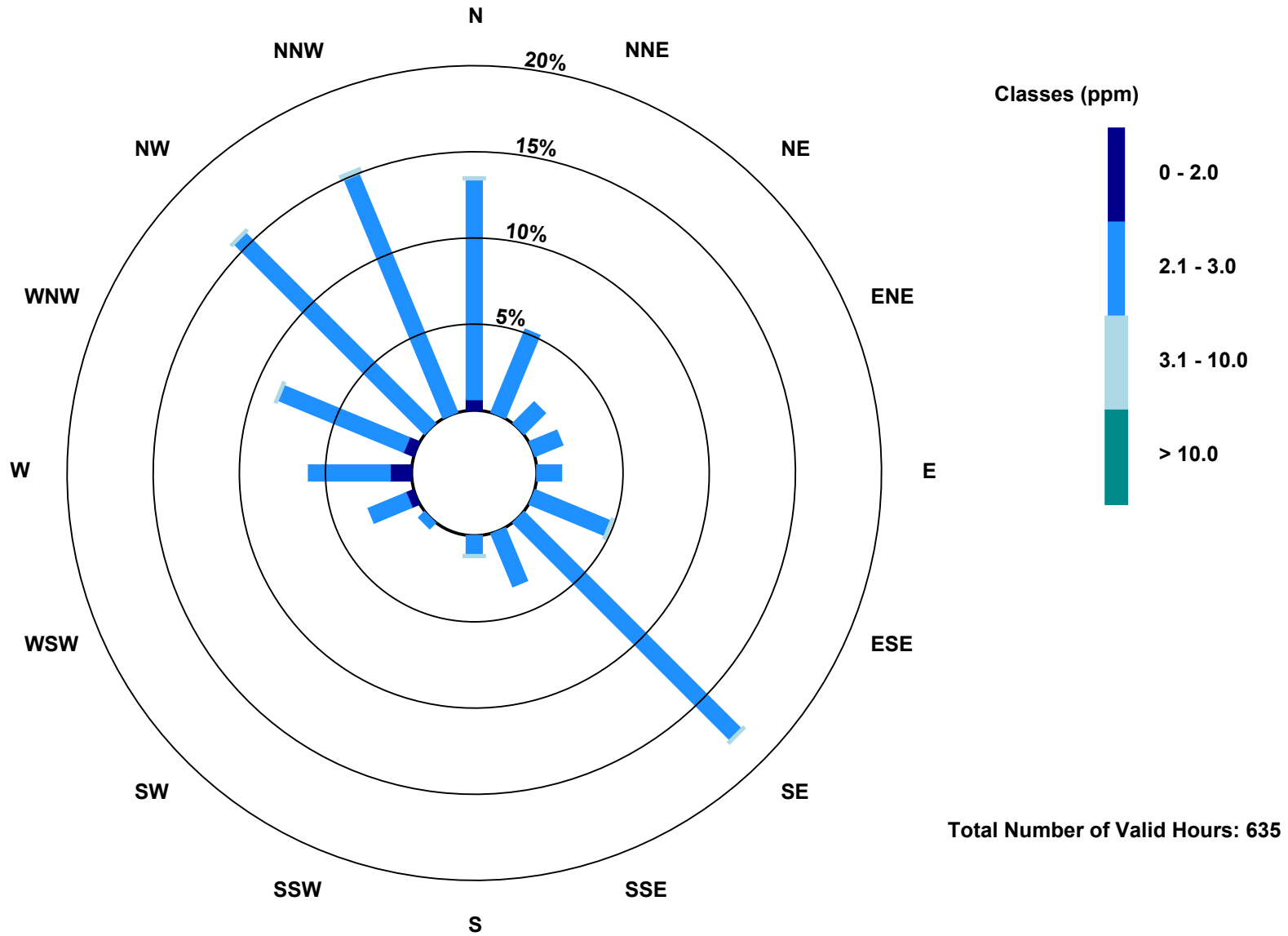
Total Number of Valid Hours: 635

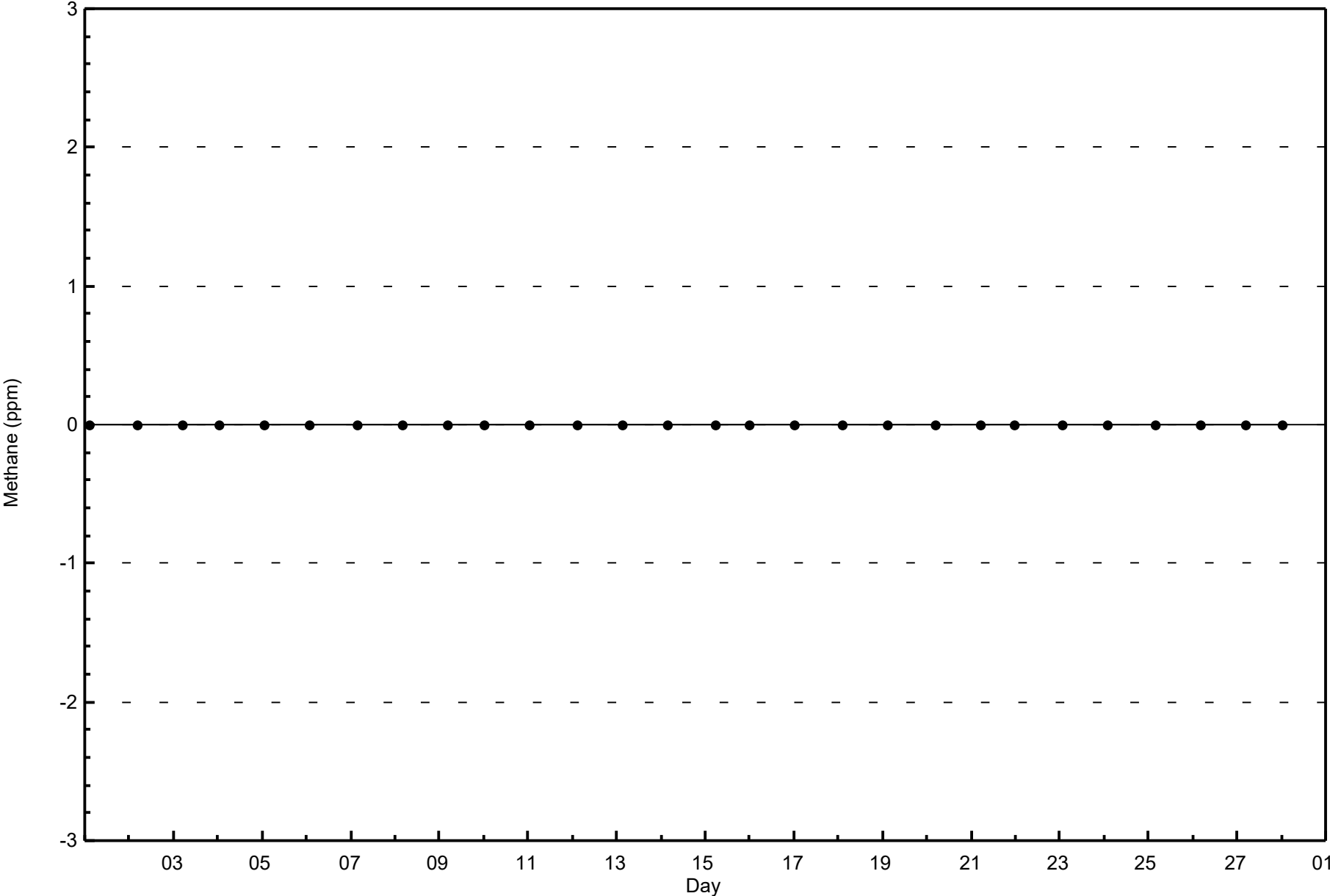
Total Number of Hours: 672

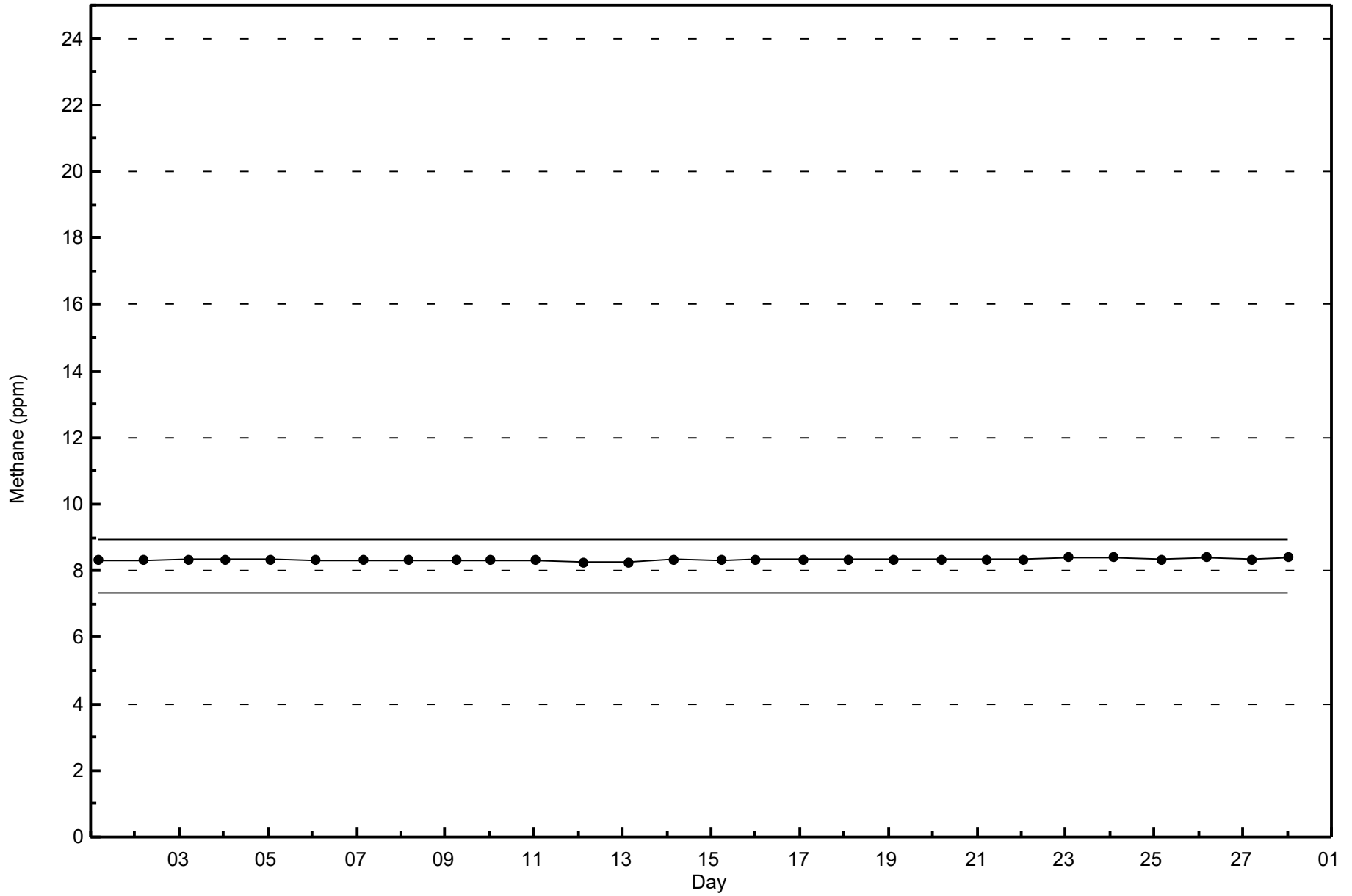


Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Methane (CH<sub>4</sub>) - ppm  
Lower Camp









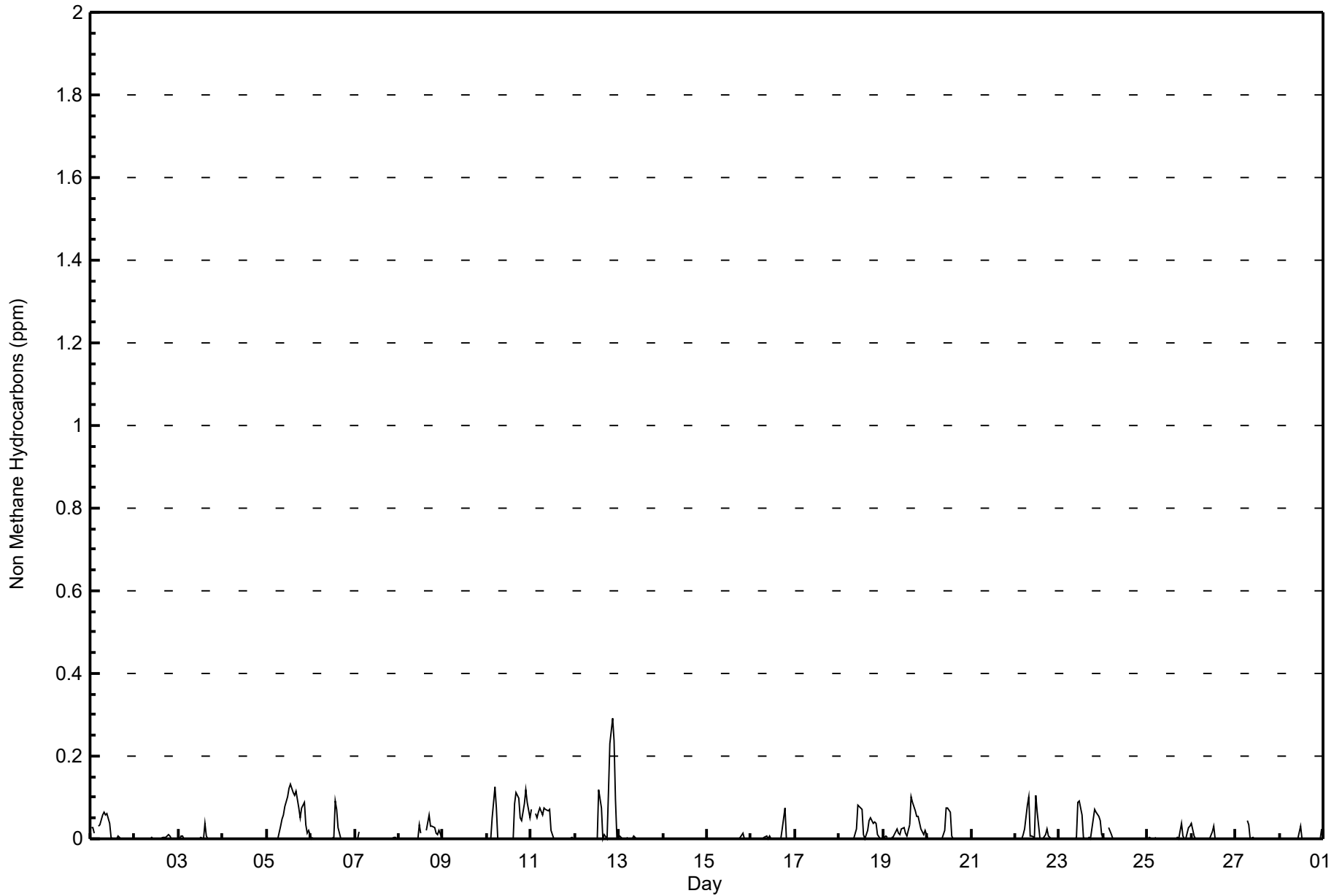
| Maximum Value: 0.291 ppm on Feb 12 21:00      |                               | Maximum Daily Average: 0.055 ppm on Feb 5  |       | Hours in Service:         | 672   |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |               |                 |  |
|---|-------------------------------|--|-------|---------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-----------------|---------------|-----------------|--|
| Minimum Value: 0.000 ppm on Feb 1 13:00       |                               | Minimum Daily Average: 0.000 ppm on Feb 14   |       | Hours of Data:            | 638   |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |               |                 |  |
| Maximum Diurnal Average: 0.022 ppm at hour 21 |                               | Minimum Diurnal Average: 0.002 ppm at hour 2   |       | Hours of Missing Data:    | 34    |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |               |                 |  |
| Monthly Average: 0.013 ppm                    |                               | Percentiles: P <sub>1</sub> = 0.0 P <sub>10</sub> = 0.0 Q <sub>1</sub> = 0.0 Median = 0.0 Q <sub>3</sub> = 0.0 P <sub>90</sub> = 0.1 P <sub>99</sub> = 0.1 |       | Hours of Calibration:     | 32    |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |               |                 |  |
|   |                               |  |       | Percent Operational Time: | 99.7  |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |               |                 |  |
| Day   | Hourly Period Ending At (MST) |  |       |                           |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 | Daily Average | Daily Maximum   |  |
|   | 1                             | 2  | 3     | 4                         | 5     | 6     | 7     | 8     | 9     | 10    | 11    | 12    | 13    | 14    | 15    | 16    | 17    | 18    | 19    | 20    | 21    | 22    | 23    | 24              |               |                 |  |
| 1-Feb   | 0.028                         | 0.026  | 0.015 | Z                         | 0.030 | 0.035 | 0.059 | 0.063 | 0.058 | 0.061 | 0.037 | 0.002 | 0.000 | 0.000 | 0.000 | 0.005 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000           | 0.018         | 0.063           |  |
| 2-Feb   | 0.000                         | 0.000  | 0.000 | 0.001                     | Z     | 0.001 | 0.000 | 0.000 | 0.000 | 0.000 | 0.002 | 0.000 | 0.000 | 0.000 | 0.000 | 0.004 | 0.002 | 0.002 | 0.011 | 0.006 | 0.001 | 0.001 | 0.000 | 0.000           | 0.001         | 0.011           |  |
| 3-Feb   | 0.000                         | 0.006  | 0.007 | 0.002                     | 0.001 | Z     | 0.000 | 0.000 | 0.000 | 0.001 | 0.000 | 0.000 | 0.002 | 0.000 | 0.039 | 0.006 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000           | 0.003         | 0.039           |  |
| 4-Feb   | Z                             | 0.000  | 0.000 | 0.000                     | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000           | 0.000         | 0.000           |  |
| 5-Feb   | 0.000                         | Z  | 0.001 | 0.000                     | 0.000 | 0.000 | 0.000 | 0.029 | 0.049 | 0.059 | 0.077 | 0.101 | 0.122 | 0.132 | 0.112 | 0.105 | 0.114 | 0.076 | 0.050 | 0.073 | 0.089 | 0.034 | 0.013 | 0.021           | 0.055         | 0.132           |  |
| 6-Feb   | 0.000                         | 0.003  | Z     | 0.000                     | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.003 | 0.093 | 0.070 | 0.027 | 0.001 | 0.000 | 0.000 | 0.000 | 0.000 | 0.001 | 0.000 | 0.000 | 0.009           | 0.093         |                 |  |
| 7-Feb   | 0.000                         | 0.000  | 0.016 | Z                         | 0.000 | 0.000 | 0.001 | 0.000 | 0.000 | 0.000 | 0.000 | C     | C     | C     | C     | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.002 | 0.002 | 0.000           | 0.001         | 0.016           |  |
| 8-Feb   | 0.000                         | 0.000  | 0.000 | 0.000                     | Z     | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.034 | 0.013 | M     | M     | 0.021 | 0.056 | 0.030 | 0.031 | 0.027 | 0.014 | 0.009 | 0.019 | 0.002           | 0.012         | 0.056           |  |
| 9-Feb   | 0.000                         | 0.000  | 0.001 | 0.000                     | 0.000 | Z     | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.002 | 0.000 | 0.000 | 0.000 | 0.001 | 0.000 | 0.000 | 0.000 | 0.001 | 0.000           | 0.000         | 0.002           |  |
| 10-Feb  | Z                             | 0.001  | 0.000 | 0.051                     | 0.124 | 0.076 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.083 | 0.113 | 0.099 | 0.052 | 0.044 | 0.085 | 0.118 | 0.088 | 0.050           | 0.043         | 0.124           |  |
| 11-Feb  | 0.072                         | Z  | 0.060 | 0.051                     | 0.065 | 0.073 | 0.059 | 0.075 | 0.072 | 0.068 | 0.070 | 0.020 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.002 | 0.000 | 0.030           | 0.075         |                 |  |
| 12-Feb  | 0.000                         | 0.000  | Z     | 0.000                     | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.119 | 0.074 | 0.000 | 0.011 | 0.001 | 0.112 | 0.232 | 0.291 | 0.236 | 0.095 | 0.004           | 0.051         | 0.291           |  |
| 13-Feb  | 0.007                         | 0.003  | 0.000 | Z                         | 0.004 | 0.000 | 0.000 | 0.000 | 0.005 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.001           | 0.007         |                 |  |
| 14-Feb  | 0.000                         | 0.000  | 0.000 | 0.000                     | Z     | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000           | 0.000         | 0.000           |  |
| 15-Feb  | 0.000                         | 0.000  | 0.000 | 0.000                     | 0.000 | Z     | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.002 | 0.012 | 0.000 | 0.000 | 0.000 | 0.001           | 0.012         |                 |  |
| 16-Feb  | Z                             | 0.000  | 0.000 | 0.000                     | 0.000 | 0.000 | 0.000 | 0.003 | 0.006 | 0.001 | 0.005 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.023 | 0.074 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.005           | 0.074         |                 |  |
| 17-Feb  | 0.000                         | Z  | 0.000 | 0.000                     | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000           | 0.000         | 0.000           |  |
| 18-Feb  | 0.000                         | 0.000  | Z     | 0.000                     | 0.000 | 0.001 | 0.000 | 0.000 | 0.000 | 0.022 | 0.082 | 0.078 | 0.072 | 0.011 | 0.000 | 0.022 | 0.043 | 0.050 | 0.037 | 0.042 | 0.036 | 0.010 | 0.000 | 0.000           | 0.022         | 0.082           |  |
| 19-Feb  | 0.000                         | 0.007  | 0.003 | Z                         | 0.003 | 0.005 | 0.009 | 0.023 | 0.014 | 0.011 | 0.025 | 0.027 | 0.015 | 0.008 | 0.034 | 0.101 | 0.089 | 0.067 | 0.055 | 0.053 | 0.025 | 0.016 | 0.009 | 0.021           | 0.027         | 0.101           |  |
| 20-Feb  | 0.000                         | 0.000  | 0.000 | 0.000                     | Z     | 0.000 | 0.000 | 0.000 | 0.000 | 0.020 | 0.076 | 0.075 | 0.064 | 0.007 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.011           | 0.076         |                 |  |
| 21-Feb  | 0.000                         | 0.000  | 0.000 | 0.000                     | 0.000 | Z     | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000           | 0.000         | 0.000           |  |
| 22-Feb  | Z                             | 0.000  | 0.000 | 0.001                     | 0.011 | 0.025 | 0.081 | 0.103 | 0.006 | 0.007 | 0.002 | 0.107 | 0.065 | 0.001 | 0.000 | 0.001 | 0.012 | 0.024 | 0.008 | 0.000 | 0.000 | 0.000 | 0.000 | 0.020           | 0.107         |                 |  |
| 23-Feb  | 0.001                         | Z  | 0.000 | 0.001                     | 0.000 | 0.000 | 0.001 | 0.000 | 0.001 | 0.000 | 0.003 | 0.087 | 0.092 | 0.057 | 0.005 | 0.000 | 0.000 | 0.002 | 0.000 | 0.047 | 0.073 | 0.065 | 0.053 | 0.043           | 0.012         | 0.092           |  |
| 24-Feb  | 0.000                         | 0.001  | Z     | 0.027                     | 0.012 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.002           | 0.027         |                 |  |
| 25-Feb  | 0.000                         | 0.002  | 0.001 | Z                         | 0.005 | 0.002 | 0.000 | 0.001 | 0.001 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.002 | 0.000 | 0.039 | 0.008 | 0.000 | 0.001 | 0.027 | 0.029           | 0.005         | 0.039           |  |
| 26-Feb  | 0.036                         | 0.005  | 0.000 | 0.001                     | Z     | 0.000 | 0.001 | 0.000 | 0.000 | 0.000 | 0.000 | 0.017 | 0.032 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.001 | 0.000 | 0.004           | 0.036         |                 |  |
| 27-Feb  | 0.000                         | 0.000  | 0.001 | 0.000                     | 0.000 | Z     | 0.044 | 0.035 | 0.000 | 0.004 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.004           | 0.044         |                 |  |
| 28-Feb  | Z                             | 0.000  | 0.000 | 0.000                     | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.029 | 0.001 | 0.000 | 0.001 | 0.000 | 0.000 | 0.001 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.002           | 0.029         |                 |  |
|   |                               |  |       |                           |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Diurnal Average |               |                 |  |
|   |                               |  |       |                           |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Diurnal Maximum |               |                 |  |
| Z - zerospan                                  |                               |  |       |                           |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | C - Calibration |               | M - Maintenance |  |





**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Non Methane Hydrocarbons (NMHC) - ppm**  
**Lower Camp - February 2023**





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Non Methane Hydrocarbons (NMHC) - ppm  
Lower Camp - February 2023**

| <b>Concentration Ranges (ppm)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 0.005                         | 486                    | 76.18    | 76.18               |
| 0.006 - 0.05                      | 91                     | 14.26    | 90.44               |
| 0.06 - 0.1                        | 58                     | 9.09     | 99.53               |
| > 0.1                             | 3                      | 0.47     | 100.00              |

Total Number of Valid Hours: 638

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Non Methane Hydrocarbons (NMHC) - ppm  
Lower Camp - February 2023**

| Concentration<br>Ranges (ppm) | Wind Direction |     |    |     |   |     |     |     |   |     |    |     |    |     |     |     | Totals |
|-------------------------------|----------------|-----|----|-----|---|-----|-----|-----|---|-----|----|-----|----|-----|-----|-----|--------|
|                               | N              | NNE | NE | ENE | E | ESE | SE  | SSE | S | SSW | SW | WSW | W  | WNW | NW  | NNW |        |
| 0 - 0.005                     | 78             | 32  | 8  | 7   | 6 | 20  | 83  | 18  | 6 | 0   | 3  | 13  | 34 | 38  | 62  | 75  | 483    |
| 0.006 - 0.05                  | 4              | 1   | 3  | 3   | 1 | 7   | 15  | 3   | 1 | 0   | 0  | 3   | 2  | 12  | 25  | 11  | 91     |
| 0.06 - 0.1                    | 3              | 0   | 0  | 1   | 2 | 4   | 16  | 0   | 1 | 0   | 0  | 2   | 2  | 5   | 13  | 9   | 58     |
| > 0.1                         | 1              | 0   | 0  | 0   | 0 | 0   | 0   | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0   | 2   | 3      |
| <b>Totals</b>                 | 86             | 33  | 11 | 11  | 9 | 31  | 114 | 21  | 8 | 0   | 3  | 18  | 38 | 55  | 100 | 97  | 635    |

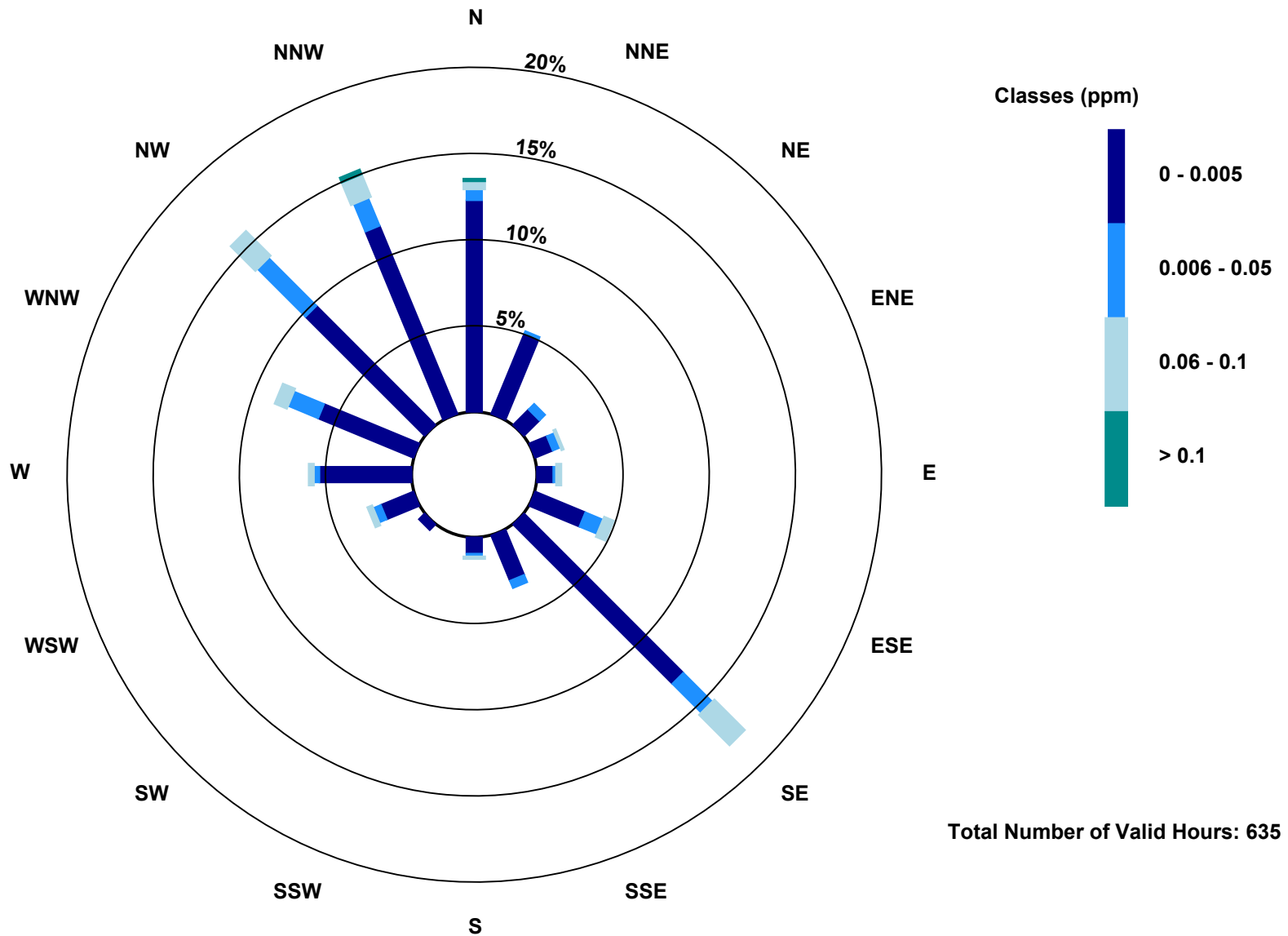
Total Number of Valid Hours: 635

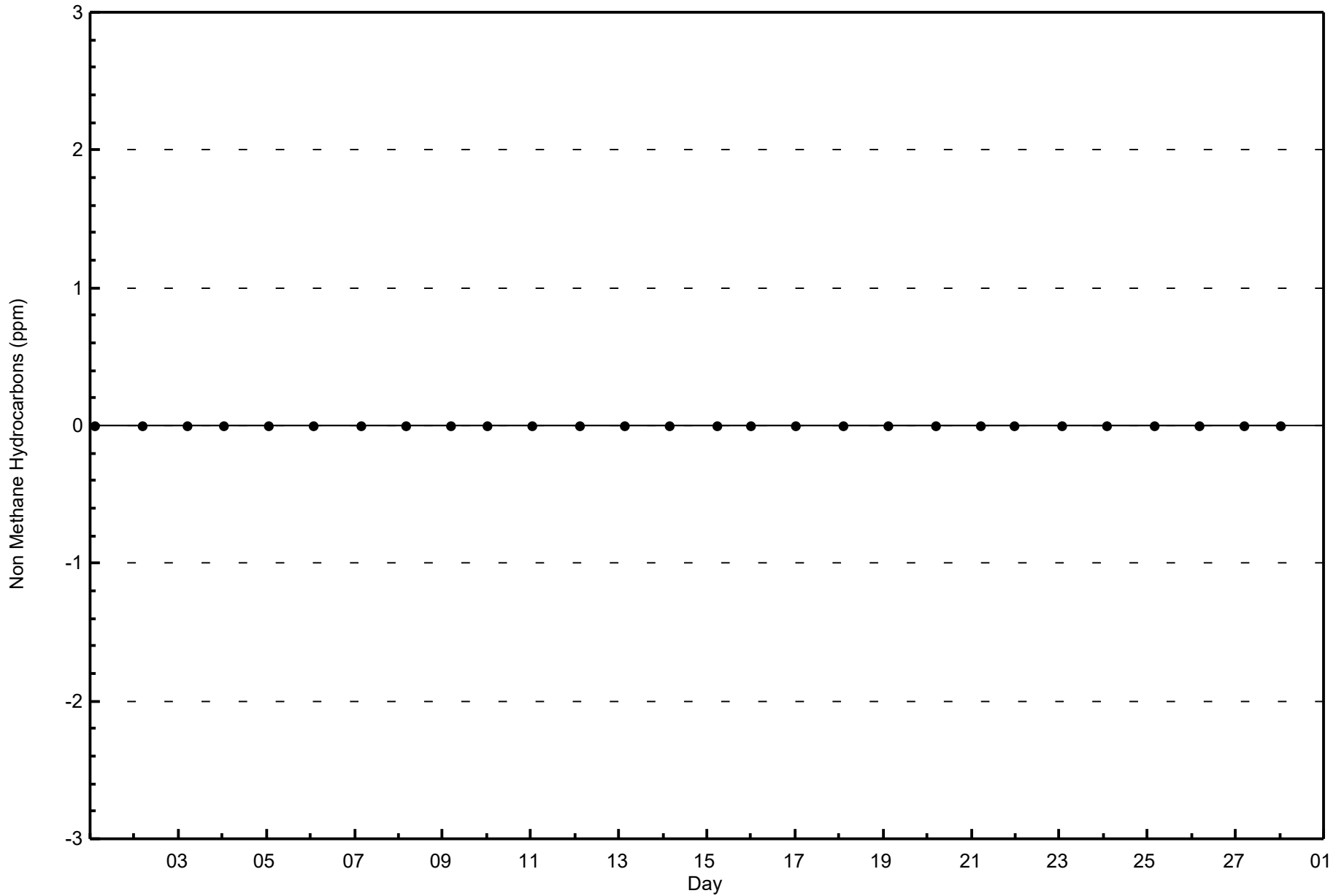
Total Number of Hours: 672

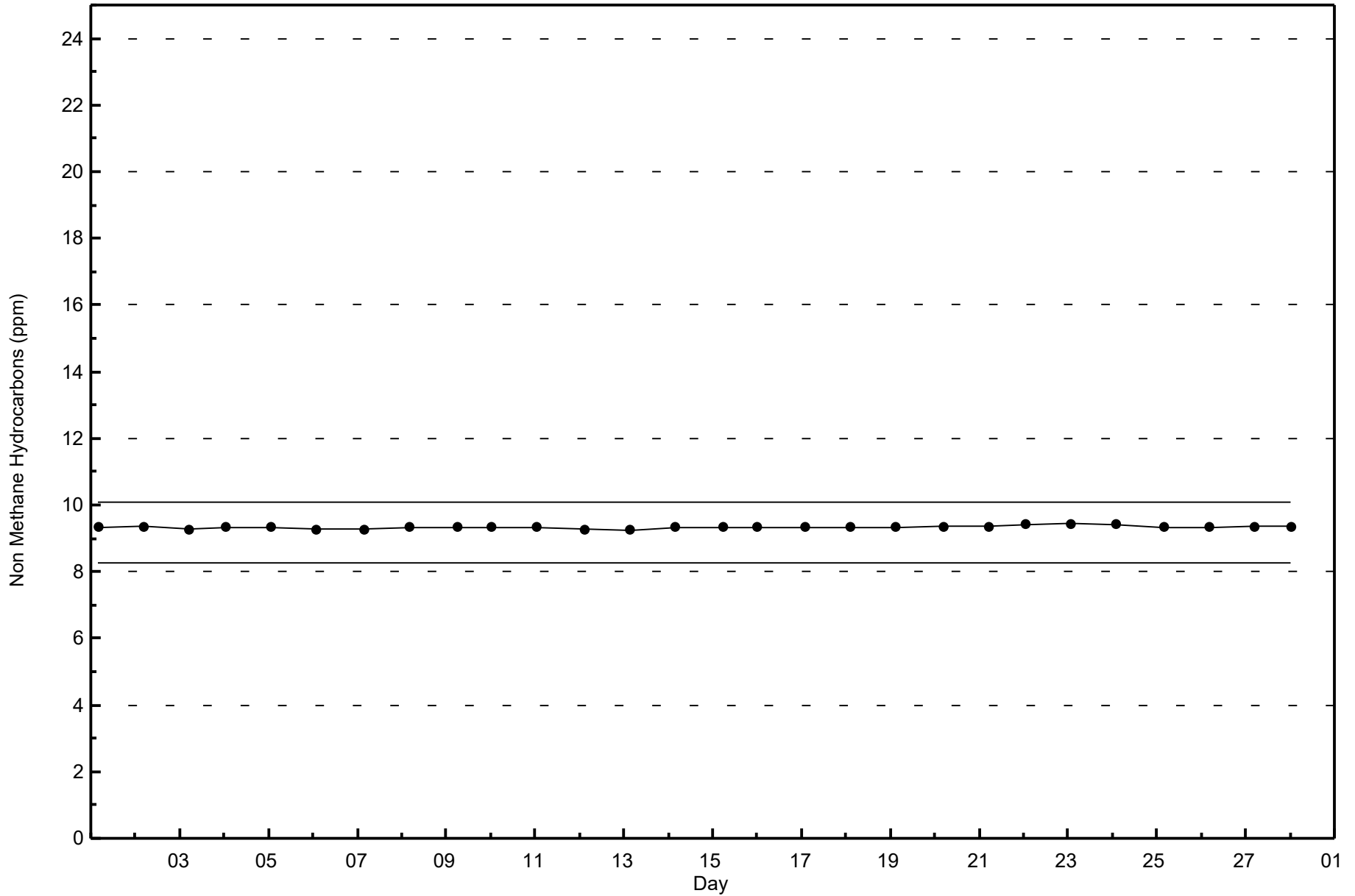


Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Non Methane Hydrocarbons (NMHC) - ppm  
Lower Camp









**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

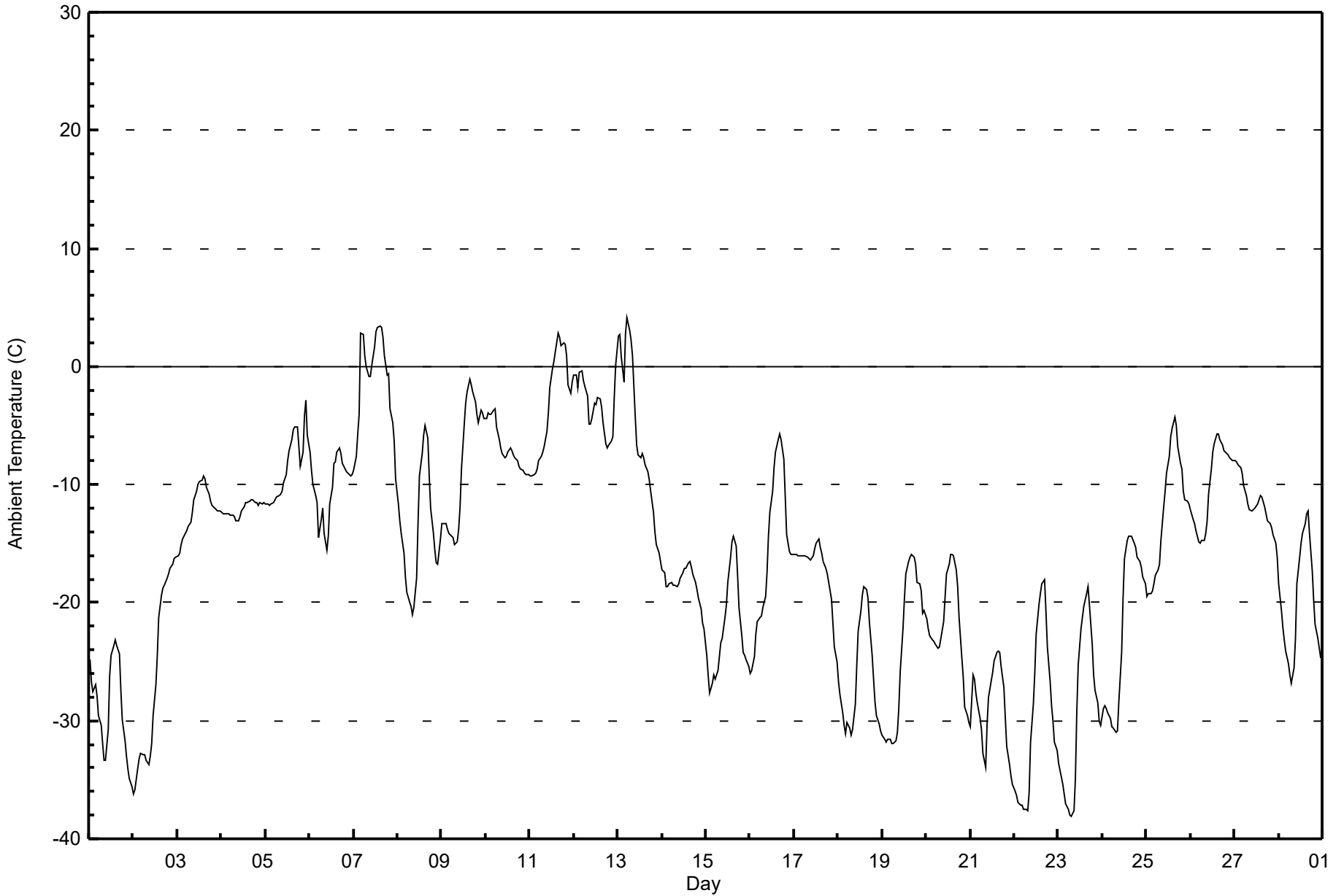
**Ambient Temperature (AT) - C**  
**Lower Camp - February 2023**

| Maximum Value: 4.1 C on Feb 13 06:00      Maximum Daily Average: -1.2 C on Feb 7  |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Hours in Service:         | 672   |       |               |               |      |
|---|-------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------------------------|-------|-------|---------------|---------------|------|
| Minimum Value: -38.2 C on Feb 23 08:00      Minimum Daily Average: -29.7 C on Feb 22  |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Hours of Data:            | 672   |       |               |               |      |
| Maximum Diurnal Average: -11.0 C at hour 16      Minimum Diurnal Average: -19.3 C at hour 9   |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Hours of Missing Data:    | 0     |       |               |               |      |
| Monthly Average: -16.08 C      Percentiles: P <sub>1</sub> = -37.2 P <sub>10</sub> = -30.5 Q <sub>1</sub> = -23.4 Median = -15.1 Q <sub>3</sub> = -8.7 P <sub>90</sub> = -4.0 P <sub>99</sub> = 2.8 |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Hours of Calibration:     | 0     |       |               |               |      |
|   |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Percent Operational Time: | 100.0 |       |               |               |      |
| Day   | Hourly Period Ending At (MST) |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                           |       |       | Daily Average | Daily Maximum |      |
|   | 1                             | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     | 10    | 11    | 12    | 13    | 14    | 15    | 16    | 17    | 18    | 19    | 20    | 21    | 22                        | 23    | 24    |               |               |      |
| 1-Feb   | -24.8                         | -26.7 | -27.5 | -26.9 | -27.8 | -29.5 | -30.4 | -32.0 | -33.3 | -33.3 | -30.7 | -26.2 | -24.5 | -23.6 | -23.1 | -23.7 | -24.3 | -27.5 | -29.9 | -31.7 | -33.0 | -34.1                     | -34.9 | -35.6 | -29.0         | -23.1         |      |
| 2-Feb   | -36.2                         | -35.9 | -34.0 | -33.3 | -32.8 | -32.9 | -32.9 | -33.4 | -33.7 | -33.0 | -31.9 | -29.6 | -27.0 | -24.4 | -21.2 | -19.3 | -18.8 | -18.5 | -17.9 | -17.6 | -17.1 | -16.7                     | -16.3 | -16.2 | -26.3         | -16.2         |      |
| 3-Feb   | -16.1                         | -15.8 | -15.1 | -14.6 | -14.2 | -13.9 | -13.6 | -13.1 | -12.4 | -11.3 | -10.5 | -10.0 | -9.7  | -9.6  | -9.2  | -9.5  | -10.3 | -10.8 | -11.4 | -11.7 | -12.0 | -12.1                     | -12.2 | -12.2 | -12.1         | -9.2          |      |
| 4-Feb   | -12.4                         | -12.5 | -12.5 | -12.5 | -12.5 | -12.5 | -12.6 | -12.7 | -13.0 | -13.0 | -12.7 | -12.2 | -11.8 | -11.5 | -11.5 | -11.4 | -11.3 | -11.5 | -11.5 | -11.8 | -11.6 | -11.6                     | -11.7 | -11.6 | -12.1         | -11.3         |      |
| 5-Feb   | -11.7                         | -11.7 | -11.7 | -11.7 | -11.5 | -11.3 | -11.1 | -10.9 | -10.8 | -10.5 | -9.8  | -9.2  | -9.2  | -7.9  | -7.2  | -6.2  | -5.3  | -5.1  | -5.1  | -6.8  | -8.4  | -7.2                      | -4.1  | -2.9  | -5.8          | -8.5          | -2.9 |
| 6-Feb   | -7.3                          | -8.8  | -10.0 | -11.0 | -11.6 | -14.5 | -13.0 | -12.0 | -14.1 | -15.6 | -14.4 | -11.7 | -10.2 | -8.2  | -8.0  | -7.3  | -6.9  | -7.4  | -8.2  | -8.7  | -8.9  | -9.0                      | -9.3  | -9.2  | -10.2         | -6.9          |      |
| 7-Feb   | -8.7                          | -7.6  | -5.7  | -4.0  | 2.9   | 2.7   | 0.9   | 0.0   | -0.9  | -0.8  | 0.1   | 1.7   | 2.9   | 3.3   | 3.4   | 3.3   | 2.5   | 1.0   | -0.8  | -0.6  | -3.5  | -4.8                      | -6.3  | -9.5  | -1.2          | 3.4           |      |
| 8-Feb   | -11.7                         | -13.0 | -14.2 | -15.8 | -17.8 | -19.1 | -20.0 | -20.3 | -21.1 | -20.4 | -17.9 | -13.3 | -9.3  | -7.3  | -5.8  | -5.0  | -6.1  | -9.3  | -12.0 | -14.1 | -15.5 | -16.6                     | -16.8 | -14.6 | -14.0         | -5.0          |      |
| 9-Feb   | -13.3                         | -13.3 | -13.2 | -13.7 | -14.1 | -14.4 | -14.5 | -15.0 | -14.9 | -13.8 | -11.9 | -8.7  | -4.9  | -3.2  | -2.2  | -1.1  | -1.5  | -2.1  | -3.0  | -4.0  | -4.8  | -3.7                      | -3.9  | -4.4  | -8.3          | -1.1          |      |
| 10-Feb  | -4.4                          | -4.0  | -4.1  | -4.0  | -3.7  | -3.6  | -5.2  | -6.1  | -6.9  | -7.4  | -7.7  | -7.6  | -7.2  | -6.9  | -7.1  | -7.5  | -7.7  | -8.0  | -8.5  | -8.6  | -8.8  | -9.0                      | -9.2  | -9.2  | -6.8          | -3.6          |      |
| 11-Feb  | -9.2                          | -9.2  | -9.2  | -9.0  | -8.7  | -8.0  | -7.6  | -7.2  | -6.8  | -5.5  | -3.9  | -1.8  | -0.2  | 0.5   | 1.2   | 2.8   | 2.4   | 1.8   | 2.0   | 1.9   | 0.9   | -1.5                      | -2.2  | -1.3  | -3.2          | 2.8           |      |
| 12-Feb  | -0.7                          | -0.7  | -1.8  | -0.5  | -0.4  | -1.2  | -1.7  | -2.6  | -4.9  | -4.8  | -4.4  | -3.1  | -3.2  | -2.7  | -2.7  | -3.4  | -4.7  | -6.5  | -6.9  | -6.7  | -6.4  | -5.9                      | -2.6  | 0.1   | -3.3          | 0.1           |      |
| 13-Feb  | 2.6                           | 2.7   | 0.8   | -1.3  | 2.7   | 4.1   | 3.1   | 2.2   | 0.9   | -4.3  | -6.7  | -7.5  | -7.8  | -7.4  | -7.7  | -8.4  | -9.0  | -9.6  | -10.6 | -12.4 | -14.0 | -15.1                     | -15.8 | -16.5 | -5.6          | 4.1           |      |
| 14-Feb  | -17.2                         | -17.4 | -18.6 | -18.6 | -18.4 | -18.3 | -18.5 | -18.6 | -18.6 | -18.5 | -18.0 | -17.5 | -17.1 | -17.1 | -16.7 | -16.5 | -17.0 | -17.6 | -18.3 | -18.9 | -19.6 | -20.5                     | -21.8 | -22.2 | -18.4         | -16.5         |      |
| 15-Feb  | -24.4                         | -26.1 | -27.7 | -26.9 | -26.1 | -26.5 | -25.7 | -24.6 | -23.4 | -23.0 | -21.3 | -20.2 | -18.3 | -16.2 | -14.9 | -14.4 | -15.2 | -17.7 | -20.4 | -22.8 | -24.2 | -24.4                     | -24.8 | -25.5 | -22.3         | -14.4         |      |
| 16-Feb  | -26.0                         | -25.8 | -24.6 | -22.6 | -21.6 | -21.3 | -21.1 | -20.5 | -19.5 | -17.5 | -14.4 | -12.3 | -10.6 | -8.6  | -7.2  | -6.1  | -5.7  | -6.2  | -7.8  | -11.0 | -14.3 | -15.6                     | -15.9 | -15.9 | -15.5         | -5.7          |      |
| 17-Feb  | -15.9                         | -15.9 | -16.0 | -16.0 | -16.0 | -16.0 | -16.0 | -16.1 | -16.3 | -16.3 | -16.1 | -15.5 | -15.0 | -14.6 | -15.3 | -15.8 | -16.5 | -17.1 | -17.5 | -18.2 | -19.7 | -21.8                     | -23.8 | -25.1 | -17.2         | -14.6         |      |
| 18-Feb  | -26.7                         | -27.8 | -29.4 | -30.4 | -31.1 | -30.1 | -30.6 | -31.2 | -30.7 | -28.6 | -25.4 | -22.4 | -20.7 | -19.3 | -18.7 | -18.8 | -19.6 | -21.6 | -24.5 | -26.4 | -28.4 | -29.5                     | -30.3 | -30.9 | -26.4         | -18.7         |      |
| 19-Feb  | -31.2                         | -31.6 | -31.9 | -31.6 | -31.5 | -31.9 | -32.0 | -31.7 | -30.9 | -29.0 | -25.9 | -22.2 | -19.7 | -17.6 | -16.5 | -16.2 | -16.0 | -16.1 | -16.8 | -18.3 | -18.4 | -19.0                     | -20.9 | -20.6 | -24.1         | -16.0         |      |
| 20-Feb  | -21.3                         | -22.2 | -22.9 | -23.2 | -23.3 | -23.5 | -23.8 | -23.8 | -23.0 | -21.6 | -19.6 | -17.5 | -16.8 | -15.9 | -16.0 | -16.0 | -17.2 | -18.7 | -21.2 | -24.7 | -26.4 | -28.8                     | -29.6 | -30.1 | -22.0         | -15.9         |      |
| 21-Feb  | -30.5                         | -26.1 | -26.4 | -27.6 | -28.5 | -29.8 | -30.7 | -32.8 | -33.9 | -30.3 | -28.0 | -26.5 | -25.8 | -24.9 | -24.3 | -24.1 | -24.2 | -25.4 | -27.2 | -29.8 | -32.1 | -33.7                     | -34.6 | -35.4 | -28.9         | -24.1         |      |
| 22-Feb  | -35.9                         | -36.3 | -36.9 | -37.2 | -37.1 | -37.5 | -37.5 | -37.6 | -36.1 | -31.8 | -28.7 | -26.0 | -22.7 | -20.1 | -19.2 | -18.4 | -18.1 | -20.8 | -23.8 | -26.7 | -28.8 | -30.1                     | -31.8 | -32.5 | -29.7         | -18.1         |      |
| 23-Feb  | -33.6                         | -34.2 | -35.4 | -36.2 | -37.0 | -37.5 | -38.0 | -38.2 | -37.7 | -34.9 | -29.3 | -25.3 | -22.2 | -21.2 | -20.3 | -19.3 | -18.6 | -20.2 | -23.5 | -26.1 | -27.4 | -28.5                     | -30.1 | -30.4 | -29.4         | -18.6         |      |
| 24-Feb  | -28.9                         | -28.7 | -28.9 | -29.4 | -29.8 | -30.5 | -30.7 | -31.0 | -30.9 | -28.3 | -24.2 | -19.6 | -16.2 | -14.7 | -14.4 | -14.4 | -14.4 | -15.0 | -15.3 | -16.1 | -16.5 | -17.0                     | -17.8 | -18.3 | -22.1         | -14.4         |      |
| 25-Feb  | -19.5                         | -19.3 | -19.2 | -19.0 | -18.4 | -17.7 | -17.2 | -16.7 | -14.7 | -11.8 | -10.5 | -9.1  | -7.6  | -5.9  | -5.2  | -4.3  | -5.0  | -6.8  | -8.2  | -8.7  | -10.6 | -11.2                     | -11.4 | -11.6 | -12.1         | -4.3          |      |
| 26-Feb  | -12.2                         | -12.9 | -13.3 | -13.8 | -14.8 | -15.0 | -14.8 | -14.7 | -14.2 | -13.0 | -10.8 | -8.7  | -7.2  | -6.5  | -5.7  | -5.8  | -6.2  | -6.6  | -7.1  | -7.2  | -7.5  | -7.8                      | -7.8  | -8.0  | -10.1         | -5.7          |      |
| 27-Feb  | -8.0                          | -8.1  | -8.3  | -8.5  | -9.1  | -10.1 | -11.0 | -11.7 | -12.1 | -12.3 | -12.2 | -12.0 | -11.7 | -11.3 | -10.9 | -11.1 | -11.9 | -12.5 | -13.1 | -13.3 | -13.6 | -14.2                     | -14.9 | -16.2 | -11.6         | -8.0          |      |
| 28-Feb  | -18.4                         | -20.7 | -22.1 | -23.2 | -24.1 | -25.2 | -26.1 | -26.8 | -25.6 | -23.1 | -18.5 | -16.1 | -15.0 | -14.1 | -13.4 | -12.5 | -12.2 | -14.1 | -17.3 | -19.8 | -21.8 | -23.0                     | -23.9 | -24.7 | -20.1         | -12.2         |      |
|   |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Diurnal Average           |       |       |               |               |      |
|   |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Diurnal Maximum           |       |       |               |               |      |
|   |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                           |       |       |               |               |      |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Ambient Temperature (AT) - C**  
**Lower Camp - February 2023**







**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Ambient Temperature (AT) - C  
Lower Camp - February 2023**

| <b>Concentration Ranges (C)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---------------------------------|------------------------|----------|---------------------|
| -50 - -20                       | 216                    | 32.14    | 32.14               |
| -20 - 0                         | 427                    | 63.54    | 95.68               |
| 0 - 10                          | 29                     | 4.32     | 100.00              |
| 10 - 20                         | 0                      | 0.00     | 100.00              |
| > 20                            | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 672

Total Number of Hours: 672



**Wood Buffalo Environmental Association**

**Summary of Hour Averages**

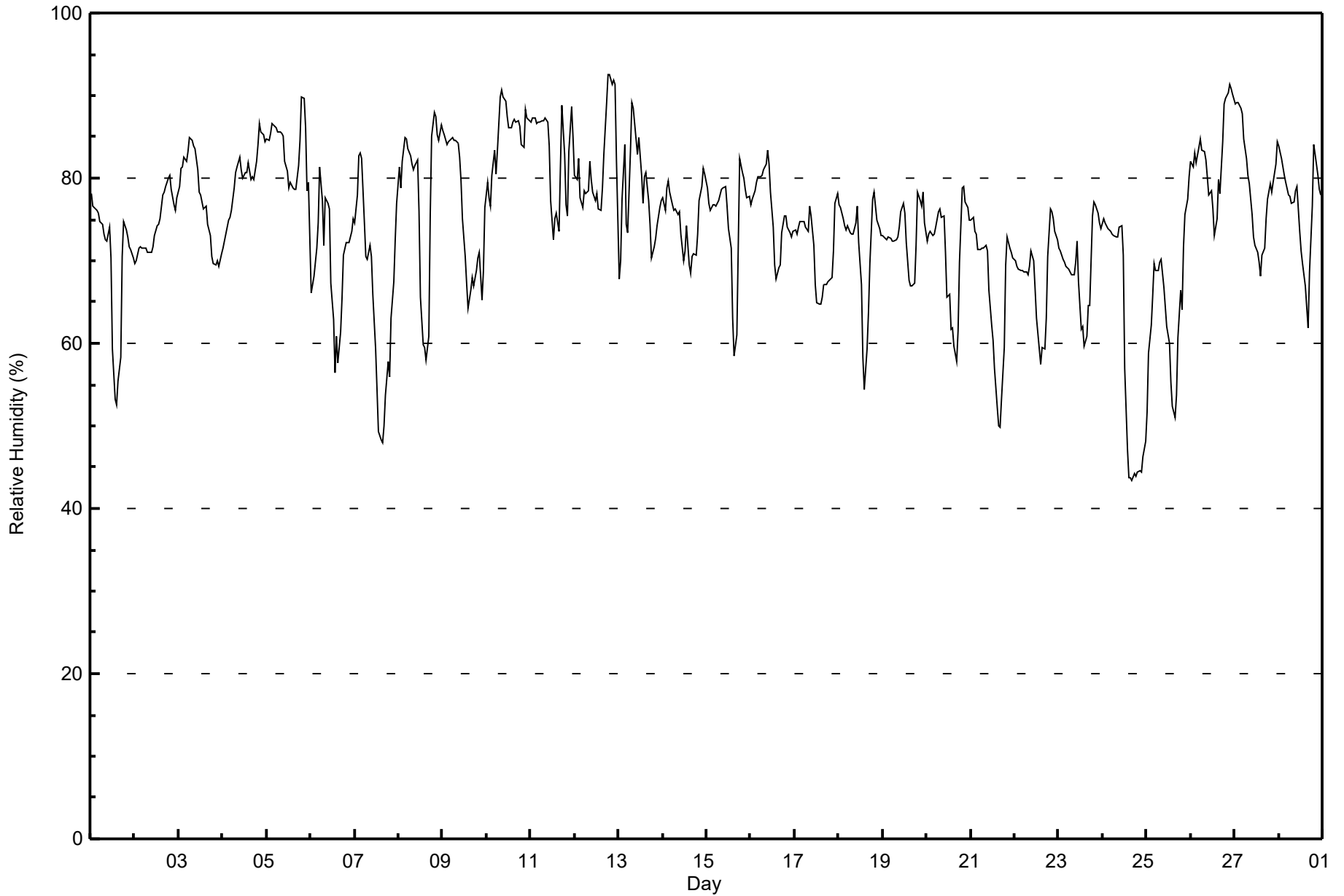
**Relative Humidity (RH) - %  
Lower Camp - February 2023**

| Maximum Value: 92.6 % on Feb 12 19:00      Maximum Daily Average: 85.2 % on Feb 10   |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Hours in Service: 672<br>Hours of Data: 672  |      |      |               |               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
|--|-------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|--|------|------|---------------|---------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----------------|--|
| Minimum Value: 43.4 % on Feb 24 17:00      Minimum Daily Average: 59.7 % on Feb 24<br>Maximum Diurnal Average: 78.0 % at hour 9      Minimum Diurnal Average: 65.8 % at hour 15<br>Monthly Average: 74.40 %      Percentiles: P <sub>1</sub> = 44.5 P <sub>10</sub> = 62.1 Q <sub>1</sub> = 70.3 Median = 75.1 Q <sub>3</sub> = 80.3 P <sub>90</sub> = 85.0 P <sub>99</sub> = 90.7 |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Hours of Missing Data: 0<br>Hours of Calibration: 0<br>Percent Operational Time: 100.0 |      |      |               |               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| Day  | Hourly Period Ending At (MST) |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |      |      | Daily Average | Daily Maximum |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
|  | 1                             | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20   | 21   | 22   | 23   | 24   |               |               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 1-Feb  | 78.1                          | 76.6 | 76.4 | 76.2 | 75.8 | 74.8 | 74.4 | 73.3 | 72.6 | 72.4 | 74.1 | 70.4 | 59.4 | 53.3 | 52.6 | 55.5 | 58.4 | 70.4 | 74.8 | 73.8 | 72.8 | 71.8   | 71.4 | 70.3 | 70.0          | 78.1          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 2-Feb  | 69.7                          | 70.0 | 71.5 | 71.7 | 71.6 | 71.5 | 71.5 | 71.1 | 70.9 | 71.1 | 71.7 | 73.0 | 74.2 | 74.3 | 75.1 | 78.0 | 78.3 | 79.0 | 80.1 | 80.3 | 78.7 | 76.7   | 76.1 | 77.6 | 74.3          | 80.3          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 3-Feb  | 78.9                          | 81.2 | 81.4 | 82.5 | 82.0 | 83.2 | 85.0 | 84.6 | 83.9 | 83.5 | 80.9 | 78.3 | 78.0 | 76.3 | 76.4 | 76.6 | 74.4 | 73.1 | 70.5 | 69.7 | 69.5 | 70.0   | 69.3 | 70.8 | 77.5          | 85.0          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 4-Feb  | 71.5                          | 72.3 | 74.1 | 74.9 | 75.3 | 76.1 | 78.9 | 80.7 | 81.3 | 82.5 | 81.0 | 80.1 | 80.8 | 80.6 | 81.9 | 79.8 | 80.1 | 79.9 | 82.1 | 84.1 | 86.7 | 85.7   | 85.3 | 84.5 | 80.0          | 86.7          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 5-Feb  | 84.7                          | 84.6 | 85.4 | 86.7 | 86.2 | 86.2 | 85.5 | 85.7 | 85.5 | 85.1 | 82.0 | 80.8 | 78.8 | 79.4 | 78.7 | 78.6 | 81.6 | 84.5 | 89.9 | 89.7 | 86.1 | 78.5   | 79.4 | 83.4 | 89.9          |               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 6-Feb  | 66.1                          | 67.2 | 68.2 | 71.6 | 74.6 | 81.4 | 77.2 | 71.8 | 77.7 | 77.0 | 76.3 | 67.3 | 62.8 | 56.4 | 60.9 | 57.7 | 61.4 | 65.4 | 70.7 | 72.3 | 72.3 | 73.6   | 75.1 | 69.9 | 81.4          |               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 7-Feb  | 74.6                          | 78.0 | 82.8 | 83.1 | 82.4 | 74.5 | 70.4 | 70.2 | 71.9 | 70.5 | 66.0 | 59.3 | 54.4 | 49.3 | 48.2 | 48.0 | 49.9 | 53.7 | 57.8 | 55.9 | 63.1 | 67.5   | 72.5 | 77.0 | 65.9          | 83.1          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 8-Feb  | 81.3                          | 78.9 | 82.0 | 84.9 | 84.8 | 83.6 | 82.8 | 81.8 | 81.0 | 81.5 | 82.2 | 76.0 | 65.6 | 59.9 | 59.6 | 58.0 | 60.9 | 75.3 | 85.1 | 88.0 | 87.5 | 85.2   | 84.7 | 86.4 | 78.2          | 88.0          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 9-Feb  | 85.8                          | 85.2 | 84.0 | 84.4 | 84.5 | 84.9 | 84.7 | 84.7 | 84.2 | 82.6 | 79.6 | 75.1 | 70.5 | 67.4 | 64.2 | 66.4 | 68.0 | 67.0 | 68.8 | 70.3 | 70.9 | 65.3   | 68.7 | 76.5 | 76.0          | 85.8          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 10-Feb   | 79.5                          | 77.6 | 76.6 | 80.4 | 83.3 | 80.5 | 83.3 | 89.9 | 90.7 | 89.8 | 89.3 | 87.5 | 86.1 | 86.1 | 86.9 | 87.2 | 86.7 | 86.9 | 86.3 | 84.0 | 83.8 | 88.3   | 87.4 | 87.0 | 85.2          | 90.7          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 11-Feb   | 86.7                          | 87.3 | 87.3 | 86.6 | 86.7 | 86.9 | 87.0 | 87.0 | 87.2 | 86.8 | 83.8 | 77.2 | 72.6 | 75.0 | 75.8 | 73.6 | 81.4 | 88.8 | 83.0 | 76.7 | 75.5 | 83.3   | 88.7 | 85.0 | 82.9          | 88.8          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 12-Feb   | 80.4                          | 79.8 | 82.5 | 77.7 | 76.4 | 78.4 | 78.2 | 78.4 | 82.1 | 79.8 | 78.4 | 77.3 | 78.1 | 76.2 | 76.2 | 78.8 | 83.0 | 89.2 | 92.6 | 92.5 | 91.4 | 91.8   | 91.3 | 82.1 | 82.2          | 92.6          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 13-Feb   | 67.8                          | 70.0 | 77.5 | 84.1 | 74.4 | 73.4 | 83.2 | 89.1 | 88.5 | 84.8 | 82.9 | 84.9 | 80.3 | 76.9 | 80.1 | 80.7 | 77.3 | 74.4 | 70.4 | 71.7 | 72.8 | 74.3   | 76.4 | 77.3 | 78.1          | 89.1          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 14-Feb   | 77.6                          | 76.2 | 78.8 | 79.7 | 78.4 | 76.8 | 76.0 | 76.2 | 75.6 | 75.9 | 73.2 | 70.0 | 71.2 | 74.2 | 69.4 | 68.5 | 70.5 | 70.8 | 70.7 | 73.2 | 77.4 | 79.0   | 81.1 | 80.5 | 75.0          | 81.1          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 15-Feb   | 78.9                          | 77.0 | 76.1 | 76.7 | 76.8 | 76.6 | 77.3 | 77.9 | 78.7 | 78.8 | 79.0 | 76.6 | 74.0 | 71.4 | 63.0 | 58.5 | 61.1 | 71.6 | 82.4 | 80.7 | 79.9 | 78.7   | 77.7 | 77.7 | 75.3          | 82.4          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 16-Feb   | 76.8                          | 77.4 | 78.5 | 79.4 | 80.2 | 80.1 | 80.4 | 81.0 | 81.8 | 83.4 | 81.7 | 78.3 | 74.0 | 69.4 | 67.9 | 69.1 | 69.5 | 73.4 | 75.5 | 75.5 | 74.0 | 73.4   | 72.9 | 73.5 | 76.1          | 83.4          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 17-Feb   | 73.8                          | 73.3 | 74.0 | 74.7 | 74.7 | 74.8 | 74.1 | 73.6 | 76.6 | 75.4 | 71.9 | 67.1 | 65.0 | 64.7 | 64.8 | 65.6 | 67.0 | 67.2 | 67.4 | 67.6 | 67.9 | 71.3   | 77.0 | 78.1 | 71.1          | 78.1          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 18-Feb   | 76.8                          | 76.5 | 75.1 | 74.2 | 73.7 | 74.3 | 73.5 | 73.3 | 73.3 | 74.6 | 76.6 | 72.2 | 67.1 | 58.3 | 54.3 | 59.3 | 63.7 | 69.6 | 77.5 | 78.3 | 76.7 | 74.9   | 73.8 | 73.1 | 71.7          | 78.3          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 19-Feb   | 73.1                          | 72.6 | 72.5 | 72.9 | 72.8 | 72.4 | 72.3 | 72.5 | 72.9 | 74.1 | 76.0 | 76.9 | 75.7 | 72.2 | 67.6 | 67.0 | 67.0 | 67.3 | 71.9 | 78.4 | 77.3 | 76.7   | 78.3 | 74.5 | 73.1          | 78.4          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 20-Feb   | 72.4                          | 73.3 | 73.5 | 73.1 | 73.2 | 74.0 | 75.9 | 76.3 | 75.3 | 75.5 | 71.0 | 65.6 | 66.0 | 61.7 | 61.9 | 59.6 | 57.8 | 61.5 | 69.9 | 78.8 | 79.0 | 77.2   | 76.5 | 75.0 | 71.0          | 79.0          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 21-Feb   | 74.8                          | 75.2 | 73.5 | 73.2 | 71.4 | 71.3 | 71.5 | 71.6 | 71.8 | 71.2 | 66.4 | 62.1 | 60.3 | 56.9 | 52.3 | 50.0 | 49.9 | 53.3 | 59.5 | 69.4 | 72.8 | 71.5   | 71.0 | 70.4 | 66.3          | 75.2          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 22-Feb   | 69.9                          | 69.3 | 69.0 | 68.8 | 68.9 | 68.6 | 68.6 | 68.4 | 69.4 | 71.1 | 70.0 | 66.6 | 63.0 | 59.4 | 57.5 | 59.5 | 59.3 | 63.1 | 70.5 | 76.2 | 75.9 | 75.0   | 73.6 | 72.6 | 68.1          | 76.2          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 23-Feb   | 71.5                          | 71.2 | 70.2 | 69.9 | 69.4 | 68.9 | 68.6 | 68.3 | 68.3 | 69.8 | 72.4 | 67.5 | 61.8 | 62.1 | 59.6 | 60.8 | 64.6 | 64.6 | 75.5 | 77.1 | 76.7 | 75.8   | 74.6 | 74.0 | 69.3          | 77.1          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 24-Feb   | 75.1                          | 74.5 | 74.2 | 73.9 | 73.6 | 73.2 | 73.1 | 72.8 | 72.9 | 74.1 | 74.3 | 70.6 | 56.9 | 47.2 | 43.8 | 43.7 | 43.4 | 44.2 | 43.9 | 44.4 | 44.5 | 44.5   | 46.3 | 48.1 | 59.7          | 75.1          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 25-Feb   | 51.7                          | 58.8 | 62.1 | 65.7 | 69.7 | 68.8 | 68.8 | 69.8 | 70.2 | 66.8 | 64.4 | 62.1 | 60.0 | 55.3 | 52.4 | 50.9 | 53.8 | 60.7 | 66.4 | 64.1 | 71.6 | 75.6   | 77.4 | 80.1 | 64.5          | 80.1          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 26-Feb   | 82.1                          | 81.4 | 83.0 | 81.9 | 83.7 | 84.8 | 83.4 | 83.2 | 82.3 | 80.2 | 78.0 | 78.5 | 76.3 | 73.0 | 75.1 | 79.9 | 78.1 | 84.5 | 89.1 | 89.7 | 90.3 | 91.4   | 90.8 | 90.2 | 82.9          | 91.4          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 27-Feb   | 89.0                          | 89.1 | 89.2 | 88.5 | 87.8 | 84.7 | 82.4 | 80.4 | 79.3 | 75.7 | 72.9 | 71.8 | 71.0 | 69.8 | 68.2 | 70.7 | 71.5 | 75.0 | 77.4 | 79.4 | 78.3 | 79.5   | 81.7 | 84.4 | 79.1          | 89.2          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 28-Feb   | 83.9                          | 82.5 | 81.4 | 80.4 | 79.5 | 78.0 | 77.7 | 77.0 | 77.0 | 78.4 | 79.0 | 73.5 | 71.2 | 69.6 | 66.9 | 64.4 | 61.9 | 68.6 | 76.7 | 84.1 | 82.9 | 80.3   | 78.7 | 77.9 | 76.3          | 84.1          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
|  |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |      | 76.2 | 76.3          | 77.2          | 77.8 | 77.6 | 77.2 | 77.3 | 77.5 | 78.0 | 77.6 | 76.2 | 73.1 | 69.8 | 67.0 | 65.8 | 65.9 | 67.1 | 70.7 | 74.3 | 75.9 | 76.4 | 76.5 | 77.0 | 77.1 | Diurnal Average |  |
|  |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |      | 89.0 | 89.1          | 89.2          | 88.5 | 87.8 | 86.9 | 87.0 | 89.9 | 90.7 | 89.8 | 89.3 | 87.5 | 86.1 | 86.1 | 86.9 | 87.2 | 86.7 | 89.2 | 92.6 | 92.5 | 91.4 | 91.8 | 91.3 | 90.2 | Diurnal Maximum |  |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Relative Humidity (RH) - %**  
**Lower Camp - February 2023**



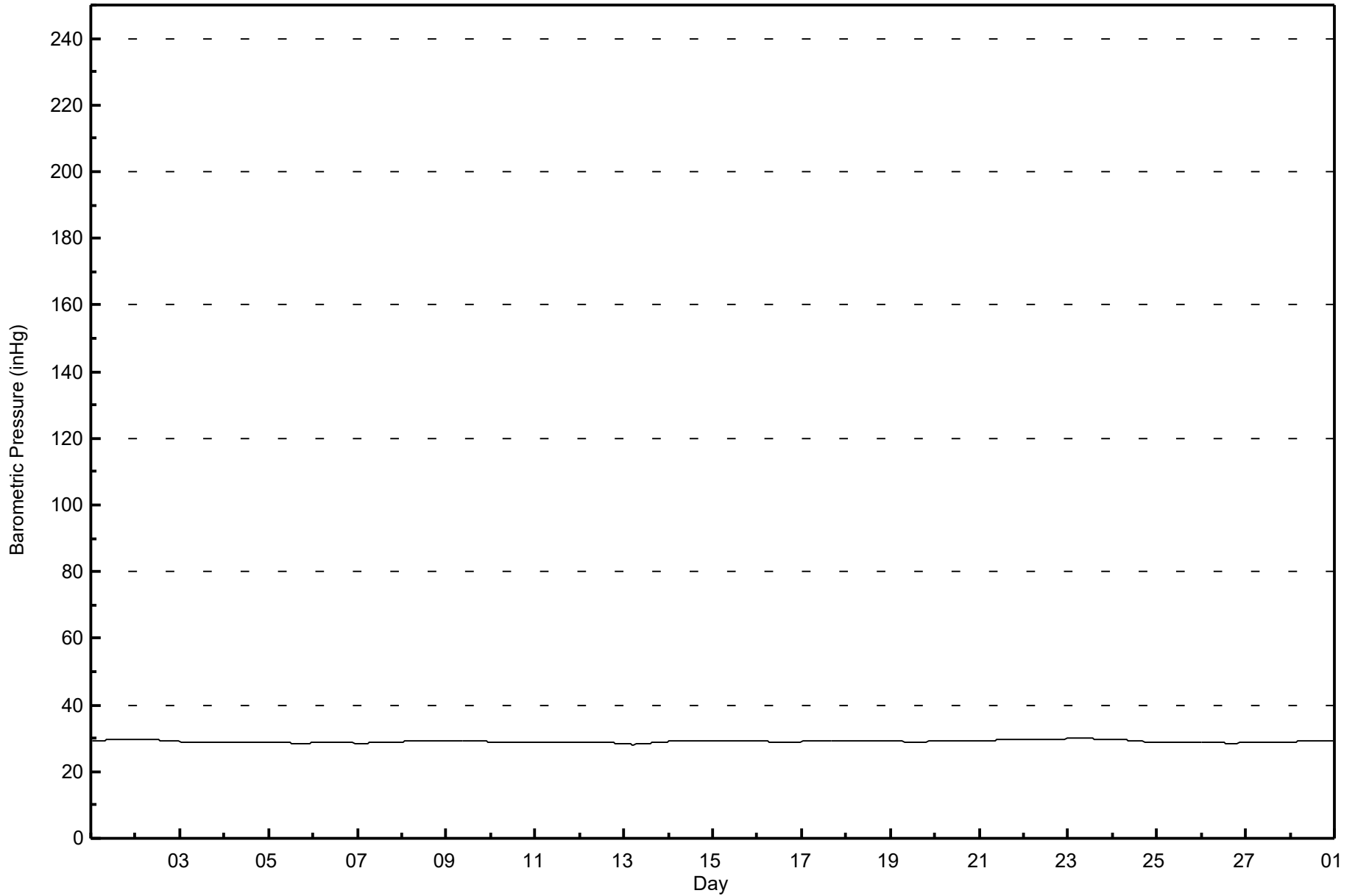


| Maximum Value: 30.0 inHg on Feb 23 10:00      Maximum Daily Average: 29.9 inHg on Feb 23   |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Hours in Service: 672           |      |      |               |               |
|--|-------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|---------------------------------|------|------|---------------|---------------|
| Minimum Value: 28.2 inHg on Feb 13 05:00      Minimum Daily Average: 28.5 inHg on Feb 13   |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Hours of Data: 672              |      |      |               |               |
| Maximum Diurnal Average: 29.1 inHg at hour 11      Minimum Diurnal Average: 29.1 inHg at hour 16   |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Hours of Missing Data: 0        |      |      |               |               |
| Monthly Average: 29.07 inHg      Percentiles: P <sub>1</sub> = 28.2 P <sub>10</sub> = 28.7 Q <sub>1</sub> = 28.8 Median = 29.0 Q <sub>3</sub> = 29.3 P <sub>90</sub> = 29.6 P <sub>99</sub> = 29.9 |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Hours of Calibration: 0         |      |      |               |               |
|  |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Percent Operational Time: 100.0 |      |      |               |               |
| Day  | Hourly Period Ending At (MST) |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                                 |      |      | Daily Average | Daily Maximum |
|  | 1                             | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20   | 21   | 22                              | 23   | 24   |               |               |
| 1-Feb  | 29.2                          | 29.2 | 29.3 | 29.3 | 29.3 | 29.3 | 29.4 | 29.4 | 29.5 | 29.5 | 29.5 | 29.5 | 29.6 | 29.6 | 29.6 | 29.6 | 29.6 | 29.6 | 29.7 | 29.7 | 29.7 | 29.7                            | 29.7 | 29.7 | 29.5          | 29.7          |
| 2-Feb  | 29.7                          | 29.7 | 29.7 | 29.7 | 29.7 | 29.7 | 29.7 | 29.6 | 29.6 | 29.6 | 29.6 | 29.5 | 29.5 | 29.4 | 29.4 | 29.3 | 29.3 | 29.3 | 29.2 | 29.2 | 29.2 | 29.1                            | 29.1 | 29.1 | 29.5          | 29.7          |
| 3-Feb  | 29.0                          | 29.0 | 28.9 | 28.9 | 28.8 | 28.8 | 28.8 | 28.8 | 28.8 | 28.8 | 28.8 | 28.8 | 28.8 | 28.8 | 28.8 | 28.8 | 28.9 | 28.9 | 28.9 | 28.9 | 28.9 | 28.9                            | 28.9 | 28.9 | 28.8          | 29.0          |
| 4-Feb  | 28.9                          | 28.9 | 28.9 | 28.9 | 28.9 | 28.9 | 28.9 | 28.9 | 28.9 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | 28.9 | 28.9                            | 28.9 | 28.9 | 28.9          | 29.0          |
| 5-Feb  | 28.9                          | 28.9 | 28.9 | 28.8 | 28.8 | 28.8 | 28.7 | 28.7 | 28.7 | 28.7 | 28.6 | 28.6 | 28.6 | 28.6 | 28.5 | 28.5 | 28.5 | 28.5 | 28.5 | 28.5 | 28.5 | 28.5                            | 28.6 | 28.6 | 28.6          | 28.9          |
| 6-Feb  | 28.7                          | 28.7 | 28.8 | 28.8 | 28.8 | 28.8 | 28.8 | 28.8 | 28.9 | 28.9 | 28.9 | 28.9 | 28.8 | 28.8 | 28.8 | 28.8 | 28.7 | 28.7 | 28.7 | 28.7 | 28.6 | 28.6                            | 28.6 | 28.6 | 28.8          | 28.9          |
| 7-Feb  | 28.6                          | 28.6 | 28.6 | 28.6 | 28.6 | 28.6 | 28.7 | 28.7 | 28.7 | 28.8 | 28.8 | 28.8 | 28.8 | 28.8 | 28.8 | 28.8 | 28.8 | 28.8 | 28.8 | 28.8 | 28.9 | 28.9                            | 28.9 | 29.0 | 28.7          | 29.0          |
| 8-Feb  | 29.0                          | 29.0 | 29.1 | 29.1 | 29.1 | 29.1 | 29.2 | 29.2 | 29.2 | 29.2 | 29.3 | 29.3 | 29.3 | 29.3 | 29.3 | 29.3 | 29.3 | 29.3 | 29.3 | 29.3 | 29.3 | 29.3                            | 29.3 | 29.3 | 29.2          | 29.3          |
| 9-Feb  | 29.3                          | 29.3 | 29.3 | 29.3 | 29.3 | 29.3 | 29.3 | 29.2 | 29.3 | 29.3 | 29.2 | 29.2 | 29.2 | 29.2 | 29.2 | 29.1 | 29.1 | 29.1 | 29.1 | 29.1 | 29.0 | 29.0                            | 29.0 | 29.0 | 29.2          | 29.3          |
| 10-Feb   | 29.0                          | 29.0 | 29.0 | 29.0 | 29.0 | 28.9 | 28.9 | 28.9 | 28.9 | 28.9 | 28.9 | 28.9 | 28.9 | 28.8 | 28.8 | 28.8 | 28.9 | 28.9 | 28.9 | 28.9 | 28.9 | 28.9                            | 28.9 | 28.9 | 28.9          | 29.0          |
| 11-Feb   | 28.9                          | 28.9 | 28.9 | 28.9 | 28.9 | 28.9 | 28.9 | 28.9 | 28.9 | 28.9 | 28.9 | 28.8 | 28.8 | 28.8 | 28.8 | 28.7 | 28.7 | 28.7 | 28.7 | 28.8 | 28.8 | 28.8                            | 28.8 | 28.8 | 28.8          | 28.9          |
| 12-Feb   | 28.8                          | 28.8 | 28.8 | 28.8 | 28.8 | 28.8 | 28.8 | 28.8 | 28.8 | 28.8 | 28.8 | 28.8 | 28.8 | 28.8 | 28.7 | 28.7 | 28.7 | 28.7 | 28.6 | 28.5 | 28.5 | 28.4                            | 28.4 | 28.3 | 28.7          | 28.8          |
| 13-Feb   | 28.3                          | 28.2 | 28.2 | 28.2 | 28.2 | 28.2 | 28.2 | 28.2 | 28.2 | 28.3 | 28.4 | 28.4 | 28.5 | 28.5 | 28.6 | 28.6 | 28.7 | 28.8 | 28.8 | 28.9 | 28.9 | 28.9                            | 29.0 | 29.0 | 28.5          | 29.0          |
| 14-Feb   | 29.0                          | 29.1 | 29.1 | 29.2 | 29.2 | 29.2 | 29.2 | 29.2 | 29.2 | 29.3 | 29.3 | 29.3 | 29.3 | 29.3 | 29.3 | 29.3 | 29.3 | 29.4 | 29.4 | 29.4 | 29.4 | 29.4                            | 29.4 | 29.4 | 29.3          | 29.4          |
| 15-Feb   | 29.4                          | 29.4 | 29.4 | 29.4 | 29.4 | 29.4 | 29.4 | 29.4 | 29.4 | 29.4 | 29.4 | 29.4 | 29.4 | 29.4 | 29.4 | 29.4 | 29.4 | 29.4 | 29.3 | 29.3 | 29.3 | 29.3                            | 29.3 | 29.3 | 29.4          | 29.4          |
| 16-Feb   | 29.3                          | 29.2 | 29.2 | 29.1 | 29.1 | 29.1 | 29.0 | 29.0 | 28.9 | 28.9 | 28.8 | 28.8 | 28.8 | 28.8 | 28.7 | 28.7 | 28.8 | 28.8 | 28.8 | 28.9 | 28.9 | 29.0                            | 29.0 | 29.0 | 28.9          | 29.3          |
| 17-Feb   | 29.0                          | 29.0 | 29.1 | 29.1 | 29.1 | 29.1 | 29.1 | 29.1 | 29.1 | 29.1 | 29.1 | 29.1 | 29.1 | 29.1 | 29.1 | 29.1 | 29.1 | 29.1 | 29.1 | 29.1 | 29.1 | 29.1                            | 29.1 | 29.1 | 29.1          | 29.1          |
| 18-Feb   | 29.1                          | 29.1 | 29.1 | 29.2 | 29.2 | 29.2 | 29.2 | 29.2 | 29.2 | 29.2 | 29.2 | 29.3 | 29.2 | 29.2 | 29.2 | 29.2 | 29.3 | 29.3 | 29.3 | 29.2 | 29.2 | 29.2                            | 29.2 | 29.2 | 29.2          | 29.3          |
| 19-Feb   | 29.2                          | 29.2 | 29.1 | 29.1 | 29.1 | 29.1 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | 28.9 | 28.9 | 28.9 | 28.9 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | 29.1                            | 29.1 | 29.1 | 29.0          | 29.2          |
| 20-Feb   | 29.1                          | 29.2 | 29.2 | 29.2 | 29.2 | 29.2 | 29.2 | 29.3 | 29.2 | 29.2 | 29.2 | 29.2 | 29.2 | 29.2 | 29.2 | 29.2 | 29.2 | 29.2 | 29.2 | 29.2 | 29.2 | 29.2                            | 29.2 | 29.2 | 29.2          | 29.3          |
| 21-Feb   | 29.2                          | 29.3 | 29.3 | 29.3 | 29.3 | 29.4 | 29.4 | 29.4 | 29.4 | 29.5 | 29.5 | 29.5 | 29.5 | 29.5 | 29.5 | 29.6 | 29.6 | 29.6 | 29.6 | 29.6 | 29.7 | 29.7                            | 29.7 | 29.7 | 29.5          | 29.7          |
| 22-Feb   | 29.7                          | 29.7 | 29.7 | 29.7 | 29.7 | 29.7 | 29.8 | 29.8 | 29.8 | 29.8 | 29.8 | 29.8 | 29.8 | 29.8 | 29.8 | 29.8 | 29.8 | 29.8 | 29.8 | 29.8 | 29.8 | 29.8                            | 29.8 | 29.8 | 29.8          | 29.9          |
| 23-Feb   | 29.9                          | 29.9 | 29.9 | 29.9 | 29.9 | 29.9 | 29.9 | 30.0 | 30.0 | 30.0 | 30.0 | 29.9 | 29.9 | 29.9 | 29.8 | 29.8 | 29.8 | 29.8 | 29.8 | 29.8 | 29.8 | 29.8                            | 29.8 | 29.7 | 29.7          | 30.0          |
| 24-Feb   | 29.7                          | 29.7 | 29.6 | 29.6 | 29.6 | 29.5 | 29.5 | 29.5 | 29.4 | 29.4 | 29.3 | 29.3 | 29.2 | 29.2 | 29.2 | 29.1 | 29.0 | 29.0 | 29.0 | 28.9 | 28.9 | 28.9                            | 28.9 | 28.9 | 29.3          | 29.7          |
| 25-Feb   | 28.9                          | 28.8 | 28.8 | 28.8 | 28.8 | 28.8 | 28.8 | 28.8 | 28.8 | 28.8 | 28.8 | 28.8 | 28.8 | 28.8 | 28.8 | 28.8 | 28.7 | 28.7 | 28.7 | 28.7 | 28.7 | 28.7                            | 28.7 | 28.7 | 28.8          | 28.9          |
| 26-Feb   | 28.7                          | 28.7 | 28.7 | 28.7 | 28.7 | 28.6 | 28.6 | 28.6 | 28.6 | 28.6 | 28.6 | 28.6 | 28.6 | 28.6 | 28.6 | 28.6 | 28.6 | 28.6 | 28.6 | 28.6 | 28.6 | 28.6                            | 28.6 | 28.6 | 28.6          | 28.7          |
| 27-Feb   | 28.6                          | 28.6 | 28.7 | 28.7 | 28.7 | 28.7 | 28.7 | 28.7 | 28.8 | 28.8 | 28.8 | 28.8 | 28.8 | 28.8 | 28.8 | 28.8 | 28.9 | 28.9 | 28.9 | 28.9 | 28.9 | 28.9                            | 28.9 | 28.9 | 28.8          | 29.0          |
| 28-Feb   | 29.0                          | 29.0 | 29.0 | 29.0 | 29.0 | 29.1 | 29.1 | 29.1 | 29.1 | 29.1 | 29.1 | 29.1 | 29.2 | 29.2 | 29.2 | 29.2 | 29.2 | 29.2 | 29.2 | 29.2 | 29.2 | 29.2                            | 29.2 | 29.2 | 29.1          | 29.2          |
|  |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Diurnal Average                 |      |      |               |               |
|  |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Diurnal Maximum                 |      |      |               |               |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Barometric Pressure (BP) - inHg**  
**Lower Camp - February 2023**





| Maximum Speed: 32 km/h on Feb 2 20:00  |                               | Maximum Daily Speed Average: 16.1 km/h on Feb 2   |       | Hours in Service: 672          |       |       |       |       |       |      |       |       |       |       |       |       |       |       |       |       |      |       |       |                 |               |               |
|--|-------------------------------|---|-------|--------------------------------|-------|-------|-------|-------|-------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|-------|-------|-----------------|---------------|---------------|
| Minimum Speed Value: 0 km/h on Feb 15 08:00  |                               | Minimum Daily Speed Average: 0.7 km/h on Feb 23   |       | Hours of Data: 669             |       |       |       |       |       |      |       |       |       |       |       |       |       |       |       |       |      |       |       |                 |               |               |
| Maximum Diurnal Speed Average: 2.6 km/h at hour 18   |                               | Minimum Diurnal Speed Average: 0.2 km/h at hour 3   |       | Hours of Missing Data: 3       |       |       |       |       |       |      |       |       |       |       |       |       |       |       |       |       |      |       |       |                 |               |               |
| Monthly Average Velocity: 1.4 km/h 328.0 deg   |                               | Percentiles: P <sub>1</sub> = 0 P <sub>10</sub> = 1 Q <sub>1</sub> = 3 Median = 6 Q <sub>3</sub> = 10 P <sub>90</sub> = 15 P <sub>99</sub> = 28 |       | Percent Operational Time: 99.6 |       |       |       |       |       |      |       |       |       |       |       |       |       |       |       |       |      |       |       |                 |               |               |
| Day  | Hourly Period Ending At (MST) |   |       |                                |       |       |       |       |       |      |       |       |       |       |       |       |       |       |       |       |      |       |       |                 | Daily Average | Daily Maximum |
|  | 1                             | 2   | 3     | 4                              | 5     | 6     | 7     | 8     | 9     | 10   | 11    | 12    | 13    | 14    | 15    | 16    | 17    | 18    | 19    | 20    | 21   | 22    | 23    | 24              |               |               |
| 1-Feb  | WNW4                          | NNW3  | NW2   | NW3                            | NW3   | NW4   | WNW4  | NW3   | NNW2  | NW2  | NW4   | NW5   | NW11  | N10   | WNW7  | NW3   | SW2   | NNW1  | NW2   | NNW1  | NNE1 | ENE1  | NNE1  | ENE1            | NW3.0         | NW11          |
| 2-Feb  | ESE1                          | ESE1  | SE3   | SE7                            | SSE7  | SE10  | SE9   | SE9   | SE9   | SE11 | SE9   | SE11  | SSE8  | SE10  | SE20  | SE32  | SE31  | SE30  | SE29  | SE32  | SE30 | SE29  | SE26  | SE24            | SE16.1        | SE32          |
| 3-Feb  | SE21                          | SE21  | SE19  | SE17                           | SSE12 | SSE11 | SE12  | SE12  | SE8   | SE8  | SE5   | N5    | NNW6  | NNW9  | N9    | N10   | NNE11 | NNE9  | NNE8  | NNE7  | N6   | NNE6  | NNE4  | N6              | ESE4.2        | SE21          |
| 4-Feb  | N7                            | N4  | NW5   | NNW6                           | NNW6  | NNW6  | NW7   | NW8   | NNW8  | N7   | N8    | N8    | N9    | N8    | N7    | NNW4  | NW6   | NNW6  | NNW5  | NW7   | NW7  | NW7   | NW6   | NW6             | NNW6.3        | N9            |
| 5-Feb  | NW6                           | NNW5  | NW4   | NNW4                           | NNW3  | N5    | NW5   | NW6   | N4    | NW5  | WNW3  | NW2   | SE2   | NNW3  | ESE3  | ENE3  | N0    | WNW3  | WNW4  | S1    | NNW1 | WNW8  | WNW23 | NW18            | NW4.2         | WNW23         |
| 6-Feb  | WNW22                         | WNW21   | W17   | W12                            | W10   | NNE1  | W11   | W10   | W8    | WNW5 | W4    | WNW3  | SSE1  | SE9   | SE8   | E2    | N2    | NNW5  | NNW6  | NNW4  | NNW6 | NNW5  | WNW4  | NNW4            | WNW5.4        | WNW22         |
| 7-Feb  | NW4                           | SSE4  | SE8   | SE5                            | W18   | WNW26 | WNW20 | WNW14 | W16   | W17  | W11   | W15   | W17   | W24   | W24   | WNW26 | WNW21 | W15   | WNW8  | W12   | NW6  | W6    | NNW12 | NNW10           | W12.2         | WNW26         |
| 8-Feb  | NNW6                          | NW7   | WNW6  | WNW5                           | NNW3  | N1    | NNW1  | NW2   | NW2   | WNW0 | SE3   | SE7   | SE10  | SE11  | SE8   | SE7   | SE4   | S0    | NW1   | NW2   | NNW1 | SE5   | ESE6  | SE10            | SE1.5         | SE11          |
| 9-Feb  | SE16                          | SE15  | SE14  | SE13                           | SSE14 | SSE12 | SE14  | SE16  | SE14  | SE14 | SSE14 | SE16  | SE14  | SE14  | SE12  | SE9   | SE8   | SE5   | SE4   | SE7   | SE7  | SSE6  | SSE4  | NNW1            | SE10.8        | SE16          |
| 10-Feb   | NE1                           | NW3   | WNW5  | NNW4                           | NW6   | NNW9  | NNW9  | NNW8  | NW8   | NW9  | NW10  | NNW9  | NNW9  | NNW10 | NW12  | NW14  | NW12  | NW12  | NW11  | NNW9  | NNW7 | NNW5  | NW6   | NNW3            | NNW7.8        | NW14          |
| 11-Feb   | NW4                           | NNW3  | N2    | NE1                            | SE2   | SE8   | SE10  | SE10  | SE8   | SE7  | SE7   | SE9   | SE11  | SE10  | SSE10 | SW8   | WSW18 | W11   | W15   | WNW20 | NW18 | WSW3  | WSW8  | W16             | SW3.1         | WNW20         |
| 12-Feb   | W19                           | WNW20   | NW11  | W18                            | WSW16 | WSW13 | W12   | W9    | NNW6  | W11  | WSW11 | W6    | NNW6  | NNW5  | NNW4  | NNW6  | NNW7  | N6    | NNW5  | NNW5  | NNW4 | N3    | SE10  | SE16            | WNW6.2        | WNW20         |
| 13-Feb   | SSE16                         | SSE12   | ESE4  | NW3                            | W14   | W19   | W20   | W16   | N16   | N28  | N26   | N24   | N27   | N28   | NNW20 | NNW19 | N23   | N19   | N15   | N12   | N13  | NNE15 | N11   | NNW10           | N11.9         | N28           |
| 14-Feb   | NNW9                          | N11   | NW7   | NW7                            | NW6   | N7    | N9    | NNE7  | NNE6  | NNW5 | N5    | N6    | NNW5  | N7    | N6    | N8    | NE10  | NNE9  | N6    | NNW5  | NNW3 | W2    | N2    | WNW3            | N5.7          | N11           |
| 15-Feb   | NNE1                          | NW2   | ENE0  | NW1                            | NW3   | NNW1  | N0    | WSW0  | E1    | N2   | N2    | NE2   | E2    | ESE8  | SE8   | SE8   | SE6   | SE3   | ESE0  | ENE1  | NNW0 | NW0   | NNW1  | SE1             | ESE1.2        | SE8           |
| 16-Feb   | N2                            | NNE1  | NNE0  | ESE2                           | SE2   | N2    | NNW3  | NW2   | NNW1  | SE2  | SE3   | SE8   | SE11  | SE6   | SE5   | SE3   | NW1   | NW7   | N11   | NNE17 | N12  | N11   | NNW10 | N8              | NNE2.5        | NNE17         |
| 17-Feb   | NNE4                          | NNE8  | N7    | N5                             | NW5   | NNW5  | NE6   | NE7   | NNE7  | NNE8 | NNE8  | N7    | NNW9  | N10   | N12   | N12   | N13   | NNE13 | N11   | N13   | N11  | NNW7  | NW5   | NW3             | N7.7          | NNE13         |
| 18-Feb   | WNW4                          | NNW4  | NW3   | NW4                            | NW4   | NW4   | NW3   | NNW3  | NW2   | WNW5 | WNW6  | WNW7  | W8    | NW8   | WNW8  | WSW10 | W9    | WNW6  | NW2   | NW3   | NW3  | N1    | NNW1  | NW1             | WNW4.2        | WSW10         |
| 19-Feb   | NW2                           | NW2   | NW3   | NNW2                           | NW3   | NW2   | NW3   | NW3   | NNW2  | NW3  | WNW3  | NW3   | WNW4  | WNW5  | NW5   | NW9   | NW8   | NW6   | WNW4  | NW3   | NW4  | NW6   | NW4   | NNW6            | NW3.9         | NW9           |
| 20-Feb   | NNW6                          | N4  | NNW4  | WNW5                           | N4    | NNE2  | ENE1  | SE2   | ESE3  | NNE1 | SE3   | ESE1  | WSW5  | WSW5  | WSW5  | NNW6  | N12   | NNW6  | WNW4  | NNW2  | NW5  | NW5   | NW5   | NW5             | NW2.5         | N12           |
| 21-Feb   | WNW4                          | NNW8  | N11   | N9                             | N7    | NW5   | WNW7  | NNW5  | NW3   | NW7  | NW8   | NW9   | NW10  | NNW11 | N11   | N14   | NNW11 | N6    | N4    | WNW3  | NNW3 | N1    | N1    | ESE1            | NNW6.1        | N14           |
| 22-Feb   | ESE1                          | ESE1  | ESE2  | ESE2                           | NE1   | ESE2  | E1    | ESE2  | SE6   | SE7  | SE8   | SE7   | W3    | W11   | WSW10 | WSW10 | WSW9  | WNW6  | NW2   | NNW3  | NE0  | E1    | NNW2  | E1              | SSW1.4        | W11           |
| 23-Feb   | NNE1                          | WNW3  | NNE1  | NW2                            | NNW2  | NW3   | E1    | ENE0  | UO    | SE1  | SE7   | SE4   | WSW2  | WNW6  | WNW4  | SE5   | SE8   | SE5   | ENE1  | ESE1  | E1   | NE1   | NNW1  | SE6             | SE0.7         | SE8           |
| 24-Feb   | SE10                          | SE11  | SSE11 | SSE13                          | SE15  | SE14  | SE13  | SE16  | SE17  | SE16 | SE18  | SE17  | SSE12 | S11   | S12   | SSE13 | SSE15 | SSE10 | S12   | S10   | S10  | S10   | SSE8  | SSE7            | SSE12.2       | SE18          |
| 25-Feb   | SE7                           | SE12  | SE12  | SE12                           | SE13  | SE11  | SE7   | SE7   | SE7   | SW4  | W10   | WSW16 | W12   | WSW10 | NE1   | ESE3  | ESE8  | SE3   | SSE1  | ESE2  | ESE2 | ENE2  | ESE2  | ESE5            | SSE4.0        | WSW16         |
| 26-Feb   | ESE5                          | ESE4  | ESE5  | ESE6                           | NW3   | WNW3  | NW3   | WNW4  | NW4   | N3   | N5    | ENE4  | ESE8  | E9    | ESE7  | ESE9  | ESE10 | ENE6  | NNE4  | N6    | N5   | N7    | N6    | N8              | ENE2.9        | ESE10         |
| 27-Feb   | N6                            | NNW5  | NNW5  | NNW7                           | NNW10 | NNW12 | NNW13 | NNW13 | NNW11 | N13  | N13   | N14   | N14   | N12   | N15   | NNE13 | NNE17 | NNE15 | NNE13 | N10   | N7   | NNW6  | WNW8  | WNW5            | N10.1         | NNE17         |
| 28-Feb   | WNW3                          | NNW2  | NW3   | NNW3                           | NW3   | NW1   | NNW2  | NNW1  | NW1   | NW2  | WNW5  | W9    | W10   | WSW11 | W9    | W7    | W8    | W7    | WNW2  | NE1   | NE1  | UO    | UO    | SE3             | W3.5          | WSW11         |
| WNW0.7 NW0.5 NW0.2WSW0.5 W2.0WNW1.7WNW1.8/NW1.0 N0.8NNW1.2NNW1.0 NW1.1 NW2.0 NW2.3NNW1.4NNW1.6 N1.7 N2.6NNW2.6 N2.6 N2.5 N2.5 N1.5NNW1.9NNW1.0 |                               |   |       |                                |       |       |       |       |       |      |       |       |       |       |       |       |       |       |       |       |      |       |       | Diurnal Average |               |               |
| WNW22WNW21 SE19 W18 W18WNW26 W20 W16 SE17 N28 N26 N24 N27 N28 W24 SE32 SE31 SE30 SE29 SE32 SE30 SE29 SE26 SE24                                 |                               |   |       |                                |       |       |       |       |       |      |       |       |       |       |       |       |       |       |       |       |      |       |       | Diurnal Maximum |               |               |
| UO - Unstable Operation  |                               |   |       |                                |       |       |       |       |       |      |       |       |       |       |       |       |       |       |       |       |      |       |       |                 |               |               |
| All monthly, daily, and diurnal averages have been calculated using vector methods   |                               |   |       |                                |       |       |       |       |       |      |       |       |       |       |       |       |       |       |       |       |      |       |       |                 |               |               |



**Wood Buffalo Environmental Association**  
**Summary of Hour Standard Deviations**

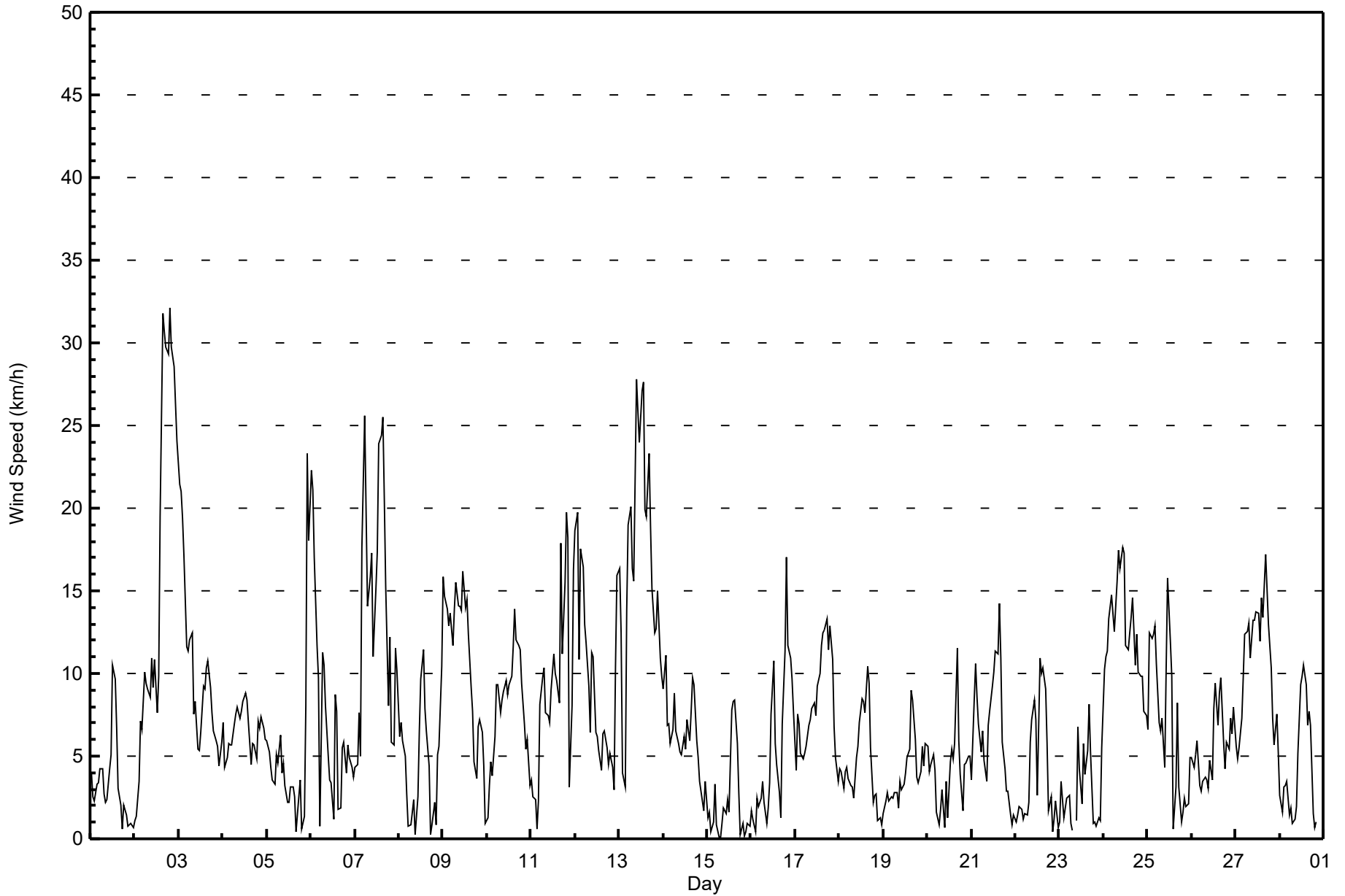
**Wind Speed (WS) - km/h**  
**Lower Camp - February 2023**

| Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0<br>Maximum Value: 8 km/h on Feb 6 03:00<br>Minimum Value: 1 km/h on Feb 19 08:00<br>Percentiles: P <sub>1</sub> = 1 P <sub>10</sub> = 1 Q <sub>1</sub> = 1 Median = 2 Q <sub>3</sub> = 3 P <sub>90</sub> = 4 P <sub>99</sub> = 6 |                               |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    | Hours in Service: 672<br>Hours of Data: 669<br>Hours of Missing Data: 3<br>Hours of Calibration: 0<br>Percent Operational Time: 99.6 |    |    |    |    |    |    |    |               |  |
|--|-------------------------------|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|--|----|----|----|----|----|----|----|---------------|--|
| Day  | Hourly Period Ending At (MST) |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |  |    |    |    |    |    |    |    | Daily Maximum |  |
|  | 1                             | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9  | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17   | 18 | 19 | 20 | 21 | 22 | 23 | 24 |               |  |
| 1-Feb  | 1                             | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1  | 1  | 1  | 2  | 3  | 3  | 2  | 2  | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 3             |  |
| 2-Feb  | 1                             | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2  | 2  | 2  | 2  | 2  | 1  | 7  | 5  | 5  | 5  | 5  | 5  | 5  | 5  | 4  | 4  | 7             |  |
| 3-Feb  | 4                             | 4 | 4 | 4 | 5 | 3 | 2 | 2 | 3  | 2  | 1  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 1  | 1  | 1  | 3  | 5             |  |
| 4-Feb  | 2                             | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2  | 1  | 2  | 2  | 2  | 2  | 2  | 2  | 1  | 2  | 1  | 1  | 2  | 1  | 1  | 1  | 2             |  |
| 5-Feb  | 1                             | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2  | 2  | 3  | 1  | 1  | 2  | 3  | 3  | 1  | 2  | 1  | 2  | 1  | 4  | 5  | 4  | 5             |  |
| 6-Feb  | 6                             | 5 | 8 | 3 | 2 | 3 | 4 | 3 | 4  | 3  | 1  | 1  | 1  | 1  | 2  | 1  | 1  | 2  | 2  | 1  | 1  | 2  | 1  | 1  | 8             |  |
| 7-Feb  | 1                             | 2 | 3 | 5 | 5 | 6 | 5 | 3 | 3  | 3  | 3  | 3  | 4  | 6  | 6  | 5  | 4  | 3  | 2  | 3  | 3  | 2  | 4  | 2  | 6             |  |
| 8-Feb  | 3                             | 2 | 1 | 2 | 2 | 1 | 1 | 1 | 1  | 1  | 2  | 3  | 1  | 1  | 2  | 1  | 2  | 1  | 1  | 1  | 1  | 4  | 2  | 5  | 5             |  |
| 9-Feb  | 2                             | 3 | 2 | 3 | 2 | 3 | 3 | 3 | 2  | 2  | 3  | 2  | 2  | 2  | 3  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 1  | 3             |  |
| 10-Feb   | 1                             | 2 | 1 | 1 | 3 | 2 | 2 | 2 | 1  | 1  | 2  | 1  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 1  | 1  | 1  | 3             |  |
| 11-Feb   | 1                             | 1 | 1 | 1 | 2 | 2 | 2 | 1 | 2  | 1  | 2  | 2  | 1  | 1  | 2  | 5  | 4  | 3  | 4  | 6  | 5  | 3  | 5  | 3  | 6             |  |
| 12-Feb   | 4                             | 4 | 3 | 3 | 3 | 3 | 4 | 4 | 2  | 2  | 3  | 1  | 1  | 1  | 1  | 1  | 2  | 2  | 2  | 1  | 1  | 2  | 7  | 4  | 7             |  |
| 13-Feb   | 4                             | 4 | 3 | 2 | 6 | 5 | 5 | 3 | 5  | 6  | 6  | 6  | 7  | 6  | 6  | 5  | 6  | 4  | 4  | 3  | 3  | 4  | 3  | 2  | 7             |  |
| 14-Feb   | 3                             | 3 | 2 | 1 | 1 | 1 | 2 | 2 | 1  | 1  | 2  | 1  | 1  | 1  | 1  | 2  | 2  | 2  | 2  | 1  | 1  | 1  | 1  | 2  | 3             |  |
| 15-Feb   | 1                             | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1  | 1  | 1  | 1  | 1  | 1  | 2  | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 2             |  |
| 16-Feb   | 1                             | 1 | 1 | 2 | 1 | 2 | 2 | 1 | 1  | 1  | 1  | 2  | 2  | 1  | 2  | 2  | 2  | 3  | 4  | 3  | 3  | 3  | 2  | 2  | 4             |  |
| 17-Feb   | 1                             | 1 | 1 | 2 | 1 | 1 | 1 | 2 | 2  | 1  | 2  | 2  | 2  | 2  | 2  | 3  | 3  | 2  | 2  | 3  | 3  | 2  | 1  | 1  | 3             |  |
| 18-Feb   | 1                             | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1  | 1  | 1  | 1  | 2  | 2  | 1  | 1  | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 2             |  |
| 19-Feb   | 1                             | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1  | 2  | 1  | 1  | 1  | 1  | 2  | 1  | 1  | 2  | 1  | 2  | 1  | 1  | 1  | 2  | 2             |  |
| 20-Feb   | 1                             | 1 | 1 | 2 | 1 | 2 | 1 | 1 | 1  | 1  | 2  | 1  | 2  | 1  | 1  | 3  | 2  | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 3             |  |
| 21-Feb   | 3                             | 2 | 2 | 2 | 2 | 1 | 1 | 2 | 1  | 2  | 2  | 2  | 3  | 3  | 3  | 4  | 3  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 4             |  |
| 22-Feb   | 1                             | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 2  | 1  | 1  | 2  | 3  | 3  | 2  | 1  | 2  | 1  | 2  | 1  | 1  | 1  | 1  | 1  | 3             |  |
| 23-Feb   | 1                             | 1 | 1 | 1 | 1 | 1 | 1 | 1 | UO | 2  | 1  | 2  | 2  | 1  | 1  | 4  | 2  | 1  | 1  | 1  | 1  | 1  | 2  | 2  | 4             |  |
| 24-Feb   | 3                             | 2 | 4 | 3 | 3 | 2 | 2 | 2 | 2  | 2  | 2  | 4  | 4  | 4  | 5  | 4  | 5  | 3  | 5  | 4  | 3  | 3  | 3  | 3  | 5             |  |
| 25-Feb   | 2                             | 2 | 2 | 2 | 3 | 4 | 2 | 3 | 3  | 2  | 3  | 3  | 3  | 3  | 2  | 2  | 4  | 2  | 2  | 1  | 1  | 1  | 1  | 2  | 4             |  |
| 26-Feb   | 1                             | 2 | 2 | 3 | 1 | 1 | 1 | 1 | 1  | 1  | 2  | 2  | 2  | 2  | 2  | 2  | 4  | 2  | 1  | 1  | 2  | 1  | 1  | 1  | 4             |  |
| 27-Feb   | 1                             | 1 | 1 | 1 | 2 | 3 | 3 | 3 | 2  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 4  | 2  | 2  | 2  | 1  | 1  | 1  | 4             |  |
| 28-Feb   | 1                             | 1 | 2 | 1 | 1 | 2 | 1 | 1 | 1  | 1  | 1  | 2  | 1  | 2  | 1  | 1  | 1  | 2  | 1  | 1  | 1  | UO | UO | 1  | 2             |  |
|  |                               |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    | Diurnal Maximum  |    |    |    |    |    |    |    |               |  |
| UO - Unstable Operation  |                               |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |  |    |    |    |    |    |    |    |               |  |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Wind Speed (WS) - km/h**  
**Lower Camp - February 2023**







**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Wind Speed (WS) - km/h  
Lower Camp - February 2023**

| <b>Wind Speed Ranges (km/h)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---------------------------------|------------------------|----------|---------------------|
| 0 - 5                           | 291                    | 43.50    | 43.50               |
| 6 - 11                          | 247                    | 36.92    | 80.42               |
| 12 - 19                         | 100                    | 14.95    | 95.37               |
| 20 - 28                         | 24                     | 3.59     | 98.95               |
| 29 - 38                         | 7                      | 1.05     | 100.00              |
| > 38                            | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 669

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Wind Speed (WS) - km/h  
Lower Camp - February 2023**

| <b>Wind Speed<br/>Ranges (km/h)</b> | <b>Wind Direction</b> |     |    |     |   |     |     |     |   |     |    |     |    |     |     |     | <b>Totals</b> |
|-------------------------------------|-----------------------|-----|----|-----|---|-----|-----|-----|---|-----|----|-----|----|-----|-----|-----|---------------|
|                                     | N                     | NNE | NE | ENE | E | ESE | SE  | SSE | S | SSW | SW | WSW | W  | WNW | NW  | NNW |               |
| 0 - 5                               | 25                    | 13  | 9  | 10  | 8 | 24  | 25  | 4   | 2 | 0   | 2  | 6   | 3  | 34  | 70  | 56  | 291           |
| 6 - 11                              | 40                    | 14  | 3  | 1   | 1 | 8   | 54  | 9   | 4 | 0   | 1  | 8   | 20 | 12  | 31  | 41  | 247           |
| 12 - 19                             | 18                    | 7   | 0  | 0   | 0 | 0   | 27  | 12  | 2 | 0   | 0  | 4   | 17 | 2   | 6   | 5   | 100           |
| 20 - 28                             | 6                     | 0   | 0  | 0   | 0 | 0   | 5   | 0   | 0 | 0   | 0  | 0   | 3  | 9   | 0   | 1   | 24            |
| 29 - 38                             | 0                     | 0   | 0  | 0   | 0 | 0   | 7   | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0   | 0   | 7             |
| > 38                                | 0                     | 0   | 0  | 0   | 0 | 0   | 0   | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0   | 0   | 0             |
| <b>Totals</b>                       | 89                    | 34  | 12 | 11  | 9 | 32  | 118 | 25  | 8 | 0   | 3  | 18  | 43 | 57  | 107 | 103 | 669           |

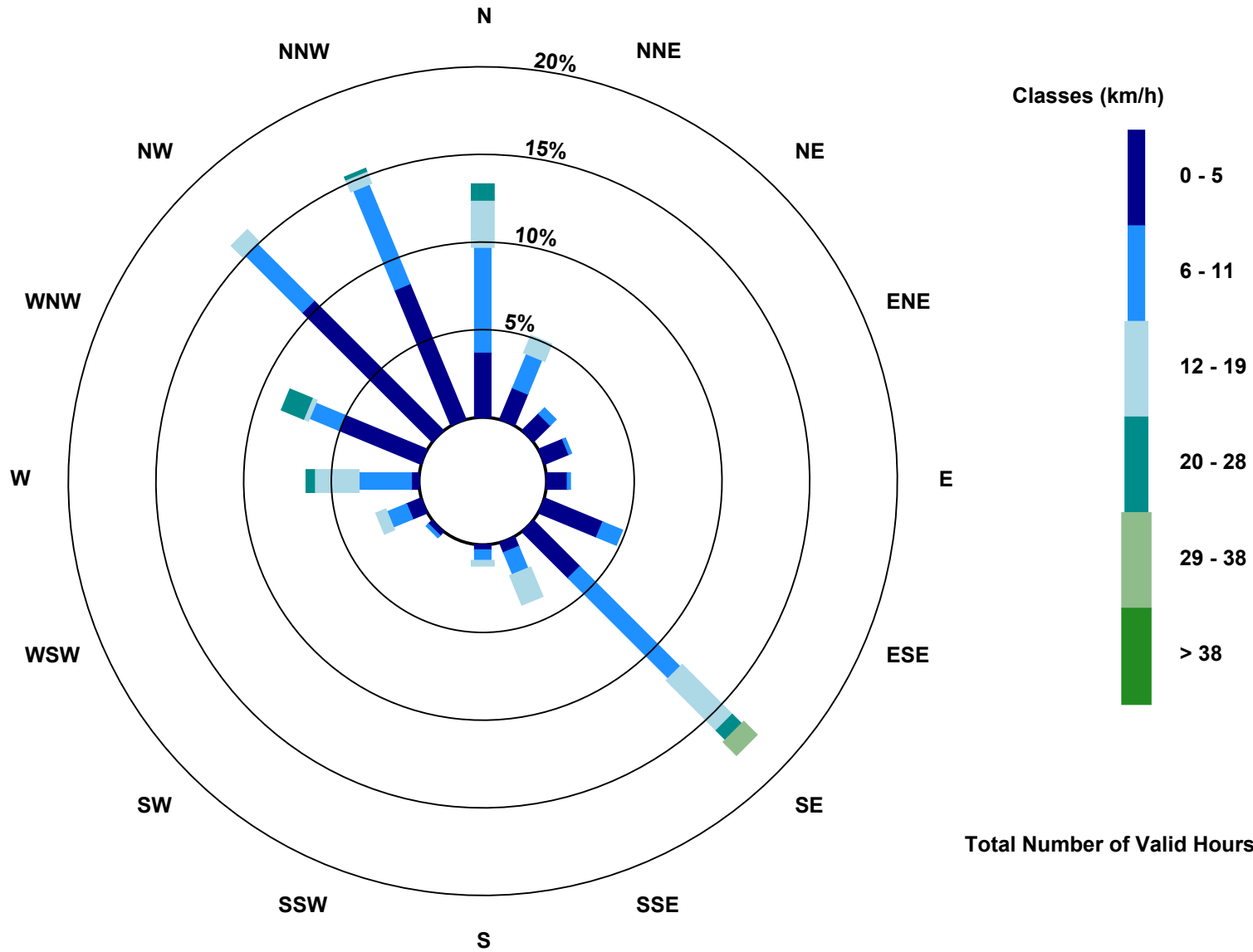
Total Number of Valid Hours: 669

Total Number of Hours: 672



Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Wind Speed (WS) - km/h  
Lower Camp



Total Number of Valid Hours: 669



**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

**Wind Direction (WD) - deg**  
**Lower Camp - February 2023**

|  |                                |
|--|--------------------------------|
| Direction of Maximum Speed: 139 deg on Feb 2 20:00           | Hours in Service: 672          |
| Direction of Maximum Daily Speed Average: 139.7 deg on Feb 2 | Hours of Data: 669             |
| Direction of Minimum Speed: 248 deg on Feb 15 08:00          | Hours of Missing Data: 3       |
| Direction of Minimum Daily Speed Average: 0.7 deg on Feb 23  | Percent Operational Time: 99.6 |
| Monthly Average Direction: 328.0 deg                         |                                |

| Day   | Hourly Period Ending At (MST) |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Daily Average |
|---|-------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---------------|
|   | 1                             | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19  | 20  | 21  | 22  | 23  | 24  |               |
| 1-Feb   | 299                           | 341 | 309 | 305 | 306 | 311 | 301 | 308 | 328 | 320 | 308 | 318 | 304 | 349 | 301 | 304 | 229 | 331 | 323 | 338 | 20  | 61  | 31  | 69  | 315.5         |
| 2-Feb   | 122                           | 114 | 141 | 143 | 148 | 145 | 144 | 145 | 145 | 145 | 143 | 143 | 151 | 143 | 131 | 138 | 138 | 136 | 140 | 139 | 140 | 138 | 139 | 140 | 139.7         |
| 3-Feb   | 141                           | 143 | 142 | 144 | 156 | 154 | 144 | 146 | 135 | 135 | 138 | 353 | 330 | 344 | 6   | 4   | 31  | 22  | 32  | 17  | 353 | 15  | 12  | 351 | 106.0         |
| 4-Feb   | 3                             | 357 | 323 | 335 | 337 | 330 | 316 | 325 | 339 | 351 | 349 | 357 | 6   | 351 | 11  | 329 | 310 | 347 | 339 | 324 | 326 | 322 | 320 | 326 | 339.0         |
| 5-Feb   | 326                           | 334 | 318 | 342 | 341 | 353 | 324 | 322 | 356 | 311 | 288 | 321 | 127 | 336 | 109 | 78  | 351 | 285 | 299 | 173 | 341 | 297 | 302 | 314 | 319.0         |
| 6-Feb   | 297                           | 286 | 278 | 263 | 265 | 14  | 271 | 269 | 279 | 288 | 262 | 292 | 160 | 141 | 135 | 99  | 352 | 332 | 333 | 332 | 330 | 330 | 295 | 341 | 286.4         |
| 7-Feb   | 325                           | 149 | 137 | 144 | 267 | 291 | 299 | 287 | 271 | 264 | 269 | 266 | 277 | 277 | 275 | 283 | 282 | 271 | 284 | 278 | 306 | 274 | 339 | 343 | 280.8         |
| 8-Feb   | 331                           | 326 | 293 | 300 | 341 | 4   | 340 | 326 | 307 | 282 | 129 | 139 | 137 | 142 | 146 | 141 | 142 | 182 | 307 | 304 | 348 | 128 | 119 | 134 | 136.6         |
| 9-Feb   | 141                           | 145 | 146 | 146 | 147 | 148 | 146 | 146 | 146 | 145 | 149 | 145 | 141 | 144 | 146 | 137 | 141 | 141 | 144 | 141 | 144 | 158 | 150 | 285 | 145.2         |
| 10-Feb  | 35                            | 320 | 298 | 329 | 314 | 341 | 342 | 330 | 319 | 317 | 322 | 332 | 336 | 333 | 320 | 317 | 320 | 316 | 319 | 343 | 344 | 344 | 326 | 329 | 326.7         |
| 11-Feb  | 319                           | 340 | 5   | 44  | 131 | 137 | 139 | 142 | 142 | 138 | 144 | 143 | 140 | 143 | 148 | 219 | 257 | 271 | 281 | 294 | 310 | 255 | 255 | 278 | 225.4         |
| 12-Feb  | 275                           | 283 | 304 | 263 | 257 | 255 | 267 | 278 | 328 | 265 | 256 | 262 | 337 | 333 | 330 | 340 | 346 | 350 | 340 | 334 | 328 | 350 | 134 | 140 | 282.5         |
| 13-Feb  | 156                           | 156 | 121 | 326 | 278 | 270 | 272 | 278 | 352 | 10  | 3   | 3   | 0   | 5   | 348 | 346 | 2   | 10  | 5   | 3   | 7   | 22  | 4   | 346 | 351.0         |
| 14-Feb  | 344                           | 354 | 314 | 312 | 325 | 352 | 11  | 22  | 20  | 341 | 1   | 0   | 336 | 8   | 3   | 3   | 35  | 25  | 5   | 336 | 340 | 272 | 8   | 300 | 354.8         |
| 15-Feb  | 12                            | 325 | 76  | 304 | 323 | 339 | 11  | 248 | 79  | 349 | 3   | 47  | 100 | 113 | 127 | 138 | 141 | 127 | 109 | 78  | 331 | 311 | 337 | 140 | 106.8         |
| 16-Feb  | 353                           | 20  | 14  | 111 | 134 | 350 | 328 | 322 | 332 | 130 | 137 | 139 | 144 | 140 | 136 | 133 | 307 | 323 | 354 | 26  | 1   | 3   | 348 | 3   | 24.0          |
| 17-Feb  | 28                            | 31  | 11  | 10  | 324 | 331 | 36  | 41  | 22  | 29  | 19  | 360 | 342 | 350 | 4   | 360 | 4   | 14  | 7   | 7   | 3   | 328 | 310 | 311 | 4.2           |
| 18-Feb  | 301                           | 337 | 316 | 319 | 315 | 308 | 323 | 328 | 325 | 301 | 302 | 282 | 275 | 315 | 299 | 257 | 262 | 286 | 315 | 323 | 315 | 6   | 342 | 319 | 298.2         |
| 19-Feb  | 305                           | 322 | 318 | 333 | 315 | 311 | 316 | 314 | 339 | 317 | 286 | 304 | 299 | 290 | 321 | 318 | 322 | 311 | 290 | 316 | 317 | 319 | 313 | 331 | 314.1         |
| 20-Feb  | 344                           | 7   | 337 | 302 | 350 | 17  | 59  | 137 | 113 | 22  | 127 | 108 | 247 | 254 | 251 | 332 | 11  | 338 | 299 | 334 | 308 | 308 | 309 | 309 | 325.8         |
| 21-Feb  | 292                           | 334 | 6   | 4   | 1   | 308 | 297 | 328 | 314 | 308 | 326 | 324 | 324 | 340 | 350 | 356 | 346 | 6   | 350 | 295 | 331 | 10  | 1   | 118 | 338.5         |
| 22-Feb  | 118                           | 123 | 120 | 110 | 53  | 108 | 93  | 110 | 134 | 140 | 141 | 137 | 266 | 259 | 255 | 251 | 247 | 298 | 305 | 338 | 42  | 93  | 330 | 95  | 211.6         |
| 23-Feb  | 31                            | 298 | 22  | 318 | 333 | 310 | 79  | 70  | UO  | 139 | 139 | 144 | 254 | 294 | 293 | 135 | 144 | 140 | 57  | 102 | 93  | 38  | 297 | 137 | 143.9         |
| 24-Feb  | 145                           | 145 | 148 | 147 | 145 | 140 | 142 | 145 | 142 | 143 | 139 | 139 | 155 | 173 | 176 | 164 | 165 | 167 | 181 | 177 | 174 | 169 | 163 | 166 | 154.4         |
| 25-Feb  | 146                           | 142 | 144 | 140 | 134 | 131 | 132 | 134 | 142 | 233 | 259 | 255 | 265 | 248 | 39  | 121 | 120 | 127 | 157 | 104 | 102 | 73  | 109 | 121 | 159.8         |
| 26-Feb  | 117                           | 114 | 123 | 116 | 319 | 300 | 311 | 303 | 313 | 351 | 7   | 60  | 104 | 91  | 113 | 121 | 118 | 78  | 25  | 8   | 1   | 11  | 8   | 7   | 59.8          |
| 27-Feb  | 2                             | 347 | 343 | 336 | 329 | 342 | 344 | 348 | 345 | 355 | 353 | 358 | 355 | 352 | 3   | 16  | 25  | 16  | 17  | 9   | 6   | 341 | 302 | 293 | 355.2         |
| 28-Feb  | 298                           | 327 | 326 | 334 | 318 | 326 | 343 | 336 | 307 | 315 | 293 | 263 | 260 | 256 | 259 | 277 | 275 | 275 | 286 | 52  | 50  | UO  | UO  | 126 | 280.1         |
| 298.9 318.7 313.9 245.4 275.6 289.0 293.8 285.1 355.1 333.5 329.3 323.3 314.7 323.4 326.8 330.3 349.1 350.9 344.1 352.1 352.3 1.5 329.2 339.6 |                               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |               |
| Diurnal Average   |                               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |               |

UO - Unstable Operation  
 All monthly, daily, and diurnal averages have been calculated using vector methods



**Wood Buffalo Environmental Association**  
**Summary of Hour Standard Deviations**

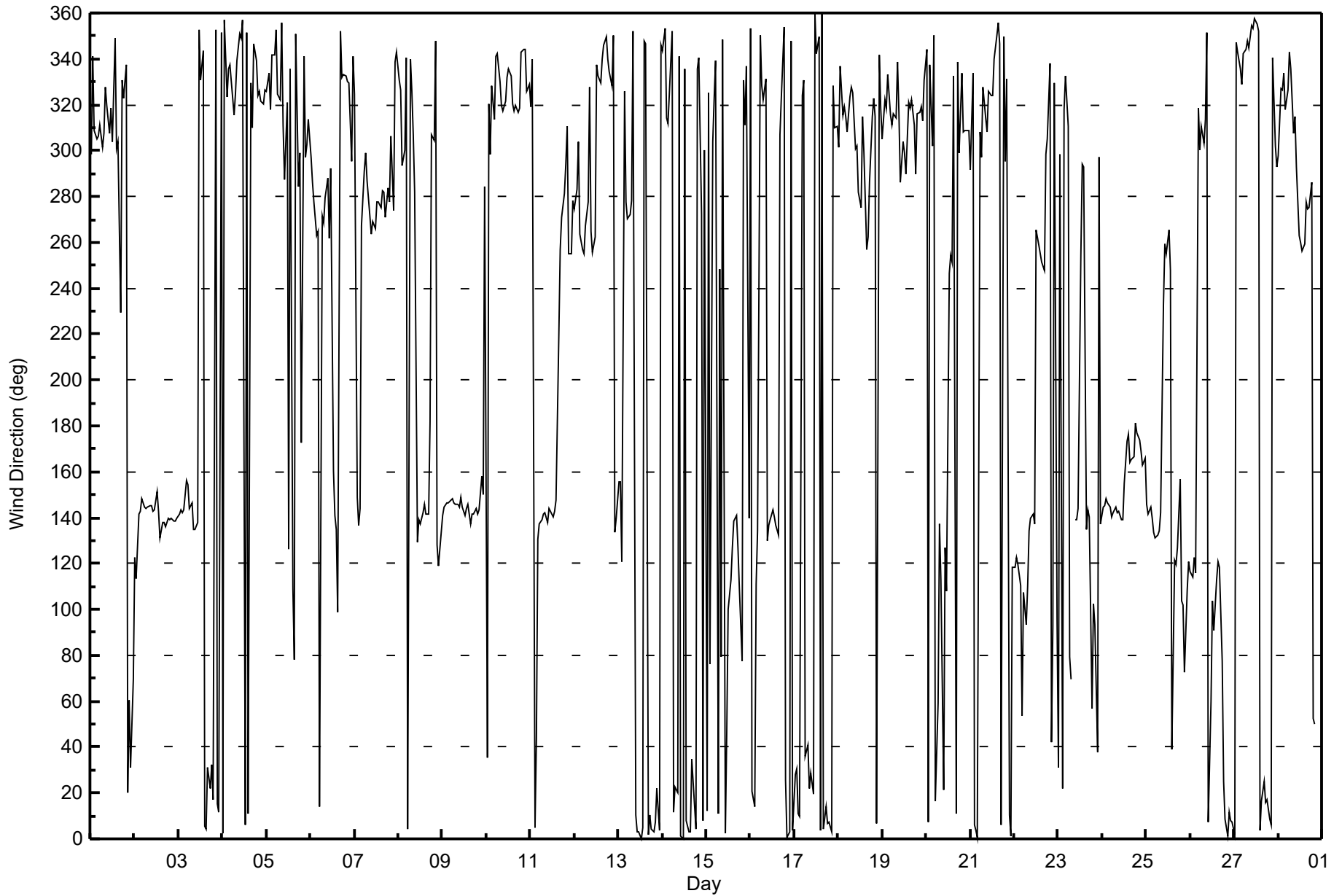
**Wind Direction (WD) - deg**  
**Lower Camp - February 2023**

| Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0<br>Maximum Value: 97 deg on Feb 25 15:00<br>Minimum Value: 5 deg on Feb 24 09:00<br>Percentiles: P <sub>1</sub> = 6 P <sub>10</sub> = 10 Q <sub>1</sub> = 13 Median = 20 Q <sub>3</sub> = 37 P <sub>90</sub> = 61 P <sub>99</sub> = 93 |                               |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    | Hours in Service: 672<br>Hours of Data: 669<br>Hours of Missing Data: 3<br>Hours of Calibration: 0<br>Percent Operational Time: 99.6 |    |    |    |    |    |               |  |  |  |
|--|-------------------------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|--|----|----|----|----|----|---------------|--|--|--|
| Day  | Hourly Period Ending At (MST) |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |  |    |    |    |    |    | Daily Maximum |  |  |  |
|  | 1                             | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19   | 20 | 21 | 22 | 23 | 24 |               |  |  |  |
| 1-Feb  | 34                            | 39 | 49 | 44 | 24 | 23 | 20 | 42 | 44 | 29 | 16 | 35 | 16 | 22 | 26 | 47 | 72 | 58 | 57   | 54 | 55 | 68 | 57 | 76 | 76            |  |  |  |
| 2-Feb  | 44                            | 60 | 30 | 14 | 15 | 10 | 11 | 10 | 12 | 10 | 10 | 8  | 17 | 9  | 13 | 7  | 7  | 7  | 8  | 7  | 8  | 8  | 8  | 8  | 60            |  |  |  |
| 3-Feb  | 10                            | 10 | 12 | 12 | 25 | 21 | 9  | 8  | 16 | 11 | 11 | 45 | 27 | 19 | 20 | 16 | 16 | 15 | 21   | 29 | 20 | 14 | 24 | 31 | 45            |  |  |  |
| 4-Feb  | 17                            | 22 | 12 | 18 | 15 | 19 | 10 | 15 | 17 | 18 | 19 | 18 | 18 | 21 | 19 | 33 | 13 | 18 | 21   | 10 | 22 | 11 | 18 | 21 | 33            |  |  |  |
| 5-Feb  | 13                            | 20 | 25 | 30 | 27 | 24 | 31 | 12 | 45 | 26 | 94 | 65 | 71 | 56 | 78 | 68 | 91 | 49 | 47   | 84 | 84 | 46 | 19 | 13 | 94            |  |  |  |
| 6-Feb  | 13                            | 13 | 14 | 14 | 13 | 78 | 25 | 19 | 58 | 38 | 27 | 28 | 80 | 7  | 13 | 54 | 64 | 40 | 29   | 23 | 18 | 25 | 13 | 34 | 80            |  |  |  |
| 7-Feb  | 36                            | 57 | 14 | 69 | 13 | 18 | 13 | 13 | 12 | 11 | 13 | 12 | 13 | 12 | 11 | 11 | 12 | 21 | 18   | 28 | 42 | 30 | 18 | 69 |               |  |  |  |
| 8-Feb  | 36                            | 20 | 10 | 32 | 38 | 87 | 42 | 39 | 22 | 76 | 46 | 9  | 6  | 6  | 9  | 11 | 42 | 95 | 86   | 46 | 87 | 71 | 24 | 36 | 95            |  |  |  |
| 9-Feb  | 7                             | 9  | 10 | 12 | 11 | 13 | 11 | 10 | 10 | 7  | 12 | 7  | 6  | 6  | 9  | 9  | 9  | 13 | 46   | 7  | 12 | 18 | 48 | 77 | 77            |  |  |  |
| 10-Feb   | 55                            | 47 | 30 | 26 | 12 | 23 | 17 | 14 | 9  | 11 | 13 | 12 | 15 | 14 | 10 | 8  | 8  | 8  | 9  | 21 | 20 | 22 | 17 | 40 | 55            |  |  |  |
| 11-Feb   | 30                            | 31 | 45 | 77 | 30 | 13 | 9  | 8  | 7  | 9  | 8  | 9  | 6  | 7  | 10 | 43 | 14 | 13 | 11   | 13 | 13 | 59 | 32 | 13 | 77            |  |  |  |
| 12-Feb   | 13                            | 15 | 18 | 11 | 12 | 20 | 19 | 36 | 26 | 22 | 8  | 18 | 25 | 23 | 22 | 15 | 15 | 20 | 26   | 20 | 24 | 70 | 24 | 18 | 70            |  |  |  |
| 13-Feb   | 18                            | 18 | 67 | 65 | 38 | 13 | 13 | 12 | 34 | 15 | 18 | 19 | 19 | 18 | 20 | 20 | 19 | 16 | 17   | 16 | 21 | 20 | 22 | 19 | 67            |  |  |  |
| 14-Feb   | 22                            | 20 | 25 | 14 | 15 | 20 | 13 | 16 | 21 | 22 | 25 | 23 | 22 | 10 | 18 | 21 | 13 | 16 | 18   | 23 | 31 | 49 | 50 | 32 | 50            |  |  |  |
| 15-Feb   | 76                            | 58 | 87 | 85 | 14 | 76 | 74 | 95 | 68 | 41 | 48 | 21 | 73 | 15 | 20 | 11 | 12 | 44 | 76   | 60 | 83 | 79 | 76 | 88 | 95            |  |  |  |
| 16-Feb   | 64                            | 72 | 93 | 49 | 53 | 51 | 40 | 43 | 50 | 61 | 14 | 9  | 6  | 12 | 12 | 23 | 67 | 29 | 18   | 13 | 22 | 21 | 18 | 17 | 93            |  |  |  |
| 17-Feb   | 26                            | 15 | 15 | 22 | 21 | 23 | 21 | 15 | 19 | 11 | 14 | 27 | 18 | 18 | 17 | 15 | 16 | 12 | 15   | 14 | 17 | 21 | 15 | 20 | 27            |  |  |  |
| 18-Feb   | 16                            | 18 | 38 | 26 | 28 | 19 | 23 | 43 | 43 | 14 | 17 | 18 | 20 | 22 | 29 | 9  | 10 | 21 | 47   | 26 | 34 | 48 | 45 | 64 | 64            |  |  |  |
| 19-Feb   | 32                            | 22 | 17 | 30 | 19 | 27 | 15 | 13 | 42 | 37 | 28 | 35 | 21 | 18 | 34 | 9  | 10 | 11 | 16   | 24 | 18 | 16 | 23 | 20 | 42            |  |  |  |
| 20-Feb   | 18                            | 20 | 22 | 28 | 24 | 61 | 76 | 41 | 30 | 84 | 37 | 78 | 49 | 24 | 20 | 47 | 10 | 22 | 29   | 51 | 18 | 19 | 21 | 19 | 84            |  |  |  |
| 21-Feb   | 66                            | 18 | 14 | 15 | 20 | 20 | 15 | 39 | 38 | 14 | 24 | 22 | 28 | 22 | 22 | 19 | 19 | 16 | 21   | 39 | 35 | 50 | 63 | 45 | 66            |  |  |  |
| 22-Feb   | 49                            | 17 | 43 | 41 | 36 | 25 | 36 | 40 | 20 | 5  | 6  | 9  | 96 | 18 | 14 | 10 | 14 | 23 | 76   | 42 | 94 | 41 | 50 | 63 | 96            |  |  |  |
| 23-Feb   | 34                            | 41 | 38 | 45 | 31 | 55 | 60 | 85 | UO | 93 | 6  | 50 | 82 | 27 | 36 | 46 | 8  | 15 | 74   | 30 | 70 | 58 | 91 | 12 | 93            |  |  |  |
| 24-Feb   | 13                            | 11 | 16 | 11 | 7  | 7  | 8  | 6  | 5  | 6  | 7  | 11 | 27 | 31 | 28 | 25 | 24 | 24 | 28   | 27 | 25 | 24 | 24 | 30 | 31            |  |  |  |
| 25-Feb   | 21                            | 10 | 8  | 7  | 6  | 15 | 22 | 34 | 38 | 57 | 20 | 13 | 16 | 22 | 97 | 75 | 17 | 40 | 96   | 73 | 53 | 46 | 41 | 23 | 97            |  |  |  |
| 26-Feb   | 21                            | 20 | 23 | 37 | 51 | 33 | 38 | 20 | 36 | 29 | 24 | 51 | 27 | 20 | 22 | 14 | 15 | 22 | 34   | 12 | 19 | 12 | 13 | 8  | 51            |  |  |  |
| 27-Feb   | 18                            | 19 | 15 | 13 | 11 | 17 | 18 | 18 | 18 | 18 | 19 | 16 | 19 | 20 | 16 | 19 | 10 | 10 | 9  | 12 | 15 | 21 | 10 | 15 | 21            |  |  |  |
| 28-Feb   | 31                            | 49 | 35 | 23 | 19 | 43 | 27 | 48 | 71 | 45 | 22 | 12 | 9  | 9  | 9  | 13 | 13 | 17 | 80   | 70 | 56 | UO | UO | 10 | 80            |  |  |  |
|  |                               |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    | Diurnal Maximum  |    |    |    |    |    |               |  |  |  |
| UO - Unstable Operation  |                               |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |  |    |    |    |    |    |               |  |  |  |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Wind Direction (WD) - deg**  
**Lower Camp - February 2023**





## WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY  
MONITORING PROGRAM  
MONTHLY REPORT

### **AMS13 FORT MCKAY SOUTH FEBRUARY 2023**

Operations, Data Collection,  
QA/QC, Data Validation and Reporting by:  
Wood Buffalo Environmental Association  
Fort McMurray, Alberta

March 31, 2023

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - FORT McKAY SOUTH (AMS13)  
FEBRUARY 2023

MONTHLY SUMMARY

| Parameter            | Hours of Data | Hours of Calibration | Hours without Data | Operational Time | Maximum 1-Hour Value | 1-Hour Exceedances | Maximum 24-Hour Value | 24-Hour Exceedances |
|----------------------|---------------|----------------------|--------------------|------------------|----------------------|--------------------|-----------------------|---------------------|
| SO2(ppb) Average     | 640           | 31                   | 32                 | 99.85            | 30                   | 0                  | 4.4                   | 0                   |
| TRS(ppb) Average     | 638           | 33                   | 34                 | 99.85            | 2.6                  | 0                  | 1.4                   | 0                   |
| THC(ppm) Average     | 637           | 31                   | 35                 | 99.4             | 4.5                  | -                  | 3                     | -                   |
| NMHC(ppm) Average    | 637           | 31                   | 35                 | 99.4             | 0.113                | -                  | 0.021                 | -                   |
| CH4(ppm) Average     | 637           | 31                   | 35                 | 99.4             | 4.5                  | -                  | 3                     | -                   |
| O3(ppb) Average      | 640           | 31                   | 32                 | 99.85            | 40.5                 | 0                  | 30.2                  | -                   |
| NO2(ppb) Average     | 638           | 33                   | 34                 | 99.85            | 37.6                 | 0                  | 27.2                  | -                   |
| NO(ppb) Average      | 638           | 33                   | 34                 | 99.85            | 183.5                | -                  | 45.2                  | -                   |
| NOX(ppb) Average     | 638           | 33                   | 34                 | 99.85            | 213                  | -                  | 72.4                  | -                   |
| PM2.5(ug/m3) Average | 670           | 1                    | 2                  | 99.85            | 23.8                 | 0                  | 11.8                  | 0                   |
| ET(C) Average        | 672           | 0                    | 0                  | 100              | 3.6                  | -                  | -1.6                  | -                   |
| RH(%) Average        | 672           | 0                    | 0                  | 100              | 95.3                 | -                  | 89                    | -                   |
| WS(km/h) Average     | 668           | 0                    | 4                  | 99.4             | 29                   | -                  | 14                    | -                   |
| WD(deg) Average      | 668           | 0                    | 4                  | 99.4             | -                    | -                  | -                     | -                   |

Note : Operational time includes periods of data collection and instrument calibration



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - FORT MCKAY SOUTH (AMS13)  
 FEBRUARY 2023

MONTHLY SUMMARY FOR AIR QUALITY/ METEOROLOGICAL MONITORING MEASUREMENTS

| Parameter                         | Number | Mean   | StnDev | Total | Percentile |       |       |        |      |      |       |
|-----------------------------------|--------|--------|--------|-------|------------|-------|-------|--------|------|------|-------|
|                                   |        |        |        |       | Min        | P10   | Q1    | Median | Q3   | P90  | Max   |
| SO2(ppb) Average                  | 640    | 1.2    | 2.1    | -     | 0.1        | 0.2   | 0.3   | 0.6    | 1.2  | 2.6  | 30    |
| TRS(ppb) Average                  | 638    | 0.79   | 0.4    | -     | 0.4        | 0.4   | 0.5   | 0.6    | 1    | 1.4  | 2.6   |
| THC(ppm) Average                  | 637    | 2.31   | 0.3    | -     | 2          | 2     | 2.1   | 2.2    | 2.4  | 2.7  | 4.5   |
| NMHC(ppm) Average                 | 637    | 0.002  | 0.011  | -     | 0          | 0     | 0     | 0      | 0    | 0    | 0.113 |
| CH4(ppm) Average                  | 637    | 2.31   | 0.3    | -     | 2          | 2     | 2.1   | 2.2    | 2.4  | 2.7  | 4.5   |
| O3(ppb) Average                   | 640    | 15.43  | 11.5   | -     | 0.6        | 1.1   | 3.5   | 15.5   | 24.8 | 30.6 | 40.5  |
| NO2(ppb) Average                  | 638    | 15.96  | 9.5    | -     | 0.3        | 3.9   | 8.1   | 14.7   | 24.2 | 29.2 | 37.6  |
| NO(ppb) Average                   | 638    | 14.99  | 29     | -     | 0          | 0     | 0.1   | 2.4    | 15.5 | 44.3 | 183.5 |
| NOX(ppb) Average                  | 638    | 30.95  | 35.5   | -     | 0.3        | 4.3   | 9     | 18.1   | 37.2 | 71.9 | 213   |
| PM2.5(ug/m3) Average              | 670    | 5.78   | 3.7    | -     | 0.4        | 2.1   | 3.3   | 5      | 7.2  | 10.2 | 23.8  |
| Temperature 2 m (C) Average       | 672    | -16.99 | 9.9    | -     | -39.5      | -31.9 | -23.8 | -16.5  | -9.3 | -5.5 | 3.6   |
| Relative Humidity (%) Average     | 672    | 75.26  | 10.1   | -     | 45.9       | 61.5  | 69.6  | 76.1   | 82.1 | 88   | 95.3  |
| Wind Speed 10 m (km/h) Average    | 668    | 6.1    | 5      | -     | 0          | 1     | 2     | 5      | 9    | 12   | 29    |
| Wind Direction 10 m (deg) Average | 668    | -      | -      | -     | -          | -     | -     | -      | -    | -    | -     |

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - FORT MCKAY SOUTH (AMS13)  
FEBRUARY 2023

OPERATIONAL NOTES

| Parameter                  | Period<br>Start   | Period<br>End     | Duration<br>(Hours) | Notes                                       |
|----------------------------|-------------------|-------------------|---------------------|---|
| NO2,O3, PM2.5, SO2, TRS    | 10 Feb 2023 16:00 | 10 Feb 2023 16:00 | 1                   | Station power failure                       |
| THC/NMHC/CH4               | 10 Feb 2023 16:00 | 10 Feb 2023 17:00 | 2                   | Station power failure                       |
| THC/NMHC/CH4               | 16 Feb 2023 11:00 | 16 Feb 2023 12:00 | 2                   | Maintenance - replaced support gas cylinder |
| Wind Speed, Wind Direction | 18 Feb 2023 01:00 | 18 Feb 2023 01:00 | 1                   | Flat line in sensor output signal           |
| Wind Speed, Wind Direction | 18 Feb 2023 08:00 | 18 Feb 2023 08:00 | 1                   | Flat line in sensor output signal           |
| Wind Speed, Wind Direction | 19 Feb 2023 03:00 | 19 Feb 2023 03:00 | 1                   | Flat line in sensor output signal           |
| Wind Speed, Wind Direction | 28 Feb 2023 19:00 | 28 Feb 2023 19:00 | 1                   | Flat line in sensor output signal           |

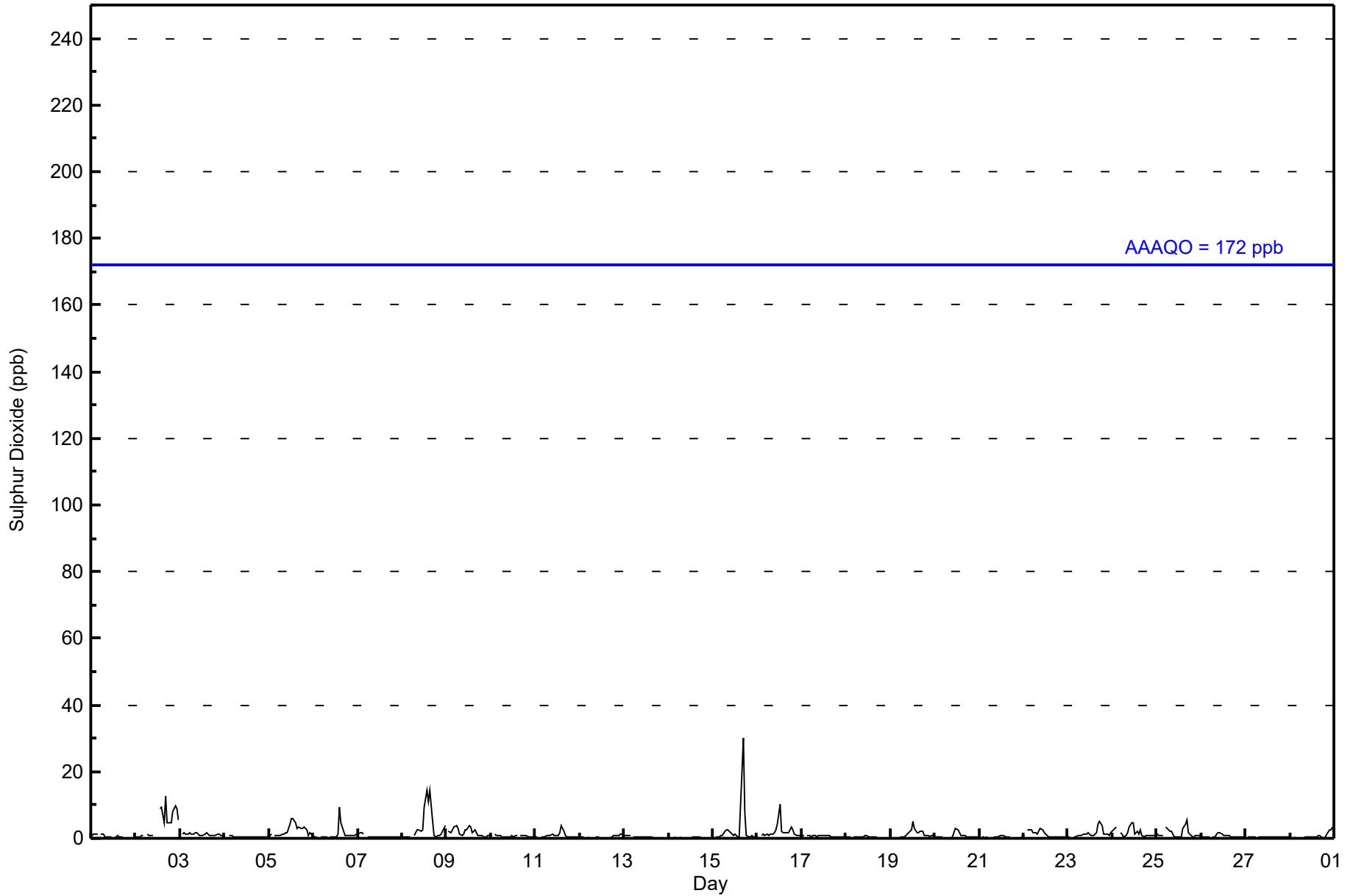


| Number of Exceedences (AAAQO):   |                               | 1-hr: 0   | 24-hr: 0 | Hours in Service: |     |     |     |     |     |     |     |     |      |      |      |      |      |     |                           |     | 672  |     |     |                 |               |               |
|--|-------------------------------|---|----------|-------------------|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|-----|---------------------------|-----|------|-----|-----|-----------------|---------------|---------------|
| Maximum Value: 30.0 ppb on Feb 15 17:00                                      |                               | Maximum Daily Average: 4.4 ppb on Feb 2   |          |                   |     |     |     |     |     |     |     |     |      |      |      |      |      |     | Hours of Data:            |     | 640  |     |     |                 |               |               |
| Minimum Value: 0.1 ppb on Feb 21 21:00                                       |                               | Minimum Daily Average: 0.2 ppb on Feb 14  |          |                   |     |     |     |     |     |     |     |     |      |      |      |      |      |     | Hours of Missing Data:    |     | 32   |     |     |                 |               |               |
| Maximum Diurnal Average: 2.8 ppb at hour 17                                  |                               | Minimum Diurnal Average: 0.7 ppb at hour 1  |          |                   |     |     |     |     |     |     |     |     |      |      |      |      |      |     | Hours of Calibration:     |     | 31   |     |     |                 |               |               |
| Monthly Average: 1.20 ppb  |                               | Percentiles: P <sub>1</sub> = 0.1 P <sub>10</sub> = 0.2 Q <sub>1</sub> = 0.3 Median = 0.6 Q <sub>3</sub> = 1.2 P <sub>90</sub> = 2.6 P <sub>99</sub> = 10.0 |          |                   |     |     |     |     |     |     |     |     |      |      |      |      |      |     | Percent Operational Time: |     | 99.9 |     |     |                 |               |               |
| Day  | Hourly Period Ending At (MST) |   |          |                   |     |     |     |     |     |     |     |     |      |      |      |      |      |     |                           |     |      |     |     |                 | Daily Average | Daily Maximum |
|  | 1                             | 2   | 3        | 4                 | 5   | 6   | 7   | 8   | 9   | 10  | 11  | 12  | 13   | 14   | 15   | 16   | 17   | 18  | 19                        | 20  | 21   | 22  | 23  | 24              |               |               |
| 1-Feb  | 1.0                           | 1.2   | 1.3      | 1.2               | Z   | 1.4 | 1.1 | 0.6 | 0.3 | 0.2 | 0.3 | 0.1 | 0.2  | 0.2  | 0.9  | 0.5  | 0.2  | 0.1 | 0.1                       | 0.1 | 0.1  | 0.1 | 0.1 | 0.1             | 0.5           | 1.4           |
| 2-Feb  | 0.2                           | 0.2   | 0.2      | 0.7               | 0.9 | Z   | 1.3 | 0.9 | 0.7 | 0.8 | C   | C   | C    | 9.0  | 9.4  | 4.6  | 12.7 | 4.7 | 4.8                       | 4.9 | 8.2  | 9.9 | 8.7 | 5.7             | 4.4           | 12.7          |
| 3-Feb  | Z                             | 1.4   | 1.6      | 1.2               | 1.3 | 1.7 | 1.1 | 1.2 | 1.5 | 1.6 | 1.0 | 0.8 | 0.9  | 1.3  | 1.9  | 1.4  | 1.0  | 0.9 | 1.0                       | 1.0 | 1.2  | 1.0 | 0.9 | 1.2             | 1.9           |               |
| 4-Feb  | 0.8                           | Z   | 0.8      | 1.1               | 0.8 | 0.6 | 0.6 | 0.6 | 0.5 | 0.4 | 0.4 | 0.5 | 0.5  | 0.4  | 0.4  | 0.4  | 0.3  | 0.3 | 0.3                       | 0.4 | 0.5  | 0.3 | 0.4 | 0.5             | 1.1           |               |
| 5-Feb  | 0.4                           | 1.3   | Z        | 1.0               | 0.9 | 0.9 | 0.9 | 1.1 | 1.2 | 1.6 | 1.9 | 4.3 | 5.8  | 6.1  | 4.6  | 2.9  | 3.3  | 3.0 | 3.0                       | 3.2 | 2.5  | 1.0 | 1.9 | 1.1             | 2.3           | 6.1           |
| 6-Feb  | 0.5                           | 0.4   | 0.2      | Z                 | 0.4 | 0.3 | 0.3 | 0.3 | 0.2 | 0.2 | 0.3 | 0.4 | 0.4  | 1.4  | 9.3  | 4.5  | 2.3  | 1.0 | 0.8                       | 0.7 | 0.8  | 0.7 | 0.8 | 1.2             | 1.2           | 9.3           |
| 7-Feb  | 1.2                           | 1.6   | 1.5      | 1.3               | Z   | 0.6 | 0.4 | 0.4 | 0.3 | 0.4 | 0.4 | 0.4 | 0.3  | 0.3  | 0.3  | 0.3  | 0.3  | 0.3 | 0.4                       | 0.3 | 0.4  | 0.4 | 0.3 | 0.3             | 0.5           | 1.6           |
| 8-Feb  | 0.3                           | 0.2   | 0.3      | 0.2               | 0.3 | Z   | 0.7 | 1.6 | 2.6 | 2.4 | 2.3 | 2.8 | 9.1  | 14.4 | 11.2 | 14.5 | 5.3  | 0.8 | 0.6                       | 0.7 | 0.9  | 1.2 | 2.3 | 3.9             | 3.4           | 14.5          |
| 9-Feb  | Z                             | 2.3   | 1.8      | 2.6               | 3.4 | 3.8 | 2.8 | 1.1 | 0.9 | 1.2 | 2.4 | 2.4 | 3.9  | 3.5  | 1.6  | 2.6  | 1.6  | 1.0 | 0.8                       | 0.7 | 0.6  | 0.6 | 0.7 | 0.8             | 1.9           | 3.9           |
| 10-Feb   | 1.0                           | Z   | 1.2      | 1.0               | 1.0 | 0.8 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.7 | 0.6  | 0.7  | 0.7  | PF   | 0.9  | 0.8 | 0.7                       | 0.7 | 0.6  | 0.5 | 0.5 | 0.5             | 0.7           | 1.2           |
| 11-Feb   | 0.4                           | 0.4   | Z        | 0.4               | 0.4 | 0.4 | 0.7 | 0.6 | 0.8 | 1.1 | 1.0 | 0.7 | 0.7  | 1.5  | 3.9  | 2.3  | 0.9  | 0.5 | 0.5                       | 0.4 | 0.4  | 0.3 | 0.3 | 0.3             | 0.8           | 3.9           |
| 12-Feb   | 0.3                           | 0.3   | 0.3      | Z                 | 0.2 | 0.2 | 0.1 | 0.2 | 0.1 | 0.3 | 0.3 | 0.2 | 0.1  | 0.1  | 0.1  | 0.1  | 0.2  | 0.5 | 0.7                       | 0.8 | 0.9  | 1.0 | 1.1 | 1.1             | 0.4           | 1.1           |
| 13-Feb   | 1.0                           | 0.8   | 0.9      | 0.9               | Z   | 0.3 | 0.3 | 0.3 | 0.3 | 0.2 | 0.3 | 0.2 | 0.3  | 0.2  | 0.3  | 0.2  | 0.2  | 0.2 | 0.2                       | 0.2 | 0.1  | 0.1 | 0.2 | 0.2             | 0.3           | 1.0           |
| 14-Feb   | 0.2                           | 0.1   | 0.2      | 0.2               | 0.2 | Z   | 0.2 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2  | 0.2  | 0.2  | 0.3  | 0.6  | 0.3 | 0.1                       | 0.1 | 0.1  | 0.1 | 0.1 | 0.1             | 0.2           | 0.6           |
| 15-Feb   | Z                             | 0.1   | 0.3      | 0.3               | 0.7 | 1.0 | 2.2 | 2.7 | 2.6 | 2.2 | 1.2 | 0.9 | 1.4  | 0.4  | 0.6  | 10.0 | 30.0 | 7.8 | 0.7                       | 0.4 | 0.6  | 0.7 | 0.6 | 0.6             | 3.0           | 30.0          |
| 16-Feb   | 0.8                           | Z   | 1.0      | 1.1               | 1.0 | 1.1 | 1.0 | 1.1 | 1.1 | 1.7 | 2.5 | 4.3 | 10.1 | 1.9  | 1.7  | 1.7  | 1.7  | 1.8 | 3.6                       | 2.6 | 1.2  | 1.0 | 0.9 | 0.9             | 2.0           | 10.1          |
| 17-Feb   | 0.9                           | 1.0   | Z        | 0.8               | 0.7 | 0.6 | 0.7 | 0.7 | 0.6 | 0.7 | 0.7 | 0.8 | 0.7  | 0.7  | 0.7  | 0.7  | 0.6  | 0.4 | 0.4                       | 0.4 | 0.3  | 0.3 | 0.3 | 0.3             | 0.6           | 1.0           |
| 18-Feb   | 0.3                           | 0.3   | 0.3      | Z                 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.5 | 0.8 | 0.9 | 0.5  | 0.4  | 0.3  | 0.3  | 0.2  | 0.2 | 0.1                       | 0.1 | 0.1  | 0.2 | 0.2 | 0.2             | 0.3           | 0.9           |
| 19-Feb   | 0.1                           | 0.2   | 0.2      | 0.2               | Z   | 0.4 | 0.4 | 0.5 | 0.7 | 1.1 | 1.8 | 2.5 | 5.2  | 3.1  | 1.8  | 1.6  | 2.1  | 2.1 | 0.9                       | 0.7 | 0.8  | 0.6 | 0.8 | 0.8             | 1.3           | 5.2           |
| 20-Feb   | 0.5                           | 0.5   | 0.4      | 0.5               | 0.4 | Z   | 0.2 | 0.1 | 0.2 | 0.4 | 1.9 | 3.0 | 2.7  | 1.7  | 0.9  | 0.7  | 0.6  | 0.5 | 0.3                       | 0.2 | 0.3  | 0.2 | 0.2 | 0.3             | 0.7           | 3.0           |
| 21-Feb   | Z                             | 0.3   | 0.4      | 0.2               | 0.3 | 0.2 | 0.1 | 0.1 | 0.2 | 0.4 | 0.5 | 0.7 | 0.9  | 0.7  | 0.3  | 0.2  | 0.3  | 0.2 | 0.1                       | 0.1 | 0.1  | 0.1 | 0.2 | 0.4             | 0.3           | 0.9           |
| 22-Feb   | 0.8                           | Z   | 2.5      | 2.5               | 2.4 | 1.8 | 1.5 | 1.3 | 1.9 | 2.8 | 2.5 | 1.7 | 1.2  | 0.5  | 0.6  | 0.6  | 0.5  | 0.3 | 0.3                       | 0.3 | 0.3  | 0.5 | 0.3 | 0.2             | 1.2           | 2.8           |
| 23-Feb   | 0.3                           | 0.2   | Z        | 0.3               | 0.4 | 0.7 | 0.8 | 0.7 | 1.2 | 1.2 | 1.2 | 1.5 | 0.8  | 0.9  | 0.8  | 1.7  | 4.1  | 4.9 | 3.7                       | 1.2 | 1.2  | 1.2 | 0.8 | 1.5             | 1.4           | 4.9           |
| 24-Feb   | 2.5                           | 2.9   | 3.4      | Z                 | 1.7 | 1.1 | 0.5 | 0.6 | 1.9 | 3.5 | 4.5 | 4.7 | 1.3  | 1.9  | 1.1  | 2.7  | 0.6  | 0.6 | 0.7                       | 0.7 | 0.7  | 0.8 | 0.9 | 1.1             | 1.8           | 4.7           |
| 25-Feb   | 1.1                           | 0.9   | 0.8      | 0.7               | Z   | 3.2 | 2.6 | 2.3 | 2.0 | 0.6 | 0.5 | 0.5 | 0.3  | 0.5  | 3.1  | 4.0  | 5.6  | 1.8 | 0.7                       | 0.4 | 0.6  | 0.9 | 0.7 | 0.7             | 1.5           | 5.6           |
| 26-Feb   | 0.6                           | 0.5   | 0.6      | 0.5               | 0.4 | Z   | 0.4 | 0.4 | 1.1 | 1.9 | 1.8 | 1.1 | 0.9  | 0.9  | 0.8  | 0.7  | 0.6  | 0.5 | 0.4                       | 0.4 | 0.3  | 0.3 | 0.3 | 0.3             | 0.7           | 1.9           |
| 27-Feb   | Z                             | 0.3   | 0.3      | 0.3               | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 | 0.3 | 0.3 | 0.4 | 0.4  | 0.3  | 0.4  | 0.3  | 0.3  | 0.2 | 0.2                       | 0.2 | 0.2  | 0.2 | 0.2 | 0.3             | 0.3           | 0.4           |
| 28-Feb   | 0.2                           | Z   | 0.3      | 0.2               | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.4 | 0.4 | 0.3 | 0.3  | 0.3  | 0.3  | 0.9  | 0.9  | 0.3 | 0.1                       | 0.3 | 1.3  | 2.5 | 2.7 | 3.4             | 0.7           | 3.4           |
|  |                               |   |          |                   |     |     |     |     |     |     |     |     |      |      |      |      |      |     |                           |     |      |     |     | Diurnal Average |               | 1.0           |
|  |                               |   |          |                   |     |     |     |     |     |     |     |     |      |      |      |      |      |     |                           |     |      |     |     | Diurnal Maximum |               | 1.0           |
|  |                               |   |          |                   |     |     |     |     |     |     |     |     |      |      |      |      |      |     |                           |     |      |     |     | Diurnal Average |               | 0.7           |
|  |                               |   |          |                   |     |     |     |     |     |     |     |     |      |      |      |      |      |     |                           |     |      |     |     | Diurnal Maximum |               | 3.4           |
| Z - zerospan      C - Calibration      PF - Power Failure                    |                               |   |          |                   |     |     |     |     |     |     |     |     |      |      |      |      |      |     |                           |     |      |     |     |                 |               |               |
| Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 172 ppb    24-hr 48 ppb |                               |   |          |                   |     |     |     |     |     |     |     |     |      |      |      |      |      |     |                           |     |      |     |     |                 |               |               |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Sulphur Dioxide (SO<sub>2</sub>) - ppb**  
**Fort McKay South - February 2023**





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Sulphur Dioxide (SO<sub>2</sub>) - ppb**  
**Fort McKay South - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 10                            | 635                    | 99.22    | 99.22               |
| 11 - 20                           | 4                      | 0.63     | 99.84               |
| 21 - 60                           | 1                      | 0.16     | 100.00              |
| 61 - 110                          | 0                      | 0.00     | 100.00              |
| 111 - 172                         | 0                      | 0.00     | 100.00              |
| > 172                             | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 640

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Sulphur Dioxide (SO<sub>2</sub>) - ppb  
Fort McKay South - February 2023**

| <b>Concentration<br/>Ranges (ppb)</b> | <b>Wind Direction</b> |            |           |            |          |            |           |            |          |            |           |            |          |            |           |            | <b>Totals</b> |
|---------------------------------------|-----------------------|------------|-----------|------------|----------|------------|-----------|------------|----------|------------|-----------|------------|----------|------------|-----------|------------|---------------|
|                                       | <b>N</b>              | <b>NNE</b> | <b>NE</b> | <b>ENE</b> | <b>E</b> | <b>ESE</b> | <b>SE</b> | <b>SSE</b> | <b>S</b> | <b>SSW</b> | <b>SW</b> | <b>WSW</b> | <b>W</b> | <b>WNW</b> | <b>NW</b> | <b>NNW</b> |               |
| 0 - 10                                | 160                   | 71         | 11        | 3          | 2        | 7          | 23        | 46         | 63       | 27         | 45        | 65         | 29       | 21         | 23        | 35         | 631           |
| 11 - 20                               | 0                     | 0          | 0         | 0          | 0        | 0          | 2         | 2          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 4             |
| 21 - 60                               | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 1          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 1             |
| 61 - 110                              | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0             |
| 111 - 172                             | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0             |
| > 172                                 | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0             |
| <b>Totals</b>                         | 160                   | 71         | 11        | 3          | 2        | 7          | 25        | 49         | 63       | 27         | 45        | 65         | 29       | 21         | 23        | 35         | 636           |

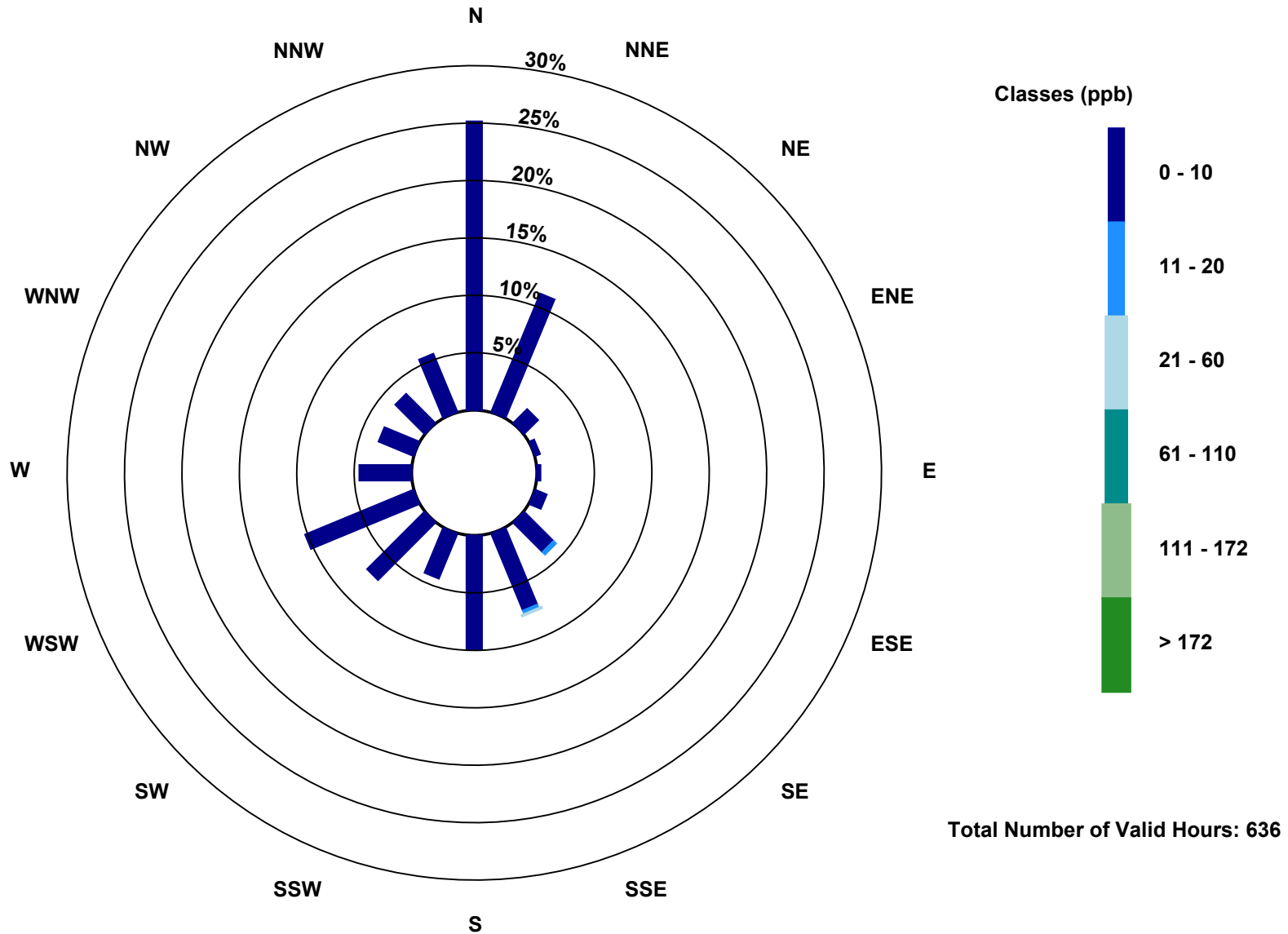
Total Number of Valid Hours: 636

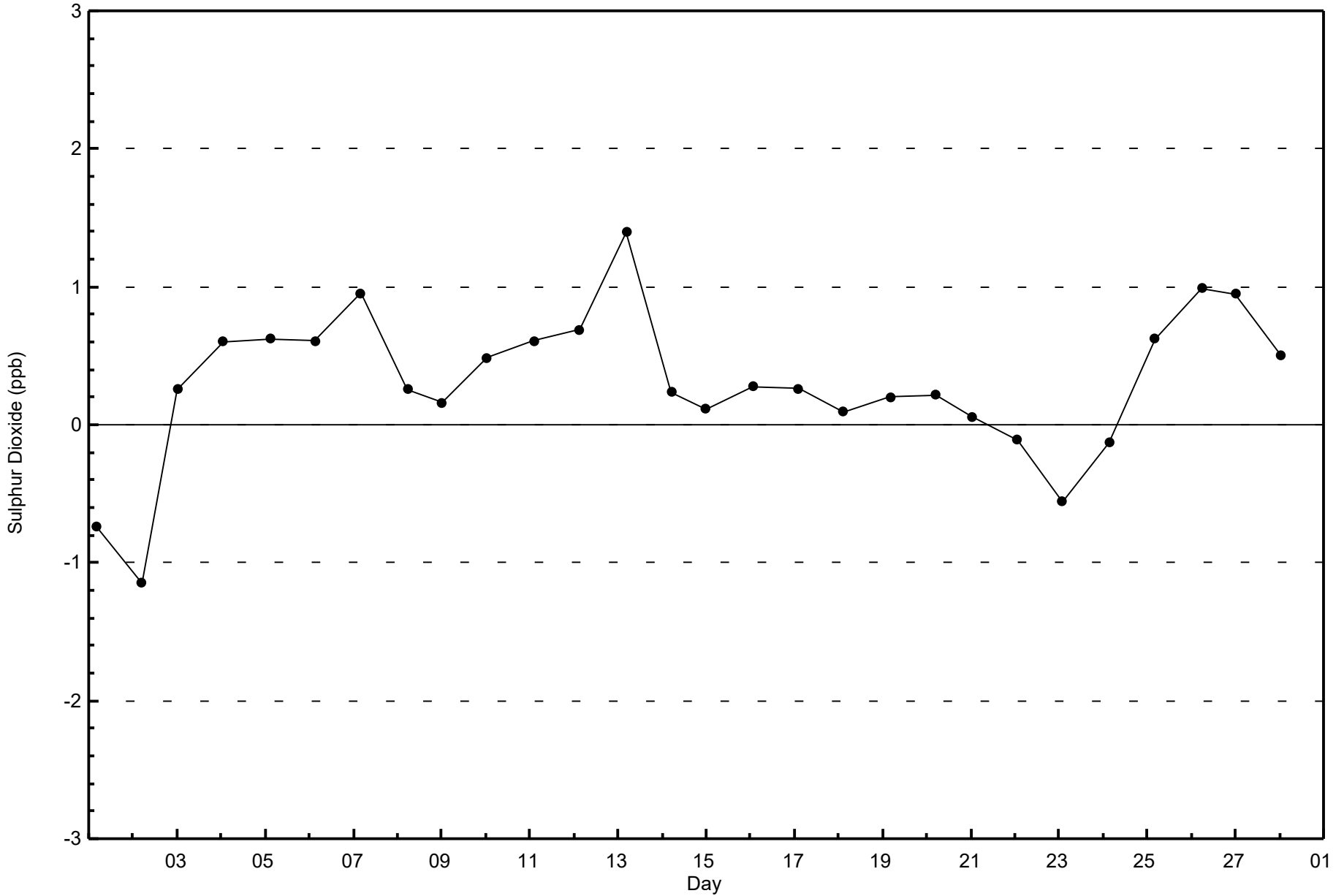
Total Number of Hours: 672



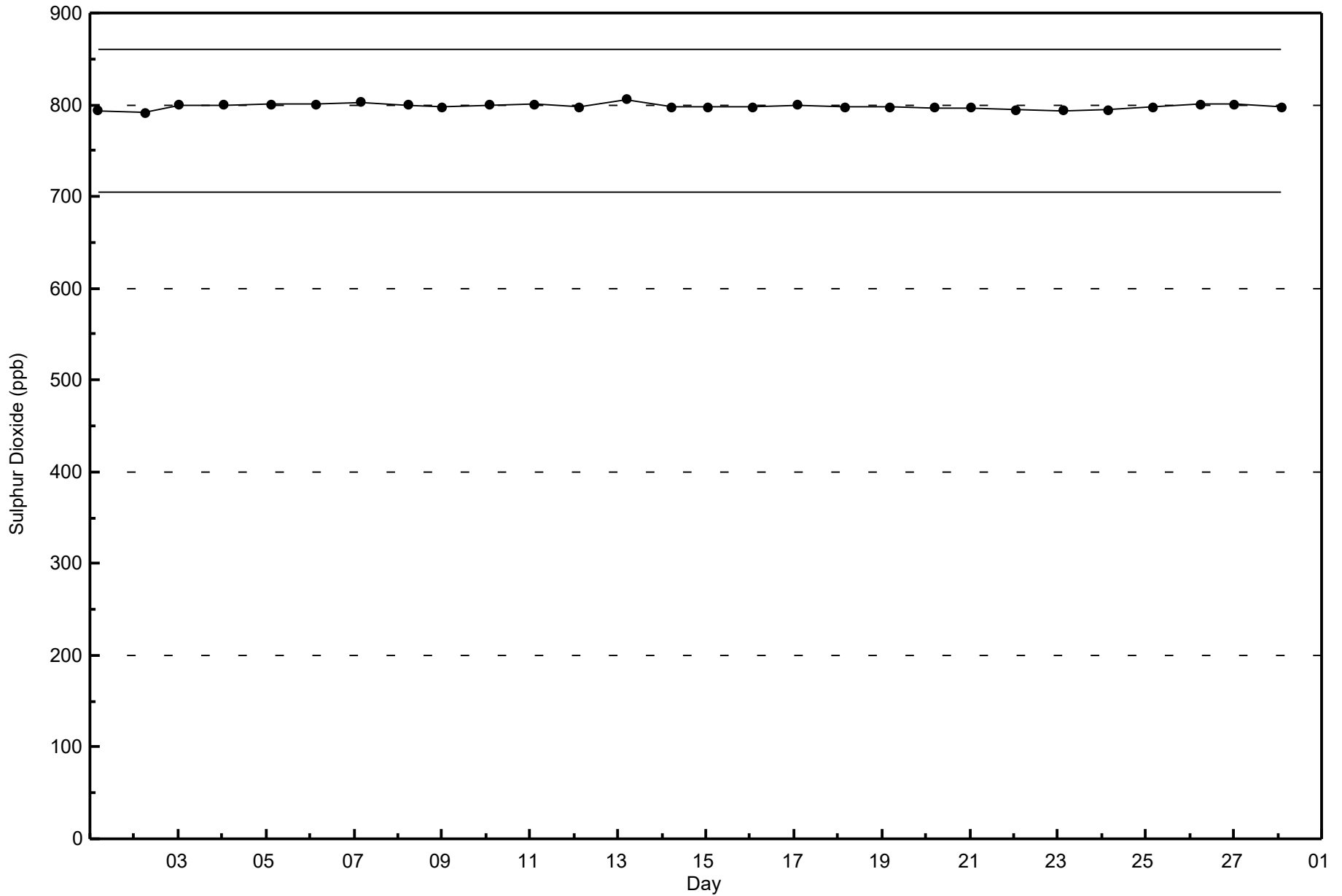
Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Sulphur Dioxide (SO<sub>2</sub>) - ppb  
Fort McKay South











Wood Buffalo Environmental Association

Summary of Hour Averages

Total Reduced Sulphur (TRS) - ppb

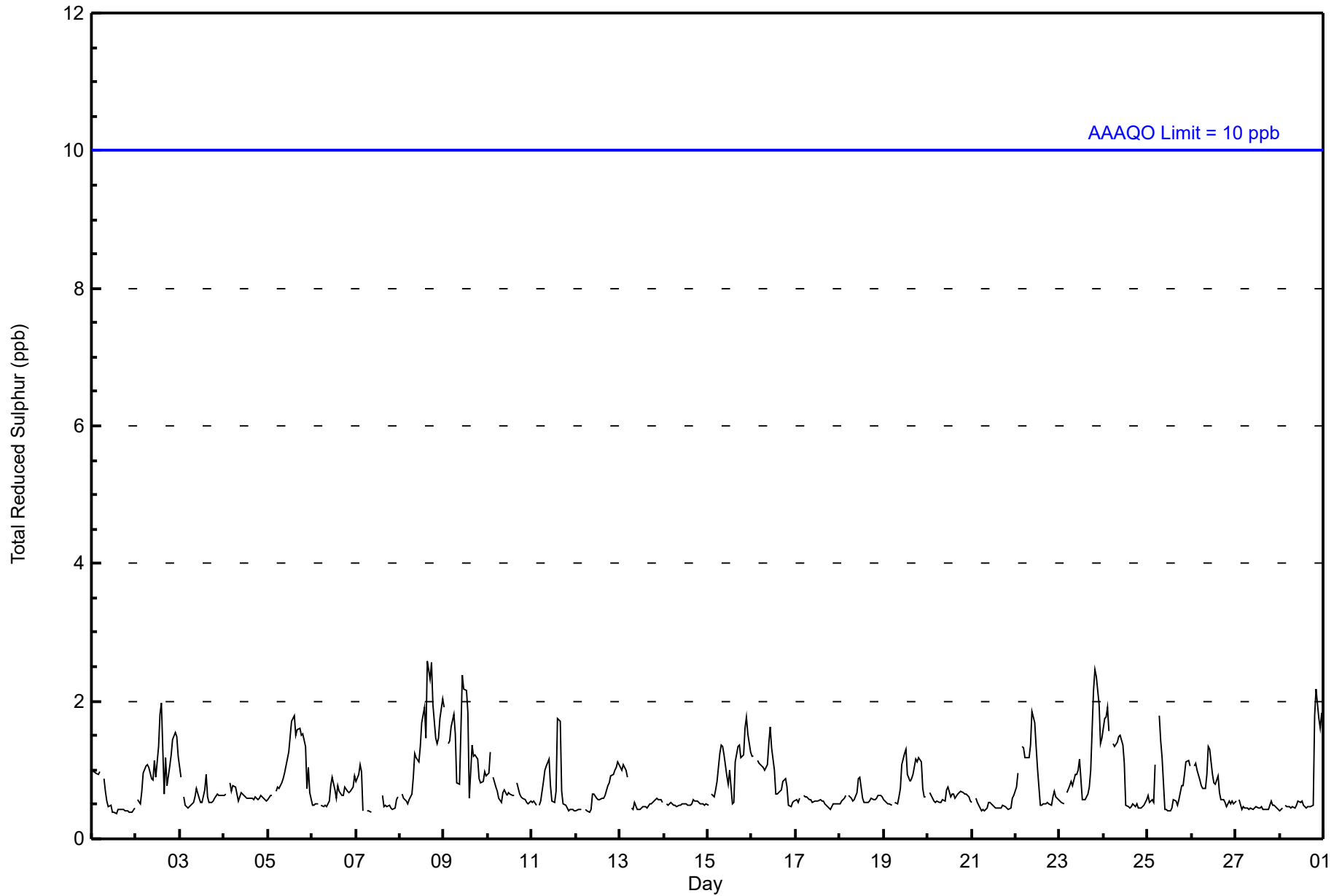
Fort McKay South - February 2023

| Number of Exceedences (AAAQO):  |                               | 1-hr: 0  |     | 24-hr: 0 |     | Hours in Service: |     |     |     |     |     |     |     |     |     |                           |     |      |     | 672 |     |     |     |                 |               |               |
|---|-------------------------------|--|-----|----------|-----|-------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|---------------------------|-----|------|-----|-----|-----|-----|-----|-----------------|---------------|---------------|
| Maximum Value: 2.6 ppb on Feb 8 16:00   |                               | Maximum Daily Average: 1.4 ppb on Feb 8  |     |          |     |                   |     |     |     |     |     |     |     |     |     | Hours of Data:            |     | 638  |     |     |     |     |     |                 |               |               |
| Minimum Value: 0.4 ppb on Feb 1 14:00   |                               | Minimum Daily Average: 0.5 ppb on Feb 27   |     |          |     |                   |     |     |     |     |     |     |     |     |     | Hours of Missing Data:    |     | 34   |     |     |     |     |     |                 |               |               |
| Maximum Diurnal Average: 0.9 ppb at hour 11   |                               | Minimum Diurnal Average: 0.7 ppb at hour 8   |     |          |     |                   |     |     |     |     |     |     |     |     |     | Hours of Calibration:     |     | 33   |     |     |     |     |     |                 |               |               |
| Monthly Average: 0.79 ppb   |                               | Percentiles: P <sub>1</sub> = 0.4 P <sub>10</sub> = 0.4 Q <sub>1</sub> = 0.5 Median = 0.6 Q <sub>3</sub> = 1.0 P <sub>90</sub> = 1.4 P <sub>99</sub> = 2.2 |     |          |     |                   |     |     |     |     |     |     |     |     |     | Percent Operational Time: |     | 99.9 |     |     |     |     |     |                 |               |               |
| Day   | Hourly Period Ending At (MST) |  |     |          |     |                   |     |     |     |     |     |     |     |     |     |                           |     |      |     |     |     |     |     |                 | Daily Average | Daily Maximum |
|   | 1                             | 2  | 3   | 4        | 5   | 6                 | 7   | 8   | 9   | 10  | 11  | 12  | 13  | 14  | 15  | 16                        | 17  | 18   | 19  | 20  | 21  | 22  | 23  | 24              |               |               |
| 1-Feb   | 1.0                           | 1.0  | 1.0 | 0.9      | 1.0 | Z                 | 0.9 | 0.7 | 0.6 | 0.5 | 0.5 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4                       | 0.4 | 0.4  | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4             | 0.6           | 1.0           |
| 2-Feb   | Z                             | 0.6  | 0.5 | 0.7      | 1.0 | 1.1               | 1.1 | 1.0 | 0.9 | 0.9 | 1.1 | 0.9 | 1.4 | 1.8 | 2.0 | 0.6                       | 1.2 | 0.8  | 1.1 | 1.2 | 1.4 | 1.5 | 1.5 | 1.2             | 1.1           | 2.0           |
| 3-Feb   | 0.9                           | Z  | 0.6 | 0.5      | 0.5 | 0.5               | 0.5 | 0.5 | 0.6 | 0.7 | 0.6 | 0.5 | 0.5 | 0.7 | 0.9 | 0.6                       | 0.5 | 0.5  | 0.6 | 0.7 | 0.6 | 0.6 | 0.6 | 0.6             | 0.6           | 0.9           |
| 4-Feb   | 0.6                           | 0.6  | Z   | 0.8      | 0.7 | 0.8               | 0.7 | 0.7 | 0.5 | 0.7 | 0.7 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6                       | 0.6 | 0.6  | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.5             | 0.6           | 0.8           |
| 5-Feb   | 0.6                           | 0.6  | 0.6 | Z        | 0.7 | 0.7               | 0.7 | 0.8 | 0.9 | 0.9 | 1.0 | 1.3 | 1.5 | 1.7 | 1.8 | 1.5                       | 1.6 | 1.6  | 1.5 | 1.5 | 1.3 | 0.7 | 1.0 | 0.7             | 1.1           | 1.8           |
| 6-Feb   | 0.5                           | 0.5  | 0.5 | 0.5      | Z   | 0.5               | 0.5 | 0.5 | 0.5 | 0.6 | 0.8 | 0.9 | 0.7 | 0.6 | 0.8 | 0.7                       | 0.6 | 0.6  | 0.8 | 0.7 | 0.7 | 0.7 | 0.7 | 0.9             | 0.6           | 0.9           |
| 7-Feb   | 0.8                           | 0.9  | 1.1 | 1.0      | 0.4 | Z                 | 0.4 | 0.4 | 0.4 | C   | C   | C   | C   | C   | 0.6 | 0.5                       | 0.5 | 0.5  | 0.5 | 0.4 | 0.4 | 0.4 | 0.6 | 0.6             | 0.6           | 1.1           |
| 8-Feb   | Z                             | 0.6  | 0.6 | 0.5      | 0.5 | 0.6               | 0.7 | 0.9 | 1.2 | 1.2 | 1.1 | 1.3 | 1.7 | 1.9 | 1.5 | 2.6                       | 2.3 | 2.6  | 1.9 | 1.5 | 1.4 | 1.5 | 1.8 | 2.0             | 1.4           | 2.6           |
| 9-Feb   | 1.9                           | Z  | 1.4 | 1.4      | 1.6 | 1.8               | 1.5 | 0.8 | 0.8 | 1.6 | 2.4 | 2.2 | 2.2 | 1.8 | 0.6 | 1.4                       | 1.2 | 1.2  | 1.2 | 0.9 | 0.8 | 0.8 | 1.0 | 0.9             | 1.4           | 2.4           |
| 10-Feb  | 1.0                           | 1.3  | Z   | 0.9      | 0.8 | 0.7               | 0.6 | 0.5 | 0.7 | 0.7 | 0.6 | 0.7 | 0.6 | 0.6 | 0.6 | PF                        | 0.8 | 0.6  | 0.6 | 0.6 | 0.6 | 0.5 | 0.5 | 0.5             | 0.7           | 1.3           |
| 11-Feb  | 0.5                           | 0.6  | 0.5 | Z        | 0.5 | 0.5               | 0.8 | 1.0 | 1.1 | 1.1 | 0.8 | 0.6 | 0.5 | 0.7 | 1.7 | 1.7                       | 0.7 | 0.5  | 0.5 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4             | 0.7           | 1.7           |
| 12-Feb  | 0.4                           | 0.4  | 0.4 | 0.4      | Z   | 0.4               | 0.4 | 0.4 | 0.4 | 0.7 | 0.7 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6                       | 0.6 | 0.8  | 0.8 | 0.9 | 0.9 | 1.0 | 1.0 | 1.1             | 0.6           | 1.1           |
| 13-Feb  | 1.0                           | 1.0  | 1.1 | 1.0      | 0.9 | Z                 | 0.4 | 0.4 | 0.5 | 0.4 | 0.4 | 0.5 | 0.5 | 0.5 | 0.4 | 0.5                       | 0.5 | 0.5  | 0.6 | 0.6 | 0.6 | 0.6 | 0.5 | 0.5             | 0.6           | 1.1           |
| 14-Feb  | Z                             | 0.5  | 0.5 | 0.5      | 0.5 | 0.5               | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.6                       | 0.6 | 0.5  | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5             | 0.5           | 0.6           |
| 15-Feb  | 0.5                           | Z  | 0.6 | 0.6      | 0.7 | 0.8               | 1.2 | 1.4 | 1.3 | 1.2 | 0.9 | 0.8 | 1.0 | 0.5 | 0.5 | 1.1                       | 1.3 | 1.4  | 1.2 | 1.2 | 1.6 | 1.8 | 1.5 | 1.3             | 1.1           | 1.8           |
| 16-Feb  | 1.2                           | 1.2  | Z   | 1.1      | 1.1 | 1.1               | 1.0 | 1.0 | 1.1 | 1.4 | 1.6 | 1.3 | 1.0 | 0.7 | 0.7 | 0.7                       | 0.7 | 0.8  | 0.9 | 0.7 | 0.5 | 0.5 | 0.5 | 0.5             | 0.9           | 1.6           |
| 17-Feb  | 0.6                           | 0.5  | 0.6 | Z        | 0.6 | 0.6               | 0.6 | 0.6 | 0.6 | 0.5 | 0.6 | 0.5 | 0.6 | 0.6 | 0.5 | 0.5                       | 0.5 | 0.5  | 0.4 | 0.4 | 0.5 | 0.5 | 0.5 | 0.5             | 0.5           | 0.6           |
| 18-Feb  | 0.5                           | 0.5  | 0.6 | 0.6      | Z   | 0.6               | 0.6 | 0.6 | 0.6 | 0.7 | 0.9 | 0.9 | 0.6 | 0.5 | 0.5 | 0.5                       | 0.6 | 0.6  | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6             | 0.6           | 0.9           |
| 19-Feb  | 0.6                           | 0.5  | 0.5 | 0.5      | 0.5 | Z                 | 0.5 | 0.5 | 0.6 | 0.7 | 1.1 | 1.2 | 1.3 | 0.9 | 0.8 | 0.9                       | 0.9 | 1.1  | 1.1 | 1.2 | 1.1 | 0.7 | 0.6 | 0.6             | 0.8           | 1.3           |
| 20-Feb  | Z                             | 0.7  | 0.6 | 0.6      | 0.5 | 0.5               | 0.5 | 0.5 | 0.6 | 0.6 | 0.7 | 0.7 | 0.6 | 0.6 | 0.6 | 0.6                       | 0.6 | 0.7  | 0.7 | 0.7 | 0.6 | 0.6 | 0.6 | 0.6             | 0.6           | 0.7           |
| 21-Feb  | 0.5                           | Z  | 0.6 | 0.5      | 0.5 | 0.4               | 0.4 | 0.4 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.4                       | 0.5 | 0.5  | 0.5 | 0.4 | 0.5 | 0.6 | 0.6 | 0.6             | 0.5           | 0.6           |
| 22-Feb  | 0.8                           | 1.0  | Z   | 1.3      | 1.3 | 1.2               | 1.2 | 1.2 | 1.4 | 1.8 | 1.7 | 1.3 | 1.0 | 0.5 | 0.5 | 0.5                       | 0.5 | 0.5  | 0.5 | 0.6 | 0.7 | 0.6 | 0.6 | 0.6             | 0.9           | 1.8           |
| 23-Feb  | 0.5                           | 0.5  | 0.5 | Z        | 0.7 | 0.8               | 0.8 | 0.8 | 0.9 | 0.9 | 1.0 | 1.2 | 0.6 | 0.6 | 0.6 | 0.7                       | 1.0 | 2.2  | 2.5 | 2.4 | 2.0 | 1.4 | 1.5 | 1.1             | 2.5           |               |
| 24-Feb  | 1.7                           | 1.8  | 1.9 | 1.6      | Z   | 1.4               | 1.3 | 1.4 | 1.5 | 1.5 | 1.4 | 1.1 | 0.5 | 0.5 | 0.4 | 0.5                       | 0.5 | 0.5  | 0.4 | 0.4 | 0.5 | 0.5 | 0.6 | 1.0             | 1.9           |               |
| 25-Feb  | 0.6                           | 0.5  | 0.6 | 0.5      | 1.1 | Z                 | 1.8 | 1.4 | 1.2 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.6 | 0.5                       | 0.5 | 0.6  | 0.8 | 0.8 | 0.9 | 1.1 | 1.1 | 1.0             | 0.8           | 1.8           |
| 26-Feb  | Z                             | 1.0  | 1.1 | 1.0      | 0.9 | 0.8               | 0.7 | 0.7 | 0.9 | 1.3 | 1.3 | 0.9 | 0.8 | 0.8 | 0.9 | 0.7                       | 0.6 | 0.6  | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5             | 0.8           | 1.3           |
| 27-Feb  | 0.5                           | Z  | 0.6 | 0.4      | 0.5 | 0.4               | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.5 | 0.4 | 0.5 | 0.5 | 0.4                       | 0.4 | 0.4  | 0.4 | 0.5 | 0.5 | 0.5 | 0.4 | 0.4             | 0.5           | 0.6           |
| 28-Feb  | 0.4                           | 0.4  | Z   | 0.5      | 0.5 | 0.5               | 0.5 | 0.5 | 0.4 | 0.5 | 0.5 | 0.5 | 0.6 | 0.5 | 0.5 | 0.5                       | 0.5 | 0.5  | 1.8 | 2.2 | 1.7 | 1.6 | 1.8 | 0.8             | 2.2           |               |
| 0.8 0.8 0.7 0.8 0.7 0.7 0.8 0.7 0.8 0.9 0.9 0.8 0.8 0.8 0.8 0.8 0.7 0.8 0.8 0.8 0.8 0.8 0.8 0.8 0.8 0.8 |                               |  |     |          |     |                   |     |     |     |     |     |     |     |     |     |                           |     |      |     |     |     |     |     | Diurnal Average |               |               |
| 1.9 1.8 1.9 1.6 1.6 1.8 1.8 1.4 1.5 1.8 2.4 2.2 2.2 1.9 2.0 2.6 2.3 2.6 2.2 2.5 2.4 2.0 1.8 2.0         |                               |  |     |          |     |                   |     |     |     |     |     |     |     |     |     |                           |     |      |     |     |     |     |     | Diurnal Maximum |               |               |
| Z - zerospan C - Calibration PF - Power Failure   |                               |  |     |          |     |                   |     |     |     |     |     |     |     |     |     |                           |     |      |     |     |     |     |     |                 |               |               |
| Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 10 ppb 24-hr 3 ppb                                 |                               |  |     |          |     |                   |     |     |     |     |     |     |     |     |     |                           |     |      |     |     |     |     |     |                 |               |               |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Total Reduced Sulphur (TRS) - ppb**  
**Fort McKay South - February 2023**





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Total Reduced Sulphur (TRS) - ppb  
Fort McKay South - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 2                             | 636                    | 99.69    | 99.69               |
| 3 - 4                             | 2                      | 0.31     | 100.00              |
| 5 - 7                             | 0                      | 0.00     | 100.00              |
| 8 - 11                            | 0                      | 0.00     | 100.00              |
| > 11                              | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 638

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Total Reduced Sulphur (TRS) - ppb  
Fort McKay South - February 2023**

| <b>Concentration<br/>Ranges (ppb)</b> | <b>Wind Direction</b> |     |    |     |   |     |    |     |    |     |    |     |    |     |    |     | <b>Totals</b> |
|---------------------------------------|-----------------------|-----|----|-----|---|-----|----|-----|----|-----|----|-----|----|-----|----|-----|---------------|
|                                       | N                     | NNE | NE | ENE | E | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |               |
| 0 - 2                                 | 158                   | 71  | 12 | 3   | 3 | 8   | 25 | 50  | 62 | 28  | 45 | 61  | 29 | 21  | 22 | 34  | 632           |
| 3 - 4                                 | 0                     | 0   | 0  | 0   | 0 | 0   | 0  | 1   | 0  | 0   | 0  | 1   | 0  | 0   | 0  | 0   | 2             |
| 5 - 7                                 | 0                     | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| 8 - 11                                | 0                     | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| > 11                                  | 0                     | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| <b>Totals</b>                         | 158                   | 71  | 12 | 3   | 3 | 8   | 25 | 51  | 62 | 28  | 45 | 62  | 29 | 21  | 22 | 34  | 634           |

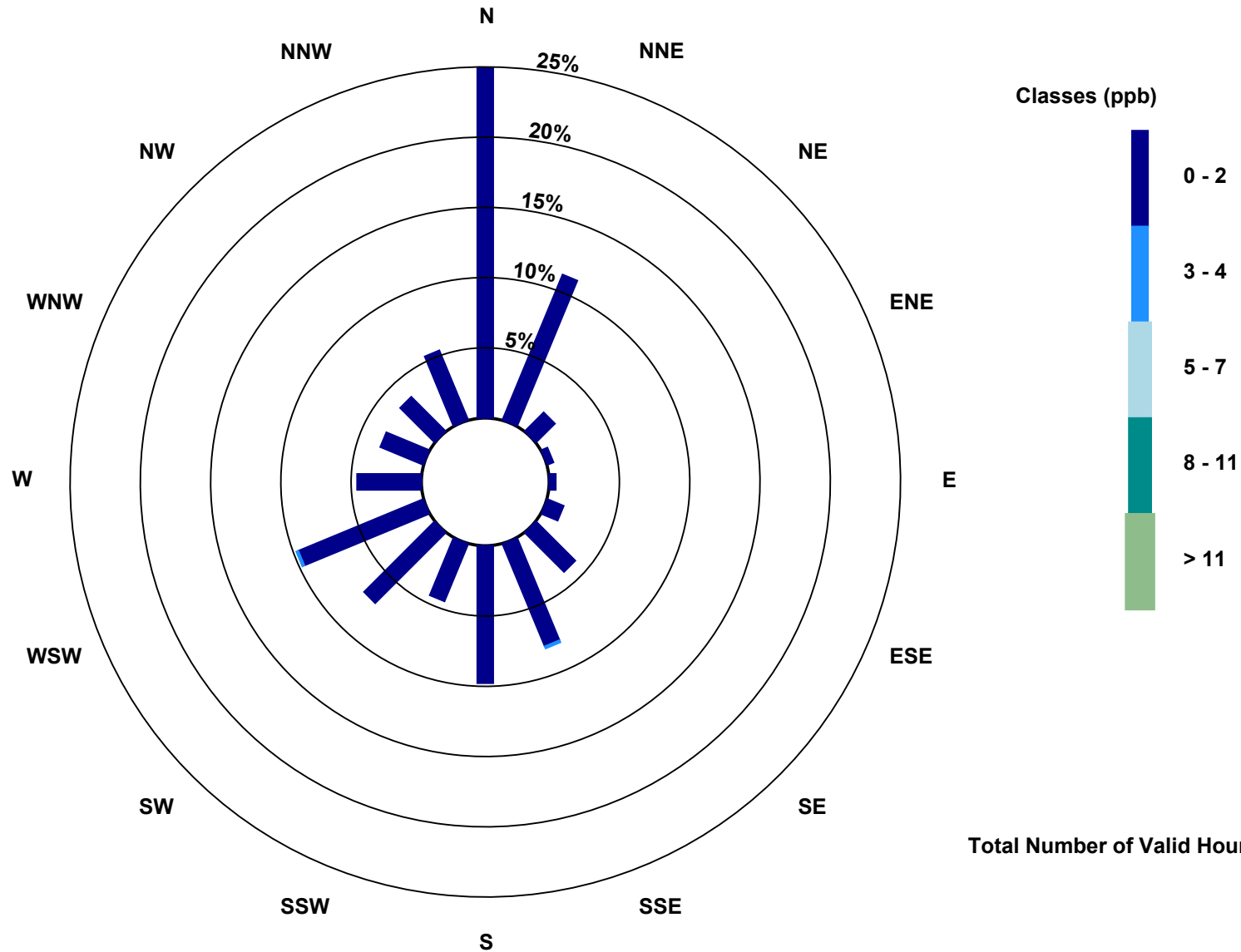
Total Number of Valid Hours: 634

Total Number of Hours: 672

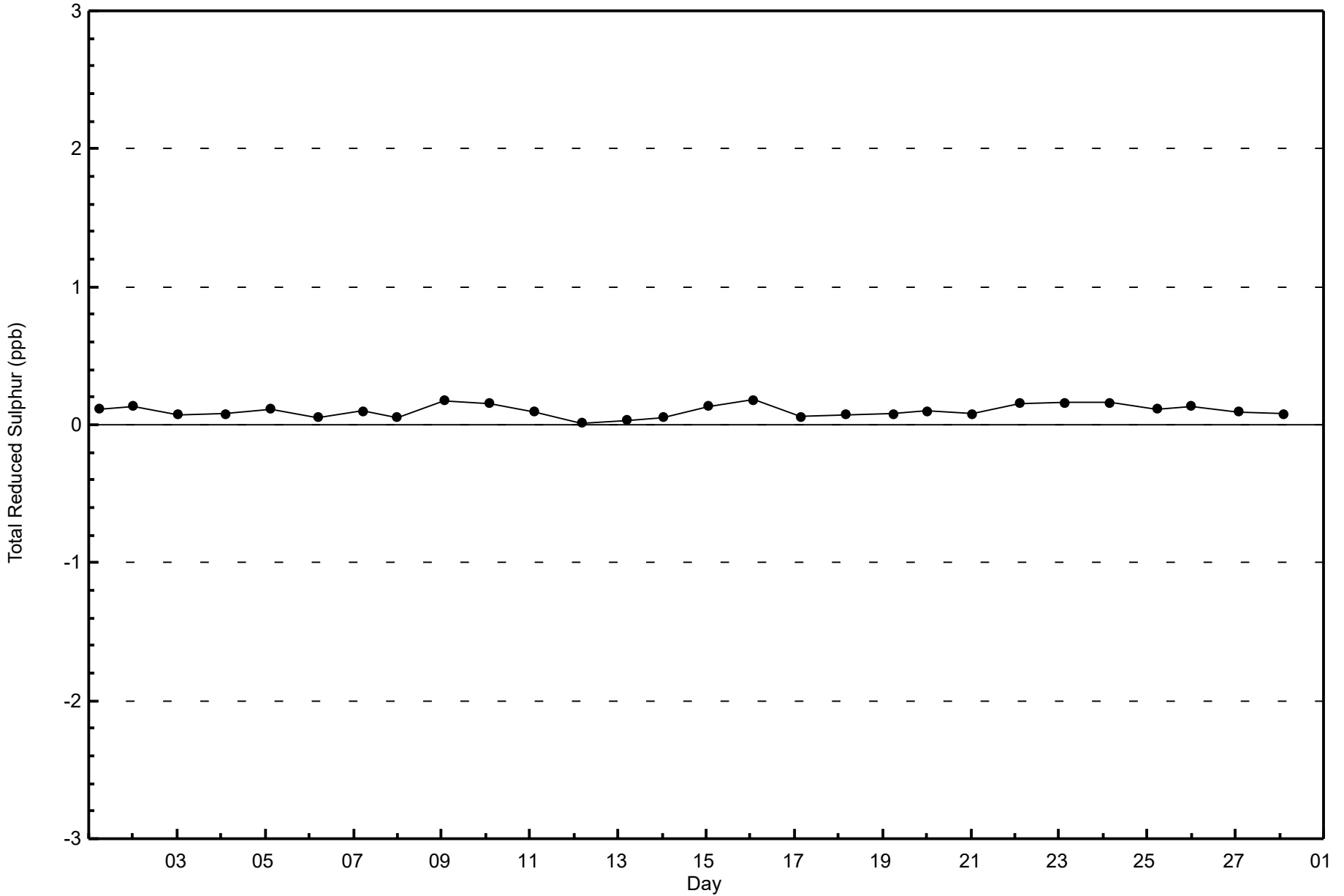


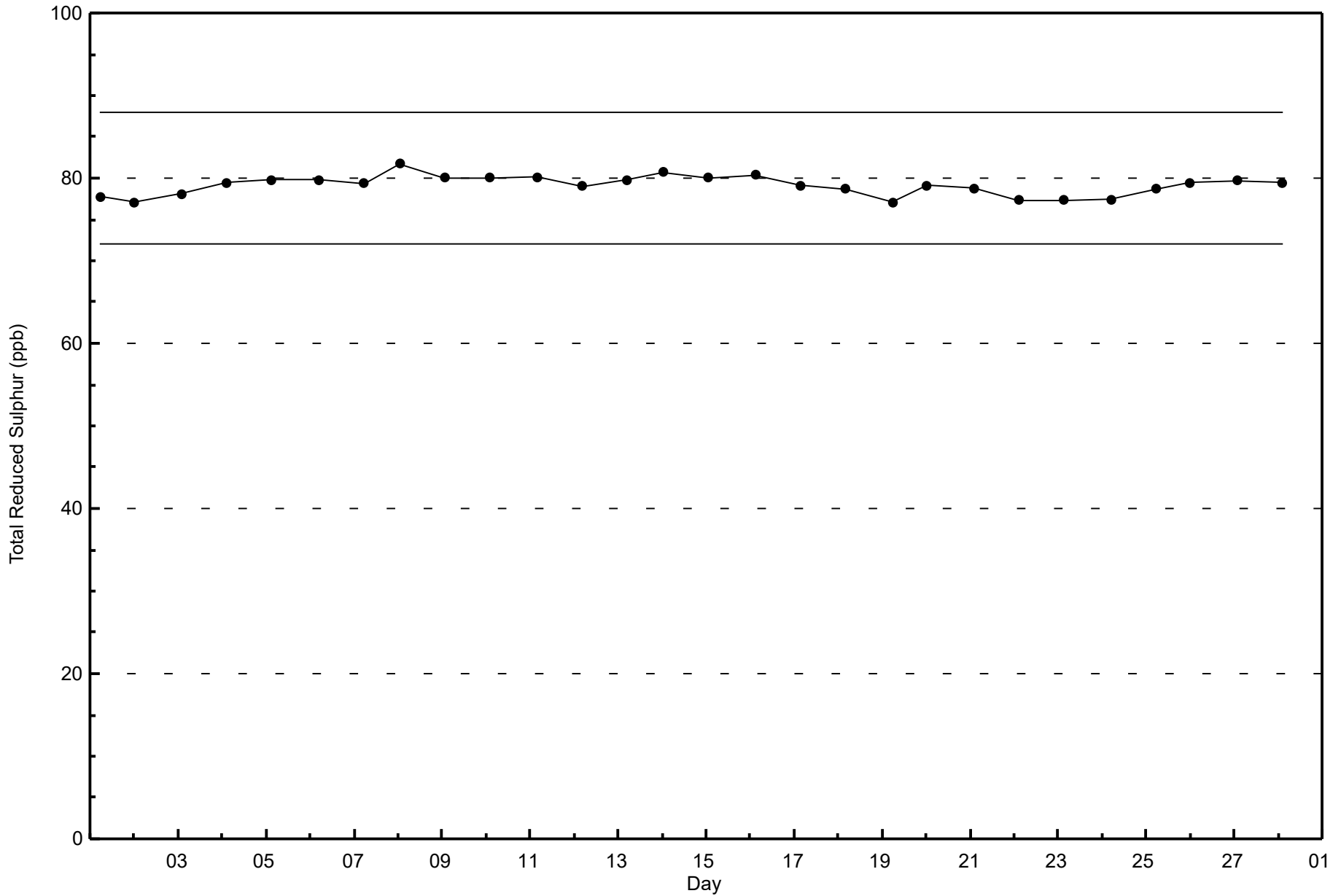
Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Total Reduced Sulphur (TRS) - ppb  
Fort McKay South



Total Number of Valid Hours: 634





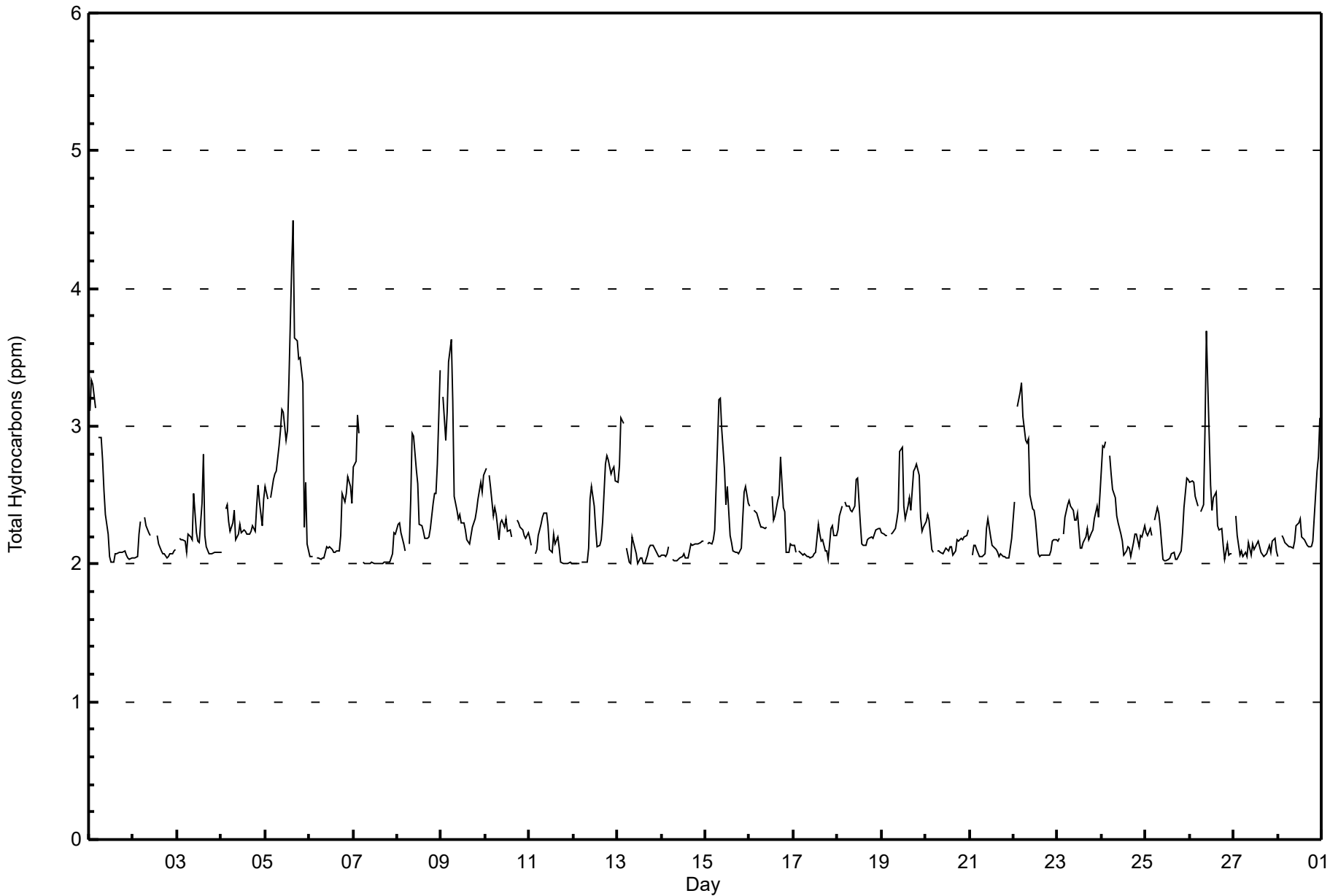




**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

**Total Hydrocarbons (THC) - ppm**  
**Fort McKay South - February 2023**

| Maximum Value: 4.5 ppm on Feb 5 16:00      |                               | Maximum Daily Average: 3.0 ppm on Feb 5  |     | Hours in Service: 672          |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |               |               |     |                 |     |     |     |                    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
|--|-------------------------------|--|-----|--------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----------------|---------------|---------------|-----|-----------------|-----|-----|-----|--------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----------------|
| Minimum Value: 2.0 ppm on Feb 11 21:00     |                               | Minimum Daily Average: 2.1 ppm on Feb 14   |     | Hours of Data: 637             |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |               |               |     |                 |     |     |     |                    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| Maximum Diurnal Average: 2.5 ppm at hour 3 |                               | Minimum Diurnal Average: 2.2 ppm at hour 17  |     | Hours of Missing Data: 35      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |               |               |     |                 |     |     |     |                    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| Monthly Average: 2.31 ppm                  |                               | Percentiles: P <sub>1</sub> = 2.0 P <sub>10</sub> = 2.0 Q <sub>1</sub> = 2.1 Median = 2.2 Q <sub>3</sub> = 2.4 P <sub>90</sub> = 2.7 P <sub>99</sub> = 3.5 |     | Hours of Calibration: 31       |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |               |               |     |                 |     |     |     |                    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
|  |                               |  |     | Percent Operational Time: 99.4 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |               |               |     |                 |     |     |     |                    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| Day  | Hourly Period Ending At (MST) |  |     |                                |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 | Daily Average | Daily Maximum |     |                 |     |     |     |                    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
|  | 1                             | 2  | 3   | 4                              | 5   | 6   | 7   | 8   | 9   | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19  | 20  | 21  | 22  | 23  | 24              |               |               |     |                 |     |     |     |                    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 1-Feb                                      | 3.1                           | 3.3  | 3.3 | 3.1                            | Z   | 2.9 | 2.9 | 2.8 | 2.5 | 2.4 | 2.2 | 2.1 | 2.0 | 2.0 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.0 | 2.0 | 2.0             | 2.4           | 3.3           |     |                 |     |     |     |                    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 2-Feb                                      | 2.0                           | 2.0  | 2.1 | 2.2                            | 2.3 | Z   | 2.3 | 2.3 | 2.2 | 2.2 | C   | C   | C   | 2.2 | 2.2 | 2.1 | 2.1 | 2.1 | 2.0 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1             | 2.1           | 2.3           |     |                 |     |     |     |                    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 3-Feb                                      | Z                             | 2.2  | 2.2 | 2.2                            | 2.2 | 2.1 | 2.2 | 2.2 | 2.2 | 2.5 | 2.2 | 2.2 | 2.2 | 2.4 | 2.8 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1             | 2.2           | 2.8           |     |                 |     |     |     |                    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 4-Feb                                      | 2.1                           | Z  | 2.4 | 2.4                            | 2.3 | 2.2 | 2.3 | 2.4 | 2.2 | 2.2 | 2.3 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.3 | 2.2 | 2.4 | 2.6 | 2.5 | 2.3 | 2.5             | 2.3           | 2.6           |     |                 |     |     |     |                    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 5-Feb                                      | 2.6                           | 2.5  | Z   | 2.5                            | 2.6 | 2.7 | 2.7 | 2.9 | 3.0 | 3.1 | 3.1 | 2.9 | 3.0 | 3.3 | 4.2 | 4.5 | 3.6 | 3.6 | 3.5 | 3.5 | 3.3 | 2.3 | 2.6 | 2.1             | 3.0           | 4.5           |     |                 |     |     |     |                    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 6-Feb                                      | 2.1                           | 2.1  | 2.1 | Z                              | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.5 | 2.5 | 2.5 | 2.6 | 2.6 | 2.4             | 2.2           | 2.6           |     |                 |     |     |     |                    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 7-Feb                                      | 2.7                           | 2.7  | 3.1 | 2.9                            | Z   | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1 | 2.2 | 2.2             | 2.2           | 3.1           |     |                 |     |     |     |                    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 8-Feb                                      | 2.3                           | 2.3  | 2.2 | 2.1                            | 2.1 | Z   | 2.1 | 2.5 | 2.9 | 2.9 | 2.7 | 2.6 | 2.3 | 2.3 | 2.2 | 2.2 | 2.2 | 2.2 | 2.3 | 2.4 | 2.5 | 2.5 | 2.7 | 3.4             | 2.4           | 3.4           |     |                 |     |     |     |                    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 9-Feb                                      | Z                             | 3.2  | 2.9 | 3.1                            | 3.5 | 3.6 | 3.2 | 2.5 | 2.4 | 2.3 | 2.4 | 2.3 | 2.3 | 2.2 | 2.2 | 2.2 | 2.2 | 2.3 | 2.3 | 2.4 | 2.5 | 2.6 | 2.5 | 2.6             | 2.6           | 3.6           |     |                 |     |     |     |                    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 10-Feb                                     | 2.7                           | Z  | 2.6 | 2.6                            | 2.3 | 2.4 | 2.4 | 2.2 | 2.3 | 2.3 | 2.3 | 2.3 | 2.2 | 2.2 | 2.2 | PF  | PF  | 2.3 | 2.3 | 2.3 | 2.2 | 2.2 | 2.2 | 2.2             | 2.3           | 2.7           |     |                 |     |     |     |                    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 11-Feb                                     | 2.2                           | 2.1  | Z   | 2.1                            | 2.1 | 2.2 | 2.3 | 2.3 | 2.4 | 2.4 | 2.3 | 2.1 | 2.1 | 2.2 | 2.1 | 2.2 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0             | 2.1           | 2.4           |     |                 |     |     |     |                    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 12-Feb                                     | 2.0                           | 2.0  | 2.0 | Z                              | 2.0 | 2.0 | 2.0 | 2.0 | 2.1 | 2.5 | 2.6 | 2.4 | 2.3 | 2.1 | 2.1 | 2.2 | 2.3 | 2.7 | 2.8 | 2.8 | 2.7 | 2.7 | 2.7 | 2.6             | 2.3           | 2.8           |     |                 |     |     |     |                    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 13-Feb                                     | 2.6                           | 2.7  | 3.1 | 3.0                            | Z   | 2.1 | 2.0 | 2.0 | 2.2 | 2.1 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.0             | 2.2           | 3.1           |     |                 |     |     |     |                    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 14-Feb                                     | 2.1                           | 2.1  | 2.1 | 2.1                            | 2.1 | Z   | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1 | 2.1 | 2.0 | 2.0 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | 2.2             | 2.1           | 2.2           |     |                 |     |     |     |                    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 15-Feb                                     | Z                             | 2.1  | 2.2 | 2.1                            | 2.2 | 2.2 | 2.9 | 3.2 | 3.2 | 3.0 | 2.7 | 2.4 | 2.6 | 2.2 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.3 | 2.5 | 2.6 | 2.4             | 2.4           | 3.2           |     |                 |     |     |     |                    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 16-Feb                                     | 2.4                           | Z  | 2.4 | 2.4                            | 2.4 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | M   | M   | 2.5 | 2.3 | 2.3 | 2.5 | 2.5 | 2.8 | 2.4 | 2.4 | 2.1 | 2.1 | 2.1 | 2.1             | 2.3           | 2.8           |     |                 |     |     |     |                    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 17-Feb                                     | 2.1                           | 2.1  | Z   | 2.1                            | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.0 | 2.1 | 2.1 | 2.1 | 2.3 | 2.2 | 2.2 | 2.2 | 2.1 | 2.1 | 2.0 | 2.3 | 2.3 | 2.2 | 2.2             | 2.1           | 2.3           |     |                 |     |     |     |                    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 18-Feb                                     | 2.3                           | 2.4  | 2.4 | Z                              | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.6 | 2.6 | 2.3 | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.3 | 2.3             | 2.3           | 2.6           |     |                 |     |     |     |                    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 19-Feb                                     | 2.2                           | 2.2  | 2.2 | 2.2                            | Z   | 2.2 | 2.2 | 2.3 | 2.3 | 2.4 | 2.8 | 2.8 | 2.4 | 2.3 | 2.4 | 2.5 | 2.4 | 2.7 | 2.7 | 2.7 | 2.6 | 2.3 | 2.2 | 2.3             | 2.4           | 2.8           |     |                 |     |     |     |                    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 20-Feb                                     | 2.3                           | 2.4  | 2.3 | 2.1                            | 2.1 | Z   | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2             | 2.2           | 2.4           |     |                 |     |     |     |                    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 21-Feb                                     | Z                             | 2.1  | 2.1 | 2.1                            | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.3 | 2.3 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.0 | 2.0 | 2.1 | 2.2             | 2.1           | 2.3           |     |                 |     |     |     |                    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 22-Feb                                     | 2.4                           | Z  | 3.1 | 3.2                            | 3.3 | 3.1 | 2.9 | 2.9 | 2.9 | 2.5 | 2.4 | 2.4 | 2.3 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | 2.2             | 2.5           | 3.3           |     |                 |     |     |     |                    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 23-Feb                                     | 2.2                           | 2.2  | Z   | 2.2                            | 2.3 | 2.4 | 2.5 | 2.4 | 2.4 | 2.3 | 2.3 | 2.4 | 2.1 | 2.1 | 2.2 | 2.2 | 2.3 | 2.2 | 2.2 | 2.2 | 2.3 | 2.4 | 2.3 | 2.5             | 2.3           | 2.5           |     |                 |     |     |     |                    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 24-Feb                                     | 2.9                           | 2.8  | 2.9 | Z                              | 2.8 | 2.7 | 2.5 | 2.5 | 2.3 | 2.3 | 2.2 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | 2.2 | 2.1 | 2.2 | 2.2 | 2.3             | 2.3           | 2.9           |     |                 |     |     |     |                    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 25-Feb                                     | 2.2                           | 2.2  | 2.3 | 2.2                            | Z   | 2.3 | 2.4 | 2.4 | 2.3 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1 | 2.1 | 2.0 | 2.0 | 2.1 | 2.1 | 2.2 | 2.4 | 2.6 | 2.6             | 2.2           | 2.6           |     |                 |     |     |     |                    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 26-Feb                                     | 2.6                           | 2.6  | 2.6 | 2.5                            | 2.4 | Z   | 2.4 | 2.4 | 3.0 | 3.7 | 3.3 | 2.6 | 2.4 | 2.5 | 2.5 | 2.3 | 2.2 | 2.3 | 2.1 | 2.0 | 2.1 | 2.1 | 2.1 | 2.1             | 2.5           | 3.7           |     |                 |     |     |     |                    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 27-Feb                                     | Z                             | 2.3  | 2.2 | 2.1                            | 2.1 | 2.0 | 2.1 | 2.1 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | 2.1             | 2.1           | 2.3           |     |                 |     |     |     |                    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 28-Feb                                     | 2.1                           | Z  | 2.2 | 2.2                            | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.3 | 2.3 | 2.3 | 2.2 | 2.2 | 2.2 | 2.1 | 2.1 | 2.1 | 2.2 | 2.3 | 2.7 | 2.8 | 3.1             | 2.3           | 3.1           |     |                 |     |     |     |                    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
|  |                               |  |     |                                |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | 2.4             | 2.4           | 2.5           | 2.4 | 2.3             | 2.4 | 2.3 | 2.3 | 2.4                | 2.4 | 2.4 | 2.3 | 2.2 | 2.2 | 2.3 | 2.2 | 2.2 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | Diurnal Average |
|  |                               |  |     |                                |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | 3.1             | 3.3           | 3.3           | 3.2 | 3.5             | 3.6 | 3.2 | 3.2 | 3.2                | 3.7 | 3.3 | 2.9 | 3.0 | 3.3 | 4.2 | 4.5 | 3.6 | 3.6 | 3.5 | 3.5 | 3.3 | 2.7 | 2.8 | 3.4 | 2.3 | Diurnal Maximum |
| Z - zerospan                               |                               |  |     |                                |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | C - Calibration |               |               |     | M - Maintenance |     |     |     | PF - Power Failure |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Total Hydrocarbons (THC) - ppm  
Fort McKay South - February 2023**

| <b>Concentration Ranges (ppm)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 2.0                           | 71                     | 11.15    | 11.15               |
| 2.1 - 3.0                         | 535                    | 83.99    | 95.13               |
| 3.1 - 10.0                        | 31                     | 4.87     | 100.00              |
| > 10.0                            | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 637

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Total Hydrocarbons (THC) - ppm  
Fort McKay South - February 2023**

| <b>Concentration<br/>Ranges (ppm)</b> | <b>Wind Direction</b> |     |    |     |   |     |    |     |    |     |    |     |    |     |    |     | <b>Totals</b> |
|---------------------------------------|-----------------------|-----|----|-----|---|-----|----|-----|----|-----|----|-----|----|-----|----|-----|---------------|
|                                       | N                     | NNE | NE | ENE | E | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |               |
| 0 - 2.0                               | 10                    | 7   | 0  | 0   | 0 | 0   | 1  | 1   | 4  | 0   | 9  | 20  | 11 | 4   | 3  | 1   | 71            |
| 2.1 - 3.0                             | 148                   | 63  | 11 | 3   | 2 | 7   | 22 | 47  | 54 | 18  | 29 | 40  | 18 | 17  | 19 | 33  | 531           |
| 3.1 - 10.0                            | 1                     | 1   | 0  | 0   | 0 | 0   | 0  | 1   | 5  | 9   | 7  | 5   | 0  | 0   | 1  | 1   | 31            |
| > 10.0                                | 0                     | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| <b>Totals</b>                         | 159                   | 71  | 11 | 3   | 2 | 7   | 23 | 49  | 63 | 27  | 45 | 65  | 29 | 21  | 23 | 35  | 633           |

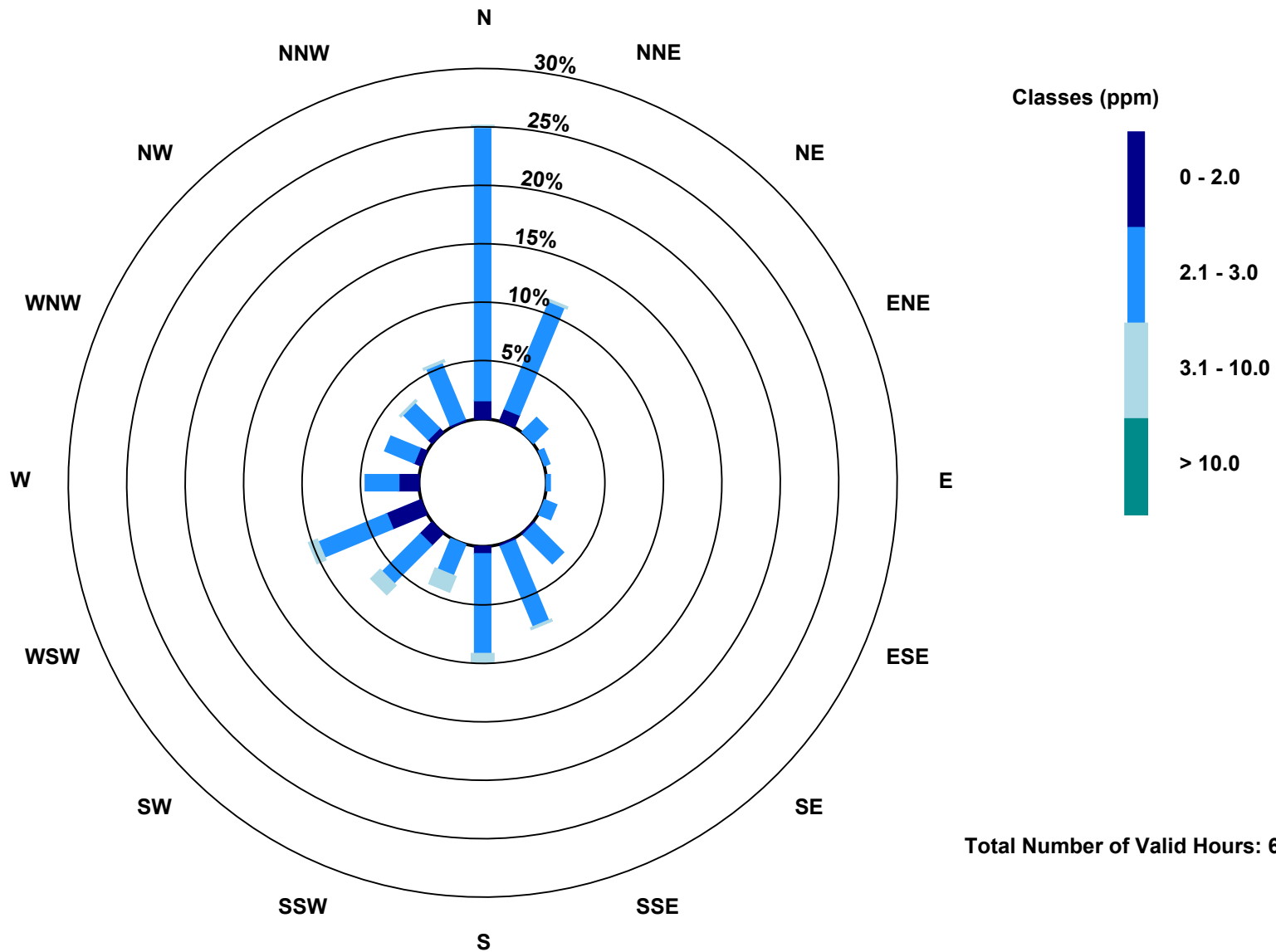
Total Number of Valid Hours: 633

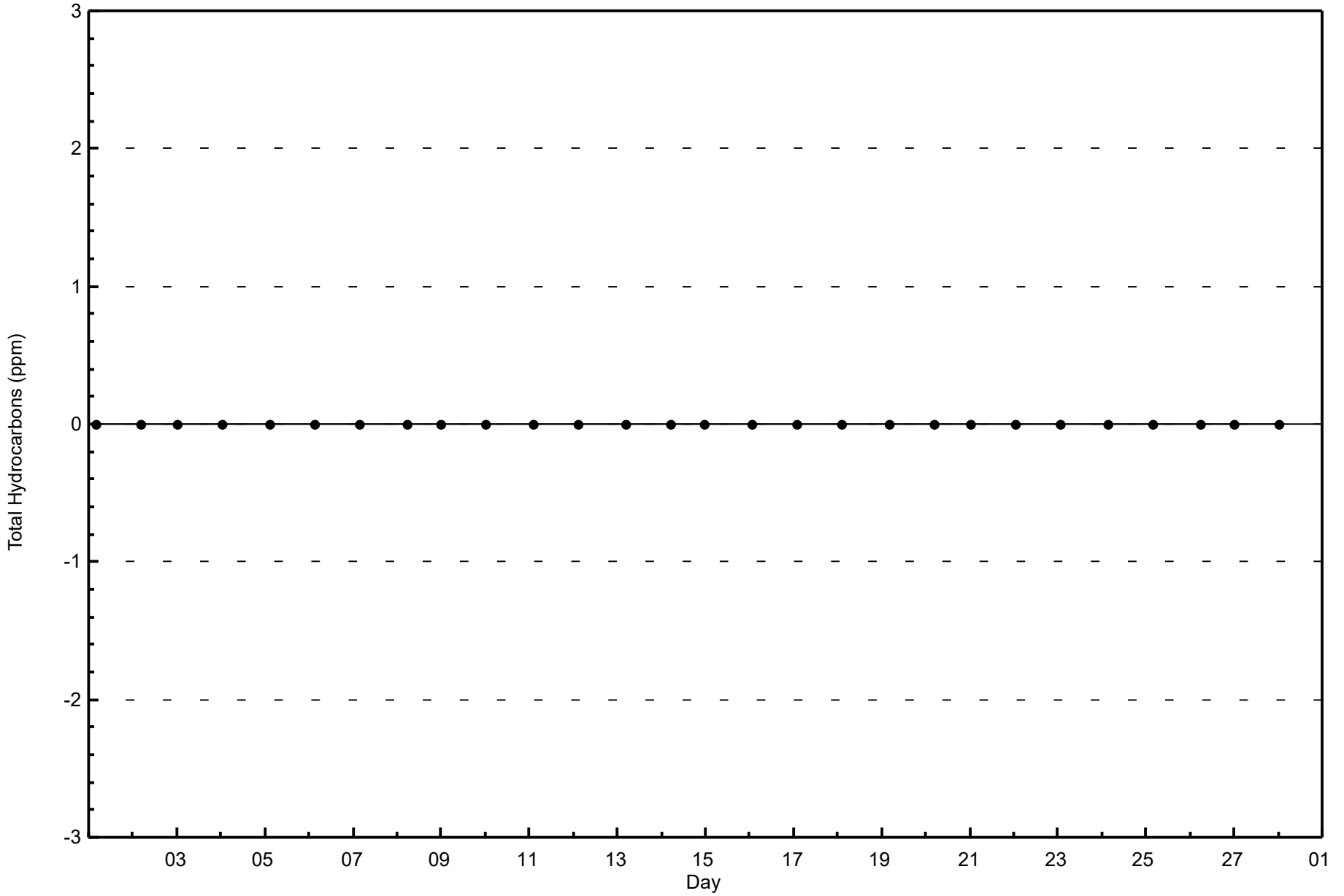
Total Number of Hours: 672

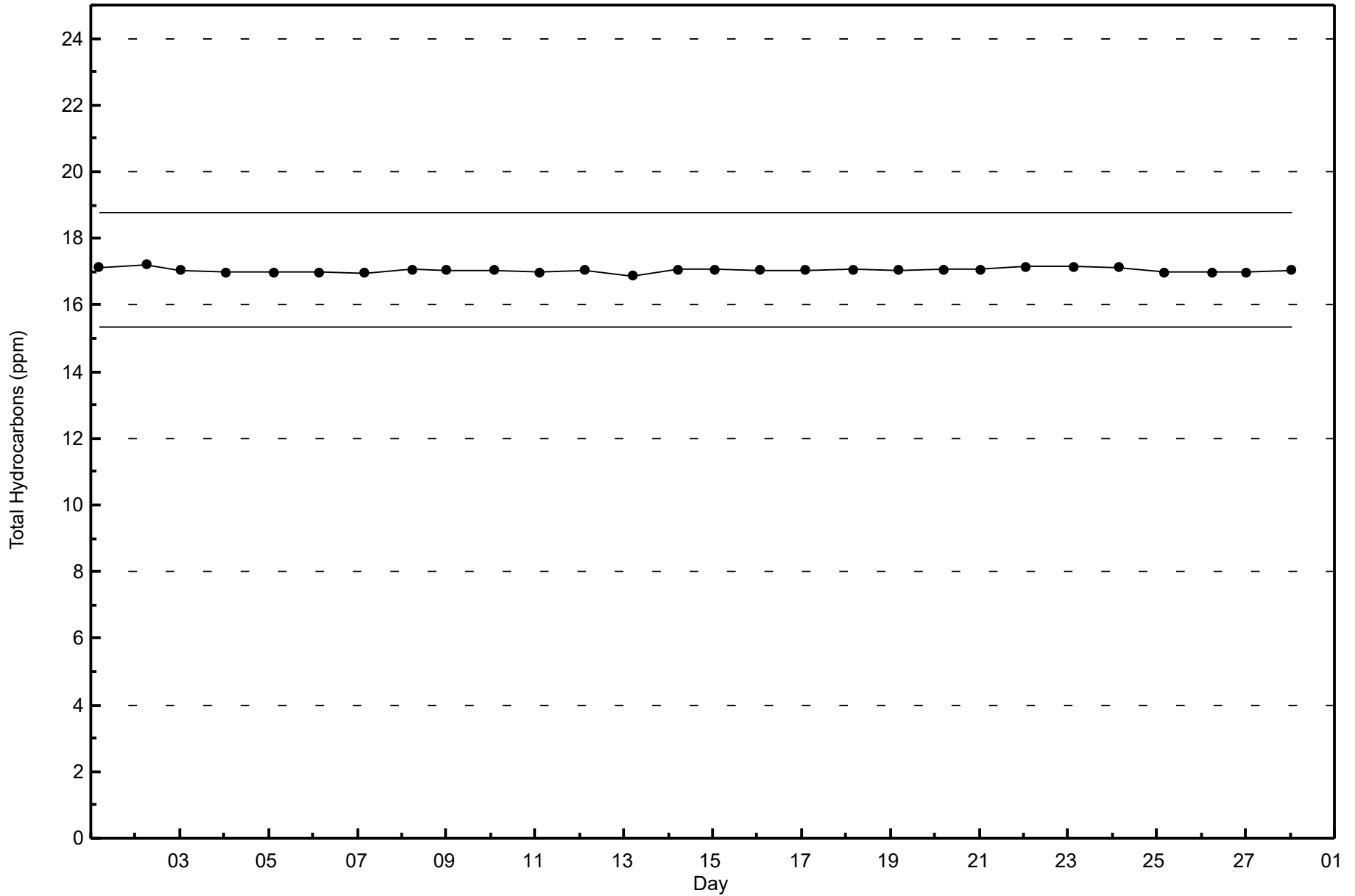


Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Total Hydrocarbons (THC) - ppm  
Fort McKay South







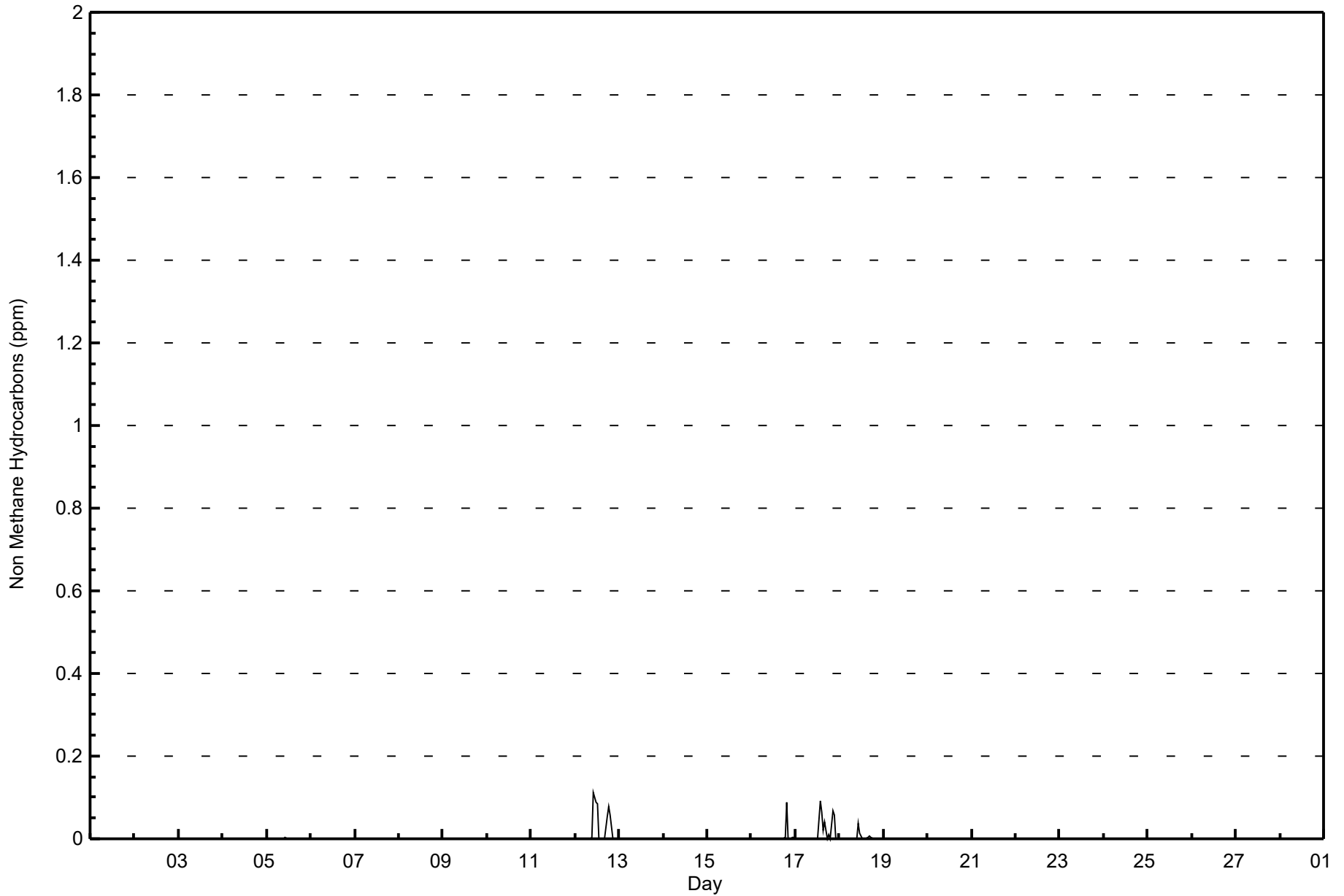






Wood Buffalo Environmental Association  
Hourly Averages

Non Methane Hydrocarbons (NMHC) - ppm  
Fort McKay South - February 2023





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Non Methane Hydrocarbons (NMHC) - ppm**  
**Fort McKay South - February 2023**

| <b>Concentration Ranges (ppm)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 0.005                         | 620                    | 97.33    | 97.33               |
| 0.006 - 0.05                      | 6                      | 0.94     | 98.27               |
| 0.06 - 0.1                        | 11                     | 1.73     | 100.00              |
| > 0.1                             | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 637

Total Number of Hours: 672



**Wood Buffalo Environmental Association**  
**Frequency Distribution**

**Non Methane Hydrocarbons (NMHC) - ppm**  
**Fort McKay South - February 2023**

| Concentration<br>Ranges (ppm) | Wind Direction |     |    |     |   |     |    |     |    |     |    |     |    |     |    |     | Totals |
|-------------------------------|----------------|-----|----|-----|---|-----|----|-----|----|-----|----|-----|----|-----|----|-----|--------|
|                               | N              | NNE | NE | ENE | E | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |        |
| 0 - 0.005                     | 148            | 65  | 11 | 3   | 2 | 7   | 23 | 49  | 63 | 27  | 45 | 65  | 29 | 21  | 23 | 35  | 616    |
| 0.006 - 0.05                  | 3              | 3   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 6      |
| 0.06 - 0.1                    | 8              | 3   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 11     |
| > 0.1                         | 0              | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| <b>Totals</b>                 | 159            | 71  | 11 | 3   | 2 | 7   | 23 | 49  | 63 | 27  | 45 | 65  | 29 | 21  | 23 | 35  | 633    |

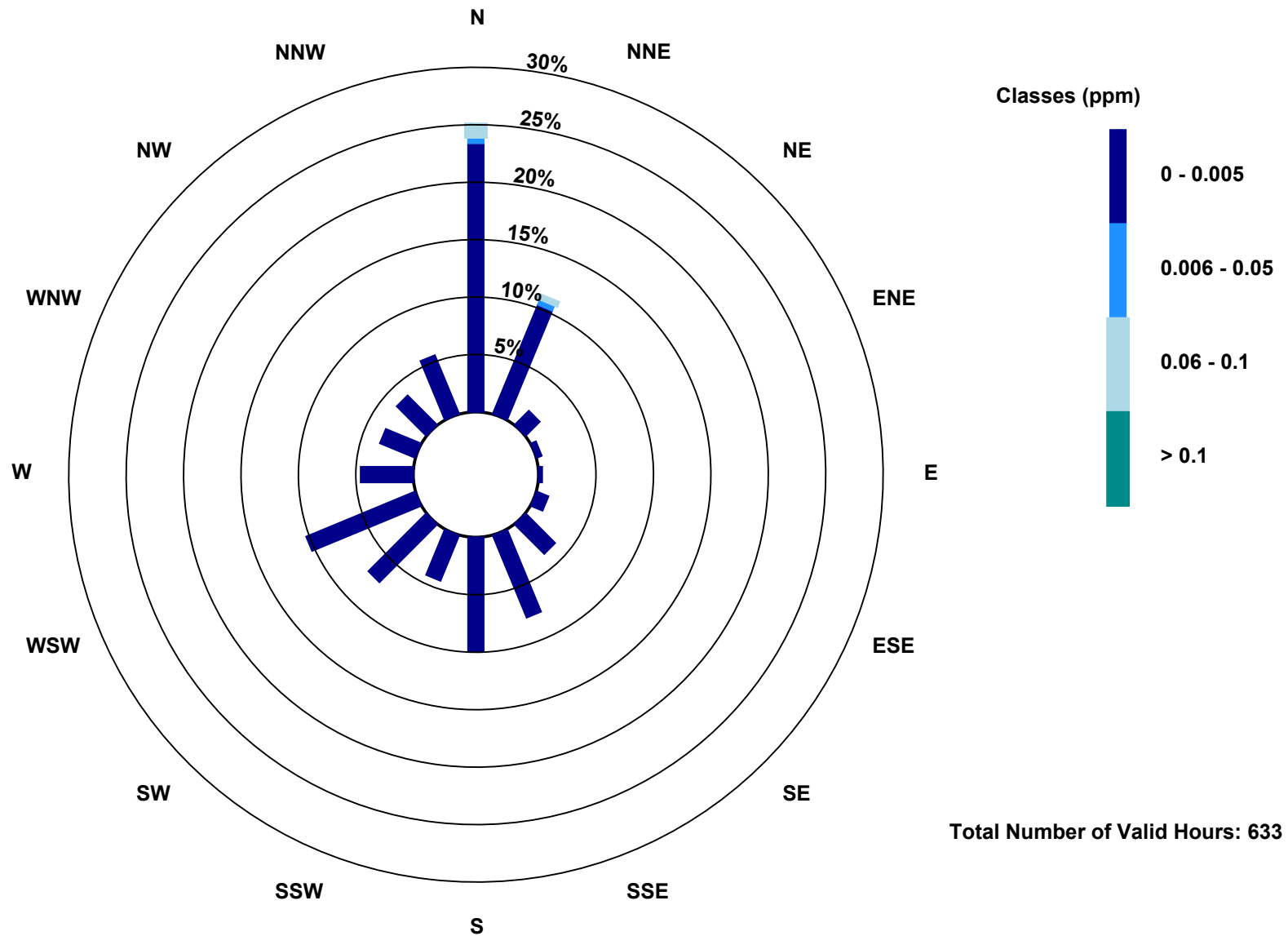
Total Number of Valid Hours: 633

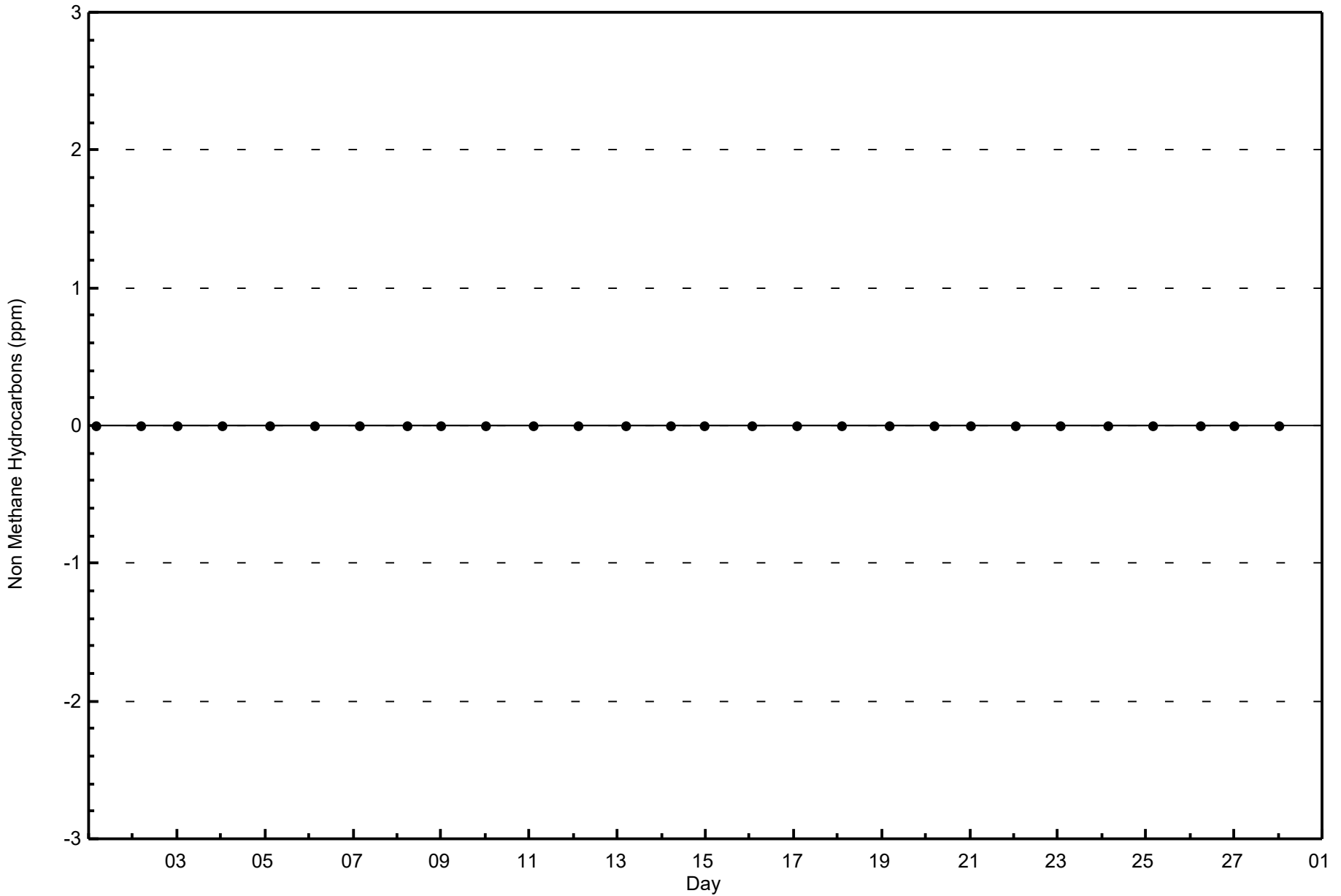
Total Number of Hours: 672

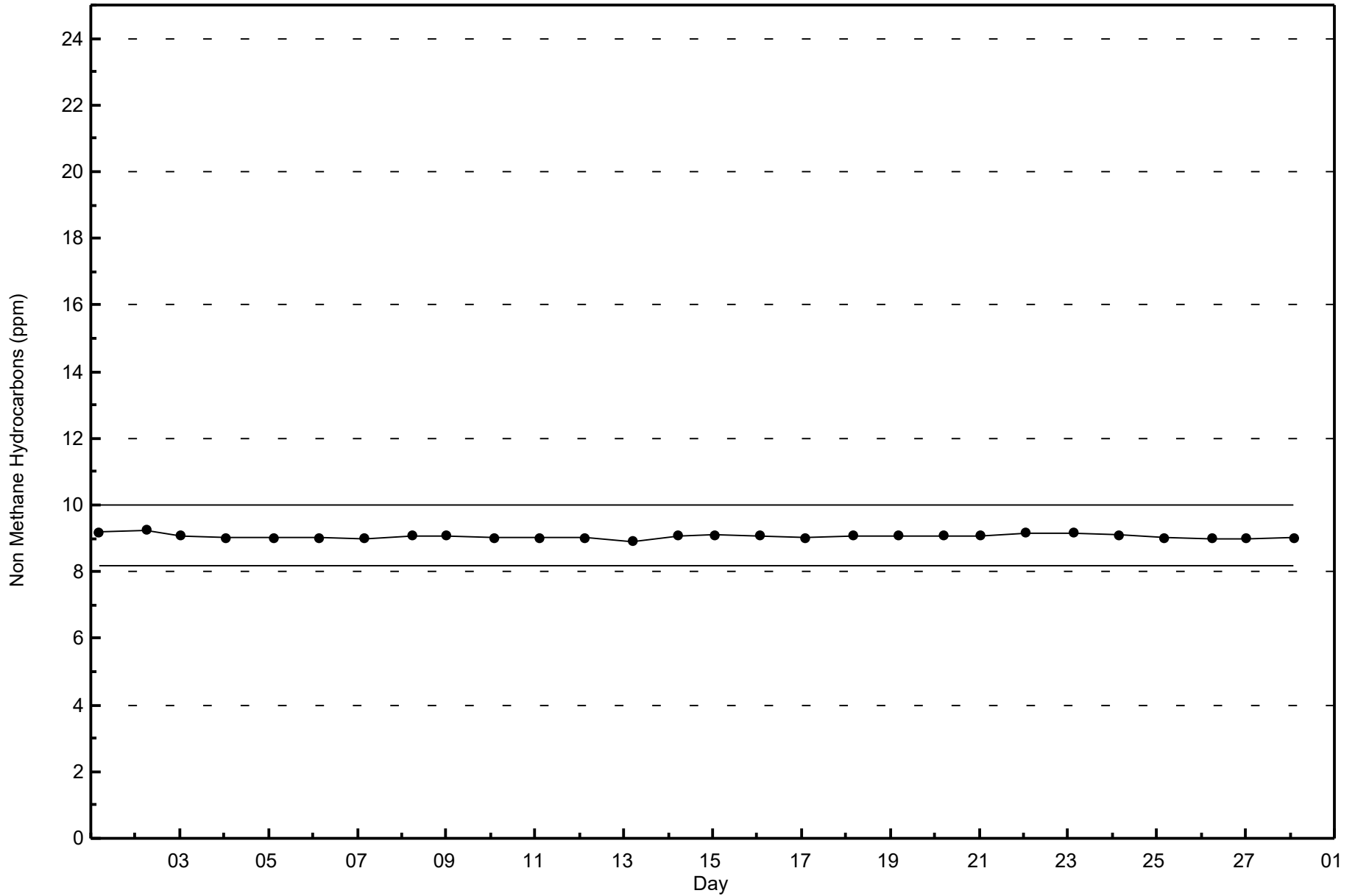


Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Non Methane Hydrocarbons (NMHC) - ppm  
Fort McKay South

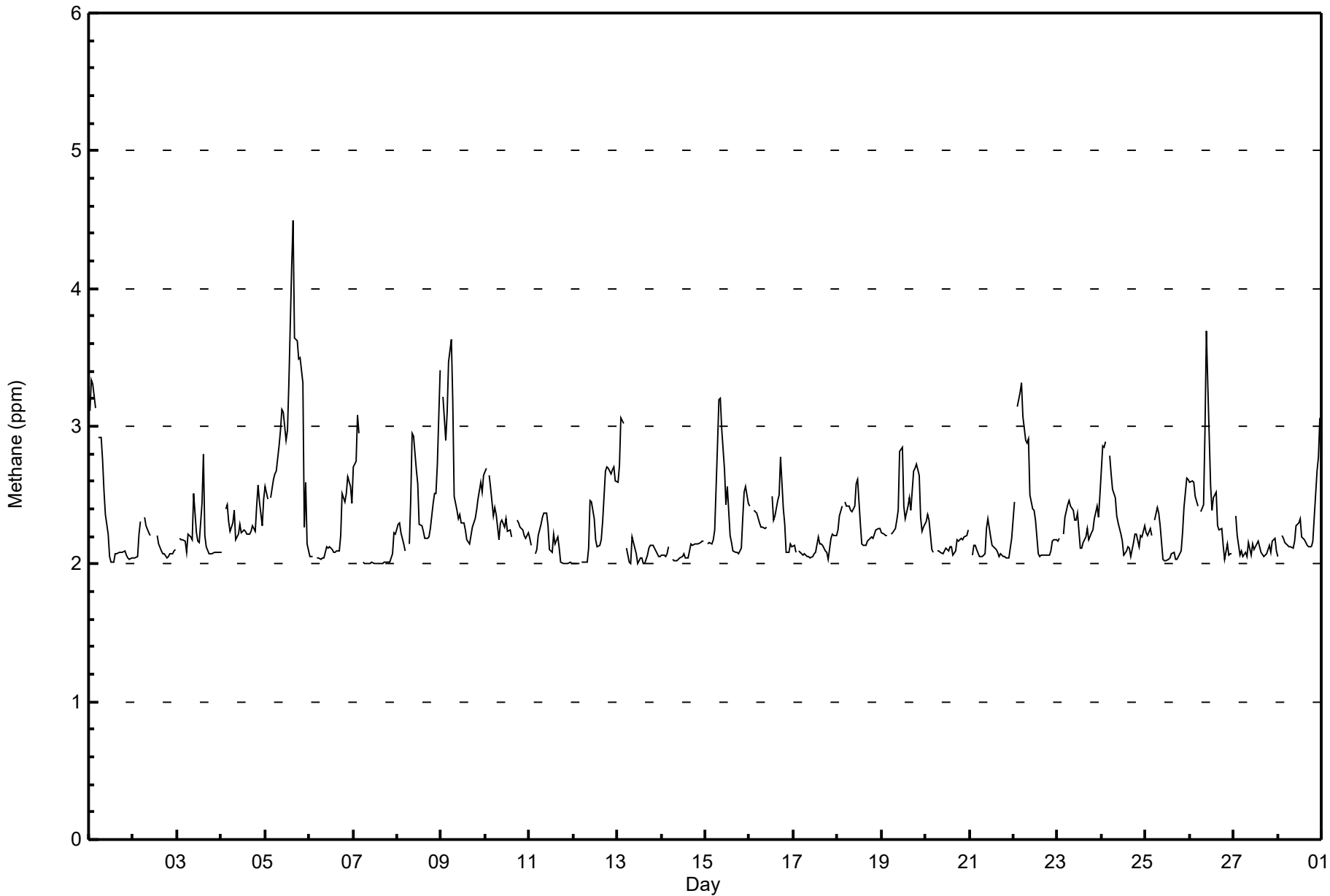








| Number of Exceedences (AAAQO):             |                               | 1-hr: 0  | 24-hr: 0        |     |     |                 |     |     |                    |     |     |     |     |     |     |     |     |     |     |     | Hours in Service:         | 672  |     |     |               |               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
|--|-------------------------------|--|-----------------|-----|-----|-----------------|-----|-----|--------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---------------------------|------|-----|-----|---------------|---------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----------------|
| Maximum Value: 4.5 ppm on Feb 5 16:00      |                               | Maximum Daily Average: 3.0 ppm on Feb 5  |                 |     |     |                 |     |     |                    |     |     |     |     |     |     |     |     |     |     |     | Hours of Data:            | 637  |     |     |               |               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| Minimum Value: 2.0 ppm on Feb 11 21:00     |                               | Minimum Daily Average: 2.1 ppm on Feb 14   |                 |     |     |                 |     |     |                    |     |     |     |     |     |     |     |     |     |     |     | Hours of Missing Data:    | 35   |     |     |               |               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| Maximum Diurnal Average: 2.5 ppm at hour 3 |                               | Minimum Diurnal Average: 2.2 ppm at hour 17  |                 |     |     |                 |     |     |                    |     |     |     |     |     |     |     |     |     |     |     | Hours of Calibration:     | 31   |     |     |               |               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| Monthly Average: 2.31 ppm                  |                               | Percentiles: P <sub>1</sub> = 2.0 P <sub>10</sub> = 2.0 Q <sub>1</sub> = 2.1 Median = 2.2 Q <sub>3</sub> = 2.4 P <sub>90</sub> = 2.7 P <sub>99</sub> = 3.5 |                 |     |     |                 |     |     |                    |     |     |     |     |     |     |     |     |     |     |     | Percent Operational Time: | 99.4 |     |     |               |               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| Day  | Hourly Period Ending At (MST) |  |                 |     |     |                 |     |     |                    |     |     |     |     |     |     |     |     |     |     |     |                           |      |     |     | Daily Average | Daily Maximum |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
|  | 1                             | 2  | 3               | 4   | 5   | 6               | 7   | 8   | 9                  | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19  | 20  | 21                        | 22   | 23  | 24  |               |               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 1-Feb                                      | 3.1                           | 3.3  | 3.3             | 3.1 | Z   | 2.9             | 2.9 | 2.8 | 2.5                | 2.4 | 2.2 | 2.1 | 2.0 | 2.0 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1                       | 2.0  | 2.0 | 2.0 | 2.4           | 3.3           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 2-Feb                                      | 2.0                           | 2.0  | 2.1             | 2.2 | 2.3 | Z               | 2.3 | 2.3 | 2.2                | 2.2 | C   | C   | C   | 2.2 | 2.2 | 2.1 | 2.1 | 2.1 | 2.0 | 2.1 | 2.1                       | 2.1  | 2.1 | 2.1 | 2.1           | 2.3           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 3-Feb                                      | Z                             | 2.2  | 2.2             | 2.2 | 2.2 | 2.1             | 2.2 | 2.2 | 2.2                | 2.5 | 2.2 | 2.2 | 2.2 | 2.4 | 2.8 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1                       | 2.1  | 2.1 | 2.1 | 2.2           | 2.8           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 4-Feb                                      | 2.1                           | Z  | 2.4             | 2.4 | 2.3 | 2.2             | 2.3 | 2.4 | 2.2                | 2.2 | 2.3 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.3 | 2.2 | 2.4 | 2.6                       | 2.5  | 2.3 | 2.5 | 2.3           | 2.6           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 5-Feb                                      | 2.6                           | 2.5  | Z               | 2.5 | 2.6 | 2.7             | 2.7 | 2.9 | 3.0                | 3.1 | 3.1 | 2.9 | 3.0 | 3.3 | 4.2 | 4.5 | 3.6 | 3.6 | 3.5 | 3.5 | 3.3                       | 2.3  | 2.6 | 2.1 | 3.0           | 4.5           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 6-Feb                                      | 2.1                           | 2.1  | 2.1             | Z   | 2.0 | 2.0             | 2.0 | 2.0 | 2.0                | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.5 | 2.5 | 2.5                       | 2.6  | 2.6 | 2.4 | 2.2           | 2.6           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 7-Feb                                      | 2.7                           | 2.7  | 3.1             | 2.9 | Z   | 2.0             | 2.0 | 2.0 | 2.0                | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1                       | 2.2  | 2.2 | 2.2 | 2.2           | 3.1           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 8-Feb                                      | 2.3                           | 2.3  | 2.2             | 2.1 | 2.1 | Z               | 2.1 | 2.5 | 2.9                | 2.9 | 2.7 | 2.6 | 2.3 | 2.3 | 2.2 | 2.2 | 2.2 | 2.2 | 2.3 | 2.4 | 2.5                       | 2.5  | 2.7 | 3.4 | 2.4           | 3.4           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 9-Feb                                      | Z                             | 3.2  | 2.9             | 3.1 | 3.5 | 3.6             | 3.2 | 2.5 | 2.4                | 2.3 | 2.4 | 2.3 | 2.3 | 2.2 | 2.2 | 2.2 | 2.2 | 2.3 | 2.3 | 2.4 | 2.5                       | 2.6  | 2.5 | 2.6 | 2.6           | 3.6           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 10-Feb                                     | 2.7                           | Z  | 2.6             | 2.6 | 2.3 | 2.4             | 2.4 | 2.2 | 2.3                | 2.3 | 2.3 | 2.3 | 2.2 | 2.2 | 2.2 | PF  | PF  | 2.3 | 2.3 | 2.3 | 2.2                       | 2.2  | 2.2 | 2.2 | 2.3           | 2.7           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 11-Feb                                     | 2.2                           | 2.1  | Z               | 2.1 | 2.1 | 2.2             | 2.3 | 2.3 | 2.4                | 2.4 | 2.3 | 2.1 | 2.1 | 2.2 | 2.1 | 2.2 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0                       | 2.0  | 2.0 | 2.0 | 2.1           | 2.4           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 12-Feb                                     | 2.0                           | 2.0  | 2.0             | Z   | 2.0 | 2.0             | 2.0 | 2.0 | 2.1                | 2.5 | 2.4 | 2.3 | 2.2 | 2.1 | 2.1 | 2.2 | 2.3 | 2.7 | 2.7 | 2.7 | 2.7                       | 2.7  | 2.7 | 2.6 | 2.3           | 2.7           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 13-Feb                                     | 2.6                           | 2.7  | 3.1             | 3.0 | Z   | 2.1             | 2.0 | 2.0 | 2.2                | 2.1 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1                       | 2.1  | 2.0 | 2.2 | 2.2           | 3.1           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 14-Feb                                     | 2.1                           | 2.1  | 2.1             | 2.1 | 2.1 | Z               | 2.0 | 2.0 | 2.0                | 2.0 | 2.0 | 2.1 | 2.1 | 2.0 | 2.0 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1                       | 2.2  | 2.2 | 2.2 | 2.1           | 2.2           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 15-Feb                                     | Z                             | 2.1  | 2.2             | 2.1 | 2.2 | 2.2             | 2.9 | 3.2 | 3.2                | 3.0 | 2.7 | 2.4 | 2.6 | 2.2 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.3                       | 2.5  | 2.6 | 2.4 | 2.4           | 3.2           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 16-Feb                                     | 2.4                           | Z  | 2.4             | 2.4 | 2.4 | 2.3             | 2.3 | 2.3 | 2.3                | 2.3 | M   | M   | 2.5 | 2.3 | 2.3 | 2.5 | 2.5 | 2.8 | 2.4 | 2.3 | 2.1                       | 2.1  | 2.1 | 2.1 | 2.3           | 2.8           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 17-Feb                                     | 2.1                           | 2.1  | Z               | 2.1 | 2.1 | 2.1             | 2.1 | 2.1 | 2.1                | 2.0 | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.0 | 2.2                       | 2.2  | 2.2 | 2.2 | 2.1           | 2.2           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 18-Feb                                     | 2.3                           | 2.4  | 2.4             | Z   | 2.4 | 2.4             | 2.4 | 2.4 | 2.4                | 2.4 | 2.6 | 2.6 | 2.3 | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2                       | 2.2  | 2.3 | 2.3 | 2.3           | 2.6           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 19-Feb                                     | 2.2                           | 2.2  | 2.2             | 2.2 | Z   | 2.2             | 2.2 | 2.3 | 2.3                | 2.4 | 2.8 | 2.8 | 2.4 | 2.3 | 2.4 | 2.5 | 2.4 | 2.7 | 2.7 | 2.7 | 2.6                       | 2.3  | 2.2 | 2.3 | 2.4           | 2.8           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 20-Feb                                     | 2.3                           | 2.4  | 2.3             | 2.1 | 2.1 | Z               | 2.1 | 2.1 | 2.1                | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | 2.2 | 2.2                       | 2.2  | 2.2 | 2.2 | 2.2           | 2.4           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 21-Feb                                     | Z                             | 2.1  | 2.1             | 2.1 | 2.1 | 2.1             | 2.1 | 2.1 | 2.1                | 2.3 | 2.3 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.0                       | 2.0  | 2.1 | 2.2 | 2.1           | 2.3           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 22-Feb                                     | 2.4                           | Z  | 3.1             | 3.2 | 3.3 | 3.1             | 2.9 | 2.9 | 2.9                | 2.5 | 2.4 | 2.4 | 2.3 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1                       | 2.2  | 2.2 | 2.2 | 2.5           | 3.3           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 23-Feb                                     | 2.2                           | 2.2  | Z               | 2.2 | 2.3 | 2.4             | 2.5 | 2.4 | 2.4                | 2.3 | 2.3 | 2.4 | 2.1 | 2.1 | 2.2 | 2.2 | 2.3 | 2.2 | 2.2 | 2.2 | 2.3                       | 2.4  | 2.3 | 2.5 | 2.3           | 2.5           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 24-Feb                                     | 2.9                           | 2.8  | 2.9             | Z   | 2.8 | 2.7             | 2.5 | 2.5 | 2.3                | 2.3 | 2.2 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | 2.2 | 2.1                       | 2.2  | 2.2 | 2.3 | 2.3           | 2.9           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 25-Feb                                     | 2.2                           | 2.2  | 2.3             | 2.2 | Z   | 2.3             | 2.4 | 2.4 | 2.3                | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1 | 2.1 | 2.0 | 2.0 | 2.1 | 2.1 | 2.2                       | 2.4  | 2.6 | 2.6 | 2.2           | 2.6           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 26-Feb                                     | 2.6                           | 2.6  | 2.6             | 2.5 | 2.4 | Z               | 2.4 | 2.4 | 3.0                | 3.7 | 3.3 | 2.6 | 2.4 | 2.5 | 2.5 | 2.3 | 2.2 | 2.3 | 2.1 | 2.0 | 2.1                       | 2.1  | 2.1 | 2.1 | 2.5           | 3.7           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 27-Feb                                     | Z                             | 2.3  | 2.2             | 2.1 | 2.1 | 2.0             | 2.1 | 2.1 | 2.2                | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1                       | 2.2  | 2.2 | 2.1 | 2.1           | 2.3           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 28-Feb                                     | 2.1                           | Z  | 2.2             | 2.2 | 2.2 | 2.1             | 2.1 | 2.1 | 2.1                | 2.2 | 2.3 | 2.3 | 2.3 | 2.2 | 2.2 | 2.2 | 2.1 | 2.1 | 2.1 | 2.2 | 2.3                       | 2.7  | 2.8 | 3.1 | 2.3           | 3.1           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
|  |                               |  |                 |     |     |                 |     |     |                    |     |     |     |     |     |     |     |     |     |     |     |                           |      |     | 2.4 | 2.4           | 2.5           | 2.4 | 2.3 | 2.4 | 2.3 | 2.3 | 2.4 | 2.4 | 2.4 | 2.3 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | Diurnal Average |
|  |                               |  |                 |     |     |                 |     |     |                    |     |     |     |     |     |     |     |     |     |     |     |                           |      |     | 3.1 | 3.3           | 3.3           | 3.2 | 3.5 | 3.6 | 3.2 | 3.2 | 3.2 | 3.7 | 3.3 | 2.9 | 3.0 | 3.3 | 4.2 | 4.5 | 3.6 | 3.6 | 3.5 | 3.5 | 3.3 | 2.7 | 2.8 | 3.4 | Diurnal Maximum |
| Z - zerospan                               |                               |  | C - Calibration |     |     | M - Maintenance |     |     | PF - Power Failure |     |     |     |     |     |     |     |     |     |     |     |                           |      |     |     |               |               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |







**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Methane (CH<sub>4</sub>) - ppm**  
**Fort McKay South - February 2023**

| <b>Concentration Ranges (ppm)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 2.0                           | 71                     | 11.15    | 11.15               |
| 2.1 - 3.0                         | 535                    | 83.99    | 95.13               |
| 3.1 - 10.0                        | 31                     | 4.87     | 100.00              |
| > 10.0                            | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 637

Total Number of Hours: 672



**Wood Buffalo Environmental Association**  
**Frequency Distribution**

**Methane (CH<sub>4</sub>) - ppm**  
**Fort McKay South - February 2023**

| Concentration<br>Ranges (ppm) | Wind Direction |     |    |     |   |     |    |     |    |     |    |     |    |     |    |     | Totals |
|-------------------------------|----------------|-----|----|-----|---|-----|----|-----|----|-----|----|-----|----|-----|----|-----|--------|
|                               | N              | NNE | NE | ENE | E | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |        |
| 0 - 2.0                       | 10             | 7   | 0  | 0   | 0 | 0   | 1  | 1   | 4  | 0   | 9  | 20  | 11 | 4   | 3  | 1   | 71     |
| 2.1 - 3.0                     | 148            | 63  | 11 | 3   | 2 | 7   | 22 | 47  | 54 | 18  | 29 | 40  | 18 | 17  | 19 | 33  | 531    |
| 3.1 - 10.0                    | 1              | 1   | 0  | 0   | 0 | 0   | 0  | 1   | 5  | 9   | 7  | 5   | 0  | 0   | 1  | 1   | 31     |
| > 10.0                        | 0              | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| <b>Totals</b>                 | 159            | 71  | 11 | 3   | 2 | 7   | 23 | 49  | 63 | 27  | 45 | 65  | 29 | 21  | 23 | 35  | 633    |

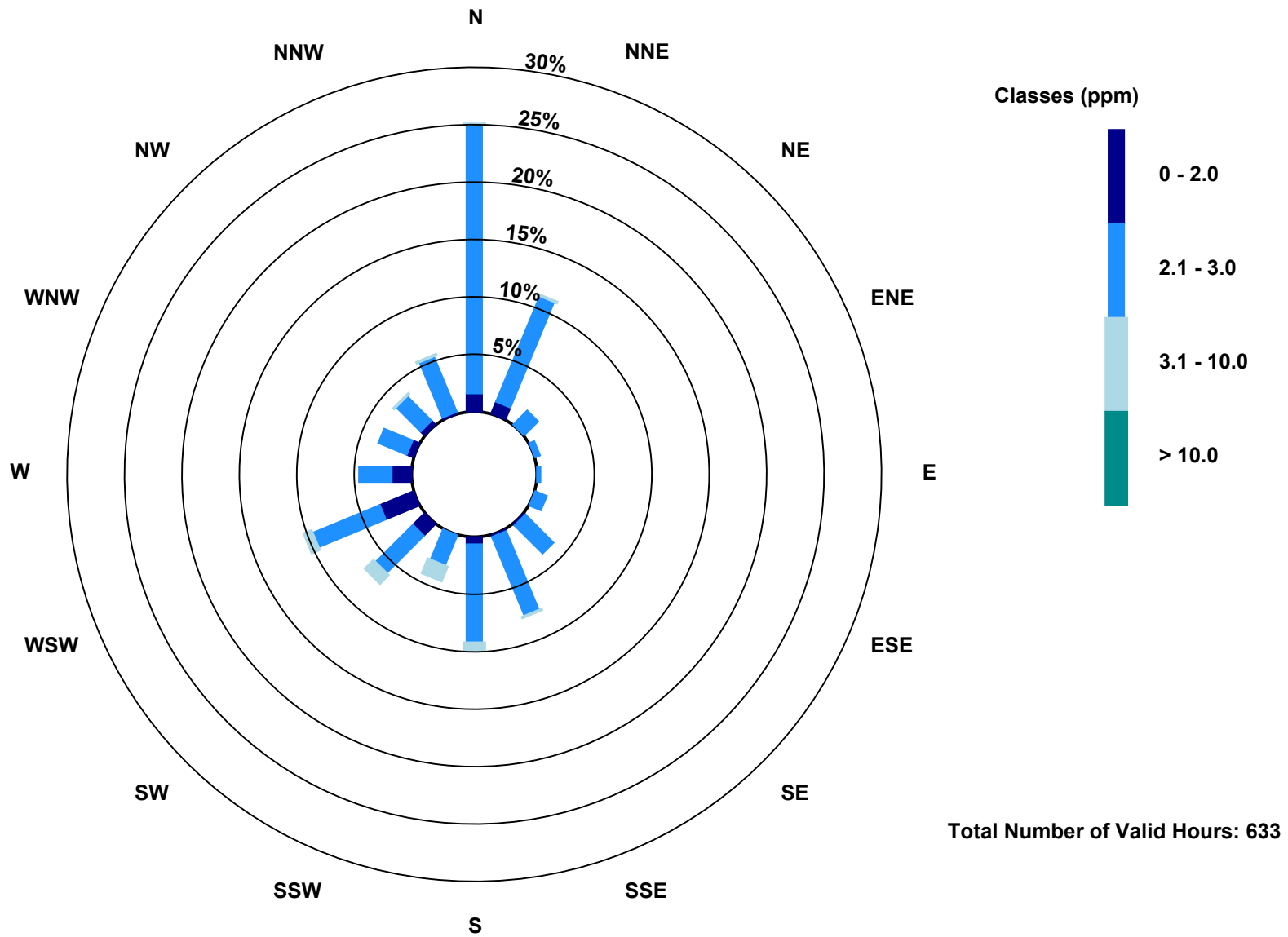
Total Number of Valid Hours: 633

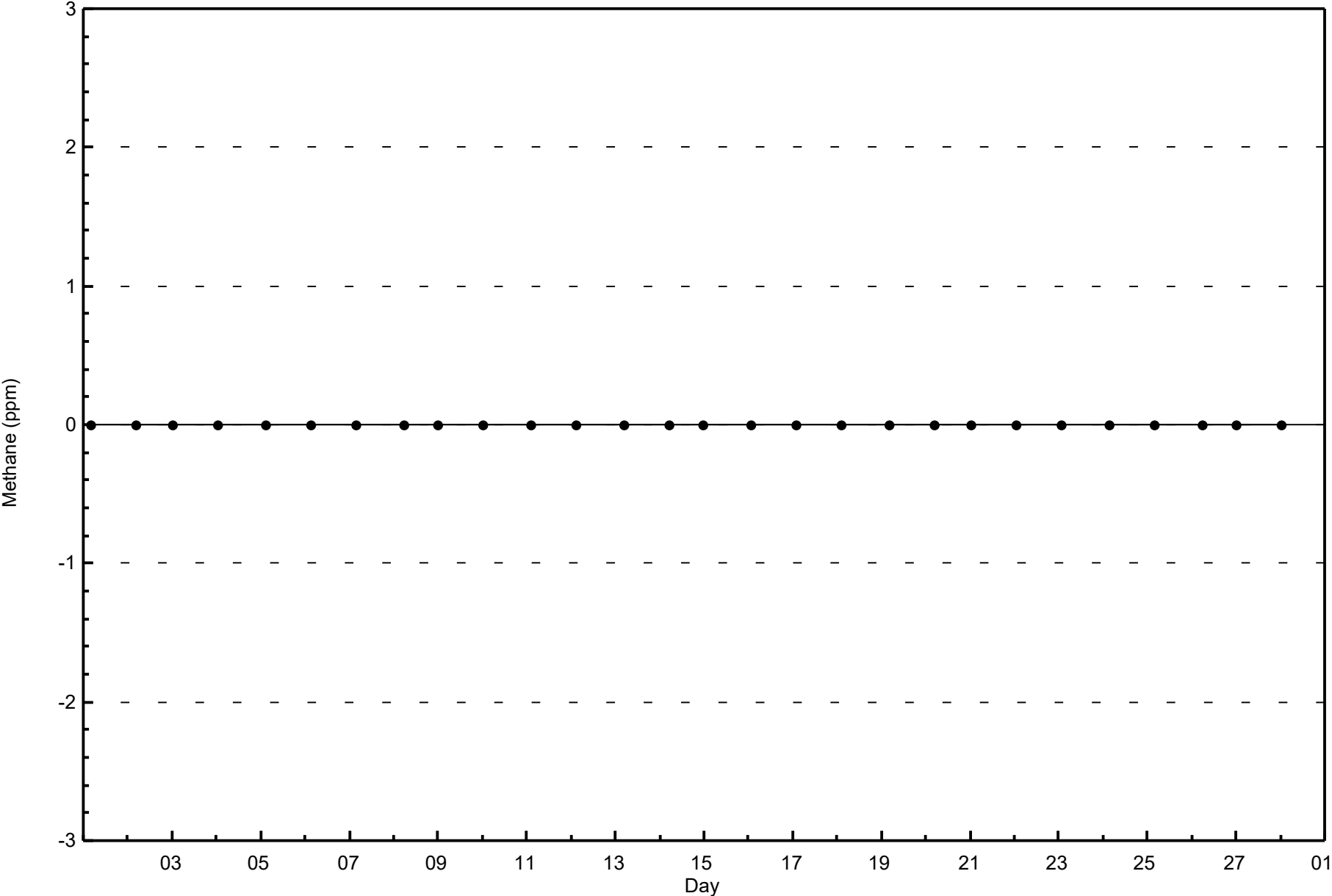
Total Number of Hours: 672

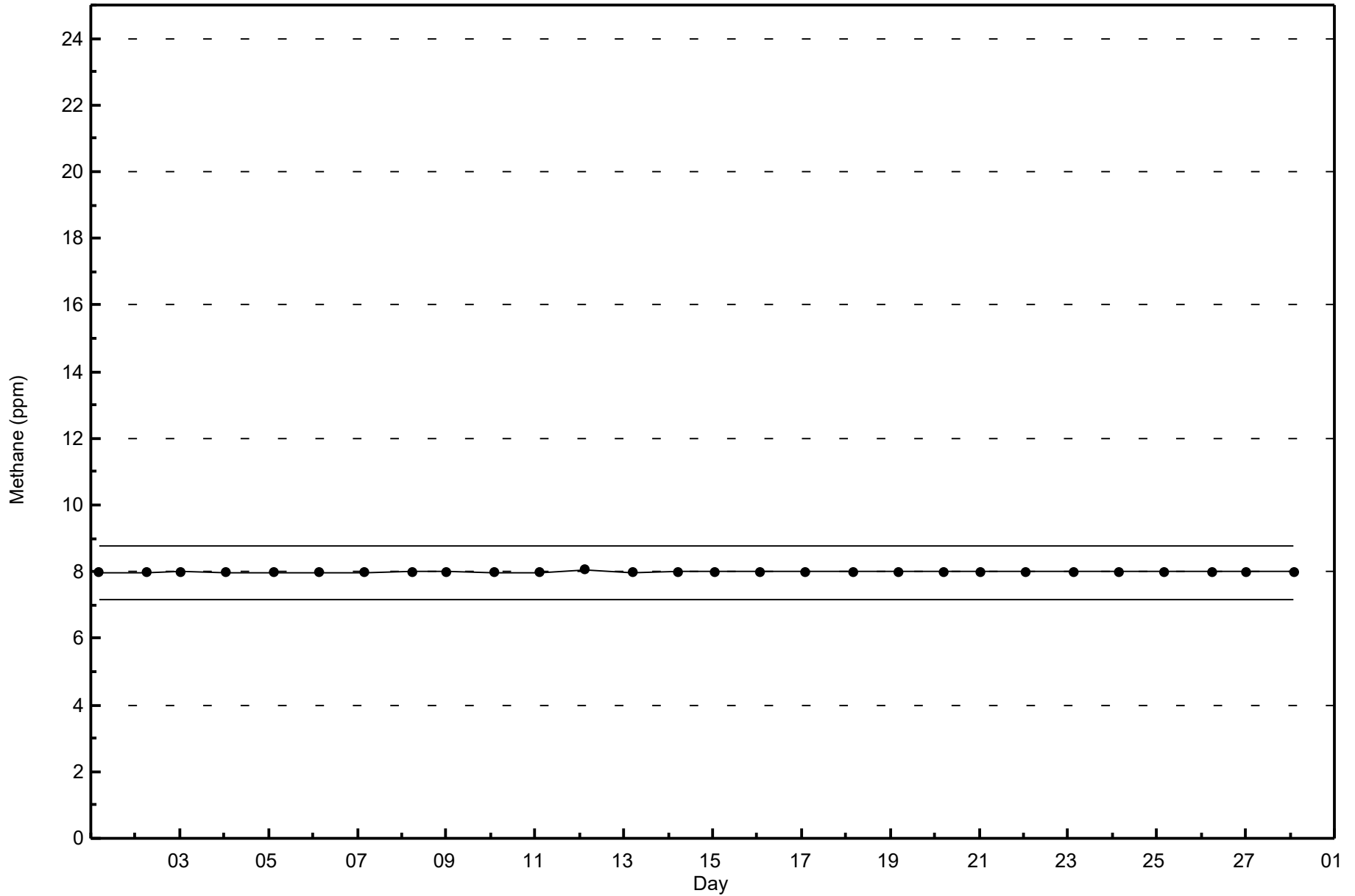


Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Methane (CH<sub>4</sub>) - ppm  
Fort McKay South









Wood Buffalo Environmental Association

Summary of Hour Averages

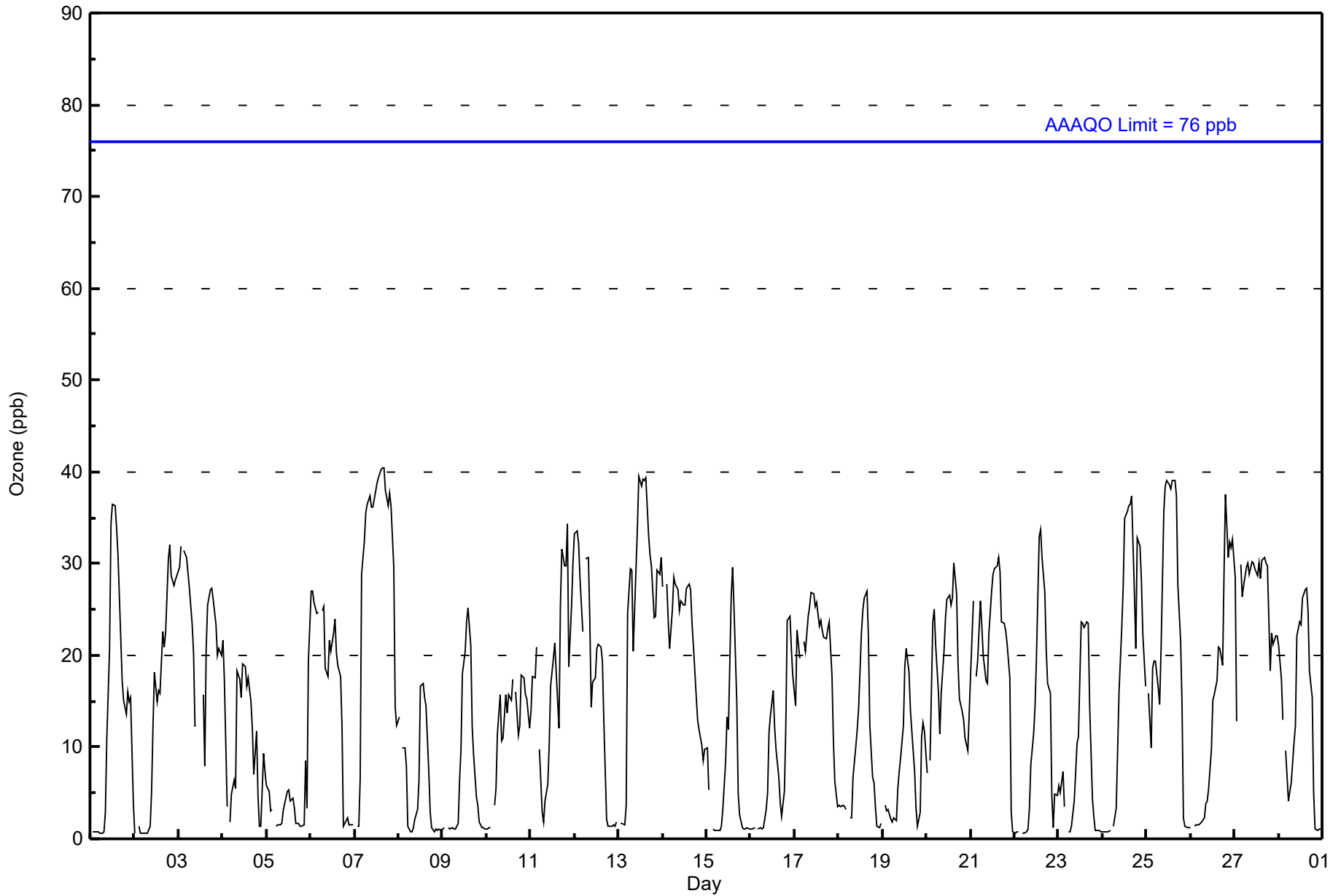
Ozone (O<sub>3</sub>) - ppb

Fort McKay South - February 2023

|  |  |          |                           |      |
|--|--|----------|---------------------------|------|
| Number of Exceedences (AAAQO):               | 1-hr: 0  | 24-hr: 0 | Hours in Service:         | 672  |
| Maximum Value: 40.5 ppb on Feb 7 16:00       | Maximum Daily Average: 30.2 ppb on Feb 7   |          | Hours of Data:            | 640  |
| Minimum Value: 0.6 ppb on Feb 2 06:00        | Minimum Daily Average: 4.0 ppb on Feb 5  |          | Hours of Missing Data:    | 32   |
| Maximum Diurnal Average: 24.3 ppb at hour 14 | Minimum Diurnal Average: 8.6 ppb at hour 3   |          | Hours of Calibration:     | 31   |
| Monthly Average: 15.43 ppb                   | Percentiles: P <sub>1</sub> = 0.6 P <sub>10</sub> = 1.1 Q <sub>1</sub> = 3.5 Median = 15.5 Q <sub>3</sub> = 24.8 P <sub>90</sub> = 30.6 P <sub>99</sub> = 39.1 |          | Percent Operational Time: | 99.9 |

| Day    | Hourly Period Ending At (MST) |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Daily Average | Daily Maximum   |
|--------|-------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|---------------|-----------------|
|        | 1                             | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20   | 21   | 22   | 23   | 24   |               |                 |
| 1-Feb  | Z                             | 0.8  | 0.8  | 0.8  | 0.7  | 0.6  | 0.6  | 0.7  | 2.9  | 10.9 | 20.7 | 34.3 | 36.5 | 36.3 | 33.8 | 30.9 | 21.9 | 17.2 | 15.1 | 13.6 | 15.9 | 14.9 | 15.4 | 3.9  | 14.3          | 36.5            |
| 2-Feb  | 0.6                           | Z    | 1.3  | 0.6  | 0.7  | 0.6  | 0.6  | 0.6  | 1.3  | 5.2  | 12.2 | 18.1 | 14.9 | 16.1 | 15.9 | 22.5 | 21.0 | 22.4 | 30.6 | 32.0 | 28.7 | 27.7 | 28.2 | 28.7 | 14.4          | 32.0            |
| 3-Feb  | 29.6                          | 31.9 | Z    | 31.4 | 30.7 | 29.0 | 27.3 | 23.4 | 20.2 | 12.3 | C    | C    | C    | 15.7 | 8.0  | 20.8 | 25.5 | 27.1 | 27.2 | 26.1 | 23.3 | 20.0 | 20.7 | 20.0 | 23.5          | 31.9            |
| 4-Feb  | 21.6                          | 17.2 | 3.5  | Z    | 1.9  | 4.8  | 6.4  | 5.5  | 18.3 | 17.4 | 15.4 | 19.1 | 18.8 | 16.7 | 17.5 | 14.9 | 11.9 | 7.0  | 11.8 | 4.8  | 1.4  | 1.3  | 9.3  | 7.4  | 11.0          | 21.6            |
| 5-Feb  | 5.8                           | 5.2  | 3.1  | 3.2  | Z    | 1.4  | 1.5  | 1.5  | 1.7  | 3.0  | 3.8  | 5.2  | 5.3  | 4.1  | 4.4  | 3.3  | 1.7  | 1.6  | 1.4  | 1.4  | 1.5  | 8.6  | 3.4  | 19.3 | 4.0           | 19.3            |
| 6-Feb  | 27.0                          | 27.0 | 25.8 | 24.5 | 24.8 | Z    | 24.8 | 25.2 | 18.7 | 17.7 | 21.7 | 20.4 | 22.4 | 23.9 | 20.2 | 18.8 | 17.7 | 12.3 | 1.3  | 2.0  | 2.3  | 1.5  | 1.5  | 1.4  | 16.7          | 27.0            |
| 7-Feb  | Z                             | 1.4  | 1.4  | 6.5  | 28.8 | 32.5 | 35.5 | 36.5 | 37.4 | 36.1 | 36.2 | 37.8 | 38.7 | 39.4 | 40.2 | 40.5 | 40.5 | 38.0 | 36.3 | 37.6 | 36.3 | 29.6 | 14.3 | 12.4 | 30.2          | 40.5            |
| 8-Feb  | 13.3                          | Z    | 9.8  | 9.9  | 7.9  | 1.4  | 0.8  | 0.8  | 1.1  | 2.1  | 3.2  | 6.5  | 16.6 | 16.9 | 15.4 | 14.5 | 7.4  | 3.0  | 1.2  | 0.8  | 1.0  | 1.0  | 1.0  | 0.9  | 5.9           | 16.9            |
| 9-Feb  | 1.0                           | 1.2  | Z    | 1.2  | 1.1  | 1.3  | 1.1  | 1.1  | 1.7  | 6.3  | 9.7  | 18.0 | 20.5 | 23.7 | 25.1 | 21.0 | 12.2 | 9.2  | 4.6  | 3.7  | 1.8  | 1.2  | 1.1  | 1.1  | 7.3           | 25.1            |
| 10-Feb | 1.1                           | 1.2  | 1.2  | Z    | 3.6  | 5.5  | 11.5 | 15.6 | 10.7 | 11.0 | 15.8 | 13.7 | 15.8 | 15.1 | 17.4 | PF   | 16.0 | 11.3 | 12.4 | 17.8 | 17.6 | 15.6 | 15.2 | 12.1 | 11.7          | 17.8            |
| 11-Feb | 13.9                          | 17.7 | 17.6 | 21.0 | Z    | 9.7  | 2.9  | 1.8  | 4.1  | 5.9  | 10.3 | 16.6 | 19.7 | 21.3 | 18.1 | 12.1 | 25.3 | 31.6 | 29.7 | 29.8 | 34.3 | 18.8 | 25.5 | 30.2 | 18.2          | 34.3            |
| 12-Feb | 33.2                          | 33.5 | 32.2 | 28.4 | 22.6 | Z    | 30.5 | 30.6 | 24.0 | 14.3 | 17.1 | 17.5 | 20.7 | 21.1 | 21.0 | 19.3 | 12.9 | 2.2  | 1.4  | 1.4  | 1.4  | 1.5  | 1.4  | 1.9  | 17.0          | 33.5            |
| 13-Feb | Z                             | 1.7  | 1.7  | 1.5  | 3.7  | 24.5 | 29.5 | 29.3 | 20.5 | 29.4 | 33.8 | 39.5 | 38.5 | 39.1 | 39.3 | 33.1 | 31.0 | 29.8 | 24.1 | 24.3 | 29.3 | 28.9 | 30.6 | 26.2 | 39.5          |                 |
| 14-Feb | 27.4                          | Z    | 27.7 | 23.7 | 20.7 | 25.0 | 28.5 | 27.8 | 27.1 | 24.9 | 25.9 | 25.4 | 25.5 | 27.3 | 27.8 | 27.1 | 23.4 | 21.1 | 15.5 | 12.9 | 12.0 | 10.2 | 8.6  | 9.7  | 22.0          | 28.5            |
| 15-Feb | 9.9                           | 5.3  | Z    | 1.0  | 0.9  | 0.9  | 0.9  | 0.9  | 1.4  | 3.2  | 8.5  | 13.2 | 11.9 | 26.3 | 29.6 | 25.1 | 14.8 | 4.9  | 2.5  | 1.3  | 1.0  | 1.0  | 1.2  | 1.0  | 7.2           | 29.6            |
| 16-Feb | 1.1                           | 1.0  | 1.1  | Z    | 1.0  | 1.2  | 1.1  | 1.1  | 3.3  | 5.1  | 11.6 | 13.4 | 16.1 | 12.2 | 9.7  | 6.8  | 4.0  | 2.4  | 5.2  | 12.2 | 23.8 | 24.3 | 20.6 | 17.7 | 8.5           | 24.3            |
| 17-Feb | 14.5                          | 22.7 | 21.2 | 19.6 | Z    | 21.5 | 20.4 | 24.2 | 25.3 | 26.9 | 26.6 | 25.4 | 25.7 | 23.2 | 23.8 | 22.8 | 22.0 | 21.8 | 22.9 | 23.7 | 17.6 | 10.7 | 6.2  | 3.5  | 20.5          | 26.9            |
| 18-Feb | 3.7                           | 3.5  | 3.7  | 3.4  | 3.2  | Z    | 2.3  | 2.3  | 6.7  | 10.0 | 11.8 | 14.1 | 22.4 | 24.9 | 26.2 | 27.0 | 22.0 | 12.3 | 6.7  | 6.2  | 3.6  | 1.4  | 1.2  | 1.6  | 9.6           | 27.0            |
| 19-Feb | Z                             | 3.7  | 3.1  | 3.1  | 2.1  | 1.9  | 2.2  | 1.9  | 5.4  | 7.3  | 8.8  | 12.4 | 18.7 | 20.7 | 18.2 | 14.0 | 11.7 | 7.3  | 3.3  | 1.4  | 3.0  | 11.1 | 12.6 | 11.7 | 8.1           | 20.7            |
| 20-Feb | 7.2                           | Z    | 8.6  | 23.6 | 25.0 | 21.2 | 16.0 | 11.5 | 15.9 | 20.5 | 23.9 | 26.1 | 26.6 | 25.5 | 26.3 | 30.0 | 26.7 | 19.0 | 15.2 | 13.9 | 12.9 | 11.0 | 9.6  | 13.7 | 18.7          | 30.0            |
| 21-Feb | 18.0                          | 26.0 | Z    | 17.6 | 19.4 | 26.0 | 23.1 | 20.0 | 17.2 | 17.0 | 22.3 | 27.0 | 28.8 | 29.4 | 29.7 | 30.7 | 29.1 | 23.6 | 23.6 | 22.7 | 21.4 | 17.5 | 2.9  | 0.8  | 21.5          | 30.7            |
| 22-Feb | 0.6                           | 0.7  | 0.7  | Z    | 0.6  | 0.7  | 0.8  | 1.1  | 3.4  | 8.1  | 11.4 | 14.3 | 19.7 | 32.9 | 33.7 | 30.7 | 26.8 | 20.5 | 16.9 | 15.8 | 4.7  | 1.3  | 4.9  | 4.8  | 11.1          | 33.7            |
| 23-Feb | 5.7                           | 5.1  | 7.3  | 3.6  | Z    | 0.8  | 0.8  | 1.3  | 4.1  | 7.2  | 10.3 | 11.2 | 23.6 | 23.5 | 23.0 | 23.7 | 23.5 | 14.6 | 4.4  | 2.5  | 0.9  | 0.9  | 0.8  | 0.8  | 8.7           | 23.7            |
| 24-Feb | 0.8                           | 0.8  | 0.8  | 0.8  | 0.9  | Z    | 1.4  | 3.3  | 9.6  | 16.0 | 23.3 | 27.6 | 35.0 | 35.7 | 36.4 | 36.5 | 37.4 | 26.7 | 20.7 | 32.8 | 31.9 | 28.1 | 22.3 | 16.7 | 19.4          | 37.4            |
| 25-Feb | Z                             | 15.9 | 10.0 | 18.6 | 19.4 | 19.4 | 16.5 | 14.6 | 20.5 | 35.7 | 38.4 | 39.0 | 38.6 | 38.1 | 39.1 | 39.0 | 37.3 | 27.7 | 21.5 | 14.6 | 2.3  | 1.4  | 1.3  | 1.3  | 22.2          | 39.1            |
| 26-Feb | 1.3                           | Z    | 1.4  | 1.5  | 1.6  | 1.7  | 1.8  | 2.2  | 3.9  | 4.0  | 5.5  | 9.8  | 15.1 | 15.7 | 17.2 | 20.9 | 20.8 | 18.9 | 29.0 | 37.5 | 30.7 | 32.3 | 31.8 | 32.6 | 14.7          | 37.5            |
| 27-Feb | 28.5                          | 12.8 | Z    | 30.0 | 26.4 | 27.6 | 29.6 | 30.0 | 28.8 | 30.2 | 30.1 | 29.5 | 28.7 | 30.1 | 28.3 | 30.4 | 30.7 | 30.0 | 29.8 | 18.2 | 22.5 | 21.2 | 22.2 | 22.2 | 26.9          | 30.7            |
| 28-Feb | 21.0                          | 17.5 | 12.9 | Z    | 9.7  | 4.1  | 5.1  | 6.2  | 10.5 | 12.3 | 22.1 | 23.6 | 23.4 | 26.2 | 27.1 | 27.3 | 24.8 | 18.4 | 15.4 | 5.0  | 1.1  | 0.9  | 1.0  | 1.0  | 13.8          | 27.3            |
|        | 12.5                          | 11.0 | 8.6  | 12.0 | 10.7 | 11.0 | 11.6 | 11.5 | 12.4 | 14.3 | 17.8 | 20.7 | 23.3 | 24.3 | 24.0 | 24.1 | 21.5 | 17.3 | 15.6 | 14.9 | 13.5 | 12.3 | 11.2 | 11.0 |               | Diurnal Average |
|        | 33.2                          | 33.5 | 32.2 | 31.4 | 30.7 | 32.5 | 35.5 | 36.5 | 37.4 | 36.1 | 38.4 | 39.5 | 38.7 | 39.4 | 40.2 | 40.5 | 40.5 | 38.0 | 36.3 | 37.6 | 36.3 | 32.3 | 31.8 | 32.6 |               | Diurnal Maximum |

Z - zerspan                      C - Calibration                      PF - Power Failure  
 Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 76 ppb





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Ozone (O<sub>3</sub>) - ppb**  
**Fort McKay South - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 20                            | 400                    | 62.50    | 62.50               |
| 21 - 50                           | 240                    | 37.50    | 100.00              |
| 51 - 82                           | 0                      | 0.00     | 100.00              |
| > 83                              | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 640

Total Number of Hours: 672





**Wood Buffalo Environmental Association  
Frequency Distribution**

**Ozone (O<sub>3</sub>) - ppb  
Fort McKay South - February 2023**

| <b>Concentration<br/>Ranges (ppb)</b> | <b>Wind Direction</b> |     |    |     |   |     |    |     |    |     |    |     |    |     |    |     | <b>Totals</b> |
|---------------------------------------|-----------------------|-----|----|-----|---|-----|----|-----|----|-----|----|-----|----|-----|----|-----|---------------|
|                                       | N                     | NNE | NE | ENE | E | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |               |
| 0 - 20                                | 87                    | 24  | 3  | 2   | 2 | 7   | 20 | 20  | 45 | 26  | 38 | 45  | 15 | 16  | 18 | 28  | 396           |
| 21 - 50                               | 69                    | 48  | 9  | 1   | 1 | 1   | 5  | 32  | 16 | 1   | 10 | 18  | 14 | 4   | 5  | 6   | 240           |
| 51 - 82                               | 0                     | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| > 83                                  | 0                     | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| <b>Totals</b>                         | 156                   | 72  | 12 | 3   | 3 | 8   | 25 | 52  | 61 | 27  | 48 | 63  | 29 | 20  | 23 | 34  | 636           |

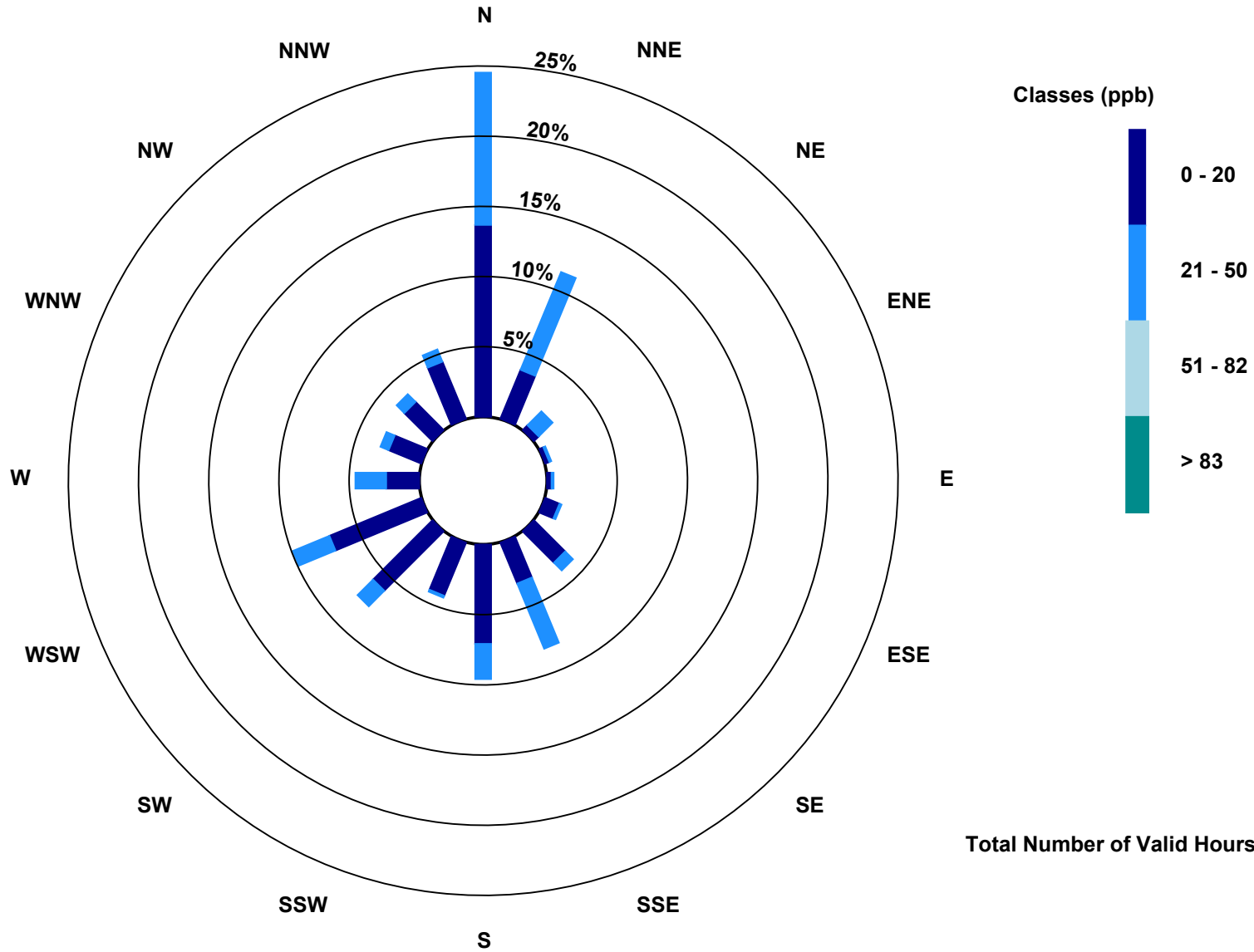
Total Number of Valid Hours: 636

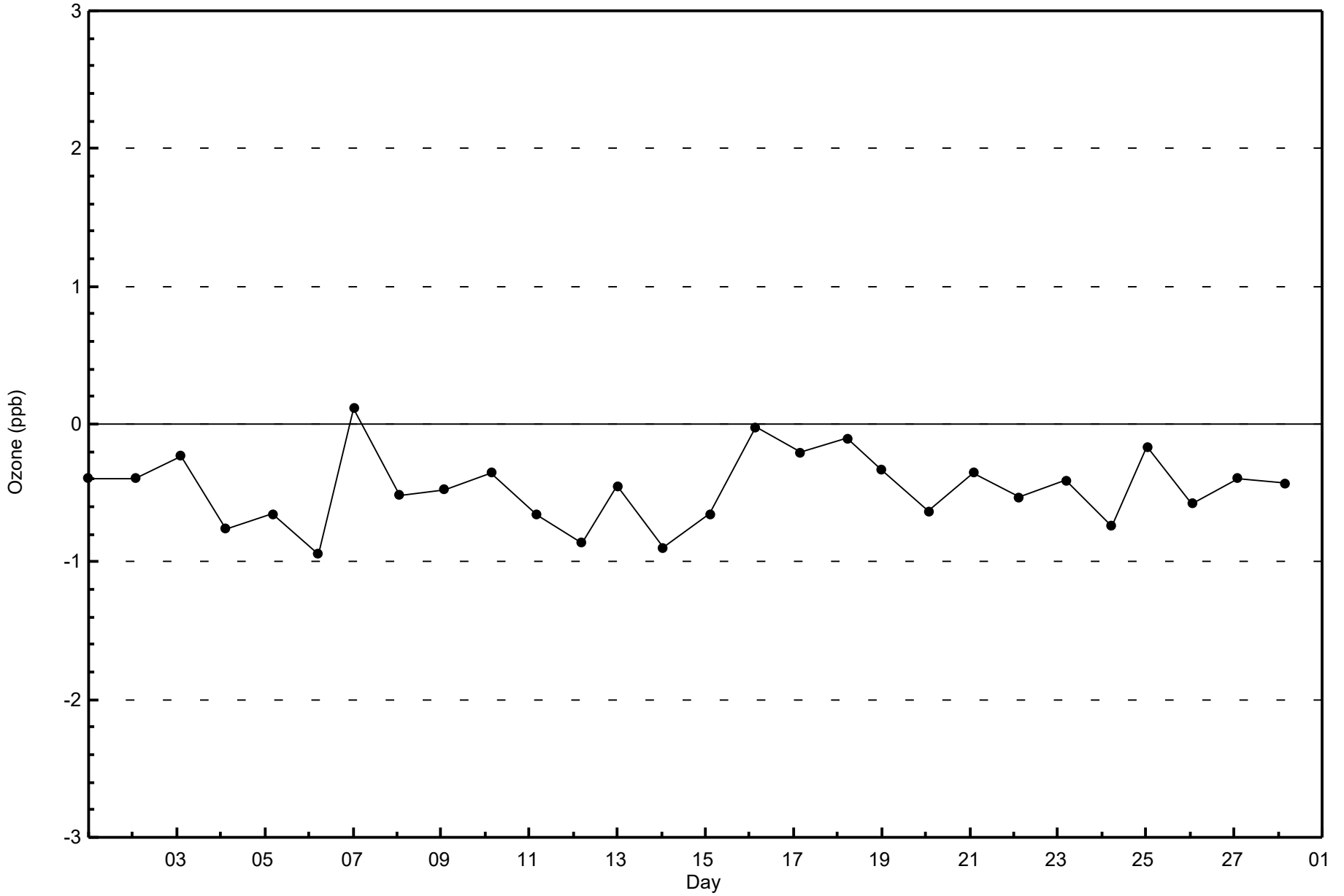
Total Number of Hours: 672

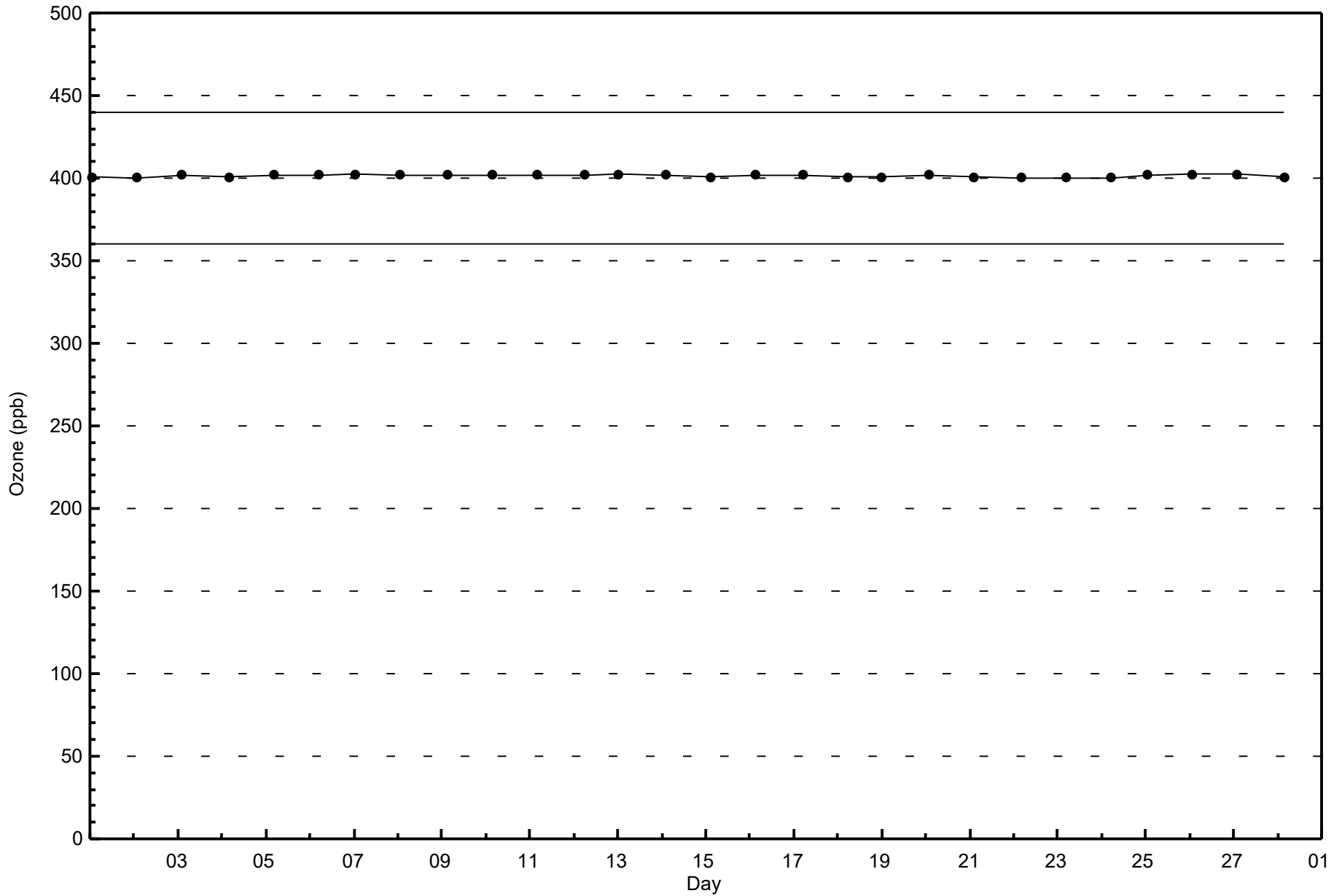


Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Ozone (O<sub>3</sub>) - ppb  
Fort McKay South







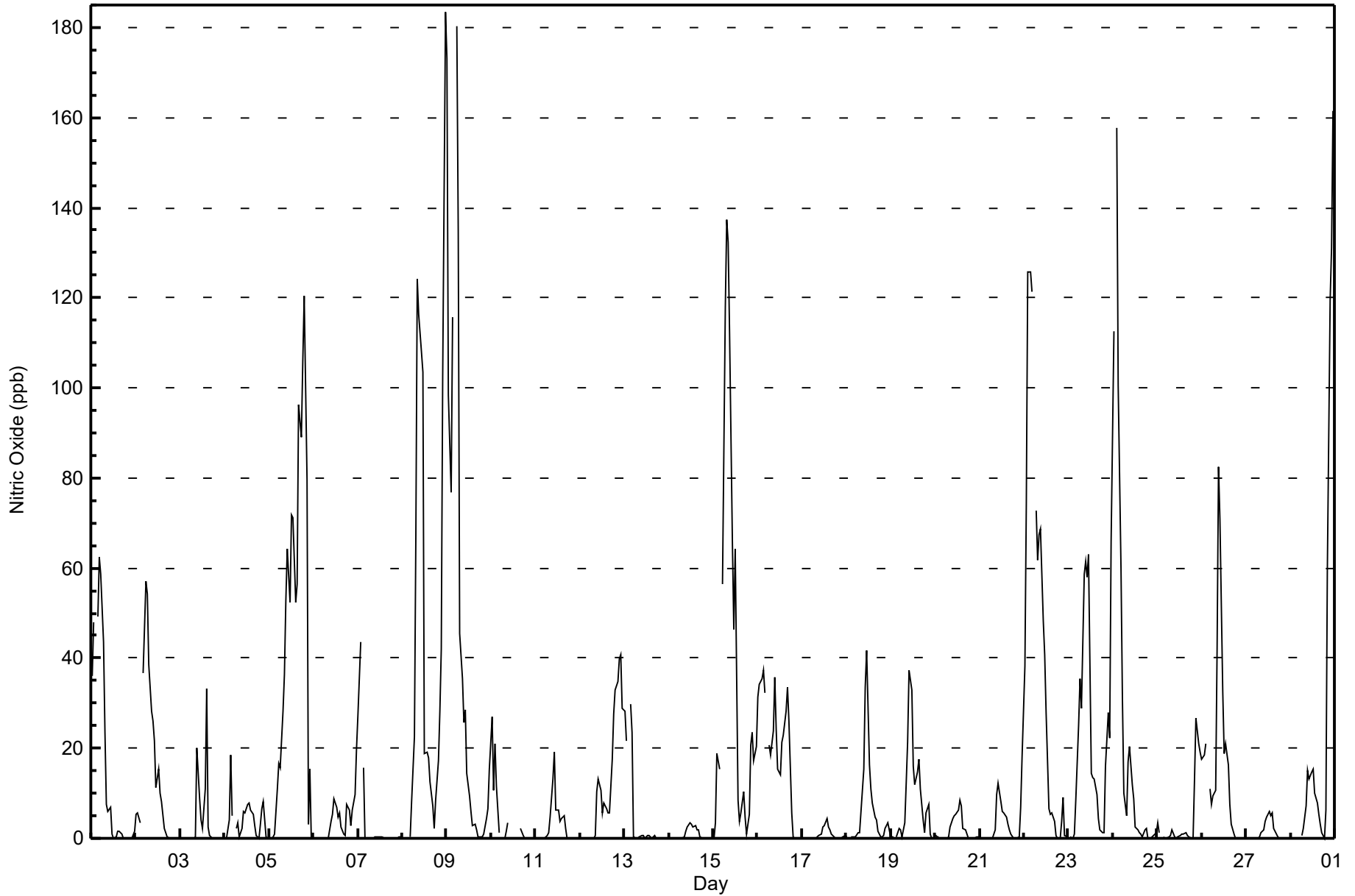


| Maximum Value: 183.5 ppb on Feb 9 00:00      Maximum Daily Average: 45.2 ppb on Feb 5  |                               |      |       |       |       |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |      | Hours in Service: 672<br>Hours of Data: 638           |       |      |               |               |
|--|-------------------------------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|------|------|------|------|------|-------|-------|------|---|-------|------|---------------|---------------|
| Minimum Value: 0.0 ppb on Feb 2 19:00      Minimum Daily Average: 0.8 ppb on Feb 17  |                               |      |       |       |       |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |      | Hours of Missing Data: 34<br>Hours of Calibration: 33 |       |      |               |               |
| Maximum Diurnal Average: 26.1 ppb at hour 10      Minimum Diurnal Average: 5.6 ppb at hour 18  |                               |      |       |       |       |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |      | Percent Operational Time: 99.9                        |       |      |               |               |
| Monthly Average: 14.99 ppb      Percentiles: P <sub>1</sub> = 0.0 P <sub>10</sub> = 0.0 Q <sub>1</sub> = 0.1 Median = 2.4 Q <sub>3</sub> = 15.5 P <sub>90</sub> = 44.3 P <sub>99</sub> = 133.9 |                               |      |       |       |       |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |      |   |       |      |               |               |
| Day  | Hourly Period Ending At (MST) |      |       |       |       |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |      |   |       |      | Daily Average | Daily Maximum |
|  | 1                             | 2    | 3     | 4     | 5     | 6     | 7     | 8     | 9     | 10    | 11    | 12    | 13   | 14   | 15   | 16   | 17   | 18   | 19    | 20    | 21   | 22  | 23    | 24   |               |               |
| 1-Feb  | 36.2                          | 48.0 | Z     | 49.3  | 62.3  | 58.6  | 43.7  | 23.4  | 7.5   | 5.8   | 6.8   | 0.9   | 0.0  | 0.3  | 1.5  | 1.5  | 1.0  | 0.0  | 0.0   | 0.0   | 0.0  | 0.0   | 0.0   | 1.5  | 15.2          | 62.3          |
| 2-Feb  | 5.3                           | 5.5  | 3.3   | Z     | 36.8  | 57.2  | 54.3  | 38.5  | 28.3  | 26.0  | 21.7  | 11.2  | 15.4 | 10.1 | 8.0  | 2.3  | 1.3  | 0.2  | 0.0   | 0.0   | 0.0  | 0.0   | 0.0   | 14.2 | 57.2          |               |
| 3-Feb  | 0.0                           | 0.0  | 0.0   | 0.0   | Z     | 0.0   | 0.0   | 0.0   | 0.4   | 20.2  | 8.6   | 3.9   | 2.0  | 11.1 | 33.2 | 2.4  | 0.5  | 0.1  | 0.0   | 0.0   | 0.0  | 0.0   | 0.0   | 3.6  | 33.2          |               |
| 4-Feb  | 0.0                           | 0.0  | 3.9   | 18.5  | 5.0   | Z     | 2.2   | 3.5   | 0.3   | 2.1   | 6.0   | 5.6   | 7.6  | 7.8  | 6.2  | 5.4  | 2.9  | 0.6  | 0.1   | 3.1   | 6.6  | 8.3   | 0.4   | 4.2  | 18.5          |               |
| 5-Feb  | Z                             | 0.1  | 0.3   | 0.8   | 10.8  | 16.7  | 15.7  | 28.2  | 36.4  | 52.7  | 64.3  | 52.3  | 71.8 | 71.3 | 52.5 | 56.3 | 96.4 | 89.1 | 106.0 | 120.5 | 79.7 | 3.2   | 15.3  | 45.2 | 120.5         |               |
| 6-Feb  | 0.0                           | Z    | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.2   | 3.7   | 5.4   | 8.7   | 7.0  | 4.8  | 5.7  | 2.5  | 0.9  | 0.7  | 7.5   | 6.2   | 2.8  | 6.2   | 9.7   | 4.0  | 19.9          |               |
| 7-Feb  | 27.2                          | 43.6 | Z     | 15.8  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.2   | 0.4   | 0.2   | 0.2  | 0.2  | 0.1  | 0.0  | 0.0  | 0.0  | 0.0   | 0.0   | 0.0  | 0.1   | 0.2   | 3.9  | 43.6          |               |
| 8-Feb  | 0.1                           | 0.1  | 0.1   | Z     | 0.3   | 8.2   | 22.7  | 66.9  | 124.1 | 116.3 | 108.0 | 103.4 | 18.8 | 19.0 | 17.8 | 12.4 | 7.2  | 2.3  | 8.5   | 17.4  | 28.2 | 41.9  | 102.6 | 43.9 | 183.5         |               |
| 9-Feb  | 173.2                         | 98.6 | 76.9  | 115.6 | Z     | 180.4 | 134.8 | 45.6  | 35.3  | 25.8  | 28.4  | 14.4  | 9.4  | 6.1  | 2.8  | 3.2  | 2.0  | 0.4  | 0.3   | 0.4   | 1.1  | 4.3   | 6.6   | 42.6 | 180.4         |               |
| 10-Feb   | 26.9                          | 10.6 | 21.2  | 11.8  | 1.2   | Z     | 0.1   | 0.1   | 1.5   | 3.5   | C     | C     | C    | C    | C    | PF   | 2.2  | 0.7  | 0.1   | 0.0   | 0.0  | 0.0   | 0.0   | --   | 26.9          |               |
| 11-Feb   | Z                             | 0.0  | 0.0   | 0.0   | 0.0   | 0.0   | 0.7   | 1.3   | 4.8   | 13.2  | 19.2  | 6.2   | 6.3  | 3.6  | 4.4  | 5.1  | 2.2  | 0.0  | 0.0   | 0.0   | 0.0  | 0.0   | 0.0   | 2.9  | 19.2          |               |
| 12-Feb   | 0.0                           | Z    | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.7   | 10.4  | 13.3  | 10.7  | 5.5  | 7.8  | 6.7  | 5.7  | 5.7  | 17.7 | 27.6  | 33.0  | 34.8 | 39.8  | 40.8  | 12.6 | 40.8          |               |
| 13-Feb   | 28.2                          | 21.7 | Z     | 29.7  | 23.4  | 0.3   | 0.0   | 0.0   | 0.3   | 0.5   | 0.8   | 0.0   | 0.7  | 0.5  | 0.3  | 0.1  | 0.5  | 0.1  | 0.0   | 0.0   | 0.0  | 0.0   | 0.0   | 4.7  | 29.7          |               |
| 14-Feb   | 0.0                           | 0.0  | 0.0   | Z     | 0.0   | 0.0   | 0.0   | 0.0   | 0.3   | 1.7   | 2.6   | 3.5   | 3.2  | 2.5  | 2.7  | 2.0  | 1.9  | 0.4  | 0.0   | 0.0   | 0.0  | 0.0   | 0.0   | 0.9  | 3.5           |               |
| 15-Feb   | 0.0                           | 3.3  | 18.7  | 15.5  | Z     | 56.5  | 117.9 | 137.3 | 132.3 | 112.1 | 66.0  | 46.4  | 64.4 | 8.5  | 3.7  | 5.7  | 10.2 | 4.6  | 1.0   | 5.3   | 20.7 | 23.6  | 17.1  | 38.7 | 137.3         |               |
| 16-Feb   | 31.3                          | 34.3 | 35.4  | 37.2  | 32.2  | Z     | 20.7  | 18.4  | 23.7  | 35.6  | 24.1  | 15.4  | 14.1 | 21.3 | 23.0 | 28.1 | 33.6 | 26.0 | 5.5   | 0.5   | 0.0  | 0.0   | 0.1   | 20.0 | 37.2          |               |
| 17-Feb   | Z                             | 0.0  | 0.0   | 0.1   | 0.0   | 0.1   | 0.0   | 0.1   | 0.3   | 0.6   | 1.1   | 2.5   | 2.7  | 4.5  | 2.4  | 1.8  | 1.0  | 0.3  | 0.1   | 0.1   | 0.0  | 0.1   | 0.4   | 0.8  | 4.5           |               |
| 18-Feb   | 0.2                           | Z    | 0.2   | 0.2   | 0.2   | 0.2   | 1.2   | 1.2   | 5.8   | 15.4  | 33.5  | 41.7  | 16.3 | 11.0 | 7.7  | 4.8  | 4.0  | 1.6  | 0.4   | 0.2   | 0.5  | 2.2   | 3.4   | 6.7  | 41.7          |               |
| 19-Feb   | 0.4                           | 0.2  | Z     | 0.4   | 2.1   | 1.9   | 0.4   | 3.6   | 12.3  | 21.5  | 37.2  | 33.0  | 16.0 | 12.0 | 14.7 | 17.4 | 10.9 | 4.1  | 1.3   | 5.7   | 7.5  | 1.0   | 0.1   | 8.9  | 37.2          |               |
| 20-Feb   | 0.6                           | 0.3  | 0.2   | Z     | 0.0   | 0.0   | 0.0   | 0.4   | 2.6   | 4.4   | 5.1   | 5.5   | 6.3  | 8.5  | 7.2  | 2.1  | 1.9  | 0.9  | 0.1   | 0.1   | 0.0  | 0.1   | 0.2   | 2.0  | 8.5           |               |
| 21-Feb   | 0.1                           | 0.1  | 0.1   | 0.1   | Z     | 0.0   | 0.0   | 0.1   | 1.8   | 9.8   | 12.3  | 8.1   | 6.0  | 5.6  | 4.8  | 3.0  | 1.9  | 0.8  | 0.0   | 0.0   | 0.0  | 0.2   | 6.8   | 3.5  | 18.1          |               |
| 22-Feb   | 38.3                          | 74.4 | 125.7 | 125.8 | 121.4 | Z     | 72.9  | 61.9  | 67.4  | 68.8  | 48.3  | 40.8  | 27.8 | 6.6  | 5.2  | 5.5  | 3.8  | 0.7  | 0.1   | 0.0   | 3.7  | 9.1   | 0.5   | 39.5 | 125.8         |               |
| 23-Feb   | Z                             | 0.2  | 0.1   | 1.0   | 8.4   | 25.0  | 35.4  | 28.7  | 58.6  | 61.4  | 58.2  | 63.1  | 14.3 | 13.3 | 13.0 | 9.6  | 4.4  | 2.0  | 1.3   | 1.3   | 16.1 | 28.0  | 22.3  | 23.1 | 65.7          |               |
| 24-Feb   | 112.6                         | Z    | 157.9 | 100.7 | 59.9  | 30.9  | 9.9   | 5.1   | 16.8  | 20.2  | 12.0  | 8.8   | 2.7  | 1.9  | 1.4  | 1.0  | 0.4  | 1.9  | 2.0   | 0.0   | 0.1  | 0.3   | 0.7   | 23.9 | 157.9         |               |
| 25-Feb   | 3.5                           | 1.2  | Z     | 0.3   | 0.1   | 0.1   | 0.2   | 0.7   | 1.7   | 0.3   | 0.1   | 0.2   | 0.7  | 1.1  | 0.9  | 1.1  | 0.6  | 0.2  | 0.0   | 0.1   | 13.0 | 26.5  | 20.9  | 4.0  | 26.5          |               |
| 26-Feb   | 17.5                          | 18.6 | 20.9  | Z     | 11.0  | 7.5   | 9.5   | 10.8  | 41.9  | 82.6  | 70.7  | 32.7  | 18.9 | 21.0 | 16.2 | 7.5  | 3.0  | 1.0  | 0.1   | 0.0   | 0.0  | 0.0   | 0.0   | 17.0 | 82.6          |               |
| 27-Feb   | 0.0                           | 0.1  | 0.1   | 0.0   | Z     | 0.0   | 0.0   | 0.2   | 1.2   | 1.9   | 3.8   | 4.8   | 6.0  | 5.2  | 5.8  | 2.1  | 1.0  | 0.4  | 0.1   | 0.1   | 0.1  | 0.1   | 0.1   | 1.4  | 6.0           |               |
| 28-Feb   | 0.0                           | 0.0  | 0.0   | 0.1   | 0.1   | Z     | 0.6   | 2.1   | 7.3   | 15.1  | 13.3  | 14.6  | 15.3 | 10.2 | 7.8  | 5.4  | 3.0  | 1.1  | 0.1   | 6.2   | 59.0 | 119.3   | 131.1 | 24.9 | 161.5         |               |
| 20.9 15.0 20.2 22.7 16.3 19.3 19.4 17.1 21.9 26.1 24.9 20.0 13.3 10.2 9.5 7.2 7.3 5.6 5.8 7.1 9.8 11.2 13.6 19.3   |                               |      |       |       |       |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |      | Diurnal Average                                       |       |      |               |               |
| 173.2 98.6 157.9 125.8 121.4 180.4 134.8 137.3 132.3 116.3 108.0 103.4 71.8 71.3 52.5 56.3 96.4 89.1 106.0 120.5 79.7 119.3 131.1 183.5  |                               |      |       |       |       |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |      | Diurnal Maximum                                       |       |      |               |               |
| Z - zerospan      C - Calibration      PF - Power Failure  |                               |      |       |       |       |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |      |   |       |      |               |               |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Nitric Oxide (NO) - ppb**  
**Fort McKay South - February 2023**





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Nitric Oxide (NO) - ppb  
Fort McKay South - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 20                            | 507                    | 79.47    | 79.47               |
| 21 - 40                           | 60                     | 9.40     | 88.87               |
| 41 - 80                           | 42                     | 6.58     | 95.45               |
| 81 - 159                          | 25                     | 3.92     | 99.37               |
| > 159                             | 4                      | 0.63     | 100.00              |

Total Number of Valid Hours: 638

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Nitric Oxide (NO) - ppb  
Fort McKay South - February 2023**

| <b>Concentration<br/>Ranges (ppb)</b> | <b>Wind Direction</b> |            |           |            |          |            |           |            |          |            |           |            |          |            |           |            | <b>Totals</b> |
|---------------------------------------|-----------------------|------------|-----------|------------|----------|------------|-----------|------------|----------|------------|-----------|------------|----------|------------|-----------|------------|---------------|
|                                       | <b>N</b>              | <b>NNE</b> | <b>NE</b> | <b>ENE</b> | <b>E</b> | <b>ESE</b> | <b>SE</b> | <b>SSE</b> | <b>S</b> | <b>SSW</b> | <b>SW</b> | <b>WSW</b> | <b>W</b> | <b>WNW</b> | <b>NW</b> | <b>NNW</b> |               |
| 0 - 20                                | 144                   | 62         | 9         | 3          | 2        | 3          | 12        | 46         | 47       | 8          | 28        | 52         | 22       | 19         | 19        | 28         | 504           |
| 21 - 40                               | 10                    | 4          | 1         | 0          | 1        | 1          | 3         | 2          | 8        | 7          | 8         | 3          | 5        | 0          | 1         | 6          | 60            |
| 11 - 80                               | 2                     | 2          | 0         | 0          | 0        | 3          | 8         | 3          | 4        | 3          | 7         | 5          | 1        | 1          | 3         | 0          | 42            |
| 81 - 159                              | 1                     | 0          | 0         | 0          | 0        | 1          | 2         | 1          | 4        | 6          | 4         | 4          | 0        | 2          | 0         | 0          | 25            |
| > 159                                 | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 3         | 1          | 0        | 0          | 0         | 0          | 4             |
| <b>Totals</b>                         | 157                   | 68         | 10        | 3          | 3        | 8          | 25        | 52         | 63       | 24         | 50        | 65         | 28       | 22         | 23        | 34         | 635           |

Total Number of Valid Hours: 635

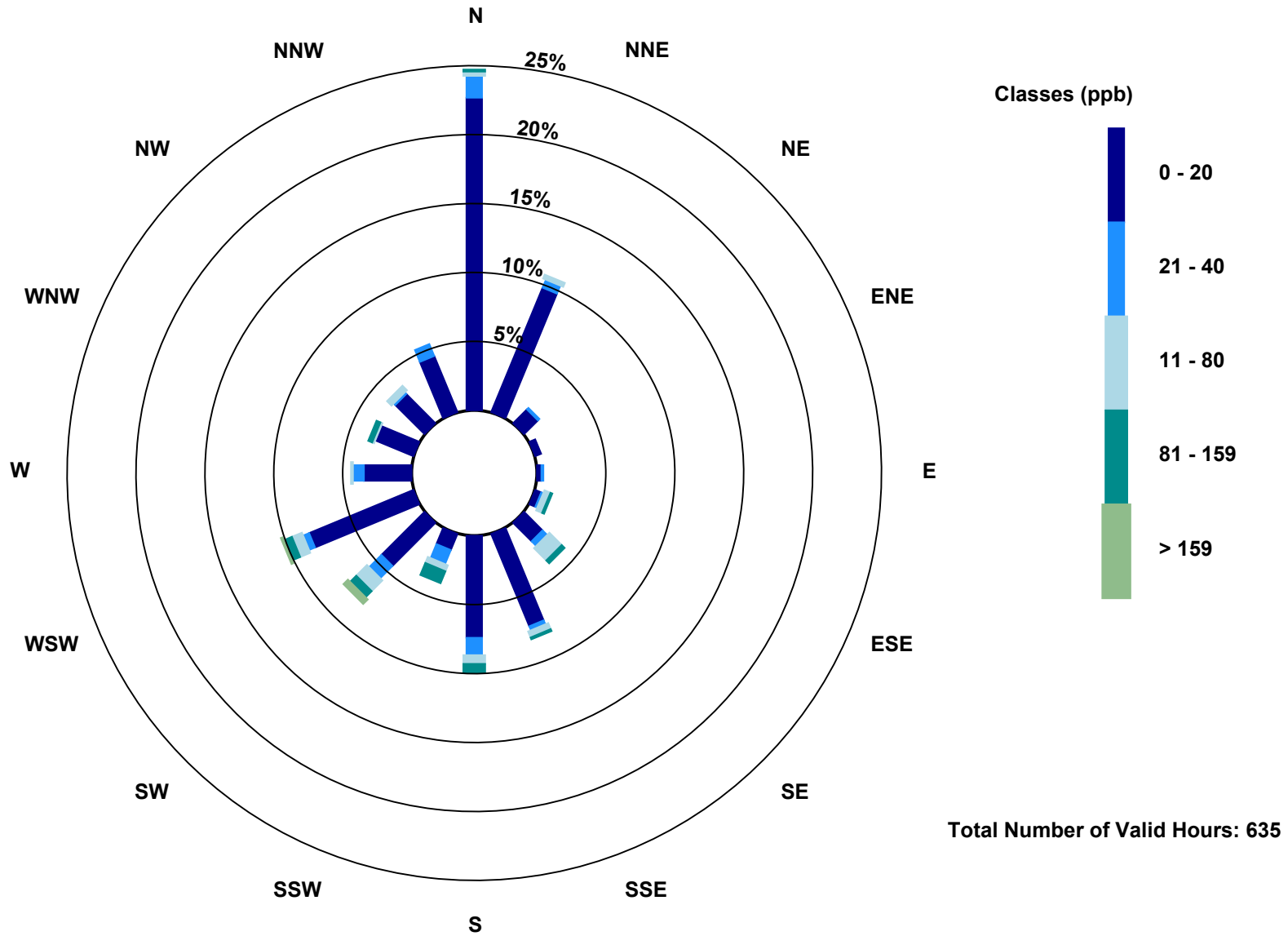
Total Number of Hours: 672

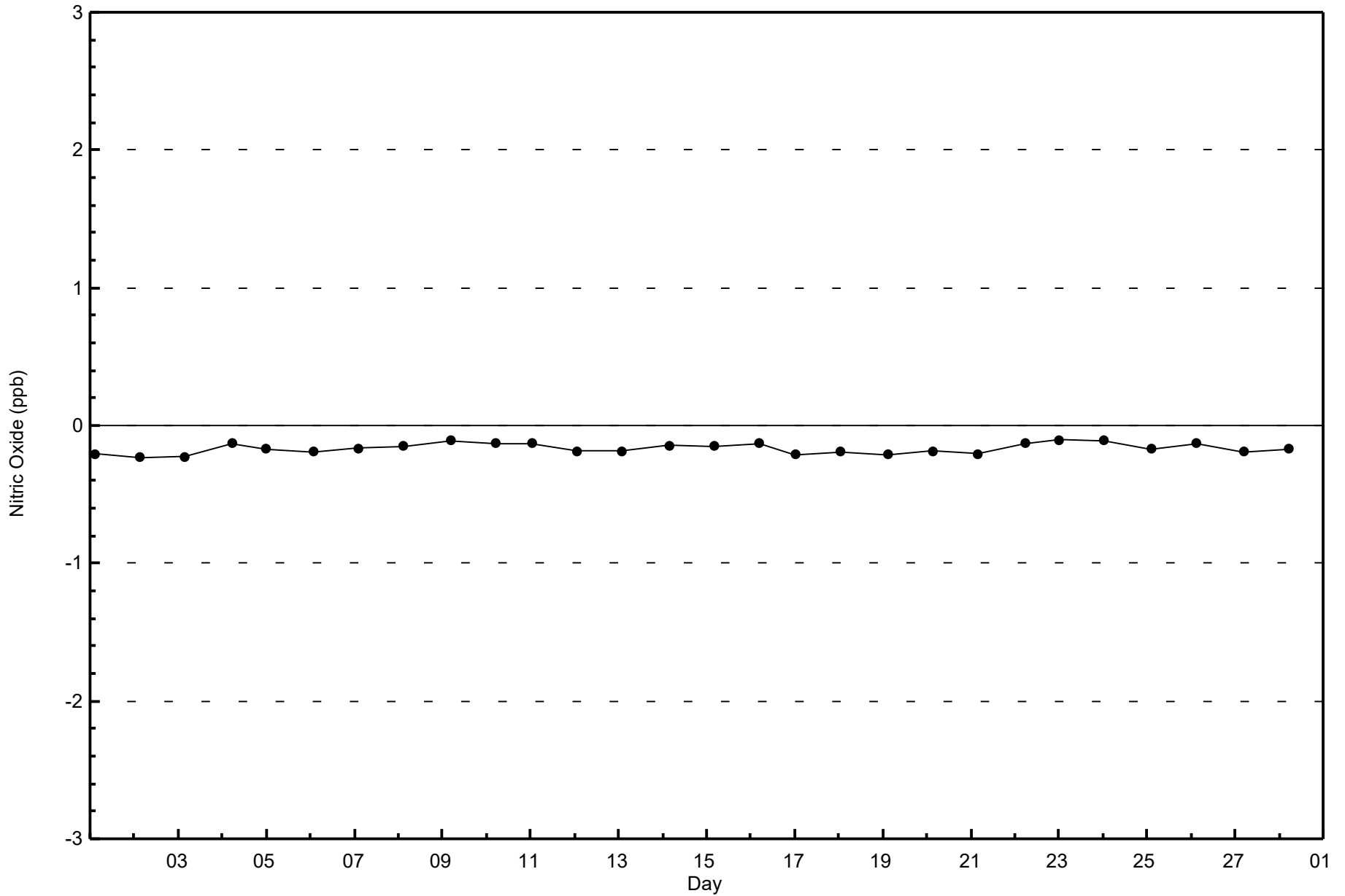


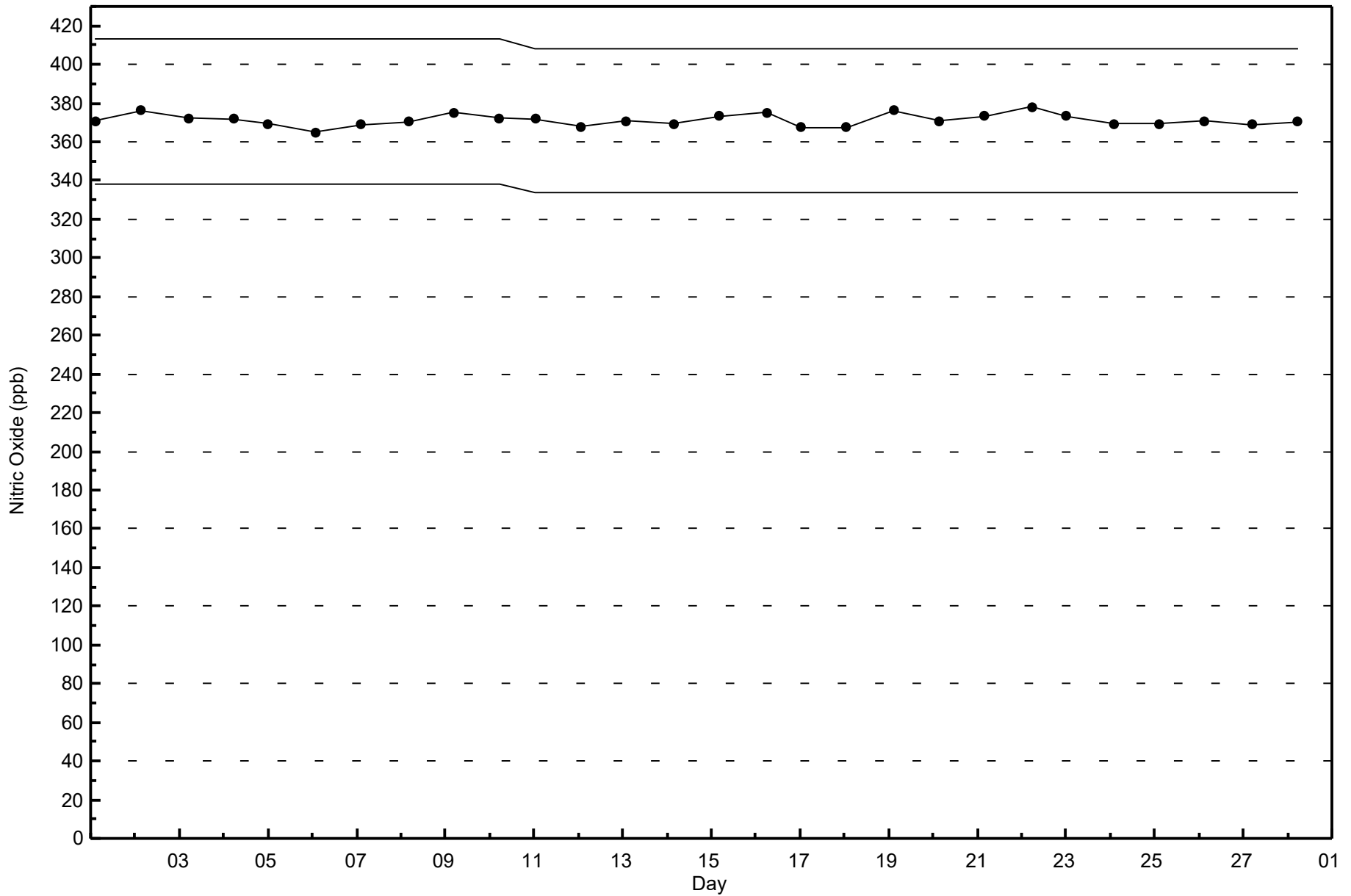


Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Nitric Oxide (NO) - ppb  
Fort McKay South









**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

**Nitrogen Dioxide (NO<sub>2</sub>) - ppb**  
**Fort McKay South - February 2023**

|  |  |
|--|--|
| Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0  | Hours in Service: 672                    |
| Maximum Value: 37.6 ppb on Feb 22 03:00  | Maximum Daily Average: 27.2 ppb on Feb 5 |
| Minimum Value: 0.3 ppb on Feb 7 17:00  | Hours of Data: 638                       |
| Maximum Diurnal Average: 19.3 ppb at hour 2  | Hours of Missing Data: 34                |
| Monthly Average: 15.96 ppb   | Hours of Calibration: 33                 |
| Minimum Daily Average: 6.1 ppb on Feb 7  | Percent Operational Time: 99.9           |
| Minimum Diurnal Average: 11.1 ppb at hour 14   |  |
| Percentiles: P <sub>1</sub> = 0.5 P <sub>10</sub> = 3.9 Q <sub>1</sub> = 8.1 Median = 14.7 Q <sub>3</sub> = 24.2 P <sub>90</sub> = 29.2 P <sub>99</sub> = 35.4 |  |

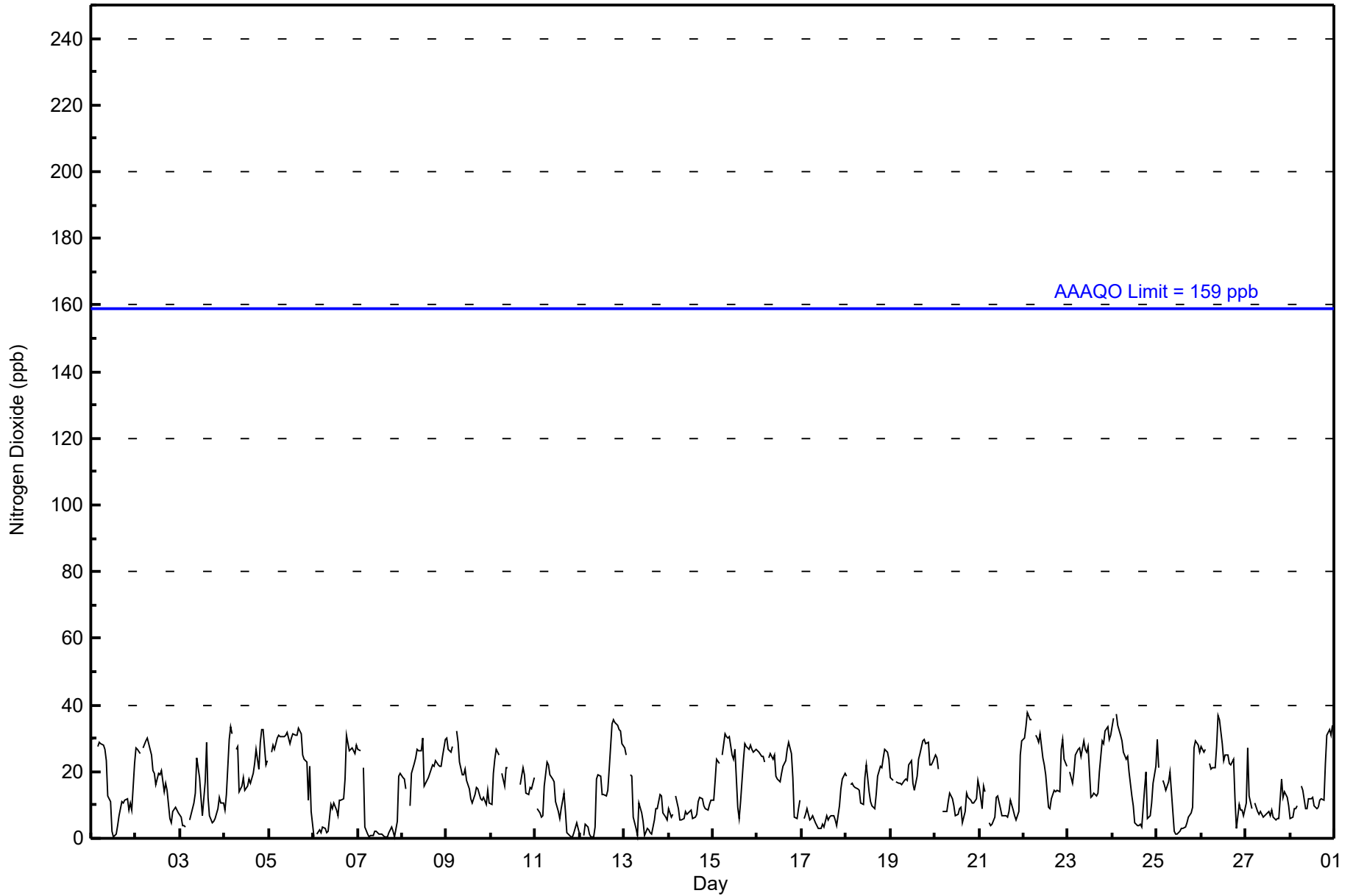
| Day    | Hourly Period Ending At (MST) |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Daily Average | Daily Maximum   |
|--------|-------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|---------------|-----------------|
|        | 1                             | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20   | 21   | 22   | 23   | 24   |               |                 |
| 1-Feb  | 29.7                          | 30.2 | Z    | 27.7 | 28.9 | 28.5 | 28.0 | 26.9 | 23.1 | 12.7 | 11.2 | 2.3  | 0.4  | 1.1  | 3.9  | 6.6  | 11.2 | 10.8 | 11.4 | 11.9 | 8.6  | 10.5 | 8.4  | 22.3 | 15.5          | 30.2            |
| 2-Feb  | 27.1                          | 26.7 | 25.4 | Z    | 27.3 | 29.1 | 29.9 | 28.3 | 24.9 | 20.3 | 19.5 | 16.2 | 19.6 | 19.1 | 20.4 | 14.1 | 16.4 | 14.4 | 5.9  | 4.5  | 8.1  | 9.2  | 8.4  | 7.6  | 18.4          | 29.9            |
| 3-Feb  | 6.3                           | 3.7  | 3.7  | 3.6  | Z    | 5.5  | 7.0  | 10.8 | 13.4 | 24.0 | 18.1 | 12.2 | 6.8  | 16.8 | 29.0 | 12.3 | 6.8  | 4.8  | 6.0  | 6.0  | 8.7  | 12.1 | 10.6 | 10.7 | 10.3          | 29.0            |
| 4-Feb  | 8.6                           | 13.1 | 29.5 | 33.5 | 31.5 | Z    | 26.6 | 27.6 | 13.9 | 15.6 | 18.2 | 14.6 | 15.7 | 18.0 | 16.7 | 19.7 | 22.4 | 26.8 | 20.7 | 28.7 | 32.7 | 32.8 | 21.9 | 23.5 | 22.3          | 33.5            |
| 5-Feb  | Z                             | 25.8 | 27.8 | 26.7 | 30.2 | 31.0 | 30.5 | 30.5 | 30.3 | 31.1 | 31.7 | 28.3 | 30.2 | 31.3 | 30.8 | 31.1 | 33.1 | 31.3 | 25.2 | 23.8 | 22.9 | 11.3 | 21.8 | 7.9  | 27.2          | 33.1            |
| 6-Feb  | 0.6                           | Z    | 1.3  | 2.5  | 1.6  | 3.4  | 3.1  | 1.6  | 2.3  | 10.0 | 8.9  | 10.5 | 8.5  | 6.9  | 11.6 | 11.6 | 12.0 | 17.8 | 31.1 | 26.4 | 26.9 | 27.2 | 25.5 | 27.9 | 12.1          | 31.1            |
| 7-Feb  | 26.6                          | 26.2 | Z    | 21.1 | 3.2  | 1.1  | 0.5  | 0.9  | 0.7  | 2.1  | 2.1  | 1.3  | 1.1  | 1.2  | 0.6  | 0.5  | 0.3  | 1.9  | 3.2  | 2.1  | 0.3  | 5.2  | 18.5 | 19.3 | 6.1           | 26.6            |
| 8-Feb  | 18.4                          | 17.8 | 14.7 | Z    | 9.9  | 19.7 | 22.3 | 24.2 | 26.9 | 26.3 | 26.3 | 30.0 | 15.6 | 17.4 | 18.4 | 19.6 | 21.9 | 21.7 | 23.2 | 22.1 | 21.8 | 21.5 | 24.6 | 29.5 | 21.5          | 30.0            |
| 9-Feb  | 30.2                          | 26.6 | 26.0 | 27.5 | Z    | 32.1 | 29.0 | 23.0 | 19.2 | 19.0 | 20.9 | 17.3 | 14.9 | 12.0 | 10.8 | 13.1 | 15.1 | 15.0 | 12.0 | 11.3 | 12.4 | 10.2 | 14.2 | 10.5 | 18.4          | 32.1            |
| 10-Feb | 10.3                          | 19.4 | 23.7 | 26.5 | 25.1 | Z    | 19.4 | 15.8 | 21.3 | 21.1 | C    | C    | C    | C    | C    | PF   | 15.9 | 21.0 | 19.2 | 13.6 | 13.1 | 15.1 | 15.0 | 18.1 | --            | 26.5            |
| 11-Feb | Z                             | 8.7  | 7.5  | 6.3  | 6.6  | 15.8 | 22.9 | 22.1 | 19.0 | 17.9 | 17.0 | 11.0 | 8.1  | 5.9  | 8.9  | 13.4 | 7.9  | 1.7  | 0.8  | 0.6  | 0.4  | 1.7  | 4.5  | 3.1  | 9.2           | 22.9            |
| 12-Feb | 1.2                           | Z    | 0.8  | 4.1  | 3.3  | 1.1  | 0.3  | 0.3  | 3.6  | 17.7 | 19.2 | 18.8 | 13.2 | 13.1 | 12.5 | 14.5 | 20.8 | 34.3 | 35.4 | 34.8 | 33.9 | 32.6 | 32.2 | 28.4 | 16.4          | 35.4            |
| 13-Feb | 27.1                          | 25.0 | Z    | 19.0 | 18.8 | 6.5  | 2.8  | 0.8  | 10.7 | 7.5  | 5.2  | 0.8  | 3.1  | 2.6  | 1.7  | 1.1  | 5.6  | 8.9  | 8.9  | 13.0 | 12.6 | 7.6  | 6.4  | 5.6  | 8.8           | 27.1            |
| 14-Feb | 8.9                           | 6.3  | 7.2  | Z    | 12.5 | 9.0  | 5.4  | 5.5  | 5.9  | 8.2  | 7.2  | 8.0  | 8.3  | 6.1  | 6.3  | 7.1  | 11.0 | 12.1 | 11.7 | 9.9  | 8.9  | 8.5  | 10.2 | 11.3 | 8.5           | 12.5            |
| 15-Feb | 11.4                          | 17.2 | 23.7 | 22.4 | Z    | 25.0 | 31.3 | 30.7 | 30.2 | 30.7 | 25.1 | 23.9 | 26.8 | 9.5  | 6.1  | 11.2 | 23.1 | 28.5 | 27.7 | 26.5 | 27.8 | 26.7 | 25.9 | 26.5 | 23.4          | 31.3            |
| 16-Feb | 26.2                          | 25.7 | 24.4 | 24.7 | 23.0 | Z    | 24.2 | 25.5 | 23.6 | 25.1 | 18.7 | 17.6 | 17.1 | 19.4 | 21.4 | 23.5 | 26.6 | 28.7 | 25.5 | 18.3 | 6.5  | 5.9  | 9.0  | 11.5 | 20.5          | 28.7            |
| 17-Feb | Z                             | 6.0  | 7.4  | 9.0  | 5.7  | 6.1  | 6.7  | 4.5  | 3.9  | 2.9  | 2.8  | 4.1  | 3.4  | 6.9  | 5.7  | 6.2  | 6.9  | 6.6  | 5.3  | 4.0  | 9.8  | 14.8 | 17.7 | 19.7 | 7.2           | 19.7            |
| 18-Feb | 18.6                          | Z    | 16.3 | 16.4 | 15.5 | 15.2 | 14.8 | 14.2 | 10.4 | 10.3 | 18.4 | 22.0 | 13.8 | 10.9 | 9.9  | 9.0  | 13.1 | 18.5 | 21.5 | 21.0 | 24.0 | 26.8 | 26.0 | 23.6 | 17.0          | 26.8            |
| 19-Feb | 18.4                          | 17.2 | Z    | 16.8 | 16.7 | 16.5 | 16.1 | 17.2 | 17.8 | 17.4 | 22.2 | 23.2 | 16.5 | 14.4 | 18.6 | 23.6 | 25.4 | 29.2 | 29.5 | 28.6 | 29.0 | 22.1 | 22.0 | 22.9 | 20.9          | 29.5            |
| 20-Feb | 25.0                          | 24.1 | 20.8 | Z    | 8.0  | 8.0  | 8.2  | 11.1 | 13.7 | 12.0 | 9.7  | 6.9  | 7.0  | 9.1  | 9.5  | 4.8  | 8.1  | 13.5 | 12.3 | 11.4 | 10.5 | 10.7 | 12.0 | 17.4 | 11.9          | 25.0            |
| 21-Feb | 15.4                          | 9.1  | 15.8 | 14.0 | Z    | 4.7  | 4.0  | 4.4  | 6.5  | 12.1 | 12.8 | 8.7  | 6.6  | 6.9  | 6.9  | 6.2  | 8.1  | 11.5 | 8.4  | 6.7  | 5.6  | 8.2  | 25.1 | 29.2 | 10.3          | 29.2            |
| 22-Feb | 29.9                          | 33.4 | 37.6 | 35.7 | 35.4 | Z    | 31.1 | 29.9 | 28.9 | 31.3 | 24.0 | 22.2 | 19.0 | 9.4  | 8.9  | 12.0 | 14.3 | 13.9 | 14.2 | 13.8 | 26.7 | 29.8 | 23.9 | 21.6 | 23.8          | 37.6            |
| 23-Feb | Z                             | 20.0 | 16.4 | 20.0 | 24.9 | 26.8 | 27.3 | 24.6 | 29.1 | 26.9 | 26.0 | 27.5 | 12.1 | 12.5 | 13.6 | 12.9 | 13.4 | 19.9 | 29.4 | 28.6 | 32.1 | 33.3 | 29.8 | 30.8 | 23.4          | 33.3            |
| 24-Feb | 36.1                          | Z    | 37.4 | 33.8 | 30.8 | 29.4 | 25.9 | 23.8 | 24.4 | 19.9 | 12.6 | 9.8  | 4.5  | 4.0  | 3.9  | 4.2  | 3.6  | 15.0 | 20.1 | 5.9  | 6.9  | 10.8 | 16.5 | 21.6 | 17.4          | 37.4            |
| 25-Feb | 29.7                          | 21.0 | Z    | 17.2 | 15.9 | 14.4 | 17.0 | 19.8 | 13.8 | 2.3  | 1.1  | 1.1  | 2.3  | 2.9  | 2.8  | 3.4  | 4.5  | 6.2  | 7.6  | 9.4  | 27.0 | 29.1 | 27.9 | 26.0 | 13.1          | 29.7            |
| 26-Feb | 27.4                          | 26.0 | 26.5 | Z    | 22.5 | 20.9 | 21.3 | 21.1 | 27.4 | 37.0 | 35.8 | 28.3 | 23.5 | 25.2 | 25.2 | 22.5 | 22.2 | 23.6 | 11.8 | 3.0  | 10.2 | 8.3  | 8.6  | 6.7  | 21.1          | 37.0            |
| 27-Feb | 10.5                          | 27.0 | 12.7 | 8.7  | Z    | 10.5 | 8.1  | 7.1  | 8.2  | 6.2  | 6.8  | 7.1  | 8.1  | 6.8  | 8.6  | 6.2  | 5.4  | 6.0  | 6.0  | 18.0 | 12.3 | 14.0 | 12.4 | 9.6  | 9.8           | 27.0            |
| 28-Feb | 6.0                           | 6.2  | 8.8  | 8.8  | 9.8  | Z    | 15.8 | 14.2 | 8.7  | 9.1  | 11.9 | 12.0 | 12.3 | 9.6  | 9.0  | 9.3  | 11.4 | 12.0 | 11.6 | 22.4 | 30.8 | 32.6 | 31.1 | 33.9 | 14.7          | 33.9            |
|        | 18.7                          | 19.3 | 18.1 | 18.5 | 17.7 | 15.7 | 17.1 | 16.7 | 16.5 | 17.0 | 16.1 | 14.3 | 11.8 | 11.1 | 11.9 | 11.8 | 13.8 | 16.3 | 15.9 | 15.2 | 16.8 | 17.1 | 18.2 | 18.8 |               | Diurnal Average |
|        | 36.1                          | 33.4 | 37.6 | 35.7 | 35.4 | 32.1 | 31.3 | 30.7 | 30.3 | 37.0 | 35.8 | 30.0 | 30.2 | 31.3 | 30.8 | 31.1 | 33.1 | 34.3 | 35.4 | 34.8 | 33.9 | 33.3 | 32.2 | 33.9 |               | Diurnal Maximum |

Z - zerospan      C - Calibration      PF - Power Failure  
 Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 159 ppb



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Nitrogen Dioxide (NO<sub>2</sub>) - ppb**  
**Fort McKay South - February 2023**





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Nitrogen Dioxide (NO<sub>2</sub>) - ppb  
Fort McKay South - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 20                            | 414                    | 64.89    | 64.89               |
| 21 - 40                           | 224                    | 35.11    | 100.00              |
| 41 - 80                           | 0                      | 0.00     | 100.00              |
| 81 - 159                          | 0                      | 0.00     | 100.00              |
| > 159                             | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 638

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Nitrogen Dioxide (NO<sub>2</sub>) - ppb  
Fort McKay South - February 2023**

| <b>Concentration<br/>Ranges (ppb)</b> | <b>Wind Direction</b> |            |           |            |          |            |           |            |           |            |           |            |           |            |           |            | <b>Totals</b> |
|---------------------------------------|-----------------------|------------|-----------|------------|----------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|---------------|
|                                       | <b>N</b>              | <b>NNE</b> | <b>NE</b> | <b>ENE</b> | <b>E</b> | <b>ESE</b> | <b>SE</b> | <b>SSE</b> | <b>S</b>  | <b>SSW</b> | <b>SW</b> | <b>WSW</b> | <b>W</b>  | <b>WNW</b> | <b>NW</b> | <b>NNW</b> |               |
| 0 - 20                                | 109                   | 61         | 9         | 2          | 2        | 3          | 12        | 44         | 38        | 7          | 19        | 39         | 20        | 15         | 12        | 19         | 411           |
| 21 - 40                               | 48                    | 7          | 1         | 1          | 1        | 5          | 13        | 8          | 25        | 17         | 31        | 26         | 8         | 7          | 11        | 15         | 224           |
| 11 - 80                               | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0             |
| 81 - 159                              | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0             |
| > 159                                 | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0             |
| <b>Totals</b>                         | <b>157</b>            | <b>68</b>  | <b>10</b> | <b>3</b>   | <b>3</b> | <b>8</b>   | <b>25</b> | <b>52</b>  | <b>63</b> | <b>24</b>  | <b>50</b> | <b>65</b>  | <b>28</b> | <b>22</b>  | <b>23</b> | <b>34</b>  | <b>635</b>    |

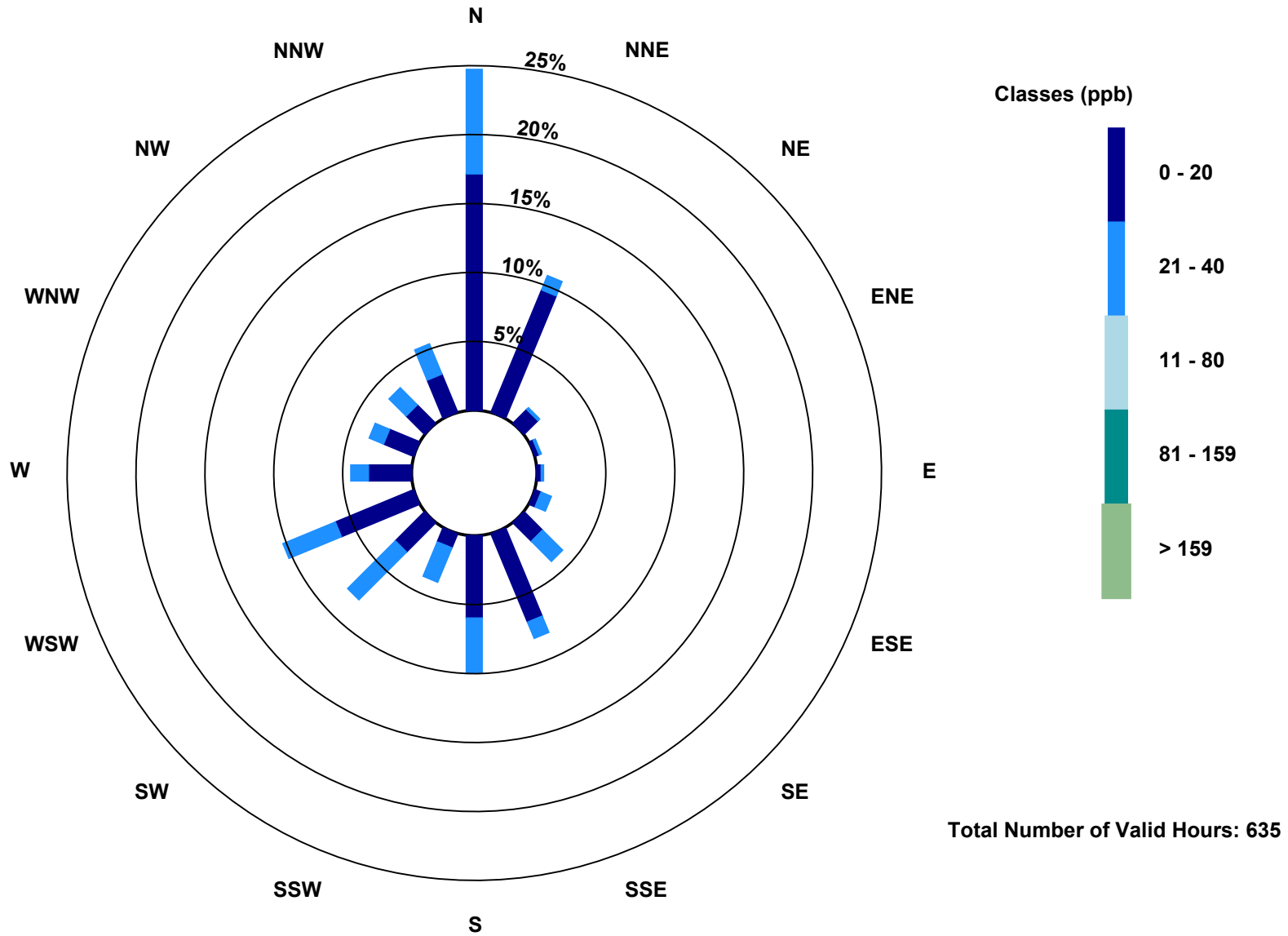
Total Number of Valid Hours: 635

Total Number of Hours: 672

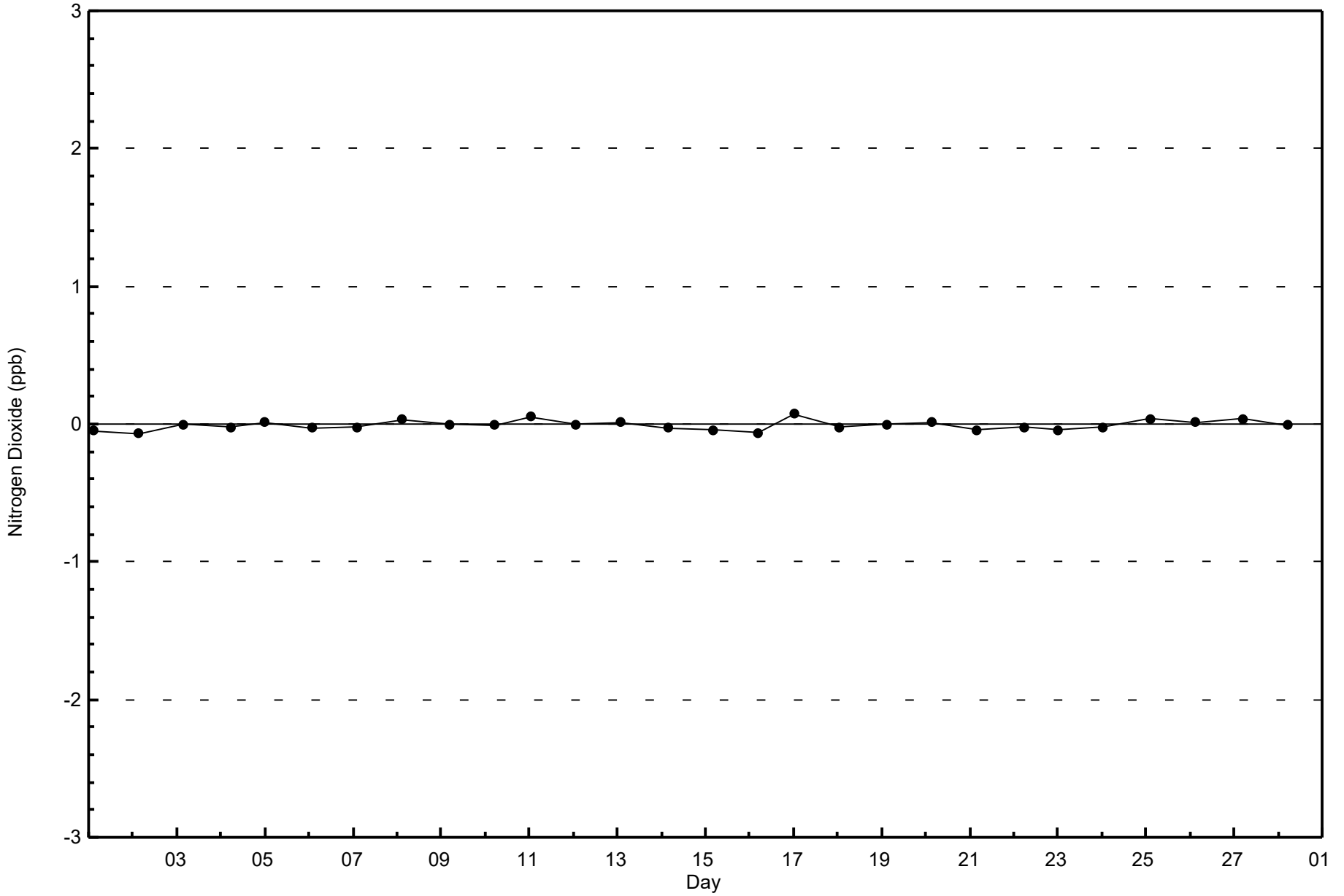


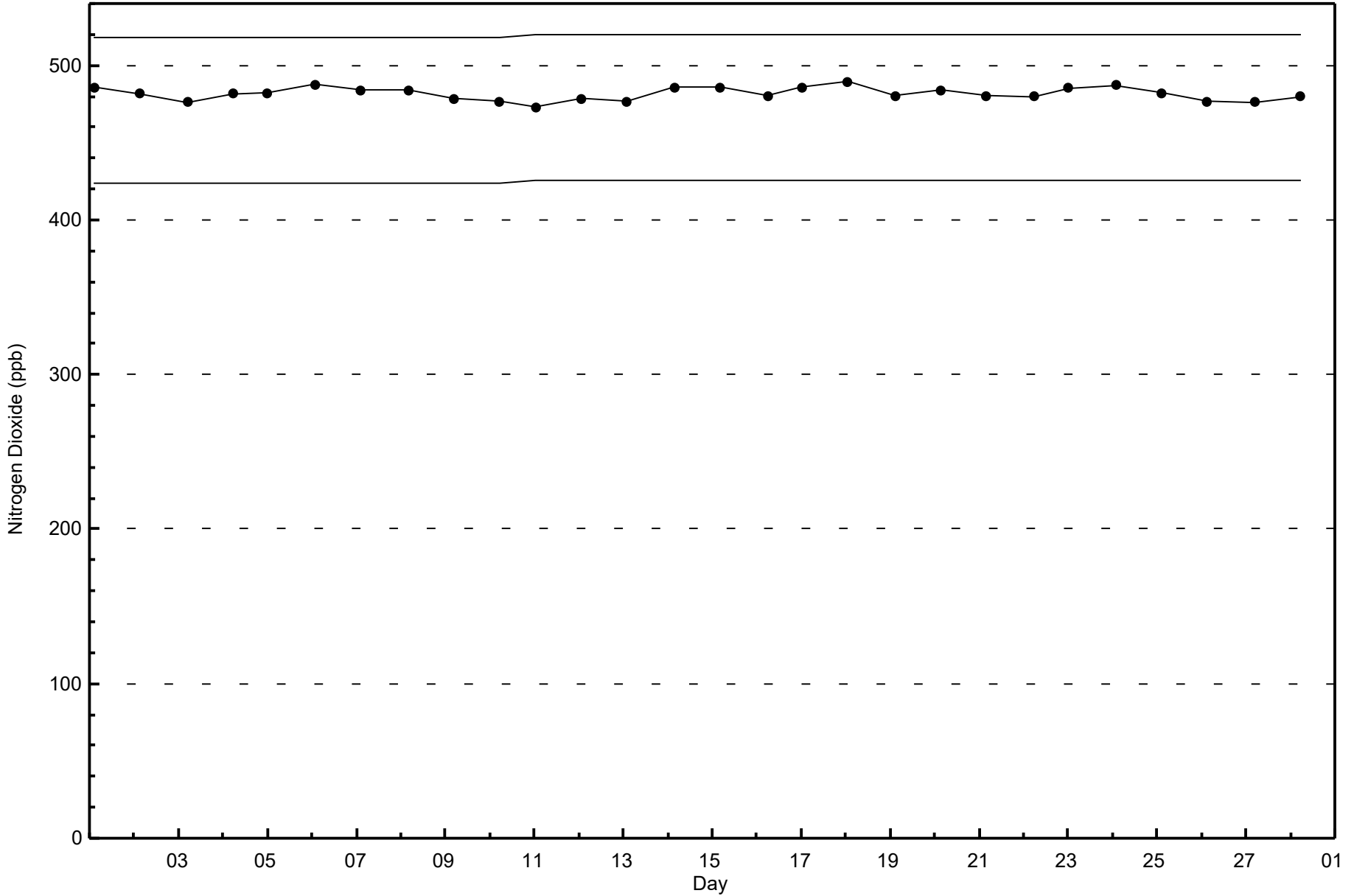
Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Nitrogen Dioxide (NO<sub>2</sub>) - ppb  
Fort McKay South











**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

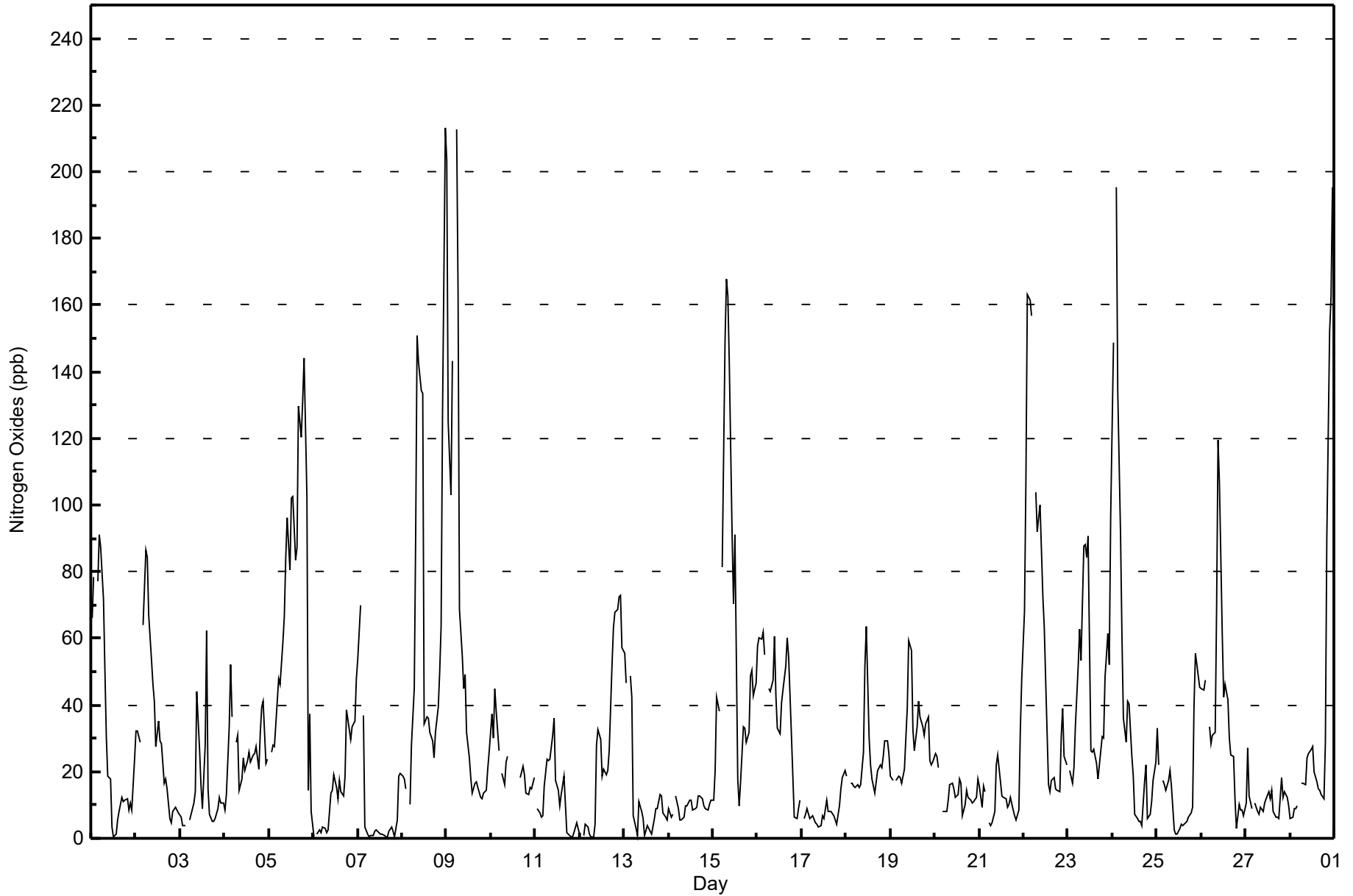
**Nitrogen Oxides (NO<sub>x</sub>) - ppb**  
**Fort McKay South - February 2023**

| Maximum Value: 213.0 ppb on Feb 9 00:00      |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |      |      |       |       |       |       |       | Maximum Daily Average: 72.4 ppb on Feb 5  |       |       |               |               |       |                    |       |       |       |       |       |       |       |      |      |       |       |       |       |       |       | Hours in Service: 672     |       |                 |
|--|-------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|------|-------|-------|-------|-------|-------|---|-------|-------|---------------|---------------|-------|--------------------|-------|-------|-------|-------|-------|-------|-------|------|------|-------|-------|-------|-------|-------|-------|---------------------------|-------|-----------------|
| Minimum Value: 0.3 ppb on Feb 12 08:00       |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |      |      |       |       |       |       |       | Minimum Daily Average: 8.0 ppb on Feb 17  |       |       |               |               |       |                    |       |       |       |       |       |       |       |      |      |       |       |       |       |       |       | Hours of Data: 638        |       |                 |
| Maximum Diurnal Average: 43.2 ppb at hour 10 |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |      |      |       |       |       |       |       | Minimum Diurnal Average: 19.0 ppb at hour 16  |       |       |               |               |       |                    |       |       |       |       |       |       |       |      |      |       |       |       |       |       |       | Hours of Missing Data: 34 |       |                 |
| Monthly Average: 30.95 ppb                   |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |      |      |       |       |       |       |       | Percentiles: P <sub>1</sub> = 0.5 P <sub>10</sub> = 4.3 Q <sub>1</sub> = 9.0 Median = 18.1 Q <sub>3</sub> = 37.2 P <sub>90</sub> = 71.9 P <sub>99</sub> = 163.6 |       |       |               |               |       |                    |       |       |       |       |       |       |       |      |      |       |       |       |       |       |       | Hours of Calibration: 33  |       |                 |
|  |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |      |      |       |       |       |       |       | Percent Operational Time: 99.9  |       |       |               |               |       |                    |       |       |       |       |       |       |       |      |      |       |       |       |       |       |       |                           |       |                 |
| Day  | Hourly Period Ending At (MST) |       |       |       |       |       |       |       |       |       |       |       |       |       |      |      |       |       |       |       |       |   |       |       | Daily Average | Daily Maximum |       |                    |       |       |       |       |       |       |       |      |      |       |       |       |       |       |       |                           |       |                 |
|  | 1                             | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     | 10    | 11    | 12    | 13    | 14    | 15   | 16   | 17    | 18    | 19    | 20    | 21    | 22  | 23    | 24    |               |               |       |                    |       |       |       |       |       |       |       |      |      |       |       |       |       |       |       |                           |       |                 |
| 1-Feb  | 65.9                          | 78.2  | Z     | 77.0  | 91.2  | 87.1  | 71.7  | 50.3  | 30.6  | 18.5  | 18.0  | 3.2   | 0.4   | 1.4   | 5.4  | 8.1  | 12.2  | 10.8  | 11.4  | 11.9  | 8.6   | 10.5  | 8.4   | 23.8  | 30.6          | 91.2          |       |                    |       |       |       |       |       |       |       |      |      |       |       |       |       |       |       |                           |       |                 |
| 2-Feb  | 32.4                          | 32.2  | 28.7  | Z     | 64.1  | 86.3  | 84.2  | 66.8  | 53.2  | 46.3  | 41.2  | 27.4  | 35.0  | 29.2  | 28.4 | 16.4 | 17.7  | 14.6  | 5.9   | 4.5   | 8.1   | 9.2   | 8.4   | 7.6   | 32.5          | 86.3          |       |                    |       |       |       |       |       |       |       |      |      |       |       |       |       |       |       |                           |       |                 |
| 3-Feb  | 6.3                           | 3.7   | 3.7   | 3.6   | Z     | 5.5   | 7.0   | 10.8  | 13.8  | 44.2  | 26.7  | 16.1  | 8.8   | 27.9  | 62.2 | 14.7 | 7.3   | 4.9   | 4.9   | 6.0   | 8.7   | 12.1  | 10.6  | 10.7  | 13.9          | 62.2          |       |                    |       |       |       |       |       |       |       |      |      |       |       |       |       |       |       |                           |       |                 |
| 4-Feb  | 8.6                           | 13.1  | 33.4  | 52.0  | 36.5  | Z     | 28.8  | 31.1  | 14.2  | 17.7  | 24.2  | 20.2  | 23.3  | 25.8  | 22.9 | 25.1 | 25.3  | 27.4  | 20.8  | 31.8  | 39.3  | 41.1  | 22.3  | 23.6  | 26.5          | 52.0          |       |                    |       |       |       |       |       |       |       |      |      |       |       |       |       |       |       |                           |       |                 |
| 5-Feb  | Z                             | 25.9  | 28.1  | 27.5  | 41.0  | 47.7  | 46.2  | 58.7  | 66.7  | 83.8  | 96.0  | 80.6  | 102.0 | 102.6 | 83.3 | 87.4 | 129.5 | 120.4 | 131.2 | 144.3 | 102.6 | 14.5  | 37.1  | 8.0   | 72.4          | 144.3         |       |                    |       |       |       |       |       |       |       |      |      |       |       |       |       |       |       |                           |       |                 |
| 6-Feb  | 0.6                           | Z     | 1.3   | 2.5   | 1.6   | 3.4   | 3.1   | 1.6   | 2.5   | 13.7  | 14.3  | 19.2  | 15.5  | 11.7  | 17.3 | 14.1 | 12.9  | 18.5  | 38.6  | 32.6  | 29.7  | 33.4  | 35.2  | 47.8  | 16.1          | 47.8          |       |                    |       |       |       |       |       |       |       |      |      |       |       |       |       |       |       |                           |       |                 |
| 7-Feb  | 53.8                          | 69.8  | Z     | 36.9  | 3.2   | 1.1   | 0.5   | 0.9   | 0.7   | 2.3   | 2.5   | 1.5   | 1.3   | 1.4   | 0.7  | 0.5  | 0.3   | 1.9   | 3.2   | 2.1   | 0.3   | 5.3   | 18.7  | 19.6  | 9.9           | 69.8          |       |                    |       |       |       |       |       |       |       |      |      |       |       |       |       |       |       |                           |       |                 |
| 8-Feb  | 18.5                          | 17.9  | 14.8  | Z     | 10.2  | 27.9  | 45.0  | 91.1  | 151.0 | 142.6 | 134.3 | 133.4 | 34.4  | 36.4  | 36.2 | 32.0 | 29.1  | 24.0  | 31.7  | 39.5  | 50.0  | 63.4  | 127.2 | 213.0 | 65.4          | 213.0         |       |                    |       |       |       |       |       |       |       |      |      |       |       |       |       |       |       |                           |       |                 |
| 9-Feb  | 203.4                         | 125.2 | 102.9 | 143.1 | Z     | 212.5 | 163.8 | 68.6  | 54.5  | 44.8  | 49.3  | 31.7  | 24.3  | 18.1  | 13.6 | 16.3 | 17.1  | 15.4  | 12.3  | 11.7  | 13.5  | 14.5  | 20.8  | 25.9  | 61.0          | 212.5         |       |                    |       |       |       |       |       |       |       |      |      |       |       |       |       |       |       |                           |       |                 |
| 10-Feb                                       | 37.2                          | 30.0  | 44.9  | 38.3  | 26.3  | Z     | 19.5  | 15.9  | 22.8  | 24.6  | C     | C     | C     | C     | C    | PF   | 18.1  | 21.7  | 19.3  | 13.6  | 13.1  | 15.1  | 15.0  | 18.1  | --            | 44.9          |       |                    |       |       |       |       |       |       |       |      |      |       |       |       |       |       |       |                           |       |                 |
| 11-Feb                                       | Z                             | 8.7   | 7.5   | 6.3   | 6.6   | 15.8  | 23.6  | 23.4  | 23.8  | 31.1  | 36.2  | 17.2  | 14.4  | 9.5   | 13.3 | 18.5 | 10.1  | 1.7   | 0.8   | 0.6   | 0.4   | 1.7   | 4.5   | 3.1   | 12.1          | 36.2          |       |                    |       |       |       |       |       |       |       |      |      |       |       |       |       |       |       |                           |       |                 |
| 12-Feb                                       | 1.2                           | Z     | 0.8   | 4.1   | 3.3   | 1.1   | 0.3   | 0.3   | 4.3   | 28.1  | 32.5  | 29.5  | 18.7  | 20.9  | 19.2 | 20.2 | 26.5  | 52.0  | 63.0  | 67.8  | 68.7  | 72.4  | 73.0  | 57.4  | 28.9          | 73.0          |       |                    |       |       |       |       |       |       |       |      |      |       |       |       |       |       |       |                           |       |                 |
| 13-Feb                                       | 55.3                          | 46.7  | Z     | 48.7  | 42.2  | 6.8   | 2.8   | 0.8   | 11.0  | 8.0   | 6.0   | 0.8   | 3.8   | 3.1   | 2.0  | 1.2  | 6.1   | 9.0   | 8.9   | 13.0  | 12.6  | 7.6   | 6.4   | 5.6   | 13.4          | 55.3          |       |                    |       |       |       |       |       |       |       |      |      |       |       |       |       |       |       |                           |       |                 |
| 14-Feb                                       | 8.9                           | 6.3   | 7.2   | Z     | 12.5  | 9.0   | 5.4   | 5.5   | 6.2   | 9.9   | 9.8   | 11.5  | 11.5  | 8.6   | 9.0  | 9.1  | 12.9  | 12.5  | 11.7  | 9.9   | 8.9   | 8.5   | 10.2  | 11.3  | 9.4           | 12.9          |       |                    |       |       |       |       |       |       |       |      |      |       |       |       |       |       |       |                           |       |                 |
| 15-Feb                                       | 11.4                          | 20.5  | 42.4  | 37.9  | Z     | 81.5  | 149.2 | 168.0 | 162.5 | 142.8 | 91.1  | 70.3  | 91.2  | 18.0  | 9.8  | 16.9 | 33.3  | 33.1  | 28.7  | 31.8  | 48.5  | 50.3  | 43.0  | 46.8  | 62.1          | 168.0         |       |                    |       |       |       |       |       |       |       |      |      |       |       |       |       |       |       |                           |       |                 |
| 16-Feb                                       | 57.5                          | 60.0  | 59.8  | 61.9  | 55.2  | Z     | 44.9  | 43.9  | 47.3  | 60.7  | 42.8  | 33.0  | 31.2  | 40.7  | 44.4 | 51.6 | 60.2  | 54.7  | 31.0  | 18.8  | 6.5   | 5.9   | 9.1   | 11.6  | 40.6          | 61.9          |       |                    |       |       |       |       |       |       |       |      |      |       |       |       |       |       |       |                           |       |                 |
| 17-Feb                                       | Z                             | 6.0   | 7.4   | 9.1   | 5.7   | 6.2   | 6.7   | 4.6   | 4.2   | 3.5   | 3.9   | 6.6   | 6.1   | 11.4  | 8.1  | 8.0  | 7.9   | 6.9   | 5.4   | 4.1   | 9.8   | 14.9  | 18.1  | 20.3  | 8.0           | 20.3          |       |                    |       |       |       |       |       |       |       |      |      |       |       |       |       |       |       |                           |       |                 |
| 18-Feb                                       | 18.8                          | Z     | 16.5  | 16.6  | 15.7  | 15.4  | 16.0  | 15.4  | 16.2  | 25.7  | 51.9  | 63.7  | 30.1  | 21.9  | 17.6 | 13.8 | 17.1  | 20.1  | 21.9  | 21.2  | 24.5  | 29.0  | 29.4  | 25.6  | 23.7          | 63.7          |       |                    |       |       |       |       |       |       |       |      |      |       |       |       |       |       |       |                           |       |                 |
| 19-Feb                                       | 18.8                          | 17.4  | Z     | 17.2  | 18.8  | 18.4  | 16.5  | 20.8  | 30.1  | 38.9  | 59.4  | 56.2  | 32.5  | 26.4  | 33.3 | 41.0 | 36.3  | 33.3  | 30.8  | 34.3  | 36.5  | 23.1  | 22.1  | 23.0  | 29.8          | 59.4          |       |                    |       |       |       |       |       |       |       |      |      |       |       |       |       |       |       |                           |       |                 |
| 20-Feb                                       | 25.6                          | 24.4  | 21.0  | Z     | 8.0   | 8.0   | 8.2   | 11.5  | 16.3  | 16.4  | 14.8  | 12.4  | 13.3  | 17.6  | 16.7 | 6.9  | 10.0  | 14.4  | 12.4  | 11.5  | 10.5  | 10.8  | 12.2  | 17.9  | 13.9          | 25.6          |       |                    |       |       |       |       |       |       |       |      |      |       |       |       |       |       |       |                           |       |                 |
| 21-Feb                                       | 15.5                          | 9.2   | 15.9  | 14.1  | Z     | 4.7   | 4.0   | 4.5   | 8.3   | 21.9  | 25.1  | 16.8  | 12.6  | 12.5  | 11.7 | 9.2  | 10.0  | 12.3  | 8.4   | 6.7   | 5.6   | 8.4   | 31.9  | 47.3  | 13.8          | 47.3          |       |                    |       |       |       |       |       |       |       |      |      |       |       |       |       |       |       |                           |       |                 |
| 22-Feb                                       | 68.2                          | 107.8 | 163.3 | 161.5 | 156.8 | Z     | 104.0 | 91.8  | 96.3  | 100.1 | 72.3  | 63.0  | 46.8  | 16.0  | 14.1 | 17.5 | 18.1  | 14.6  | 14.3  | 13.8  | 30.4  | 38.9  | 24.4  | 21.9  | 63.3          | 163.3         |       |                    |       |       |       |       |       |       |       |      |      |       |       |       |       |       |       |                           |       |                 |
| 23-Feb                                       | Z                             | 20.2  | 16.5  | 21.0  | 33.3  | 51.8  | 62.7  | 53.3  | 87.7  | 88.3  | 84.2  | 90.6  | 26.4  | 25.8  | 26.6 | 22.5 | 17.8  | 21.9  | 30.7  | 29.9  | 48.2  | 61.3  | 52.1  | 96.5  | 46.5          | 96.5          |       |                    |       |       |       |       |       |       |       |      |      |       |       |       |       |       |       |                           |       |                 |
| 24-Feb                                       | 148.7                         | Z     | 195.3 | 134.5 | 90.7  | 60.3  | 35.8  | 28.9  | 41.2  | 40.1  | 24.6  | 18.6  | 7.2   | 5.9   | 5.3  | 5.2  | 4.0   | 16.9  | 22.1  | 5.9   | 7.0   | 11.1  | 17.2  | 22.9  | 41.3          | 195.3         |       |                    |       |       |       |       |       |       |       |      |      |       |       |       |       |       |       |                           |       |                 |
| 25-Feb                                       | 33.2                          | 22.2  | Z     | 17.5  | 16.0  | 14.5  | 17.2  | 20.5  | 15.5  | 2.6   | 1.2   | 1.3   | 3.0   | 4.0   | 3.7  | 4.5  | 5.1   | 6.4   | 7.6   | 9.5   | 40.0  | 55.6  | 48.8  | 45.1  | 17.2          | 55.6          |       |                    |       |       |       |       |       |       |       |      |      |       |       |       |       |       |       |                           |       |                 |
| 26-Feb                                       | 44.9                          | 44.6  | 47.4  | Z     | 33.5  | 28.4  | 30.8  | 31.9  | 69.3  | 119.6 | 106.5 | 61.0  | 42.4  | 46.2  | 41.4 | 30.0 | 25.2  | 24.6  | 11.9  | 3.0   | 10.2  | 8.3   | 8.6   | 6.7   | 38.1          | 119.6         |       |                    |       |       |       |       |       |       |       |      |      |       |       |       |       |       |       |                           |       |                 |
| 27-Feb                                       | 10.5                          | 27.1  | 12.8  | 8.7   | Z     | 10.5  | 8.1   | 7.3   | 9.4   | 8.1   | 10.6  | 11.9  | 14.1  | 12.0  | 14.4 | 8.3  | 6.4   | 6.4   | 6.1   | 18.1  | 12.4  | 14.1  | 12.5  | 9.6   | 11.3          | 27.1          |       |                    |       |       |       |       |       |       |       |      |      |       |       |       |       |       |       |                           |       |                 |
| 28-Feb                                       | 6.0                           | 6.2   | 8.8   | 8.9   | 9.9   | Z     | 16.4  | 16.3  | 16.0  | 24.2  | 25.2  | 26.6  | 27.6  | 19.8  | 16.8 | 14.7 | 14.4  | 13.1  | 11.7  | 28.6  | 89.8  | 151.9   | 162.2 | 195.4 | 39.6          | 195.4         |       |                    |       |       |       |       |       |       |       |      |      |       |       |       |       |       |       |                           |       |                 |
|  |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |      |      |       |       |       |       |       | 39.6  | 34.3  | 38.3  | 41.3          | 34.0          | 35.0  | 36.5               | 33.7  | 38.4  | 43.2  | 40.9  | 34.2  | 25.1  | 21.3  | 21.4 | 19.0 | 21.1  | 21.9  | 21.7  | 22.4  | 26.6  | 28.3  | 31.8                      | 38.1  | Diurnal Average |
|  |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |      |      |       |       |       |       |       | 203.4   | 125.2 | 195.3 | 161.5         | 156.8         | 212.5 | 163.8              | 168.0 | 162.5 | 142.8 | 134.3 | 133.4 | 102.0 | 102.6 | 83.3 | 87.4 | 129.5 | 120.4 | 131.2 | 144.3 | 102.6 | 151.9 | 162.2                     | 213.0 | Diurnal Maximum |
| Z - zerspan                                  |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |      |      |       |       |       |       |       | C - Calibration   |       |       |               |               |       | PF - Power Failure |       |       |       |       |       |       |       |      |      |       |       |       |       |       |       |                           |       |                 |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Nitrogen Oxides (NO<sub>x</sub>) - ppb**  
**Fort McKay South - February 2023**





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Nitrogen Oxides (NO<sub>x</sub>) - ppb  
Fort McKay South - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 20                            | 349                    | 54.70    | 54.70               |
| 21 - 40                           | 139                    | 21.79    | 76.49               |
| 41 - 80                           | 91                     | 14.26    | 90.75               |
| 81 - 159                          | 47                     | 7.37     | 98.12               |
| > 159                             | 11                     | 1.72     | 99.84               |

Total Number of Valid Hours: 638

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Nitrogen Oxides (NO<sub>x</sub>) - ppb  
Fort McKay South - February 2023**

| <b>Concentration<br/>Ranges (ppb)</b> | <b>Wind Direction</b> |     |    |     |   |     |    |     |    |     |    |     |    |     |    |     | <b>Totals</b> |
|---------------------------------------|-----------------------|-----|----|-----|---|-----|----|-----|----|-----|----|-----|----|-----|----|-----|---------------|
|                                       | N                     | NNE | NE | ENE | E | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |               |
| 0 - 20                                | 95                    | 51  | 9  | 2   | 2 | 2   | 5  | 33  | 26 | 4   | 17 | 39  | 19 | 14  | 11 | 17  | 346           |
| 21 - 40                               | 43                    | 11  | 0  | 1   | 0 | 1   | 6  | 12  | 20 | 4   | 10 | 12  | 3  | 3   | 4  | 9   | 139           |
| 11 - 80                               | 18                    | 5   | 1  | 0   | 1 | 2   | 5  | 5   | 9  | 8   | 9  | 7   | 5  | 2   | 6  | 8   | 91            |
| 81 - 159                              | 1                     | 1   | 0  | 0   | 0 | 3   | 8  | 2   | 6  | 6   | 10 | 4   | 1  | 3   | 2  | 0   | 47            |
| > 159                                 | 0                     | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 2  | 2   | 4  | 3   | 0  | 0   | 0  | 0   | 11            |
| <b>Totals</b>                         | 157                   | 68  | 10 | 3   | 3 | 8   | 24 | 52  | 63 | 24  | 50 | 65  | 28 | 22  | 23 | 34  | 634           |

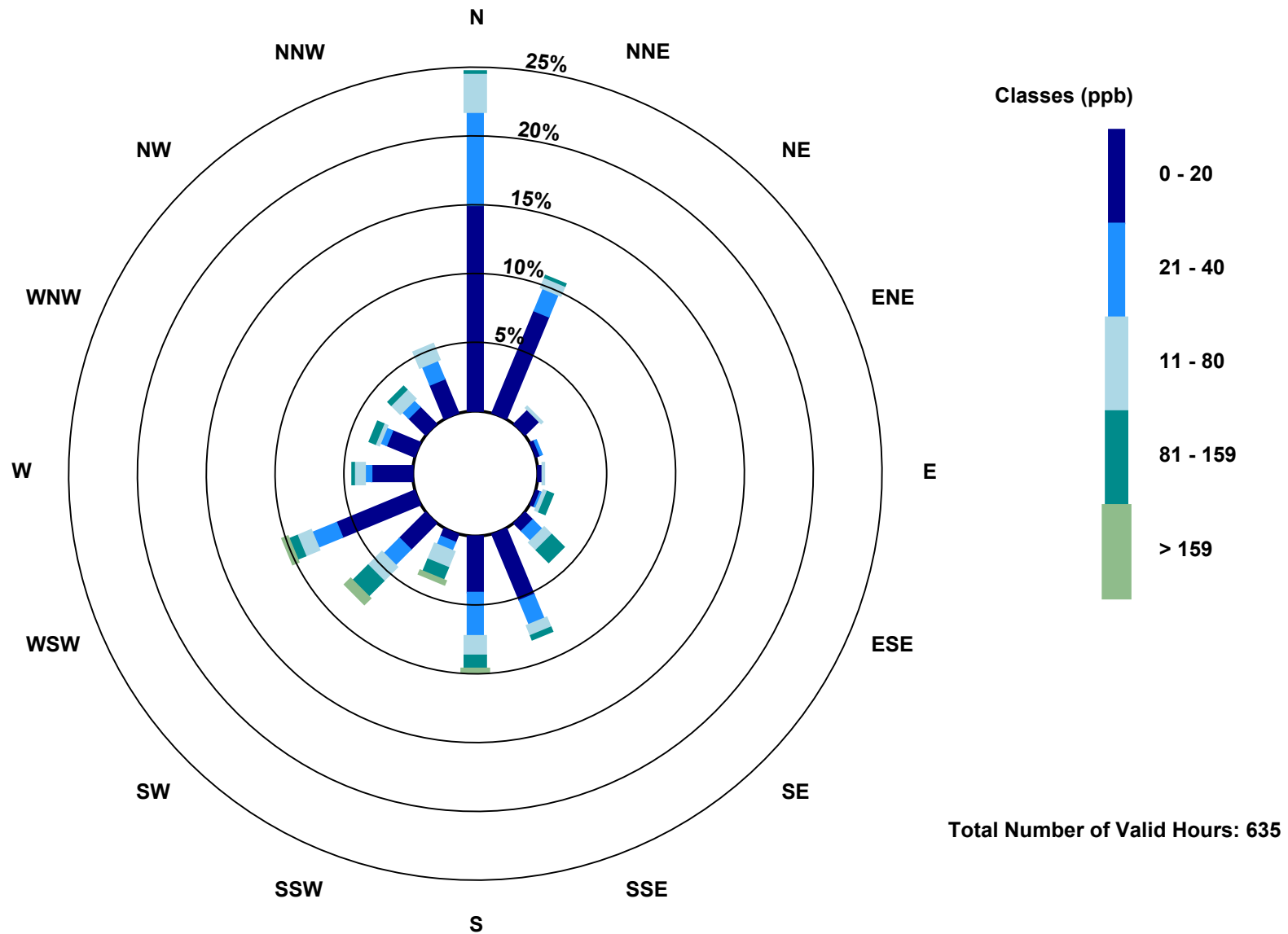
Total Number of Valid Hours: 635

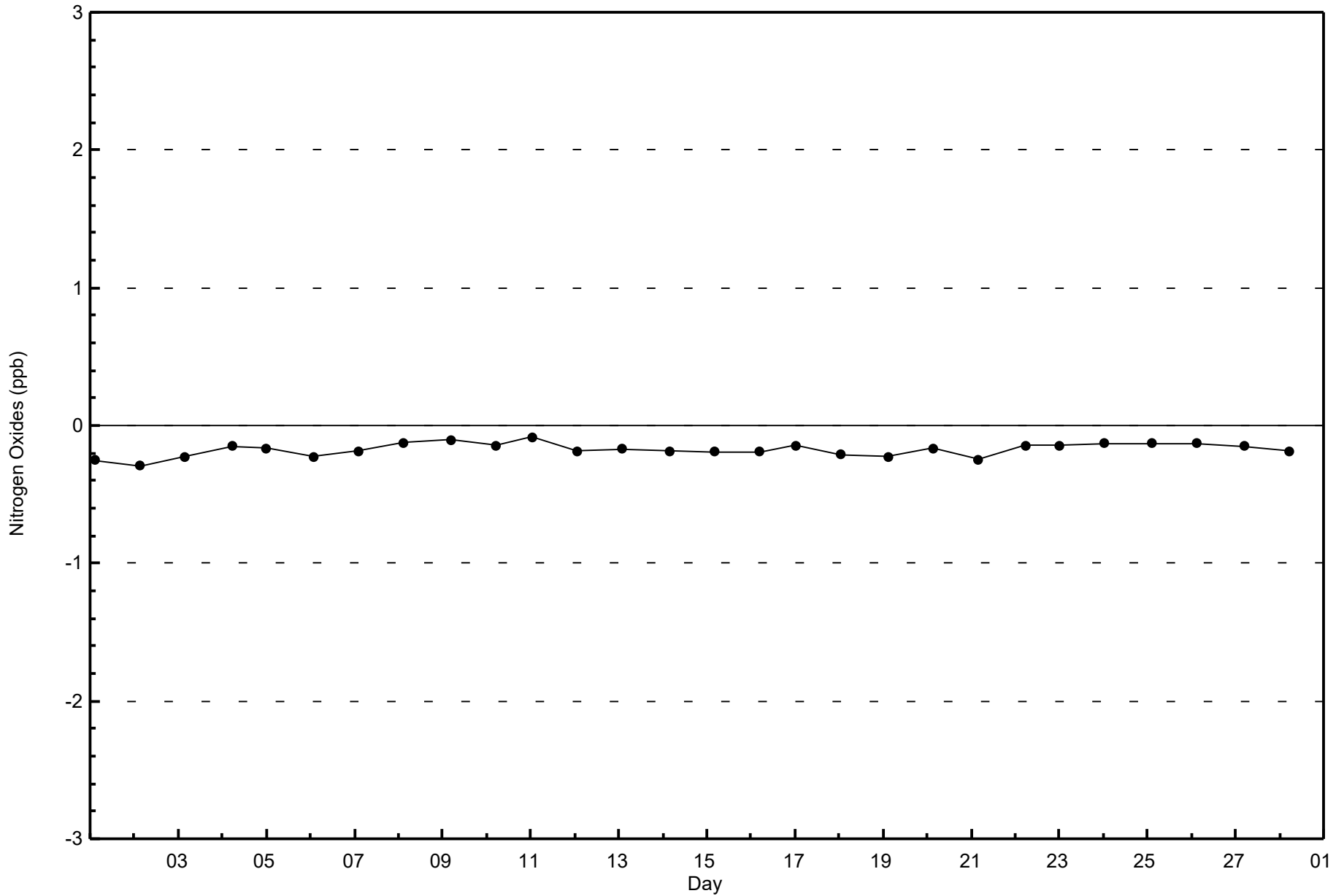
Total Number of Hours: 672



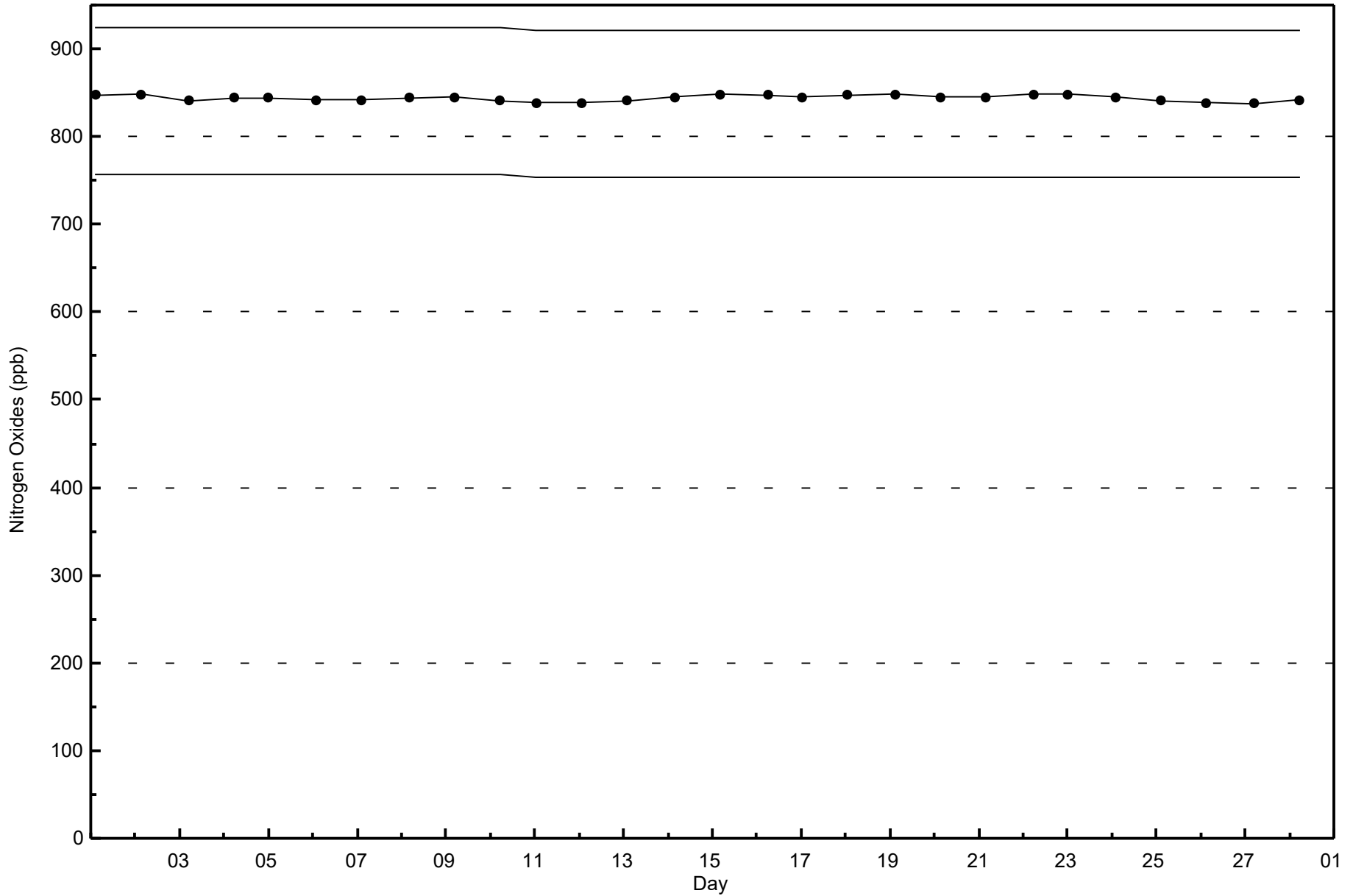
Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Nitrogen Oxides (NO<sub>x</sub>) - ppb  
Fort McKay South











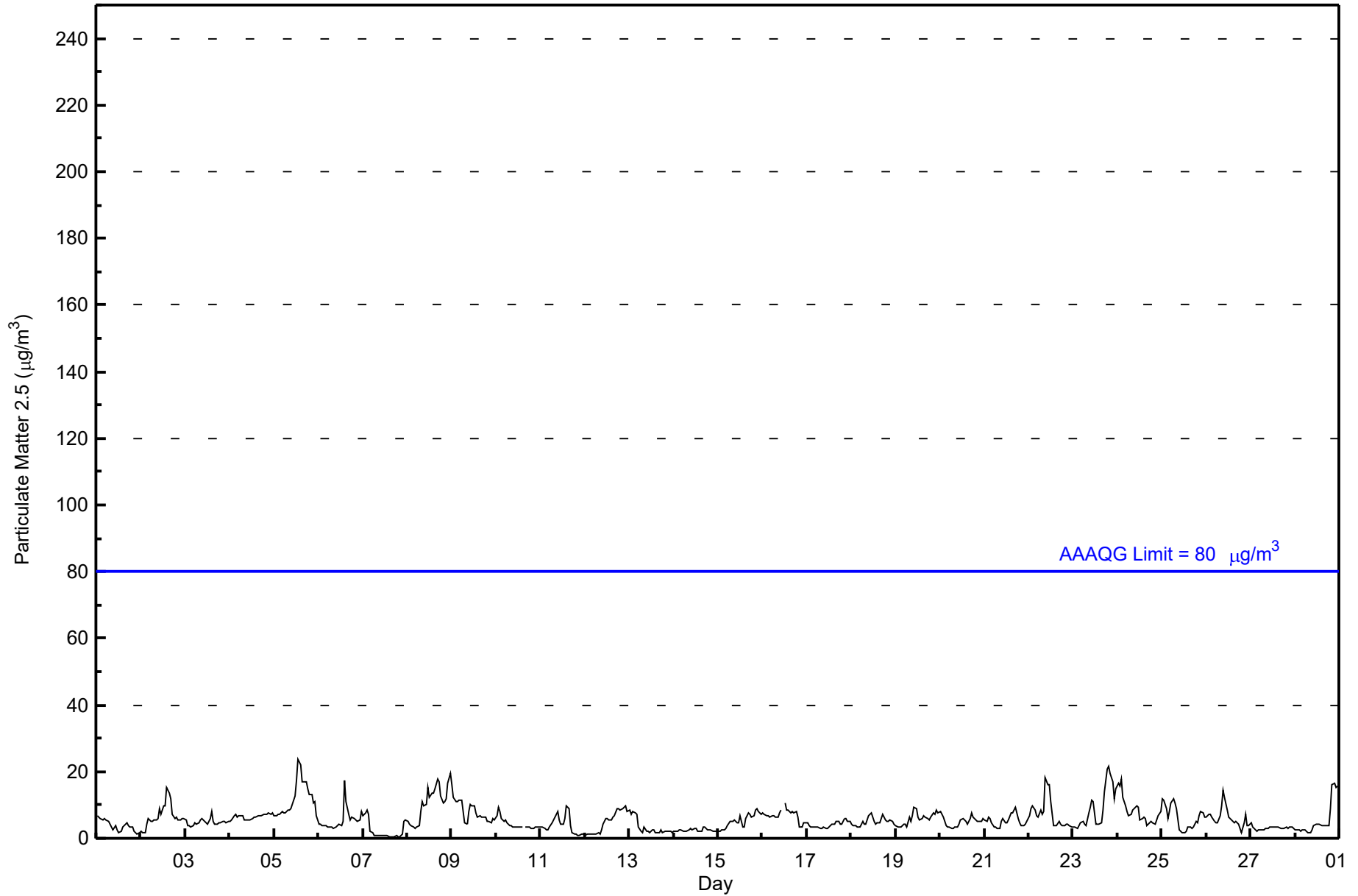
Wood Buffalo Environmental Association

Summary of Hour Averages

Particulate Matter 2.5 (PM<sub>2.5</sub>) - µg/m<sup>3</sup>

Fort McKay South - February 2023

| Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0<br>Maximum Value: 23.8 µg/m <sup>3</sup> on Feb 5 14:00<br>Minimum Value: 0.4 µg/m <sup>3</sup> on Feb 7 21:00<br>Maximum Diurnal Average: 6.6 µg/m <sup>3</sup> at hour 15<br>Monthly Average: 5.78 µg/m <sup>3</sup> |                               | Maximum Daily Average: 11.8 µg/m <sup>3</sup> on Feb 5<br>Minimum Daily Average: 2.3 µg/m <sup>3</sup> on Feb 7<br>Minimum Diurnal Average: 4.7 µg/m <sup>3</sup> at hour 7<br>Percentiles: P <sub>1</sub> = 0.7 P <sub>10</sub> = 2.1 Q <sub>1</sub> = 3.3 Median = 5.0 Q <sub>3</sub> = 7.2 P <sub>90</sub> = 10.2 P <sub>99</sub> = 17.9 |      | Hours in Service: 672<br>Hours of Data: 670<br>Hours of Missing Data: 2<br>Hours of Calibration: 1<br>Percent Operational Time: 99.9 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |               |                 |  |
|--|-------------------------------|---|------|--|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----------------|---------------|-----------------|--|
| Day  | Hourly Period Ending At (MST) |   |      |  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 | Daily Average | Daily Maximum   |  |
|  | 1                             | 2   | 3    | 4  | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20   | 21   | 22   | 23   | 24              |               |                 |  |
| 1-Feb  | 6.7                           | 6.5   | 5.8  | 5.7  | 5.7  | 5.5  | 5.2  | 4.2  | 3.3  | 2.6  | 3.7  | 2.6  | 1.7  | 2.2  | 3.4  | 4.0  | 4.7  | 3.7  | 3.6  | 3.3  | 2.2  | 1.5  | 1.2  | 1.7             | 3.8           | 6.7             |  |
| 2-Feb  | 2.0                           | 1.8   | 1.8  | 4.2  | 5.7  | 5.2  | 5.2  | 5.4  | 5.4  | 6.0  | 8.9  | 7.1  | 9.9  | 9.6  | 15.2 | 13.6 | 12.1 | 7.3  | 6.0  | 6.2  | 5.7  | 5.7  | 5.8  | 5.9             | 6.7           | 15.2            |  |
| 3-Feb  | 5.5                           | 3.8   | 3.7  | 3.6  | 3.6  | 4.8  | 4.2  | 4.7  | 5.4  | 5.9  | 5.0  | 4.6  | 4.4  | 5.8  | 8.2  | 5.3  | 4.4  | 4.2  | 4.5  | 4.6  | 4.9  | 5.0  | 4.9  | 5.0             | 4.8           | 8.2             |  |
| 4-Feb  | 5.0                           | 5.4   | 6.7  | 7.2  | 6.6  | 6.7  | 6.8  | 6.6  | 5.6  | 5.7  | 5.6  | 5.3  | 6.0  | 6.2  | 6.7  | 6.8  | 6.8  | 7.1  | 7.4  | 7.3  | 7.4  | 7.3  | 7.5  | 7.5             | 6.5           | 7.5             |  |
| 5-Feb  | 6.9                           | 6.8   | 7.1  | 7.2  | 7.9  | 7.8  | 7.7  | 8.3  | 8.6  | 8.9  | 10.2 | 12.5 | 17.3 | 23.8 | 22.0 | 17.1 | 16.8 | 16.8 | 14.8 | 13.2 | 13.3 | 10.7 | 10.9 | 6.7             | 11.8          | 23.8            |  |
| 6-Feb  | 4.3                           | 4.1   | 3.9  | 3.7  | 3.6  | 3.6  | 3.3  | 3.2  | 3.0  | 3.5  | 3.6  | 4.1  | 3.9  | 5.0  | 17.3 | 11.0 | 7.0  | 5.5  | 6.4  | 5.7  | 5.4  | 5.3  | 5.4  | 8.1             | 5.4           | 17.3            |  |
| 7-Feb  | 6.7                           | 7.6   | 8.4  | 7.3  | 2.1  | 1.5  | 1.0  | 0.8  | 0.6  | 0.8  | 0.9  | 0.8  | 0.7  | 0.7  | 0.6  | 0.5  | 0.5  | 0.5  | 0.8  | 0.5  | 0.4  | 1.3  | 5.2  | 5.5             | 2.3           | 8.4             |  |
| 8-Feb  | 5.1                           | 4.3   | 3.8  | 3.4  | 3.1  | 3.2  | 3.7  | 8.0  | 11.2 | 9.6  | 10.0 | 15.2 | 12.4 | 13.6 | 13.8 | 14.7 | 17.8 | 16.7 | 12.7 | 10.5 | 11.0 | 11.7 | 16.5 | 19.4            | 10.5          | 19.4            |  |
| 9-Feb  | 16.3                          | 12.1  | 11.1 | 11.1   | 11.6 | 11.3 | 7.9  | 4.6  | 4.3  | 8.1  | 10.3 | 9.7  | 9.6  | 7.7  | 6.2  | 6.6  | 6.2  | 6.3  | 6.4  | 5.2  | 4.9  | 4.8  | 5.9  | 5.4             | 8.1           | 16.3            |  |
| 10-Feb   | 6.8                           | 9.5   | 7.9  | 6.0  | 5.1  | 5.4  | 4.8  | 3.6  | 3.7  | 3.5  | 3.3  | 3.5  | 3.4  | 3.5  | 3.4  | PF   | 3.2  | 3.3  | 3.3  | 3.1  | 3.2  | 3.4  | 3.5  | 3.3             | 4.3           | 9.5             |  |
| 11-Feb   | 3.3                           | 3.2   | 3.1  | 2.7  | 2.6  | 3.5  | 4.6  | 5.4  | 6.3  | 8.0  | 5.6  | 4.2  | 4.0  | 5.8  | 9.6  | 9.0  | 3.8  | 1.6  | 1.5  | 1.1  | 0.8  | 0.9  | 1.1  | 1.3             | 3.9           | 9.6             |  |
| 12-Feb   | 1.0                           | 1.1   | 1.1  | 1.4  | 1.4  | 1.3  | 1.5  | 1.5  | 1.3  | 2.7  | 4.3  | 5.9  | 5.9  | 5.6  | 5.6  | 6.2  | 6.9  | 8.8  | 8.8  | 8.7  | 9.1  | 9.1  | 9.6  | 7.9             | 4.9           | 9.6             |  |
| 13-Feb   | 8.3                           | 7.2   | 8.3  | 7.4  | 7.1  | 3.5  | 2.2  | 1.8  | 3.2  | 1.9  | 2.0  | 1.9  | 2.3  | 2.5  | 1.8  | 1.7  | 1.9  | 2.4  | 1.7  | 2.1  | 2.3  | 2.2  | 2.0  | 1.7             | 3.3           | 8.3             |  |
| 14-Feb   | 2.1                           | 1.9   | 2.1  | 2.5  | 2.7  | 2.2  | 2.0  | 2.3  | 2.5  | 2.9  | 2.7  | 3.2  | 2.9  | 2.1  | 2.0  | 2.1  | 3.2  | 3.2  | 2.7  | 2.5  | 2.4  | 2.3  | 2.2  | 2.1             | 2.4           | 3.2             |  |
| 15-Feb   | 2.0                           | 2.0   | 2.7  | 2.5  | 3.0  | 3.6  | 5.1  | 5.1  | 5.2  | 5.5  | 4.5  | 4.5  | 6.9  | 3.3  | 3.3  | 6.0  | 7.7  | 7.2  | 6.5  | 6.8  | 8.3  | 8.7  | 8.0  | 7.4             | 5.2           | 8.7             |  |
| 16-Feb   | 7.6                           | 7.0   | 6.6  | 6.7  | 6.5  | 6.9  | 6.8  | 6.5  | 6.5  | 7.7  | 8.5  | C    | 10.7 | 8.3  | 8.4  | 7.8  | 8.0  | 7.5  | 8.2  | 6.5  | 3.2  | 3.5  | 4.5  | 4.6             | 6.9           | 10.7            |  |
| 17-Feb   | 4.8                           | 3.6   | 3.2  | 3.5  | 3.2  | 3.4  | 3.3  | 2.9  | 3.1  | 3.2  | 2.9  | 3.2  | 3.4  | 4.1  | 4.1  | 4.2  | 5.0  | 5.2  | 4.4  | 4.3  | 5.9  | 6.0  | 5.2  | 4.9             | 4.0           | 6.0             |  |
| 18-Feb   | 4.4                           | 4.0   | 3.7  | 3.6  | 3.5  | 3.5  | 4.9  | 4.3  | 4.2  | 6.6  | 7.4  | 7.5  | 5.0  | 4.1  | 4.5  | 4.6  | 5.9  | 7.1  | 5.5  | 5.2  | 5.2  | 5.4  | 5.0  | 4.4             | 5.0           | 7.5             |  |
| 19-Feb   | 3.8                           | 3.5   | 3.3  | 3.6  | 4.3  | 4.1  | 3.2  | 6.4  | 5.0  | 6.7  | 9.3  | 8.8  | 6.4  | 5.4  | 5.8  | 6.7  | 6.6  | 5.9  | 5.5  | 6.3  | 7.5  | 7.0  | 8.4  | 7.5             | 5.9           | 9.3             |  |
| 20-Feb   | 7.9                           | 7.4   | 6.5  | 3.7  | 3.4  | 3.4  | 2.9  | 3.1  | 3.3  | 3.6  | 4.3  | 5.4  | 6.0  | 5.7  | 5.0  | 4.1  | 6.0  | 7.7  | 6.4  | 5.7  | 5.3  | 5.0  | 5.0  | 6.1             | 5.1           | 7.9             |  |
| 21-Feb   | 5.5                           | 5.0   | 6.5  | 6.0  | 4.5  | 3.4  | 3.2  | 3.0  | 3.1  | 5.0  | 6.1  | 4.9  | 4.8  | 5.7  | 7.5  | 7.8  | 8.7  | 9.5  | 5.9  | 4.5  | 3.9  | 3.8  | 4.2  | 5.1             | 5.3           | 9.5             |  |
| 22-Feb   | 6.8                           | 9.0   | 9.8  | 8.7  | 6.7  | 6.5  | 8.7  | 7.2  | 8.1  | 18.1 | 16.3 | 16.1 | 10.9 | 4.0  | 3.7  | 4.0  | 4.9  | 4.0  | 4.0  | 3.9  | 4.4  | 4.2  | 3.7  | 3.4             | 7.4           | 18.1            |  |
| 23-Feb   | 3.4                           | 3.2   | 2.9  | 3.7  | 4.7  | 4.9  | 4.2  | 3.8  | 7.6  | 9.3  | 11.2 | 10.9 | 4.4  | 4.1  | 4.1  | 4.6  | 8.6  | 13.9 | 20.8 | 21.5 | 19.7 | 16.9 | 11.7 | 14.9            | 9.0           | 21.5            |  |
| 24-Feb   | 16.7                          | 15.8  | 17.8 | 12.3   | 9.7  | 7.9  | 6.9  | 7.1  | 8.5  | 8.8  | 9.9  | 9.3  | 5.6  | 5.9  | 6.2  | 5.9  | 4.0  | 4.5  | 5.3  | 4.6  | 4.3  | 5.6  | 6.8  | 8.1             | 8.2           | 17.8            |  |
| 25-Feb   | 12.0                          | 11.4  | 9.0  | 6.1  | 8.1  | 10.5 | 12.0 | 10.6 | 8.7  | 2.5  | 1.9  | 1.6  | 1.7  | 2.2  | 3.3  | 3.2  | 2.9  | 3.4  | 4.9  | 4.7  | 6.8  | 8.0  | 7.5  | 6.5             | 6.2           | 12.0            |  |
| 26-Feb   | 6.4                           | 7.2   | 7.3  | 6.3  | 5.1  | 4.6  | 4.8  | 6.8  | 9.8  | 14.2 | 12.1 | 8.3  | 6.4  | 5.9  | 4.9  | 4.7  | 5.1  | 4.1  | 2.8  | 1.7  | 4.8  | 7.0  | 3.6  | 4.0             | 6.2           | 14.2            |  |
| 27-Feb   | 4.6                           | 3.5   | 2.8  | 2.3  | 2.6  | 2.7  | 2.6  | 2.5  | 3.0  | 3.1  | 3.3  | 3.4  | 3.6  | 3.5  | 3.5  | 3.3  | 3.0  | 3.2  | 3.1  | 3.3  | 2.9  | 3.2  | 3.2  | 3.1             | 3.1           | 4.6             |  |
| 28-Feb   | 2.5                           | 2.4   | 2.5  | 2.3  | 2.4  | 2.4  | 1.9  | 1.7  | 1.8  | 2.4  | 3.9  | 4.3  | 4.4  | 4.0  | 3.9  | 3.9  | 3.9  | 3.6  | 3.6  | 8.9  | 16.0 | 16.7 | 15.3 | 15.7            | 5.4           | 16.7            |  |
|  |                               |   |      |  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Diurnal Average |               | Diurnal Maximum |  |
| 6.0 5.7 5.7 5.2 4.9 4.8 4.7 4.7 5.1 6.0 6.4 6.2 5.9 5.7 6.6 6.3 6.3 6.2 6.0 5.8 6.1 6.2 6.2 6.3  |                               |   |      |  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 16.7            |               | 18.1            |  |
| 16.7 15.8 17.8 12.3 11.6 11.3 12.0 10.6 11.2 18.1 16.3 16.1 17.3 23.8 22.0 17.1 17.8 16.8 20.8 21.5 19.7 16.9 16.5 19.4  |                               |   |      |  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 16.9            |               | 16.5            |  |
| C - Calibration PF - Power Failure   |                               |   |      |  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |               |                 |  |
| Alberta Ambient Air Quality Guideline/Objectives: 1-hr 80 µg/m <sup>3</sup> 24-hr 29 µg/m <sup>3</sup>   |                               |   |      |  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |               |                 |  |





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Particulate Matter 2.5 (PM<sub>2.5</sub>) -  $\mu\text{g}/\text{m}^3$**   
**Fort McKay South - February 2023**

| <b>Concentration Ranges (<math>\mu\text{g}/\text{m}^3</math>)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---|------------------------|----------|---------------------|
| 0 - 5   | 383                    | 57.16    | 57.16               |
| 6 - 15  | 262                    | 39.10    | 96.27               |
| 16 - 25   | 25                     | 3.73     | 100.00              |
| 26 - 80   | 0                      | 0.00     | 100.00              |
| > 81.0  | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 670

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Particulate Matter 2.5 (PM<sub>2.5</sub>) -  $\mu\text{g}/\text{m}^3$   
Fort McKay South - February 2023**

| Concentration<br>Ranges ( $\mu\text{g}/\text{m}^3$ ) | Wind Direction |     |    |     |   |     |    |     |    |     |    |     |    |     |    |     | Totals |
|--|----------------|-----|----|-----|---|-----|----|-----|----|-----|----|-----|----|-----|----|-----|--------|
|  | N              | NNE | NE | ENE | E | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |        |
| 0 - 5  | 103            | 50  | 11 | 2   | 2 | 2   | 6  | 19  | 24 | 9   | 28 | 52  | 25 | 16  | 12 | 18  | 379    |
| 6 - 15   | 62             | 22  | 1  | 1   | 1 | 4   | 15 | 34  | 37 | 18  | 15 | 10  | 5  | 6   | 12 | 19  | 262    |
| 16 - 25  | 0              | 0   | 0  | 0   | 0 | 2   | 3  | 0   | 4  | 2   | 8  | 6   | 0  | 0   | 0  | 0   | 25     |
| 26 - 80  | 0              | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| > 81.0   | 0              | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| <b>Totals</b>  | 165            | 72  | 12 | 3   | 3 | 8   | 24 | 53  | 65 | 29  | 51 | 68  | 30 | 22  | 24 | 37  | 666    |

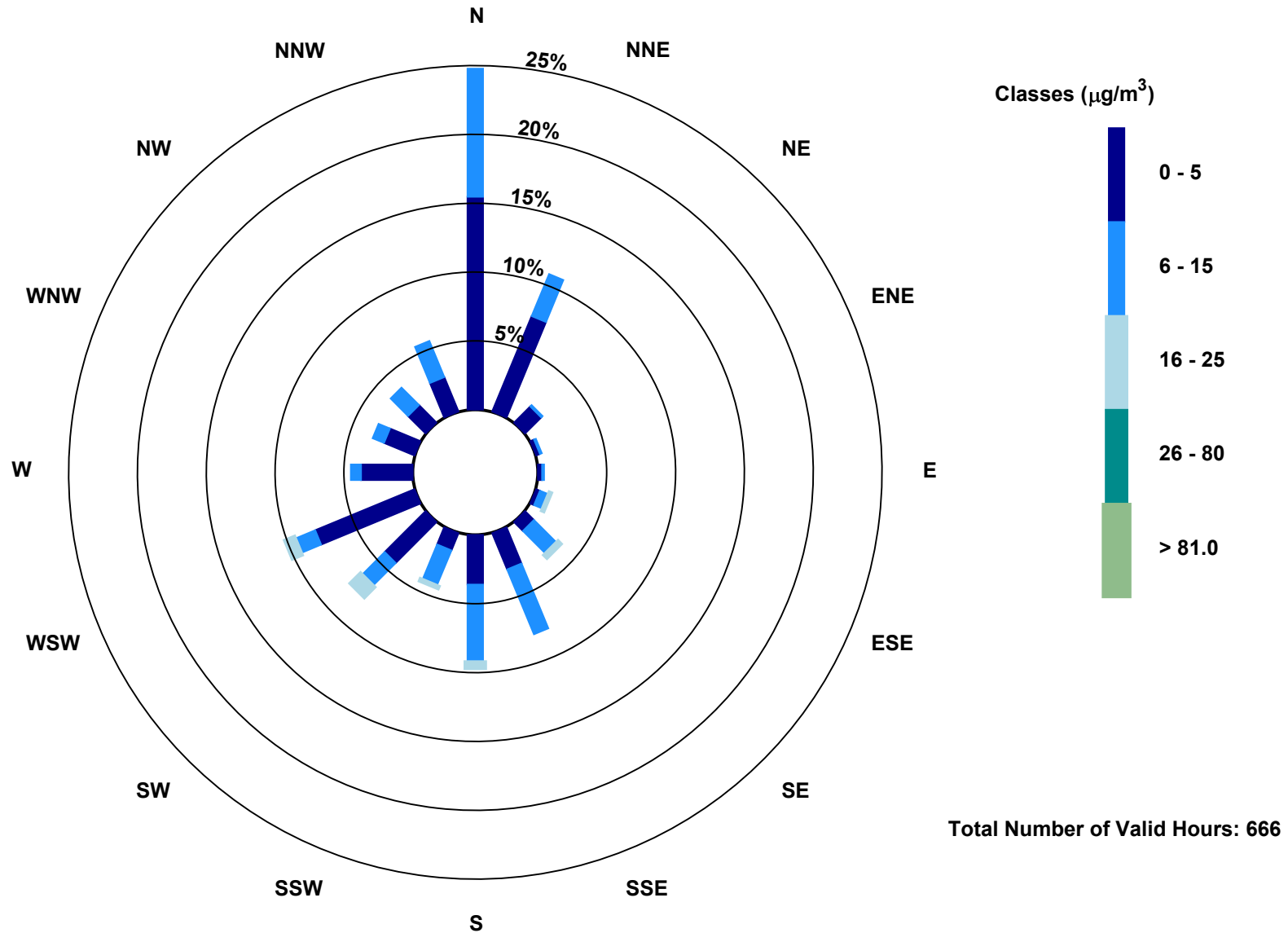
Total Number of Valid Hours: 666

Total Number of Hours: 672



Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Particulate Matter 2.5 (PM<sub>2.5</sub>) -  $\mu\text{g}/\text{m}^3$   
Fort McKay South





**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

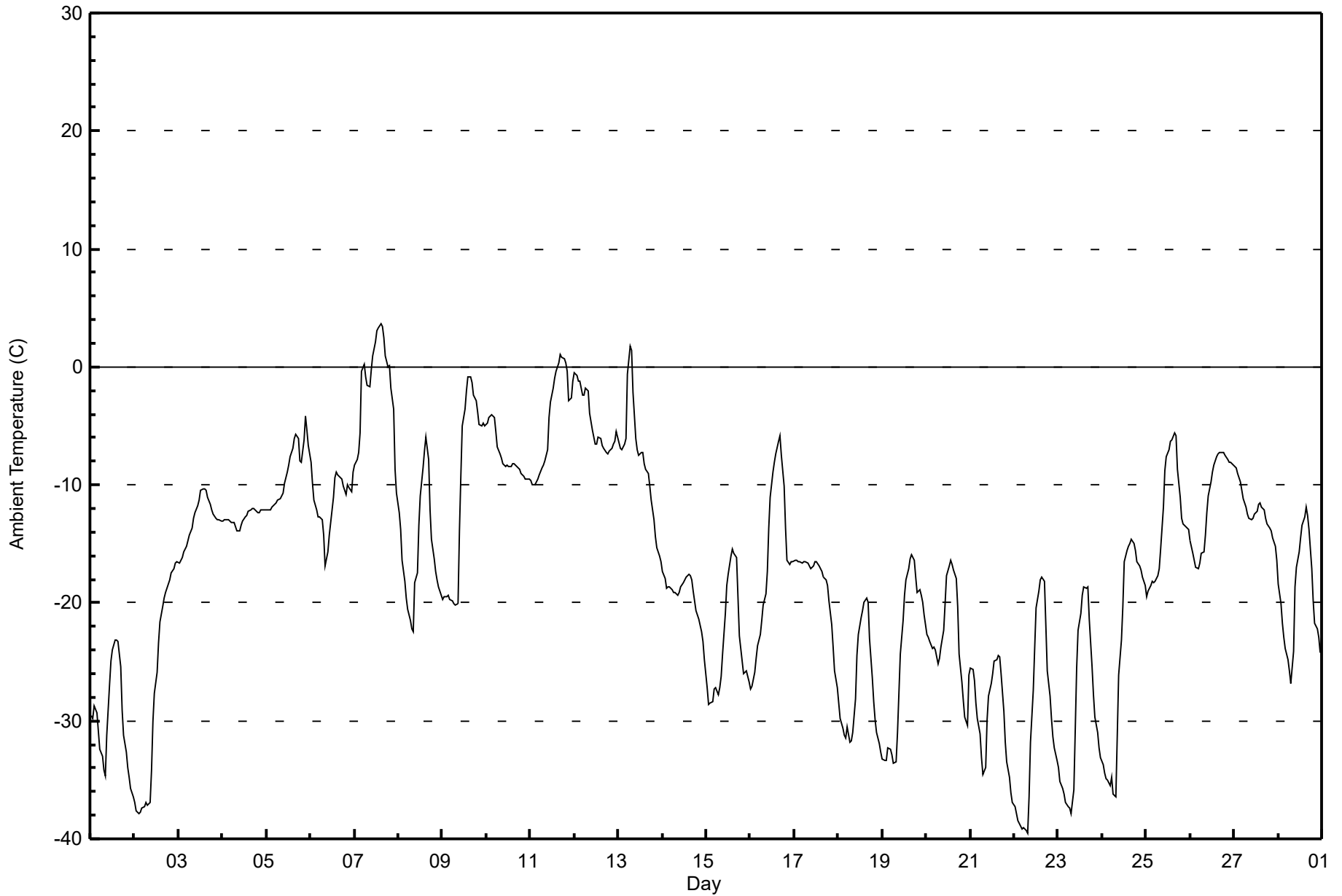
**Ambient Temperature (AT) - C**  
**Fort McKay South - February 2023**

| Maximum Value: 3.6 C on Feb 7 15:00         |                               | Maximum Daily Average: -1.6 C on Feb 7   |       | Hours in Service: 672           |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |               |                 |  |
|---|-------------------------------|--|-------|---------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------------|-----------------|--|
| Minimum Value: -39.5 C on Feb 22 08:00      |                               | Minimum Daily Average: -30.2 C on Feb 22   |       | Hours of Data: 672              |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |               |                 |  |
| Maximum Diurnal Average: -11.8 C at hour 16 |                               | Minimum Diurnal Average: -20.6 C at hour 8   |       | Hours of Missing Data: 0        |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |               |                 |  |
| Monthly Average: -16.99 C                   |                               | Percentiles: P <sub>1</sub> = -37.9 P <sub>10</sub> = -31.9 Q <sub>1</sub> = -23.8 Median = -16.5 Q <sub>3</sub> = -9.3 P <sub>90</sub> = -5.5 P <sub>99</sub> = 1.5 |       | Hours of Calibration: 0         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |               |                 |  |
|   |                               |  |       | Percent Operational Time: 100.0 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |               |                 |  |
| Day   | Hourly Period Ending At (MST) |  |       |                                 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Daily Average | Daily Maximum   |  |
|   | 1                             | 2  | 3     | 4                               | 5     | 6     | 7     | 8     | 9     | 10    | 11    | 12    | 13    | 14    | 15    | 16    | 17    | 18    | 19    | 20    | 21    | 22    | 23    | 24    |               |                 |  |
| 1-Feb                                       | -29.5                         | -29.8  | -28.7 | -29.3                           | -30.9 | -32.4 | -33.0 | -34.2 | -34.7 | -31.3 | -26.9 | -25.0 | -24.0 | -23.2 | -23.1 | -23.2 | -25.4 | -29.1 | -31.2 | -32.7 | -33.9 | -34.8 | -35.7 | -36.5 | -29.9         | -23.1           |  |
| 2-Feb                                       | -36.9                         | -37.7  | -37.8 | -37.7                           | -37.3 | -37.3 | -36.9 | -37.2 | -37.0 | -34.2 | -30.0 | -27.6 | -25.9 | -23.4 | -21.6 | -20.3 | -19.6 | -19.1 | -18.4 | -18.0 | -17.5 | -17.1 | -16.7 | -16.5 | -27.6         | -16.5           |  |
| 3-Feb                                       | -16.6                         | -16.4  | -16.1 | -15.7                           | -15.2 | -14.7 | -14.3 | -13.6 | -12.9 | -12.4 | -11.8 | -11.3 | -10.5 | -10.4 | -10.3 | -10.5 | -11.1 | -11.6 | -12.1 | -12.5 | -12.8 | -13.0 | -13.0 | -13.0 | -13.0         | -10.3           |  |
| 4-Feb                                       | -13.1                         | -13.0  | -13.0 | -13.0                           | -13.1 | -13.1 | -13.2 | -13.5 | -13.9 | -13.8 | -13.4 | -13.1 | -12.7 | -12.6 | -12.3 | -12.1 | -12.0 | -12.0 | -12.3 | -12.4 | -12.3 | -12.1 | -12.1 | -12.1 | -12.8         | -12.0           |  |
| 5-Feb                                       | -12.2                         | -12.1  | -12.1 | -11.9                           | -11.6 | -11.5 | -11.3 | -11.1 | -10.9 | -10.7 | -9.9  | -8.9  | -8.3  | -7.6  | -6.9  | -6.0  | -5.8  | -6.0  | -7.9  | -8.1  | -6.2  | -4.2  | -5.4  | -6.7  | -8.9          | -4.2            |  |
| 6-Feb                                       | -8.1                          | -9.8   | -11.3 | -12.2                           | -12.7 | -12.8 | -13.0 | -14.3 | -16.9 | -15.6 | -14.3 | -13.2 | -11.0 | -9.4  | -8.9  | -9.1  | -9.3  | -9.5  | -10.1 | -10.8 | -10.0 | -10.2 | -10.6 | -8.9  | -11.3         | -8.1            |  |
| 7-Feb                                       | -8.3                          | -7.9   | -7.2  | -5.6                            | -0.4  | 0.2   | -0.9  | -1.5  | -1.6  | -0.2  | 0.9   | 2.2   | 3.1   | 3.3   | 3.6   | 3.4   | 2.5   | 0.9   | 0.0   | 0.1   | -1.8  | -3.6  | -8.7  | -10.7 | -1.6          | 3.6             |  |
| 8-Feb                                       | -12.4                         | -13.7  | -16.4 | -18.2                           | -19.6 | -20.6 | -21.5 | -22.2 | -22.4 | -18.3 | -17.4 | -13.5 | -10.9 | -8.6  | -7.1  | -6.0  | -7.9  | -12.1 | -14.6 | -16.3 | -17.3 | -18.1 | -18.7 | -19.3 | -15.5         | -6.0            |  |
| 9-Feb                                       | -19.7                         | -19.5  | -19.4 | -19.4                           | -19.7 | -19.8 | -20.0 | -20.1 | -20.0 | -13.9 | -9.2  | -5.0  | -3.5  | -2.1  | -0.8  | -0.8  | -1.3  | -2.4  | -2.9  | -3.8  | -4.9  | -5.0  | -4.8  | -5.0  | -10.1         | -0.8            |  |
| 10-Feb                                      | -4.8                          | -4.3   | -4.1  | -4.1                            | -4.3  | -5.5  | -6.7  | -7.3  | -7.7  | -8.2  | -8.5  | -8.3  | -8.4  | -8.5  | -8.3  | -8.2  | -8.3  | -8.5  | -8.7  | -9.0  | -9.3  | -9.4  | -9.5  | -9.5  | -7.5          | -4.1            |  |
| 11-Feb                                      | -9.7                          | -10.0  | -9.9  | -9.8                            | -9.5  | -9.1  | -8.6  | -8.4  | -8.0  | -7.0  | -4.3  | -3.0  | -1.8  | -1.0  | -0.3  | 0.3   | 1.1   | 0.8   | 0.6   | 0.4   | -0.3  | -2.9  | -2.6  | -1.2  | -4.3          | 1.1             |  |
| 12-Feb                                      | -0.5                          | -0.7   | -1.2  | -1.2                            | -2.4  | -2.4  | -1.8  | -2.0  | -4.0  | -4.6  | -5.4  | -6.5  | -6.5  | -6.0  | -6.1  | -6.6  | -6.9  | -7.2  | -7.4  | -7.2  | -6.9  | -6.6  | -6.3  | -5.5  | -4.7          | -0.5            |  |
| 13-Feb                                      | -6.5                          | -6.9   | -7.0  | -6.6                            | -6.0  | -0.6  | 1.8   | 1.4   | -2.2  | -6.0  | -7.1  | -7.5  | -7.3  | -7.3  | -8.2  | -8.6  | -9.0  | -10.1 | -11.3 | -13.0 | -14.4 | -15.4 | -16.0 | -16.6 | -7.9          | 1.8             |  |
| 14-Feb                                      | -17.3                         | -18.0  | -18.7 | -18.7                           | -18.7 | -18.8 | -19.1 | -19.2 | -19.3 | -19.1 | -18.6 | -18.3 | -18.1 | -17.8 | -17.5 | -17.7 | -18.0 | -18.9 | -20.7 | -21.0 | -21.4 | -22.4 | -23.2 | -24.8 | -19.4         | -17.3           |  |
| 15-Feb                                      | -27.2                         | -28.6  | -28.5 | -28.4                           | -27.3 | -27.2 | -27.8 | -27.1 | -26.2 | -24.3 | -20.9 | -18.5 | -17.6 | -16.1 | -15.5 | -15.8 | -16.2 | -19.4 | -22.8 | -25.0 | -26.1 | -25.9 | -25.8 | -26.7 | -23.5         | -15.5           |  |
| 16-Feb                                      | -27.3                         | -27.0  | -25.9 | -24.7                           | -23.7 | -22.6 | -21.5 | -20.2 | -19.2 | -17.3 | -13.6 | -11.1 | -8.9  | -8.1  | -7.4  | -6.3  | -5.8  | -7.5  | -10.1 | -13.7 | -16.4 | -16.7 | -16.6 | -16.5 | -16.2         | -5.8            |  |
| 17-Feb                                      | -16.4                         | -16.4  | -16.5 | -16.5                           | -16.6 | -16.6 | -16.5 | -16.6 | -16.9 | -17.0 | -16.9 | -16.5 | -16.5 | -16.9 | -17.0 | -17.3 | -17.8 | -18.1 | -18.5 | -19.9 | -21.8 | -23.8 | -25.8 | -27.2 | -18.3         | -16.4           |  |
| 18-Feb                                      | -28.5                         | -29.8  | -30.6 | -31.2                           | -31.5 | -30.5 | -31.8 | -31.7 | -31.0 | -28.2 | -24.5 | -22.7 | -21.3 | -20.6 | -20.0 | -19.5 | -19.9 | -23.0 | -26.3 | -28.3 | -29.9 | -31.0 | -32.0 | -32.6 | -27.4         | -19.5           |  |
| 19-Feb                                      | -33.2                         | -33.4  | -33.3 | -32.3                           | -32.4 | -32.8 | -33.6 | -33.5 | -31.0 | -27.6 | -24.4 | -21.5 | -19.4 | -18.1 | -17.1 | -16.3 | -15.9 | -16.4 | -17.8 | -19.2 | -18.9 | -19.4 | -20.0 | -21.0 | -24.5         | -15.9           |  |
| 20-Feb                                      | -22.7                         | -22.9  | -23.3 | -23.8                           | -23.8 | -24.0 | -25.2 | -24.7 | -23.7 | -22.4 | -20.1 | -17.7 | -16.8 | -16.3 | -16.8 | -17.2 | -17.9 | -20.3 | -24.4 | -26.7 | -28.3 | -29.7 | -30.4 | -26.2 | -22.7         | -16.3           |  |
| 21-Feb                                      | -25.6                         | -25.6  | -26.6 | -28.5                           | -29.8 | -31.1 | -33.1 | -34.5 | -34.0 | -29.9 | -27.9 | -26.9 | -26.0 | -24.9 | -24.8 | -24.4 | -24.5 | -26.0 | -29.2 | -31.9 | -33.5 | -34.8 | -36.1 | -36.9 | -29.4         | -24.4           |  |
| 22-Feb                                      | -37.3                         | -37.9  | -38.5 | -39.0                           | -39.1 | -39.1 | -39.3 | -39.5 | -36.5 | -31.9 | -27.5 | -23.9 | -20.4 | -19.0 | -18.0 | -17.9 | -18.1 | -21.9 | -25.7 | -28.0 | -29.8 | -31.3 | -32.2 | -33.4 | -30.2         | -17.9           |  |
| 23-Feb                                      | -33.9                         | -35.1  | -35.7 | -36.2                           | -36.9 | -37.3 | -37.4 | -37.9 | -35.8 | -30.8 | -25.6 | -22.3 | -20.9 | -19.4 | -18.7 | -18.8 | -18.7 | -21.3 | -25.4 | -27.8 | -29.7 | -31.0 | -32.2 | -33.2 | -29.3         | -18.7           |  |
| 24-Feb                                      | -33.7                         | -34.5  | -34.8 | -35.1                           | -35.5 | -34.8 | -36.2 | -36.5 | -31.3 | -26.2 | -23.2 | -20.3 | -16.5 | -15.5 | -15.3 | -15.0 | -14.7 | -15.0 | -15.6 | -16.5 | -16.8 | -17.3 | -17.8 | -18.5 | -24.0         | -14.7           |  |
| 25-Feb                                      | -19.5                         | -18.9  | -18.6 | -18.2                           | -18.3 | -18.2 | -17.7 | -17.1 | -15.5 | -11.9 | -8.8  | -7.6  | -7.0  | -6.3  | -6.2  | -5.6  | -5.8  | -8.7  | -11.0 | -12.8 | -13.3 | -13.4 | -13.6 | -13.8 | -12.8         | -5.6            |  |
| 26-Feb                                      | -14.7                         | -15.8  | -16.4 | -17.0                           | -17.1 | -16.7 | -15.8 | -15.7 | -14.3 | -12.3 | -10.9 | -9.8  | -9.0  | -8.3  | -7.6  | -7.4  | -7.3  | -7.3  | -7.2  | -7.5  | -7.8  | -8.1  | -8.1  | -8.2  | -11.3         | -7.2            |  |
| 27-Feb                                      | -8.4                          | -8.6   | -9.0  | -9.7                            | -10.4 | -11.1 | -11.9 | -12.5 | -12.8 | -12.9 | -12.9 | -12.5 | -12.3 | -11.7 | -11.6 | -11.9 | -12.1 | -12.8 | -13.3 | -13.6 | -13.9 | -14.4 | -15.2 | -16.4 | -12.2         | -8.4            |  |
| 28-Feb                                      | -18.4                         | -20.0  | -21.7 | -22.9                           | -23.8 | -24.9 | -25.8 | -26.8 | -24.1 | -18.6 | -17.0 | -15.6 | -14.5 | -13.4 | -12.7 | -11.9 | -12.6 | -13.7 | -17.1 | -19.8 | -21.7 | -22.2 | -22.9 | -24.3 | -19.4         | -11.9           |  |
|   |                               | -19.4  | -19.8 | -20.1                           | -20.2 | -20.3 | -20.2 | -20.4 | -20.6 | -20.1 | -18.1 | -16.1 | -14.5 | -13.3 | -12.5 | -12.0 | -11.8 | -12.1 | -13.4 | -15.1 | -16.2 | -17.0 | -17.6 | -18.3 | -18.6         | Diurnal Average |  |
|   |                               | -0.5   | -0.7  | -1.2                            | -1.2  | -0.4  | 0.2   | 1.8   | 1.4   | -1.6  | -0.2  | 0.9   | 2.2   | 3.1   | 3.3   | 3.6   | 3.4   | 2.5   | 0.9   | 0.6   | 0.4   | -0.3  | -2.9  | -2.6  | -1.2          | Diurnal Maximum |  |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Ambient Temperature (AT) - C**  
**Fort McKay South - February 2023**







**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Ambient Temperature (AT) - C  
Fort McKay South - February 2023**

| <b>Concentration Ranges (C)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---------------------------------|------------------------|----------|---------------------|
| -50 - -20                       | 222                    | 33.04    | 33.04               |
| -20 - 0                         | 433                    | 64.43    | 97.47               |
| 0 - 10                          | 17                     | 2.53     | 100.00              |
| 10 - 20                         | 0                      | 0.00     | 100.00              |
| > 20                            | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 672

Total Number of Hours: 672



**Wood Buffalo Environmental Association**

**Summary of Hour Averages**

**Relative Humidity (RH) - %**

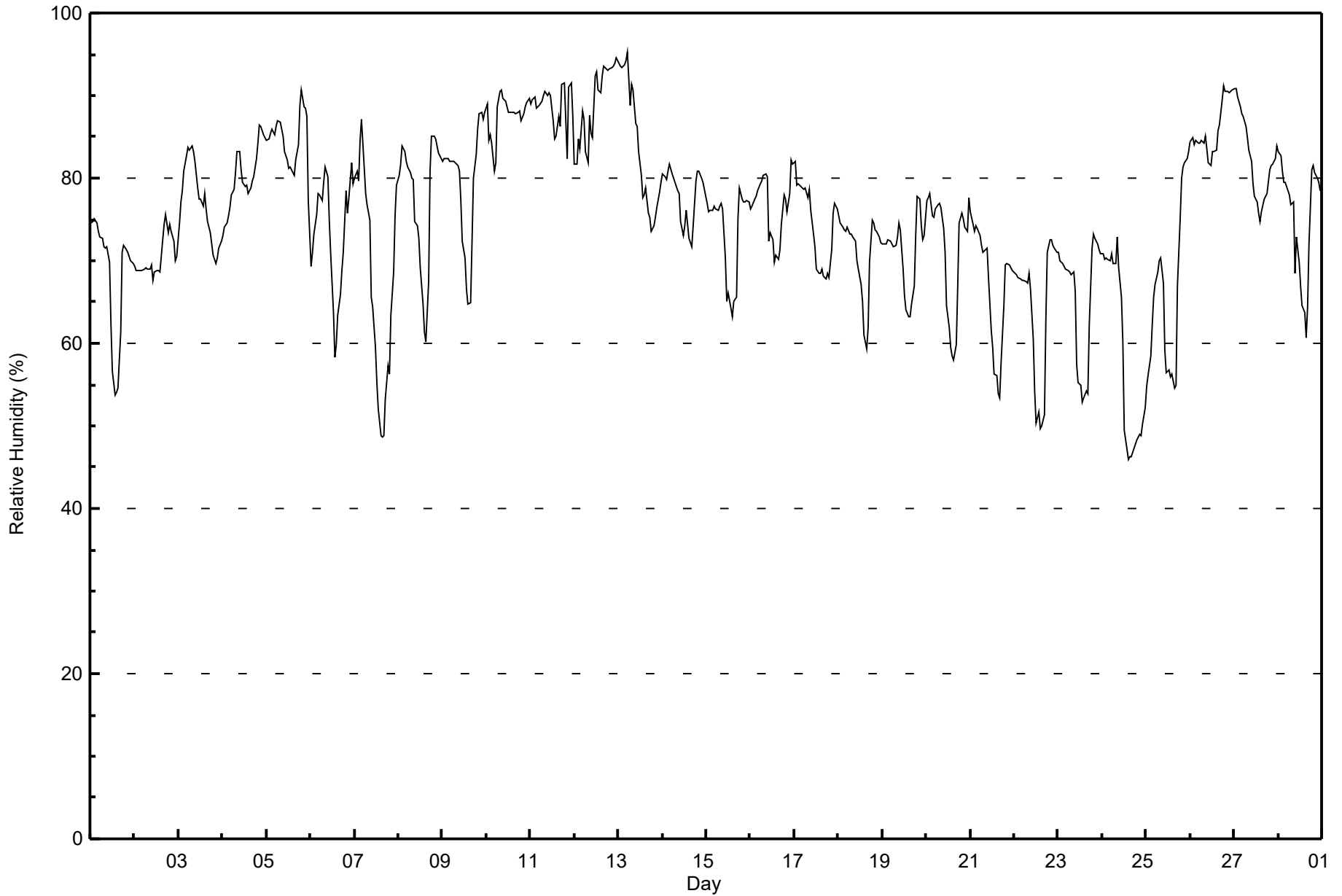
**Fort McKay South - February 2023**

| Maximum Value: 95.3 % on Feb 13 06:00      Maximum Daily Average: 89.0 % on Feb 12   |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Hours in Service: 672<br>Hours of Data: 672  |      |                 |               |               |
|--|-------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|--|------|-----------------|---------------|---------------|
| Minimum Value: 45.9 % on Feb 24 15:00      Minimum Daily Average: 58.7 % on Feb 24<br>Maximum Diurnal Average: 78.7 % at hour 9      Minimum Diurnal Average: 67.0 % at hour 15<br>Monthly Average: 75.26 %      Percentiles: P <sub>1</sub> = 48.5 P <sub>10</sub> = 61.5 Q <sub>1</sub> = 69.6 Median = 76.1 Q <sub>3</sub> = 82.1 P <sub>90</sub> = 88.0 P <sub>99</sub> = 93.5 |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Hours of Missing Data: 0<br>Hours of Calibration: 0<br>Percent Operational Time: 100.0 |      |                 |               |               |
| Day  | Hourly Period Ending At (MST) |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |      |                 | Daily Average | Daily Maximum |
|  | 1                             | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20   | 21   | 22   | 23   | 24              |               |               |
| 1-Feb  | 74.7                          | 74.7 | 75.0 | 74.6 | 73.6 | 72.8 | 72.8 | 71.8 | 71.5 | 71.7 | 69.9 | 62.4 | 56.5 | 53.7 | 54.1 | 54.5 | 61.4 | 71.0 | 71.8 | 71.3 | 71.1 | 70.6   | 70.0 | 69.6            | 68.4          | 75.0          |
| 2-Feb  | 69.4                          | 68.9 | 68.8 | 68.7 | 68.9 | 68.9 | 69.1 | 68.9 | 69.1 | 69.5 | 67.6 | 68.6 | 68.8 | 68.8 | 68.6 | 72.5 | 74.3 | 75.6 | 73.4 | 74.3 | 73.6 | 72.3   | 70.0 | 70.5            | 70.4          | 75.6          |
| 3-Feb  | 74.6                          | 77.2 | 78.4 | 80.9 | 82.7 | 83.8 | 83.4 | 83.9 | 83.2 | 82.1 | 78.8 | 77.4 | 77.5 | 76.7 | 78.1 | 76.2 | 74.7 | 73.4 | 72.1 | 70.6 | 69.7 | 70.4   | 71.5 | 72.3            | 77.1          | 83.9          |
| 4-Feb  | 73.1                          | 74.0 | 74.6 | 75.5 | 76.5 | 78.0 | 78.7 | 80.6 | 83.2 | 83.2 | 81.0 | 79.4 | 78.9 | 79.2 | 78.2 | 78.8 | 79.7 | 80.2 | 82.4 | 84.3 | 86.5 | 86.3   | 85.3 | 84.9            | 80.1          | 86.5          |
| 5-Feb  | 84.5                          | 84.7 | 85.4 | 86.0 | 85.3 | 86.2 | 87.0 | 86.7 | 86.0 | 85.0 | 83.2 | 82.2 | 81.2 | 81.3 | 80.8 | 80.4 | 82.3 | 84.1 | 88.8 | 90.6 | 88.7 | 88.5   | 87.5 | 77.3            | 84.7          | 90.6          |
| 6-Feb  | 69.4                          | 71.0 | 73.3 | 75.5 | 78.1 | 77.9 | 77.3 | 79.4 | 81.4 | 80.2 | 74.9 | 70.9 | 63.7 | 58.3 | 59.8 | 63.4 | 65.9 | 68.8 | 71.1 | 78.5 | 75.8 | 77.7   | 81.8 | 79.3            | 73.1          | 81.8          |
| 7-Feb  | 80.1                          | 80.9 | 79.7 | 84.5 | 87.2 | 81.2 | 78.2 | 76.7 | 75.0 | 65.6 | 64.3 | 59.5 | 55.2 | 52.0 | 48.8 | 48.6 | 48.9 | 53.3 | 57.3 | 56.4 | 63.3 | 68.7   | 75.4 | 79.1            | 67.5          | 87.2          |
| 8-Feb  | 80.3                          | 81.8 | 84.0 | 83.3 | 82.1 | 81.3 | 80.7 | 80.1 | 79.8 | 74.7 | 74.2 | 72.7 | 69.1 | 64.8 | 61.3 | 60.1 | 67.4 | 80.9 | 85.1 | 85.1 | 84.7 | 83.9   | 83.0 | 82.3            | 77.6          | 85.1          |
| 9-Feb  | 82.0                          | 82.4 | 82.4 | 82.4 | 82.1 | 82.1 | 82.1 | 81.9 | 81.6 | 80.9 | 77.3 | 72.4 | 70.3 | 66.6 | 64.7 | 64.9 | 72.3 | 80.0 | 82.9 | 85.9 | 87.8 | 88.0   | 87.2 | 88.0            | 79.5          | 88.0          |
| 10-Feb   | 88.9                          | 84.5 | 85.3 | 84.3 | 80.9 | 81.8 | 88.6 | 90.5 | 90.7 | 89.6 | 89.4 | 88.6 | 88.0 | 88.0 | 87.9 | 88.1 | 87.8 | 88.1 | 88.2 | 87.0 | 87.7 | 88.6   | 89.2 | 89.6            | 87.6          | 90.7          |
| 11-Feb   | 89.0                          | 89.6 | 89.8 | 88.5 | 88.7 | 88.8 | 89.3 | 90.0 | 90.5 | 89.9 | 90.4 | 90.0 | 86.9 | 84.8 | 85.2 | 87.5 | 86.2 | 91.4 | 91.6 | 87.0 | 82.3 | 90.9   | 91.5 | 87.5            | 88.6          | 91.6          |
| 12-Feb   | 81.7                          | 81.6 | 84.7 | 83.6 | 88.1 | 87.2 | 83.2 | 81.9 | 87.6 | 85.5 | 84.8 | 92.4 | 92.9 | 90.7 | 90.4 | 92.3 | 93.5 | 93.2 | 93.0 | 93.2 | 93.3 | 93.6   | 93.9 | 94.6            | 89.0          | 94.6          |
| 13-Feb   | 93.9                          | 93.5 | 93.4 | 93.7 | 94.2 | 95.3 | 88.9 | 91.3 | 90.6 | 86.6 | 86.3 | 83.3 | 80.3 | 77.6 | 78.1 | 78.9 | 75.7 | 75.2 | 73.5 | 74.2 | 75.3 | 76.4   | 78.2 | 79.6            | 83.9          | 95.3          |
| 14-Feb   | 80.5                          | 80.2 | 79.9 | 80.8 | 81.6 | 80.6 | 80.0 | 79.4 | 78.5 | 78.1 | 74.8 | 73.0 | 74.2 | 76.1 | 72.7 | 72.3 | 71.7 | 74.2 | 79.6 | 80.9 | 80.8 | 80.1   | 79.5 | 78.6            | 77.8          | 81.6          |
| 15-Feb   | 76.9                          | 76.0 | 76.2 | 76.1 | 76.6 | 76.3 | 76.0 | 76.6 | 76.9 | 76.2 | 70.3 | 65.1 | 66.1 | 64.3 | 63.1 | 65.1 | 65.6 | 75.0 | 78.8 | 77.4 | 77.1 | 77.1   | 77.3 | 77.1            | 73.5          | 78.8          |
| 16-Feb   | 76.3                          | 76.6 | 77.4 | 77.9 | 78.5 | 79.2 | 79.6 | 80.4 | 80.6 | 80.1 | 72.4 | 73.4 | 72.6 | 69.9 | 70.7 | 70.2 | 71.4 | 74.5 | 78.0 | 77.5 | 75.9 | 78.1   | 82.3 | 81.7            | 76.5          | 82.3          |
| 17-Feb   | 82.1                          | 79.2 | 79.3 | 79.1 | 78.8 | 78.6 | 78.8 | 77.7 | 78.7 | 76.1 | 73.3 | 71.7 | 69.0 | 68.5 | 68.5 | 68.9 | 68.1 | 67.9 | 68.4 | 67.9 | 71.3 | 75.8   | 76.9 | 76.3            | 74.2          | 82.1          |
| 18-Feb   | 75.5                          | 74.6 | 74.0 | 73.7 | 73.6 | 74.1 | 73.2 | 73.3 | 73.0 | 72.3 | 70.0 | 68.9 | 67.1 | 65.1 | 61.1 | 59.3 | 61.9 | 69.8 | 74.9 | 74.6 | 73.7 | 73.5   | 72.8 | 72.2            | 70.9          | 75.5          |
| 19-Feb   | 72.1                          | 72.0 | 72.0 | 72.6 | 72.4 | 72.1 | 71.6 | 71.9 | 72.9 | 74.5 | 73.8 | 69.0 | 65.8 | 64.1 | 63.1 | 63.2 | 64.7 | 66.9 | 73.1 | 77.8 | 77.5 | 74.3   | 72.5 | 73.0            | 71.0          | 77.8          |
| 20-Feb   | 77.2                          | 77.7 | 78.2 | 75.4 | 75.2 | 76.2 | 76.8 | 77.0 | 76.4 | 74.0 | 71.1 | 64.6 | 61.9 | 59.5 | 58.5 | 57.9 | 59.9 | 66.8 | 74.6 | 75.7 | 75.2 | 74.1   | 73.6 | 77.6            | 71.5          | 78.2          |
| 21-Feb   | 76.0                          | 74.3 | 73.6 | 74.3 | 73.9 | 73.0 | 71.8 | 71.0 | 71.3 | 71.5 | 68.0 | 61.5 | 59.5 | 56.3 | 56.1 | 53.9 | 53.3 | 57.7 | 64.5 | 69.4 | 69.7 | 69.6   | 69.1 | 68.9            | 67.0          | 76.0          |
| 22-Feb   | 68.5                          | 68.3 | 68.0 | 67.8 | 67.7 | 67.7 | 67.5 | 67.4 | 68.5 | 66.7 | 60.5 | 54.2 | 50.4 | 51.7 | 49.7 | 50.0 | 51.4 | 63.0 | 71.0 | 72.6 | 72.5 | 71.9   | 71.6 | 70.9            | 64.1          | 72.6          |
| 23-Feb   | 70.9                          | 70.0 | 69.7 | 69.4 | 68.9 | 68.8 | 68.7 | 68.4 | 68.7 | 66.3 | 57.5 | 55.3 | 54.9 | 52.9 | 53.3 | 54.2 | 54.0 | 62.3 | 71.5 | 73.3 | 72.7 | 72.0   | 71.4 | 70.8            | 65.2          | 73.3          |
| 24-Feb   | 70.9                          | 70.2 | 70.3 | 70.2 | 70.0 | 70.8 | 69.6 | 69.6 | 72.8 | 69.1 | 65.6 | 60.1 | 49.5 | 47.2 | 45.9 | 46.3 | 46.2 | 47.4 | 47.8 | 48.4 | 48.9 | 48.8   | 50.2 | 52.3            | 58.7          | 72.8          |
| 25-Feb   | 54.7                          | 56.0 | 58.5 | 62.1 | 65.6 | 67.1 | 68.6 | 69.9 | 70.4 | 67.3 | 59.1 | 56.5 | 56.8 | 55.9 | 56.3 | 54.6 | 54.9 | 66.9 | 75.3 | 80.0 | 81.3 | 81.8   | 82.4 | 83.2            | 66.1          | 83.2          |
| 26-Feb   | 84.5                          | 84.9 | 84.1 | 84.6 | 84.2 | 84.2 | 84.6 | 84.3 | 85.2 | 83.6 | 81.8 | 81.5 | 83.2 | 83.5 | 85.8 | 86.4 | 89.5 | 91.2 | 90.6 | 90.5 | 90.3 | 90.6   | 90.7 | 85.9            | 91.2          |               |
| 27-Feb   | 90.8                          | 90.8 | 89.9 | 88.7 | 87.9 | 87.5 | 86.3 | 84.8 | 83.5 | 82.0 | 79.4 | 77.9 | 77.2 | 75.7 | 74.7 | 76.0 | 77.5 | 77.8 | 78.2 | 80.9 | 81.6 | 81.6   | 82.5 | 83.8            | 82.4          | 90.8          |
| 28-Feb   | 83.2                          | 82.7 | 80.8 | 79.5 | 79.5 | 78.5 | 78.0 | 76.8 | 77.1 | 68.5 | 72.8 | 69.8 | 67.0 | 64.6 | 63.7 | 60.7 | 64.5 | 72.0 | 80.9 | 81.5 | 80.8 | 79.9   | 79.6 | 78.6            | 75.0          | 83.2          |
| 77.9 77.8 78.1 78.3 78.7 78.6 78.2 78.3 78.7 76.8 74.0 71.5 69.4 67.8 67.0 67.3 68.6 73.1 76.4 77.4 77.5 78.0 78.5 78.2  |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |      | Diurnal Average |               |               |
| 93.9 93.5 93.4 93.7 94.2 95.3 89.3 91.3 90.7 89.9 90.4 92.4 92.9 90.7 90.4 92.3 93.5 93.2 93.0 93.2 93.3 93.6 93.9 94.6  |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |      | Diurnal Maximum |               |               |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Relative Humidity (RH) - %**  
**Fort McKay South - February 2023**





|  |  |                                |
|--|--|--------------------------------|
| Maximum Speed: 29 km/h on Feb 13 14:00             | Maximum Daily Speed Average: 12.1 km/h on Feb 13   | Hours in Service: 672          |
| Minimum Speed Value: 0 km/h on Feb 25 23:00        | Minimum Daily Speed Average: 0.3 km/h on Feb 22  | Hours of Data: 668             |
| Maximum Diurnal Speed Average: 2.9 km/h at hour 11 | Minimum Diurnal Speed Average: 0.6 km/h at hour 3  | Hours of Missing Data: 4       |
| Monthly Average Velocity: 1.4 km/h 350.4 deg       | Percentiles: P <sub>1</sub> = 1 P <sub>10</sub> = 1 Q <sub>1</sub> = 2 Median = 5 Q <sub>3</sub> = 9 P <sub>90</sub> = 12 P <sub>99</sub> = 22 | Percent Operational Time: 99.4 |

| Day   | Hourly Period Ending At (MST) |       |       |       |       |       |       |      |      |      |       |       |       |       |       |       |       |       |       |       |       |       |       |                 | Daily Average | Daily Maximum |
|---|-------------------------------|-------|-------|-------|-------|-------|-------|------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-----------------|---------------|---------------|
|   | 1                             | 2     | 3     | 4     | 5     | 6     | 7     | 8    | 9    | 10   | 11    | 12    | 13    | 14    | 15    | 16    | 17    | 18    | 19    | 20    | 21    | 22    | 23    | 24              |               |               |
| 1-Feb   | SW2                           | WSW3  | NNW2  | WSW2  | WNW2  | NW3   | NW3   | W2   | W3   | WNW3 | N4    | NW8   | NW9   | NNW10 | N9    | NNE6  | NE3   | WNW2  | WSW4  | WSW2  | WSW1  | WSW1  | WNW1  | S3              | NW2.4         | NNW10         |
| 2-Feb   | SW1                           | SW2   | SW2   | SSW2  | SSW2  | SW2   | SW1   | SW1  | SSW2 | S2   | SSE3  | SSE9  | ESE4  | S8    | SSE11 | SSE14 | SSE18 | SSE16 | SSE24 | SSE24 | SSE21 | SSE19 | SSE19 | SSE22           | SSE9.2        | SSE24         |
| 3-Feb   | SSE21                         | SSE18 | SSE15 | SSE14 | SSE13 | SSE11 | SSE10 | SSE8 | S4   | SW4  | SSW3  | N3    | N6    | N9    | N10   | NNE9  | NNE8  | NNE8  | NE6   | NE5   | NNE6  | NNE5  | ENE2  | N5              | SE2.6         | SSE21         |
| 4-Feb   | N5                            | N5    | N5    | N7    | N5    | NNE6  | N8    | N9   | N9   | N9   | N10   | N10   | N10   | N9    | N6    | N5    | N4    | N4    | N7    | N6    | N6    | NNW6  | NNW5  | NNW3            | N6.6          | N10           |
| 5-Feb   | NNW4                          | N3    | S0    | N2    | NW1   | N4    | N3    | NNW4 | NNW2 | NW2  | SSE3  | SE2   | SE6   | S5    | S6    | SW4   | SW1   | SSW2  | S3    | S5    | SSW4  | WSW7  | NNW14 | NW10            | W0.9          | NNW14         |
| 6-Feb   | W13                           | W13   | SW5   | SW6   | SW6   | WSW6  | WSW7  | WSW7 | NW5  | N7   | N7    | NNW6  | SSE3  | SE2   | ESE3  | NNE4  | N5    | NNE6  | N5    | WNW1  | NNE3  | SE1   | SSE4  | S3              | WNW2.2        | W13           |
| 7-Feb   | S3                            | SSE5  | S6    | SW5   | WSW10 | W12   | W8    | WSW6 | W6   | SW9  | WSW8  | SW10  | WSW10 | WSW17 | WSW14 | W11   | W10   | WSW8  | WSW7  | W8    | NW5   | NNW8  | N14   | N12             | W6.3          | WSW17         |
| 8-Feb   | N9                            | N5    | SW2   | SW3   | SW2   | W1    | W1    | W1   | WNW1 | ESE0 | SE2   | SE5   | SSE9  | SE9   | SE8   | SSE7  | S2    | WSW2  | WSW1  | WSW3  | SW2   | WSW2  | SW2   | SW2             | S1.4          | SE9           |
| 9-Feb   | WSW1                          | WSW1  | WSW2  | SSW2  | SSW2  | SW1   | SSW3  | SSW3 | S5   | S5   | SSE4  | SE9   | SSE11 | SSE9  | SSE9  | SE4   | SSW2  | NNW4  | NNW2  | WSW2  | WSW1  | S3    | NW1   | S2              | S2.7          | SSE11         |
| 10-Feb  | SW1                           | N5    | NNW6  | N8    | N13   | N13   | N11   | N11  | N10  | N11  | N11   | N11   | N12   | N11   | N12   | N12   | N12   | N10   | N9    | N10   | N7    | N6    | NNE4  | NE3             | N8.9          | N13           |
| 11-Feb  | NNE2                          | N2    | E1    | SSE4  | S5    | SSE4  | S3    | S3   | S4   | S4   | S7    | S11   | S12   | SSE11 | SSE9  | S4    | SW9   | WSW7  | W5    | W8    | WNW8  | SW4   | SW7   | SW8             | SSW4.2        | S12           |
| 12-Feb  | WSW11                         | W11   | W9    | SW6   | S4    | WSW6  | W10   | W7   | N5   | N7   | N11   | NNE8  | NNE6  | N6    | N6    | N8    | N9    | N7    | N5    | N4    | NNE1  | E2    | N1    | SSW4            | NW3.2         | WSW11         |
| 13-Feb  | NNW4                          | N4    | SSW2  | N2    | SSW4  | WSW10 | WSW10 | WNW8 | N17  | N18  | N21   | N25   | N27   | N29   | N26   | N21   | N22   | N16   | N14   | NNE9  | NNE10 | NNE11 | NNE15 | N13             | N12.1         | N29           |
| 14-Feb  | N12                           | N12   | N10   | N6    | N5    | NNE6  | NNE6  | NNE6 | NNE5 | NNE4 | NNE5  | NNE5  | N6    | N6    | N7    | N9    | NNE8  | N6    | NW2   | WNW2  | WNW2  | WNW2  | W2    | W1              | N5.1          | N12           |
| 15-Feb  | SW2                           | WSW2  | WNW1  | WNW2  | WSW1  | WSW2  | WNW1  | WSW2 | WSW1 | SSE1 | ESE3  | SSE4  | SE7   | S9    | SSE8  | SSE9  | S3    | WSW3  | SW3   | WSW1  | W1    | WNW1  | NW1   |                 | S2.2          | SSE9          |
| 16-Feb  | SW2                           | NW1   | NNW0  | W1    | N2    | NNE2  | SE1   | SE1  | S1   | ESE1 | SE3   | SE4   | S9    | SSW7  | SSW6  | S4    | N2    | N12   | NNE14 | NNE15 | NNE11 | NNE7  | NNE4  | NNE4            | NNE1.7        | NNE15         |
| 17-Feb  | NE3                           | NE4   | NE3   | NNE4  | NNW3  | N2    | ENE2  | NE4  | NNE7 | NNE7 | NNE8  | N8    | N12   | N13   | N11   | N13   | N13   | N10   | NNE11 | N10   | N9    | N5    | NNW4  | NW2             | N6.7          | N13           |
| 18-Feb  | UO                            | WSW2  | WSW2  | WSW1  | NNW2  | WNW1  | N2    | UO   | S2   | NNE2 | NNE4  | NNE5  | NNE6  | N8    | N8    | N7    | N7    | NNW5  | NW3   | WSW2  | WSW3  | WSW1  | WSW2  | WSW1            | N2.2          | N8            |
| 19-Feb  | WSW1                          | WSW1  | UO    | W1    | NNW1  | WNW1  | NW1   | WNW0 | S2   | N4   | NNE4  | NE5   | NNW3  | NNE6  | NNE6  | N6    | NNW7  | NW4   | NNW3  | NW3   | NNW6  | N7    | N10   | N7              | N3.3          | N10           |
| 20-Feb  | N4                            | N3    | ENE2  | NE3   | SE1   | S1    | S2    | S2   | S2   | SE1  | SE5   | NE2   | NNE4  | N8    | NNE11 | NNE10 | N8    | N5    | WNW2  | W3    | WSW1  | WNW2  | NW2   | NNW9            | N2.2          | NNE11         |
| 21-Feb  | N9                            | N11   | N9    | NNE3  | NNE4  | N3    | W2    | WSW3 | WSW1 | NNW5 | NNE8  | NNE9  | NNE9  | NNE10 | NNE12 | N12   | NNE8  | N5    | NW3   | WNW3  | WSW4  | WSW3  | SSW2  | SW2             | N4.5          | NNE12         |
| 22-Feb  | SW2                           | SW1   | SSW2  | SW1   | SSW1  | SSW2  | SW2   | SSW3 | S2   | SE5  | ESE3  | SE3   | SE2   | NNE4  | N5    | N7    | NNW6  | NNW4  | W3    | SW2   | W2    | WSW2  | WSW1  | SW1             | W0.3          | NNE7          |
| 23-Feb  | NNW2                          | WSW1  | SW1   | SW1   | SSW1  | SW1   | WSW2  | NNW1 | SE1  | ESE1 | SE2   | SE4   | SSE4  | SE4   | SSE6  | SSE8  | SSE7  | S5    | SW2   | WSW1  | WSW2  | WSW2  | SW2   | SW2             | S1.9          | SSE8          |
| 24-Feb  | WSW1                          | SSW2  | S3    | SSW2  | S4    | S6    | S7    | S7   | S9   | SSE7 | SSE13 | SSE14 | S19   | S20   | S22   | S21   | S20   | S16   | S16   | S17   | S16   | S17   | S15   | S10             | S11.6         | S22           |
| 25-Feb  | S9                            | S10   | S9    | SSE8  | SSE6  | S6    | SSE5  | S6   | SSE7 | WSW5 | WNW8  | WSW10 | SW9   | S11   | SSE11 | SSE10 | SE6   | S5    | SSW2  | SSW2  | SSW2  | S2    | W0    | NW1             | S5.1          | SSE11         |
| 26-Feb  | NW1                           | NNW2  | SW2   | NW2   | NNW1  | N2    | N4    | N4   | N6   | N7   | NNE7  | NNE7  | N8    | N12   | N14   | N13   | N12   | N10   | NNE5  | NNE8  | N10   | N8    | N9    | N7              | N6.3          | N14           |
| 27-Feb  | N7                            | N8    | N12   | N13   | N14   | N12   | N12   | N13  | N16  | N14  | N16   | N15   | N13   | N13   | N14   | NNE13 | NNE11 | NNE11 | N10   | N8    | N9    | N9    | NNW9  | NNW7            | N11.5         | N16           |
| 28-Feb  | NW4                           | NNW3  | SW1   | WSW3  | W1    | WSW2  | W1    | WSW1 | NNW1 | NNE2 | N8    | NNE9  | NNE8  | NNE6  | NE5   | NNE2  | E1    | N2    | UO    | SW2   | SW1   | SW2   | S1    | SW1             | N1.6          | NNE9          |
| WNW1.4 NW1.4 W0.6 W0.6 W0.8WNW1.3WNW1.3WNW1.3 N1.4 N2.2NNE2.9NNE2.6NNE1.8NNE2.3NNE2.7NNE2.9 N2.8 N2.7NNW1.6 NW1.0NNW1.3NNW0.9NNW1.4 NW1.1 |                               |       |       |       |       |       |       |      |      |      |       |       |       |       |       |       |       |       |       |       |       |       |       | Diurnal Average |               |               |
| SSE21 SSE18 SSE15 SSE14 N14 N13 N12 N13 N17 N18 N21 N25 N27 N29 N26 N21 N22 S16 SSE24 SSE24 SSE21 SSE19 SSE19 SSE22                       |                               |       |       |       |       |       |       |      |      |      |       |       |       |       |       |       |       |       |       |       |       |       |       | Diurnal Maximum |               |               |

UO - Unstable Operation

All monthly, daily, and diurnal averages have been calculated using vector methods



**Wood Buffalo Environmental Association**  
**Summary of Hour Standard Deviations**

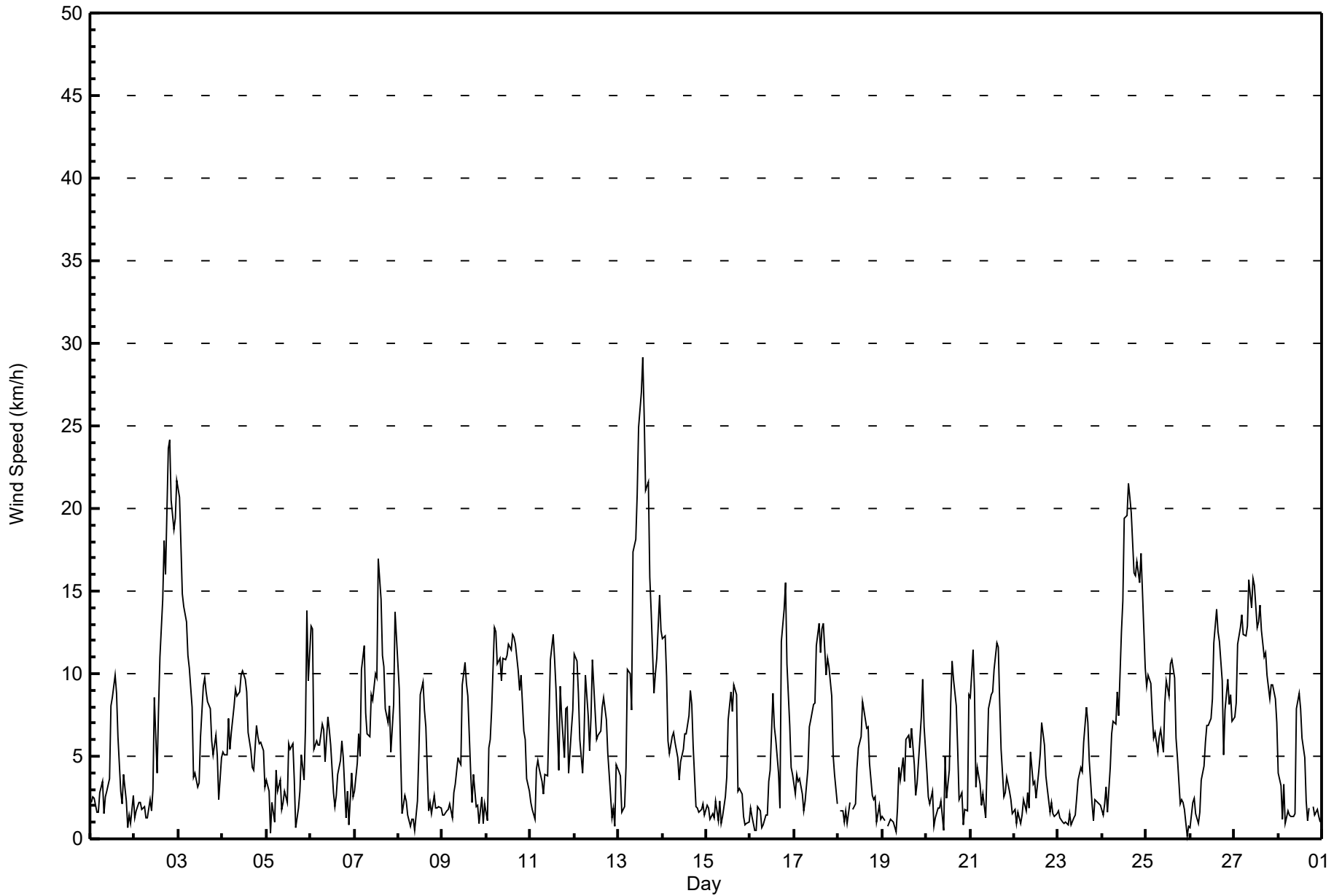
**Wind Speed (WS) - km/h**  
**Fort McKay South - February 2023**

| Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0<br>Maximum Value: 7 km/h on Feb 13 13:00   |                               |   |    |   |   |   |   |    |   |    |    |    |    | Hours in Service: 672<br>Hours of Data: 668<br>Hours of Missing Data: 4<br>Hours of Calibration: 0<br>Percent Operational Time: 99.4 |    |    |    |    |    |    |    |    |    |    |               |
|--|-------------------------------|---|----|---|---|---|---|----|---|----|----|----|----|--|----|----|----|----|----|----|----|----|----|----|---------------|
| Minimum Value: 0 km/h on Feb 20 19:00  |                               |   |    |   |   |   |   |    |   |    |    |    |    |  |    |    |    |    |    |    |    |    |    |    |               |
| Percentiles: P <sub>1</sub> = 1 P <sub>10</sub> = 1 Q <sub>1</sub> = 1 Median = 1 Q <sub>3</sub> = 2 P <sub>90</sub> = 3 P <sub>99</sub> = 5 |                               |   |    |   |   |   |   |    |   |    |    |    |    |  |    |    |    |    |    |    |    |    |    |    |               |
| Day  | Hourly Period Ending At (MST) |   |    |   |   |   |   |    |   |    |    |    |    |  |    |    |    |    |    |    |    |    |    |    | Daily Maximum |
|  | 1                             | 2 | 3  | 4 | 5 | 6 | 7 | 8  | 9 | 10 | 11 | 12 | 13 | 14   | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |               |
| 1-Feb  | 1                             | 1 | 1  | 1 | 1 | 2 | 2 | 1  | 1 | 1  | 1  | 3  | 3  | 3  | 3  | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 3             |
| 2-Feb  | 1                             | 1 | 1  | 1 | 1 | 1 | 1 | 1  | 2 | 1  | 2  | 2  | 1  | 1  | 4  | 3  | 4  | 4  | 5  | 5  | 5  | 5  | 4  | 4  | 5             |
| 3-Feb  | 4                             | 3 | 3  | 3 | 2 | 2 | 2 | 2  | 1 | 2  | 2  | 2  | 3  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 1  | 1  | 2  | 4  |               |
| 4-Feb  | 1                             | 1 | 1  | 2 | 1 | 2 | 2 | 2  | 2 | 2  | 2  | 2  | 2  | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 2  |               |
| 5-Feb  | 1                             | 1 | 1  | 1 | 1 | 1 | 1 | 1  | 1 | 2  | 1  | 2  | 1  | 2  | 2  | 2  | 1  | 1  | 1  | 1  | 2  | 2  | 4  | 4  |               |
| 6-Feb  | 4                             | 4 | 2  | 2 | 2 | 2 | 2 | 1  | 2 | 2  | 1  | 1  | 1  | 2  | 1  | 2  | 1  | 1  | 2  | 1  | 1  | 1  | 1  | 4  |               |
| 7-Feb  | 1                             | 2 | 2  | 3 | 4 | 5 | 3 | 2  | 2 | 4  | 3  | 4  | 4  | 5  | 5  | 5  | 4  | 3  | 3  | 3  | 2  | 6  | 3  | 6  |               |
| 8-Feb  | 3                             | 3 | 1  | 1 | 1 | 1 | 1 | 1  | 1 | 1  | 1  | 2  | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 3  |               |
| 9-Feb  | 1                             | 1 | 1  | 1 | 1 | 1 | 1 | 1  | 1 | 1  | 2  | 3  | 2  | 2  | 3  | 1  | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 3  |               |
| 10-Feb   | 2                             | 1 | 1  | 2 | 2 | 3 | 2 | 2  | 2 | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 1  | 1  | 1  | 3  |               |
| 11-Feb   | 1                             | 1 | 1  | 1 | 1 | 1 | 1 | 1  | 1 | 1  | 2  | 2  | 3  | 2  | 1  | 2  | 4  | 3  | 2  | 3  | 4  | 1  | 3  | 4  |               |
| 12-Feb   | 4                             | 4 | 3  | 2 | 1 | 2 | 3 | 2  | 1 | 1  | 2  | 2  | 2  | 1  | 1  | 1  | 1  | 1  | 2  | 1  | 1  | 1  | 2  | 4  |               |
| 13-Feb   | 1                             | 2 | 1  | 1 | 2 | 5 | 4 | 4  | 4 | 4  | 5  | 6  | 7  | 6  | 6  | 6  | 5  | 5  | 3  | 2  | 2  | 3  | 4  | 7  |               |
| 14-Feb   | 3                             | 4 | 3  | 2 | 2 | 1 | 1 | 2  | 2 | 1  | 1  | 2  | 1  | 2  | 2  | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 4  |               |
| 15-Feb   | 1                             | 1 | 2  | 1 | 1 | 1 | 1 | 1  | 1 | 1  | 1  | 1  | 3  | 2  | 2  | 1  | 1  | 2  | 1  | 1  | 1  | 1  | 1  | 3  |               |
| 16-Feb   | 1                             | 1 | 1  | 1 | 1 | 2 | 1 | 1  | 1 | 1  | 1  | 2  | 3  | 1  | 2  | 1  | 2  | 3  | 3  | 3  | 3  | 2  | 1  | 3  |               |
| 17-Feb   | 1                             | 1 | 2  | 1 | 1 | 2 | 1 | 1  | 2 | 2  | 2  | 2  | 2  | 2  | 3  | 3  | 3  | 3  | 2  | 2  | 2  | 1  | 2  | 3  |               |
| 18-Feb   | UO                            | 1 | 1  | 1 | 1 | 1 | 1 | UO | 1 | 1  | 1  | 1  | 2  | 2  | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 2  |               |
| 19-Feb   | 1                             | 1 | UO | 1 | 1 | 1 | 1 | 1  | 2 | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 2  | 1  | 1  | 1  | 1  | 2  | 2  | 2  |               |
| 20-Feb   | 1                             | 2 | 1  | 1 | 1 | 1 | 1 | 1  | 1 | 1  | 2  | 2  | 2  | 3  | 2  | 2  | 2  | 2  | 0  | 1  | 1  | 1  | 2  | 3  |               |
| 21-Feb   | 2                             | 3 | 3  | 1 | 2 | 1 | 1 | 1  | 1 | 4  | 2  | 2  | 2  | 3  | 3  | 3  | 3  | 1  | 1  | 1  | 1  | 1  | 1  | 4  |               |
| 22-Feb   | 1                             | 1 | 1  | 1 | 1 | 1 | 2 | 1  | 1 | 1  | 1  | 1  | 1  | 2  | 2  | 2  | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 2  |               |
| 23-Feb   | 2                             | 1 | 1  | 1 | 1 | 1 | 1 | 1  | 1 | 1  | 1  | 1  | 2  | 2  | 2  | 2  | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 2  |               |
| 24-Feb   | 1                             | 1 | 2  | 1 | 2 | 2 | 1 | 3  | 1 | 3  | 2  | 3  | 5  | 4  | 4  | 4  | 4  | 4  | 4  | 3  | 3  | 3  | 3  | 5  |               |
| 25-Feb   | 2                             | 2 | 2  | 1 | 1 | 1 | 2 | 2  | 2 | 3  | 3  | 4  | 3  | 3  | 3  | 2  | 1  | 2  | 1  | 1  | 1  | 1  | 1  | 4  |               |
| 26-Feb   | 1                             | 1 | 1  | 1 | 1 | 1 | 1 | 1  | 2 | 1  | 1  | 1  | 1  | 2  | 2  | 2  | 2  | 2  | 1  | 2  | 2  | 2  | 2  | 2  |               |
| 27-Feb   | 1                             | 2 | 2  | 3 | 3 | 3 | 3 | 3  | 4 | 3  | 3  | 4  | 3  | 4  | 3  | 3  | 2  | 3  | 3  | 2  | 2  | 2  | 2  | 4  |               |
| 28-Feb   | 1                             | 1 | 1  | 1 | 1 | 1 | 1 | 1  | 1 | 2  | 1  | 2  | 1  | 2  | 2  | 1  | 1  | 1  | UO | 1  | 1  | 1  | 1  | 2  |               |
|  |                               |   |    |   |   |   |   |    |   |    |    |    |    | Diurnal Maximum  |    |    |    |    |    |    |    |    |    |    |               |
| UO - Unstable Operation  |                               |   |    |   |   |   |   |    |   |    |    |    |    |  |    |    |    |    |    |    |    |    |    |    |               |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Wind Speed (WS) - km/h**  
**Fort McKay South - February 2023**





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Wind Speed (WS) - km/h  
Fort McKay South - February 2023**

| <b>Wind Speed Ranges (km/h)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---------------------------------|------------------------|----------|---------------------|
| 0 - 5                           | 360                    | 53.89    | 53.89               |
| 6 - 11                          | 224                    | 33.53    | 87.43               |
| 12 - 19                         | 68                     | 10.18    | 97.60               |
| 20 - 28                         | 15                     | 2.25     | 99.85               |
| 29 - 38                         | 1                      | 0.15     | 100.00              |
| > 38                            | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 668

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Wind Speed (WS) - km/h  
Fort McKay South - February 2023**

| <b>Wind Speed<br/>Ranges (km/h)</b> | <b>Wind Direction</b> |     |    |     |   |     |    |     |    |     |    |     |    |     |    |     | <b>Totals</b> |
|-------------------------------------|-----------------------|-----|----|-----|---|-----|----|-----|----|-----|----|-----|----|-----|----|-----|---------------|
|                                     | N                     | NNE | NE | ENE | E | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |               |
| 0 - 5                               | 42                    | 25  | 11 | 3   | 3 | 8   | 19 | 13  | 35 | 27  | 42 | 49  | 18 | 19  | 21 | 25  | 360           |
| 6 - 11                              | 80                    | 41  | 1  | 0   | 0 | 0   | 6  | 24  | 18 | 2   | 9  | 17  | 9  | 3   | 3  | 11  | 224           |
| 12 - 19                             | 37                    | 6   | 0  | 0   | 0 | 0   | 0  | 11  | 8  | 0   | 0  | 2   | 3  | 0   | 0  | 1   | 68            |
| 20 - 28                             | 6                     | 0   | 0  | 0   | 0 | 0   | 0  | 5   | 4  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 15            |
| 29 - 38                             | 1                     | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 1             |
| > 38                                | 0                     | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| <b>Totals</b>                       | 166                   | 72  | 12 | 3   | 3 | 8   | 25 | 53  | 65 | 29  | 51 | 68  | 30 | 22  | 24 | 37  | 668           |

Total Number of Valid Hours: 668

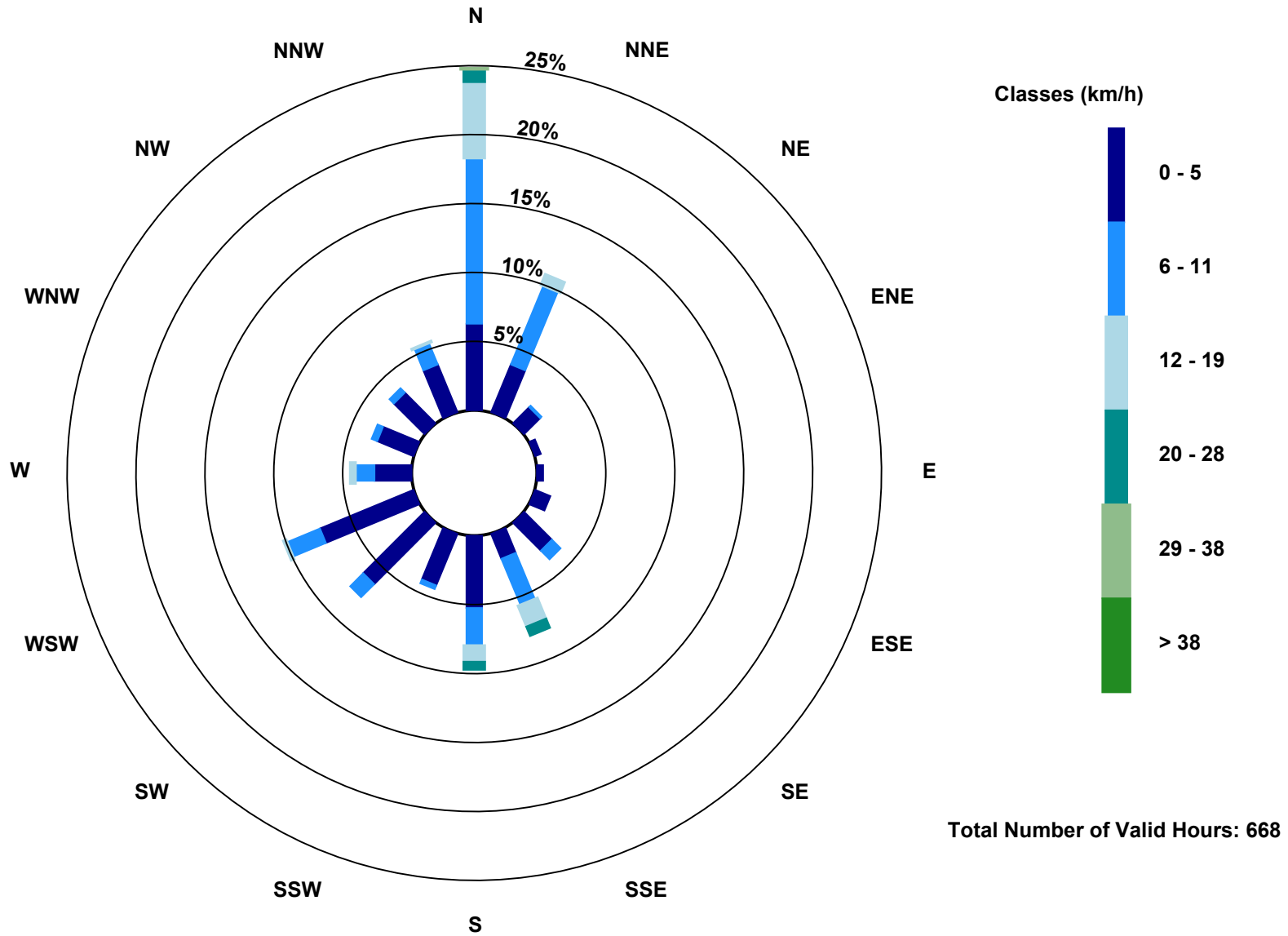
Total Number of Hours: 672





Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Wind Speed (WS) - km/h  
Fort McKay South





**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

**Wind Direction (WD) - deg**  
**Fort McKay South - February 2023**

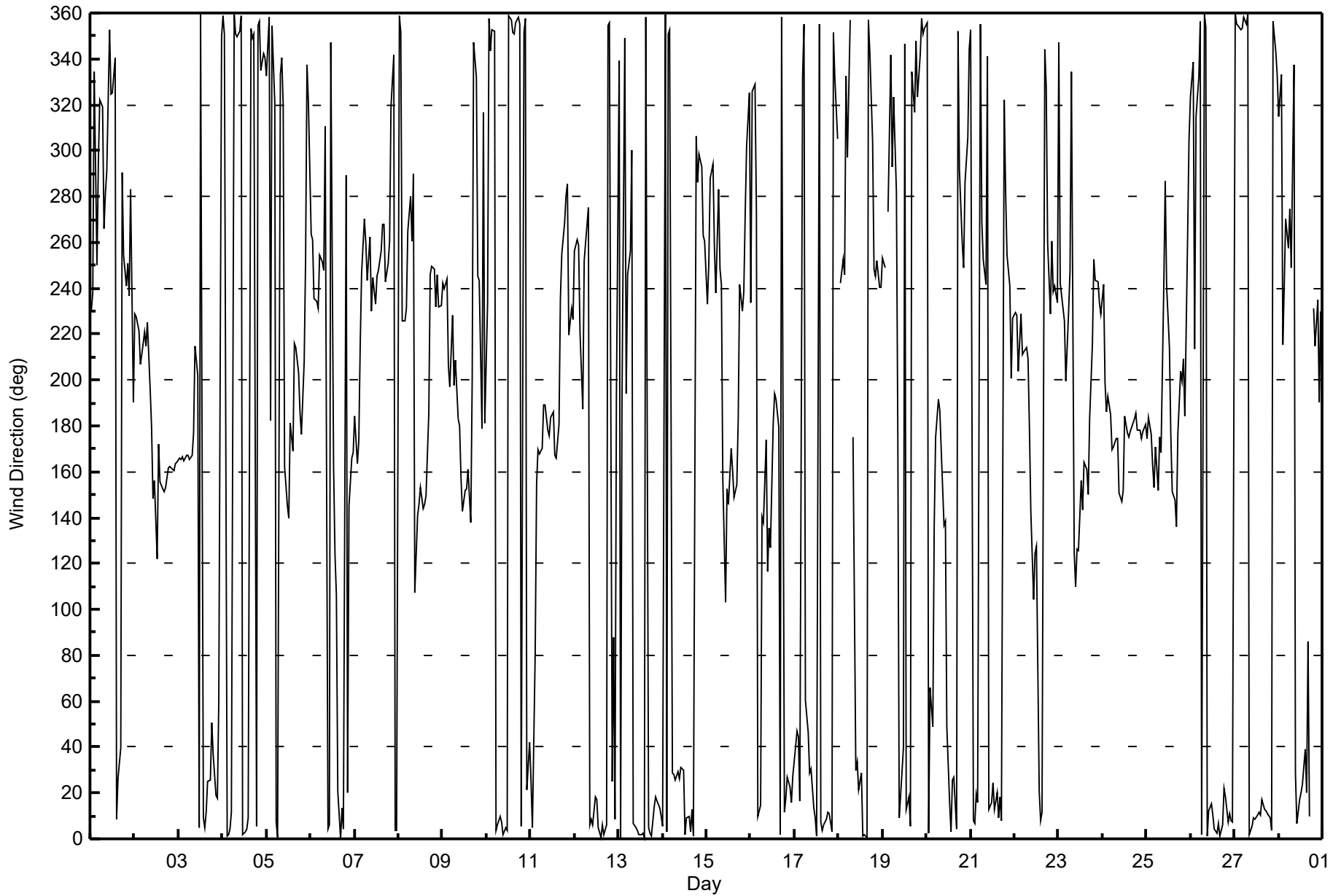
| Direction of Maximum Speed: 2 deg on Feb 13 14:00                                  |                               |       |       |       |       |       |       |       |     |      |   |      |      |      |      |     |       |       |       |       |       |       | Hours in Service:         | 672  |               |       |
|--|-------------------------------|-------|-------|-------|-------|-------|-------|-------|-----|------|---|------|------|------|------|-----|-------|-------|-------|-------|-------|-------|---------------------------|------|---------------|-------|
| Direction of Maximum Daily Speed Average: 359.0 deg on Feb 13                      |                               |       |       |       |       |       |       |       |     |      |   |      |      |      |      |     |       |       |       |       |       |       | Hours of Data:            | 668  |               |       |
| Direction of Minimum Speed: 263 deg on Feb 25 23:00                                |                               |       |       |       |       |       |       |       |     |      | Direction of Minimum Daily Speed Average: 0.3 deg on Feb 22 |      |      |      |      |     |       |       |       |       |       |       | Hours of Missing Data:    | 4    |               |       |
| Monthly Average Direction: 350.4 deg   |                               |       |       |       |       |       |       |       |     |      |   |      |      |      |      |     |       |       |       |       |       |       | Percent Operational Time: | 99.4 |               |       |
| Day  | Hourly Period Ending At (MST) |       |       |       |       |       |       |       |     |      |   |      |      |      |      |     |       |       |       |       |       |       |                           |      | Daily Average |       |
|  | 1                             | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9   | 10   | 11  | 12   | 13   | 14   | 15   | 16  | 17    | 18    | 19    | 20    | 21    | 22    | 23                        | 24   |               |       |
| 1-Feb  | 230                           | 238   | 334   | 250   | 296   | 322   | 319   | 266   | 281 | 291  | 353   | 325  | 325  | 340  | 8    | 27  | 40    | 290   | 254   | 241   | 251   | 237   | 283                       | 190  | 320.0         |       |
| 2-Feb  | 229                           | 227   | 221   | 207   | 211   | 221   | 215   | 225   | 196 | 179  | 149   | 156  | 122  | 172  | 155  | 152 | 151   | 153   | 162   | 162   | 161   | 160   | 164                       | 164  | 162.4         |       |
| 3-Feb  | 166                           | 165   | 166   | 165   | 167   | 167   | 165   | 167   | 167 | 177  | 215   | 202  | 5    | 360  | 9    | 5   | 12    | 25    | 25    | 51    | 36    | 19    | 18                        | 60   | 350           | 130.7 |
| 4-Feb  | 359                           | 351   | 1     | 2     | 4     | 12    | 359   | 351   | 350 | 352  | 359   | 2    | 3    | 4    | 9    | 353 | 349   | 351   | 6     | 355   | 356   | 335   | 342                       | 341  | 357.0         |       |
| 5-Feb  | 333                           | 358   | 183   | 355   | 321   | 8     | 1     | 333   | 340 | 320  | 162   | 145  | 140  | 181  | 169  | 216 | 214   | 203   | 186   | 176   | 208   | 253   | 338                       | 321  | 280.9         |       |
| 6-Feb  | 264                           | 261   | 235   | 234   | 231   | 255   | 251   | 247   | 310 | 4    | 6   | 347  | 162  | 124  | 106  | 21  | 0     | 13    | 4     | 289   | 20    | 145   | 166                       | 169  | 284.8         |       |
| 7-Feb  | 184                           | 164   | 173   | 215   | 246   | 270   | 260   | 244   | 263 | 230  | 245   | 233  | 245  | 248  | 256  | 268 | 268   | 243   | 251   | 260   | 319   | 342   | 4                         | 4    | 259.9         |       |
| 8-Feb  | 359                           | 352   | 226   | 226   | 231   | 265   | 280   | 260   | 290 | 107  | 141   | 146  | 153  | 144  | 146  | 150 | 185   | 246   | 249   | 248   | 232   | 246   | 232                       | 232  | 180.3         |       |
| 9-Feb  | 242                           | 240   | 244   | 206   | 197   | 228   | 198   | 209   | 183 | 180  | 158   | 143  | 152  | 153  | 161  | 138 | 200   | 347   | 332   | 245   | 244   | 179   | 317                       | 181  | 173.6         |       |
| 10-Feb   | 234                           | 358   | 344   | 353   | 352   | 3     | 6     | 10    | 7   | 2    | 5   | 4    | 359  | 357  | 351  | 351 | 355   | 358   | 355   | 5     | 352   | 358   | 22                        | 42   | 359.3         |       |
| 11-Feb   | 26                            | 5     | 81    | 155   | 170   | 168   | 170   | 189   | 189 | 178  | 176   | 184  | 186  | 167  | 166  | 181 | 236   | 255   | 268   | 280   | 285   | 220   | 231                       | 226  | 203.3         |       |
| 12-Feb   | 256                           | 261   | 259   | 221   | 187   | 252   | 260   | 275   | 6   | 8    | 6   | 18   | 17   | 5    | 1    | 6   | 2     | 6     | 354   | 356   | 25    | 88    | 9                         | 193  | 322.5         |       |
| 13-Feb   | 339                           | 0     | 192   | 349   | 194   | 246   | 257   | 300   | 7   | 5    | 4   | 2    | 2    | 2    | 1    | 358 | 5     | 2     | 1     | 14    | 18    | 16    | 13                        | 10   | 359.0         |       |
| 14-Feb   | 5                             | 359   | 3     | 351   | 353   | 29    | 28    | 25    | 29  | 26   | 31  | 30   | 2    | 9    | 10   | 3   | 13    | 1     | 307   | 286   | 299   | 293   | 263                       | 261  | 5.7           |       |
| 15-Feb   | 233                           | 251   | 288   | 294   | 258   | 238   | 283   | 248   | 242 | 157  | 103   | 152  | 146  | 170  | 160  | 149 | 154   | 182   | 241   | 230   | 239   | 273   | 302                       | 326  | 179.7         |       |
| 16-Feb   | 234                           | 326   | 329   | 273   | 10    | 15    | 140   | 138   | 174 | 117  | 135   | 127  | 181  | 194  | 192  | 180 | 2     | 358   | 12    | 17    | 27    | 22    | 16                        | 28   | 29.4          |       |
| 17-Feb   | 40                            | 47    | 45    | 17    | 333   | 355   | 60    | 47    | 28  | 31   | 13  | 9    | 1    | 355  | 7    | 4   | 6     | 9     | 12    | 11    | 3     | 352   | 332                       | 305  | 9.5           |       |
| 18-Feb   | UO                            | 243   | 252   | 246   | 333   | 297   | 357   | UO    | 175 | 30   | 33  | 21   | 29   | 1    | 2    | 1   | 357   | 343   | 304   | 248   | 245   | 252   | 240                       | 241  | 349.6         |       |
| 19-Feb   | 253                           | 249   | UO    | 274   | 342   | 293   | 323   | 282   | 176 | 9    | 19  | 40   | 347  | 13   | 18   | 6   | 334   | 316   | 348   | 323   | 342   | 357   | 351                       | 353  | 352.1         |       |
| 20-Feb   | 356                           | 3     | 66    | 49    | 137   | 175   | 191   | 187   | 170 | 136  | 139   | 49   | 16   | 3    | 25   | 27  | 4     | 352   | 292   | 260   | 249   | 286   | 306                       | 344  | 9.8           |       |
| 21-Feb   | 353                           | 8     | 6     | 20    | 16    | 355   | 269   | 253   | 242 | 341  | 13  | 16   | 24   | 13   | 20   | 9   | 18    | 8     | 322   | 282   | 254   | 241   | 201                       | 227  | 1.7           |       |
| 22-Feb   | 229                           | 228   | 204   | 229   | 211   | 212   | 214   | 209   | 180 | 143  | 104   | 124  | 128  | 21   | 8    | 11  | 344   | 328   | 260   | 229   | 260   | 238   | 241                       | 234  | 261.5         |       |
| 23-Feb   | 347                           | 242   | 231   | 226   | 200   | 230   | 248   | 334   | 124 | 110  | 126   | 126  | 156  | 143  | 164  | 161 | 150   | 183   | 216   | 253   | 244   | 243   | 234                       | 229  | 175.6         |       |
| 24-Feb   | 242                           | 199   | 186   | 193   | 185   | 170   | 171   | 175   | 174 | 151  | 147   | 152  | 184  | 177  | 175  | 177 | 179   | 183   | 185   | 178   | 178   | 174   | 177                       | 181  | 175.5         |       |
| 25-Feb   | 175                           | 184   | 176   | 163   | 153   | 171   | 152   | 175   | 168 | 242  | 287   | 241  | 214  | 176  | 151  | 148 | 136   | 176   | 204   | 200   | 210   | 184   | 263                       | 305  | 181.2         |       |
| 26-Feb   | 324                           | 338   | 214   | 315   | 332   | 356   | 2     | 360   | 354 | 1    | 12  | 15   | 10   | 4    | 2    | 7   | 1     | 6     | 22    | 18    | 7     | 11    | 8                         | 8    | 5.1           |       |
| 27-Feb   | 360                           | 355   | 355   | 353   | 353   | 358   | 355   | 359   | 2   | 5    | 9   | 9    | 10   | 11   | 10   | 17  | 13    | 12    | 11    | 9     | 3     | 356   | 343                       | 333  | 2.8           |       |
| 28-Feb   | 315                           | 333   | 216   | 241   | 270   | 257   | 275   | 249   | 338 | 29   | 7   | 17   | 20   | 24   | 39   | 20  | 86    | 10    | UO    | 231   | 215   | 235   | 190                       | 230  | 354.1         |       |
| 297.2  | 307.7                         | 265.6 | 271.0 | 267.3 | 284.6 | 285.5 | 292.9 | 350.8 | 3.0 | 19.8 | 26.3  | 23.9 | 12.8 | 28.4 | 23.5 | 9.2 | 352.5 | 340.6 | 321.2 | 338.0 | 329.1 | 339.8 | 319.5                     |      |               |       |
| Diurnal Average  |                               |       |       |       |       |       |       |       |     |      |   |      |      |      |      |     |       |       |       |       |       |       |                           |      |               |       |
| UO - Unstable Operation  |                               |       |       |       |       |       |       |       |     |      |   |      |      |      |      |     |       |       |       |       |       |       |                           |      |               |       |
| All monthly, daily, and diurnal averages have been calculated using vector methods |                               |       |       |       |       |       |       |       |     |      |   |      |      |      |      |     |       |       |       |       |       |       |                           |      |               |       |



**Wood Buffalo Environmental Association**  
**Summary of Hour Standard Deviations**

**Wind Direction (WD) - deg**  
**Fort McKay South - February 2023**

| Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0<br>Maximum Value: 97 deg on Feb 12 23:00<br>Minimum Value: 6 deg on Feb 21 21:00<br>Percentiles: P <sub>1</sub> = 8 P <sub>10</sub> = 12 Q <sub>1</sub> = 15 Median = 23 Q <sub>3</sub> = 38 P <sub>90</sub> = 57 P <sub>99</sub> = 89 |                               |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    | Hours in Service: 672<br>Hours of Data: 668<br>Hours of Missing Data: 4<br>Hours of Calibration: 0<br>Percent Operational Time: 99.4 |    |    |    |    |    |               |
|--|-------------------------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|--|----|----|----|----|----|---------------|
| Day  | Hourly Period Ending At (MST) |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |  |    |    |    |    |    | Daily Maximum |
|  | 1                             | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19   | 20 | 21 | 22 | 23 | 24 |               |
| 1-Feb  | 29                            | 38 | 52 | 65 | 28 | 40 | 39 | 62 | 34 | 35 | 29 | 31 | 35 | 30 | 27 | 21 | 27 | 27 | 18   | 28 | 65 | 32 | 66 | 18 | 66            |
| 2-Feb  | 64                            | 39 | 24 | 24 | 19 | 43 | 34 | 42 | 52 | 53 | 54 | 15 | 31 | 15 | 12 | 12 | 10 | 12 | 11   | 11 | 11 | 11 | 10 | 11 | 64            |
| 3-Feb  | 11                            | 11 | 12 | 10 | 10 | 10 | 9  | 11 | 18 | 34 | 54 | 57 | 33 | 12 | 15 | 14 | 18 | 19 | 31   | 30 | 17 | 16 | 42 | 37 | 57            |
| 4-Feb  | 12                            | 12 | 14 | 13 | 14 | 14 | 14 | 12 | 14 | 14 | 16 | 14 | 17 | 14 | 19 | 18 | 15 | 21 | 14   | 15 | 19 | 19 | 22 | 29 | 29            |
| 5-Feb  | 23                            | 29 | 92 | 56 | 56 | 31 | 33 | 39 | 56 | 55 | 60 | 73 | 17 | 36 | 39 | 51 | 88 | 55 | 33   | 13 | 53 | 20 | 18 | 33 | 92            |
| 6-Feb  | 23                            | 21 | 29 | 29 | 25 | 23 | 17 | 11 | 49 | 16 | 16 | 16 | 72 | 81 | 61 | 29 | 17 | 16 | 16   | 81 | 22 | 79 | 26 | 42 | 81            |
| 7-Feb  | 35                            | 16 | 13 | 37 | 22 | 29 | 26 | 29 | 32 | 27 | 41 | 34 | 37 | 23 | 27 | 31 | 31 | 27 | 31   | 37 | 33 | 47 | 13 | 14 | 47            |
| 8-Feb  | 14                            | 36 | 51 | 28 | 21 | 48 | 48 | 22 | 49 | 64 | 37 | 9  | 13 | 9  | 9  | 10 | 54 | 30 | 28   | 23 | 28 | 40 | 15 | 16 | 64            |
| 9-Feb  | 37                            | 51 | 27 | 28 | 38 | 42 | 45 | 24 | 13 | 9  | 17 | 12 | 12 | 12 | 25 | 26 | 60 | 24 | 18   | 43 | 61 | 32 | 79 | 69 | 79            |
| 10-Feb   | 71                            | 14 | 13 | 10 | 13 | 14 | 13 | 13 | 13 | 13 | 14 | 14 | 14 | 14 | 13 | 14 | 13 | 14 | 15   | 15 | 18 | 14 | 27 | 33 | 71            |
| 11-Feb   | 30                            | 48 | 70 | 14 | 15 | 19 | 19 | 28 | 14 | 23 | 18 | 14 | 15 | 13 | 9  | 25 | 25 | 32 | 37   | 28 | 27 | 29 | 20 | 25 | 70            |
| 12-Feb   | 29                            | 30 | 29 | 28 | 37 | 29 | 23 | 26 | 27 | 12 | 14 | 28 | 26 | 22 | 15 | 13 | 13 | 13 | 14   | 16 | 89 | 53 | 97 | 59 | 97            |
| 13-Feb   | 46                            | 63 | 82 | 83 | 49 | 26 | 28 | 43 | 19 | 15 | 17 | 18 | 18 | 19 | 17 | 18 | 16 | 16 | 14   | 17 | 14 | 15 | 15 | 16 | 83            |
| 14-Feb   | 17                            | 15 | 15 | 19 | 22 | 19 | 16 | 17 | 20 | 26 | 30 | 23 | 16 | 24 | 22 | 16 | 14 | 11 | 43   | 20 | 47 | 32 | 33 | 46 | 47            |
| 15-Feb   | 22                            | 45 | 77 | 34 | 23 | 17 | 62 | 22 | 50 | 68 | 29 | 37 | 18 | 26 | 16 | 8  | 9  | 24 | 15   | 6  | 40 | 53 | 42 | 34 | 77            |
| 16-Feb   | 43                            | 38 | 63 | 57 | 27 | 37 | 92 | 92 | 79 | 65 | 23 | 36 | 20 | 29 | 32 | 44 | 92 | 13 | 14   | 15 | 17 | 17 | 17 | 18 | 92            |
| 17-Feb   | 26                            | 22 | 21 | 23 | 23 | 70 | 58 | 24 | 22 | 19 | 21 | 22 | 14 | 14 | 15 | 15 | 15 | 16 | 15   | 14 | 12 | 11 | 29 | 37 | 70            |
| 18-Feb   | UO                            | 30 | 39 | 48 | 29 | 81 | 23 | UO | 16 | 36 | 11 | 20 | 33 | 21 | 21 | 16 | 12 | 13 | 17   | 29 | 15 | 48 | 25 | 55 | 81            |
| 19-Feb   | 32                            | 51 | UO | 45 | 57 | 49 | 45 | 73 | 52 | 29 | 36 | 23 | 41 | 17 | 19 | 20 | 17 | 18 | 16   | 12 | 11 | 14 | 13 | 16 | 73            |
| 20-Feb   | 17                            | 26 | 38 | 22 | 83 | 56 | 36 | 27 | 63 | 93 | 21 | 56 | 53 | 29 | 18 | 19 | 17 | 13 | 28   | 7  | 56 | 65 | 57 | 12 | 93            |
| 21-Feb   | 13                            | 15 | 15 | 30 | 21 | 27 | 21 | 32 | 65 | 68 | 21 | 22 | 26 | 24 | 22 | 20 | 20 | 16 | 28   | 32 | 6  | 22 | 30 | 37 | 68            |
| 22-Feb   | 17                            | 55 | 70 | 86 | 45 | 21 | 70 | 30 | 58 | 8  | 37 | 35 | 54 | 45 | 37 | 31 | 18 | 19 | 20   | 52 | 44 | 53 | 28 | 45 | 86            |
| 23-Feb   | 54                            | 60 | 49 | 72 | 62 | 62 | 33 | 67 | 69 | 53 | 26 | 30 | 53 | 40 | 32 | 15 | 24 | 13 | 15   | 39 | 18 | 22 | 40 | 20 | 72            |
| 24-Feb   | 45                            | 21 | 19 | 34 | 14 | 12 | 6  | 9  | 9  | 12 | 7  | 22 | 20 | 15 | 11 | 11 | 11 | 11 | 13   | 10 | 10 | 10 | 11 | 13 | 45            |
| 25-Feb   | 11                            | 16 | 11 | 7  | 7  | 14 | 57 | 27 | 27 | 55 | 42 | 33 | 29 | 26 | 13 | 14 | 19 | 9  | 22   | 31 | 49 | 72 | 79 | 77 | 79            |
| 26-Feb   | 67                            | 38 | 24 | 50 | 46 | 66 | 14 | 8  | 12 | 13 | 11 | 10 | 13 | 13 | 14 | 14 | 14 | 13 | 22   | 17 | 14 | 14 | 14 | 14 | 67            |
| 27-Feb   | 13                            | 12 | 14 | 15 | 14 | 15 | 15 | 14 | 16 | 15 | 14 | 16 | 16 | 16 | 16 | 18 | 16 | 16 | 15   | 13 | 15 | 15 | 12 | 10 | 18            |
| 28-Feb   | 20                            | 29 | 60 | 11 | 43 | 45 | 55 | 51 | 56 | 51 | 14 | 14 | 20 | 36 | 38 | 69 | 83 | 24 | UO   | 48 | 41 | 29 | 28 | 58 | 83            |
| Diurnal Maximum  |                               |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |  |    |    |    |    |    |               |
| UO - Unstable Operation  |                               |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |  |    |    |    |    |    |               |





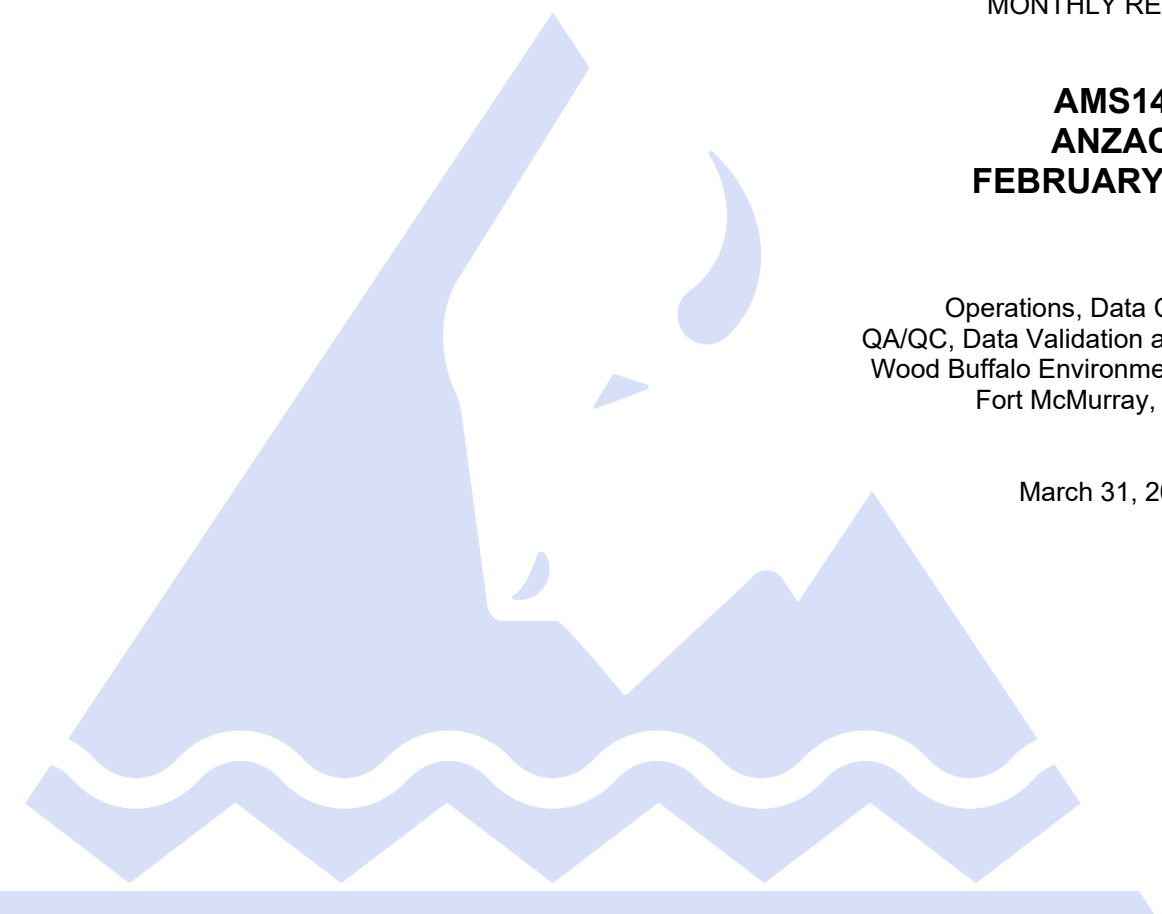
## WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY  
MONITORING PROGRAM  
MONTHLY REPORT

**AMS14  
ANZAC  
FEBRUARY 2023**

Operations, Data Collection,  
QA/QC, Data Validation and Reporting by:  
Wood Buffalo Environmental Association  
Fort McMurray, Alberta

March 31, 2023



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - ANZAC (AMS14)  
 FEBRUARY 2023

MONTHLY SUMMARY for  
 AMD SECTION III.B.1(c)

| Parameter                         | Hours of Data | Hours of Calibration | Hours without Data | Operational Time | Maximum 1-Hour Value | 1-Hour Exceedances | Maximum 24-Hour Value | 24-Hour Exceedances |
|-----------------------------------|---------------|----------------------|--------------------|------------------|----------------------|--------------------|-----------------------|---------------------|
| SO2(ppb) Average                  | 641           | 31                   | 31                 | 100              | 31.4                 | 0                  | 8                     | 0                   |
| TRS(ppb) Average                  | 639           | 33                   | 33                 | 100              | 1.5                  | 0                  | 0.6                   | 0                   |
| THC(ppm) Average                  | 641           | 31                   | 31                 | 100              | 2.9                  | -                  | 2.2                   | -                   |
| NMHC(ppm) Average                 | 641           | 31                   | 31                 | 100              | 0.441                | -                  | 0.065                 | -                   |
| CH4(ppm) Average                  | 641           | 31                   | 31                 | 100              | 2.6                  | -                  | 2.2                   | -                   |
| NO2(ppb) Average                  | 638           | 34                   | 34                 | 100              | 36.5                 | 0                  | 11.8                  | -                   |
| NO(ppb) Average                   | 638           | 34                   | 34                 | 100              | 25.9                 | -                  | 5.3                   | -                   |
| NOX(ppb) Average                  | 638           | 34                   | 34                 | 100              | 62.4                 | -                  | 16.9                  | -                   |
| O3(ppb) Average                   | 637           | 32                   | 35                 | 99.55            | 45.5                 | 0                  | 39.5                  | -                   |
| PM2.5(ug/m3) Average              | 671           | 1                    | 1                  | 100              | 214.3                | 2                  | 23.9                  | 0                   |
| AT 2m(C) Average                  | 672           | 0                    | 0                  | 100              | 5                    | -                  | 1                     | -                   |
| RH(%) Average                     | 672           | 0                    | 0                  | 100              | 97.3                 | -                  | 92.3                  | -                   |
| WS(km/h) Average                  | 664           | 0                    | 8                  | 98.81            | 31                   | -                  | 20                    | -                   |
| WD(deg) Average                   | 664           | 0                    | 8                  | 98.81            | -                    | -                  | -                     | -                   |
| Leaf Wetness (% of range) Average | 671           | 0                    | 1                  | 99.85            | 62.7                 | -                  | 14.5                  | -                   |

Note : Operational time includes periods of data collection and instrument calibration

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - ANZAC (AMS14)  
 FEBRUARY 2023

MONTHLY SUMMARY FOR AIR QUALITY/ METEOROLOGICAL MONITORING MEASUREMENTS

| Parameter                         | Number | Mean   | StnDev | Total | Percentile |       |       |        |      |      |       |
|-----------------------------------|--------|--------|--------|-------|------------|-------|-------|--------|------|------|-------|
|                                   |        |        |        |       | Min        | P10   | Q1    | Median | Q3   | P90  | Max   |
| SO2(ppb) Average                  | 641    | 1.72   | 2.9    | -     | 0          | 0.1   | 0.2   | 0.7    | 1.9  | 4.9  | 31.4  |
| TRS(ppb) Average                  | 639    | 0.32   | 0.2    | -     | 0.1        | 0.2   | 0.2   | 0.3    | 0.4  | 0.5  | 1.5   |
| THC(ppm) Average                  | 641    | 2.1    | 0.1    | -     | 2          | 2     | 2     | 2.1    | 2.1  | 2.2  | 2.9   |
| NMHC (ppm) Average                | 641    | 0.01   | 0.041  | -     | 0          | 0     | 0     | 0      | 0    | 0    | 0.441 |
| CH4(ppm) Average                  | 641    | 2.09   | 0.1    | -     | 2          | 2     | 2     | 2.1    | 2.1  | 2.2  | 2.6   |
| NO2(ppb) Average                  | 638    | 5.6    | 5.9    | -     | 0.2        | 0.8   | 1.5   | 3.5    | 7    | 12.9 | 36.5  |
| NO(ppb) Average                   | 638    | 1.19   | 2.4    | -     | 0          | 0     | 0.1   | 0.3    | 1.3  | 3.1  | 25.9  |
| NOX(ppb) Average                  | 638    | 6.79   | 7.4    | -     | 0.2        | 0.9   | 1.8   | 4.3    | 8.7  | 15.2 | 62.4  |
| O3(ppb) Average                   | 637    | 27.5   | 8.8    | -     | 0.1        | 14.9  | 22.2  | 28.7   | 34.4 | 37.7 | 45.5  |
| PM2.5(ug/m3) Average              | 671    | 4.57   | 12.3   | -     | 0.4        | 1.1   | 2     | 3.1    | 4.5  | 7.1  | 214.3 |
| Temperature 2 m (C) Average       | 672    | -13.72 | 9.9    | -     | -34.8      | -27.1 | -20.7 | -14.1  | -6   | 0.5  | 5     |
| Relative Humidity (%) Average     | 672    | 74.34  | 12.2   | -     | 42.2       | 56.7  | 66.9  | 75.1   | 83   | 91   | 97.3  |
| Wind Speed 20 m (km/h) Average    | 664    | 10.3   | 6      | -     | 0          | 4     | 6     | 9      | 13   | 19   | 31    |
| Wind Direction 20 m (deg) Average | 664    | 234.2  | -      | -     | -          | -     | -     | -      | -    | -    | -     |
| Leaf Wetness (% of range) Average | 671    | 1.77   | 6.3    | -     | 0          | 0     | 0     | 0      | 0.7  | 5.7  | 62.7  |

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - ANZAC (AMS14)  
FEBRUARY 2023

OPERATIONAL NOTES

| Parameter                  | Period<br>Start   | Period<br>End     | Duration<br>(Hours) | Notes   |
|----------------------------|-------------------|-------------------|---------------------|---|
| O3                         | 10 Feb 2023 23:00 | 10 Feb 2023 23:00 | 1                   | Unstable Operation - excessive baseline drift     |
| O3                         | 20 Feb 2023 00:00 | 20 Feb 2023 01:00 | 2                   | Unstable Operation - excessive baseline drift     |
| Wind Speed, Wind Direction | 03 Feb 2023 21:00 | 04 Feb 2023 02:00 | 6                   | Flat line in sensor output signal - Sensor frozen |
| Wind Speed, Wind Direction | 11 Feb 2023 00:00 | 11 Feb 2023 01:00 | 2                   | Flat line in sensor output signal - Sensor frozen |
| Surface Leaf Wetness       | 13 Feb 2023 09:00 | 13 Feb 2023 09:00 | 1                   | Sensor operated out of range                      |





Wood Buffalo Environmental Association

Summary of Hour Averages

Sulphur Dioxide (SO<sub>2</sub>) - ppb

Anzac - February 2023

|   |   |          |                           |       |
|---|---|----------|---------------------------|-------|
| Number of Exceedences (AAAQO):              | 1-hr: 0   | 24-hr: 0 | Hours in Service:         | 672   |
| Maximum Value: 31.4 ppb on Feb 20 06:00     | Maximum Daily Average: 8.0 ppb on Feb 20  |          | Hours of Data:            | 641   |
| Minimum Value: 0.0 ppb on Feb 1 07:00       | Minimum Daily Average: 0.1 ppb on Feb 13  |          | Hours of Missing Data:    | 31    |
| Maximum Diurnal Average: 2.3 ppb at hour 15 | Minimum Diurnal Average: 0.6 ppb at hour 1  |          | Hours of Calibration:     | 31    |
| Monthly Average: 1.72 ppb                   | Percentiles: P <sub>1</sub> = 0.0 P <sub>10</sub> = 0.1 Q <sub>1</sub> = 0.2 Median = 0.7 Q <sub>3</sub> = 1.9 P <sub>90</sub> = 4.9 P <sub>99</sub> = 13.4 |          | Percent Operational Time: | 100.0 |

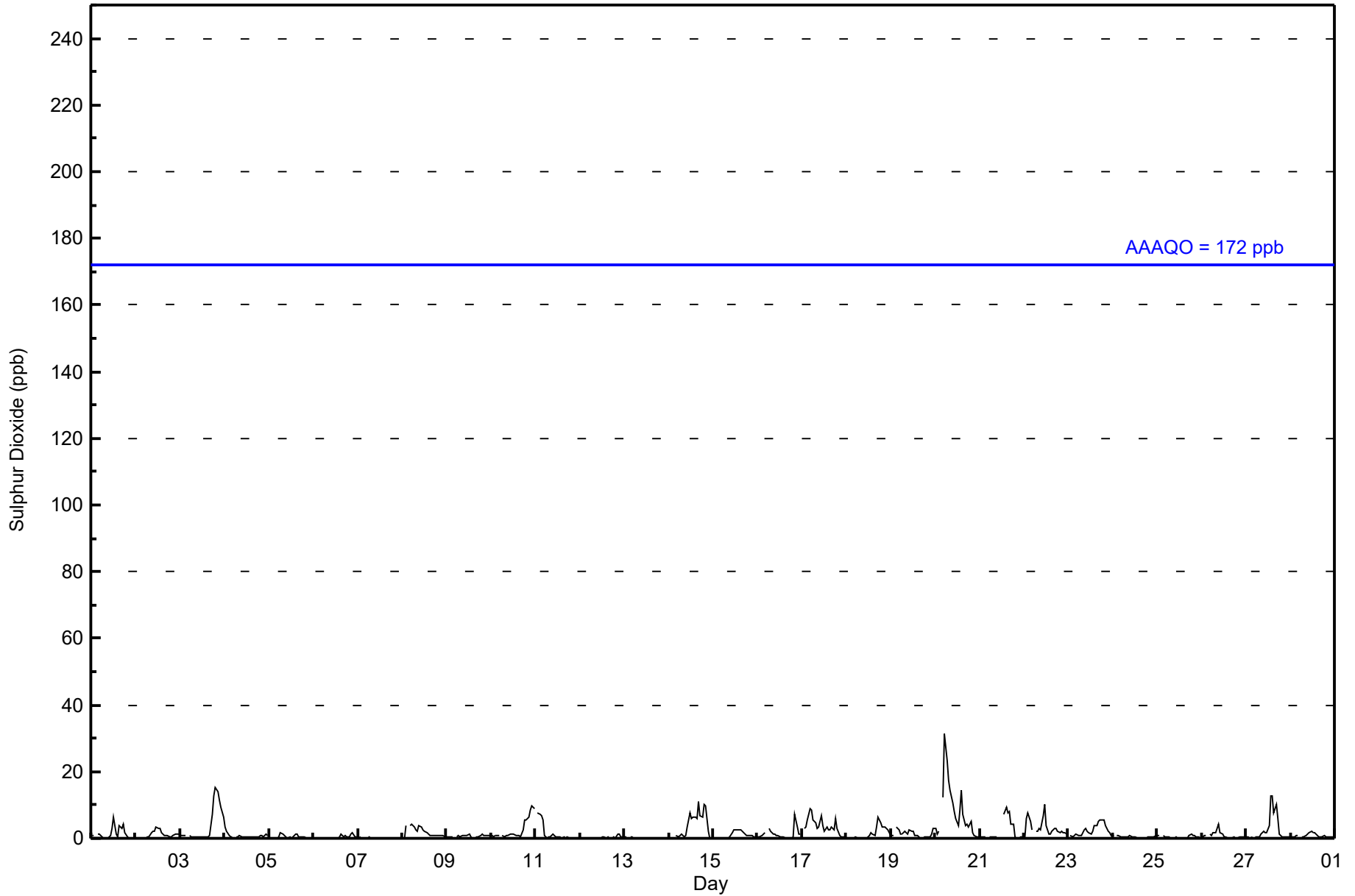
| Day    | Hourly Period Ending At (MST) |     |     |     |      |      |      |      |      |      |     |      |     |      |      |     |      |     |      |      |      |      |     |                 | Daily Average   | Daily Maximum |     |      |      |      |      |      |      |     |      |     |      |      |     |      |     |      |      |      |      |     |     |      |
|--------|-------------------------------|-----|-----|-----|------|------|------|------|------|------|-----|------|-----|------|------|-----|------|-----|------|------|------|------|-----|-----------------|-----------------|---------------|-----|------|------|------|------|------|------|-----|------|-----|------|------|-----|------|-----|------|------|------|------|-----|-----|------|
|        | 1                             | 2   | 3   | 4   | 5    | 6    | 7    | 8    | 9    | 10   | 11  | 12   | 13  | 14   | 15   | 16  | 17   | 18  | 19   | 20   | 21   | 22   | 23  | 24              |                 |               |     |      |      |      |      |      |      |     |      |     |      |      |     |      |     |      |      |      |      |     |     |      |
| 1-Feb  | 0.7                           | 1.0 | Z   | 1.1 | 1.2  | 0.7  | 0.0  | 0.0  | 0.0  | 0.0  | 0.9 | 2.8  | 6.2 | 1.2  | 0.6  | 3.9 | 2.9  | 4.2 | 1.9  | 0.4  | 0.2  | 0.1  | 0.1 | 0.0             | 1.3             | 6.2           |     |      |      |      |      |      |      |     |      |     |      |      |     |      |     |      |      |      |      |     |     |      |
| 2-Feb  | 0.1                           | 0.1 | 0.0 | Z   | 0.1  | 0.0  | 0.5  | 0.5  | 1.6  | 2.2  | 2.2 | 3.4  | 3.0 | 2.8  | 1.8  | 1.0 | 0.8  | 0.9 | 0.6  | 0.6  | 1.0  | 1.2  | 1.2 | 1.2             | 1.2             | 3.4           |     |      |      |      |      |      |      |     |      |     |      |      |     |      |     |      |      |      |      |     |     |      |
| 3-Feb  | 1.0                           | 0.9 | 0.7 | 0.7 | Z    | 0.7  | 0.4  | 0.6  | 0.6  | 0.6  | 0.6 | 0.4  | 0.3 | 0.4  | 0.3  | 0.4 | 0.7  | 7.3 | 12.9 | 15.4 | 13.8 | 11.6 | 9.2 | 6.5             | 15.4            |               |     |      |      |      |      |      |      |     |      |     |      |      |     |      |     |      |      |      |      |     |     |      |
| 4-Feb  | 3.2                           | 2.0 | 0.9 | 0.6 | 0.4  | Z    | 0.4  | 0.4  | 0.7  | 0.3  | 0.3 | 0.3  | 0.4 | 0.3  | 0.3  | 0.3 | 0.3  | 0.3 | 0.3  | 0.8  | 0.9  | 0.2  | 1.3 | 0.8             | 3.2             |               |     |      |      |      |      |      |      |     |      |     |      |      |     |      |     |      |      |      |      |     |     |      |
| 5-Feb  | Z                             | 0.1 | 0.1 | 0.0 | 0.1  | 0.5  | 1.8  | 1.2  | 0.7  | 0.5  | 0.1 | 0.3  | 0.2 | 0.4  | 1.3  | 1.4 | 0.6  | 0.2 | 0.4  | 0.4  | 0.0  | 0.0  | 0.1 | 0.0             | 1.8             |               |     |      |      |      |      |      |      |     |      |     |      |      |     |      |     |      |      |      |      |     |     |      |
| 6-Feb  | 0.0                           | Z   | 0.0 | 0.0 | 0.0  | 0.0  | 0.1  | 0.1  | 0.0  | 0.0  | 0.0 | 0.0  | 0.1 | 0.1  | 0.5  | 1.4 | 0.3  | 0.7 | 0.2  | 0.3  | 1.5  | 1.9  | 0.5 | 0.5             | 1.9             |               |     |      |      |      |      |      |      |     |      |     |      |      |     |      |     |      |      |      |      |     |     |      |
| 7-Feb  | 0.2                           | 0.2 | Z   | 0.2 | 0.2  | 0.1  | 0.2  | 0.1  | 0.1  | 0.1  | 0.0 | 0.1  | 0.1 | 0.1  | 0.1  | 0.1 | 0.1  | 0.1 | 0.0  | 0.1  | 0.1  | 0.0  | 0.0 | 0.1             | 0.2             |               |     |      |      |      |      |      |      |     |      |     |      |      |     |      |     |      |      |      |      |     |     |      |
| 8-Feb  | 0.0                           | 0.2 | 4.0 | Z   | 3.7  | 4.2  | 3.3  | 2.4  | 2.0  | 3.6  | 3.6 | 2.6  | 2.2 | 1.6  | 1.2  | 1.1 | 1.0  | 1.1 | 0.8  | 0.8  | 0.7  | 0.9  | 0.7 | 0.6             | 4.2             |               |     |      |      |      |      |      |      |     |      |     |      |      |     |      |     |      |      |      |      |     |     |      |
| 9-Feb  | 0.4                           | 0.4 | 0.5 | 0.5 | Z    | 0.6  | 0.8  | 0.6  | 0.9  | 1.1  | 0.8 | 0.7  | 1.1 | 0.2  | 0.1  | 0.1 | 0.2  | 0.4 | 0.8  | 1.2  | 1.0  | 0.9  | 1.0 | 1.0             | 1.2             |               |     |      |      |      |      |      |      |     |      |     |      |      |     |      |     |      |      |      |      |     |     |      |
| 10-Feb | 0.7                           | 0.6 | 0.8 | 0.9 | 0.7  | Z    | 0.7  | 0.6  | 0.8  | 0.9  | 1.2 | 1.4  | 1.1 | 0.7  | 0.7  | 0.6 | 0.6  | 2.6 | 5.6  | 5.4  | 6.2  | 8.3  | 9.7 | 8.9             | 9.7             |               |     |      |      |      |      |      |      |     |      |     |      |      |     |      |     |      |      |      |      |     |     |      |
| 11-Feb | Z                             | 7.6 | 7.0 | 6.6 | 5.7  | 1.0  | 0.2  | 0.3  | 0.4  | 1.2  | 0.7 | 0.5  | 0.3 | 0.5  | 0.2  | 0.4 | 0.2  | 0.2 | 0.1  | 0.2  | 0.1  | 0.2  | 0.1 | 0.2             | 7.6             |               |     |      |      |      |      |      |      |     |      |     |      |      |     |      |     |      |      |      |      |     |     |      |
| 12-Feb | 0.2                           | Z   | 0.1 | 0.1 | 0.1  | 0.1  | 0.1  | 0.1  | 0.1  | 0.1  | 0.0 | 0.1  | 0.6 | 0.5  | 0.1  | 0.5 | 0.2  | 0.1 | 0.4  | 0.2  | 1.2  | 1.3  | 0.5 | 0.3             | 1.3             |               |     |      |      |      |      |      |      |     |      |     |      |      |     |      |     |      |      |      |      |     |     |      |
| 13-Feb | 0.3                           | 0.4 | Z   | 0.5 | 0.2  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.2 | 0.0  | 0.0 | 0.0  | 0.0  | 0.0 | 0.1  | 0.0 | 0.1  | 0.0  | 0.0  | 0.0  | 0.0 | 0.1             | 0.5             |               |     |      |      |      |      |      |      |     |      |     |      |      |     |      |     |      |      |      |      |     |     |      |
| 14-Feb | 0.0                           | 0.1 | 0.1 | Z   | 1.0  | 0.6  | 1.0  | 1.1  | 0.6  | 0.8  | 3.2 | 7.8  | 6.1 | 6.5  | 6.4  | 5.8 | 11.0 | 6.8 | 6.2  | 10.0 | 9.9  | 2.0  | 0.1 | 0.0             | 11.0            |               |     |      |      |      |      |      |      |     |      |     |      |      |     |      |     |      |      |      |      |     |     |      |
| 15-Feb | 0.0                           | 0.0 | 0.0 | 0.0 | Z    | 0.0  | 0.0  | 0.0  | 0.0  | 0.2  | 1.6 | 2.6  | 2.5 | 2.4  | 2.7  | 2.4 | 1.8  | 1.3 | 1.0  | 0.7  | 0.8  | 0.9  | 0.6 | 0.6             | 2.7             |               |     |      |      |      |      |      |      |     |      |     |      |      |     |      |     |      |      |      |      |     |     |      |
| 16-Feb | 0.6                           | 0.5 | 0.7 | 1.3 | 1.8  | Z    | 2.8  | 2.0  | 1.1  | 1.1  | 0.8 | 0.7  | 0.4 | 0.6  | 0.3  | 0.2 | 0.2  | 0.1 | 0.1  | 0.5  | 7.2  | 3.2  | 1.3 | 1.1             | 7.2             |               |     |      |      |      |      |      |      |     |      |     |      |      |     |      |     |      |      |      |      |     |     |      |
| 17-Feb | Z                             | 2.9 | 3.2 | 5.5 | 9.0  | 8.4  | 5.6  | 4.6  | 3.1  | 3.4  | 6.6 | 3.7  | 2.2 | 3.5  | 2.7  | 2.4 | 3.3  | 2.7 | 6.0  | 3.1  | 0.7  | 0.4  | 0.4 | 0.2             | 9.0             |               |     |      |      |      |      |      |      |     |      |     |      |      |     |      |     |      |      |      |      |     |     |      |
| 18-Feb | 0.2                           | Z   | 0.1 | 0.1 | 0.1  | 0.2  | 0.1  | 0.0  | 0.1  | 0.1  | 0.0 | 0.2  | 0.7 | 1.7  | 1.3  | 0.8 | 3.2  | 6.2 | 4.7  | 3.3  | 3.3  | 3.5  | 2.4 | 1.8             | 6.2             |               |     |      |      |      |      |      |      |     |      |     |      |      |     |      |     |      |      |      |      |     |     |      |
| 19-Feb | 1.0                           | 0.7 | Z   | 3.2 | 2.4  | 1.4  | 1.4  | 2.1  | 1.5  | 1.4  | 2.5 | 2.3  | 2.2 | 1.0  | 1.0  | 0.3 | 0.2  | 0.2 | 0.3  | 0.2  | 0.2  | 0.3  | 1.1 | 2.8             | 3.2             |               |     |      |      |      |      |      |      |     |      |     |      |      |     |      |     |      |      |      |      |     |     |      |
| 20-Feb | 3.0                           | 1.3 | 2.3 | Z   | 12.3 | 31.4 | 23.4 | 17.5 | 14.5 | 10.6 | 8.1 | 6.1  | 3.8 | 8.3  | 14.5 | 7.0 | 3.9  | 4.4 | 3.5  | 4.9  | 1.7  | 0.9  | 0.6 | 0.5             | 31.4            |               |     |      |      |      |      |      |      |     |      |     |      |      |     |      |     |      |      |      |      |     |     |      |
| 21-Feb | 0.4                           | 0.5 | 0.4 | 0.4 | Z    | 0.4  | 0.3  | 0.3  | 0.3  | 0.4  | C   | C    | C   | 7.2  | 9.5  | 7.5 | 8.0  | 4.2 | 4.1  | 0.4  | 0.2  | 0.2  | 0.3 | 0.2             | 9.5             |               |     |      |      |      |      |      |      |     |      |     |      |      |     |      |     |      |      |      |      |     |     |      |
| 22-Feb | 0.4                           | 6.0 | 7.4 | 4.9 | 2.4  | Z    | 2.2  | 2.1  | 2.8  | 2.6  | 6.7 | 10.0 | 3.7 | 1.4  | 1.4  | 2.0 | 3.0  | 3.0 | 2.2  | 1.9  | 2.1  | 1.7  | 1.6 | 1.2             | 10.0            |               |     |      |      |      |      |      |      |     |      |     |      |      |     |      |     |      |      |      |      |     |     |      |
| 23-Feb | Z                             | 0.9 | 0.5 | 0.8 | 1.1  | 0.7  | 0.9  | 1.0  | 2.3  | 2.9  | 1.9 | 1.7  | 1.4 | 2.1  | 3.8  | 3.7 | 5.1  | 5.6 | 5.4  | 5.7  | 3.7  | 2.0  | 1.6 | 0.9             | 5.7             |               |     |      |      |      |      |      |      |     |      |     |      |      |     |      |     |      |      |      |      |     |     |      |
| 24-Feb | 0.8                           | Z   | 0.7 | 0.8 | 0.3  | 0.2  | 0.3  | 0.2  | 0.3  | 0.8  | 0.6 | 0.3  | 0.3 | 0.1  | 0.1  | 0.1 | 0.2  | 0.2 | 0.2  | 0.4  | 0.3  | 0.5  | 0.6 | 0.7             | 0.8             |               |     |      |      |      |      |      |      |     |      |     |      |      |     |      |     |      |      |      |      |     |     |      |
| 25-Feb | 0.9                           | 1.0 | Z   | 0.7 | 0.5  | 0.4  | 0.3  | 0.2  | 0.2  | 0.2  | 0.2 | 0.0  | 0.1 | 0.1  | 0.1  | 0.1 | 0.1  | 0.1 | 0.9  | 1.4  | 1.1  | 0.7  | 0.4 | 0.2             | 1.4             |               |     |      |      |      |      |      |      |     |      |     |      |      |     |      |     |      |      |      |      |     |     |      |
| 26-Feb | 0.1                           | 0.7 | 0.7 | Z   | 1.2  | 1.0  | 1.7  | 1.9  | 2.8  | 4.2  | 1.9 | 1.4  | 0.6 | 0.3  | 0.2  | 0.2 | 0.1  | 0.3 | 0.2  | 0.2  | 0.2  | 0.2  | 0.3 | 0.3             | 4.2             |               |     |      |      |      |      |      |      |     |      |     |      |      |     |      |     |      |      |      |      |     |     |      |
| 27-Feb | 0.3                           | 0.3 | 0.2 | 0.2 | Z    | 0.2  | 0.3  | 0.4  | 1.4  | 2.0  | 1.8 | 1.7  | 3.7 | 12.9 | 12.6 | 7.7 | 10.0 | 5.8 | 1.1  | 0.4  | 0.3  | 0.2  | 0.3 | 0.3             | 12.9            |               |     |      |      |      |      |      |      |     |      |     |      |      |     |      |     |      |      |      |      |     |     |      |
| 28-Feb | 0.3                           | 0.3 | 0.5 | 0.8 | 0.7  | Z    | 0.5  | 0.5  | 0.9  | 1.2  | 1.5 | 2.2  | 1.8 | 1.6  | 0.8  | 0.5 | 0.5  | 0.6 | 0.7  | 0.6  | 0.5  | 0.3  | 0.3 | 0.4             | 2.2             |               |     |      |      |      |      |      |      |     |      |     |      |      |     |      |     |      |      |      |      |     |     |      |
|        |                               |     |     |     |      |      |      |      |      |      |     |      |     |      |      |     |      |     |      |      |      |      |     | Diurnal Average | Diurnal Maximum |               |     |      |      |      |      |      |      |     |      |     |      |      |     |      |     |      |      |      |      |     |     |      |
|        |                               |     |     |     |      |      |      |      |      |      |     |      |     |      |      |     |      |     |      |      |      |      |     | 0.6             | 1.2             | 1.4           | 1.3 | 2.0  | 2.3  | 1.8  | 1.5  | 1.4  | 1.5  | 1.8 | 2.0  | 1.6 | 2.1  | 2.3  | 1.8 | 2.1  | 2.2 | 2.2  | 2.1  | 2.1  | 1.5  | 1.3 | 1.1 | 8.9  |
|        |                               |     |     |     |      |      |      |      |      |      |     |      |     |      |      |     |      |     |      |      |      |      |     | 3.2             | 7.6             | 7.4           | 6.6 | 12.3 | 31.4 | 23.4 | 17.5 | 14.5 | 10.6 | 8.1 | 10.0 | 6.2 | 12.9 | 14.5 | 7.7 | 11.0 | 7.3 | 12.9 | 15.4 | 13.8 | 11.6 | 9.7 | 8.9 | 31.4 |

Z - zerospan      C - Calibration  
 Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 172 ppb    24-hr 48 ppb



Wood Buffalo Environmental Association  
Hourly Averages

Sulphur Dioxide (SO<sub>2</sub>) - ppb  
Anzac - February 2023





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Sulphur Dioxide (SO<sub>2</sub>) - ppb**  
**Anzac - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 10                            | 627                    | 97.82    | 97.82               |
| 11 - 20                           | 12                     | 1.87     | 99.69               |
| 21 - 60                           | 2                      | 0.31     | 100.00              |
| 61 - 110                          | 0                      | 0.00     | 100.00              |
| 111 - 172                         | 0                      | 0.00     | 100.00              |
| > 172                             | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 641

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Sulphur Dioxide (SO<sub>2</sub>) - ppb  
Anzac - February 2023**

| <b>Concentration<br/>Ranges (ppb)</b> | <b>Wind Direction</b> |            |           |            |           |            |           |            |           |            |           |            |            |            |           |            | <b>Totals</b> |
|---------------------------------------|-----------------------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|------------|------------|-----------|------------|---------------|
|                                       | <b>N</b>              | <b>NNE</b> | <b>NE</b> | <b>ENE</b> | <b>E</b>  | <b>ESE</b> | <b>SE</b> | <b>SSE</b> | <b>S</b>  | <b>SSW</b> | <b>SW</b> | <b>WSW</b> | <b>W</b>   | <b>WNW</b> | <b>NW</b> | <b>NNW</b> |               |
| 0 - 10                                | 9                     | 10         | 15        | 17         | 30        | 48         | 71        | 24         | 29        | 25         | 9         | 47         | 102        | 71         | 76        | 39         | 622           |
| 11 - 20                               | 1                     | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 1          | 3          | 1         | 4          | 10            |
| 21 - 60                               | 0                     | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 1          | 1          | 0         | 0          | 2             |
| 61 - 110                              | 0                     | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0          | 0          | 0         | 0          | 0             |
| 111 - 172                             | 0                     | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0          | 0          | 0         | 0          | 0             |
| > 172                                 | 0                     | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0          | 0          | 0         | 0          | 0             |
| <b>Totals</b>                         | <b>10</b>             | <b>10</b>  | <b>15</b> | <b>17</b>  | <b>30</b> | <b>48</b>  | <b>71</b> | <b>24</b>  | <b>29</b> | <b>25</b>  | <b>9</b>  | <b>47</b>  | <b>104</b> | <b>75</b>  | <b>77</b> | <b>43</b>  | <b>634</b>    |

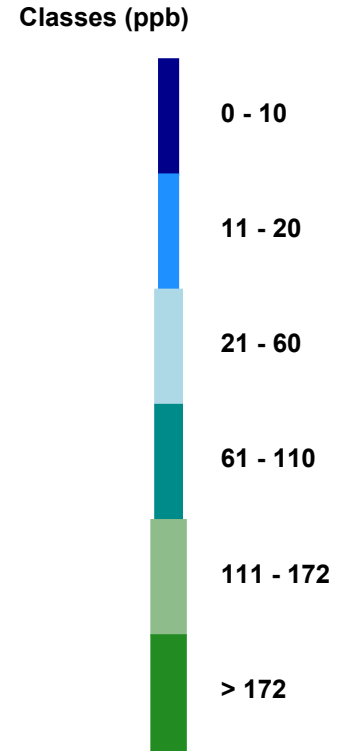
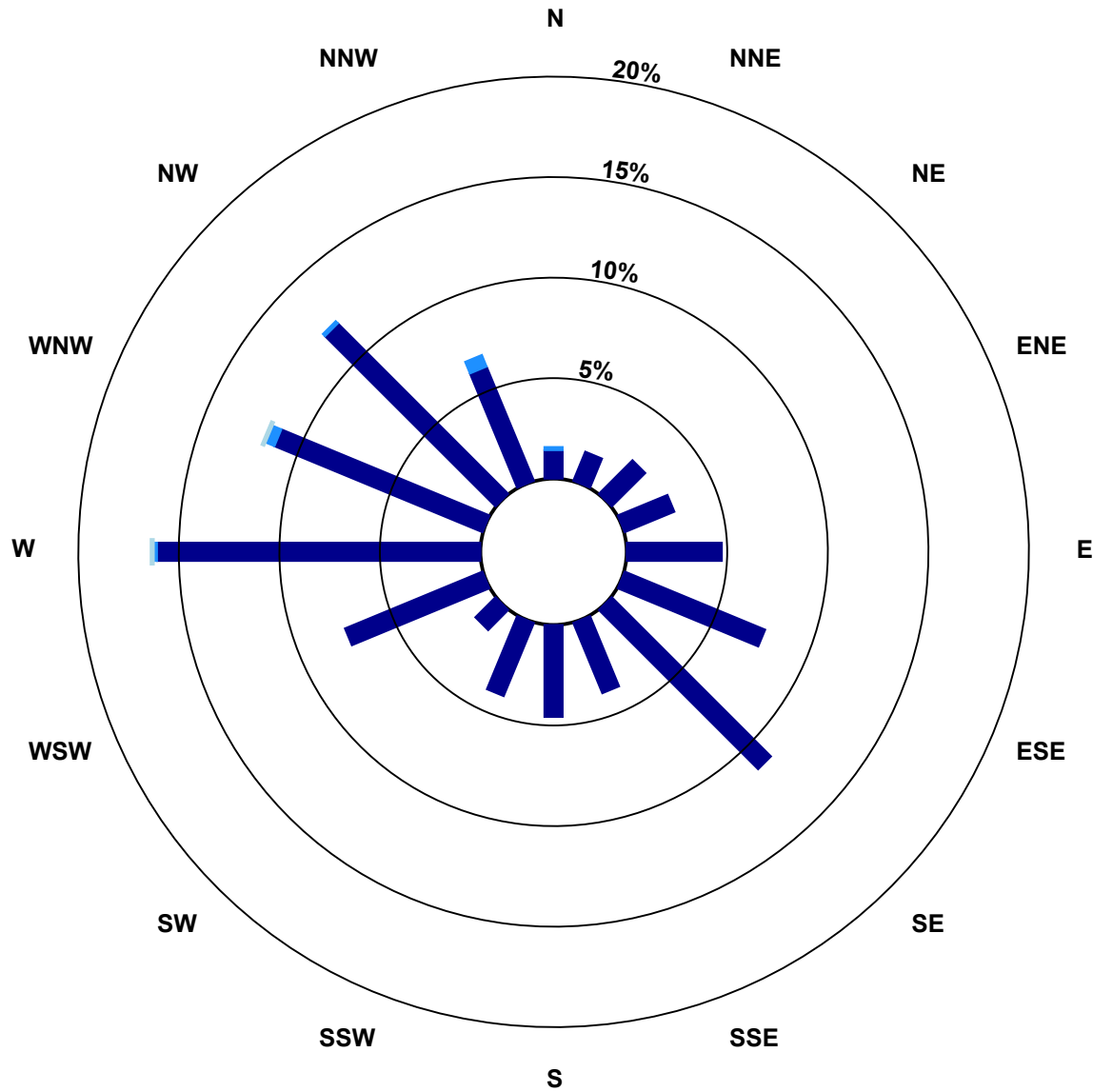
Total Number of Valid Hours: 634

Total Number of Hours: 672



Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Sulphur Dioxide (SO<sub>2</sub>) - ppb  
Anzac

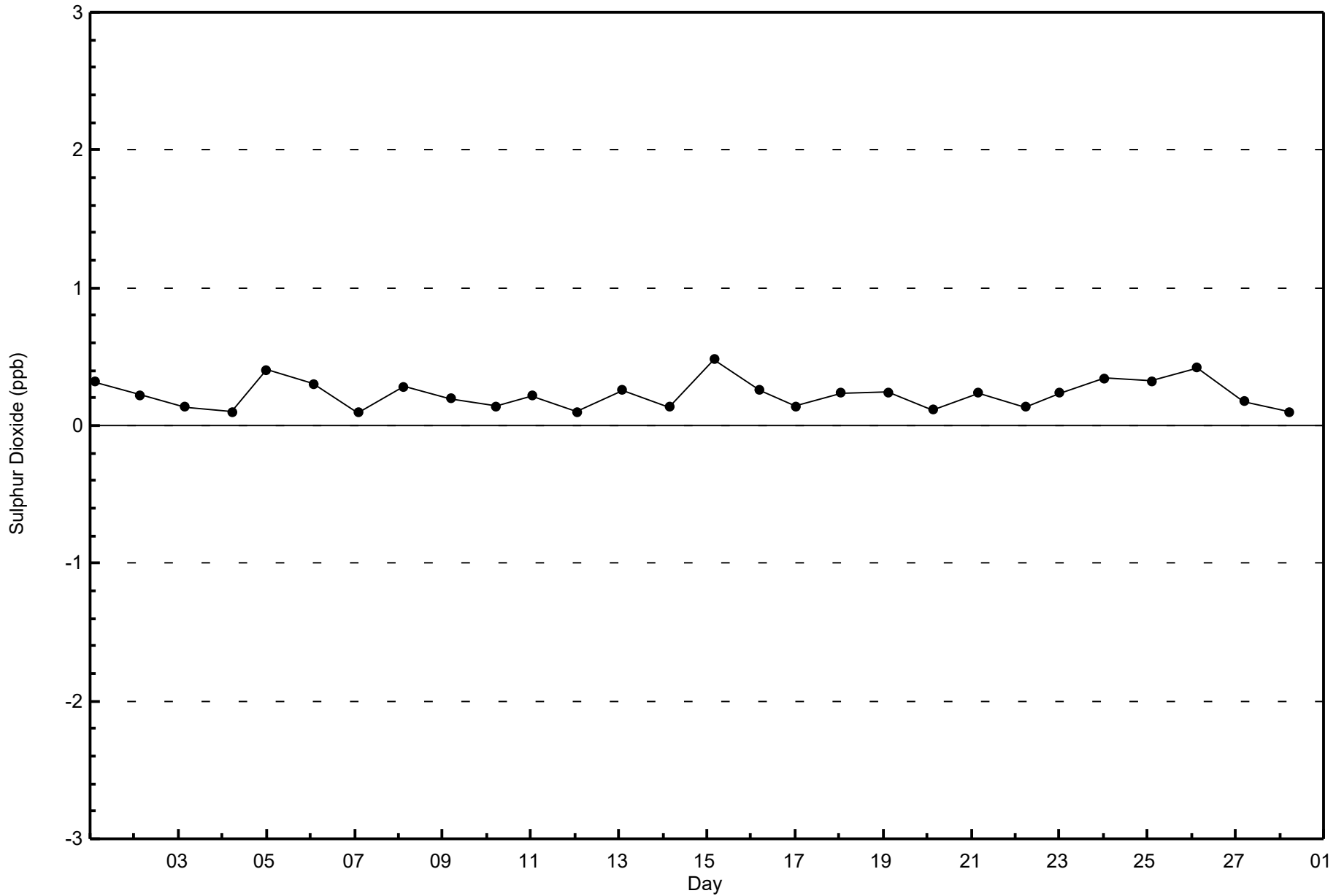


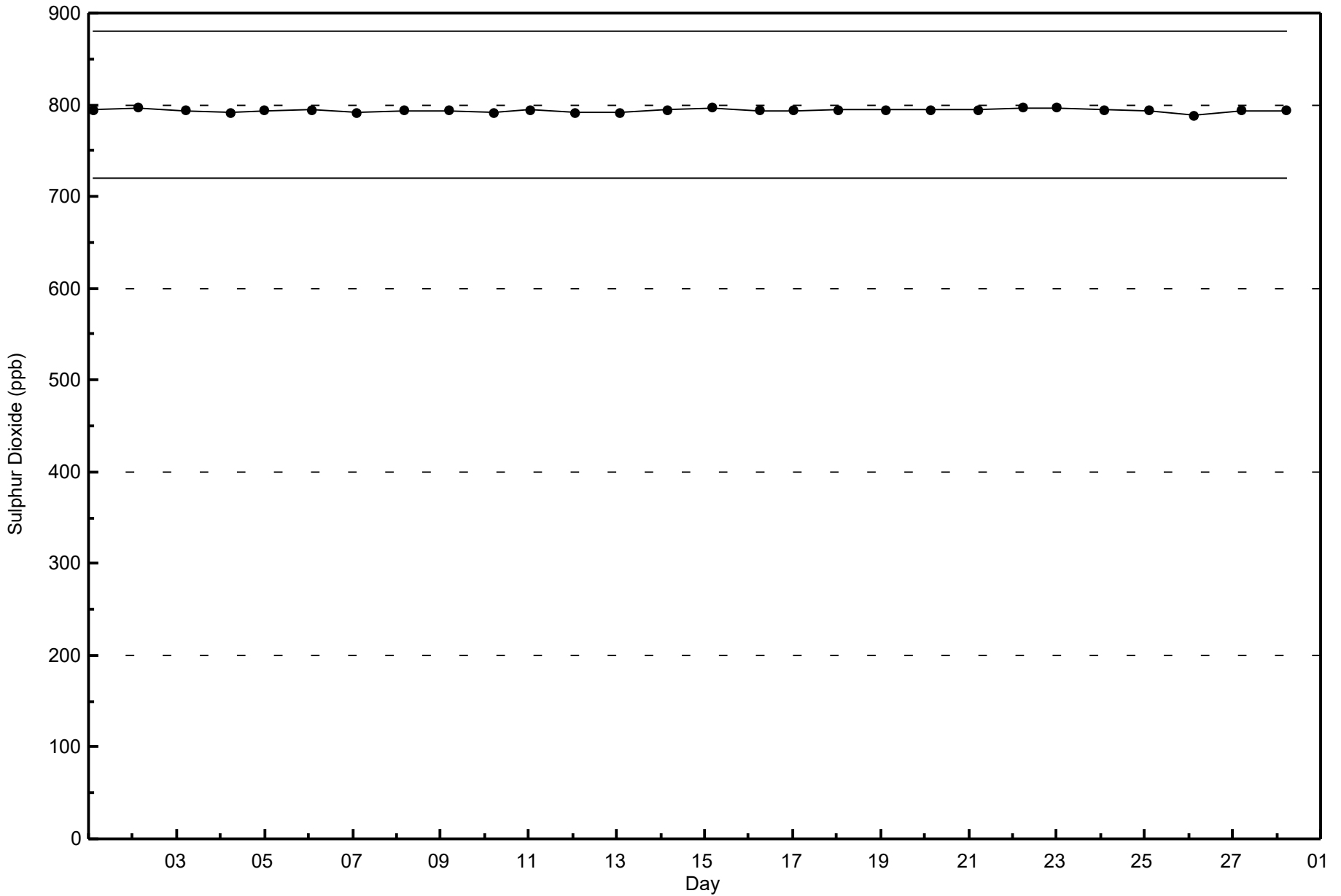
Total Number of Valid Hours: 634



Wood Buffalo Environmental Association  
Zero Responses

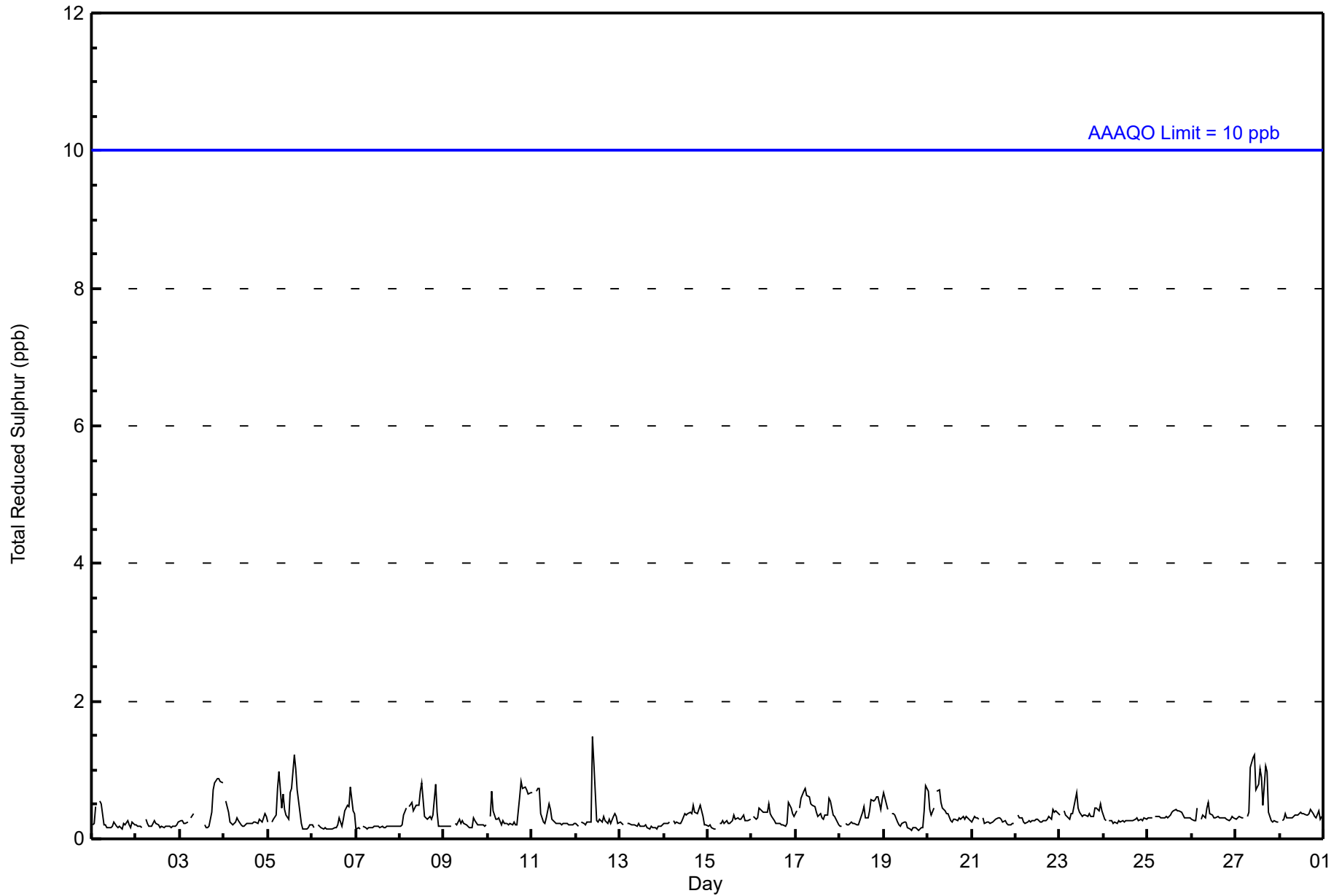
Sulphur Dioxide (SO<sub>2</sub>) - ppb  
Anzac - February 2023













**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Total Reduced Sulphur (TRS) - ppb**  
**Anzac - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 2                             | 639                    | 100.00   | 100.00              |
| 3 - 4                             | 0                      | 0.00     | 100.00              |
| 5 - 7                             | 0                      | 0.00     | 100.00              |
| 8 - 11                            | 0                      | 0.00     | 100.00              |
| > 11                              | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 639

Total Number of Hours: 672



**Wood Buffalo Environmental Association**  
**Frequency Distribution**

**Total Reduced Sulphur (TRS) - ppb**  
**Anzac - February 2023**

| <b>Concentration</b><br><b>Ranges (ppb)</b> | <b>Wind Direction</b> |     |    |     |    |     |    |     |    |     |    |     |     |     |    |     | <b>Totals</b> |
|---|-----------------------|-----|----|-----|----|-----|----|-----|----|-----|----|-----|-----|-----|----|-----|---------------|
|   | N                     | NNE | NE | ENE | E  | ESE | SE | SSE | S  | SSW | SW | WSW | W   | WNW | NW | NNW |               |
| 0 - 2                                       | 10                    | 9   | 14 | 17  | 31 | 50  | 69 | 23  | 29 | 26  | 9  | 48  | 102 | 72  | 80 | 43  | 632           |
| 3 - 4                                       | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0   | 0   | 0  | 0   | 0             |
| 5 - 7                                       | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0   | 0   | 0  | 0   | 0             |
| 8 - 11                                      | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0   | 0   | 0  | 0   | 0             |
| > 11  | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0   | 0   | 0  | 0   | 0             |
| <b>Totals</b>                               | 10                    | 9   | 14 | 17  | 31 | 50  | 69 | 23  | 29 | 26  | 9  | 48  | 102 | 72  | 80 | 43  | 632           |

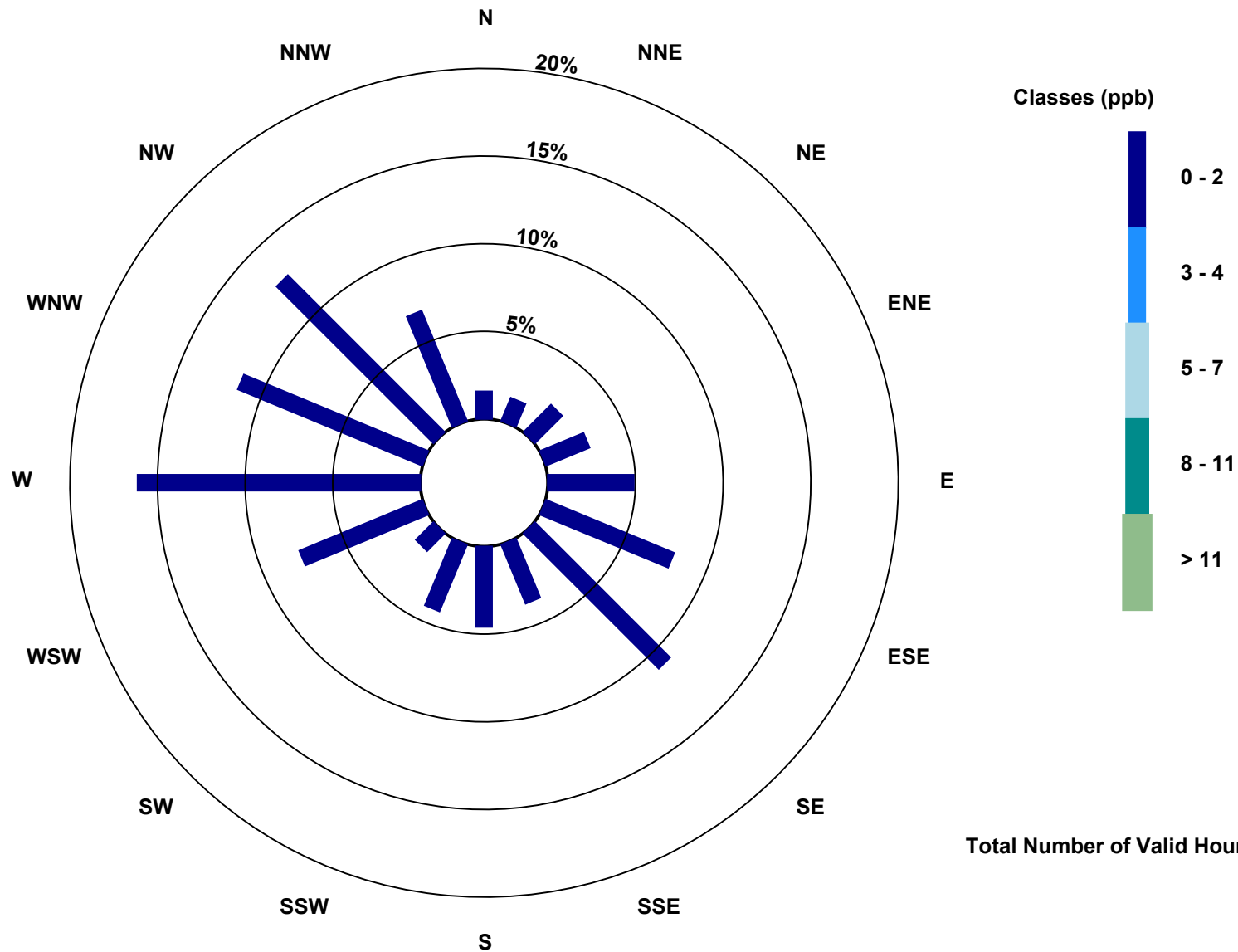
Total Number of Valid Hours: 632

Total Number of Hours: 672



Wood Buffalo Environmental Association  
Wind Rose Feb 2023

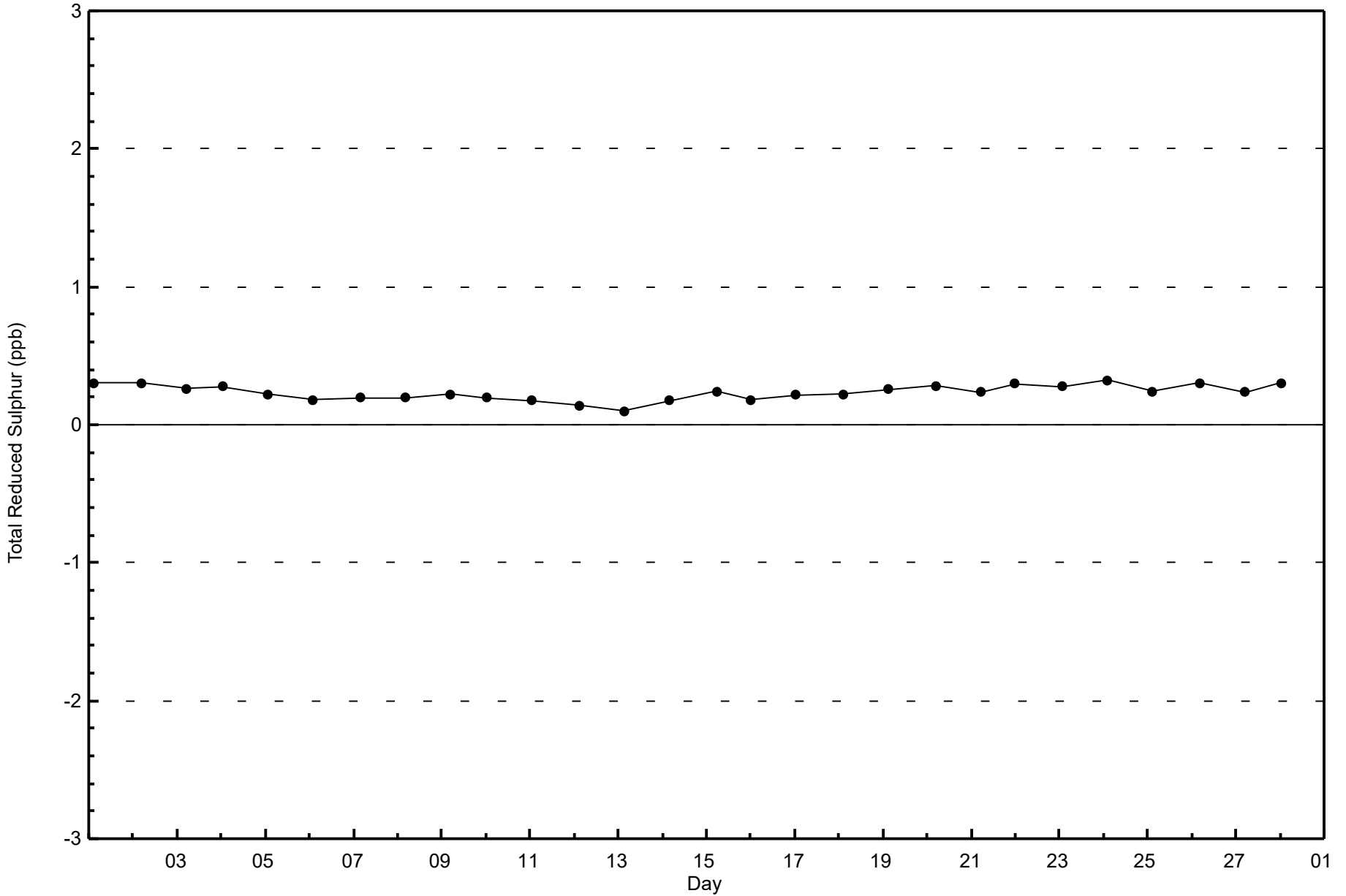
Total Reduced Sulphur (TRS) - ppb  
Anzac

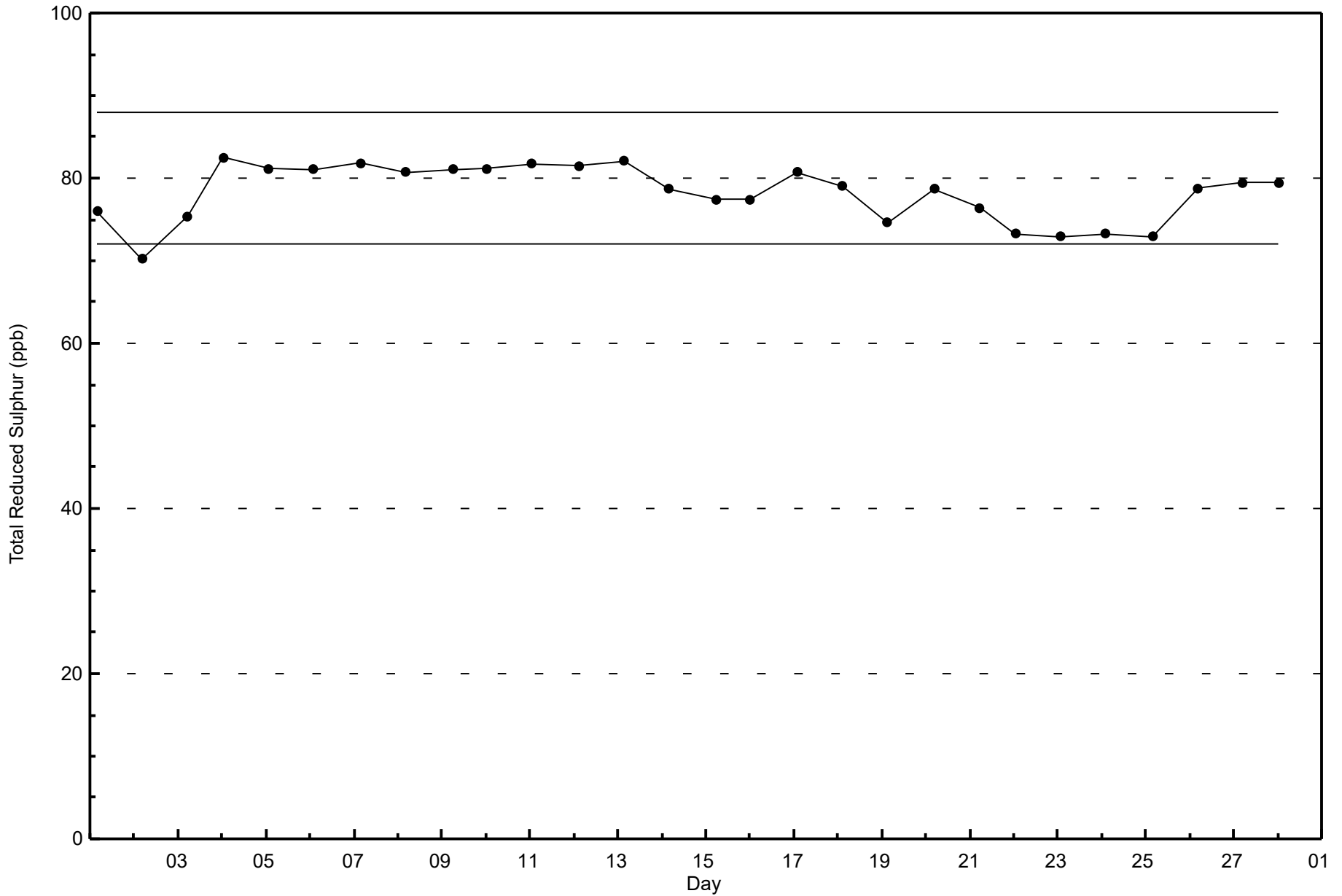




Wood Buffalo Environmental Association  
Zero Responses

Total Reduced Sulphur (TRS) - ppb  
Anzac - February 2023



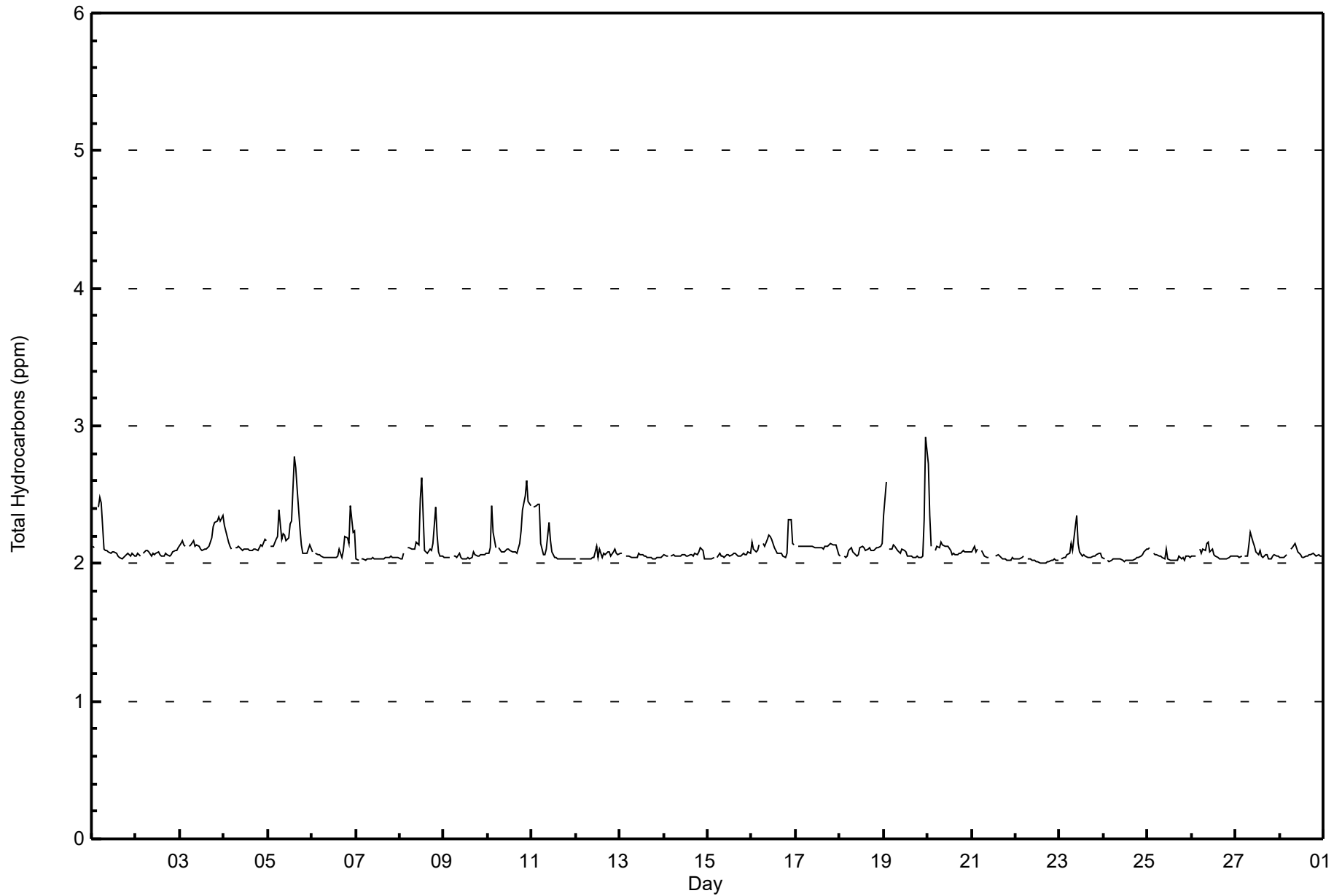






**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Total Hydrocarbons (THC) - ppm**  
**Anzac - February 2023**







**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Total Hydrocarbons (THC) - ppm**  
**Anzac - February 2023**

| <b>Concentration Ranges (ppm)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 2.0                           | 192                    | 29.95    | 29.95               |
| 2.1 - 3.0                         | 449                    | 70.05    | 100.00              |
| 3.1 - 10.0                        | 0                      | 0.00     | 100.00              |
| > 10.0                            | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 641

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Total Hydrocarbons (THC) - ppm  
Anzac - February 2023**

| <b>Concentration<br/>Ranges (ppm)</b> | <b>Wind Direction</b> |     |    |     |    |     |    |     |    |     |    |     |     |     |    |     | <b>Totals</b> |
|---------------------------------------|-----------------------|-----|----|-----|----|-----|----|-----|----|-----|----|-----|-----|-----|----|-----|---------------|
|                                       | N                     | NNE | NE | ENE | E  | ESE | SE | SSE | S  | SSW | SW | WSW | W   | WNW | NW | NNW |               |
| 0 - 2.0                               | 4                     | 3   | 1  | 6   | 5  | 1   | 2  | 6   | 14 | 12  | 4  | 35  | 49  | 19  | 23 | 8   | 192           |
| 2.1 - 3.0                             | 6                     | 7   | 14 | 11  | 25 | 47  | 69 | 18  | 15 | 13  | 5  | 12  | 55  | 56  | 54 | 35  | 442           |
| 3.1 - 10.0                            | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0   | 0   | 0  | 0   | 0             |
| > 10.0                                | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0   | 0   | 0  | 0   | 0             |
| <b>Totals</b>                         | 10                    | 10  | 15 | 17  | 30 | 48  | 71 | 24  | 29 | 25  | 9  | 47  | 104 | 75  | 77 | 43  | 634           |

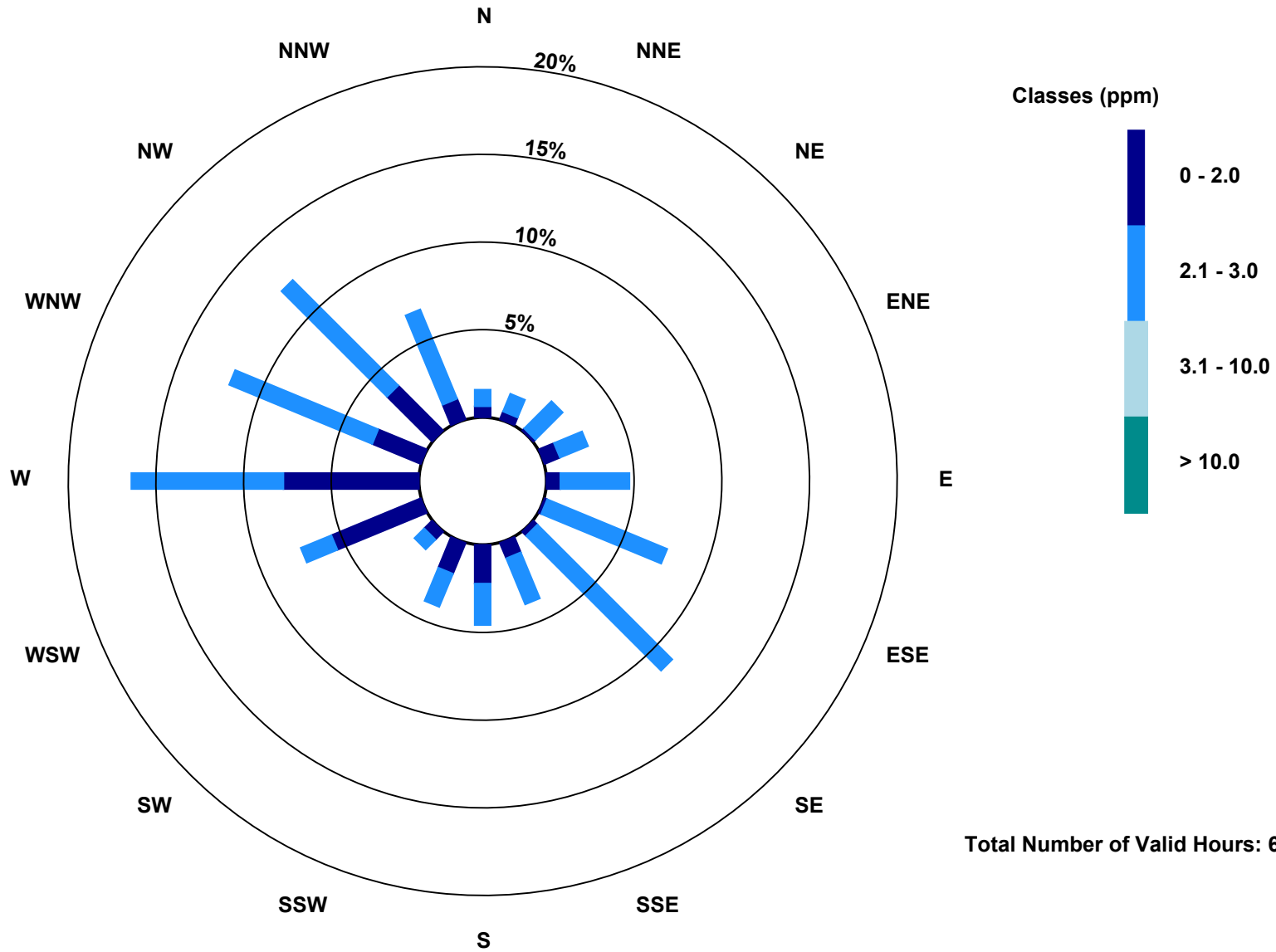
Total Number of Valid Hours: 634

Total Number of Hours: 672



Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Total Hydrocarbons (THC) - ppm  
Anzac

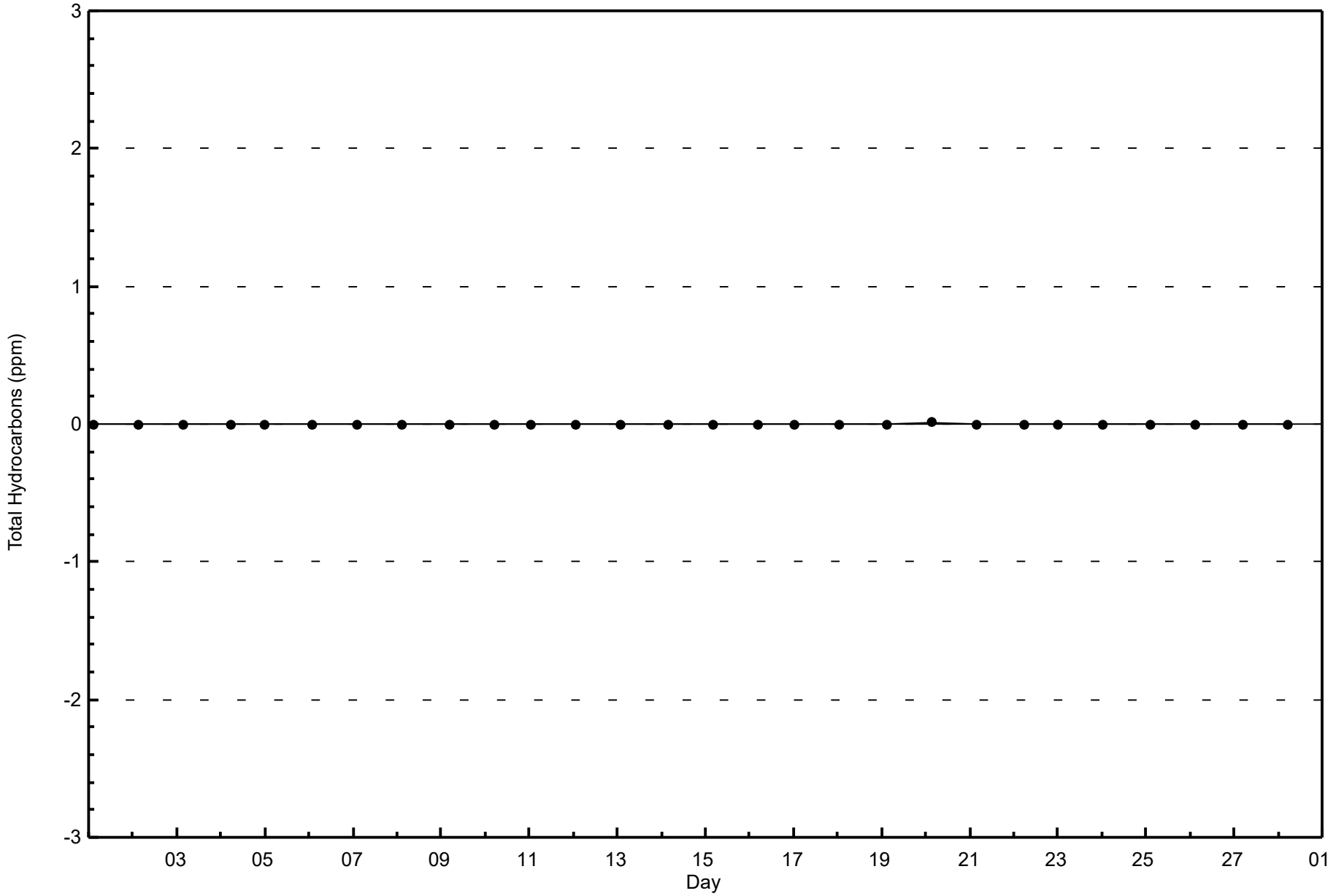


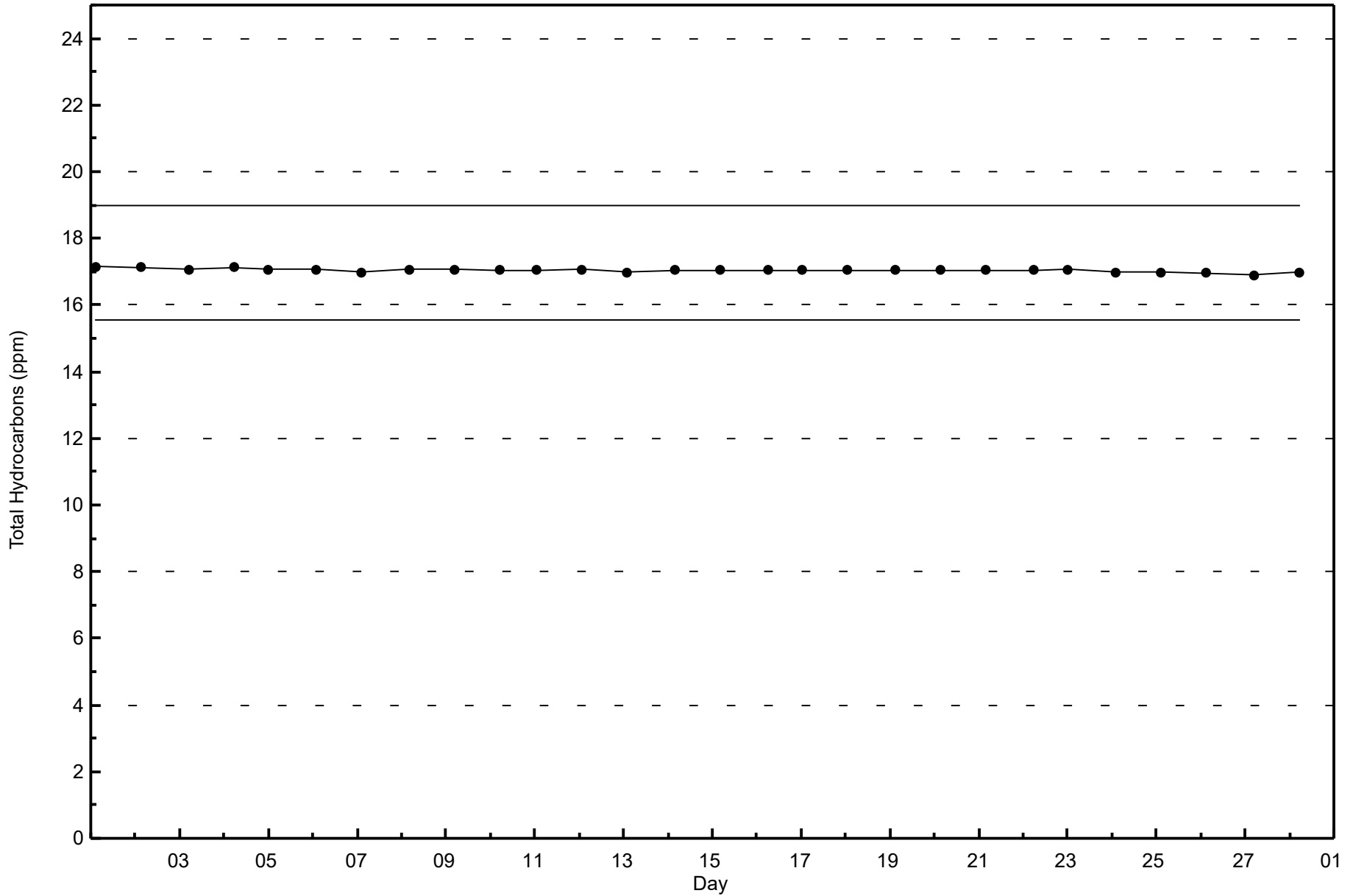
Total Number of Valid Hours: 634



Wood Buffalo Environmental Association  
Zero Responses

Total Hydrocarbons (THC) - ppm  
Anzac - February 2023



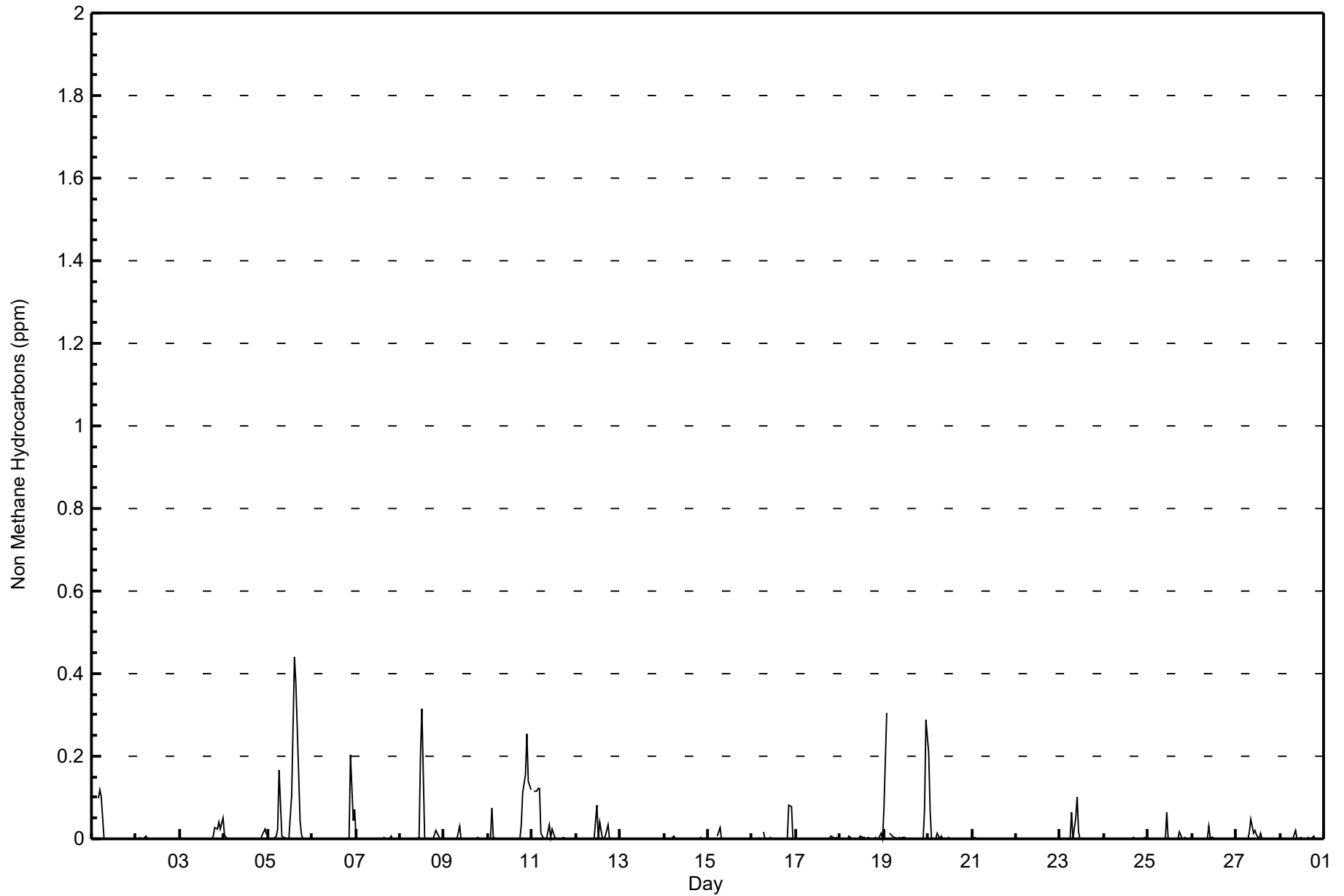




Summary of Hour Averages

Anzac - February 2023

| Maximum Value: 0.441 ppm on Feb 5 15:00       |                               | Maximum Daily Average: 0.065 ppm on Feb 5  |       | Hours in Service: 672           |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |               |                 |       |
|---|-------------------------------|--|-------|---------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------------|-----------------|-------|
| Minimum Value: 0.000 ppm on Feb 1 01:00       |                               | Minimum Daily Average: 0.000 ppm on Feb 13   |       | Hours of Data: 641              |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |               |                 |       |
| Maximum Diurnal Average: 0.021 ppm at hour 22 |                               | Minimum Diurnal Average: 0.001 ppm at hour 8   |       | Hours of Missing Data: 31       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |               |                 |       |
| Monthly Average: 0.010 ppm                    |                               | Percentiles: P <sub>1</sub> = 0.0 P <sub>10</sub> = 0.0 Q <sub>1</sub> = 0.0 Median = 0.0 Q <sub>3</sub> = 0.0 P <sub>90</sub> = 0.0 P <sub>99</sub> = 0.2 |       | Hours of Calibration: 31        |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |               |                 |       |
|   |                               |  |       | Percent Operational Time: 100.0 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |               |                 |       |
| Day   | Hourly Period Ending At (MST) |  |       |                                 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Daily Average | Daily Maximum   |       |
|   | 1                             | 2  | 3     | 4                               | 5     | 6     | 7     | 8     | 9     | 10    | 11    | 12    | 13    | 14    | 15    | 16    | 17    | 18    | 19    | 20    | 21    | 22    | 23    | 24    |               |                 |       |
| 1-Feb   | 0.000                         | 0.000  | Z     | 0.098                           | 0.119 | 0.100 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.014         | 0.119           |       |
| 2-Feb   | 0.000                         | 0.000  | 0.002 | Z                               | 0.000 | 0.005 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.001 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000         | 0.005           | 0.005 |
| 3-Feb   | 0.000                         | 0.000  | 0.000 | 0.000                           | Z     | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.005 | 0.026 | 0.024 | 0.040 | 0.023 | 0.050 | 0.007         | 0.050           |       |
| 4-Feb   | 0.011                         | 0.003  | 0.000 | 0.000                           | 0.000 | Z     | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.010 | 0.023 | 0.009 | 0.002 | 0.023         | 0.023           |       |
| 5-Feb   | Z                             | 0.000  | 0.000 | 0.000                           | 0.006 | 0.023 | 0.166 | 0.007 | 0.003 | 0.005 | 0.000 | 0.000 | 0.053 | 0.103 | 0.441 | 0.378 | 0.267 | 0.045 | 0.009 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.065         | 0.441           |       |
| 6-Feb   | 0.000                         | Z  | 0.000 | 0.000                           | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.202 | 0.044 | 0.072 | 0.014 | 0.202         |                 |       |
| 7-Feb   | 0.000                         | 0.000  | Z     | 0.000                           | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.002 | 0.000 | 0.000 | 0.000 | 0.006 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000         | 0.006           |       |
| 8-Feb   | 0.000                         | 0.000  | 0.000 | Z                               | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.002 | 0.201 | 0.315 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.019 | 0.012 | 0.007 | 0.000 | 0.000 | 0.024         | 0.315           |       |
| 9-Feb   | 0.000                         | 0.000  | 0.000 | 0.000                           | Z     | 0.000 | 0.000 | 0.000 | 0.031 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.002 | 0.000 | 0.000 | 0.000 | 0.001 | 0.002 | 0.031         | 0.031           |       |
| 10-Feb  | 0.000                         | 0.000  | 0.073 | 0.003                           | 0.000 | Z     | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.032 | 0.112 | 0.155 | 0.255 | 0.138 | 0.120 | 0.039         | 0.255           |       |
| 11-Feb  | Z                             | 0.115  | 0.116 | 0.123                           | 0.122 | 0.013 | 0.000 | 0.000 | 0.000 | 0.033 | 0.003 | 0.023 | 0.004 | 0.000 | 0.000 | 0.000 | 0.000 | 0.004 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.024         | 0.123           |       |
| 12-Feb  | 0.000                         | Z  | 0.000 | 0.000                           | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.082 | 0.000 | 0.042 | 0.000 | 0.000 | 0.005 | 0.034 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.007         | 0.082           |       |
| 13-Feb  | 0.000                         | 0.000  | Z     | 0.000                           | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000         | 0.000           |       |
| 14-Feb  | 0.000                         | 0.000  | 0.000 | Z                               | 0.000 | 0.006 | 0.000 | 0.000 | 0.000 | 0.000 | 0.001 | 0.001 | 0.001 | 0.000 | 0.001 | 0.001 | 0.000 | 0.000 | 0.000 | 0.000 | 0.005 | 0.001 | 0.000 | 0.000 | 0.001         | 0.006           |       |
| 15-Feb  | 0.000                         | 0.001  | 0.000 | 0.000                           | Z     | 0.006 | 0.027 | 0.000 | 0.000 | 0.001 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.001 | 0.000 | 0.001 | 0.000 | 0.000 | 0.000 | 0.002         | 0.027           |       |
| 16-Feb  | 0.000                         | 0.000  | 0.000 | 0.001                           | 0.003 | Z     | 0.017 | 0.000 | 0.000 | 0.001 | 0.004 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.082 | 0.077 | 0.000 | 0.000 | 0.000 | 0.008         | 0.082           |       |
| 17-Feb  | Z                             | 0.001  | 0.000 | 0.001                           | 0.002 | 0.001 | 0.000 | 0.001 | 0.000 | 0.001 | 0.000 | 0.000 | 0.001 | 0.000 | 0.001 | 0.000 | 0.000 | 0.000 | 0.005 | 0.002 | 0.000 | 0.003 | 0.000 | 0.000 | 0.001         | 0.005           |       |
| 18-Feb  | 0.001                         | Z  | 0.000 | 0.001                           | 0.000 | 0.005 | 0.000 | 0.000 | 0.001 | 0.001 | 0.001 | 0.008 | 0.003 | 0.003 | 0.000 | 0.004 | 0.000 | 0.000 | 0.000 | 0.003 | 0.000 | 0.001 | 0.014 | 0.001 | 0.002         | 0.014           |       |
| 19-Feb  | 0.071                         | 0.306  | Z     | 0.013                           | 0.007 | 0.003 | 0.003 | 0.001 | 0.002 | 0.002 | 0.003 | 0.002 | 0.001 | 0.000 | 0.001 | 0.000 | 0.000 | 0.001 | 0.000 | 0.000 | 0.000 | 0.000 | 0.070 | 0.287 | 0.034         | 0.306           |       |
| 20-Feb  | 0.206                         | 0.069  | 0.000 | Z                               | 0.002 | 0.013 | 0.001 | 0.006 | 0.000 | 0.000 | 0.000 | 0.002 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.001 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.001 | 0.013         | 0.206           |       |
| 21-Feb  | 0.000                         | 0.002  | 0.000 | 0.001                           | Z     | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | C     | C     | C     | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000         | 0.002           |       |
| 22-Feb  | 0.000                         | 0.000  | 0.000 | 0.000                           | 0.000 | Z     | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000         | 0.000           |       |
| 23-Feb  | Z                             | 0.001  | 0.000 | 0.000                           | 0.000 | 0.000 | 0.065 | 0.000 | 0.049 | 0.102 | 0.016 | 0.001 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.002 | 0.001 | 0.000 | 0.010 | 0.102         |                 |       |
| 24-Feb  | 0.000                         | Z  | 0.000 | 0.001                           | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.003 | 0.000 | 0.000 | 0.000 | 0.000 | 0.003 | 0.001 | 0.000 | 0.003         | 0.003           |       |
| 25-Feb  | 0.000                         | 0.000  | Z     | 0.000                           | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.064 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.017 | 0.000 | 0.001 | 0.003 | 0.002 | 0.000 | 0.004 | 0.064         |                 |       |
| 26-Feb  | 0.000                         | 0.000  | 0.000 | Z                               | 0.000 | 0.001 | 0.000 | 0.000 | 0.000 | 0.030 | 0.003 | 0.002 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.002 | 0.030         | 0.030           |       |
| 27-Feb  | 0.000                         | 0.000  | 0.000 | 0.000                           | Z     | 0.000 | 0.000 | 0.017 | 0.047 | 0.013 | 0.019 | 0.011 | 0.000 | 0.014 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.005 | 0.047         |                 |       |
| 28-Feb  | 0.000                         | 0.000  | 0.000 | 0.000                           | 0.000 | Z     | 0.001 | 0.000 | 0.020 | 0.000 | 0.000 | 0.003 | 0.000 | 0.000 | 0.000 | 0.003 | 0.000 | 0.000 | 0.006 | 0.000 | 0.000 | 0.000 | 0.000 | 0.001 | 0.020         | 0.020           |       |
|   |                               | 0.012  | 0.021 | 0.008                           | 0.010 | 0.011 | 0.008 | 0.010 | 0.001 | 0.005 | 0.007 | 0.004 | 0.012 | 0.014 | 0.006 | 0.016 | 0.014 | 0.010 | 0.004 | 0.002 | 0.006 | 0.010 | 0.021 | 0.011 | 0.019         | Diurnal Average |       |
|   |                               | 0.206  | 0.306 | 0.116                           | 0.123 | 0.122 | 0.100 | 0.166 | 0.017 | 0.049 | 0.102 | 0.064 | 0.201 | 0.315 | 0.103 | 0.441 | 0.378 | 0.267 | 0.045 | 0.032 | 0.112 | 0.155 | 0.255 | 0.138 | 0.287         | Diurnal Maximum |       |
| Z - zerospan                                  |                               | C - Calibration  |       |                                 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |               |                 |       |





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Non Methane Hydrocarbons (NMHC) - ppm  
Anzac - February 2023**

| <b>Concentration Ranges (ppm)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 0.005                         | 558                    | 87.05    | 87.05               |
| 0.006 - 0.05                      | 49                     | 7.64     | 94.70               |
| 0.06 - 0.1                        | 22                     | 3.43     | 98.13               |
| > 0.1                             | 12                     | 1.87     | 100.00              |

Total Number of Valid Hours: 641

Total Number of Hours: 672





**Wood Buffalo Environmental Association  
Frequency Distribution**

**Non Methane Hydrocarbons (NMHC) - ppm  
Anzac - February 2023**

| <b>Concentration<br/>Ranges (ppm)</b> | <b>Wind Direction</b> |            |           |            |          |            |           |            |          |            |           |            |          |            |           |            | <b>Totals</b> |
|---------------------------------------|-----------------------|------------|-----------|------------|----------|------------|-----------|------------|----------|------------|-----------|------------|----------|------------|-----------|------------|---------------|
|                                       | <b>N</b>              | <b>NNE</b> | <b>NE</b> | <b>ENE</b> | <b>E</b> | <b>ESE</b> | <b>SE</b> | <b>SSE</b> | <b>S</b> | <b>SSW</b> | <b>SW</b> | <b>WSW</b> | <b>W</b> | <b>WNW</b> | <b>NW</b> | <b>NNW</b> |               |
| 0 - 0.005                             | 10                    | 9          | 15        | 16         | 27       | 40         | 57        | 22         | 28       | 22         | 7         | 42         | 89       | 62         | 71        | 40         | 557           |
| 0.006 - 0.05                          | 0                     | 0          | 0         | 1          | 3        | 5          | 8         | 0          | 1        | 3          | 2         | 2          | 8        | 9          | 1         | 1          | 44            |
| 0.06 - 0.1                            | 0                     | 1          | 0         | 0          | 0        | 1          | 2         | 0          | 0        | 0          | 0         | 3          | 5        | 3          | 4         | 2          | 21            |
| > 0.1                                 | 0                     | 0          | 0         | 0          | 0        | 2          | 4         | 2          | 0        | 0          | 0         | 0          | 2        | 1          | 1         | 0          | 12            |
| <b>Totals</b>                         | 10                    | 10         | 15        | 17         | 30       | 48         | 71        | 24         | 29       | 25         | 9         | 47         | 104      | 75         | 77        | 43         | 634           |

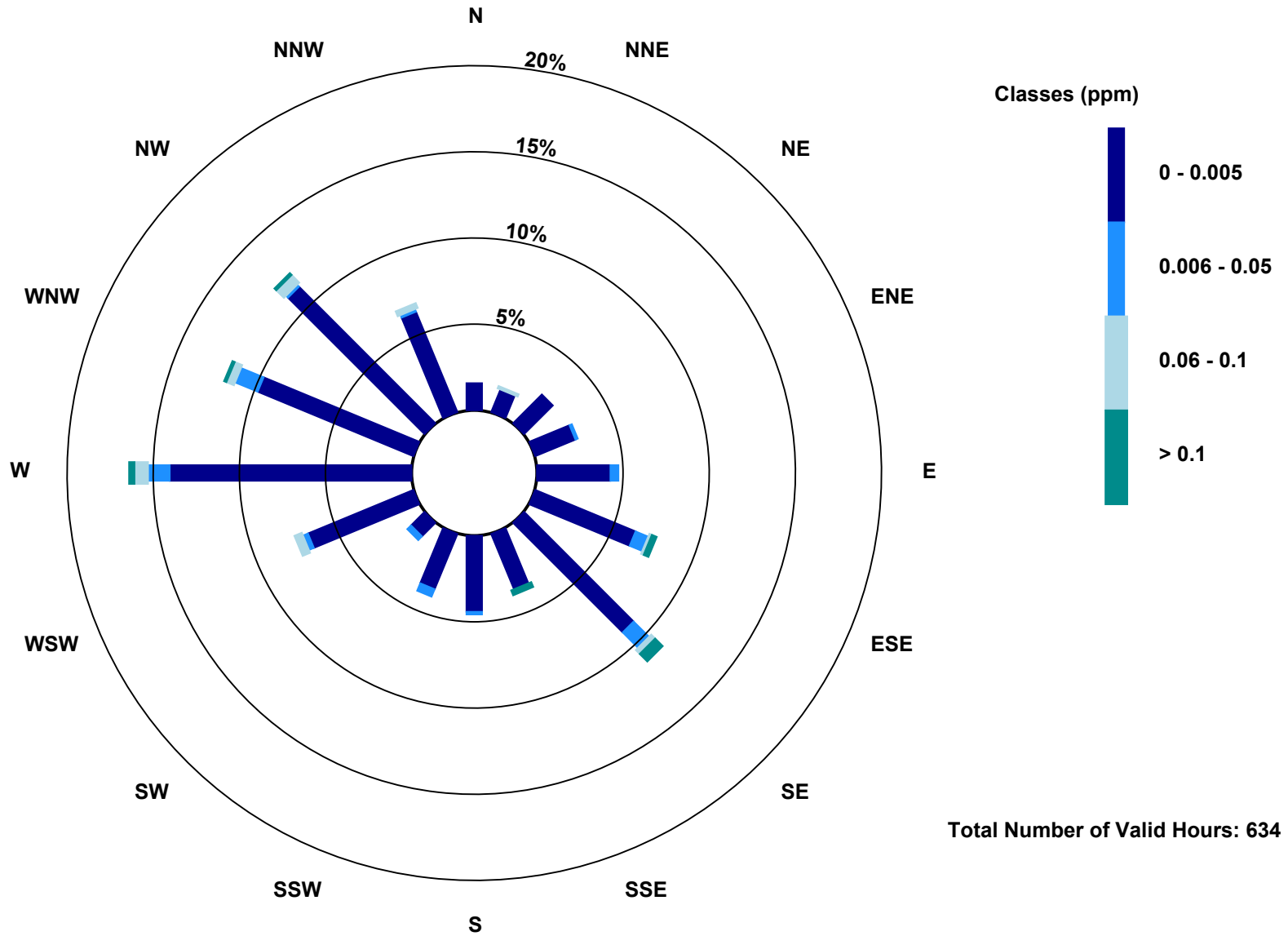
Total Number of Valid Hours: 634

Total Number of Hours: 672



Wood Buffalo Environmental Association  
Wind Rose Feb 2023

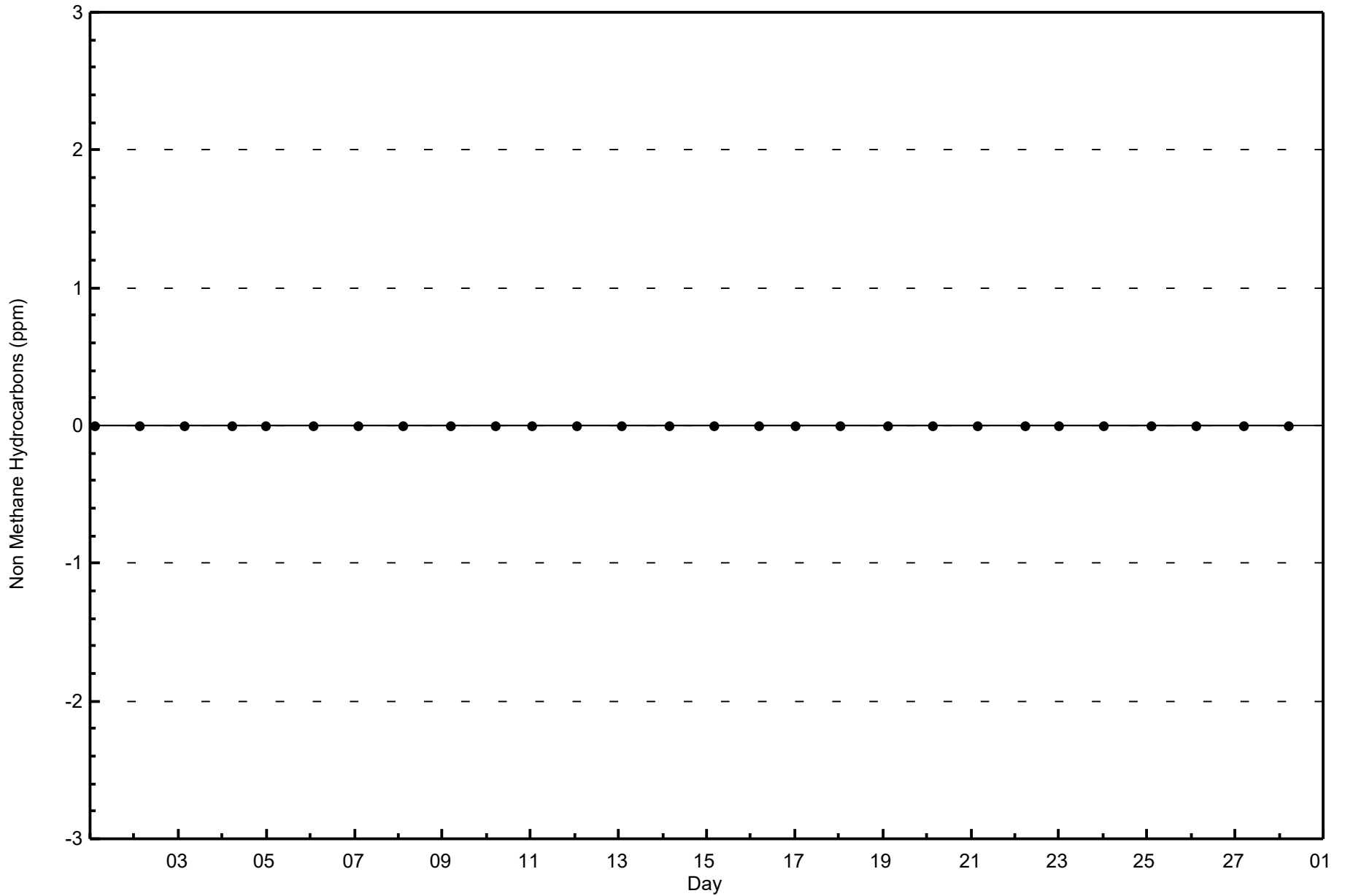
Non Methane Hydrocarbons (NMHC) - ppm  
Anzac

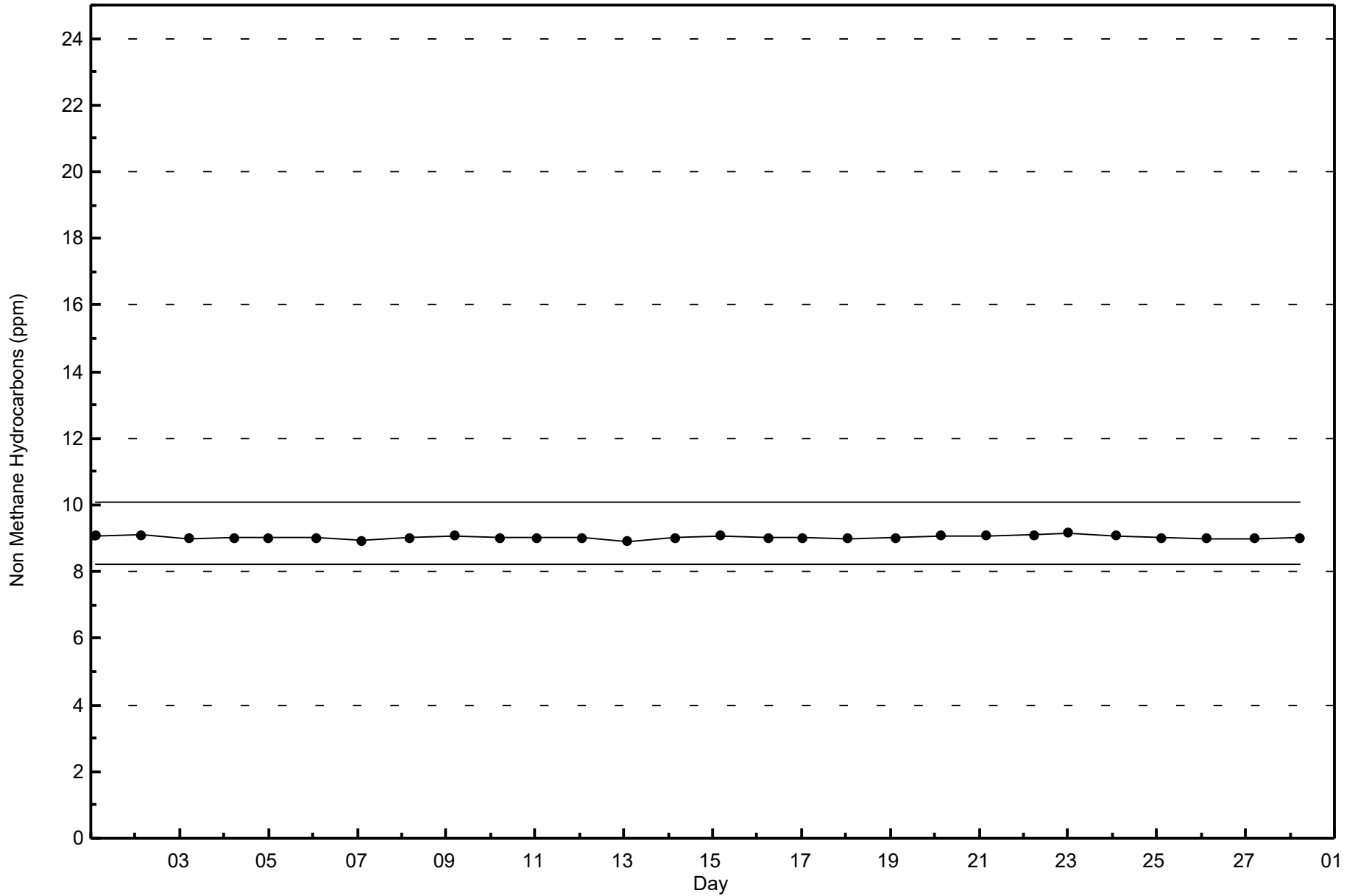




Wood Buffalo Environmental Association  
Zero Responses

Non Methane Hydrocarbons (NMHC) - ppm  
Anzac - February 2023







# Wood Buffalo Environmental Association

## Summary of Hour Averages

**Methane (CH<sub>4</sub>) - ppm**

**Anzac - February 2023**

|   |  |
|---|--|
| Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0 | Hours in Service: 672  |
| Maximum Value: 2.6 ppm on Feb 20 00:00          | Maximum Daily Average: 2.2 ppm on Feb 5  |
| Minimum Value: 2.0 ppm on Feb 22 16:00          | Minimum Daily Average: 2.0 ppm on Feb 22   |
| Maximum Diurnal Average: 2.1 ppm at hour 24     | Minimum Diurnal Average: 2.1 ppm at hour 14  |
| Monthly Average: 2.09 ppm                       | Percentiles: P <sub>1</sub> = 2.0 P <sub>10</sub> = 2.0 Q <sub>1</sub> = 2.0 Median = 2.1 Q <sub>3</sub> = 2.1 P <sub>90</sub> = 2.2 P <sub>99</sub> = 2.3 |
|   | Hours of Data: 641   |
|   | Hours of Missing Data: 31  |
|   | Hours of Calibration: 31   |
|   | Percent Operational Time: 100.0  |

| Day    | Hourly Period Ending At (MST) |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Daily Average | Daily Maximum |     |     |     |     |     |     |     |                 |
|--------|-------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---------------|---------------|-----|-----|-----|-----|-----|-----|-----|-----------------|
|        | 1                             | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19  | 20  | 21  | 22  | 23  | 24  |               |               |     |     |     |     |     |     |     |                 |
| 1-Feb  | 2.1                           | 2.1 | Z   | 2.3 | 2.4 | 2.3 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.0 | 2.0 | 2.0 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1           | 2.1           | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 |     |     |                 |
| 2-Feb  | 2.1                           | 2.1 | 2.1 | Z   | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1           | 2.1           | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 |     |     |                 |
| 3-Feb  | 2.1                           | 2.2 | 2.1 | 2.1 | Z   | 2.1 | 2.1 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3           | 2.3           | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 |     |     |                 |
| 4-Feb  | 2.3                           | 2.2 | 2.2 | 2.1 | 2.1 | Z   | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1           | 2.1           | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 |     |     |                 |
| 5-Feb  | Z                             | 2.1 | 2.1 | 2.1 | 2.2 | Z   | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.3 | 2.3 | 2.3 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1           | 2.1           | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 |     |     |                 |
| 6-Feb  | 2.1                           | Z   | 2.1 | 2.1 | 2.1 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1 | 2.1 | 2.0 | 2.1 | 2.2 | 2.2 | 2.1 | 2.2 | 2.2 | 2.2 | 2.2           | 2.1           | 2.2 | 2.2 | 2.2 | 2.2 | 2.1 |     |     |                 |
| 7-Feb  | 2.0                           | 2.0 | Z   | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0           | 2.0           | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |     |                 |
| 8-Feb  | 2.0                           | 2.0 | 2.1 | Z   | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.1 | 2.3 | 2.3 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.4 | 2.2 | 2.1 | 2.1 | 2.1           | 2.1           | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 |     |                 |
| 9-Feb  | 2.0                           | 2.0 | 2.0 | 2.0 | Z   | 2.1 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1 | 2.1 | 2.0 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1           | 2.1           | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 |     |                 |
| 10-Feb | 2.1                           | 2.1 | 2.3 | 2.2 | 2.1 | Z   | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | 2.3 | 2.3 | 2.4 | 2.3 | 2.3           | 2.4           | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.2 | 2.4 |                 |
| 11-Feb | Z                             | 2.3 | 2.3 | 2.3 | 2.3 | 2.1 | 2.1 | 2.1 | 2.1 | 2.3 | 2.2 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0           | 2.0           | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1 | 2.3 |                 |
| 12-Feb | 2.0                           | Z   | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1 | 2.0 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1           | 2.1           | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 |                 |
| 13-Feb | 2.1                           | 2.1 | Z   | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0           | 2.1           | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 |                 |
| 14-Feb | 2.1                           | 2.1 | 2.1 | Z   | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1           | 2.1           | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 |                 |
| 15-Feb | 2.0                           | 2.0 | 2.0 | 2.0 | Z   | 2.0 | 2.0 | 2.1 | 2.1 | 2.0 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.0 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1           | 2.1           | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 |                 |
| 16-Feb | 2.2                           | 2.1 | 2.1 | 2.1 | 2.1 | Z   | 2.1 | 2.1 | 2.2 | 2.2 | 2.2 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.0 | 2.1 | 2.2 | 2.2 | 2.1 | 2.1           | 2.1           | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 |                 |
| 17-Feb | Z                             | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1           | 2.1           | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 |                 |
| 18-Feb | 2.1                           | Z   | 2.1 | 2.0 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1           | 2.1           | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 |                 |
| 19-Feb | 2.3                           | 2.3 | Z   | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1           | 2.3           | 2.6 | 2.1 | 2.3 | 2.6 | 2.1 | 2.6 |     |                 |
| 20-Feb | 2.5                           | 2.3 | 2.1 | Z   | 2.1 | 2.1 | 2.1 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1           | 2.1           | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 |                 |
| 21-Feb | 2.1                           | 2.1 | 2.1 | 2.1 | Z   | 2.1 | 2.1 | 2.1 | 2.0 | 2.0 | C   | C   | C   | 2.1 | 2.1 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0           | 2.0           | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1 | 2.1 |                 |
| 22-Feb | 2.0                           | 2.0 | 2.0 | 2.0 | 2.1 | Z   | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0           | 2.0           | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |                 |
| 23-Feb | Z                             | 2.0 | 2.0 | 2.0 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1           | 2.1           | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 |                 |
| 24-Feb | 2.0                           | Z   | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1 | 2.1 | 2.1 | 2.1           | 2.1           | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.0 | 2.1             |
| 25-Feb | 2.1                           | 2.1 | Z   | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0           | 2.0           | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.0 | 2.0 |                 |
| 26-Feb | 2.1                           | 2.1 | 2.1 | Z   | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0           | 2.1           | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1             |
| 27-Feb | 2.1                           | 2.0 | 2.0 | 2.1 | Z   | 2.1 | 2.1 | 2.1 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.0 | 2.1 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1           | 2.1           | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1             |
| 28-Feb | 2.0                           | 2.0 | 2.0 | 2.1 | 2.1 | Z   | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.0 | 2.0 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1           | 2.1           | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1             |
|        | 2.1                           | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1           | 2.1           | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | Diurnal Average |
|        | 2.5                           | 2.3 | 2.3 | 2.3 | 2.4 | 2.3 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.3 | 2.3 | 2.3 | 2.2 | 2.3 | 2.3 | 2.3 | 2.2 | 2.3 | 2.4 | 2.3 | 2.4 | 2.3 | 2.4           | 2.3           | 2.4 | 2.3 | 2.4 | 2.3 | 2.6 | 2.6 | 2.6 | Diurnal Maximum |

Z - zerospan      C - Calibration

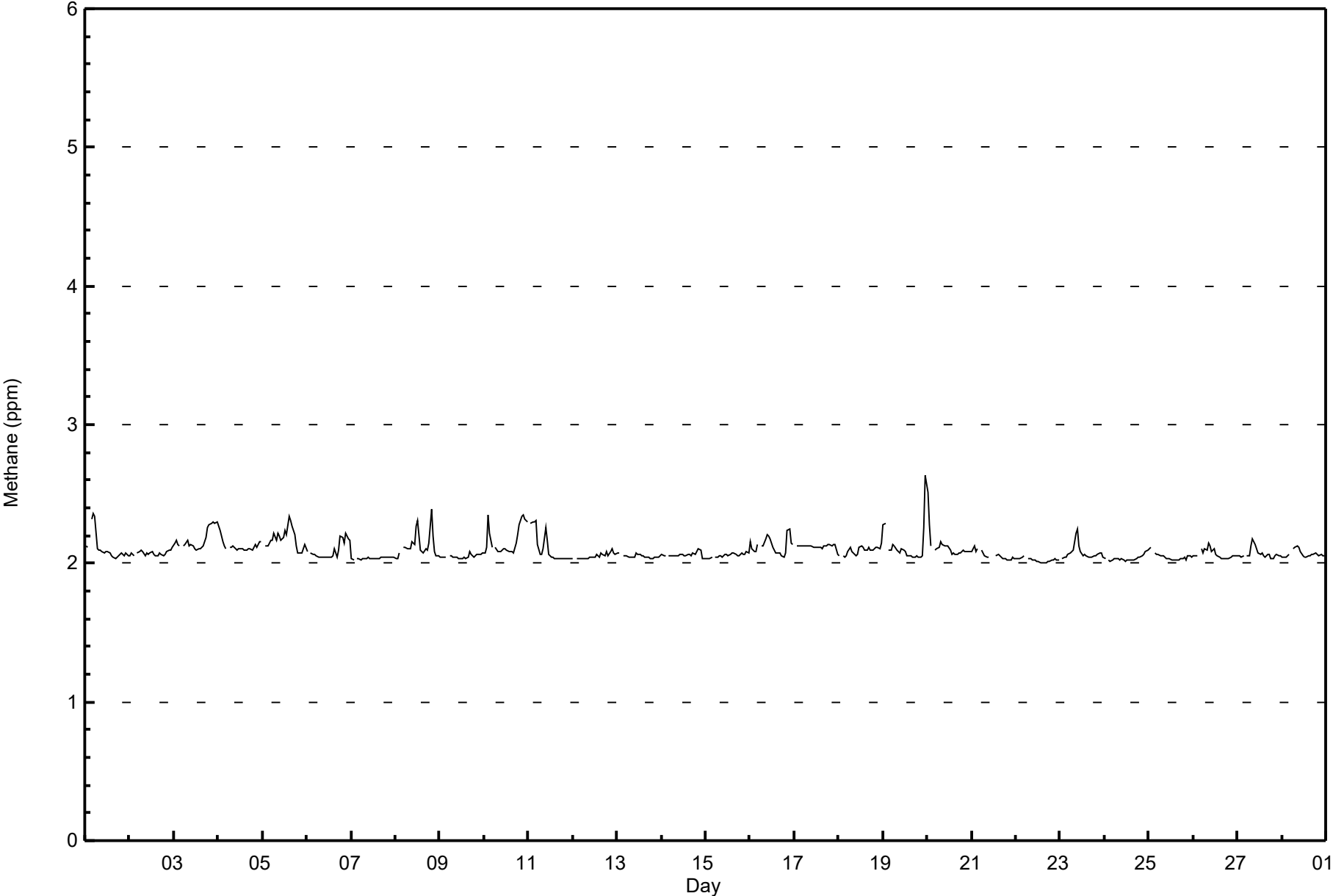


Wood Buffalo Environmental Association

Hourly Averages

Methane (CH<sub>4</sub>) - ppm

Anzac - February 2023





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Methane (CH<sub>4</sub>) - ppm**  
**Anzac - February 2023**

| <b>Concentration Ranges (ppm)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 2.0                           | 198                    | 30.89    | 30.89               |
| 2.1 - 3.0                         | 443                    | 69.11    | 100.00              |
| 3.1 - 10.0                        | 0                      | 0.00     | 100.00              |
| > 10.0                            | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 641

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Methane (CH<sub>4</sub>) - ppm  
Anzac - February 2023**

| Concentration<br>Ranges (ppm) | Wind Direction |     |    |     |    |     |    |     |    |     |    |     |     |     |    |     | Totals |
|-------------------------------|----------------|-----|----|-----|----|-----|----|-----|----|-----|----|-----|-----|-----|----|-----|--------|
|                               | N              | NNE | NE | ENE | E  | ESE | SE | SSE | S  | SSW | SW | WSW | W   | WNW | NW | NNW |        |
| 0 - 2.0                       | 4              | 3   | 1  | 6   | 5  | 1   | 3  | 6   | 14 | 12  | 6  | 37  | 50  | 19  | 23 | 8   | 198    |
| 2.1 - 3.0                     | 6              | 7   | 14 | 11  | 25 | 47  | 68 | 18  | 15 | 13  | 3  | 10  | 54  | 56  | 54 | 35  | 436    |
| 3.1 - 10.0                    | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0   | 0   | 0  | 0   | 0      |
| > 10.0                        | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0   | 0   | 0  | 0   | 0      |
| <b>Totals</b>                 | 10             | 10  | 15 | 17  | 30 | 48  | 71 | 24  | 29 | 25  | 9  | 47  | 104 | 75  | 77 | 43  | 634    |

Total Number of Valid Hours: 634

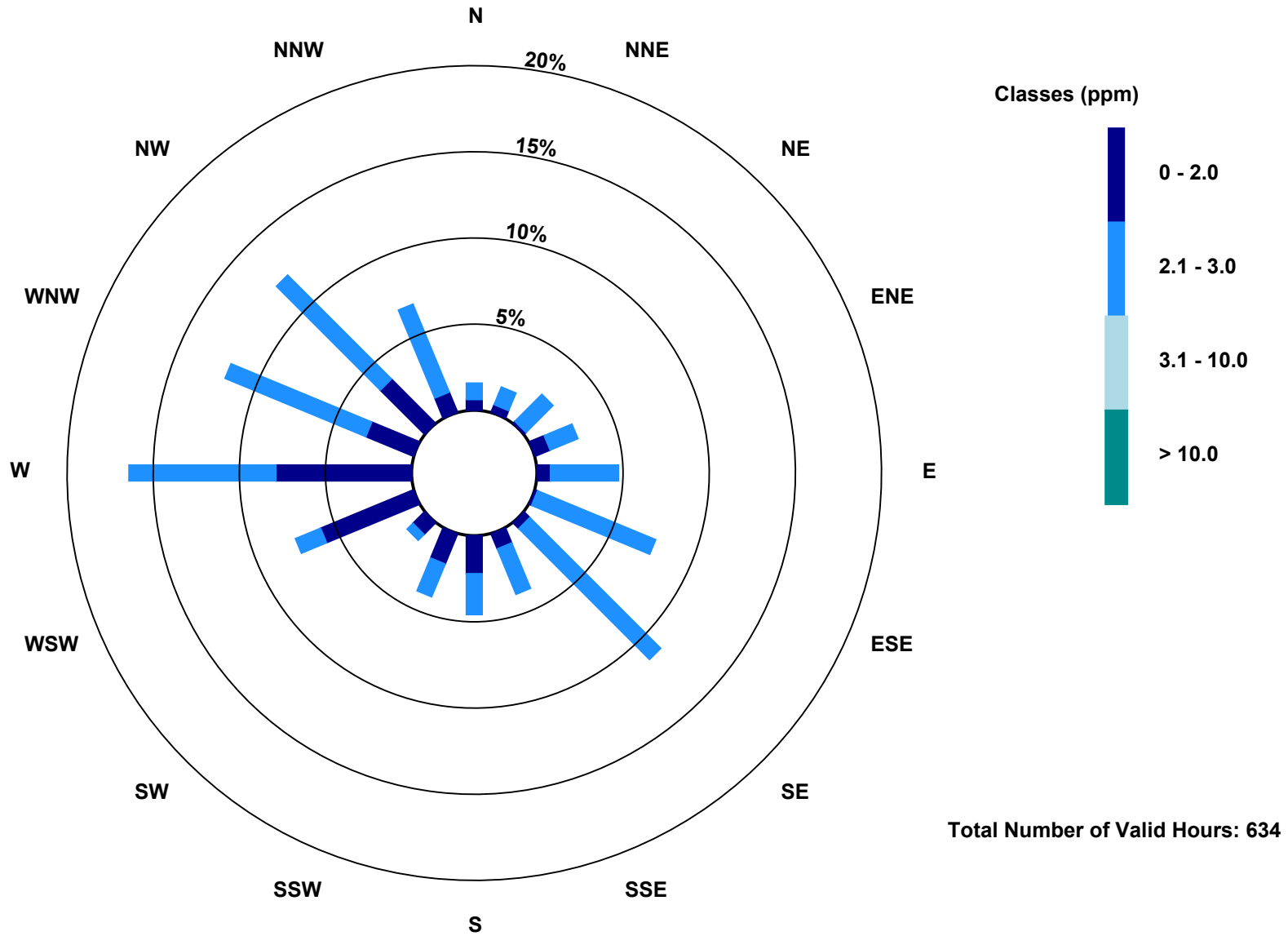
Total Number of Hours: 672





Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Methane (CH<sub>4</sub>) - ppm  
Anzac



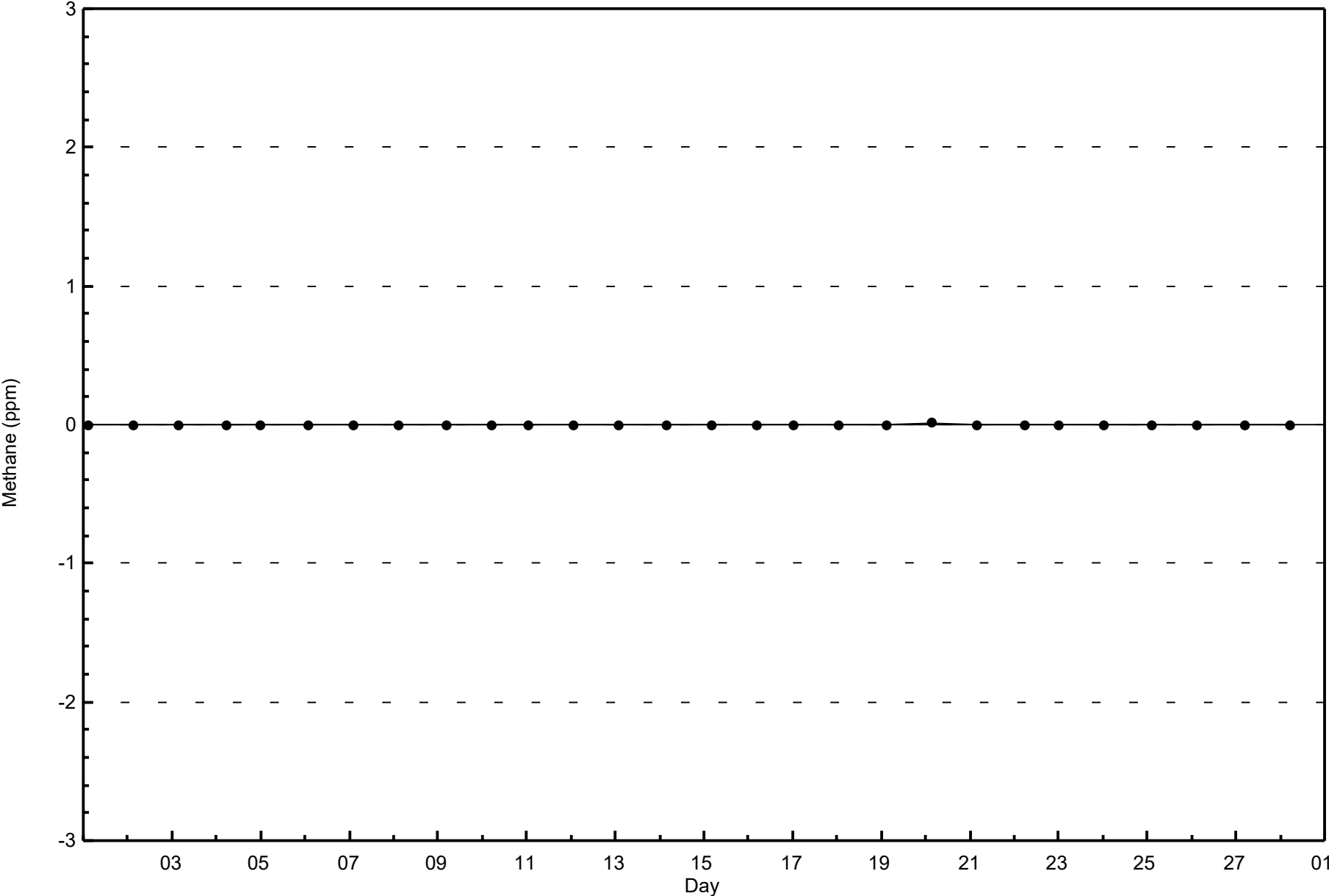


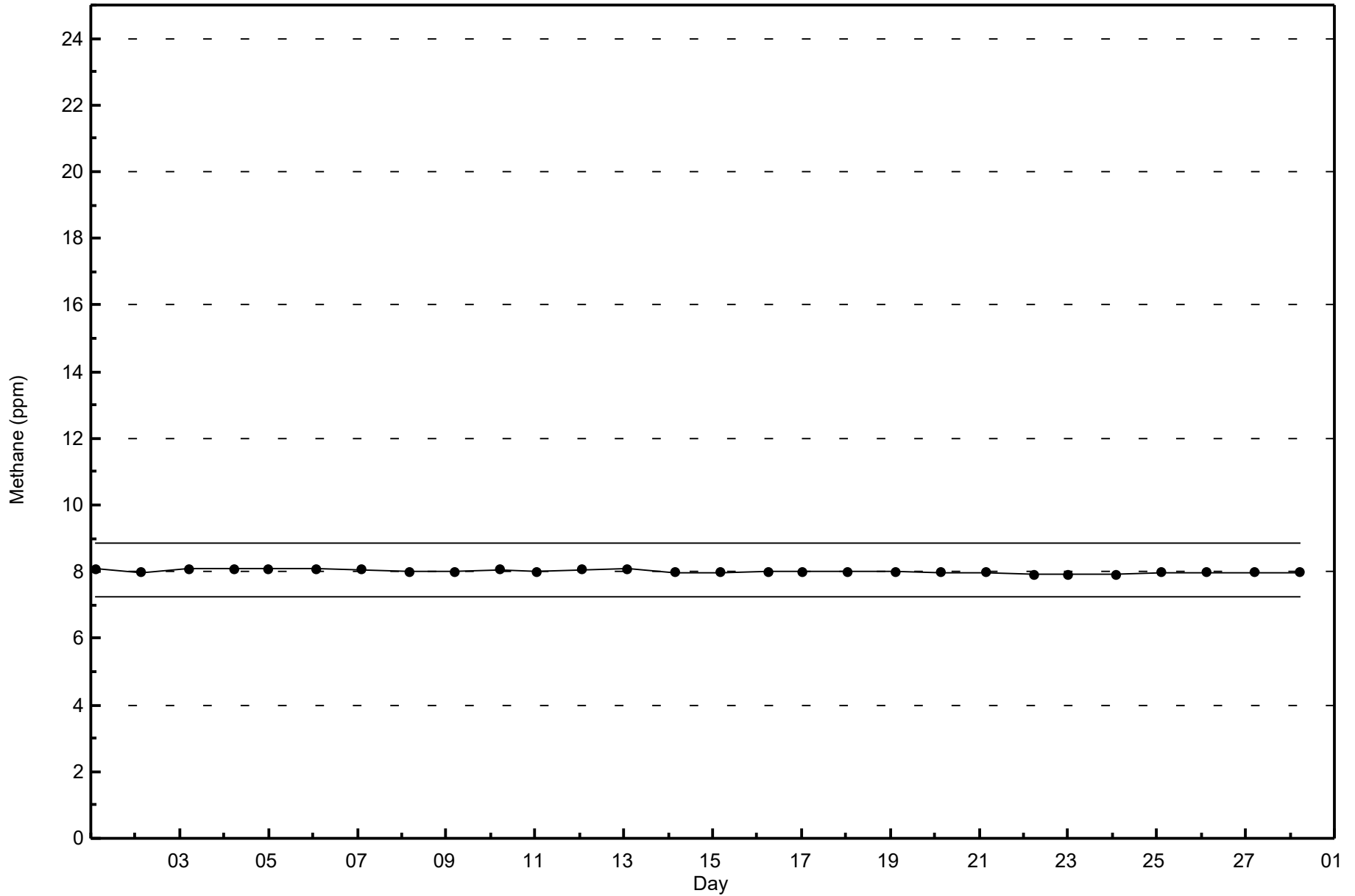
Wood Buffalo Environmental Association

Zero Responses

Methane (CH<sub>4</sub>) - ppm

Anzac - February 2023







**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

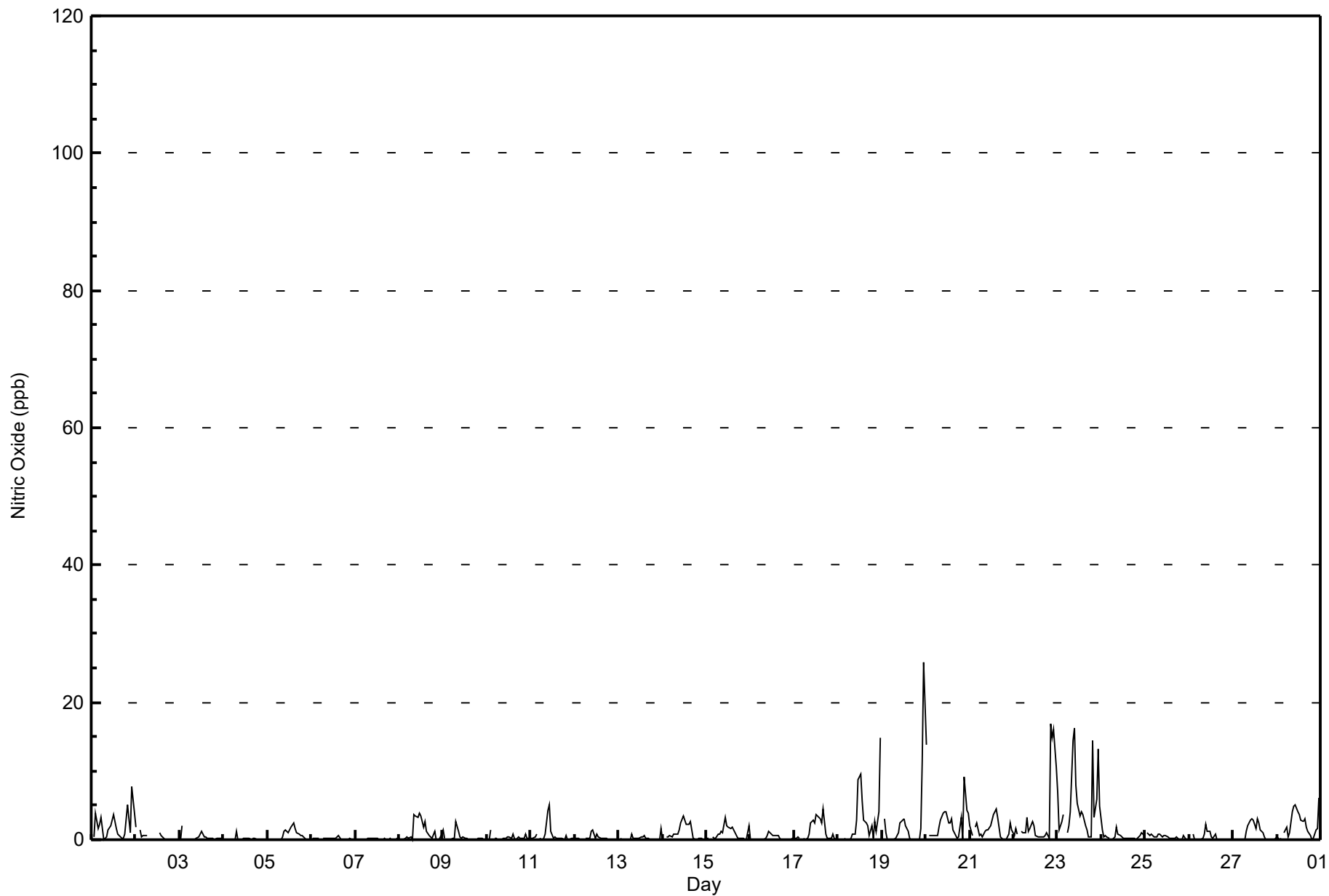
**Nitric Oxide (NO) - ppb**  
**Anzac - February 2023**

| Maximum Value: 25.9 ppb on Feb 20 00:00     |                               | Maximum Daily Average: 5.3 ppb on Feb 23  |     | Hours in Service: 672           |     |     |     |     |      |      |      |     |     |     |     |     |     |     |     |      |      |      |      |      |                 |                 |     |  |
|---|-------------------------------|---|-----|---------------------------------|-----|-----|-----|-----|------|------|------|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|-----------------|-----------------|-----|--|
| Minimum Value: 0.0 ppb on Feb 2 17:00       |                               | Minimum Daily Average: 0.1 ppb on Feb 7   |     | Hours of Data: 638              |     |     |     |     |      |      |      |     |     |     |     |     |     |     |     |      |      |      |      |      |                 |                 |     |  |
| Maximum Diurnal Average: 2.8 ppb at hour 24 |                               | Minimum Diurnal Average: 0.3 ppb at hour 19   |     | Hours of Missing Data: 34       |     |     |     |     |      |      |      |     |     |     |     |     |     |     |     |      |      |      |      |      |                 |                 |     |  |
| Monthly Average: 1.19 ppb                   |                               | Percentiles: P <sub>1</sub> = 0.0 P <sub>10</sub> = 0.0 Q <sub>1</sub> = 0.1 Median = 0.3 Q <sub>3</sub> = 1.3 P <sub>90</sub> = 3.1 P <sub>99</sub> = 14.4 |     | Hours of Calibration: 34        |     |     |     |     |      |      |      |     |     |     |     |     |     |     |     |      |      |      |      |      |                 |                 |     |  |
|   |                               |   |     | Percent Operational Time: 100.0 |     |     |     |     |      |      |      |     |     |     |     |     |     |     |     |      |      |      |      |      |                 |                 |     |  |
| Day   | Hourly Period Ending At (MST) |   |     |                                 |     |     |     |     |      |      |      |     |     |     |     |     |     |     |     |      |      |      |      |      | Daily Average   | Daily Maximum   |     |  |
|   | 1                             | 2   | 3   | 4                               | 5   | 6   | 7   | 8   | 9    | 10   | 11   | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19  | 20   | 21   | 22   | 23   | 24   |                 |                 |     |  |
| 1-Feb                                       | Z                             | 0.3   | 3.9 | 1.7                             | 2.2 | 3.3 | 0.1 | 0.1 | 0.5  | 1.4  | 2.0  | 2.8 | 3.7 | 1.6 | 0.8 | 0.5 | 0.2 | 0.1 | 0.9 | 5.1  | 3.0  | 1.0  | 7.8  | 3.9  | 2.0             | 7.8             |     |  |
| 2-Feb                                       | 1.9                           | Z   | 1.5 | 0.4                             | 0.6 | 0.5 | 0.6 | C   | C    | C    | C    | C   | C   | 1.0 | 0.6 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0             | --              | 1.9 |  |
| 3-Feb                                       | 0.0                           | 2.1   | Z   | 0.0                             | 0.0 | 0.0 | 0.0 | 0.0 | 0.1  | 0.2  | 0.3  | 0.7 | 1.3 | 0.3 | 0.3 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1  | 0.1  | 0.1  | 0.1  | 0.1  | 0.1             | 0.3             | 2.1 |  |
| 4-Feb                                       | 0.1                           | 0.1   | 0.0 | Z                               | 0.0 | 0.0 | 0.0 | 1.2 | 0.1  | 0.1  | 0.1  | 0.1 | 0.3 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.0 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.1             | 1.2             | 0.1 |  |
| 5-Feb                                       | 0.0                           | 0.0   | 0.0 | 0.0                             | Z   | 0.0 | 0.1 | 0.1 | 0.4  | 1.3  | 1.4  | 1.0 | 1.4 | 1.8 | 2.5 | 1.6 | 0.9 | 0.9 | 0.6 | 0.7  | 0.1  | 0.0  | 0.1  | 0.0  | 0.7             | 2.5             | 0.0 |  |
| 6-Feb                                       | 0.0                           | 0.2   | 0.2 | 0.2                             | 0.2 | Z   | 0.2 | 0.2 | 0.1  | 0.1  | 0.1  | 0.1 | 0.1 | 0.1 | 0.5 | 0.5 | 0.1 | 0.1 | 0.1 | 0.0  | 0.1  | 0.2  | 0.1  | 0.1  | 0.2             | 0.5             | 0.0 |  |
| 7-Feb                                       | Z                             | 0.1   | 0.1 | 0.1                             | 0.1 | 0.1 | 0.0 | 0.1 | 0.1  | 0.2  | 0.2  | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.0 | 0.0 | 0.2  | 0.1  | 0.1  | 0.1  | 0.2  | 0.1             | 0.2             | 0.2 |  |
| 8-Feb                                       | 0.1                           | Z   | 0.1 | 0.2                             | 0.4 | 0.1 | 0.5 | 0.1 | 3.6  | 3.4  | 3.2  | 3.9 | 3.5 | 1.9 | 2.6 | 1.2 | 0.6 | 0.3 | 0.3 | 1.2  | 0.1  | 0.1  | 0.0  | 0.8  | 1.2             | 3.9             | 0.0 |  |
| 9-Feb                                       | 1.4                           | 0.3   | Z   | 0.0                             | 0.0 | 0.1 | 0.1 | 2.7 | 1.2  | 0.4  | 0.3  | 0.3 | 0.3 | 0.2 | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 | 0.1  | 0.2  | 0.1  | 0.0  | 0.1  | 0.4             | 2.7             | 0.0 |  |
| 10-Feb                                      | 0.0                           | 0.0   | 1.4 | Z                               | 0.2 | 0.2 | 0.0 | 0.0 | 0.0  | 0.1  | 0.3  | 0.3 | 0.4 | 0.3 | 0.7 | 0.2 | 0.1 | 0.5 | 0.3 | 0.2  | 0.3  | 0.8  | 0.3  | 0.2  | 0.3             | 1.4             | 0.3 |  |
| 11-Feb                                      | 0.2                           | 0.2   | 0.4 | 0.8                             | Z   | 0.1 | 0.1 | 0.1 | 0.9  | 4.3  | 5.0  | 1.3 | 0.3 | 0.4 | 0.2 | 0.2 | 0.1 | 0.2 | 0.0 | 0.6  | 0.1  | 0.1  | 0.1  | 0.2  | 0.7             | 5.0             | 0.0 |  |
| 12-Feb                                      | 0.2                           | 0.1   | 0.1 | 0.1                             | 0.1 | Z   | 0.1 | 0.1 | 0.2  | 1.3  | 1.5  | 0.2 | 0.8 | 0.5 | 0.2 | 0.2 | 0.1 | 0.2 | 0.0 | 0.0  | 0.0  | 0.1  | 0.0  | 0.1  | 0.3             | 1.5             | 0.0 |  |
| 13-Feb                                      | Z                             | 0.2   | 0.0 | 0.0                             | 0.1 | 0.1 | 0.1 | 0.7 | 0.3  | 0.1  | 0.2  | 0.2 | 0.5 | 0.4 | 0.5 | 0.3 | 0.3 | 0.1 | 0.0 | 0.0  | 0.0  | 0.0  | 0.0  | 1.6  | 0.3             | 1.6             | 0.0 |  |
| 14-Feb                                      | 0.1                           | Z   | 0.3 | 0.5                             | 0.6 | 0.5 | 0.8 | 0.8 | 0.8  | 1.4  | 2.5  | 3.4 | 2.9 | 2.2 | 2.3 | 2.6 | 1.4 | 0.2 | 0.1 | 0.1  | 0.2  | 0.1  | 0.0  | 0.0  | 1.0             | 3.4             | 0.0 |  |
| 15-Feb                                      | 0.2                           | 0.2   | Z   | 0.5                             | 0.2 | 0.3 | 0.9 | 0.9 | 1.1  | 1.0  | 3.3  | 2.0 | 1.8 | 1.7 | 1.9 | 1.4 | 0.6 | 0.1 | 0.1 | 0.1  | 0.1  | 0.1  | 0.1  | 2.0  | 0.9             | 3.3             | 0.0 |  |
| 16-Feb                                      | 0.0                           | 0.0   | 0.0 | Z                               | 0.0 | 0.0 | 0.1 | 0.1 | 0.3  | 0.6  | 1.1  | 1.0 | 0.6 | 0.6 | 0.6 | 0.6 | 0.2 | 0.1 | 0.1 | 0.0  | 0.1  | 0.1  | 0.1  | 0.2  | 0.3             | 1.1             | 0.0 |  |
| 17-Feb                                      | 0.2                           | 0.2   | 0.3 | 0.2                             | Z   | 0.1 | 0.1 | 0.2 | 0.8  | 2.4  | 2.9  | 2.4 | 3.8 | 3.2 | 3.1 | 2.5 | 4.5 | 0.7 | 0.2 | 0.2  | 0.1  | 0.8  | 0.3  | 0.0  | 1.3             | 4.5             | 0.0 |  |
| 18-Feb                                      | 0.0                           | 0.0   | 0.0 | 0.0                             | 0.2 | Z   | 0.1 | 0.2 | 0.9  | 0.9  | 2.8  | 8.8 | 9.6 | 5.7 | 2.8 | 2.5 | 2.0 | 0.6 | 1.9 | 0.2  | 2.6  | 1.3  | 4.1  | 14.9 | 2.7             | 14.9            | 0.0 |  |
| 19-Feb                                      | Z                             | 3.1   | 1.0 | 0.1                             | 0.0 | 0.0 | 0.0 | 0.1 | 0.7  | 1.1  | 2.5  | 2.8 | 3.1 | 2.0 | 1.2 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0  | 1.6  | 11.5 | 25.9 | 2.5             | 25.9            | 0.0 |  |
| 20-Feb                                      | 13.7                          | Z   | 0.5 | 0.7                             | 0.7 | 0.7 | 0.6 | 1.7 | 2.8  | 3.9  | 4.2  | 4.0 | 2.5 | 2.4 | 3.1 | 1.5 | 0.6 | 0.3 | 0.4 | 3.3  | 0.0  | 9.2  | 4.3  | 3.9  | 2.8             | 13.7            | 0.0 |  |
| 21-Feb                                      | 2.1                           | 0.6   | Z   | 1.8                             | 2.5 | 0.6 | 0.7 | 0.5 | 1.3  | 1.3  | 1.4  | 1.9 | 2.9 | 3.7 | 4.5 | 3.3 | 1.9 | 0.4 | 0.0 | 0.0  | 0.0  | 0.8  | 2.5  | 1.4  | 1.6             | 4.5             | 0.0 |  |
| 22-Feb                                      | 0.7                           | 1.6   | 0.9 | Z                               | 1.3 | 1.0 | 1.0 | 3.3 | 1.2  | 1.6  | 2.6  | 1.9 | 0.7 | 0.4 | 0.4 | 0.4 | 0.4 | 0.6 | 0.9 | 0.2  | 16.9 | 14.8 | 16.2 | 10.5 | 3.5             | 16.9            | 0.0 |  |
| 23-Feb                                      | 6.8                           | 1.5   | 2.6 | 3.6                             | Z   | 1.0 | 2.1 | 4.2 | 14.4 | 16.3 | 8.0  | 5.3 | 3.4 | 4.0 | 3.7 | 2.0 | 1.4 | 0.5 | 0.4 | 14.5 | 3.3  | 5.9  | 13.1 | 4.8  | 5.3             | 16.3            | 0.0 |  |
| 24-Feb                                      | 1.5                           | 0.4   | 0.5 | 0.4                             | 0.2 | Z   | 0.1 | 0.4 | 1.8  | 0.8  | 0.6  | 0.4 | 0.2 | 0.2 | 0.2 | 0.1 | 0.2 | 0.2 | 0.1 | 0.4  | 0.7  | 0.9  | 0.6  | 0.6  | 0.5             | 1.8             | 0.0 |  |
| 25-Feb                                      | Z                             | 1.0   | 0.6 | 0.8                             | 0.7 | 0.4 | 0.4 | 0.8 | 0.7  | 0.5  | 0.6  | 0.5 | 0.3 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 | 0.5 | 0.0  | 0.0  | 0.5  | 0.0  | 0.0  | 0.4             | 1.0             | 0.0 |  |
| 26-Feb                                      | 0.0                           | Z   | 0.9 | 0.0                             | 0.0 | 0.0 | 0.0 | 0.1 | 0.8  | 2.2  | 1.1  | 1.2 | 0.5 | 0.2 | 0.8 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.3             | 2.2             | 0.0 |  |
| 27-Feb                                      | 0.0                           | 0.0   | Z   | 0.0                             | 0.0 | 0.0 | 0.1 | 1.2 | 2.1  | 2.9  | 3.1  | 2.8 | 1.5 | 3.1 | 2.5 | 1.5 | 1.1 | 0.4 | 0.1 | 0.0  | 0.0  | 0.1  | 0.1  | 0.3  | 1.0             | 3.1             | 0.0 |  |
| 28-Feb                                      | 0.4                           | 0.1   | 0.1 | Z                               | 1.0 | 1.8 | 0.4 | 0.9 | 4.1  | 4.9  | 5.1  | 4.1 | 3.6 | 2.8 | 2.7 | 3.1 | 1.8 | 1.2 | 0.6 | 0.0  | 0.1  | 1.4  | 1.7  | 6.1  | 2.1             | 6.1             | 0.0 |  |
|   |                               | 1.3   | 0.5 | 0.7                             | 0.5 | 0.5 | 0.3 | 0.8 | 1.5  | 2.0  | 2.1  | 2.0 | 1.9 | 1.5 | 1.4 | 1.0 | 0.7 | 0.3 | 0.3 | 1.0  | 1.0  | 1.4  | 2.3  | 2.8  | Diurnal Average |                 |     |  |
|   |                               | 13.7  | 3.1 | 3.9                             | 3.6 | 2.5 | 3.3 | 2.1 | 4.2  | 14.4 | 16.3 | 8.0 | 8.8 | 9.6 | 5.7 | 4.5 | 3.3 | 4.5 | 1.2 | 1.9  | 14.5 | 16.9 | 14.8 | 16.2 | 25.9            | Diurnal Maximum |     |  |
| Z - zerspan                                 |                               | C - Calibration   |     |                                 |     |     |     |     |      |      |      |     |     |     |     |     |     |     |     |      |      |      |      |      |                 |                 |     |  |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Nitric Oxide (NO) - ppb**  
**Anzac - February 2023**





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Nitric Oxide (NO) - ppb  
Anzac - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 20                            | 637                    | 99.84    | 99.84               |
| 21 - 40                           | 1                      | 0.16     | 100.00              |
| 41 - 80                           | 0                      | 0.00     | 100.00              |
| 81 - 159                          | 0                      | 0.00     | 100.00              |
| > 159                             | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 638

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Nitric Oxide (NO) - ppb  
Anzac - February 2023**

| <b>Concentration<br/>Ranges (ppb)</b> | <b>Wind Direction</b> |            |           |            |          |            |           |            |          |            |           |            |          |            |           |            | <b>Totals</b> |
|---------------------------------------|-----------------------|------------|-----------|------------|----------|------------|-----------|------------|----------|------------|-----------|------------|----------|------------|-----------|------------|---------------|
|                                       | <b>N</b>              | <b>NNE</b> | <b>NE</b> | <b>ENE</b> | <b>E</b> | <b>ESE</b> | <b>SE</b> | <b>SSE</b> | <b>S</b> | <b>SSW</b> | <b>SW</b> | <b>WSW</b> | <b>W</b> | <b>WNW</b> | <b>NW</b> | <b>NNW</b> |               |
| 0 - 20                                | 9                     | 10         | 16        | 17         | 31       | 44         | 69        | 23         | 28       | 24         | 11        | 48         | 100      | 75         | 82        | 42         | 629           |
| 21 - 40                               | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 1        | 0          | 0         | 0          | 1             |
| 11 - 80                               | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0             |
| 81 - 159                              | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0             |
| > 159                                 | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0             |
| <b>Totals</b>                         | 9                     | 10         | 16        | 17         | 31       | 44         | 69        | 23         | 28       | 24         | 11        | 48         | 101      | 75         | 82        | 42         | 630           |

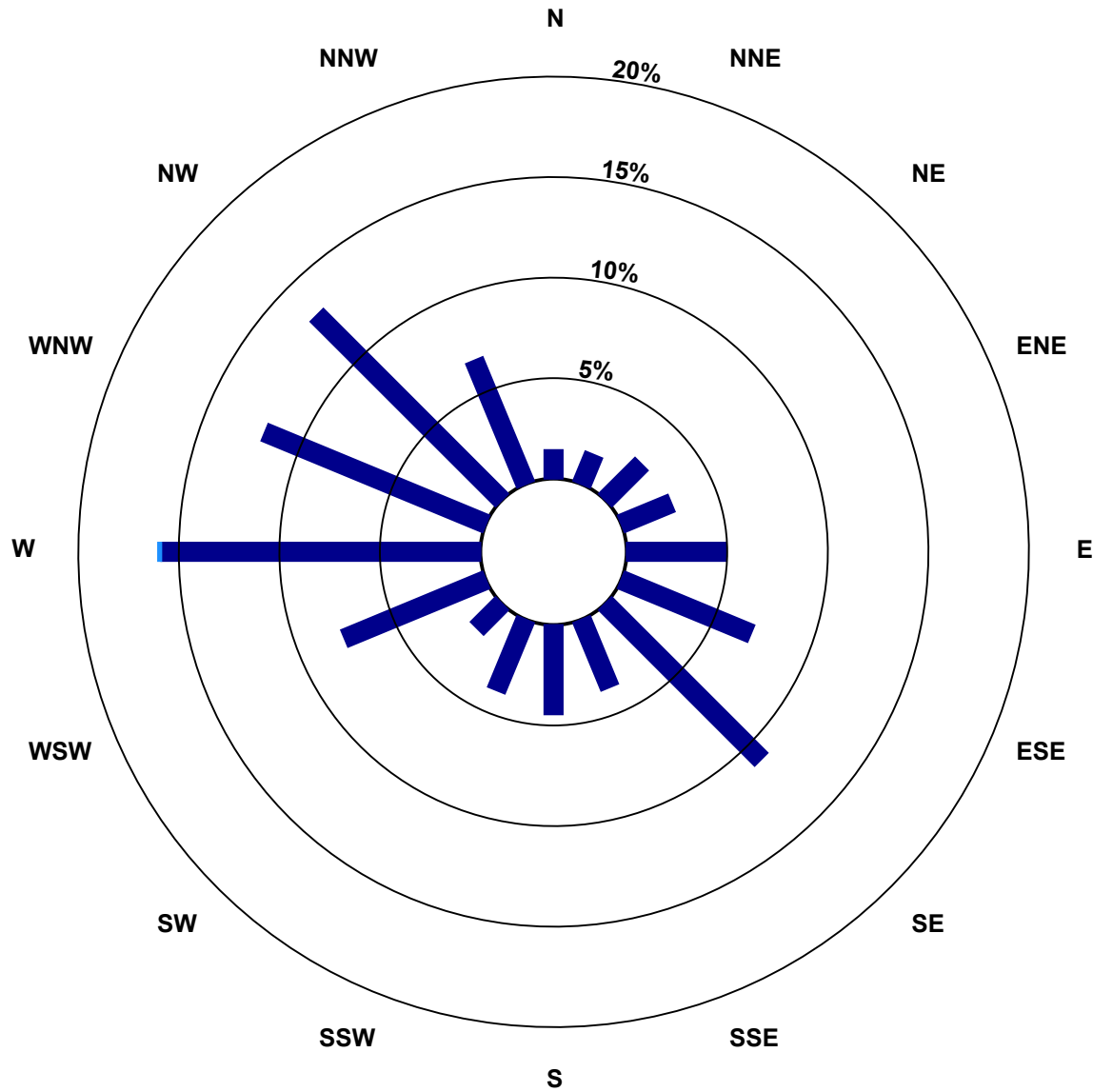
Total Number of Valid Hours: 630

Total Number of Hours: 672

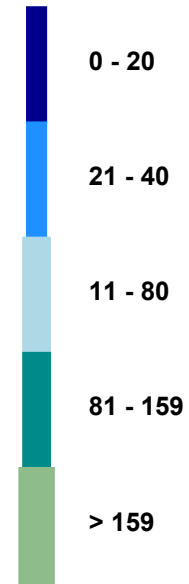


Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Nitric Oxide (NO) - ppb  
Anzac



Classes (ppb)



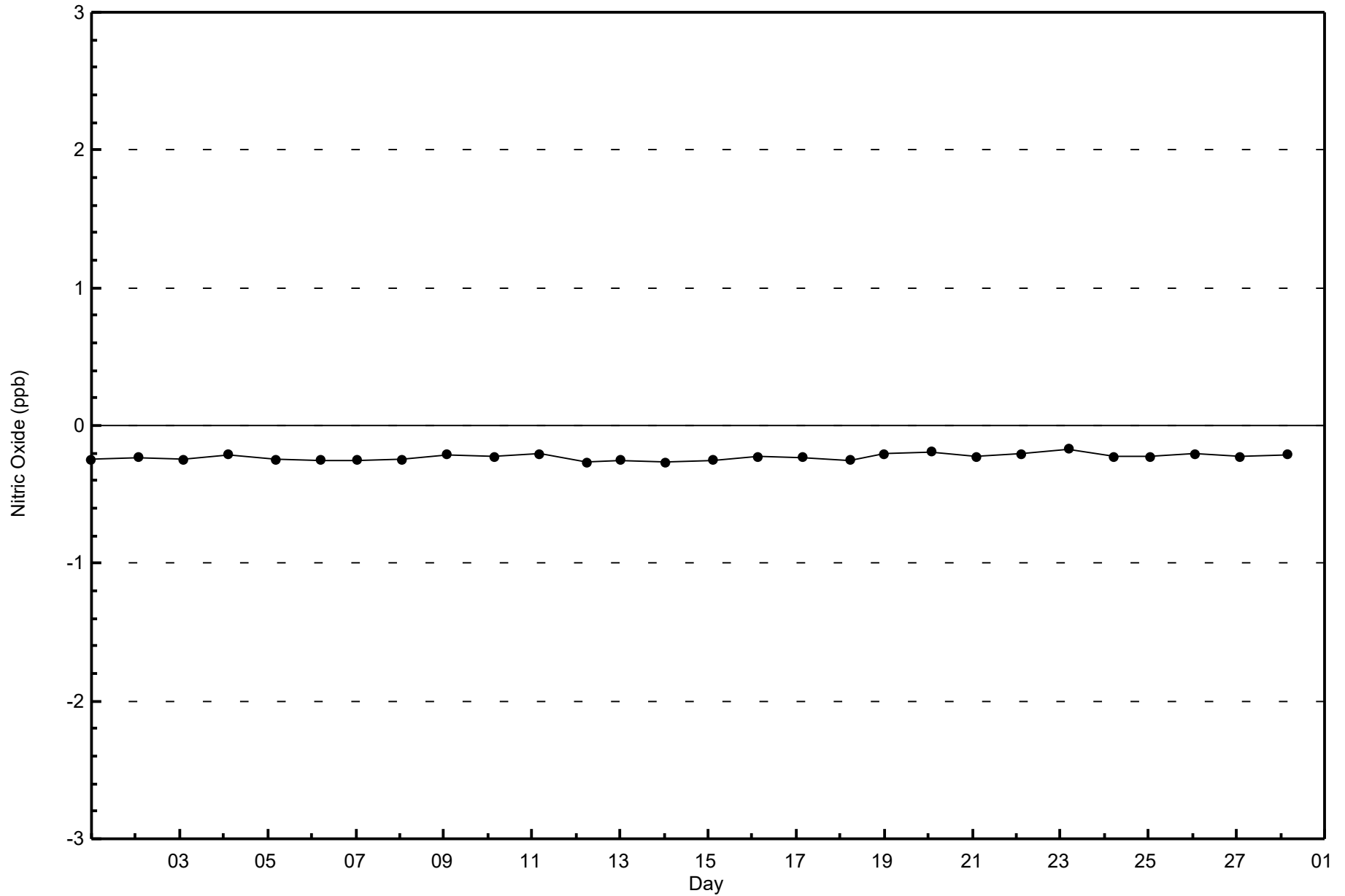
Total Number of Valid Hours: 630

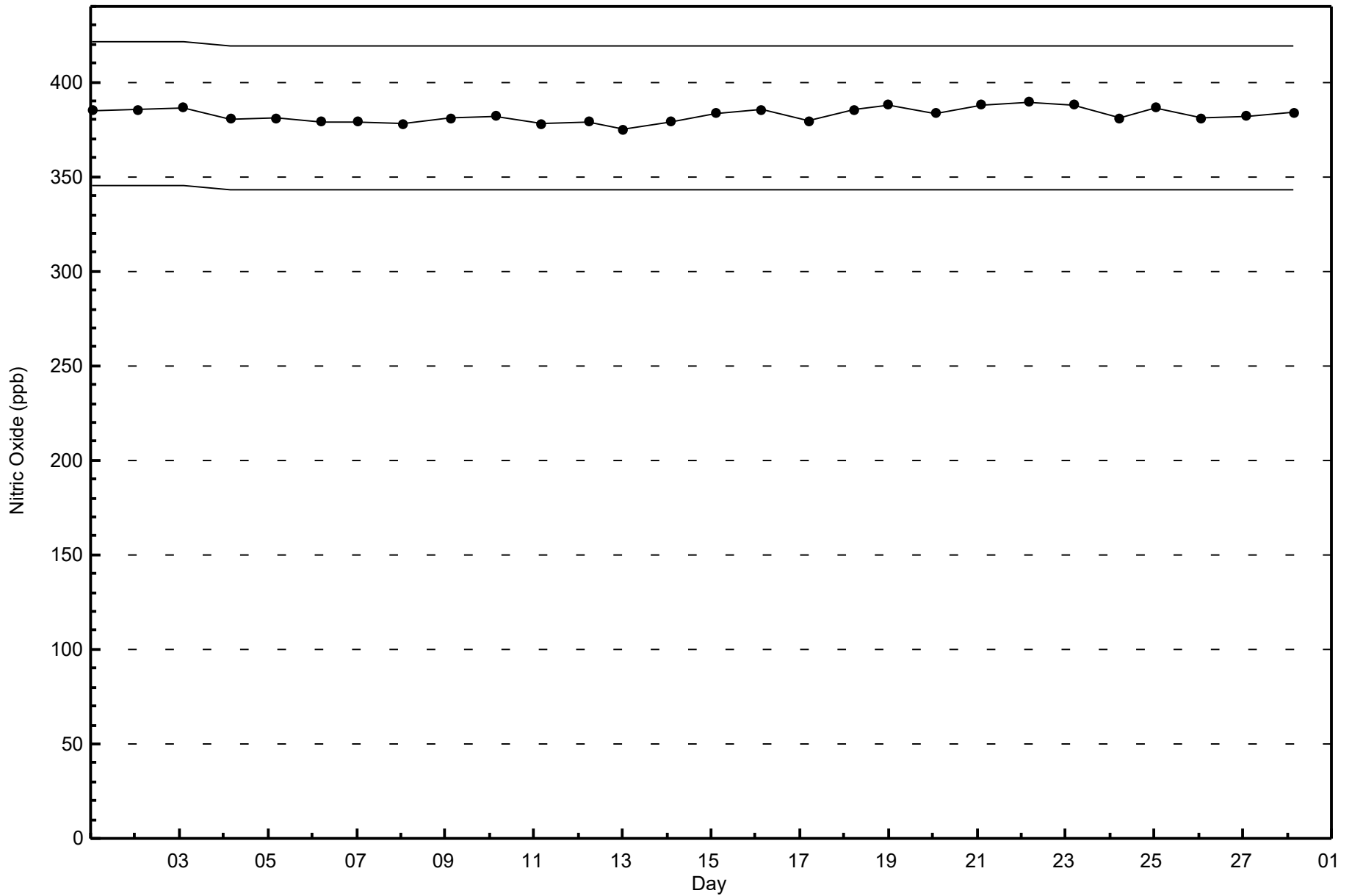




**Wood Buffalo Environmental Association**  
**Zero Responses**

**Nitric Oxide (NO) - ppb**  
**Anzac - February 2023**







# Wood Buffalo Environmental Association

## Summary of Hour Averages

# Nitrogen Dioxide (NO<sub>2</sub>) - ppb

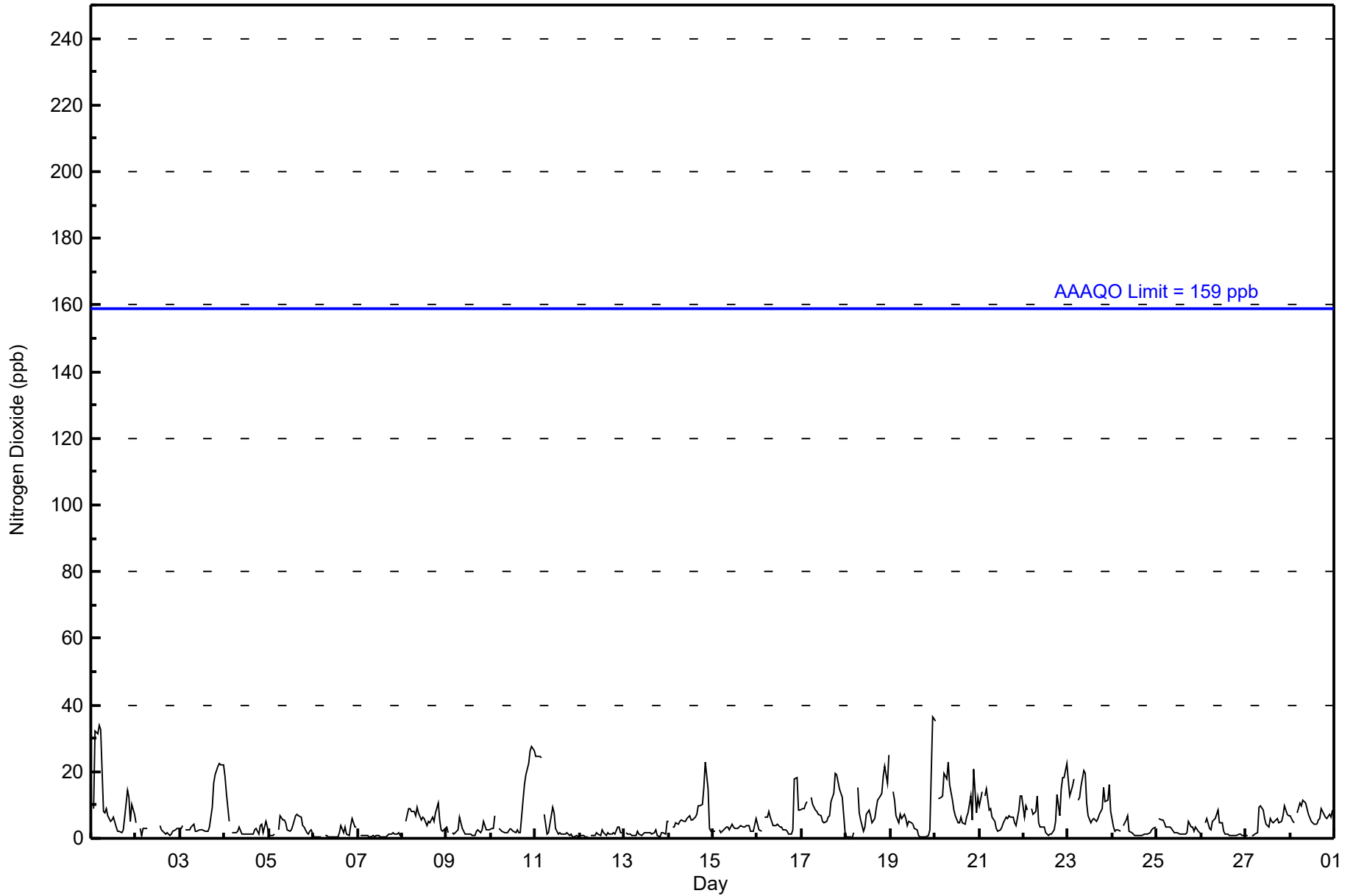
## Anzac - February 2023

| Number of Exceedences (AAAQO):                  |                               | 1-hr: 0  | 24-hr: 0 | Hours in Service: 672 |      |      |      |      |      |      |      |      |     |     |     |     |      |      |                                 |      | 638  |      |      |      |               |                 |  |
|---|-------------------------------|--|----------|-----------------------|------|------|------|------|------|------|------|------|-----|-----|-----|-----|------|------|---------------------------------|------|------|------|------|------|---------------|-----------------|--|
| Maximum Value: 36.5 ppb on Feb 20 00:00         |                               | Maximum Daily Average: 11.8 ppb on Feb 20  |          |                       |      |      |      |      |      |      |      |      |     |     |     |     |      |      | Hours of Data: 638              |      |      |      |      |      |               |                 |  |
| Minimum Value: 0.2 ppb on Feb 18 04:00          |                               | Minimum Daily Average: 0.9 ppb on Feb 7  |          |                       |      |      |      |      |      |      |      |      |     |     |     |     |      |      | Hours of Missing Data: 34       |      |      |      |      |      |               |                 |  |
| Maximum Diurnal Average: 8.5 ppb at hour 24     |                               | Minimum Diurnal Average: 3.0 ppb at hour 14  |          |                       |      |      |      |      |      |      |      |      |     |     |     |     |      |      | Hours of Calibration: 34        |      |      |      |      |      |               |                 |  |
| Monthly Average: 5.60 ppb                       |                               | Percentiles: P <sub>1</sub> = 0.4 P <sub>10</sub> = 0.8 Q <sub>1</sub> = 1.5 Median = 3.5 Q <sub>3</sub> = 7.0 P <sub>90</sub> = 12.9 P <sub>99</sub> = 27.0 |          |                       |      |      |      |      |      |      |      |      |     |     |     |     |      |      | Percent Operational Time: 100.0 |      |      |      |      |      |               |                 |  |
| Day   | Hourly Period Ending At (MST) |  |          |                       |      |      |      |      |      |      |      |      |     |     |     |     |      |      |                                 |      |      |      |      |      | Daily Average | Daily Maximum   |  |
|   | 1                             | 2  | 3        | 4                     | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13  | 14  | 15  | 16  | 17   | 18   | 19                              | 20   | 21   | 22   | 23   | 24   |               |                 |  |
| 1-Feb   | Z                             | 9.1  | 32.0     | 31.4                  | 33.7 | 32.5 | 8.1  | 7.7  | 9.1  | 6.7  | 5.0  | 5.3  | 6.2 | 3.2 | 2.1 | 2.1 | 1.5  | 2.6  | 6.3                             | 14.2 | 12.1 | 4.9  | 10.3 | 7.2  | 11.0          | 33.7            |  |
| 2-Feb   | 4.7                           | Z  | 3.1      | 0.9                   | 3.0  | 3.0  | 2.8  | C    | C    | C    | C    | C    | C   | 3.7 | 2.7 | 1.5 | 1.2  | 1.6  | 1.0                             | 1.3  | 2.2  | 2.7  | 2.9  | 3.0  | --            | 4.7             |  |
| 3-Feb   | 2.9                           | 3.9  | Z        | 2.4                   | 2.5  | 2.6  | 3.4  | 4.1  | 2.3  | 2.3  | 2.4  | 2.6  | 2.6 | 2.2 | 2.0 | 2.2 | 3.2  | 9.5  | 16.5                            | 19.2 | 21.7 | 22.5 | 22.0 | 22.1 | 7.7           | 22.5            |  |
| 4-Feb   | 18.7                          | 13.7   | 4.9      | Z                     | 1.8  | 1.6  | 1.5  | 2.3  | 3.4  | 1.3  | 1.2  | 1.2  | 1.4 | 1.4 | 1.3 | 1.2 | 2.5  | 2.9  | 1.3                             | 3.9  | 4.1  | 1.7  | 4.9  | 3.4  | 3.5           | 18.7            |  |
| 5-Feb   | 1.0                           | 1.0  | 0.9      | 1.2                   | Z    | 2.5  | 6.6  | 5.7  | 5.4  | 4.5  | 2.5  | 2.3  | 2.7 | 3.8 | 6.8 | 7.0 | 6.6  | 6.2  | 4.0                             | 3.4  | 1.5  | 1.3  | 2.0  | 2.6  | 3.5           | 7.0             |  |
| 6-Feb   | 0.6                           | 0.6  | 0.6      | 0.5                   | 0.6  | Z    | 0.8  | 0.8  | 0.5  | 0.4  | 0.4  | 0.4  | 0.5 | 0.5 | 1.8 | 3.8 | 1.5  | 3.6  | 1.4                             | 1.0  | 3.8  | 5.8  | 3.2  | 3.3  | 1.6           | 5.8             |  |
| 7-Feb   | Z                             | 0.8  | 0.8      | 0.8                   | 0.8  | 0.8  | 0.6  | 0.5  | 0.7  | 0.6  | 0.7  | 0.7  | 0.5 | 0.4 | 0.5 | 0.5 | 0.9  | 1.2  | 1.4                             | 1.7  | 1.4  | 1.3  | 1.9  | 1.0  | 0.9           | 1.9             |  |
| 8-Feb   | 0.8                           | Z  | 5.2      | 9.0                   | 8.8  | 8.1  | 8.2  | 6.8  | 9.3  | 7.8  | 5.5  | 6.3  | 6.0 | 3.7 | 5.0 | 4.8 | 6.4  | 5.0  | 7.6                             | 10.4 | 5.3  | 2.6  | 2.1  | 3.1  | 6.0           | 10.4            |  |
| 9-Feb   | 3.4                           | 1.8  | Z        | 1.5                   | 1.2  | 2.0  | 2.6  | 6.3  | 3.1  | 2.3  | 1.2  | 1.3  | 1.1 | 1.2 | 0.9 | 0.8 | 2.3  | 2.4  | 1.7                             | 2.7  | 5.1  | 2.7  | 2.5  | 2.5  | 2.3           | 6.3             |  |
| 10-Feb  | 2.8                           | 3.1  | 6.9      | Z                     | 3.1  | 2.7  | 2.0  | 1.6  | 1.5  | 1.8  | 2.8  | 2.6  | 2.2 | 1.9 | 2.4 | 1.8 | 1.9  | 11.4 | 16.3                            | 18.9 | 22.6 | 26.3 | 27.4 | 26.1 | 8.3           | 27.4            |  |
| 11-Feb  | 24.7                          | 24.7   | 24.4     | 24.2                  | Z    | 7.0  | 1.4  | 1.5  | 4.1  | 9.5  | 7.7  | 3.1  | 1.2 | 1.5 | 1.3 | 1.3 | 1.6  | 0.8  | 1.2                             | 0.5  | 0.6  | 0.7  | 0.6  | 6.3  | 24.7          |                 |  |
| 12-Feb  | 0.7                           | 0.7  | 0.7      | 0.6                   | 0.6  | Z    | 0.8  | 0.7  | 0.9  | 1.8  | 1.1  | 0.7  | 2.6 | 1.5 | 0.8 | 1.6 | 1.1  | 1.4  | 1.8                             | 1.3  | 3.2  | 3.6  | 1.5  | 1.5  | 1.4           | 3.6             |  |
| 13-Feb  | Z                             | 1.8  | 1.3      | 1.1                   | 0.8  | 0.8  | 0.7  | 2.2  | 1.2  | 0.8  | 1.4  | 1.6  | 1.8 | 1.5 | 1.8 | 1.3 | 1.7  | 2.6  | 0.8                             | 0.4  | 1.7  | 1.5  | 1.2  | 5.0  | 1.5           | 5.0             |  |
| 14-Feb  | 5.0                           | Z  | 3.6      | 3.3                   | 4.5  | 4.1  | 5.1  | 5.5  | 5.0  | 5.1  | 5.9  | 6.8  | 5.5 | 5.5 | 6.2 | 7.0 | 9.7  | 9.9  | 10.1                            | 15.1 | 22.9 | 14.9 | 3.0  | 2.3  | 7.2           | 22.9            |  |
| 15-Feb  | 2.3                           | 2.3  | Z        | 2.6                   | 1.7  | 2.2  | 2.9  | 3.2  | 3.5  | 2.7  | 4.3  | 3.2  | 3.0 | 3.0 | 3.5 | 3.7 | 3.5  | 3.6  | 4.0                             | 3.8  | 2.3  | 2.1  | 2.0  | 6.0  | 3.1           | 6.0             |  |
| 16-Feb  | 4.2                           | 2.4  | 2.1      | Z                     | 6.4  | 6.5  | 8.0  | 6.4  | 4.0  | 4.0  | 4.0  | 4.4  | 3.4 | 3.3 | 2.5 | 2.7 | 2.0  | 1.4  | 1.2                             | 2.7  | 17.7 | 18.1 | 8.5  | 8.5  | 5.4           | 18.1            |  |
| 17-Feb  | 8.7                           | 9.1  | 10.3     | 11.1                  | Z    | 12.2 | 10.0 | 8.6  | 7.9  | 7.4  | 6.6  | 4.9  | 4.7 | 5.2 | 6.2 | 6.8 | 10.9 | 13.6 | 19.6                            | 19.1 | 14.7 | 13.5 | 12.2 | 1.9  | 9.8           | 19.6            |  |
| 18-Feb  | 0.4                           | 0.4  | 0.6      | 0.2                   | 1.9  | Z    | 15.4 | 7.7  | 5.5  | 2.3  | 3.5  | 7.1  | 8.6 | 6.9 | 4.7 | 5.8 | 9.1  | 11.5 | 12.9                            | 13.6 | 18.7 | 21.6 | 16.6 | 24.9 | 8.7           | 24.9            |  |
| 19-Feb  | Z                             | 14.0   | 11.3     | 6.7                   | 4.7  | 7.2  | 5.8  | 7.2  | 5.8  | 3.8  | 5.2  | 4.5  | 4.3 | 3.0 | 2.5 | 0.7 | 0.5  | 0.4  | 0.4                             | 0.4  | 0.7  | 2.6  | 20.1 | 36.5 | 6.4           | 36.5            |  |
| 20-Feb  | 35.3                          | Z  | 11.8     | 12.1                  | 12.9 | 19.6 | 17.9 | 22.8 | 15.9 | 11.3 | 8.6  | 6.7  | 4.8 | 4.6 | 6.5 | 4.6 | 4.1  | 6.2  | 7.6                             | 12.8 | 5.4  | 20.6 | 7.6  | 12.1 | 11.8          | 35.3            |  |
| 21-Feb  | 9.8                           | 13.9   | Z        | 12.9                  | 14.9 | 8.6  | 8.7  | 6.2  | 5.1  | 2.9  | 2.3  | 2.6  | 3.6 | 4.5 | 6.3 | 6.1 | 6.8  | 6.5  | 6.3                             | 4.5  | 3.8  | 8.6  | 12.5 | 12.6 | 7.4           | 14.9            |  |
| 22-Feb  | 6.5                           | 9.9  | 8.5      | Z                     | 9.1  | 7.1  | 7.9  | 12.6 | 4.6  | 3.2  | 3.4  | 3.2  | 1.5 | 1.0 | 1.1 | 1.4 | 2.7  | 5.1  | 13.1                            | 6.7  | 14.7 | 18.3 | 18.3 | 22.3 | 7.9           | 22.3            |  |
| 23-Feb  | 17.5                          | 12.6   | 15.7     | 17.8                  | Z    | 11.3 | 12.3 | 15.5 | 20.4 | 19.3 | 10.4 | 6.8  | 4.7 | 5.6 | 6.1 | 4.9 | 6.1  | 7.4  | 8.7                             | 15.3 | 11.1 | 11.5 | 15.9 | 7.9  | 11.5          | 20.4            |  |
| 24-Feb  | 3.6                           | 2.3  | 2.6      | 2.4                   | 2.1  | Z    | 3.9  | 5.4  | 6.6  | 2.3  | 1.7  | 1.1  | 0.8 | 0.7 | 0.8 | 0.8 | 0.9  | 1.2  | 1.4                             | 1.3  | 1.7  | 2.4  | 3.1  | 3.3  | 2.3           | 6.6             |  |
| 25-Feb  | Z                             | 5.9  | 5.7      | 5.5                   | 4.6  | 3.5  | 3.4  | 3.6  | 3.1  | 1.9  | 1.7  | 1.5  | 1.3 | 1.2 | 1.2 | 1.2 | 1.8  | 5.1  | 3.6                             | 3.3  | 2.0  | 3.3  | 2.3  | 1.9  | 3.0           | 5.9             |  |
| 26-Feb  | 1.3                           | Z  | 4.6      | 5.9                   | 3.1  | 2.4  | 5.0  | 6.0  | 7.1  | 8.5  | 4.8  | 4.6  | 2.1 | 1.4 | 1.3 | 1.0 | 0.9  | 0.9  | 0.8                             | 0.9  | 1.1  | 1.1  | 1.0  | 0.9  | 2.9           | 8.5             |  |
| 27-Feb  | 0.9                           | 0.8  | Z        | 0.9                   | 0.8  | 1.2  | 1.5  | 9.5  | 9.7  | 8.6  | 6.1  | 4.1  | 3.4 | 6.1 | 5.2 | 4.6 | 5.7  | 5.8  | 4.6                             | 5.1  | 6.9  | 9.7  | 7.2  | 6.7  | 5.0           | 9.7             |  |
| 28-Feb  | 6.7                           | 5.0  | 4.5      | Z                     | 7.7  | 10.6 | 9.9  | 11.5 | 10.6 | 8.7  | 7.4  | 5.2  | 4.6 | 4.1 | 4.4 | 5.5 | 6.1  | 8.8  | 7.3                             | 6.3  | 6.0  | 7.1  | 6.4  | 8.6  | 7.1           | 11.5            |  |
|   |                               | 7.1  | 6.1      | 7.0                   | 6.7  | 5.5  | 6.7  | 5.6  | 6.4  | 5.8  | 4.9  | 4.0  | 3.5 | 3.2 | 3.0 | 3.1 | 3.1  | 3.7  | 5.0                             | 5.8  | 6.8  | 7.7  | 8.3  | 7.8  | 8.5           | Diurnal Average |  |
|   |                               | 35.3   | 24.7     | 32.0                  | 31.4 | 33.7 | 32.5 | 17.9 | 22.8 | 20.4 | 19.3 | 10.4 | 7.1 | 8.6 | 6.9 | 6.8 | 7.0  | 10.9 | 13.6                            | 19.6 | 19.2 | 22.9 | 26.3 | 27.4 | 36.5          | Diurnal Maximum |  |
| Z - zerospan                                    |                               | C - Calibration  |          |                       |      |      |      |      |      |      |      |      |     |     |     |     |      |      |                                 |      |      |      |      |      |               |                 |  |
| Alberta Ambient Air Quality Objectives (AAAQO): |                               | 1-hr 159 ppb   |          |                       |      |      |      |      |      |      |      |      |     |     |     |     |      |      |                                 |      |      |      |      |      |               |                 |  |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Nitrogen Dioxide (NO<sub>2</sub>) - ppb**  
**Anzac - February 2023**





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Nitrogen Dioxide (NO<sub>2</sub>) - ppb**  
**Anzac - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 20                            | 614                    | 96.24    | 96.24               |
| 21 - 40                           | 24                     | 3.76     | 100.00              |
| 41 - 80                           | 0                      | 0.00     | 100.00              |
| 81 - 159                          | 0                      | 0.00     | 100.00              |
| > 159                             | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 638

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Nitrogen Dioxide (NO<sub>2</sub>) - ppb  
Anzac - February 2023**

| <b>Concentration<br/>Ranges (ppb)</b> | <b>Wind Direction</b> |            |           |            |          |            |           |            |          |            |           |            |          |            |           |            | <b>Totals</b> |
|---------------------------------------|-----------------------|------------|-----------|------------|----------|------------|-----------|------------|----------|------------|-----------|------------|----------|------------|-----------|------------|---------------|
|                                       | <b>N</b>              | <b>NNE</b> | <b>NE</b> | <b>ENE</b> | <b>E</b> | <b>ESE</b> | <b>SE</b> | <b>SSE</b> | <b>S</b> | <b>SSW</b> | <b>SW</b> | <b>WSW</b> | <b>W</b> | <b>WNW</b> | <b>NW</b> | <b>NNW</b> |               |
| 0 - 20                                | 8                     | 9          | 16        | 17         | 31       | 44         | 67        | 23         | 28       | 24         | 11        | 48         | 98       | 71         | 77        | 40         | 612           |
| 21 - 40                               | 1                     | 1          | 0         | 0          | 0        | 0          | 2         | 0          | 0        | 0          | 0         | 0          | 3        | 4          | 5         | 2          | 18            |
| 11 - 80                               | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0             |
| 81 - 159                              | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0             |
| > 159                                 | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0             |
| <b>Totals</b>                         | 9                     | 10         | 16        | 17         | 31       | 44         | 69        | 23         | 28       | 24         | 11        | 48         | 101      | 75         | 82        | 42         | 630           |

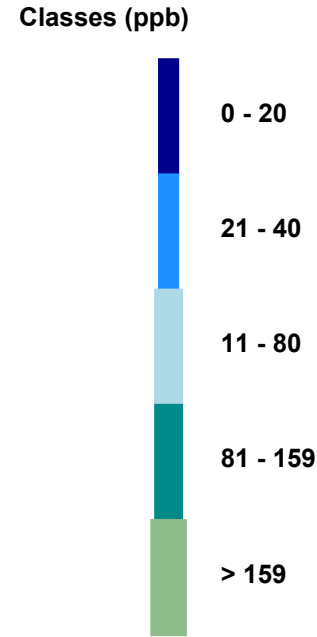
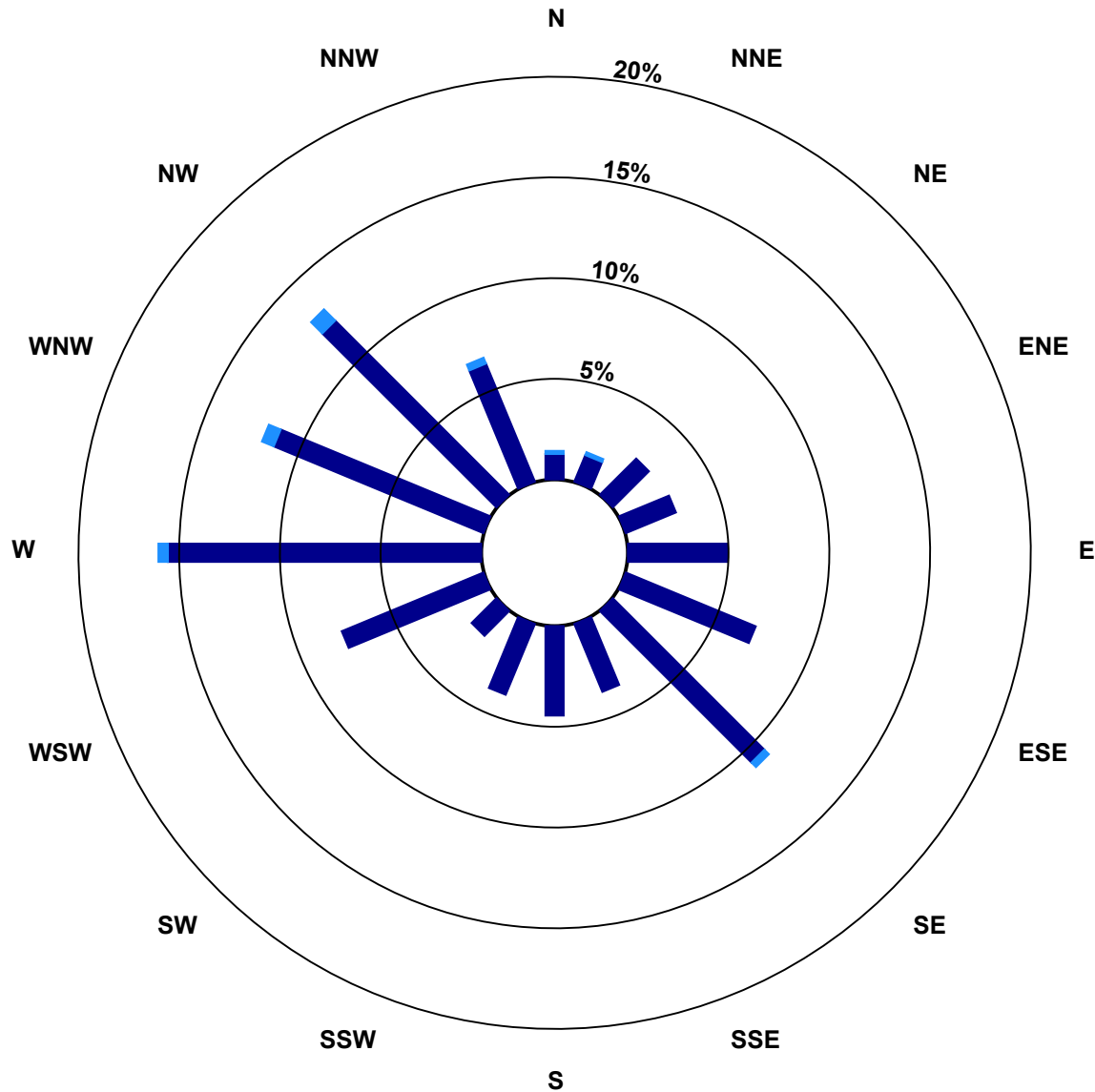
Total Number of Valid Hours: 630

Total Number of Hours: 672



Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Nitrogen Dioxide (NO<sub>2</sub>) - ppb  
Anzac

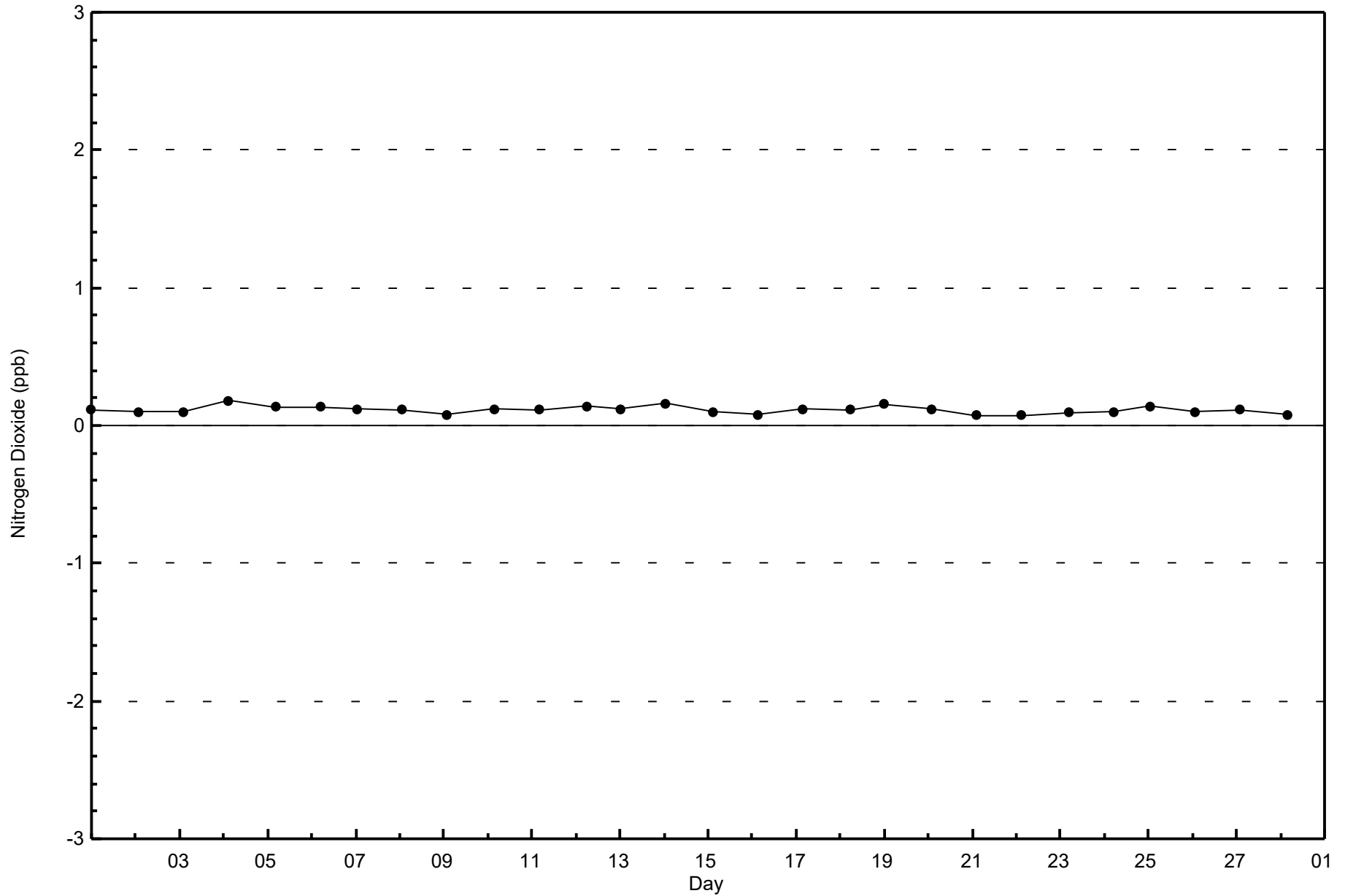


Total Number of Valid Hours: 630



Wood Buffalo Environmental Association  
Zero Responses

Nitrogen Dioxide (NO<sub>2</sub>) - ppb  
Anzac - February 2023

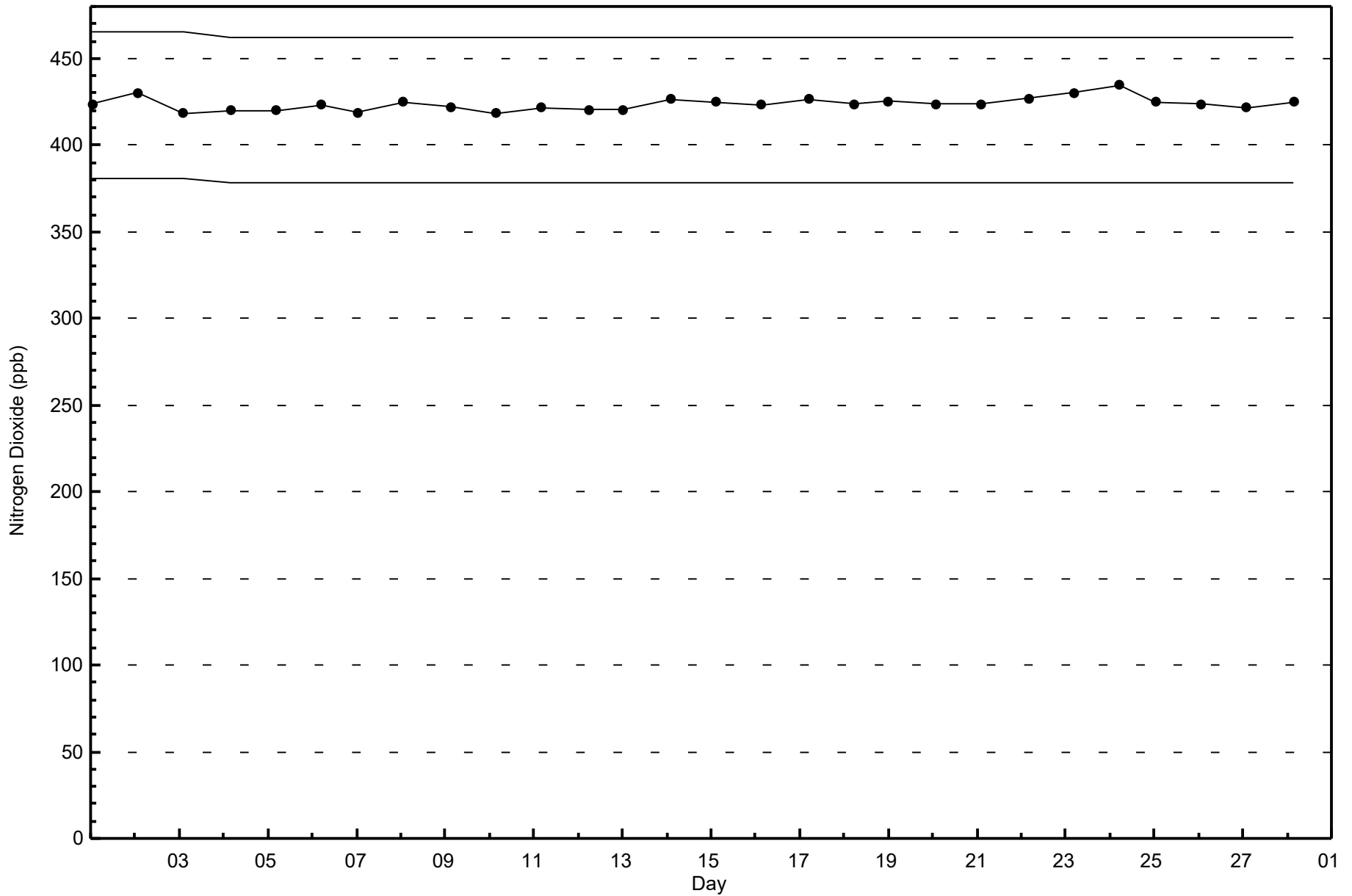






**Wood Buffalo Environmental Association**  
**Span Responses**

**Nitrogen Dioxide (NO<sub>2</sub>) - ppb**  
**Anzac - February 2023**





**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

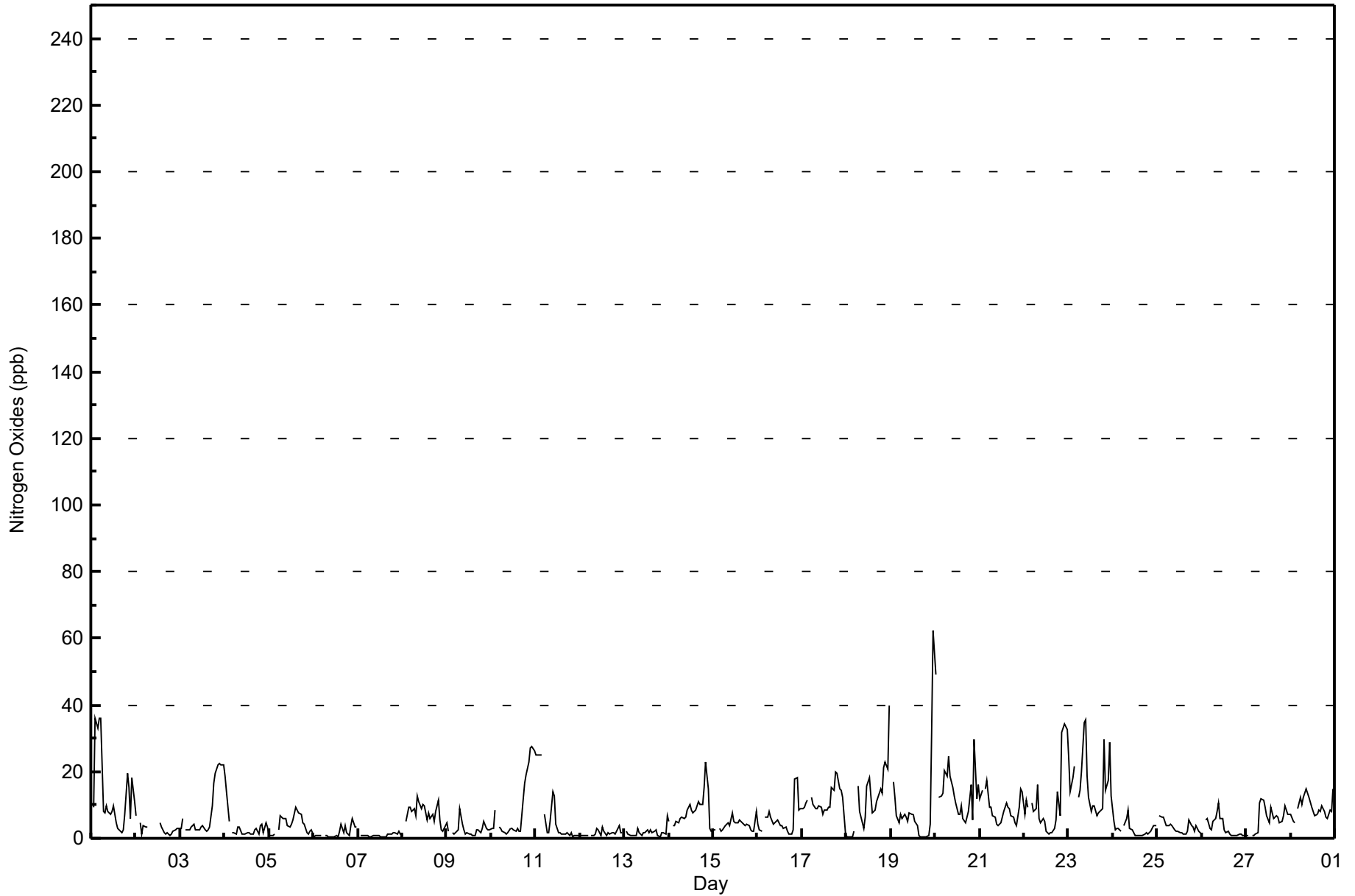
**Nitrogen Oxides (NO<sub>x</sub>) - ppb**  
**Anzac - February 2023**

| Maximum Value: 62.4 ppb on Feb 20 00:00      |                               | Maximum Daily Average: 16.9 ppb on Feb 23  |      | Hours in Service: 672           |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |               |                 |  |
|--|-------------------------------|--|------|---------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|---------------|-----------------|--|
| Minimum Value: 0.2 ppb on Feb 18 04:00       |                               | Minimum Daily Average: 1.0 ppb on Feb 7  |      | Hours of Data: 638              |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |               |                 |  |
| Maximum Diurnal Average: 11.3 ppb at hour 24 |                               | Minimum Diurnal Average: 4.1 ppb at hour 16  |      | Hours of Missing Data: 34       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |               |                 |  |
| Monthly Average: 6.79 ppb                    |                               | Percentiles: P <sub>1</sub> = 0.5 P <sub>10</sub> = 0.9 Q <sub>1</sub> = 1.8 Median = 4.3 Q <sub>3</sub> = 8.7 P <sub>90</sub> = 15.2 P <sub>99</sub> = 35.3 |      | Hours of Calibration: 34        |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |               |                 |  |
|  |                               |  |      | Percent Operational Time: 100.0 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |               |                 |  |
| Day  | Hourly Period Ending At (MST) |  |      |                                 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Daily Average | Daily Maximum   |  |
|  | 1                             | 2  | 3    | 4                               | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20   | 21   | 22   | 23   | 24   |               |                 |  |
| 1-Feb  | Z                             | 9.4  | 35.9 | 33.1                            | 35.9 | 35.8 | 8.2  | 7.8  | 9.6  | 8.1  | 7.0  | 8.1  | 9.9  | 4.8  | 2.9  | 2.6  | 1.7  | 2.7  | 7.2  | 19.3 | 15.1 | 5.9  | 18.1 | 11.1 | 13.1          | 35.9            |  |
| 2-Feb  | 6.6                           | Z  | 4.6  | 1.3                             | 3.6  | 3.5  | 3.4  | C    | C    | C    | C    | C    | C    | 4.7  | 3.3  | 1.6  | 1.2  | 1.6  | 1.0  | 1.3  | 2.2  | 2.7  | 2.9  | 3.0  | --            | 6.6             |  |
| 3-Feb  | 2.9                           | 6.0  | Z    | 2.4                             | 2.5  | 2.6  | 3.4  | 4.1  | 2.4  | 2.5  | 2.7  | 3.3  | 3.9  | 2.5  | 2.3  | 2.4  | 3.3  | 9.6  | 16.6 | 19.3 | 21.8 | 22.6 | 22.1 | 22.2 | 8.0           | 22.6            |  |
| 4-Feb  | 18.8                          | 13.8   | 4.9  | Z                               | 1.8  | 1.6  | 1.5  | 3.5  | 3.5  | 1.4  | 1.3  | 1.3  | 1.7  | 1.5  | 1.4  | 1.3  | 2.6  | 3.1  | 1.3  | 3.9  | 4.1  | 1.7  | 4.9  | 3.4  | 3.7           | 18.8            |  |
| 5-Feb  | 1.0                           | 1.0  | 0.9  | 1.2                             | Z    | 2.5  | 6.7  | 5.8  | 5.8  | 5.8  | 3.9  | 3.3  | 4.1  | 5.6  | 9.3  | 8.6  | 7.5  | 7.1  | 4.6  | 4.1  | 1.6  | 1.3  | 2.1  | 2.6  | 4.2           | 9.3             |  |
| 6-Feb  | 0.6                           | 0.8  | 0.8  | 0.7                             | 0.8  | Z    | 1.0  | 1.0  | 0.6  | 0.5  | 0.5  | 0.5  | 0.6  | 0.6  | 2.3  | 4.3  | 1.6  | 3.7  | 1.5  | 1.0  | 3.9  | 6.0  | 3.3  | 3.4  | 1.8           | 6.0             |  |
| 7-Feb  | Z                             | 0.9  | 0.9  | 0.9                             | 0.9  | 0.9  | 0.6  | 0.6  | 0.8  | 0.8  | 0.9  | 0.9  | 0.6  | 0.5  | 0.6  | 0.6  | 1.1  | 1.2  | 1.4  | 1.9  | 1.5  | 1.4  | 2.0  | 1.2  | 1.0           | 2.0             |  |
| 8-Feb  | 0.9                           | Z  | 5.3  | 9.2                             | 9.2  | 8.2  | 8.7  | 6.9  | 12.9 | 11.2 | 8.7  | 10.2 | 9.5  | 5.6  | 7.6  | 6.0  | 7.0  | 5.3  | 7.9  | 11.6 | 5.4  | 2.7  | 2.1  | 3.9  | 7.2           | 12.9            |  |
| 9-Feb  | 4.8                           | 2.1  | Z    | 1.5                             | 1.2  | 2.1  | 2.7  | 9.0  | 4.3  | 2.7  | 1.5  | 1.6  | 1.4  | 1.4  | 1.0  | 0.9  | 2.4  | 2.4  | 1.7  | 2.8  | 5.3  | 2.8  | 2.5  | 2.6  | 2.6           | 9.0             |  |
| 10-Feb                                       | 2.8                           | 3.1  | 8.3  | Z                               | 3.3  | 2.9  | 2.0  | 1.6  | 1.5  | 1.9  | 3.1  | 2.9  | 2.6  | 2.2  | 3.1  | 2.0  | 2.0  | 11.9 | 16.6 | 19.1 | 22.9 | 27.1 | 27.7 | 26.3 | 8.6           | 27.7            |  |
| 11-Feb                                       | 24.9                          | 24.9   | 24.8 | 25.0                            | Z    | 7.1  | 1.5  | 1.6  | 5.0  | 13.8 | 12.7 | 4.4  | 1.5  | 1.9  | 1.5  | 1.5  | 1.4  | 1.8  | 0.8  | 1.8  | 0.6  | 0.7  | 0.8  | 0.8  | 7.0           | 25.0            |  |
| 12-Feb                                       | 0.9                           | 0.8  | 0.8  | 0.7                             | 0.7  | Z    | 0.9  | 0.8  | 1.1  | 3.1  | 2.6  | 0.9  | 3.4  | 2.0  | 1.0  | 1.8  | 1.2  | 1.6  | 1.8  | 1.3  | 3.2  | 3.7  | 1.5  | 1.6  | 1.6           | 3.7             |  |
| 13-Feb                                       | Z                             | 2.0  | 1.3  | 1.1                             | 0.9  | 0.9  | 0.8  | 2.9  | 1.5  | 0.9  | 1.6  | 1.8  | 2.3  | 1.9  | 2.3  | 1.6  | 2.0  | 2.7  | 0.8  | 0.4  | 1.7  | 1.5  | 1.2  | 6.6  | 1.8           | 6.6             |  |
| 14-Feb                                       | 5.1                           | Z  | 3.9  | 3.8                             | 5.1  | 4.6  | 5.9  | 6.3  | 5.8  | 6.5  | 8.4  | 10.2 | 8.4  | 7.7  | 8.5  | 9.6  | 11.1 | 10.1 | 10.2 | 15.2 | 23.1 | 15.0 | 3.0  | 2.3  | 8.3           | 23.1            |  |
| 15-Feb                                       | 2.5                           | 2.5  | Z    | 3.1                             | 1.9  | 2.5  | 3.8  | 4.1  | 4.6  | 3.7  | 7.6  | 5.2  | 4.8  | 4.7  | 5.4  | 5.1  | 4.1  | 3.7  | 4.1  | 3.9  | 2.4  | 2.2  | 2.1  | 8.0  | 4.0           | 8.0             |  |
| 16-Feb                                       | 4.2                           | 2.4  | 2.1  | Z                               | 6.4  | 6.5  | 8.1  | 6.5  | 4.3  | 4.6  | 5.1  | 5.4  | 4.0  | 3.9  | 3.1  | 3.3  | 2.2  | 1.5  | 1.3  | 2.7  | 17.8 | 18.2 | 8.6  | 8.7  | 5.7           | 18.2            |  |
| 17-Feb                                       | 8.9                           | 9.3  | 10.6 | 11.3                            | Z    | 12.3 | 10.1 | 8.8  | 8.7  | 9.8  | 9.5  | 7.3  | 8.5  | 8.4  | 9.3  | 9.3  | 15.4 | 14.3 | 19.8 | 19.3 | 14.8 | 14.3 | 12.5 | 1.9  | 11.1          | 19.8            |  |
| 18-Feb                                       | 0.4                           | 0.4  | 0.6  | 0.2                             | 2.1  | Z    | 15.5 | 7.9  | 6.4  | 3.2  | 6.3  | 15.9 | 18.2 | 12.6 | 7.5  | 8.3  | 11.1 | 12.1 | 14.8 | 13.8 | 21.3 | 22.9 | 20.7 | 39.8 | 11.4          | 39.8            |  |
| 19-Feb                                       | Z                             | 17.1   | 12.3 | 6.8                             | 4.7  | 7.2  | 5.8  | 7.3  | 6.5  | 4.9  | 7.7  | 7.3  | 7.4  | 5.0  | 3.7  | 0.8  | 0.5  | 0.4  | 0.4  | 0.4  | 0.7  | 4.2  | 31.6 | 62.4 | 8.9           | 62.4            |  |
| 20-Feb                                       | 49.0                          | Z  | 12.3 | 12.8                            | 13.6 | 20.3 | 18.5 | 24.5 | 18.7 | 15.2 | 12.8 | 10.7 | 7.3  | 7.0  | 9.6  | 6.1  | 4.7  | 6.5  | 8.0  | 16.1 | 5.4  | 29.8 | 11.9 | 16.0 | 14.6          | 49.0            |  |
| 21-Feb                                       | 11.9                          | 14.5   | Z    | 14.7                            | 17.4 | 9.2  | 9.4  | 6.7  | 6.4  | 4.2  | 3.7  | 4.5  | 6.5  | 8.2  | 10.8 | 9.4  | 8.7  | 6.9  | 6.3  | 4.5  | 3.8  | 9.4  | 15.0 | 14.0 | 9.0           | 17.4            |  |
| 22-Feb                                       | 7.2                           | 11.5   | 9.4  | Z                               | 10.4 | 8.1  | 8.9  | 15.9 | 5.8  | 4.8  | 6.0  | 5.1  | 2.2  | 1.4  | 1.5  | 1.8  | 3.1  | 5.7  | 14.0 | 6.9  | 31.6 | 33.1 | 34.5 | 32.8 | 11.4          | 34.5            |  |
| 23-Feb                                       | 24.3                          | 14.1   | 18.3 | 21.4                            | Z    | 12.3 | 14.4 | 19.7 | 34.8 | 35.6 | 18.4 | 12.1 | 8.1  | 9.6  | 9.8  | 6.9  | 7.5  | 7.9  | 9.1  | 29.8 | 14.4 | 17.4 | 29.0 | 12.7 | 16.9          | 35.6            |  |
| 24-Feb                                       | 5.1                           | 2.7  | 3.1  | 2.8                             | 2.3  | Z    | 4.0  | 5.8  | 8.4  | 3.1  | 2.3  | 1.5  | 1.0  | 0.9  | 1.0  | 1.0  | 1.0  | 1.4  | 1.6  | 1.4  | 2.1  | 3.1  | 4.0  | 3.9  | 2.8           | 8.4             |  |
| 25-Feb                                       | Z                             | 6.9  | 6.3  | 6.3                             | 5.3  | 3.9  | 3.8  | 4.4  | 3.8  | 2.4  | 2.3  | 2.0  | 1.6  | 1.5  | 1.4  | 1.4  | 2.0  | 5.6  | 3.6  | 3.3  | 2.0  | 3.8  | 2.3  | 1.9  | 3.4           | 6.9             |  |
| 26-Feb                                       | 1.3                           | Z  | 5.5  | 5.9                             | 3.1  | 2.4  | 5.0  | 6.1  | 7.9  | 10.7 | 5.9  | 5.8  | 2.6  | 1.6  | 2.1  | 1.1  | 0.9  | 0.9  | 0.8  | 0.9  | 1.1  | 1.1  | 1.0  | 0.9  | 3.3           | 10.7            |  |
| 27-Feb                                       | 0.9                           | 0.8  | Z    | 0.9                             | 0.8  | 1.2  | 1.6  | 10.7 | 11.8 | 11.5 | 9.2  | 6.9  | 4.9  | 9.2  | 7.7  | 6.1  | 6.8  | 6.2  | 4.7  | 5.1  | 6.9  | 9.8  | 7.3  | 7.0  | 6.0           | 11.8            |  |
| 28-Feb                                       | 7.1                           | 5.1  | 4.6  | Z                               | 8.7  | 12.4 | 10.3 | 12.4 | 14.7 | 13.6 | 12.5 | 9.3  | 8.2  | 6.9  | 7.1  | 8.6  | 7.9  | 10.0 | 7.9  | 6.3  | 6.1  | 8.5  | 8.1  | 14.7 | 9.2           | 14.7            |  |
|  |                               | 8.4  | 6.6  | 7.7                             | 7.3  | 5.9  | 7.1  | 5.9  | 7.1  | 7.3  | 6.9  | 6.1  | 5.5  | 5.0  | 4.4  | 4.5  | 4.1  | 4.4  | 5.3  | 6.1  | 7.8  | 8.7  | 9.7  | 10.1 | 11.3          | Diurnal Average |  |
|  |                               | 49.0   | 24.9 | 35.9                            | 33.1 | 35.9 | 35.8 | 18.5 | 24.5 | 34.8 | 35.6 | 18.4 | 15.9 | 18.2 | 12.6 | 10.8 | 9.6  | 15.4 | 14.3 | 19.8 | 29.8 | 31.6 | 33.1 | 34.5 | 62.4          | Diurnal Maximum |  |
| Z - zerspan                                  |                               | C - Calibration  |      |                                 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |               |                 |  |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Nitrogen Oxides (NO<sub>x</sub>) - ppb**  
**Anzac - February 2023**





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Nitrogen Oxides (NO<sub>x</sub>) - ppb**  
**Anzac - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 20                            | 602                    | 94.36    | 94.36               |
| 21 - 40                           | 34                     | 5.33     | 99.69               |
| 41 - 80                           | 2                      | 0.31     | 100.00              |
| 81 - 159                          | 0                      | 0.00     | 100.00              |
| > 159                             | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 638

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Nitrogen Oxides (NO<sub>x</sub>) - ppb  
Anzac - February 2023**

| <b>Concentration<br/>Ranges (ppb)</b> | <b>Wind Direction</b> |            |           |            |          |            |           |            |          |            |           |            |          |            |           |            | <b>Totals</b> |
|---------------------------------------|-----------------------|------------|-----------|------------|----------|------------|-----------|------------|----------|------------|-----------|------------|----------|------------|-----------|------------|---------------|
|                                       | <b>N</b>              | <b>NNE</b> | <b>NE</b> | <b>ENE</b> | <b>E</b> | <b>ESE</b> | <b>SE</b> | <b>SSE</b> | <b>S</b> | <b>SSW</b> | <b>SW</b> | <b>WSW</b> | <b>W</b> | <b>WNW</b> | <b>NW</b> | <b>NNW</b> |               |
| 0 - 20                                | 8                     | 9          | 16        | 17         | 31       | 44         | 65        | 23         | 26       | 24         | 10        | 44         | 96       | 70         | 77        | 40         | 600           |
| 21 - 40                               | 1                     | 1          | 0         | 0          | 0        | 0          | 4         | 0          | 2        | 0          | 1         | 4          | 3        | 5          | 5         | 2          | 28            |
| 11 - 80                               | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 2        | 0          | 0         | 0          | 2             |
| 81 - 159                              | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0             |
| > 159                                 | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0             |
| <b>Totals</b>                         | 9                     | 10         | 16        | 17         | 31       | 44         | 69        | 23         | 28       | 24         | 11        | 48         | 101      | 75         | 82        | 42         | 630           |

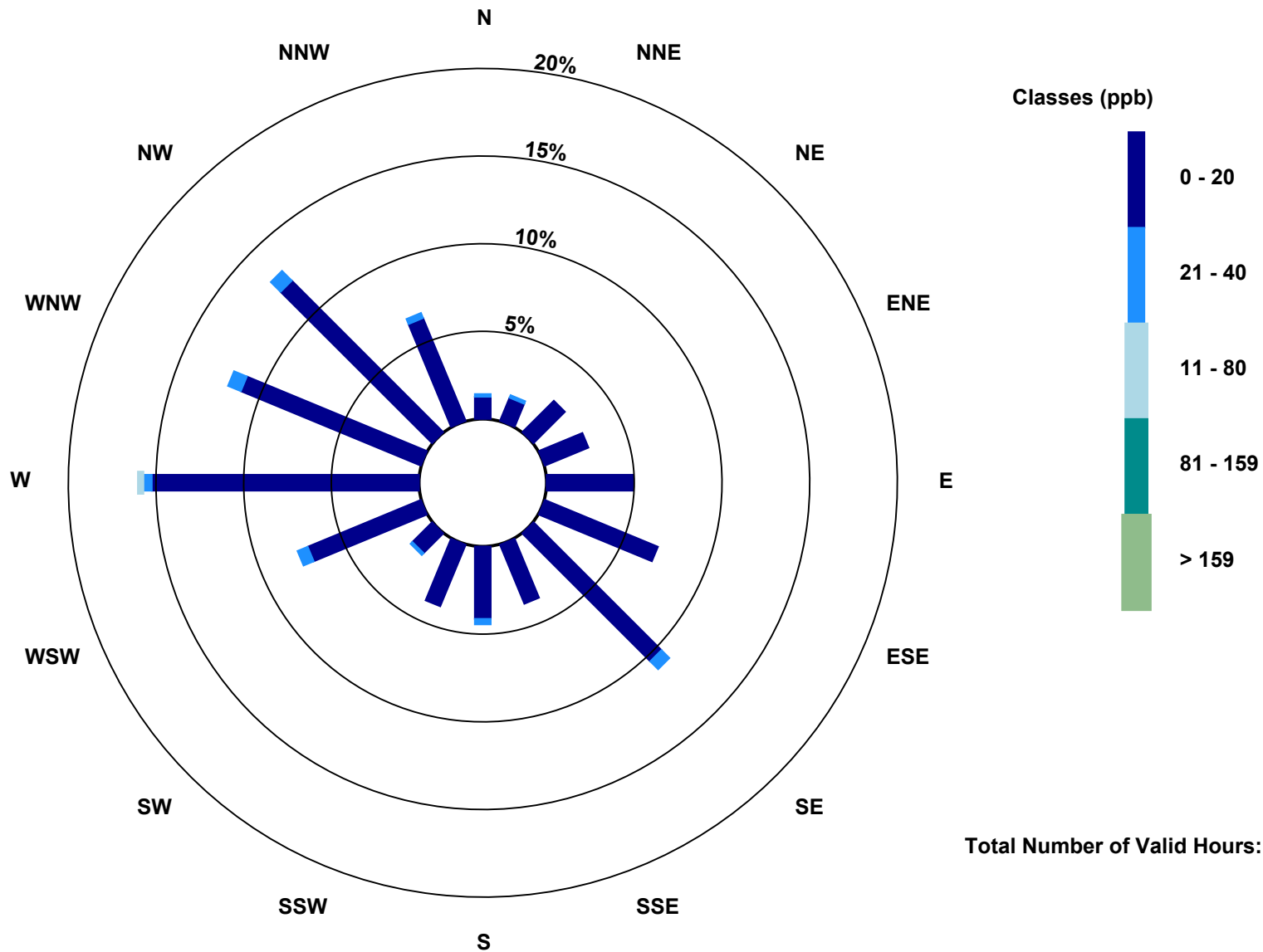
Total Number of Valid Hours: 630

Total Number of Hours: 672



Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Nitrogen Oxides (NO<sub>x</sub>) - ppb  
Anzac



Total Number of Valid Hours: 630

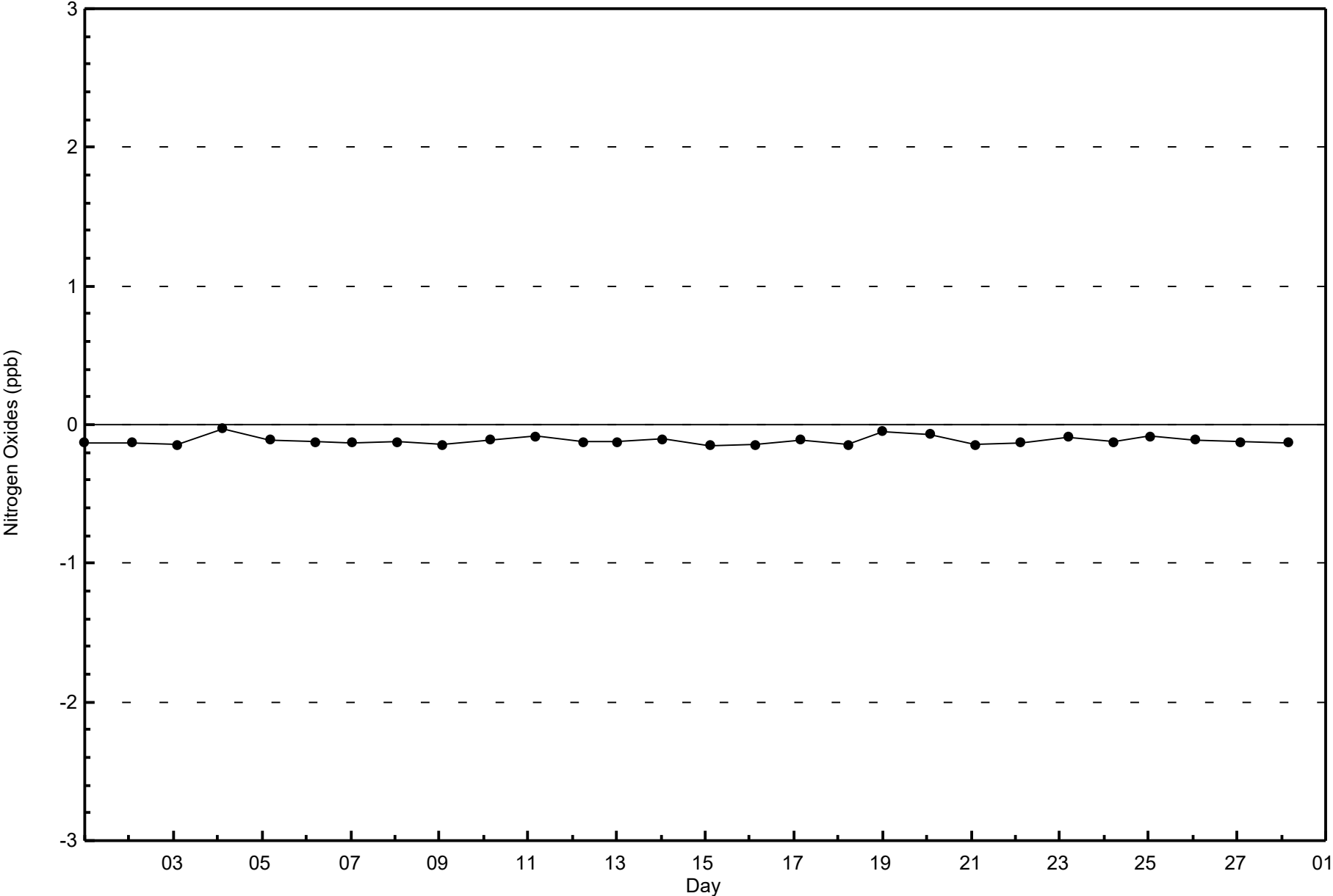


Wood Buffalo Environmental Association

Zero Responses

Nitrogen Oxides (NO<sub>x</sub>) - ppb

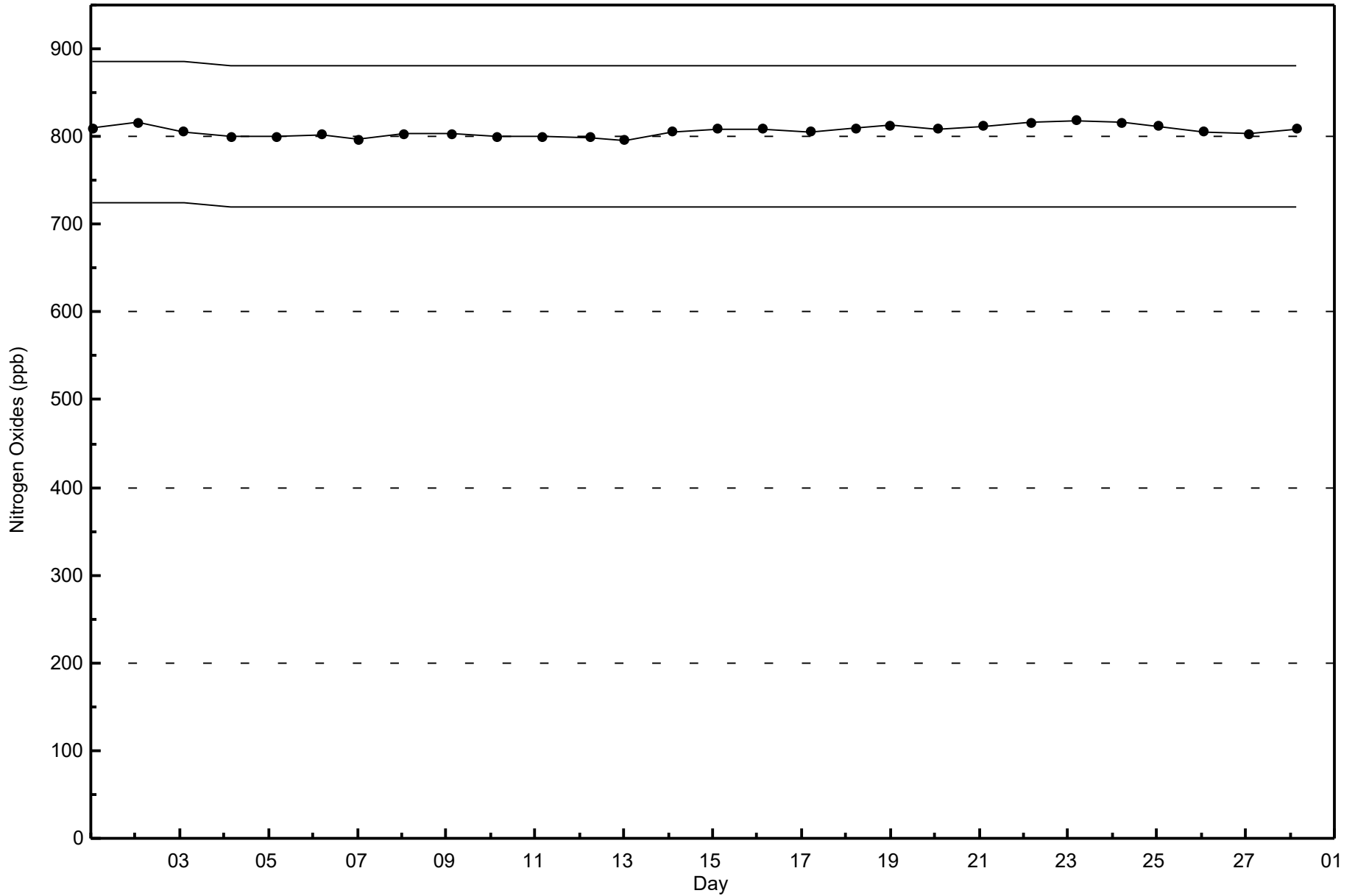
Anzac - February 2023





**Wood Buffalo Environmental Association**  
**Span Responses**

**Nitrogen Oxides (NO<sub>x</sub>) - ppb**  
**Anzac - February 2023**







# Wood Buffalo Environmental Association

## Summary of Hour Averages

Ozone (O<sub>3</sub>) - ppb

Anzac - February 2023

|  |  |          |                           |      |
|--|--|----------|---------------------------|------|
| Number of Exceedences (AAAQO):               | 1-hr: 0  | 24-hr: 0 | Hours in Service:         | 672  |
| Maximum Value: 45.5 ppb on Feb 12 14:00      | Maximum Daily Average: 39.5 ppb on Feb 7   |          | Hours of Data:            | 637  |
| Minimum Value: 0.1 ppb on Feb 11 00:00       | Minimum Daily Average: 15.5 ppb on Feb 17  |          | Hours of Missing Data:    | 35   |
| Maximum Diurnal Average: 31.9 ppb at hour 16 | Minimum Diurnal Average: 24.4 ppb at hour 22   |          | Hours of Calibration:     | 32   |
| Monthly Average: 27.50 ppb                   | Percentiles: P <sub>1</sub> = 1.5 P <sub>10</sub> = 14.9 Q <sub>1</sub> = 22.2 Median = 28.7 Q <sub>3</sub> = 34.4 P <sub>90</sub> = 37.7 P <sub>99</sub> = 40.9 |          | Percent Operational Time: | 99.6 |

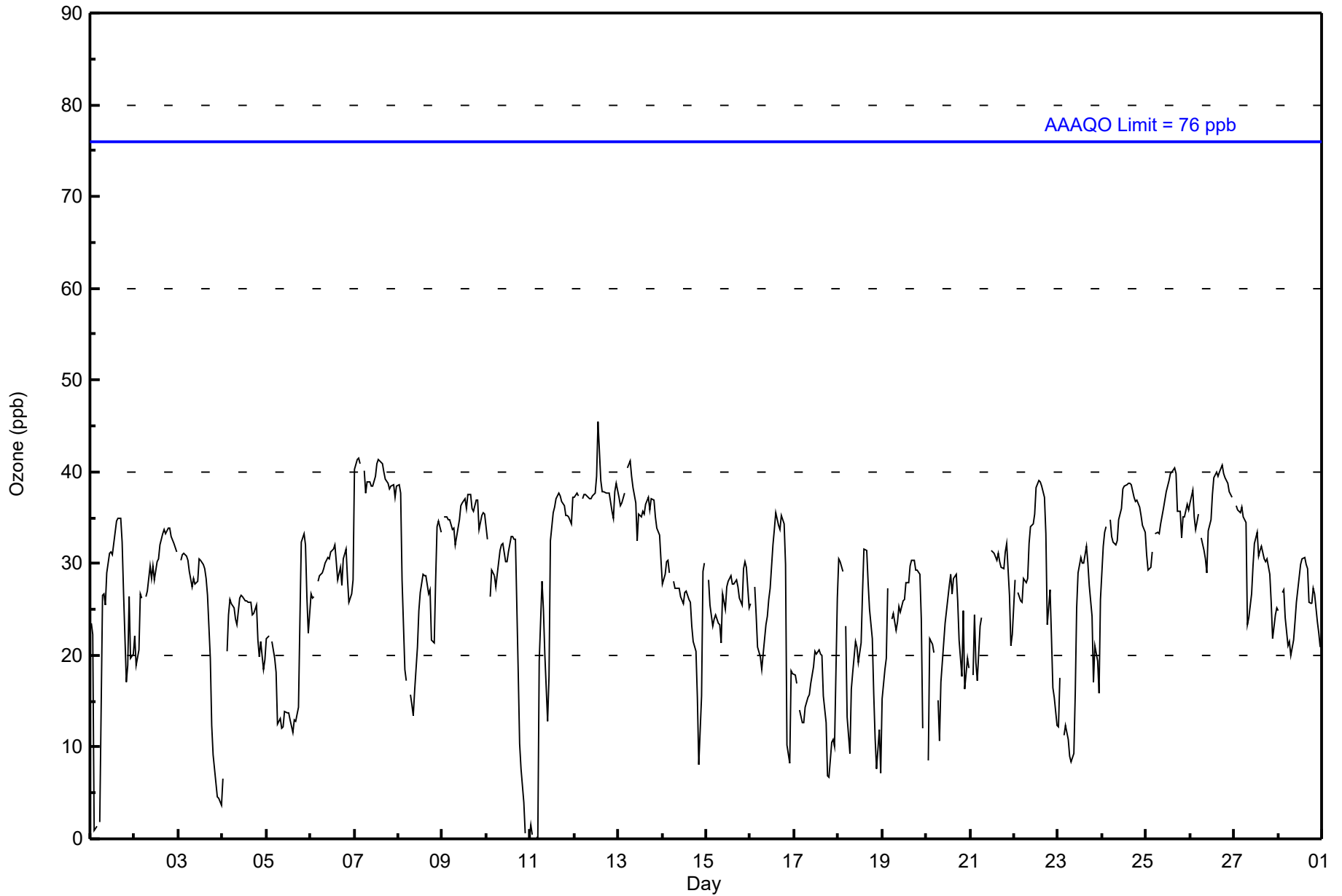
| Day    | Hourly Period Ending At (MST) |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Daily Average | Daily Maximum |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
|--------|-------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|---------------|---------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----------------|--|
|        | 1                             | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20   | 21   | 22   | 23   | 24   |               |               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 1-Feb  | 23.5                          | 22.2 | 0.9  | 1.4  | Z    | 1.9  | 26.6 | 26.6 | 25.5 | 29.0 | 31.2 | 31.3 | 31.0 | 33.4 | 34.7 | 34.9 | 34.9 | 32.4 | 26.9 | 17.1 | 18.9 | 26.4 | 19.7 | 20.2 | 23.9          | 34.9          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 2-Feb  | 22.1                          | 18.9 | 20.5 | 26.7 | 26.2 | Z    | 26.5 | 27.0 | 29.7 | 28.3 | 29.7 | 28.3 | 30.2 | 30.5 | 32.0 | 33.3 | 33.8 | 33.3 | 33.9 | 33.8 | 32.9 | 32.2 | 31.7 | 31.3 | 29.3          | 33.9          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 3-Feb  | Z                             | 30.4 | 30.9 | 31.1 | 30.8 | 30.3 | 29.1 | 27.5 | 28.4 | 27.7 | 28.1 | 30.6 | 30.4 | 29.9 | 29.4 | 28.3 | 26.6 | 19.6 | 12.4 | 9.1  | 6.0  | 4.6  | 4.4  | 3.6  | 23.0          | 31.1          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 4-Feb  | 6.5                           | Z    | 20.4 | 24.5 | 26.1 | 25.6 | 25.1 | 24.0 | 23.3 | 26.2 | 26.5 | 26.4 | 25.9 | 25.8 | 25.8 | 24.5 | 24.6 | 25.5 | 21.7 | 19.9 | 21.5 | 18.4 | 19.5 | 23.2 | 26.5          |               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 5-Feb  | 21.7                          | 22.1 | Z    | 21.6 | 19.7 | 18.1 | 12.5 | 13.1 | 12.1 | 12.2 | 13.9 | 13.8 | 13.7 | 12.9 | 11.5 | 12.9 | 12.8 | 14.3 | 23.7 | 32.3 | 33.2 | 32.1 | 26.4 | 22.4 | 18.7          | 33.2          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 6-Feb  | 26.7                          | 26.2 | 26.3 | Z    | 28.1 | 28.7 | 28.9 | 29.4 | 30.1 | 30.6 | 30.5 | 31.3 | 31.5 | 32.0 | 30.2 | 28.2 | 29.6 | 27.6 | 30.4 | 31.6 | 28.4 | 25.7 | 26.7 | 28.3 | 29.0          | 32.0          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 7-Feb  | 40.3                          | 41.4 | 41.5 | 40.9 | Z    | 40.1 | 37.7 | 38.8 | 38.9 | 38.4 | 38.5 | 39.6 | 40.9 | 41.3 | 41.0 | 40.8 | 40.0 | 39.3 | 38.7 | 38.2 | 38.4 | 38.5 | 37.2 | 38.4 | 39.5          | 41.5          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 8-Feb  | 38.5                          | 37.7 | 28.2 | 18.4 | 17.2 | Z    | 15.7 | 14.6 | 13.4 | 16.2 | 20.9 | 24.9 | 26.9 | 28.8 | 28.6 | 28.7 | 26.6 | 27.2 | 21.6 | 21.3 | 28.2 | 34.0 | 34.6 | 33.5 | 25.5          | 38.5          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 9-Feb  | Z                             | 35.0 | 35.1 | 34.8 | 34.7 | 33.7 | 33.9 | 32.0 | 33.9 | 34.8 | 36.3 | 36.7 | 37.0 | 36.1 | 37.4 | 37.6 | 36.0 | 35.7 | 36.9 | 36.9 | 33.7 | 35.2 | 35.6 | 35.4 | 35.4          | 37.6          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 10-Feb | 32.6                          | Z    | 26.4 | 29.3 | 28.6 | 27.4 | 28.9 | 31.5 | 32.0 | 32.1 | 30.2 | 30.2 | 31.3 | 33.0 | 32.9 | 32.6 | 32.7 | 18.1 | 10.3 | 7.6  | 4.0  | 0.6  | UO   | 0.1  | 24.2          | 33.0          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 11-Feb | 1.5                           | 0.4  | Z    | 0.2  | 0.1  | 19.4 | 28.0 | 25.1 | 20.1 | 12.8 | 17.7 | 32.6 | 35.6 | 36.1 | 37.1 | 37.6 | 37.4 | 36.8 | 36.4 | 35.2 | 35.3 | 35.1 | 34.3 | 37.2 | 25.7          | 37.6          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 12-Feb | 37.2                          | 37.7 | 37.3 | Z    | 37.1 | 37.5 | 37.6 | 37.3 | 37.0 | 37.0 | 37.3 | 37.6 | 39.5 | 45.5 | 39.0 | 37.8 | 37.8 | 37.8 | 37.7 | 37.6 | 35.7 | 35.0 | 37.9 | 38.7 | 37.9          | 45.5          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 13-Feb | 37.2                          | 36.3 | 36.6 | 37.6 | Z    | 40.4 | 41.2 | 39.6 | 38.3 | 36.6 | 32.4 | 35.4 | 35.0 | 35.8 | 35.4 | 36.5 | 37.2 | 35.8 | 37.1 | 37.0 | 35.0 | 33.9 | 33.1 | 30.3 | 36.3          | 41.2          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 14-Feb | 27.8                          | 28.8 | 30.2 | 30.4 | 29.0 | Z    | 28.1 | 27.2 | 27.3 | 27.3 | 26.3 | 25.6 | 26.9 | 27.0 | 26.0 | 25.8 | 23.3 | 21.6 | 20.4 | 15.4 | 8.1  | 15.5 | 29.2 | 30.1 | 25.1          | 30.4          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 15-Feb | Z                             | 28.2 | 25.5 | 23.1 | 23.9 | 24.5 | 23.4 | 23.3 | 21.4 | 26.7 | 25.0 | 27.4 | 28.1 | 28.6 | 27.7 | 27.8 | 28.2 | 27.5 | 26.2 | 25.4 | 29.4 | 30.2 | 29.7 | 25.1 | 26.4          | 30.2          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 16-Feb | 25.6                          | Z    | 27.5 | 24.4 | 20.9 | 19.8 | 18.5 | 20.1 | 23.3 | 24.3 | 26.1 | 27.3 | 32.0 | 33.8 | 35.5 | 34.2 | 33.8 | 35.2 | 34.4 | 29.9 | 10.3 | 8.2  | 18.3 | 18.1 | 25.3          | 35.5          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 17-Feb | 17.8                          | 17.0 | Z    | 14.1 | 12.7 | 12.7 | 14.3 | 15.4 | 15.7 | 16.9 | 18.8 | 20.4 | 20.1 | 20.7 | 20.2 | 19.9 | 15.6 | 12.7 | 6.9  | 6.7  | 10.5 | 10.8 | 10.1 | 26.2 | 15.5          | 26.2          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 18-Feb | 30.6                          | 30.2 | 29.1 | Z    | 23.2 | 13.2 | 9.3  | 16.4 | 18.2 | 21.5 | 20.9 | 19.2 | 21.3 | 26.8 | 31.5 | 31.4 | 27.9 | 25.0 | 21.8 | 15.9 | 11.0 | 7.6  | 12.0 | 7.2  | 20.5          | 31.5          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 19-Feb | 15.2                          | 18.5 | 19.7 | 27.3 | Z    | 23.9 | 24.6 | 22.8 | 23.6 | 25.4 | 24.8 | 25.9 | 26.1 | 27.9 | 27.8 | 29.8 | 30.4 | 30.3 | 29.3 | 29.2 | 28.8 | 24.0 | 12.0 | UO   | 24.9          | 30.4          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 20-Feb | UO                            | 8.5  | 21.8 | 21.1 | 20.2 | Z    | 15.1 | 10.6 | 17.0 | 21.4 | 23.5 | 24.8 | 27.6 | 28.8 | 26.6 | 28.3 | 28.8 | 25.9 | 21.7 | 17.8 | 24.8 | 16.2 | 19.6 | 18.7 | 21.3          | 28.8          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 21-Feb | Z                             | 17.8 | 24.4 | 19.3 | 17.3 | 23.1 | 24.0 | C    | C    | C    | C    | 31.5 | 31.3 | 31.1 | 30.3 | 31.1 | 30.2 | 29.7 | 29.5 | 31.3 | 32.3 | 26.6 | 21.0 | 22.2 | 26.5          | 32.3          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 22-Feb | 28.2                          | Z    | 26.8 | 26.0 | 25.8 | 28.4 | 28.0 | 28.3 | 32.2 | 34.0 | 34.3 | 35.4 | 38.3 | 39.0 | 38.9 | 38.4 | 37.2 | 33.2 | 23.3 | 27.2 | 22.0 | 16.5 | 15.4 | 12.4 | 29.1          | 39.0          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 23-Feb | 12.3                          | 17.5 | Z    | 11.3 | 12.4 | 10.8 | 9.0  | 8.4  | 9.2  | 15.8 | 25.2 | 28.9 | 30.7 | 30.1 | 30.0 | 31.9 | 30.0 | 27.6 | 24.3 | 17.1 | 21.0 | 19.3 | 15.8 | 26.1 | 20.2          | 31.9          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 24-Feb | 31.8                          | 33.4 | 34.0 | Z    | 34.7 | 32.9 | 32.4 | 32.0 | 32.5 | 34.8 | 36.0 | 38.2 | 38.5 | 38.6 | 38.7 | 38.8 | 38.6 | 37.2 | 36.7 | 36.9 | 36.1 | 35.3 | 34.2 | 33.3 | 35.5          | 38.8          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 25-Feb | 31.0                          | 29.3 | 29.5 | 31.3 | Z    | 33.3 | 33.4 | 33.2 | 34.3 | 36.0 | 37.0 | 37.9 | 39.1 | 39.7 | 40.0 | 40.4 | 39.9 | 35.6 | 35.7 | 32.8 | 35.0 | 35.1 | 36.4 | 35.9 | 35.3          | 40.4          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 26-Feb | 36.6                          | 37.9 | 35.1 | 33.7 | 35.4 | Z    | 32.8 | 31.5 | 30.5 | 29.0 | 33.5 | 34.8 | 37.5 | 39.4 | 39.9 | 39.5 | 40.0 | 40.7 | 39.8 | 39.4 | 38.7 | 37.8 | 37.6 | 37.3 | 36.5          | 40.7          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 27-Feb | Z                             | 36.3 | 35.9 | 35.6 | 36.1 | 35.1 | 34.5 | 23.3 | 24.1 | 26.7 | 29.8 | 32.1 | 33.4 | 30.8 | 31.5 | 31.9 | 30.5 | 30.2 | 30.5 | 28.9 | 25.7 | 21.9 | 24.4 | 25.1 | 30.2          | 36.3          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 28-Feb | 24.8                          | Z    | 26.9 | 27.1 | 24.0 | 21.0 | 21.5 | 20.0 | 21.6 | 23.6 | 25.8 | 28.6 | 29.9 | 30.5 | 30.6 | 30.0 | 29.5 | 25.8 | 25.7 | 27.3 | 26.7 | 23.6 | 22.4 | 20.9 | 25.6          | 30.6          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
|        |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 25.9 | 26.6          | 27.9          | 24.6 | 24.5 | 25.3 | 25.7 | 25.2 | 25.7 | 26.9 | 28.1 | 29.9 | 31.1 | 31.9 | 31.8 | 31.9 | 31.2 | 29.3 | 27.8 | 26.5 | 25.4 | 24.4 | 25.1 | 25.1 | Diurnal Average |  |
|        |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 40.3 | 41.4          | 41.5          | 40.9 | 37.1 | 40.4 | 41.2 | 39.6 | 38.9 | 38.4 | 38.5 | 39.6 | 40.9 | 45.5 | 41.0 | 40.8 | 40.0 | 40.7 | 39.8 | 39.4 | 38.7 | 38.5 | 37.9 | 38.7 | Diurnal Maximum |  |

Z - zerospan                      C - Calibration                      UO - Unstable Operation  
 Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 76 ppb



Wood Buffalo Environmental Association  
Hourly Averages

Ozone (O<sub>3</sub>) - ppb  
Anzac - February 2023





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Ozone (O<sub>3</sub>) - ppb**  
**Anzac - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 20                            | 128                    | 20.09    | 20.09               |
| 21 - 50                           | 509                    | 79.91    | 100.00              |
| 51 - 82                           | 0                      | 0.00     | 100.00              |
| > 83                              | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 637

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Ozone (O<sub>3</sub>) - ppb  
Anzac - February 2023**

| <b>Concentration<br/>Ranges (ppb)</b> | <b>Wind Direction</b> |            |           |            |           |            |           |            |           |            |           |            |            |            |           |            | <b>Totals</b> |
|---------------------------------------|-----------------------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|------------|------------|-----------|------------|---------------|
|                                       | <b>N</b>              | <b>NNE</b> | <b>NE</b> | <b>ENE</b> | <b>E</b>  | <b>ESE</b> | <b>SE</b> | <b>SSE</b> | <b>S</b>  | <b>SSW</b> | <b>SW</b> | <b>WSW</b> | <b>W</b>   | <b>WNW</b> | <b>NW</b> | <b>NNW</b> |               |
| 0 - 20                                | 3                     | 3          | 2         | 3          | 3         | 9          | 15        | 2          | 6         | 1          | 1         | 6          | 20         | 19         | 17        | 11         | 121           |
| 21 - 50                               | 6                     | 7          | 14        | 13         | 28        | 39         | 56        | 22         | 23        | 24         | 8         | 43         | 82         | 53         | 59        | 32         | 509           |
| 51 - 82                               | 0                     | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0          | 0          | 0         | 0          | 0             |
| > 83                                  | 0                     | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0          | 0          | 0         | 0          | 0             |
| <b>Totals</b>                         | <b>9</b>              | <b>10</b>  | <b>16</b> | <b>16</b>  | <b>31</b> | <b>48</b>  | <b>71</b> | <b>24</b>  | <b>29</b> | <b>25</b>  | <b>9</b>  | <b>49</b>  | <b>102</b> | <b>72</b>  | <b>76</b> | <b>43</b>  | <b>630</b>    |

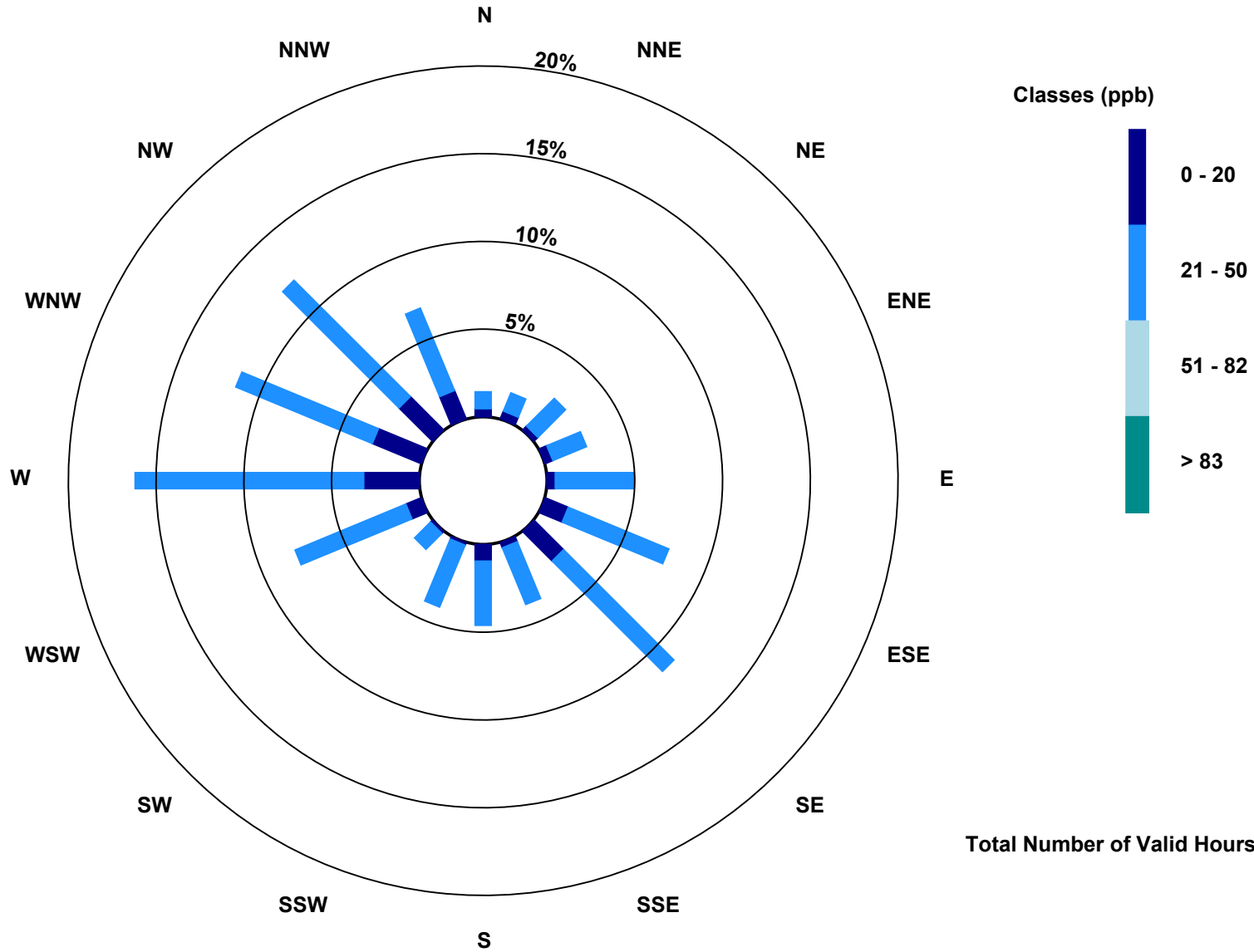
Total Number of Valid Hours: 630

Total Number of Hours: 672



Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Ozone (O<sub>3</sub>) - ppb  
Anzac

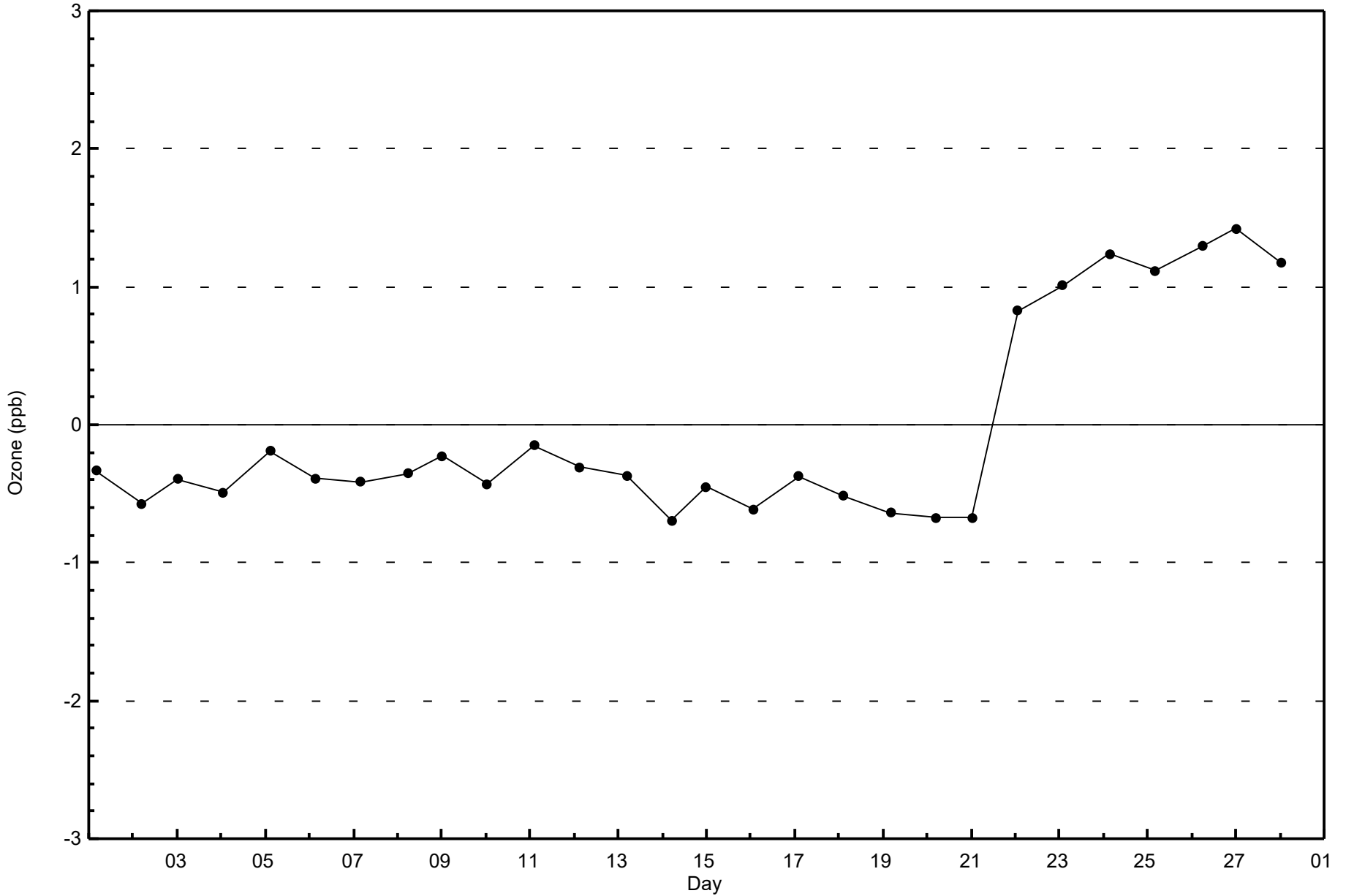


Total Number of Valid Hours: 630



Wood Buffalo Environmental Association  
Zero Responses

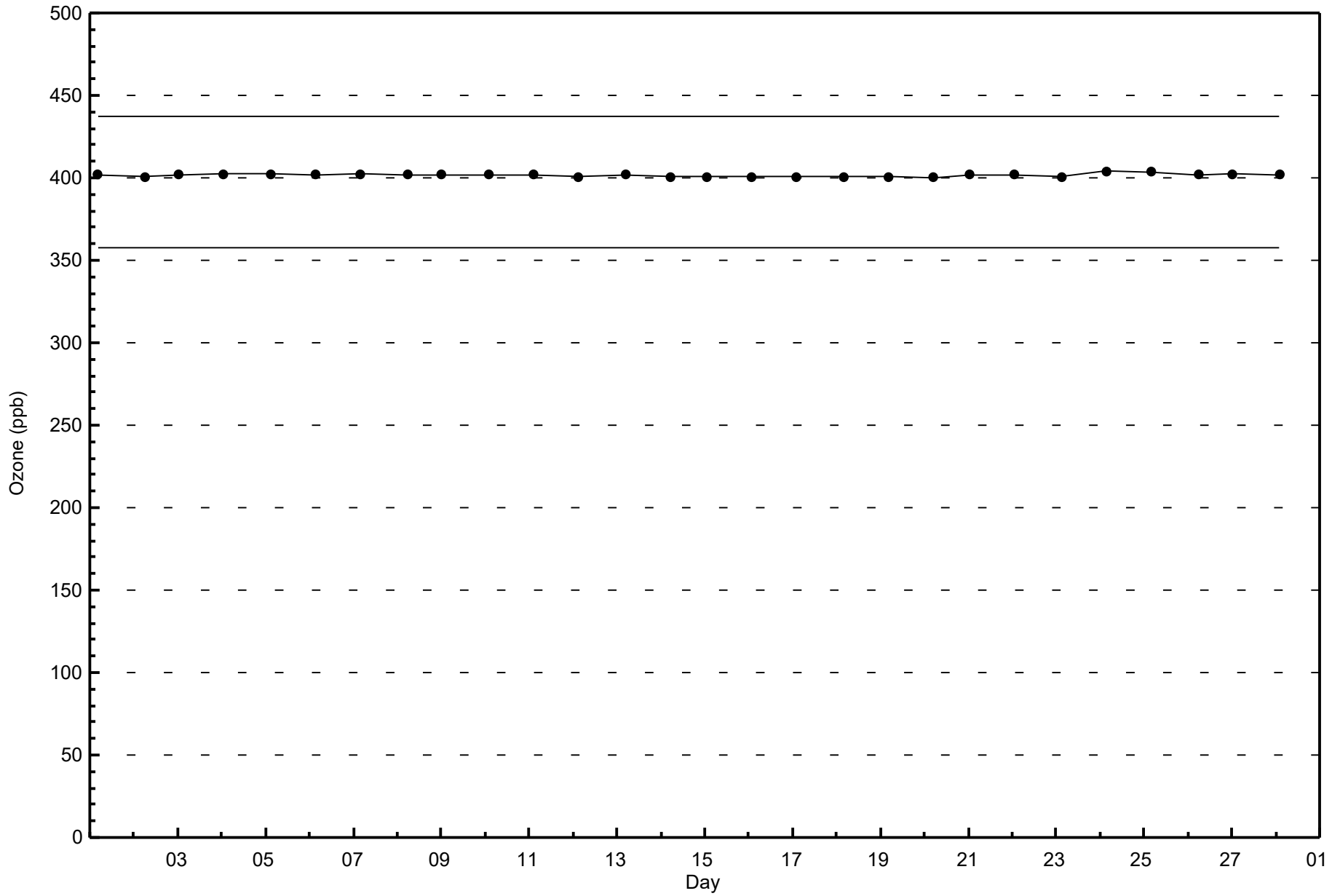
Ozone (O<sub>3</sub>) - ppb  
Anzac - February 2023





Wood Buffalo Environmental Association  
Span Responses

Ozone (O<sub>3</sub>) - ppb  
Anzac - February 2023





Wood Buffalo Environmental Association

Summary of Hour Averages

Particulate Matter 2.5 (PM<sub>2.5</sub>) - µg/m<sup>3</sup>

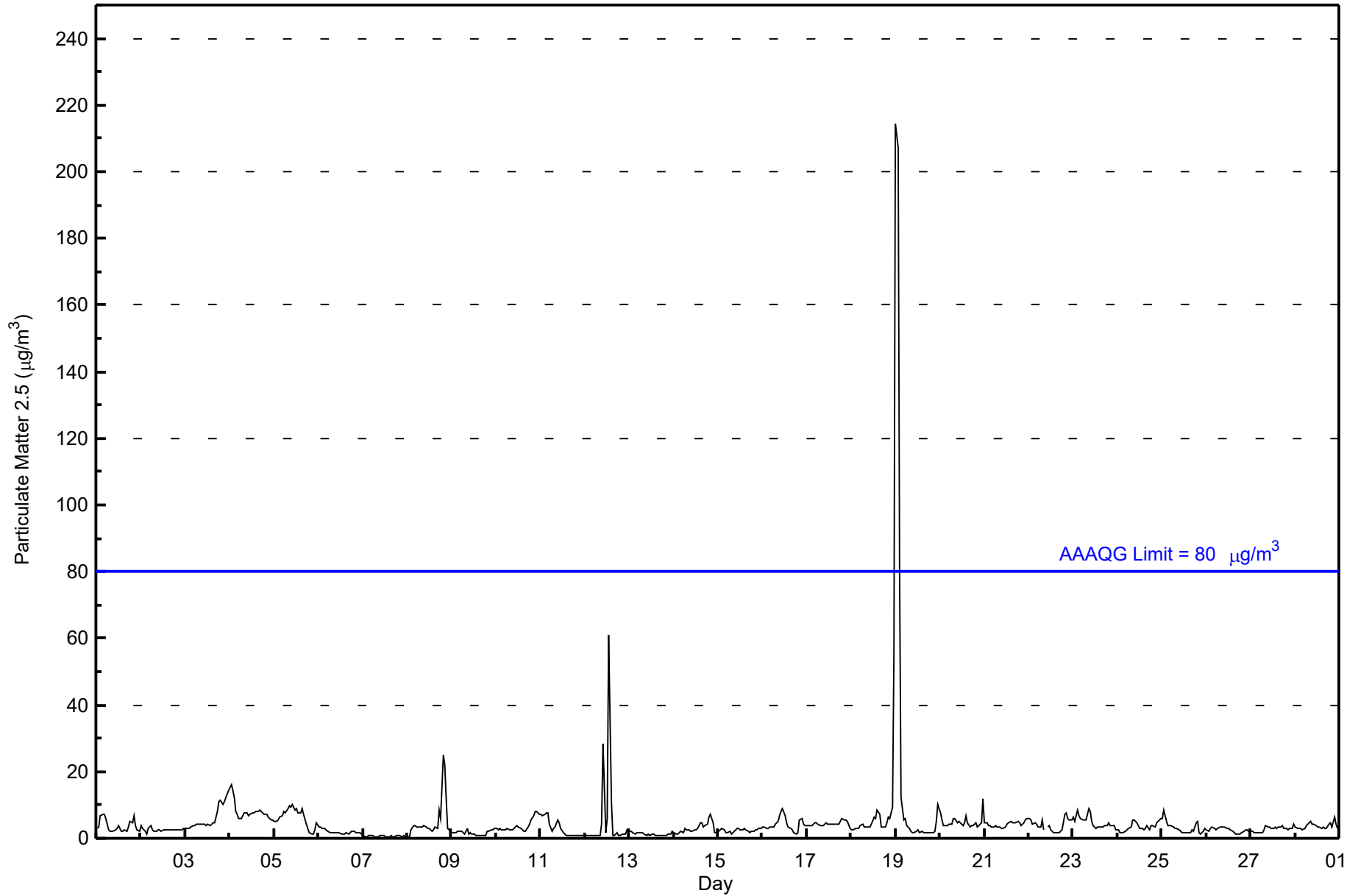
Anzac - February 2023

|   |   |          |                           |       |
|---|---|----------|---------------------------|-------|
| Number of Exceedences (AAAQO):                            | 1-hr: 2   | 24-hr: 0 | Hours in Service:         | 672   |
| Maximum Value: 214.3 µg/m <sup>3</sup> on Feb 19 01:00    | Maximum Daily Average: 23.9 µg/m <sup>3</sup> on Feb 19   |          | Hours of Data:            | 671   |
| Minimum Value: 0.4 µg/m <sup>3</sup> on Feb 7 14:00       | Minimum Daily Average: 0.7 µg/m <sup>3</sup> on Feb 7   |          | Hours of Missing Data:    | 1     |
| Maximum Diurnal Average: 11.4 µg/m <sup>3</sup> at hour 1 | Minimum Diurnal Average: 2.9 µg/m <sup>3</sup> at hour 17   |          | Hours of Calibration:     | 1     |
| Monthly Average: 4.57 µg/m <sup>3</sup>                   | Percentiles: P <sub>1</sub> = 0.5 P <sub>10</sub> = 1.1 Q <sub>1</sub> = 2.0 Median = 3.1 Q <sub>3</sub> = 4.5 P <sub>90</sub> = 7.1 P <sub>99</sub> = 23.0 |          | Percent Operational Time: | 100.0 |

| Day  | Hourly Period Ending At (MST) |       |      |      |     |     |     |     |     |     |      |     |     |      |      |     |     |     |      |      |      |      |      |                 | Daily Average | Daily Maximum |
|--|-------------------------------|-------|------|------|-----|-----|-----|-----|-----|-----|------|-----|-----|------|------|-----|-----|-----|------|------|------|------|------|-----------------|---------------|---------------|
|  | 1                             | 2     | 3    | 4    | 5   | 6   | 7   | 8   | 9   | 10  | 11   | 12  | 13  | 14   | 15   | 16  | 17  | 18  | 19   | 20   | 21   | 22   | 23   | 24              |               |               |
| 1-Feb  | 3.1                           | 3.3   | 7.0  | 7.1  | 7.4 | 6.0 | 2.4 | 2.1 | 2.1 | 2.1 | 2.5  | 2.9 | 3.9 | 2.3  | 2.0  | 2.4 | 2.0 | 3.3 | 4.9  | 4.7  | 6.9  | 3.7  | 2.4  | 2.1             | 3.7           | 7.4           |
| 2-Feb  | 3.8                           | 3.0   | 2.0  | 1.4  | 2.8 | 3.9 | 2.7 | 2.2 | 2.2 | 2.6 | 2.5  | 2.2 | 2.6 | 2.4  | 2.5  | 2.5 | 2.7 | 2.7 | 2.6  | 2.6  | 2.6  | 2.5  | 2.6  | 2.8             | 2.6           | 3.9           |
| 3-Feb  | 3.1                           | 3.1   | 3.1  | 3.4  | 3.7 | 3.8 | 4.1 | 4.3 | 4.2 | 4.3 | 4.4  | 3.9 | 4.0 | 3.7  | 4.1  | 4.5 | 4.5 | 8.0 | 11.2 | 11.3 | 10.3 | 10.9 | 12.1 | 14.2            | 6.0           | 14.2          |
| 4-Feb  | 15.2                          | 16.2  | 12.2 | 8.2  | 7.1 | 5.9 | 5.8 | 6.9 | 7.7 | 7.6 | 7.0  | 7.7 | 7.8 | 8.0  | 8.0  | 8.3 | 7.9 | 7.3 | 7.3  | 7.1  | 6.5  | 5.7  | 5.3  | 5.3             | 8.1           | 16.2          |
| 5-Feb  | 4.9                           | 5.1   | 5.6  | 6.3  | 6.8 | 7.9 | 7.7 | 8.7 | 9.7 | 9.5 | 10.1 | 8.4 | 8.7 | 7.7  | 7.5  | 8.9 | 7.1 | 4.2 | 2.9  | 1.7  | 1.3  | 1.3  | 2.6  | 4.6             | 6.2           | 10.1          |
| 6-Feb  | 3.3                           | 3.3   | 3.2  | 2.8  | 2.6 | 2.0 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8  | 1.5 | 1.4 | 1.3  | 1.5  | 1.6 | 1.4 | 1.6 | 2.3  | 2.0  | 1.7  | 1.8  | 1.9  | 1.4             | 2.0           | 3.3           |
| 7-Feb  | 1.0                           | 0.6   | 0.6  | 1.0  | 0.9 | 0.7 | 0.6 | 0.5 | 0.5 | 0.7 | 0.7  | 0.7 | 0.6 | 0.4  | 0.5  | 0.8 | 0.5 | 0.6 | 0.7  | 0.7  | 0.9  | 0.5  | 0.7  | 0.6             | 0.7           | 1.0           |
| 8-Feb  | 0.5                           | 0.6   | 2.4  | 3.7  | 3.6 | 3.5 | 3.2 | 3.3 | 3.3 | 3.8 | 3.6  | 3.0 | 3.1 | 2.3  | 2.4  | 3.5 | 2.8 | 8.5 | 5.9  | 25.1 | 22.2 | 11.8 | 3.1  | 2.1             | 5.3           | 25.1          |
| 9-Feb  | 1.8                           | 1.7   | 1.7  | 2.1  | 2.1 | 1.9 | 1.5 | 1.4 | 3.1 | 1.1 | 1.8  | 1.2 | 1.1 | 1.0  | 0.8  | 0.7 | 0.9 | 0.8 | 0.8  | 1.9  | 2.0  | 2.6  | 2.7  | 2.9             | 1.7           | 3.1           |
| 10-Feb   | 2.8                           | 2.7   | 3.0  | 2.6  | 2.5 | 2.5 | 2.8 | 2.5 | 2.5 | 2.7 | 3.5  | 3.8 | 3.2 | 2.9  | 2.5  | 2.2 | 2.0 | 3.3 | 4.2  | 5.4  | 6.9  | 7.9  | 7.9  | 7.3             | 3.7           | 7.9           |
| 11-Feb   | 7.1                           | 7.0   | 7.2  | 7.5  | 7.6 | 4.2 | 2.1 | 2.8 | 3.5 | 5.6 | 4.7  | 2.8 | 1.7 | 1.4  | 1.0  | 0.9 | 0.7 | 0.7 | 0.7  | 0.8  | 0.8  | 0.7  | 0.8  | 0.9             | 3.1           | 7.6           |
| 12-Feb   | 0.8                           | 0.7   | 0.9  | 0.9  | 0.9 | 0.9 | 0.8 | 0.9 | 0.9 | 4.3 | 28.3 | 1.7 | 5.9 | 61.1 | 10.4 | 0.9 | 0.8 | 1.6 | 1.0  | 1.0  | 1.3  | 1.4  | 1.2  | 2.7             | 5.5           | 61.1          |
| 13-Feb   | 2.0                           | 2.0   | 1.5  | 1.4  | 1.8 | 1.8 | 1.7 | 1.7 | 1.2 | 1.1 | 1.2  | 0.8 | 1.1 | 1.3  | 1.0  | 1.0 | 1.0 | 1.0 | 0.8  | 0.7  | 0.9  | 1.2  | 1.4  | 2.0             | 1.3           | 2.0           |
| 14-Feb   | 1.5                           | 1.4   | 1.5  | 1.5  | 2.3 | 1.9 | 2.8 | 2.7 | 2.4 | 2.1 | 2.2  | 2.3 | 2.4 | 2.8  | 4.5  | 4.5 | 3.5 | 3.9 | 4.3  | 6.3  | 7.4  | 4.8  | 1.5  | 1.6             | 3.0           | 7.4           |
| 15-Feb   | 2.3                           | 2.4   | 2.9  | 2.7  | 1.8 | 1.9 | 2.1 | 1.4 | 1.5 | 2.0 | 2.9  | 2.9 | 2.8 | 2.7  | 2.9  | 2.6 | 2.3 | 1.9 | 2.1  | 2.3  | 2.4  | 2.3  | 2.9  | 2.9             | 2.4           | 2.9           |
| 16-Feb   | 3.6                           | 3.3   | 3.1  | 2.9  | 3.3 | 3.5 | 3.6 | 4.0 | 5.2 | 6.7 | 7.9  | 8.7 | 6.6 | 4.8  | 3.4  | 3.1 | 2.4 | 1.5 | 1.2  | 1.9  | 5.6  | 5.8  | 4.1  | 4.0             | 4.2           | 8.7           |
| 17-Feb   | 3.8                           | 3.8   | 3.9  | 3.9  | 4.6 | 4.7 | 4.1 | 3.8 | 3.9 | 3.8 | 4.5  | 4.1 | 4.2 | 4.4  | 4.1  | 4.0 | 4.3 | 4.1 | 5.0  | 6.1  | 5.6  | 5.3  | 5.2  | 2.8             | 4.3           | 6.1           |
| 18-Feb   | 2.6                           | 2.7   | 2.9  | 2.8  | 3.0 | 3.6 | 4.1 | 3.5 | 3.5 | 3.3 | 3.6  | 4.1 | 6.2 | 6.1  | 8.7  | 7.4 | 3.5 | 3.4 | 3.5  | 4.8  | 6.5  | 6.0  | 9.4  | 56.1            | 6.7           | 56.1          |
| 19-Feb   | 214.3                         | 207.4 | 79.1 | 12.4 | 5.5 | 5.8 | 3.9 | 3.1 | 2.3 | 1.8 | 1.8  | 2.1 | 2.6 | 1.8  | 1.9  | 1.8 | 1.8 | 1.8 | 1.8  | 1.7  | 1.6  | 2.0  | 5.2  | 10.0            | 23.9          | 214.3         |
| 20-Feb   | 7.7                           | 5.6   | 4.0  | 3.7  | 3.6 | 4.2 | 4.2 | 6.0 | 5.8 | 4.8 | 4.9  | 4.8 | 4.0 | 4.5  | 6.8  | 4.5 | 3.5 | 3.7 | 4.0  | 4.5  | 3.3  | 3.9  | 4.6  | 11.9            | 4.9           | 11.9          |
| 21-Feb   | 4.5                           | 4.6   | 3.6  | 3.8  | 3.6 | 3.4 | 3.8 | 3.6 | 3.4 | 3.2 | 3.1  | 3.4 | 4.3 | 4.5  | 5.0  | 4.8 | 4.6 | 4.8 | 5.1  | 4.7  | 4.0  | 4.7  | 5.5  | 6.0             | 4.2           | 6.0           |
| 22-Feb   | 5.8                           | 5.7   | 4.3  | 4.8  | 4.4 | 3.6 | 3.3 | 5.6 | 2.8 | C   | 3.4  | 3.8 | 2.4 | 1.6  | 1.6  | 1.6 | 1.8 | 2.1 | 2.4  | 7.0  | 7.5  | 6.1  | 5.4  | 5.5             | 4.0           | 7.5           |
| 23-Feb   | 6.3                           | 5.2   | 8.5  | 6.8  | 6.0 | 5.5 | 5.4 | 5.5 | 8.7 | 7.9 | 5.2  | 3.8 | 3.0 | 3.3  | 3.5  | 3.2 | 3.5 | 3.7 | 3.9  | 4.6  | 3.7  | 3.9  | 3.8  | 2.5             | 4.9           | 8.7           |
| 24-Feb   | 2.7                           | 1.5   | 1.9  | 1.8  | 2.2 | 2.6 | 2.9 | 3.4 | 5.6 | 5.5 | 4.8  | 4.0 | 3.1 | 2.8  | 2.5  | 3.0 | 3.8 | 2.5 | 3.8  | 3.7  | 3.5  | 4.6  | 4.9  | 5.9             | 3.5           | 5.9           |
| 25-Feb   | 6.1                           | 8.3   | 4.9  | 4.0  | 3.7 | 3.7 | 3.4 | 3.1 | 2.8 | 2.4 | 2.3  | 1.8 | 1.6 | 1.6  | 1.5  | 1.6 | 2.5 | 2.1 | 4.6  | 4.9  | 1.5  | 1.4  | 2.1  | 2.9             | 3.1           | 8.3           |
| 26-Feb   | 2.6                           | 2.2   | 2.8  | 3.2  | 3.1 | 2.7 | 3.1 | 3.2 | 3.4 | 3.6 | 3.2  | 3.2 | 2.9 | 2.5  | 2.0  | 1.6 | 1.4 | 1.1 | 1.5  | 1.6  | 2.3  | 2.6  | 2.6  | 2.2             | 2.5           | 3.6           |
| 27-Feb   | 2.1                           | 1.9   | 1.7  | 1.8  | 1.7 | 1.7 | 1.7 | 2.6 | 3.6 | 3.4 | 3.2  | 2.9 | 2.8 | 3.3  | 3.1  | 3.3 | 3.5 | 3.9 | 2.9  | 2.8  | 2.6  | 3.1  | 2.9  | 4.0             | 2.8           | 4.0           |
| 28-Feb   | 3.4                           | 3.1   | 3.1  | 2.8  | 2.7 | 3.1 | 4.0 | 4.3 | 4.9 | 4.0 | 4.0  | 4.0 | 3.5 | 3.4  | 3.1  | 3.3 | 3.0 | 3.2 | 4.0  | 4.7  | 3.2  | 6.4  | 4.1  | 3.1             | 3.7           | 6.4           |
| 11.4 11.0 6.4 3.8 3.6 3.5 3.2 3.4 3.7 3.8 4.6 3.4 3.5 5.2 3.5 3.1 2.9 3.1 3.4 4.5 4.5 4.1 3.9 6.1              |                               |       |      |      |     |     |     |     |     |     |      |     |     |      |      |     |     |     |      |      |      |      |      | Diurnal Average |               |               |
| 214.3 207.4 79.1 12.4 7.6 7.9 7.7 8.7 9.7 9.5 28.3 8.7 8.7 61.1 10.4 8.9 8.3 8.5 11.2 25.1 22.2 11.8 12.1 56.1 |                               |       |      |      |     |     |     |     |     |     |      |     |     |      |      |     |     |     |      |      |      |      |      | Diurnal Maximum |               |               |

C - Calibration  
 Alberta Ambient Air Quality Guideline/Objectives: 1-hr 80 µg/m<sup>3</sup> 24-hr 29 µg/m<sup>3</sup>







**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Particulate Matter 2.5 (PM<sub>2.5</sub>) -  $\mu\text{g}/\text{m}^3$**   
**Anzac - February 2023**

| <b>Concentration Ranges (<math>\mu\text{g}/\text{m}^3</math>)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---|------------------------|----------|---------------------|
| 0 - 5   | 550                    | 81.97    | 81.97               |
| 6 - 15  | 112                    | 16.69    | 98.66               |
| 16 - 25   | 3                      | 0.45     | 99.11               |
| 26 - 80   | 4                      | 0.60     | 99.70               |
| > 81.0  | 2                      | 0.30     | 100.00              |

Total Number of Valid Hours: 671

Total Number of Hours: 672



**Wood Buffalo Environmental Association**  
**Frequency Distribution**

**Particulate Matter 2.5 (PM<sub>2.5</sub>) -  $\mu\text{g}/\text{m}^3$**   
**Anzac - February 2023**

| Concentration<br>Ranges ( $\mu\text{g}/\text{m}^3$ ) | Wind Direction |     |    |     |    |     |    |     |    |     |    |     |     |     |    |     | Totals |
|--|----------------|-----|----|-----|----|-----|----|-----|----|-----|----|-----|-----|-----|----|-----|--------|
|  | N              | NNE | NE | ENE | E  | ESE | SE | SSE | S  | SSW | SW | WSW | W   | WNW | NW | NNW |        |
| 0 - 5  | 10             | 6   | 13 | 11  | 23 | 37  | 57 | 22  | 26 | 22  | 8  | 47  | 92  | 67  | 71 | 38  | 550    |
| 6 - 15   | 0              | 4   | 4  | 6   | 8  | 13  | 13 | 3   | 3  | 3   | 3  | 3   | 14  | 11  | 11 | 6   | 105    |
| 16 - 25  | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 2   | 0  | 0   | 0   | 0   | 0  | 0   | 2      |
| 26 - 80  | 0              | 0   | 0  | 0   | 0  | 0   | 2  | 0   | 0  | 0   | 0  | 0   | 2   | 0   | 0  | 0   | 4      |
| > 81.0   | 0              | 0   | 0  | 0   | 0  | 0   | 2  | 0   | 0  | 0   | 0  | 0   | 0   | 0   | 0  | 0   | 2      |
| <b>Totals</b>  | 10             | 10  | 17 | 17  | 31 | 50  | 74 | 25  | 29 | 27  | 11 | 50  | 108 | 78  | 82 | 44  | 663    |

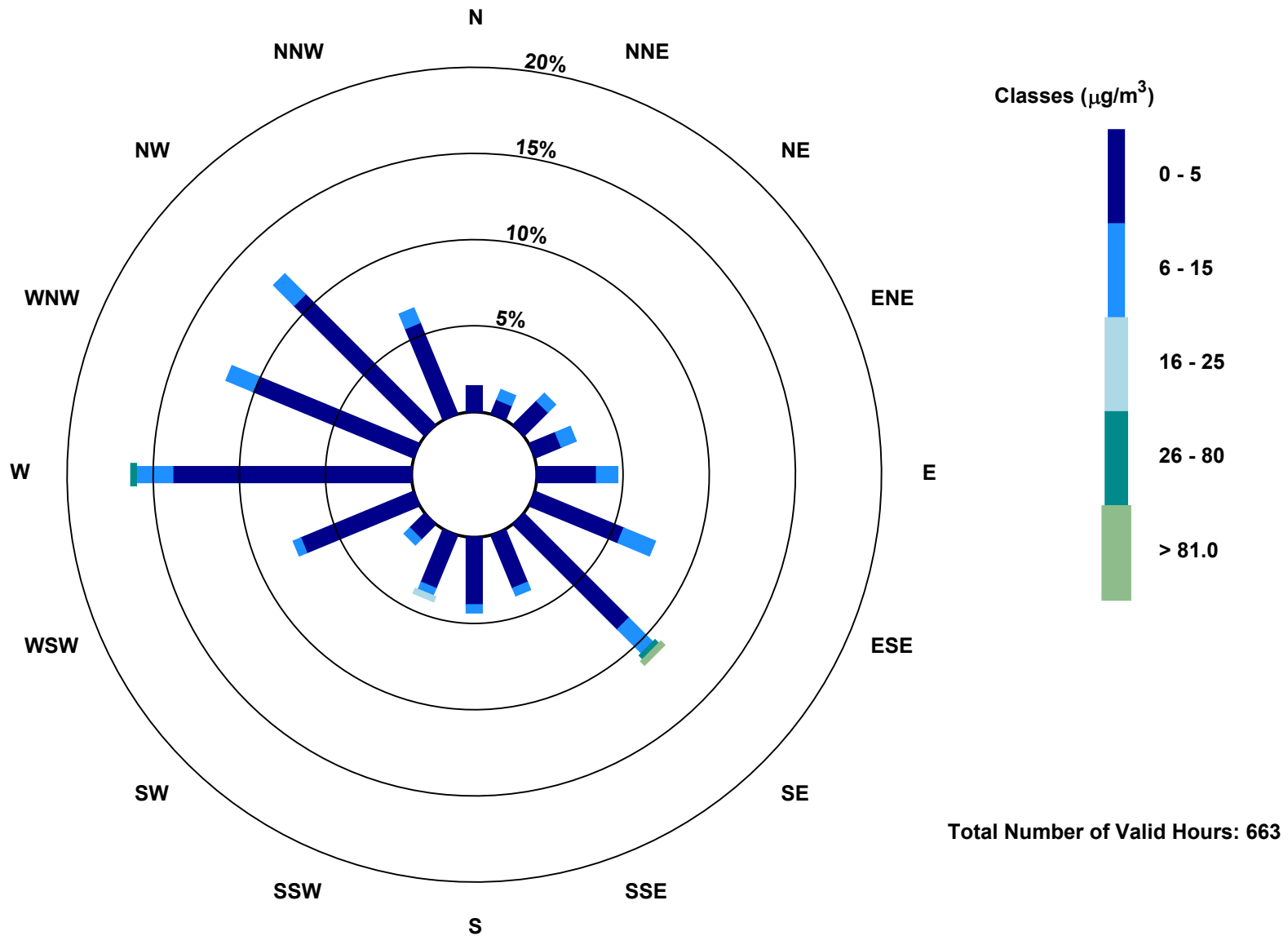
Total Number of Valid Hours: 663

Total Number of Hours: 672



Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Particulate Matter 2.5 (PM<sub>2.5</sub>) -  $\mu\text{g}/\text{m}^3$   
Anzac



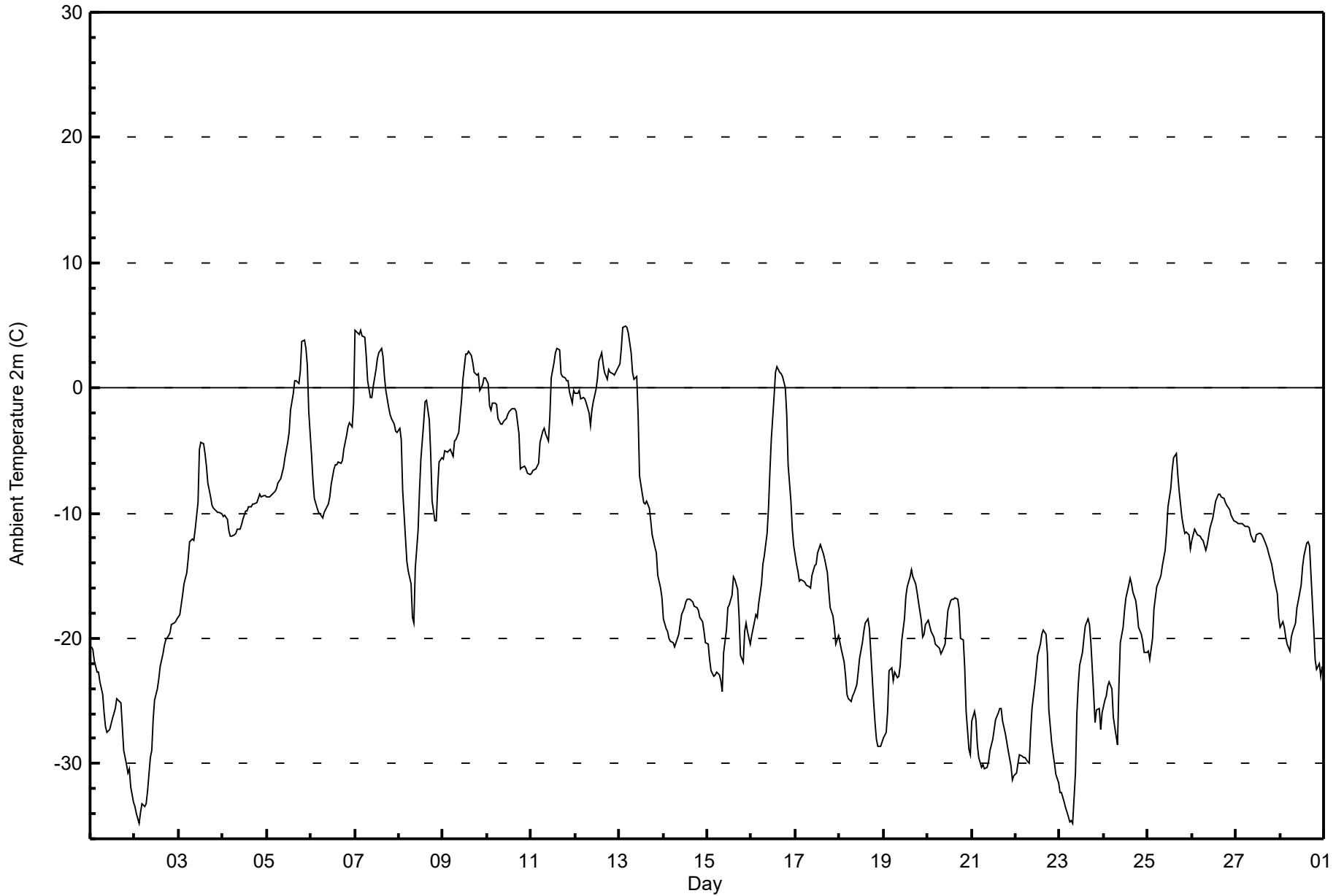


| Maximum Value: 5.0 C on Feb 13 04:00      Maximum Daily Average: 1.0 C on Feb 7  |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Hours in Service:         | 672   |       |               |               |
|--|-------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------------------------|-------|-------|---------------|---------------|
| Minimum Value: -34.8 C on Feb 23 08:00      Minimum Daily Average: -28.3 C on Feb 21   |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Hours of Data:            | 672   |       |               |               |
| Maximum Diurnal Average: -10.0 C at hour 16      Minimum Diurnal Average: -16.1 C at hour 8  |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Hours of Missing Data:    | 0     |       |               |               |
| Monthly Average: -13.72 C      Percentiles: P <sub>1</sub> = -33.6 P <sub>10</sub> = -27.1 Q <sub>1</sub> = -20.7 Median = -14.1 Q <sub>3</sub> = -6.0 P <sub>90</sub> = 0.5 P <sub>99</sub> = 4.3 |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Hours of Calibration:     | 0     |       |               |               |
|  |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Percent Operational Time: | 100.0 |       |               |               |
| Day  | Hourly Period Ending At (MST) |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                           |       |       | Daily Average | Daily Maximum |
|  | 1                             | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     | 10    | 11    | 12    | 13    | 14    | 15    | 16    | 17    | 18    | 19    | 20    | 21    | 22                        | 23    | 24    |               |               |
| 1-Feb  | -20.7                         | -20.9 | -21.8 | -22.6 | -22.7 | -23.5 | -24.5 | -25.9 | -27.1 | -27.5 | -27.3 | -26.8 | -26.4 | -25.6 | -24.8 | -24.9 | -25.2 | -27.1 | -28.9 | -30.1 | -30.7 | -30.4                     | -31.9 | -33.1 | -26.3         | -20.7         |
| 2-Feb  | -33.5                         | -33.9 | -34.8 | -33.9 | -33.2 | -33.4 | -33.3 | -32.2 | -29.5 | -28.9 | -26.5 | -25.0 | -24.0 | -23.3 | -22.2 | -21.2 | -20.5 | -20.1 | -19.8 | -19.5 | -18.9 | -18.8                     | -18.7 | -18.5 | -26.0         | -18.5         |
| 3-Feb  | -18.1                         | -17.4 | -16.5 | -15.6 | -14.7 | -13.7 | -12.3 | -12.1 | -12.2 | -11.3 | -9.2  | -4.9  | -4.4  | -4.4  | -5.2  | -6.2  | -7.6  | -8.7  | -9.4  | -9.6  | -9.8  | -9.9                      | -9.9  | -10.1 | -10.5         | -4.4          |
| 4-Feb  | -10.3                         | -10.1 | -10.5 | -11.3 | -11.9 | -11.8 | -11.8 | -11.6 | -11.3 | -11.3 | -10.9 | -10.5 | -9.8  | -9.8  | -9.5  | -9.5  | -9.3  | -9.2  | -9.2  | -8.8  | -8.5  | -8.7                      | -8.6  | -8.6  | -10.1         | -8.5          |
| 5-Feb  | -8.8                          | -8.7  | -8.6  | -8.5  | -8.3  | -8.0  | -7.6  | -7.3  | -6.8  | -6.3  | -5.5  | -4.4  | -3.6  | -1.8  | -0.5  | 0.5   | 0.5   | 0.4   | 1.3   | 3.7   | 3.8   | 3.2                       | 1.9   | -1.8  | -3.4          | 3.8           |
| 6-Feb  | -5.4                          | -7.4  | -8.9  | -9.6  | -9.9  | -10.1 | -10.4 | -9.9  | -9.8  | -9.2  | -8.7  | -7.7  | -6.4  | -6.1  | -6.1  | -5.9  | -6.0  | -5.8  | -4.9  | -3.8  | -3.1  | -2.8                      | -3.1  | -1.2  | -6.8          | -1.2          |
| 7-Feb  | 4.6                           | 4.3   | 4.3   | 4.6   | 4.1   | 4.1   | 2.5   | 0.5   | -0.7  | -0.7  | 0.1   | 1.5   | 2.3   | 2.8   | 3.1   | 2.5   | 0.9   | -0.2  | -1.6  | -2.1  | -2.4  | -2.9                      | -3.5  | -3.5  | 1.0           | 4.6           |
| 8-Feb  | -3.3                          | -4.1  | -8.1  | -12.0 | -13.8 | -14.7 | -15.6 | -18.3 | -18.7 | -14.4 | -11.4 | -8.3  | -5.7  | -2.8  | -1.1  | -1.0  | -2.6  | -5.2  | -9.0  | -10.6 | -10.6 | -7.9                      | -5.9  | -5.6  | -8.8          | -1.0          |
| 9-Feb  | -5.7                          | -5.0  | -5.1  | -5.0  | -4.9  | -5.4  | -4.3  | -4.1  | -3.6  | -2.2  | -0.9  | 0.7   | 2.7   | 2.7   | 2.9   | 2.6   | 2.0   | 1.3   | 1.0   | 1.2   | -0.2  | 0.2                       | 0.8   | 0.8   | -1.1          | 2.9           |
| 10-Feb   | 0.4                           | -1.5  | -1.8  | -1.2  | -1.2  | -1.4  | -2.4  | -2.9  | -2.9  | -2.6  | -2.4  | -2.1  | -1.9  | -1.6  | -1.6  | -1.6  | -1.9  | -3.6  | -6.4  | -6.3  | -6.2  | -6.4                      | -6.8  | -6.9  | -3.1          | 0.4           |
| 11-Feb   | -6.8                          | -6.6  | -6.5  | -6.2  | -6.0  | -4.3  | -3.5  | -3.3  | -3.7  | -4.3  | -2.3  | 0.8   | 2.0   | 2.8   | 3.2   | 3.0   | 1.1   | 0.9   | 0.8   | 0.6   | 0.6   | -0.3                      | -1.3  | -0.2  | -1.6          | 3.2           |
| 12-Feb   | -0.4                          | -0.4  | -0.2  | -0.9  | -0.7  | -0.8  | -1.2  | -2.0  | -3.0  | -1.8  | -1.1  | -0.1  | 0.8   | 2.2   | 2.8   | 1.9   | 1.2   | 0.7   | 1.4   | 1.2   | 1.1   | 1.0                       | 1.3   | 1.5   | 0.2           | 2.8           |
| 13-Feb   | 2.0                           | 3.2   | 4.8   | 5.0   | 4.9   | 4.4   | 2.8   | 1.3   | 0.7   | 0.9   | -2.2  | -7.1  | -8.5  | -9.2  | -9.3  | -9.1  | -9.6  | -10.6 | -11.7 | -12.7 | -13.2 | -15.0                     | -16.0 | -16.7 | -5.0          | 5.0           |
| 14-Feb   | -18.4                         | -19.3 | -19.5 | -20.0 | -20.3 | -20.4 | -20.7 | -20.4 | -19.7 | -18.9 | -18.1 | -17.5 | -17.1 | -16.9 | -17.0 | -17.1 | -17.4 | -17.5 | -17.8 | -18.3 | -18.7 | -19.5                     | -20.3 | -20.3 | -18.7         | -16.9         |
| 15-Feb   | -20.4                         | -21.7 | -22.6 | -23.0 | -22.9 | -22.7 | -22.9 | -23.3 | -24.3 | -21.2 | -19.4 | -17.6 | -17.3 | -16.5 | -15.1 | -15.3 | -16.1 | -18.2 | -21.3 | -21.9 | -19.4 | -18.8                     | -19.5 | -20.4 | -20.1         | -15.1         |
| 16-Feb   | -19.7                         | -19.2 | -18.0 | -18.4 | -17.2 | -15.6 | -14.1 | -13.4 | -11.7 | -9.6  | -6.7  | -4.1  | -0.6  | 1.2   | 1.8   | 1.3   | 1.2   | 0.9   | 0.0   | -2.1  | -6.1  | -9.0                      | -11.3 | -12.6 | -8.5          | 1.8           |
| 17-Feb   | -14.1                         | -14.7 | -15.4 | -15.3 | -15.4 | -15.6 | -15.8 | -15.9 | -16.0 | -15.0 | -14.2 | -14.1 | -13.2 | -12.5 | -12.8 | -13.2 | -13.6 | -14.7 | -16.2 | -17.6 | -18.2 | -19.1                     | -20.5 | -19.8 | -15.5         | -12.5         |
| 18-Feb   | -20.4                         | -20.9 | -21.9 | -23.0 | -24.5 | -24.9 | -25.0 | -24.6 | -24.3 | -23.7 | -22.7 | -21.6 | -20.4 | -19.4 | -18.8 | -18.4 | -19.2 | -21.1 | -25.0 | -26.7 | -28.0 | -28.6                     | -28.6 | -28.2 | -23.3         | -18.4         |
| 19-Feb   | -27.9                         | -27.5 | -25.8 | -22.6 | -22.4 | -23.4 | -22.6 | -23.1 | -23.0 | -22.1 | -20.3 | -18.4 | -16.7 | -15.9 | -15.0 | -14.5 | -15.1 | -15.6 | -16.3 | -17.1 | -18.6 | -19.9                     | -19.7 | -18.8 | -20.1         | -14.5         |
| 20-Feb   | -18.6                         | -19.0 | -19.4 | -19.9 | -20.5 | -20.6 | -20.8 | -21.2 | -21.1 | -20.4 | -19.1 | -17.8 | -16.9 | -16.8 | -16.9 | -16.7 | -16.9 | -17.7 | -20.1 | -20.1 | -22.3 | -25.8                     | -28.8 | -29.3 | -20.3         | -16.7         |
| 21-Feb   | -26.5                         | -25.8 | -26.5 | -28.5 | -29.5 | -30.2 | -30.0 | -30.5 | -30.3 | -29.8 | -28.9 | -28.0 | -27.3 | -26.4 | -25.9 | -25.6 | -25.6 | -26.6 | -27.6 | -28.2 | -28.9 | -30.2                     | -31.3 | -31.0 | -28.3         | -25.6         |
| 22-Feb   | -30.7                         | -30.0 | -29.2 | -29.4 | -29.5 | -29.5 | -29.8 | -30.0 | -27.5 | -25.6 | -23.8 | -22.6 | -21.4 | -20.4 | -19.7 | -19.3 | -19.6 | -21.3 | -25.8 | -28.3 | -29.2 | -30.0                     | -30.9 | -31.5 | -26.5         | -19.3         |
| 23-Feb   | -32.3                         | -32.3 | -33.1 | -33.6 | -33.9 | -34.7 | -34.5 | -34.8 | -30.7 | -26.1 | -23.7 | -22.1 | -21.2 | -20.0 | -19.0 | -18.4 | -18.8 | -20.3 | -24.5 | -26.7 | -25.7 | -25.6                     | -27.3 | -25.9 | -26.9         | -18.4         |
| 24-Feb   | -24.9                         | -24.6 | -23.8 | -23.5 | -24.0 | -26.3 | -27.0 | -28.5 | -23.8 | -20.3 | -19.1 | -17.7 | -16.8 | -15.8 | -15.2 | -15.7 | -16.3 | -17.0 | -17.9 | -19.1 | -19.7 | -20.2                     | -21.2 | -21.1 | -20.8         | -15.2         |
| 25-Feb   | -21.0                         | -21.7 | -20.0 | -17.7 | -16.7 | -15.9 | -15.3 | -14.9 | -14.2 | -13.0 | -11.5 | -9.5  | -8.0  | -6.6  | -5.5  | -5.3  | -6.9  | -8.3  | -10.4 | -11.1 | -11.6 | -11.5                     | -11.8 | -12.8 | -12.5         | -5.3          |
| 26-Feb   | -12.2                         | -11.3 | -11.5 | -11.7 | -11.8 | -12.0 | -12.2 | -13.0 | -12.5 | -11.8 | -11.1 | -10.3 | -9.7  | -9.1  | -8.5  | -8.4  | -8.7  | -8.8  | -9.2  | -9.4  | -9.8  | -10.1                     | -10.3 | -10.6 | -10.6         | -8.4          |
| 27-Feb   | -10.7                         | -10.8 | -10.8 | -10.9 | -11.0 | -11.0 | -11.1 | -11.1 | -11.7 | -12.3 | -12.2 | -11.7 | -11.6 | -11.6 | -11.7 | -11.9 | -12.5 | -12.8 | -13.3 | -14.1 | -14.7 | -15.4                     | -16.5 | -18.4 | -12.5         | -10.7         |
| 28-Feb   | -19.1                         | -18.7 | -19.1 | -19.9 | -20.4 | -21.1 | -19.9 | -19.4 | -18.7 | -17.6 | -17.0 | -15.7 | -14.3 | -13.4 | -12.4 | -12.2 | -12.6 | -14.8 | -19.2 | -21.7 | -22.4 | -22.0                     | -23.0 | -22.3 | -18.2         | -12.2         |
|  |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Diurnal Average           |       |       |               |               |
|  |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Diurnal Maximum           |       |       |               |               |
|  |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                           |       |       |               |               |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Ambient Temperature 2m (AT 2m) - C**  
**Anzac - February 2023**





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Ambient Temperature 2m (AT 2m) - C  
Anzac - February 2023**

| <b>Concentration Ranges (C)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---------------------------------|------------------------|----------|---------------------|
| -50 - -20                       | 192                    | 28.57    | 28.57               |
| -20 - 0                         | 406                    | 60.42    | 88.99               |
| 0 - 10                          | 74                     | 11.01    | 100.00              |
| 10 - 20                         | 0                      | 0.00     | 100.00              |
| > 20                            | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 672

Total Number of Hours: 672



**Wood Buffalo Environmental Association**

**Summary of Hour Averages**

**Relative Humidity (RH) - %**

**Anzac - February 2023**

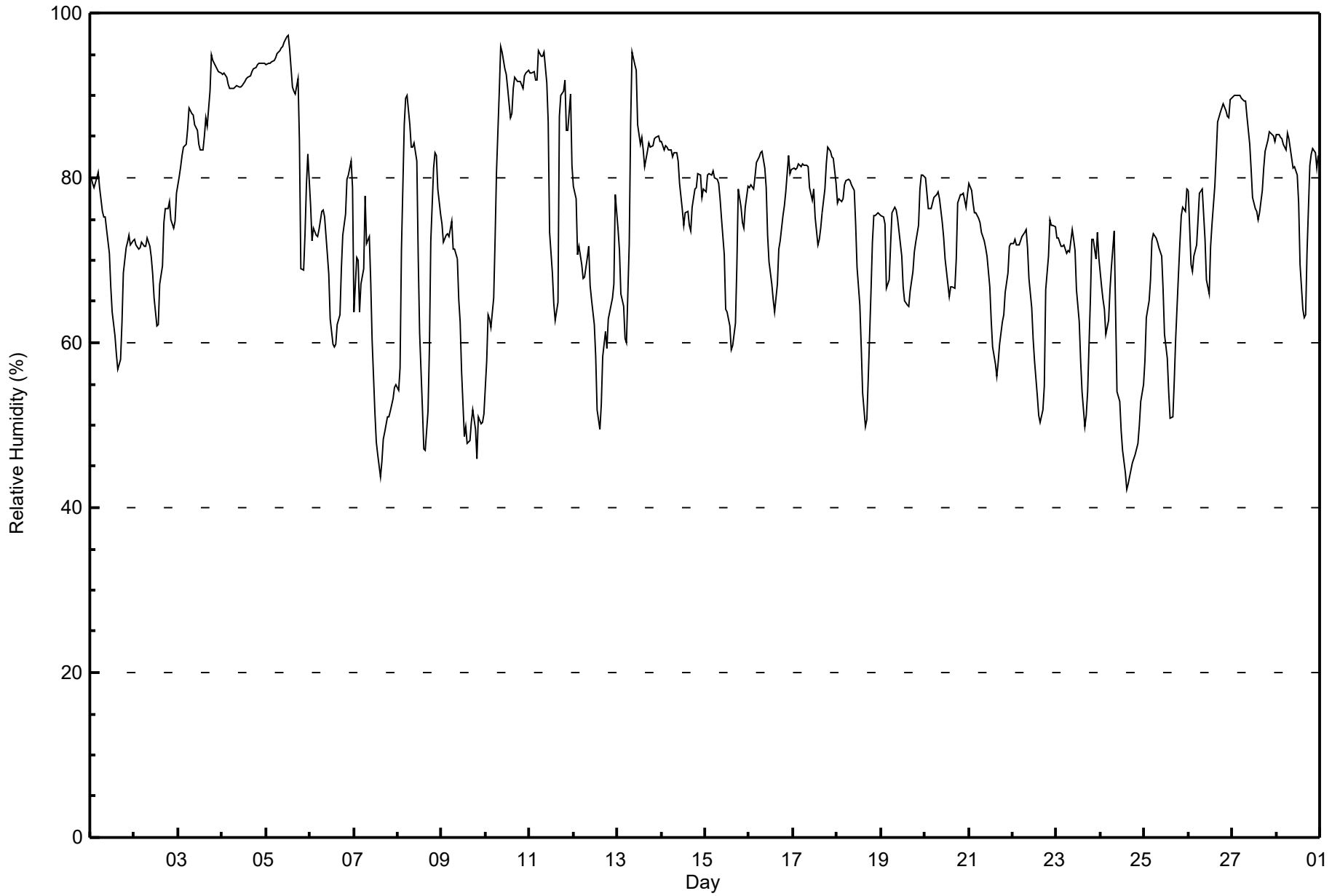
| Maximum Value: 97.3 % on Feb 5 13:00      Maximum Daily Average: 92.3 % on Feb 4  |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Hours in Service:         | 672   |      |               |               |
|---|-------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|---------------------------|-------|------|---------------|---------------|
| Minimum Value: 42.2 % on Feb 24 15:00      Minimum Daily Average: 54.7 % on Feb 24  |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Hours of Data:            | 672   |      |               |               |
| Maximum Diurnal Average: 80.2 % at hour 8      Minimum Diurnal Average: 64.5 % at hour 15   |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Hours of Missing Data:    | 0     |      |               |               |
| Monthly Average: 74.34 %      Percentiles: P <sub>1</sub> = 45.8 P <sub>10</sub> = 56.7 Q <sub>1</sub> = 66.9 Median = 75.1 Q <sub>3</sub> = 83.0 P <sub>90</sub> = 91.0 P <sub>99</sub> = 95.5 |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Hours of Calibration:     | 0     |      |               |               |
|   |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Percent Operational Time: | 100.0 |      |               |               |
| Day   | Hourly Period Ending At (MST) |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                           |       |      | Daily Average | Daily Maximum |
|   | 1                             | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20   | 21   | 22                        | 23    | 24   |               |               |
| 1-Feb   | 80.0                          | 79.3 | 78.7 | 79.9 | 80.6 | 78.8 | 75.9 | 75.3 | 75.2 | 73.7 | 70.8 | 66.8 | 63.7 | 60.9 | 58.6 | 56.7 | 57.9 | 62.5 | 68.5 | 71.6 | 72.3 | 73.1                      | 71.9  | 72.4 | 71.1          | 80.6          |
| 2-Feb   | 72.5                          | 71.8 | 71.3 | 71.6 | 72.2 | 71.8 | 71.8 | 72.7 | 71.7 | 70.3 | 68.3 | 65.5 | 62.1 | 62.3 | 67.1 | 69.3 | 74.6 | 76.3 | 76.2 | 77.1 | 75.0 | 73.9                      | 74.8  | 78.2 | 71.6          | 78.2          |
| 3-Feb   | 80.1                          | 81.3 | 82.7 | 83.7 | 84.0 | 86.0 | 88.4 | 87.8 | 87.7 | 86.4 | 85.8 | 84.1 | 83.3 | 83.4 | 85.0 | 87.4 | 86.3 | 90.5 | 94.9 | 94.2 | 93.5 | 93.2                      | 92.9  | 92.7 | 87.3          | 94.9          |
| 4-Feb   | 92.6                          | 92.7 | 92.1 | 91.4 | 90.9 | 90.9 | 90.9 | 91.1 | 91.2 | 91.0 | 91.3 | 91.8 | 92.0 | 92.2 | 92.4 | 92.9 | 93.2 | 93.4 | 93.7 | 93.9 | 93.8 | 93.9                      | 93.9  | 93.9 | 92.3          | 93.9          |
| 5-Feb   | 93.8                          | 93.9 | 93.9 | 94.0 | 94.3 | 94.5 | 95.0 | 95.4 | 95.8 | 95.9 | 96.4 | 97.1 | 97.3 | 95.6 | 91.0 | 90.5 | 90.1 | 92.1 | 84.4 | 69.0 | 68.8 | 73.2                      | 79.1  | 83.0 | 89.8          | 97.3          |
| 6-Feb   | 76.6                          | 72.4 | 73.9 | 73.0 | 72.9 | 73.7 | 75.9 | 76.2 | 75.2 | 70.7 | 68.3 | 62.9 | 59.8 | 59.5 | 59.8 | 62.3 | 63.5 | 68.9 | 73.1 | 75.5 | 79.9 | 80.3                      | 82.1  | 78.8 | 71.5          | 82.1          |
| 7-Feb   | 63.8                          | 70.3 | 70.0 | 63.7 | 67.1 | 69.0 | 77.9 | 72.1 | 72.9 | 67.5 | 60.4 | 51.6 | 48.0 | 46.5 | 43.7 | 45.5 | 48.3 | 49.1 | 51.0 | 51.0 | 51.7 | 53.2                      | 54.5  | 54.9 | 58.5          | 77.9          |
| 8-Feb   | 54.2                          | 56.9 | 71.3 | 86.4 | 89.6 | 90.0 | 86.5 | 83.8 | 83.8 | 84.3 | 82.1 | 70.4 | 61.2 | 52.0 | 47.1 | 47.0 | 51.7 | 59.3 | 72.3 | 81.2 | 83.1 | 82.7                      | 78.7  | 75.7 | 72.1          | 90.0          |
| 9-Feb   | 74.4                          | 72.3 | 73.0 | 73.3 | 72.9 | 74.8 | 71.4 | 71.3 | 70.2 | 65.2 | 62.6 | 56.7 | 48.6 | 49.8 | 47.8 | 48.2 | 50.3 | 51.8 | 49.5 | 45.9 | 51.0 | 50.2                      | 50.4  | 51.4 | 59.7          | 74.8          |
| 10-Feb  | 57.9                          | 63.3 | 62.9 | 61.9 | 65.4 | 72.5 | 80.7 | 90.5 | 95.9 | 95.2 | 93.3 | 92.5 | 90.8 | 87.4 | 87.8 | 90.8 | 92.2 | 91.7 | 91.7 | 91.6 | 90.9 | 92.3                      | 92.7  | 93.0 | 84.4          | 95.9          |
| 11-Feb  | 92.7                          | 92.8 | 92.8 | 91.8 | 91.8 | 95.4 | 94.7 | 94.7 | 95.3 | 91.6 | 86.8 | 73.5 | 68.4 | 64.8 | 62.6 | 64.9 | 87.5 | 90.0 | 90.4 | 91.9 | 85.7 | 85.8                      | 90.2  | 81.5 | 85.7          | 95.4          |
| 12-Feb  | 78.9                          | 77.4 | 70.7 | 71.7 | 69.5 | 67.8 | 68.0 | 70.3 | 71.7 | 67.0 | 65.3 | 62.2 | 58.4 | 51.9 | 49.4 | 52.5 | 58.3 | 61.3 | 59.3 | 62.8 | 64.6 | 65.4                      | 67.1  | 77.9 | 65.4          | 78.9          |
| 13-Feb  | 73.7                          | 71.1 | 65.9 | 64.4 | 60.5 | 60.0 | 72.1 | 86.6 | 95.3 | 93.7 | 93.1 | 86.5 | 84.0 | 84.8 | 83.4 | 81.3 | 83.2 | 84.3 | 83.8 | 83.8 | 84.7 | 85.0                      | 85.1  | 84.5 | 80.4          | 95.3          |
| 14-Feb  | 84.4                          | 83.5 | 83.9 | 83.7 | 83.5 | 83.5 | 82.6 | 83.0 | 83.0 | 82.0 | 79.4 | 76.1 | 74.3 | 75.7 | 75.9 | 74.3 | 73.6 | 76.4 | 78.6 | 78.7 | 80.5 | 80.4                      | 77.6  | 78.6 | 79.7          | 84.4          |
| 15-Feb  | 78.3                          | 80.3 | 80.6 | 80.3 | 80.8 | 80.0 | 79.9 | 79.3 | 77.5 | 75.1 | 70.7 | 64.1 | 63.7 | 62.0 | 59.1 | 59.7 | 62.4 | 69.3 | 78.6 | 76.5 | 74.5 | 74.0                      | 76.5  | 79.0 | 73.4          | 80.8          |
| 16-Feb  | 78.8                          | 79.1 | 78.7 | 80.1 | 81.9 | 82.5 | 83.1 | 83.3 | 81.3 | 78.9 | 73.1 | 69.9 | 67.2 | 65.3 | 63.7 | 67.0 | 71.3 | 72.4 | 75.4 | 76.5 | 78.3 | 82.7                      | 80.6  | 81.1 | 76.3          | 83.3          |
| 17-Feb  | 81.3                          | 81.0 | 81.2 | 81.6 | 81.3 | 81.6 | 81.5 | 81.5 | 81.3 | 78.7 | 77.3 | 78.6 | 75.3 | 71.9 | 72.6 | 73.9 | 75.8 | 78.6 | 81.7 | 83.7 | 83.2 | 82.6                      | 82.3  | 79.3 | 79.5          | 83.7          |
| 18-Feb  | 77.0                          | 77.4 | 77.1 | 77.4 | 79.1 | 79.7 | 79.9 | 79.7 | 79.2 | 78.5 | 74.5 | 69.1 | 64.6 | 59.6 | 53.8 | 49.8 | 50.6 | 55.6 | 66.3 | 72.3 | 75.4 | 75.4                      | 75.8  | 75.7 | 71.0          | 79.9          |
| 19-Feb  | 75.4                          | 75.2 | 74.4 | 66.5 | 67.6 | 71.8 | 75.7 | 76.5 | 76.1 | 75.1 | 73.5 | 70.5 | 66.8 | 65.1 | 64.5 | 64.4 | 66.2 | 68.6 | 71.1 | 72.2 | 74.3 | 78.6                      | 80.4  | 80.3 | 72.1          | 80.4          |
| 20-Feb  | 80.0                          | 78.2 | 76.2 | 76.3 | 77.0 | 77.7 | 77.9 | 78.2 | 77.5 | 74.6 | 72.7 | 70.2 | 67.2 | 65.6 | 66.7 | 66.8 | 66.7 | 70.2 | 76.9 | 77.9 | 77.9 | 78.2                      | 76.4  | 78.0 | 74.4          | 80.0          |
| 21-Feb  | 79.3                          | 78.5 | 77.0 | 75.7 | 75.7 | 75.1 | 74.6 | 73.4 | 72.3 | 71.6 | 70.5 | 66.7 | 62.7 | 59.5 | 57.5 | 55.8 | 57.7 | 59.9 | 62.6 | 63.4 | 66.0 | 68.4                      | 71.7  | 72.0 | 68.7          | 79.3          |
| 22-Feb  | 72.0                          | 72.6 | 71.9 | 71.8 | 72.3 | 73.0 | 73.4 | 73.7 | 71.6 | 67.7 | 64.3 | 60.5 | 57.8 | 53.6 | 51.3 | 50.3 | 51.9 | 54.8 | 66.4 | 70.5 | 74.9 | 74.2                      | 74.2  | 74.0 | 66.6          | 74.9          |
| 23-Feb  | 72.7                          | 72.8 | 71.7 | 71.7 | 71.9 | 70.8 | 71.2 | 71.0 | 73.7 | 72.5 | 71.2 | 66.5 | 62.5 | 57.8 | 54.0 | 49.9 | 51.2 | 54.1 | 65.5 | 72.6 | 72.5 | 70.2                      | 73.3  | 70.4 | 67.2          | 73.7          |
| 24-Feb  | 66.8                          | 65.3 | 64.0 | 61.0 | 62.7 | 66.5 | 69.2 | 73.5 | 63.9 | 54.1 | 52.8 | 49.4 | 47.0 | 44.2 | 42.2 | 42.8 | 43.8 | 45.5 | 45.9 | 47.8 | 49.9 | 52.9                      | 54.9  | 54.7 | 73.5          |               |
| 25-Feb  | 57.8                          | 63.0 | 65.1 | 67.6 | 72.3 | 73.2 | 72.6 | 72.2 | 71.6 | 70.6 | 66.5 | 61.1 | 58.1 | 54.0 | 50.8 | 50.9 | 55.5 | 60.5 | 68.3 | 72.0 | 75.4 | 76.5                      | 75.9  | 78.7 | 66.3          | 78.7          |
| 26-Feb  | 78.5                          | 69.4 | 68.6 | 70.5 | 71.9 | 74.9 | 78.1 | 78.6 | 75.5 | 72.5 | 67.6 | 65.9 | 71.8 | 74.5 | 79.0 | 82.7 | 86.8 | 88.0 | 88.4 | 89.0 | 88.1 | 87.4                      | 87.2  | 89.5 | 78.5          | 89.5          |
| 27-Feb  | 89.8                          | 90.0 | 90.1 | 90.0 | 89.9 | 89.7 | 89.4 | 89.4 | 87.5 | 84.1 | 81.0 | 77.7 | 76.3 | 76.0 | 74.8 | 75.8 | 78.4 | 81.2 | 83.2 | 84.6 | 85.6 | 85.3                      | 85.2  | 84.4 | 84.1          | 90.1          |
| 28-Feb  | 85.2                          | 85.2 | 85.0 | 84.8 | 84.1 | 83.5 | 85.4 | 84.7 | 82.3 | 81.1 | 81.4 | 80.3 | 77.0 | 69.5 | 64.0 | 63.0 | 63.4 | 71.0 | 81.6 | 82.8 | 83.5 | 83.1                      | 81.2  | 82.8 | 79.4          | 85.4          |
|   |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Diurnal Average           |       |      |               |               |
|   |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Diurnal Maximum           |       |      |               |               |
|   |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                           |       |      |               |               |





**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Relative Humidity (RH) - %**  
**Anzac - February 2023**





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Relative Humidity (RH) - %**  
**Anzac - February 2023**

| <b>Concentration Ranges (%)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---------------------------------|------------------------|----------|---------------------|
| 0 - 20                          | 0                      | 0.00     | 0.00                |
| 20 - 40                         | 0                      | 0.00     | 0.00                |
| 40 - 60                         | 91                     | 13.54    | 13.54               |
| 60 - 80                         | 357                    | 53.13    | 66.67               |
| 80 - 100                        | 224                    | 33.33    | 100.00              |

Total Number of Valid Hours: 672

Total Number of Hours: 672



**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

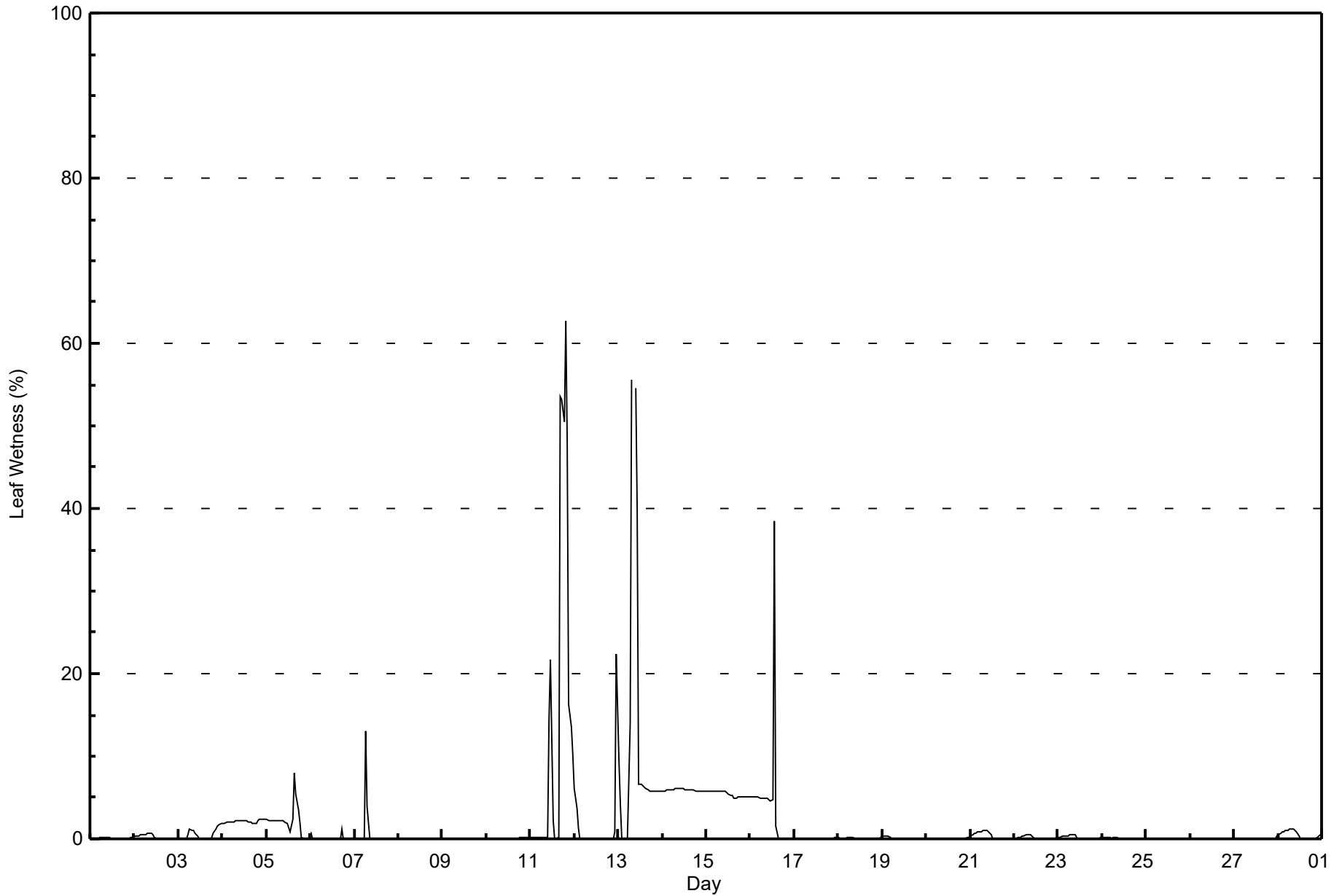
**Leaf Wetness (LW) - %**  
**Anzac - February 2023**

| Maximum Value: 62.7 % on Feb 11 20:00      Maximum Daily Average: 14.5 % on Feb 11   |                               | Hours in Service: 672<br>Hours of Data: 671<br>Hours of Missing Data: 1<br>Hours of Calibration: 0<br>Percent Operational Time: 99.9  |     |     |     |     |      |      |     |      |      |      |     |      |     |     |      |      |      |      |      |      |      |                 |               |               |     |
|--|-------------------------------|---|-----|-----|-----|-----|------|------|-----|------|------|------|-----|------|-----|-----|------|------|------|------|------|------|------|-----------------|---------------|---------------|-----|
| Minimum Value: 0.0 % on Feb 1 01:00<br>Maximum Diurnal Average: 3.1 % at hour 8<br>Monthly Average: 1.77 %   |                               | Minimum Daily Average: 0.0 % on Feb 9<br>Minimum Diurnal Average: 0.8 % at hour 15<br>Percentiles: P <sub>1</sub> = 0.0 P <sub>10</sub> = 0.0 Q <sub>1</sub> = 0.0 Median = 0.0 Q <sub>3</sub> = 0.7 P <sub>90</sub> = 5.7 P <sub>99</sub> = 42.1 |     |     |     |     |      |      |     |      |      |      |     |      |     |     |      |      |      |      |      |      |      |                 |               |               |     |
| Day  | Hourly Period Ending At (MST) |   |     |     |     |     |      |      |     |      |      |      |     |      |     |     |      |      |      |      |      |      |      |                 | Daily Average | Daily Maximum |     |
|  | 1                             | 2   | 3   | 4   | 5   | 6   | 7    | 8    | 9   | 10   | 11   | 12   | 13  | 14   | 15  | 16  | 17   | 18   | 19   | 20   | 21   | 22   | 23   | 24              |               |               |     |
| 1-Feb  | 0.0                           | 0.0   | 0.0 | 0.0 | 0.1 | 0.1 | 0.1  | 0.1  | 0.2 | 0.2  | 0.1  | 0.0  | 0.0 | 0.0  | 0.0 | 0.0 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.1  | 0.2             | 0.1           | 0.2           |     |
| 2-Feb  | 0.3                           | 0.3   | 0.4 | 0.4 | 0.5 | 0.5 | 0.6  | 0.6  | 0.7 | 0.6  | 0.5  | 0.2  | 0.0 | 0.0  | 0.0 | 0.0 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0             | 0.0           | 0.2           | 0.7 |
| 3-Feb  | 0.0                           | 0.0   | 0.0 | 0.0 | 0.0 | 0.5 | 1.2  | 1.1  | 1.0 | 0.7  | 0.4  | 0.0  | 0.0 | 0.0  | 0.0 | 0.0 | 0.0  | 0.0  | 0.2  | 0.7  | 1.2  | 1.6  | 1.7  | 1.8             | 0.5           | 1.8           |     |
| 4-Feb  | 1.9                           | 1.9   | 2.0 | 2.0 | 2.1 | 2.1 | 2.1  | 2.1  | 2.1 | 2.2  | 2.2  | 2.2  | 2.2 | 2.1  | 2.0 | 2.0 | 1.9  | 1.9  | 1.9  | 2.2  | 2.4  | 2.4  | 2.4  | 2.3             | 2.1           | 2.4           |     |
| 5-Feb  | 2.3                           | 2.3   | 2.2 | 2.3 | 2.3 | 2.2 | 2.2  | 2.3  | 2.2 | 2.2  | 2.0  | 1.8  | 1.4 | 0.9  | 2.4 | 8.0 | 5.5  | 3.5  | 2.0  | 0.1  | 0.0  | 0.0  | 0.0  | 0.0             | 2.1           | 8.0           |     |
| 6-Feb  | 0.6                           | 0.1   | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0  | 0.0 | 0.0  | 0.0  | 0.0  | 0.0 | 0.0  | 0.0 | 0.0 | 0.0  | 1.3  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0             | 0.1           | 1.3           |     |
| 7-Feb  | 0.0                           | 0.1   | 0.0 | 0.0 | 0.0 | 0.0 | 13.1 | 3.9  | 0.0 | 0.0  | 0.0  | 0.0  | 0.0 | 0.0  | 0.0 | 0.0 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0             | 0.7           | 13.1          |     |
| 8-Feb  | 0.0                           | 0.0   | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0  | 0.0 | 0.0  | 0.0  | 0.0  | 0.0 | 0.0  | 0.0 | 0.0 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0             | 0.0           | 0.0           | 0.0 |
| 9-Feb  | 0.0                           | 0.0   | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0  | 0.0 | 0.0  | 0.0  | 0.0  | 0.0 | 0.0  | 0.0 | 0.0 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0             | 0.0           | 0.0           | 0.0 |
| 10-Feb   | 0.0                           | 0.0   | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0  | 0.0 | 0.0  | 0.0  | 0.0  | 0.0 | 0.0  | 0.0 | 0.0 | 0.0  | 0.0  | 0.1  | 0.1  | 0.1  | 0.1  | 0.1  | 0.2             | 0.0           | 0.2           |     |
| 11-Feb   | 0.2                           | 0.2   | 0.2 | 0.2 | 0.2 | 0.2 | 0.2  | 0.2  | 0.2 | 0.1  | 14.5 | 21.6 | 2.2 | 0.0  | 0.0 | 0.1 | 53.5 | 53.2 | 50.5 | 62.7 | 47.9 | 16.2 | 13.6 | 10.2            | 14.5          | 62.7          |     |
| 12-Feb   | 6.1                           | 3.7   | 1.4 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0  | 0.0 | 0.0  | 0.0  | 0.0  | 0.0 | 0.0  | 0.0 | 0.0 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.9  | 22.4            | 1.4           | 22.4          |     |
| 13-Feb   | 9.4                           | 4.1   | 0.0 | 0.0 | 0.0 | 0.0 | 13.9 | 55.7 | OR  | 54.6 | 39.6 | 6.7  | 6.6 | 6.5  | 6.3 | 6.1 | 5.9  | 5.8  | 5.7  | 5.7  | 5.7  | 5.7  | 5.7  | 5.8             | 11.1          | 55.7          |     |
| 14-Feb   | 5.8                           | 5.8   | 5.9 | 5.9 | 6.0 | 6.0 | 6.0  | 6.0  | 6.0 | 6.0  | 6.0  | 6.0  | 5.9 | 5.9  | 5.9 | 5.9 | 5.9  | 5.9  | 5.8  | 5.8  | 5.8  | 5.8  | 5.8  | 5.8             | 5.9           | 6.0           |     |
| 15-Feb   | 5.8                           | 5.8   | 5.8 | 5.8 | 5.8 | 5.8 | 5.8  | 5.8  | 5.8 | 5.8  | 5.7  | 5.6  | 5.5 | 5.3  | 5.2 | 5.0 | 5.0  | 5.0  | 5.0  | 5.1  | 5.1  | 5.0  | 5.0  | 5.0             | 5.4           | 5.8           |     |
| 16-Feb   | 5.0                           | 5.0   | 5.0 | 5.0 | 5.0 | 5.0 | 5.0  | 5.0  | 4.9 | 4.9  | 4.8  | 4.5  | 4.7 | 38.5 | 1.5 | 0.0 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0             | 4.3           | 38.5          |     |
| 17-Feb   | 0.0                           | 0.0   | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0  | 0.0 | 0.0  | 0.0  | 0.0  | 0.0 | 0.0  | 0.0 | 0.0 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.1  | 0.2  | 0.2             | 0.0           | 0.2           |     |
| 18-Feb   | 0.1                           | 0.0   | 0.0 | 0.0 | 0.1 | 0.1 | 0.1  | 0.1  | 0.1 | 0.0  | 0.0  | 0.0  | 0.0 | 0.0  | 0.0 | 0.0 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.1  | 0.2             | 0.0           | 0.2           |     |
| 19-Feb   | 0.3                           | 0.4   | 0.4 | 0.3 | 0.1 | 0.0 | 0.0  | 0.0  | 0.0 | 0.0  | 0.0  | 0.0  | 0.0 | 0.0  | 0.0 | 0.0 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0             | 0.1           | 0.4           |     |
| 20-Feb   | 0.0                           | 0.0   | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0  | 0.0 | 0.0  | 0.0  | 0.0  | 0.0 | 0.0  | 0.0 | 0.0 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.1  | 0.2             | 0.0           | 0.2           |     |
| 21-Feb   | 0.3                           | 0.5   | 0.6 | 0.7 | 0.8 | 0.9 | 0.9  | 1.0  | 1.0 | 0.9  | 0.8  | 0.5  | 0.0 | 0.0  | 0.0 | 0.0 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0             | 0.4           | 1.0           |     |
| 22-Feb   | 0.0                           | 0.1   | 0.1 | 0.2 | 0.3 | 0.4 | 0.4  | 0.5  | 0.5 | 0.5  | 0.2  | 0.0  | 0.0 | 0.0  | 0.0 | 0.0 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.1             | 0.1           | 0.5           |     |
| 23-Feb   | 0.2                           | 0.2   | 0.3 | 0.3 | 0.4 | 0.4 | 0.4  | 0.5  | 0.5 | 0.4  | 0.2  | 0.0  | 0.0 | 0.0  | 0.0 | 0.0 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.1  | 0.1             | 0.2           | 0.5           |     |
| 24-Feb   | 0.2                           | 0.2   | 0.2 | 0.2 | 0.1 | 0.1 | 0.1  | 0.2  | 0.2 | 0.0  | 0.0  | 0.0  | 0.0 | 0.0  | 0.0 | 0.0 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0             | 0.1           | 0.2           |     |
| 25-Feb   | 0.0                           | 0.0   | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0  | 0.0 | 0.0  | 0.0  | 0.0  | 0.0 | 0.0  | 0.0 | 0.0 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0             | 0.0           | 0.0           |     |
| 26-Feb   | 0.0                           | 0.0   | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0  | 0.0 | 0.0  | 0.0  | 0.0  | 0.0 | 0.0  | 0.0 | 0.0 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0             | 0.0           | 0.0           |     |
| 27-Feb   | 0.0                           | 0.0   | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0  | 0.0 | 0.0  | 0.0  | 0.0  | 0.0 | 0.0  | 0.0 | 0.0 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.3             | 0.0           | 0.3           |     |
| 28-Feb   | 0.5                           | 0.7   | 0.8 | 0.9 | 1.0 | 1.1 | 1.2  | 1.2  | 1.2 | 1.1  | 0.9  | 0.3  | 0.0 | 0.0  | 0.0 | 0.0 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.2  | 0.3  | 0.4             | 0.5           | 1.2           |     |
|  |                               |   |     |     |     |     |      |      |     |      |      |      |     |      |     |     |      |      |      |      |      |      |      | Diurnal Average |               |               |     |
|  |                               |   |     |     |     |     |      |      |     |      |      |      |     |      |     |     |      |      |      |      |      |      |      | Diurnal Maximum |               |               |     |
| 1.4 1.1 0.9 0.9 0.9 0.9 1.9 3.1 1.0 2.9 2.8 1.8 1.0 2.1 0.8 1.0 2.8 2.7 2.5 2.9 2.4 1.3 1.3 2.0<br>9.4 5.8 5.9 5.9 6.0 6.0 13.9 55.7 6.0 54.6 39.6 21.6 6.6 38.5 6.3 8.0 53.5 53.2 50.5 62.7 47.9 16.2 13.6 22.4 |                               |   |     |     |     |     |      |      |     |      |      |      |     |      |     |     |      |      |      |      |      |      |      |                 |               |               |     |
| OR - Out of Range  |                               |   |     |     |     |     |      |      |     |      |      |      |     |      |     |     |      |      |      |      |      |      |      |                 |               |               |     |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Leaf Wetness (LW) - %**  
**Anzac - February 2023**





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Leaf Wetness (LW) - %  
Anzac - February 2023**

| <b>Concentration Ranges (%)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---------------------------------|------------------------|----------|---------------------|
| 0 - 0.3                         | 470                    | 70.04    | 70.04               |
| 0.4 - 0.5                       | 24                     | 3.58     | 73.62               |
| 0.6 - 0.7                       | 10                     | 1.49     | 75.11               |
| 0.8 - 1.4                       | 25                     | 3.73     | 78.84               |
| 1.5 - 10                        | 124                    | 18.48    | 97.32               |
| > 10                            | 17                     | 2.53     | 99.85               |

Total Number of Valid Hours: 671

Total Number of Hours: 672



|   |   |                                |
|---|---|--------------------------------|
| Maximum Speed: 31 km/h on Feb 6 03:00             | Maximum Daily Speed Average: 16.4 km/h on Feb 7   | Hours in Service: 672          |
| Minimum Speed Value: 0 km/h on Feb 17 10:00       | Minimum Daily Speed Average: 1.5 km/h on Feb 3  | Hours of Data: 664             |
| Maximum Diurnal Speed Average: 5.3 km/h at hour 7 | Minimum Diurnal Speed Average: 2.0 km/h at hour 21  | Hours of Missing Data: 8       |
| Monthly Average Velocity: 3.6 km/h 268.1 deg      | Percentiles: P <sub>1</sub> = 2 P <sub>10</sub> = 4 Q <sub>1</sub> = 6 Median = 9 Q <sub>3</sub> = 13 P <sub>90</sub> = 19 P <sub>99</sub> = 26 | Percent Operational Time: 98.8 |

| Day  | Hourly Period Ending At (MST) |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 | Daily Average | Daily Maximum |
|--|-------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-----------------|---------------|---------------|
|  | 1                             | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     | 10    | 11    | 12    | 13    | 14    | 15    | 16    | 17    | 18    | 19    | 20    | 21    | 22    | 23    | 24              |               |               |
| 1-Feb  | NNW7                          | NW11  | NW10  | WNW9  | NW9   | NNW14 | NNW17 | NW16  | NW17  | NW19  | NW17  | NW18  | NW18  | NW19  | NW19  | NW16  | NW11  | NW8   | WNW8  | W8    | W9    | WNW8  | WSW7  | WSW5            | NW11.7        | NW19          |
| 2-Feb  | SSW4                          | S5    | S4    | SSE7  | SSE9  | SSE9  | SE11  | SE11  | SE13  | ESE11 | ESE13 | ESE14 | ESE18 | SE22  | SE21  | SE19  | ESE22 | SE22  | SE21  | SE19  | SE19  | SE19  | SE17  | SE15            | SE14.0        | SE22          |
| 3-Feb  | SE13                          | SE11  | SE12  | SE11  | SE12  | SE8   | ESE5  | NNE5  | NE4   | NE4   | NW6   | W15   | NNW15 | NNW13 | NNW15 | NW12  | NNW12 | NNW10 | NW7   | NNW5  | UO    | UO    | UO    | UO              | NW1.5         | W15           |
| 4-Feb  | UO                            | UO    | ENE5  | NE6   | ENE7  | E6    | E4    | ESE5  | ENE4  | ENE5  | NE3   | NE2   | ENE2  | NNE4  | NNE4  | NE3   | ESE5  | E7    | ESE7  | E7    | E6    | ESE5  | ENE3  | ENE4.2          | E7            |               |
| 5-Feb  | NE2                           | NE3   | ENE3  | ESE4  | ESE5  | SE5   | ESE6  | ESE5  | ESE2  | SE3   | SE4   | NNE3  | E3    | ESE4  | ESE5  | SE6   | SE8   | E7    | SW10  | WSW17 | W18   | W17   | NNW24 | WNW26           | SW2.5         | WNW26         |
| 6-Feb  | WNW28                         | NNW29 | W31   | W29   | W24   | W20   | NNW22 | WNW22 | NNW18 | NNW18 | NNW17 | NNW11 | W6    | E5    | ESE8  | ESE10 | ESE11 | SE10  | SE12  | SE10  | SE8   | SE5   | SE6   | WSW7            | W8.3          | W31           |
| 7-Feb  | WSW21                         | WSW20 | WSW17 | WSW21 | WSW17 | WSW17 | NNW24 | W23   | W21   | W19   | WSW18 | WSW18 | W25   | W22   | W19   | W19   | WSW15 | WSW10 | WSW8  | W9    | W9    | W8    | W10   | W13             | W16.4         | W25           |
| 8-Feb  | W16                           | W14   | NW12  | WNW9  | W10   | WNW9  | W5    | NE5   | SE4   | SE5   | SE5   | SSE5  | SSE4  | SE3   | SSE5  | SE6   | SE7   | SE6   | SE7   | SSW6  | SSW6  | SSW9  | SSW9  | SSW9            | SW3.1         | W16           |
| 9-Feb  | SSW9                          | SSW10 | SSW10 | SSW9  | SSW8  | SW9   | WSW11 | WSW12 | WSW12 | WSW10 | W10   | WSW8  | S3    | S10   | S9    | SSE7  | ESE9  | SSE11 | SSE11 | S8    | S5    | SSW8  | SSW10 | SSW7            | SSW7.3        | WSW12         |
| 10-Feb   | SSE4                          | ESE5  | SE7   | SSE7  | ESE3  | SE4   | NE9   | E5    | E6    | ESE11 | ESE10 | E10   | E11   | E10   | E9    | NE6   | NNE5  | WNW6  | W9    | WNW7  | WNW6  | NW5   | NNW3  | UO              | E3.0          | ESE11         |
| 11-Feb   | UO                            | NNE3  | NW2   | W2    | W2    | W11   | W12   | W10   | S3    | SE5   | S2    | WSW10 | W11   | WSW13 | WSW14 | SW19  | WSW19 | WSW19 | WSW22 | W21   | W23   | W17   | W16   | WSW20           | WSW10.9       | W23           |
| 12-Feb   | WSW19                         | WSW19 | WSW18 | W19   | W21   | WSW21 | WSW22 | W18   | W14   | W15   | W14   | W10   | W7    | W5    | E1    | ENE4  | SSE9  | SE10  | SE10  | SE12  | ESE12 | ESE12 | SE12  | SSE18           | SW7.5         | WSW22         |
| 13-Feb   | SSE14                         | S12   | SW18  | SW21  | SW23  | WSW26 | WSW21 | WSW18 | W17   | W17   | NNW24 | NW25  | NW23  | NW25  | NW24  | NW27  | NW25  | NW28  | NNW24 | NW19  | NW18  | NW14  | NW15  | WNW14           | WNW15.4       | NW28          |
| 14-Feb   | WNW12                         | WNW12 | WNW14 | WNW11 | WNW10 | WNW9  | W7    | W7    | W7    | W7    | W7    | W7    | NW6   | NNW7  | NNW10 | NNW12 | NNW9  | NW7   | NW6   | NW9   | NW9   | NW9   | NNW7  | NNW6            | NW7.9         | WNW14         |
| 15-Feb   | WNW3                          | WSW2  | W2    | NW1   | NE3   | SE2   | SE5   | SSE7  | SE6   | SSE7  | SE4   | E3    | ENE3  | ENE5  | SE5   | E6    | E6    | E6    | E8    | SE8   | SE11  | SE10  | SE11  | SE7             | ESE4.3        | SE11          |
| 16-Feb   | SE6                           | SE9   | ESE8  | ESE8  | ESE8  | ESE8  | E9    | ESE10 | ESE7  | SE8   | SE13  | SSE11 | S11   | SW8   | WSW16 | W18   | W16   | WNW20 | WNW21 | NW24  | NW22  | NW19  | NW15  | WNW9            | W3.0          | NW24          |
| 17-Feb   | W11                           | WNW8  | W9    | W8    | W9    | WNW6  | WNW6  | WNW4  | NNW2  | SSE0  | ENE3  | NE5   | NE5   | NNW5  | N7    | NNW8  | NNW7  | NNW9  | NW8   | NNW9  | NW8   | NW5   | NW7   | NNW9            | NW5.3         | W11           |
| 18-Feb   | NNW8                          | NW8   | NNW8  | N6    | NNW6  | NNW5  | NNW5  | NNW5  | NNW6  | NW6   | WNW7  | W8    | W9    | W10   | W10   | WNW8  | NNW8  | NW6   | WNW5  | SW3   | S4    | SE6   | SE6   | SE9             | WNW3.8        | W10           |
| 19-Feb   | SE9                           | SE10  | SE9   | SE11  | ESE12 | ESE10 | ESE10 | ESE10 | ESE10 | ESE11 | ESE13 | ESE14 | E10   | E9    | ESE9  | E8    | ENE7  | NNE6  | NNE7  | NNE6  | NE3   | NW3   | WSW5  | W8              | ESE6.6        | ESE14         |
| 20-Feb   | W10                           | W11   | WNW11 | W9    | W10   | WNW10 | W10   | WNW6  | NNW7  | N6    | N5    | NNW7  | NNW9  | NW11  | NNW10 | NNW10 | NNW7  | NW5   | NW6   | N9    | N8    | N5    | WNW6  | WNW8            | NW7.1         | W11           |
| 21-Feb   | WNW10                         | NW13  | NW12  | WNW10 | W10   | WNW12 | WNW12 | NW15  | NW17  | NW17  | NW17  | NW19  | NW19  | NW19  | NW21  | NW20  | NW16  | NW14  | NW14  | NW15  | NW12  | WNW9  | W9    | W10             | NW13.8        | NW21          |
| 22-Feb   | WNW11                         | W9    | WNW12 | W11   | W11   | W11   | W10   | W11   | W11   | W11   | W11   | W13   | WNW11 | NNW9  | NNW8  | NNW8  | NNW6  | NNW5  | NW5   | WNW5  | WSW5  | WSW6  | W5    | WNW4            | WNW7.9        | W13           |
| 23-Feb   | SW6                           | W4    | SW5   | WSW5  | WNW5  | WSW7  | W8    | WNW7  | W6    | WNW6  | NW7   | NNW7  | NNW8  | NNW10 | NNW9  | NW9   | NNW8  | N4    | ESE4  | SE7   | SSE9  | SSE10 | S9    | SSW8            | W3.0          | SSE10         |
| 24-Feb   | SSW8                          | SSW9  | SSW10 | SSW11 | SSW11 | SSW5  | SSW7  | SSW6  | SW6   | SSE8  | S19   | S19   | S17   | S17   | S16   | S18   | S18   | S16   | S18   | S19   | S15   | S15   | S12   | S10             | S12.5         | S19           |
| 25-Feb   | SSW9                          | SSW7  | WSW8  | W15   | W18   | W19   | W19   | W18   | W17   | W16   | WSW16 | WSW14 | WSW14 | WSW11 | WSW9  | WSW9  | W8    | WSW6  | S4    | SSE6  | SE4   | SSE7  | SSW6  | SSE4            | WSW9.4        | W19           |
| 26-Feb   | SE9                           | SE11  | SE8   | ESE9  | SE11  | SE9   | ESE11 | ESE10 | ESE10 | ESE9  | ESE11 | E11   | E11   | E13   | E12   | ENE12 | ENE13 | E10   | ENE12 | ENE12 | ENE13 | E9    | E8    | NE5             | E9.6          | E13           |
| 27-Feb   | NE4                           | N6    | N6    | NNW7  | NNW7  | NW8   | NW9   | NNW10 | NNW13 | NNW13 | NNW14 | NNW14 | NNW16 | NNW15 | NNW16 | NNW14 | NW14  | NW12  | WNW10 | NW12  | NW10  | NNW10 | NNW10 | W9              | NW10.1        | WNW16         |
| 28-Feb   | W9                            | WNW8  | W7    | W7    | W6    | W5    | WNW5  | WNW4  | W3    | W3    | WSW4  | W8    | WNW5  | W5    | WNW4  | W5    | WNW5  | W5    | W4    | NNW3  | NE2   | SSE6  | ESE6  | SE9             | W3.6          | W9            |
| WSW5.1 WSW4.8 WSW4.9 WSW5.2 WSW5.1 W5.2 W5.3 W4.7 W4.1 W3.3 W3.4 W4.3 W4.1 WNW3.7 WNW3.7 WNW3.5 NW2.1 WNW2.1 W2.4 W2.5 W2.0 WSW2.1 WSW3.1 WSW4.2 |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Diurnal Average |               |               |
| WNW28 WNW29 W31 W29 W24 WSW26 WNW24 W23 W21 W19 NNW24 NW25 W25 NW25 NW24 NW27 NW25 NW28 NNW24 NW24 W23 SE19 WNW24 WNW26                          |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Diurnal Maximum |               |               |

UO - Unstable Operation

All monthly, daily, and diurnal averages have been calculated using vector methods



**Wood Buffalo Environmental Association**  
**Summary of Hour Standard Deviations**

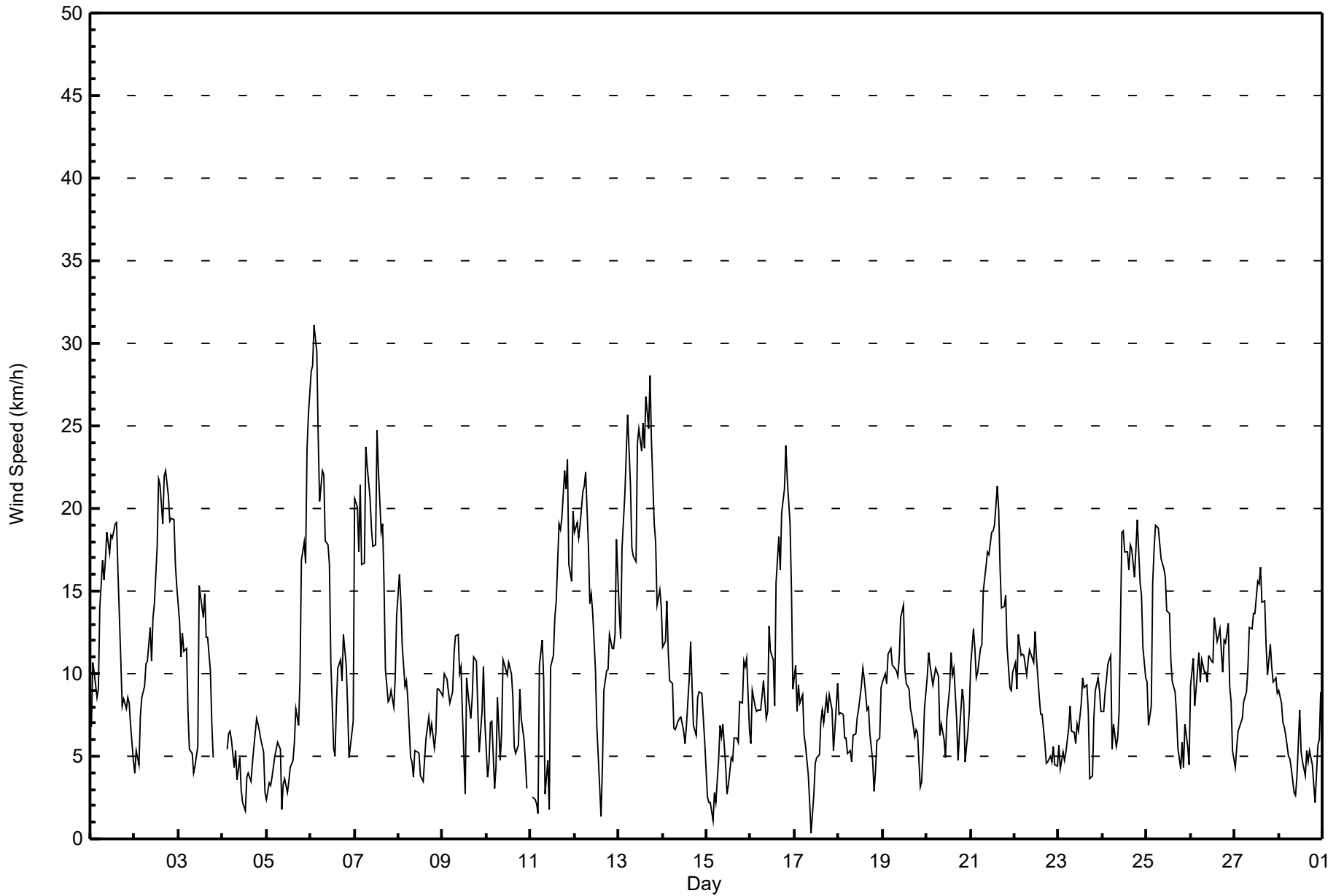
**Wind Speed (WS) - km/h**  
**Anzac - February 2023**

| Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0<br>Maximum Value: 8 km/h on Feb 7 07:00<br>Minimum Value: 0 km/h on Feb 28 20:00<br>Percentiles: P <sub>1</sub> = 1 P <sub>10</sub> = 1 Q <sub>1</sub> = 1 Median = 2 Q <sub>3</sub> = 3 P <sub>90</sub> = 5 P <sub>99</sub> = 8 |                               |    |   |   |   |   |   |   |   |    |    |    |    |    |    |    | Hours in Service: 672<br>Hours of Data: 664<br>Hours of Missing Data: 8<br>Hours of Calibration: 0<br>Percent Operational Time: 98.8 |    |    |    |    |    |    |    |               |  |  |
|--|-------------------------------|----|---|---|---|---|---|---|---|----|----|----|----|----|----|----|--|----|----|----|----|----|----|----|---------------|--|--|
| Day  | Hourly Period Ending At (MST) |    |   |   |   |   |   |   |   |    |    |    |    |    |    |    |  |    |    |    |    |    |    |    | Daily Maximum |  |  |
|  | 1                             | 2  | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17   | 18 | 19 | 20 | 21 | 22 | 23 | 24 |               |  |  |
| 1-Feb  | 2                             | 3  | 3 | 2 | 3 | 2 | 4 | 3 | 4 | 4  | 4  | 5  | 4  | 5  | 4  | 4  | 3  | 1  | 1  | 1  | 1  | 2  | 1  | 2  | 5             |  |  |
| 2-Feb  | 1                             | 1  | 1 | 1 | 2 | 1 | 2 | 3 | 3 | 2  | 3  | 4  | 4  | 5  | 5  | 5  | 5  | 5  | 5  | 4  | 4  | 4  | 4  | 3  | 5             |  |  |
| 3-Feb  | 3                             | 3  | 3 | 2 | 3 | 2 | 1 | 2 | 2 | 2  | 4  | 4  | 4  | 4  | 4  | 3  | 3  | 3  | 1  | 1  | UO | UO | UO | UO | 4             |  |  |
| 4-Feb  | UO                            | UO | 1 | 2 | 1 | 1 | 2 | 2 | 1 | 1  | 1  | 1  | 2  | 1  | 1  | 1  | 1  | 1  | 2  | 2  | 2  | 1  | 2  | 1  | 2             |  |  |
| 5-Feb  | 1                             | 1  | 2 | 1 | 1 | 2 | 2 | 2 | 1 | 2  | 3  | 2  | 1  | 1  | 2  | 1  | 2  | 1  | 2  | 5  | 5  | 4  | 7  | 7  | 7             |  |  |
| 6-Feb  | 8                             | 8  | 8 | 8 | 6 | 5 | 5 | 6 | 5 | 4  | 4  | 4  | 2  | 2  | 2  | 2  | 2  | 3  | 2  | 2  | 2  | 1  | 2  | 5  | 8             |  |  |
| 7-Feb  | 8                             | 6  | 5 | 6 | 4 | 4 | 8 | 6 | 5 | 5  | 5  | 5  | 8  | 7  | 6  | 6  | 4  | 3  | 2  | 2  | 2  | 2  | 2  | 4  | 8             |  |  |
| 8-Feb  | 4                             | 3  | 3 | 2 | 2 | 2 | 2 | 1 | 2 | 1  | 1  | 1  | 1  | 1  | 2  | 1  | 2  | 2  | 1  | 1  | 1  | 1  | 2  | 2  | 4             |  |  |
| 9-Feb  | 2                             | 2  | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 2  | 3  | 2  | 2  | 3  | 3  | 2  | 2  | 2  | 3  | 2  | 1  | 2  | 2  | 1  | 3             |  |  |
| 10-Feb   | 1                             | 1  | 2 | 3 | 1 | 2 | 2 | 1 | 2 | 3  | 3  | 3  | 3  | 2  | 2  | 1  | 1  | 2  | 2  | 2  | 1  | 1  | 2  | UO | 3             |  |  |
| 11-Feb   | UO                            | 1  | 1 | 1 | 2 | 4 | 3 | 3 | 1 | 1  | 2  | 3  | 3  | 4  | 4  | 6  | 5  | 5  | 6  | 5  | 6  | 5  | 4  | 6  | 6             |  |  |
| 12-Feb   | 5                             | 6  | 5 | 5 | 6 | 6 | 6 | 5 | 4 | 4  | 3  | 3  | 2  | 2  | 1  | 1  | 2  | 2  | 2  | 2  | 2  | 3  | 4  | 4  | 6             |  |  |
| 13-Feb   | 5                             | 4  | 6 | 6 | 7 | 6 | 7 | 8 | 5 | 4  | 7  | 6  | 6  | 7  | 5  | 6  | 7  | 6  | 5  | 5  | 4  | 3  | 3  | 3  | 8             |  |  |
| 14-Feb   | 2                             | 3  | 3 | 3 | 2 | 2 | 1 | 1 | 2 | 2  | 2  | 2  | 2  | 2  | 2  | 3  | 2  | 2  | 2  | 2  | 2  | 2  | 1  | 2  | 3             |  |  |
| 15-Feb   | 1                             | 1  | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1  | 1  | 2  | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 2  | 2  | 2  | 2  | 2             |  |  |
| 16-Feb   | 2                             | 3  | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2  | 3  | 2  | 2  | 5  | 5  | 5  | 4  | 5  | 6  | 6  | 5  | 5  | 3  | 2  | 6             |  |  |
| 17-Feb   | 2                             | 2  | 2 | 2 | 2 | 1 | 2 | 1 | 1 | 1  | 1  | 1  | 1  | 1  | 1  | 2  | 2  | 1  | 1  | 2  | 2  | 1  | 1  | 2  | 2             |  |  |
| 18-Feb   | 2                             | 1  | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1  | 2  | 2  | 3  | 2  | 2  | 2  | 2  | 1  | 1  | 1  | 1  | 1  | 2  | 1  | 3             |  |  |
| 19-Feb   | 1                             | 1  | 2 | 2 | 2 | 2 | 3 | 2 | 2 | 3  | 3  | 3  | 2  | 2  | 2  | 2  | 2  | 1  | 1  | 1  | 1  | 1  | 2  | 1  | 3             |  |  |
| 20-Feb   | 2                             | 3  | 2 | 2 | 2 | 3 | 2 | 1 | 1 | 1  | 1  | 2  | 2  | 2  | 2  | 2  | 2  | 1  | 2  | 1  | 2  | 2  | 1  | 2  | 3             |  |  |
| 21-Feb   | 2                             | 2  | 3 | 2 | 2 | 2 | 2 | 4 | 4 | 4  | 3  | 4  | 4  | 5  | 5  | 5  | 5  | 3  | 3  | 4  | 2  | 2  | 2  | 2  | 5             |  |  |
| 22-Feb   | 2                             | 2  | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 3  | 2  | 3  | 3  | 2  | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 3             |  |  |
| 23-Feb   | 1                             | 1  | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1  | 1  | 2  | 2  | 2  | 2  | 2  | 2  | 1  | 1  | 2  | 1  | 1  | 1  | 1  | 2             |  |  |
| 24-Feb   | 1                             | 2  | 2 | 4 | 3 | 2 | 2 | 1 | 3 | 3  | 5  | 6  | 5  | 5  | 4  | 5  | 5  | 4  | 5  | 6  | 5  | 4  | 3  | 3  | 6             |  |  |
| 25-Feb   | 2                             | 2  | 4 | 4 | 5 | 5 | 5 | 4 | 4 | 4  | 4  | 4  | 4  | 3  | 3  | 2  | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 5             |  |  |
| 26-Feb   | 3                             | 2  | 2 | 2 | 2 | 3 | 2 | 2 | 2 | 3  | 2  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 2  | 3  | 1  | 3             |  |  |
| 27-Feb   | 1                             | 1  | 1 | 1 | 1 | 1 | 1 | 3 | 3 | 3  | 3  | 3  | 4  | 3  | 4  | 3  | 3  | 3  | 3  | 2  | 2  | 2  | 2  | 2  | 4             |  |  |
| 28-Feb   | 1                             | 1  | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1  | 2  | 2  | 2  | 2  | 2  | 1  | 1  | 1  | 1  | 0  | 1  | 2  | 1  | 1  | 2             |  |  |
|  |                               |    |   |   |   |   |   |   |   |    |    |    |    |    |    |    | Diurnal Maximum  |    |    |    |    |    |    |    |               |  |  |
| UO - Unstable Operation  |                               |    |   |   |   |   |   |   |   |    |    |    |    |    |    |    |  |    |    |    |    |    |    |    |               |  |  |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Wind Speed (WS) - km/h**  
**Anzac - February 2023**







**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Wind Speed (WS) - km/h  
Anzac - February 2023**

| <b>Wind Speed Ranges (km/h)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---------------------------------|------------------------|----------|---------------------|
| 0 - 5                           | 133                    | 20.03    | 20.03               |
| 6 - 11                          | 326                    | 49.10    | 69.13               |
| 12 - 19                         | 156                    | 23.49    | 92.62               |
| 20 - 28                         | 46                     | 6.93     | 99.55               |
| 29 - 38                         | 3                      | 0.45     | 100.00              |
| > 38                            | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 664

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Wind Speed (WS) - km/h  
Anzac - February 2023**

| <b>Wind Speed<br/>Ranges (km/h)</b> | <b>Wind Direction</b> |            |           |            |           |            |           |            |           |            |           |            |            |            |           |            | <b>Totals</b> |
|-------------------------------------|-----------------------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|------------|------------|-----------|------------|---------------|
|                                     | <b>N</b>              | <b>NNE</b> | <b>NE</b> | <b>ENE</b> | <b>E</b>  | <b>ESE</b> | <b>SE</b> | <b>SSE</b> | <b>S</b>  | <b>SSW</b> | <b>SW</b> | <b>WSW</b> | <b>W</b>   | <b>WNW</b> | <b>NW</b> | <b>NNW</b> |               |
| 0 - 5                               | 3                     | 7          | 14        | 10         | 6         | 13         | 15        | 6          | 8         | 3          | 1         | 6          | 14         | 11         | 7         | 9          | 133           |
| 6 - 11                              | 7                     | 3          | 3         | 2          | 23        | 28         | 41        | 17         | 7         | 24         | 6         | 14         | 55         | 36         | 31        | 29         | 326           |
| 12 - 19                             | 0                     | 0          | 0         | 5          | 2         | 8          | 14        | 2          | 14        | 0          | 2         | 21         | 29         | 22         | 33        | 4          | 156           |
| 20 - 28                             | 0                     | 0          | 0         | 0          | 0         | 1          | 4         | 0          | 0         | 0          | 2         | 9          | 9          | 8          | 11        | 2          | 46            |
| 29 - 38                             | 0                     | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 2          | 1          | 0         | 0          | 3             |
| > 38                                | 0                     | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0          | 0          | 0         | 0          | 0             |
| <b>Totals</b>                       | <b>10</b>             | <b>10</b>  | <b>17</b> | <b>17</b>  | <b>31</b> | <b>50</b>  | <b>74</b> | <b>25</b>  | <b>29</b> | <b>27</b>  | <b>11</b> | <b>50</b>  | <b>109</b> | <b>78</b>  | <b>82</b> | <b>44</b>  | <b>664</b>    |

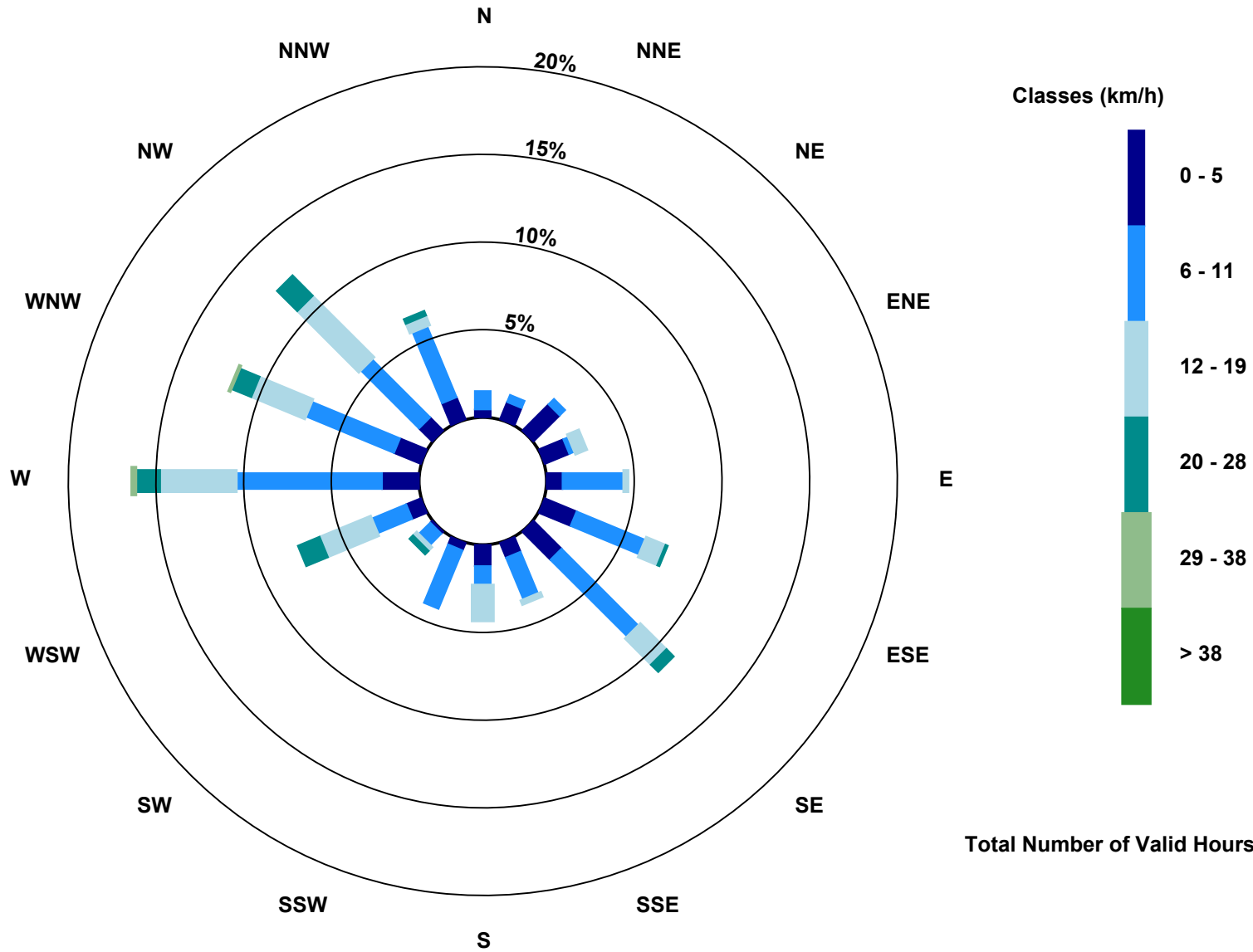
Total Number of Valid Hours: 664

Total Number of Hours: 672



Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Wind Speed (WS) - km/h  
Anzac



Total Number of Valid Hours: 664



**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

**Wind Direction (WD) - deg**  
**Anzac - February 2023**

|  |                                |
|--|--------------------------------|
| Direction of Maximum Speed: 273 deg on Feb 6 03:00           | Hours in Service: 672          |
| Direction of Maximum Daily Speed Average: 261.6 deg on Feb 7 | Hours of Data: 664             |
| Direction of Minimum Speed: 158 deg on Feb 17 10:00          | Hours of Missing Data: 8       |
| Direction of Minimum Daily Speed Average: 1.5 deg on Feb 3   | Percent Operational Time: 98.8 |
| Monthly Average Direction: 268.1 deg                         |                                |

| Day   | Hourly Period Ending At (MST) |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Daily Average |
|---|-------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---------------|
|   | 1                             | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19  | 20  | 21  | 22  | 23  | 24  |               |
| 1-Feb   | 346                           | 321 | 305 | 283 | 308 | 340 | 332 | 317 | 315 | 318 | 312 | 311 | 306 | 309 | 306 | 310 | 310 | 319 | 290 | 268 | 276 | 291 | 249 | 241 | 308.7         |
| 2-Feb   | 204                           | 187 | 172 | 151 | 150 | 148 | 142 | 132 | 130 | 120 | 120 | 111 | 121 | 131 | 133 | 127 | 123 | 127 | 134 | 133 | 136 | 136 | 131 | 124 | 132.2         |
| 3-Feb   | 125                           | 125 | 124 | 127 | 129 | 135 | 119 | 27  | 51  | 46  | 323 | 268 | 284 | 292 | 297 | 314 | 343 | 328 | 313 | 327 | UO  | UO  | UO  | UO  | 324.6         |
| 4-Feb   | UO                            | UO  | 61  | 40  | 58  | 79  | 90  | 107 | 71  | 58  | 37  | 41  | 66  | 29  | 33  | 47  | 123 | 93  | 95  | 113 | 93  | 100 | 118 | 64  | 78.1          |
| 5-Feb   | 36                            | 42  | 70  | 119 | 117 | 125 | 119 | 120 | 120 | 143 | 142 | 13  | 81  | 117 | 121 | 132 | 146 | 169 | 227 | 243 | 267 | 270 | 287 | 282 | 234.1         |
| 6-Feb   | 284                           | 282 | 273 | 274 | 277 | 275 | 283 | 286 | 286 | 295 | 296 | 298 | 278 | 84  | 109 | 114 | 104 | 124 | 129 | 127 | 130 | 124 | 137 | 243 | 273.8         |
| 7-Feb   | 248                           | 245 | 245 | 255 | 256 | 253 | 286 | 281 | 263 | 260 | 252 | 250 | 261 | 263 | 279 | 270 | 256 | 250 | 254 | 273 | 266 | 276 | 265 | 273 | 261.6         |
| 8-Feb   | 278                           | 280 | 313 | 285 | 273 | 296 | 268 | 45  | 132 | 142 | 128 | 153 | 165 | 144 | 153 | 145 | 145 | 132 | 145 | 200 | 197 | 195 | 206 | 199 | 216.7         |
| 9-Feb   | 199                           | 201 | 197 | 209 | 213 | 233 | 250 | 242 | 242 | 252 | 260 | 256 | 186 | 189 | 184 | 157 | 118 | 148 | 168 | 180 | 182 | 194 | 202 | 202 | 206.1         |
| 10-Feb  | 166                           | 111 | 140 | 149 | 122 | 141 | 55  | 92  | 96  | 105 | 106 | 92  | 96  | 84  | 82  | 40  | 15  | 287 | 272 | 292 | 300 | 306 | 334 | UO  | 90.0          |
| 11-Feb  | UO                            | 21  | 308 | 261 | 267 | 272 | 272 | 281 | 183 | 139 | 173 | 255 | 259 | 244 | 241 | 235 | 240 | 241 | 257 | 263 | 278 | 275 | 260 | 258 | 256.6         |
| 12-Feb  | 255                           | 252 | 254 | 264 | 263 | 258 | 258 | 266 | 259 | 267 | 267 | 269 | 262 | 267 | 80  | 78  | 152 | 140 | 131 | 132 | 109 | 112 | 140 | 161 | 236.2         |
| 13-Feb  | 166                           | 189 | 222 | 229 | 235 | 240 | 253 | 258 | 266 | 267 | 328 | 311 | 307 | 311 | 314 | 324 | 322 | 319 | 329 | 324 | 313 | 309 | 313 | 300 | 290.6         |
| 14-Feb  | 291                           | 293 | 299 | 296 | 296 | 300 | 271 | 273 | 273 | 270 | 265 | 272 | 324 | 340 | 333 | 332 | 340 | 313 | 317 | 315 | 316 | 320 | 335 | 330 | 305.3         |
| 15-Feb  | 288                           | 250 | 266 | 311 | 39  | 133 | 140 | 152 | 144 | 152 | 145 | 92  | 76  | 71  | 145 | 95  | 82  | 88  | 100 | 125 | 129 | 131 | 136 | 127 | 122.7         |
| 16-Feb  | 124                           | 128 | 119 | 102 | 114 | 109 | 97  | 113 | 113 | 124 | 143 | 147 | 189 | 228 | 250 | 260 | 273 | 292 | 288 | 306 | 324 | 325 | 317 | 292 | 270.1         |
| 17-Feb  | 272                           | 284 | 274 | 276 | 278 | 291 | 286 | 299 | 329 | 158 | 71  | 34  | 42  | 335 | 352 | 345 | 340 | 321 | 310 | 309 | 313 | 307 | 324 | 333 | 312.0         |
| 18-Feb  | 341                           | 324 | 335 | 3   | 329 | 331 | 340 | 330 | 334 | 322 | 302 | 269 | 260 | 264 | 266 | 289 | 327 | 322 | 296 | 214 | 176 | 145 | 134 | 140 | 303.1         |
| 19-Feb  | 137                           | 131 | 128 | 125 | 123 | 116 | 117 | 110 | 104 | 104 | 119 | 116 | 94  | 88  | 102 | 96  | 75  | 32  | 25  | 20  | 39  | 318 | 257 | 274 | 105.6         |
| 20-Feb  | 276                           | 280 | 292 | 280 | 276 | 287 | 279 | 285 | 327 | 352 | 349 | 338 | 311 | 324 | 342 | 343 | 347 | 314 | 320 | 352 | 9   | 2   | 297 | 302 | 313.4         |
| 21-Feb  | 291                           | 305 | 304 | 289 | 280 | 301 | 298 | 306 | 310 | 320 | 316 | 316 | 313 | 314 | 315 | 319 | 317 | 317 | 309 | 320 | 318 | 288 | 267 | 263 | 307.4         |
| 22-Feb  | 283                           | 275 | 282 | 279 | 278 | 277 | 272 | 277 | 280 | 278 | 279 | 270 | 287 | 313 | 328 | 345 | 344 | 332 | 308 | 293 | 255 | 241 | 274 | 282 | 285.9         |
| 23-Feb  | 233                           | 269 | 232 | 256 | 283 | 258 | 266 | 282 | 270 | 287 | 320 | 336 | 346 | 333 | 317 | 317 | 348 | 354 | 114 | 145 | 153 | 160 | 185 | 194 | 274.9         |
| 24-Feb  | 196                           | 197 | 201 | 203 | 204 | 202 | 201 | 203 | 216 | 155 | 181 | 179 | 174 | 169 | 179 | 169 | 171 | 173 | 180 | 180 | 187 | 185 | 183 | 177 | 182.7         |
| 25-Feb  | 197                           | 202 | 238 | 260 | 264 | 271 | 270 | 268 | 259 | 264 | 258 | 255 | 254 | 258 | 252 | 257 | 267 | 234 | 188 | 166 | 138 | 154 | 202 | 164 | 249.2         |
| 26-Feb  | 135                           | 136 | 125 | 114 | 128 | 126 | 106 | 105 | 117 | 120 | 121 | 100 | 92  | 84  | 87  | 66  | 71  | 82  | 69  | 75  | 73  | 82  | 87  | 55  | 97.3          |
| 27-Feb  | 40                            | 9   | 356 | 342 | 331 | 318 | 304 | 296 | 295 | 295 | 299 | 283 | 290 | 295 | 296 | 296 | 305 | 308 | 303 | 314 | 316 | 302 | 300 | 270 | 304.3         |
| 28-Feb  | 268                           | 283 | 278 | 276 | 273 | 268 | 283 | 283 | 274 | 275 | 257 | 259 | 290 | 270 | 296 | 278 | 290 | 262 | 280 | 337 | 49  | 148 | 122 | 141 | 269.3         |
| 249.9 255.2 258.7 255.1 255.2 262.4 271.6 275.3 271.2 274.3 273.8 274.1 279.2 288.5 289.3 303.5 315.8 286.6 266.3 269.1 276.4 240.0 239.8 242.4 |                               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |               |
| Diurnal Average   |                               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |               |

UO - Unstable Operation  
 All monthly, daily, and diurnal averages have been calculated using vector methods



**Wood Buffalo Environmental Association**  
**Summary of Hour Standard Deviations**

**Wind Direction (WD) - deg**  
**Anzac - February 2023**

|  |                                |
|--|--------------------------------|
| Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0  | Hours in Service: 672          |
| Maximum Value: 90 deg on Feb 17 10:00  | Hours of Data: 664             |
| Minimum Value: 3 deg on Feb 23 22:00   | Hours of Missing Data: 8       |
| Percentiles: P <sub>1</sub> = 8 P <sub>10</sub> = 12 Q <sub>1</sub> = 13 Median = 16 Q <sub>3</sub> = 19 P <sub>90</sub> = 26 P <sub>99</sub> = 64 | Hours of Calibration: 0        |
|  | Percent Operational Time: 98.8 |

| Day    | Hourly Period Ending At (MST) |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    | Daily Maximum |
|--------|-------------------------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|---------------|
|        | 1                             | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |               |
| 1-Feb  | 18                            | 14 | 15 | 14 | 24 | 11 | 12 | 13 | 12 | 12 | 15 | 16 | 14 | 15 | 15 | 15 | 13 | 9  | 12 | 14 | 14 | 14 | 10 | 14 | 24            |
| 2-Feb  | 17                            | 8  | 12 | 7  | 7  | 8  | 10 | 11 | 12 | 17 | 14 | 15 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 13 | 13 | 13 | 14 | 15 | 17            |
| 3-Feb  | 14                            | 14 | 14 | 13 | 15 | 14 | 20 | 40 | 44 | 32 | 42 | 17 | 16 | 16 | 17 | 13 | 15 | 14 | 15 | UO | UO | UO | UO | 44 |               |
| 4-Feb  | UO                            | UO | 19 | 13 | 18 | 16 | 26 | 22 | 24 | 17 | 28 | 34 | 53 | 26 | 29 | 28 | 19 | 18 | 15 | 16 | 21 | 17 | 18 | 31 | 53            |
| 5-Feb  | 16                            | 16 | 22 | 24 | 17 | 20 | 20 | 21 | 70 | 70 | 60 | 50 | 39 | 17 | 52 | 14 | 9  | 21 | 14 | 16 | 17 | 16 | 16 | 17 | 70            |
| 6-Feb  | 17                            | 17 | 16 | 16 | 16 | 17 | 16 | 15 | 17 | 16 | 16 | 22 | 32 | 31 | 18 | 17 | 15 | 17 | 12 | 13 | 15 | 21 | 16 | 51 | 51            |
| 7-Feb  | 19                            | 16 | 16 | 17 | 18 | 18 | 18 | 18 | 17 | 16 | 18 | 17 | 17 | 18 | 19 | 17 | 18 | 16 | 15 | 15 | 16 | 14 | 14 | 15 | 19            |
| 8-Feb  | 15                            | 16 | 21 | 16 | 10 | 14 | 27 | 58 | 26 | 12 | 22 | 23 | 22 | 20 | 22 | 13 | 13 | 12 | 14 | 26 | 31 | 14 | 12 | 13 | 58            |
| 9-Feb  | 13                            | 14 | 12 | 14 | 19 | 21 | 13 | 12 | 12 | 16 | 15 | 20 | 67 | 23 | 25 | 17 | 14 | 12 | 16 | 17 | 14 | 14 | 15 | 12 | 67            |
| 10-Feb | 49                            | 33 | 11 | 45 | 49 | 40 | 21 | 22 | 17 | 14 | 14 | 17 | 17 | 17 | 18 | 22 | 18 | 38 | 15 | 16 | 16 | 20 | 20 | UO | 49            |
| 11-Feb | UO                            | 17 | 33 | 45 | 68 | 24 | 17 | 20 | 62 | 22 | 66 | 17 | 18 | 17 | 18 | 15 | 15 | 16 | 16 | 17 | 16 | 17 | 17 | 18 | 68            |
| 12-Feb | 18                            | 18 | 18 | 19 | 17 | 17 | 17 | 17 | 16 | 16 | 15 | 17 | 29 | 30 | 77 | 17 | 11 | 12 | 13 | 13 | 13 | 16 | 20 | 13 | 77            |
| 13-Feb | 20                            | 26 | 18 | 17 | 16 | 16 | 17 | 17 | 18 | 18 | 29 | 13 | 14 | 13 | 13 | 12 | 14 | 12 | 12 | 13 | 14 | 12 | 12 | 13 | 29            |
| 14-Feb | 14                            | 13 | 12 | 15 | 12 | 12 | 13 | 14 | 15 | 16 | 17 | 25 | 27 | 18 | 15 | 12 | 14 | 13 | 13 | 16 | 13 | 16 | 16 | 17 | 27            |
| 15-Feb | 38                            | 35 | 31 | 43 | 21 | 63 | 20 | 10 | 10 | 11 | 17 | 54 | 60 | 37 | 36 | 22 | 17 | 9  | 12 | 12 | 11 | 12 | 11 | 16 | 63            |
| 16-Feb | 19                            | 14 | 21 | 17 | 15 | 16 | 20 | 18 | 18 | 15 | 11 | 12 | 23 | 32 | 18 | 17 | 17 | 16 | 16 | 15 | 13 | 12 | 13 | 22 | 32            |
| 17-Feb | 15                            | 14 | 12 | 14 | 14 | 16 | 21 | 26 | 54 | 90 | 54 | 24 | 32 | 25 | 19 | 16 | 16 | 10 | 12 | 12 | 14 | 11 | 12 | 11 | 90            |
| 18-Feb | 15                            | 13 | 15 | 14 | 24 | 19 | 19 | 24 | 15 | 14 | 27 | 21 | 17 | 16 | 18 | 31 | 15 | 13 | 16 | 32 | 25 | 11 | 10 | 9  | 32            |
| 19-Feb | 9                             | 10 | 10 | 12 | 12 | 15 | 16 | 13 | 15 | 16 | 14 | 15 | 24 | 21 | 19 | 22 | 20 | 13 | 13 | 19 | 54 | 22 | 20 | 13 | 54            |
| 20-Feb | 13                            | 16 | 15 | 16 | 15 | 15 | 15 | 15 | 16 | 15 | 19 | 20 | 22 | 18 | 16 | 16 | 15 | 18 | 14 | 15 | 9  | 21 | 11 | 9  | 22            |
| 21-Feb | 10                            | 11 | 13 | 11 | 10 | 12 | 12 | 15 | 13 | 14 | 15 | 15 | 16 | 17 | 14 | 14 | 12 | 12 | 10 | 12 | 12 | 19 | 17 | 11 | 19            |
| 22-Feb | 13                            | 15 | 12 | 13 | 11 | 13 | 13 | 14 | 14 | 16 | 17 | 17 | 22 | 22 | 24 | 15 | 14 | 12 | 15 | 11 | 12 | 12 | 19 | 28 | 28            |
| 23-Feb | 19                            | 29 | 15 | 16 | 19 | 9  | 11 | 9  | 14 | 15 | 22 | 32 | 22 | 18 | 19 | 22 | 15 | 24 | 22 | 9  | 8  | 3  | 8  | 7  | 32            |
| 24-Feb | 10                            | 14 | 13 | 13 | 11 | 27 | 10 | 22 | 18 | 24 | 16 | 17 | 19 | 17 | 15 | 15 | 16 | 18 | 16 | 16 | 20 | 18 | 18 | 14 | 27            |
| 25-Feb | 15                            | 16 | 40 | 15 | 16 | 16 | 17 | 16 | 15 | 16 | 15 | 17 | 17 | 21 | 22 | 21 | 20 | 14 | 15 | 15 | 13 | 9  | 25 | 29 | 40            |
| 26-Feb | 10                            | 11 | 12 | 13 | 13 | 15 | 14 | 13 | 15 | 17 | 16 | 15 | 17 | 15 | 15 | 19 | 14 | 17 | 14 | 15 | 15 | 16 | 15 | 13 | 19            |
| 27-Feb | 17                            | 12 | 12 | 11 | 10 | 11 | 12 | 13 | 14 | 15 | 14 | 19 | 15 | 17 | 15 | 16 | 13 | 13 | 12 | 13 | 13 | 12 | 12 | 12 | 19            |
| 28-Feb | 11                            | 12 | 13 | 14 | 12 | 13 | 17 | 19 | 18 | 24 | 25 | 16 | 37 | 48 | 52 | 26 | 20 | 16 | 6  | 25 | 30 | 16 | 14 | 8  | 52            |
|        | 49                            | 35 | 40 | 45 | 68 | 63 | 27 | 58 | 70 | 90 | 66 | 54 | 67 | 48 | 77 | 31 | 20 | 38 | 22 | 32 | 54 | 22 | 25 | 51 |               |

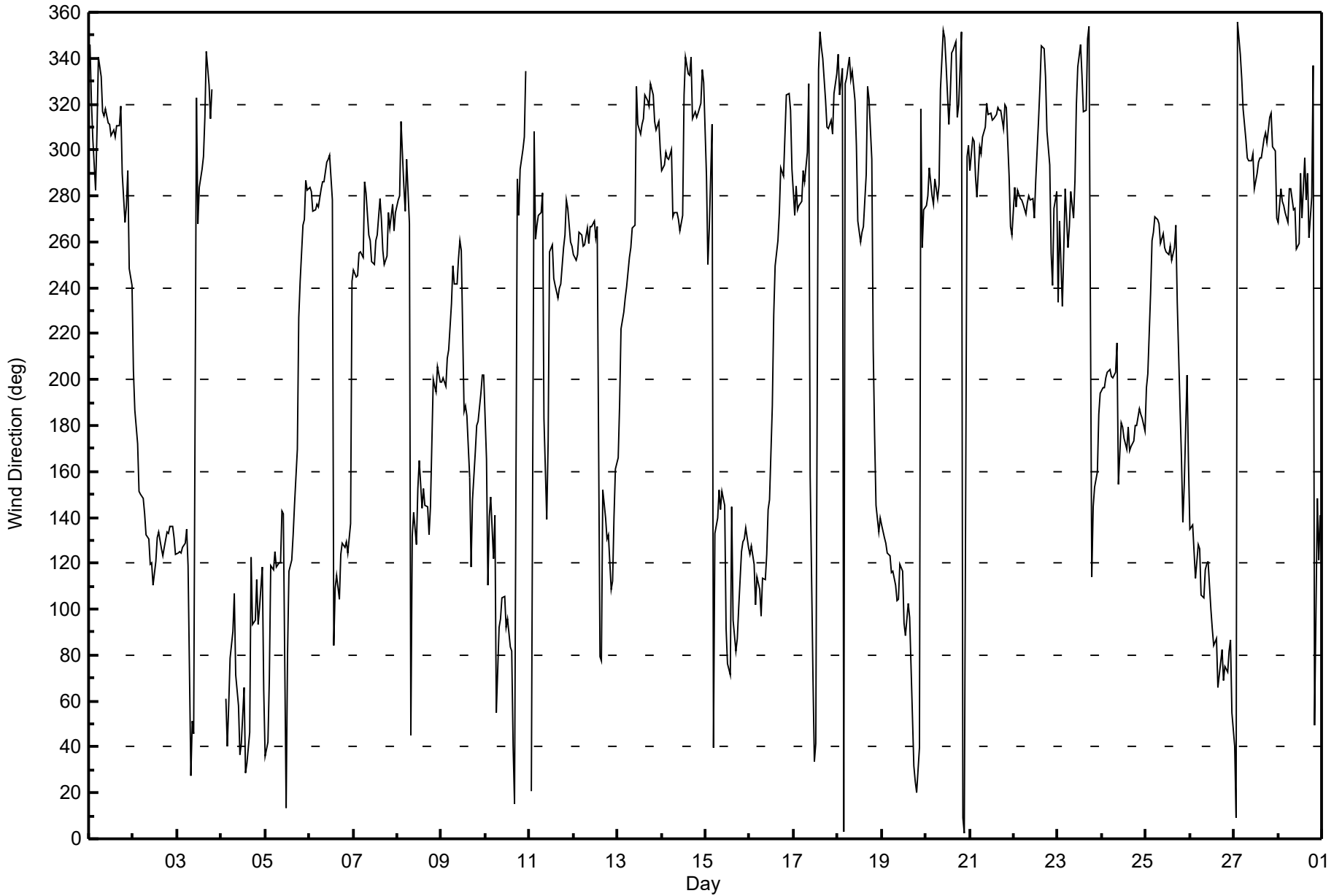
Diurnal Maximum

UO - Unstable Operation



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Wind Direction (WD) - deg**  
**Anzac - February 2023**





## WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY  
MONITORING PROGRAM  
MONTHLY REPORT

**AMS17  
WAPASU  
FEBRUARY 2023**

Operations, Data Collection,  
QA/QC, Data Validation and Reporting by:  
Wood Buffalo Environmental Association  
Fort McMurray, Alberta

March 31, 2023

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - WAPASU (AMS17)  
 FEBRUARY 2023

MONTHLY SUMMARY

| Parameter                         | Hours of Data | Hours of Calibration | Hours without Data | Operational Time | Maximum 1-Hour Value | 1-Hour Exceedances | Maximum 24-Hour Value | 24-Hour Exceedances |
|-----------------------------------|---------------|----------------------|--------------------|------------------|----------------------|--------------------|-----------------------|---------------------|
| SO2 (ppb) Average                 | 640           | 31                   | 32                 | 99.85            | 28                   | 0                  | 6.9                   | 0                   |
| H2S (ppb) Average                 | 638           | 33                   | 34                 | 99.85            | 1.9                  | 0                  | 0.5                   | 0                   |
| THC (ppm) Average                 | 640           | 31                   | 32                 | 99.85            | 2.9                  | -                  | 2.4                   | -                   |
| O3 (ppb) Average                  | 640           | 31                   | 32                 | 99.85            | 47.7                 | 0                  | 42.6                  | -                   |
| NO2 (ppb) Average                 | 639           | 33                   | 33                 | 100              | 30                   | 0                  | 11.3                  | -                   |
| NO (ppb) Average                  | 639           | 33                   | 33                 | 100              | 30.6                 | -                  | 3.2                   | -                   |
| NOX (ppb) Average                 | 639           | 33                   | 33                 | 100              | 58.8                 | -                  | 14.1                  | -                   |
| PM2.5 (ug/m3) Average             | 671           | 1                    | 1                  | 100              | 10.5                 | 0                  | 6.3                   | 0                   |
| Temperature 2 m (C) Average       | 672           | 0                    | 0                  | 100              | 1.6                  | -                  | -2.4                  | -                   |
| Relative Humidity (%) Average     | 672           | 0                    | 0                  | 100              | 98.9                 | -                  | 93.2                  | -                   |
| Wind Speed 10 m (km/h) Average    | 670           | 0                    | 2                  | 99.7             | 24                   | -                  | 16                    | -                   |
| Wind Direction 10 m (deg) Average | 670           | 0                    | 2                  | 99.7             | -                    | -                  | -                     | -                   |
| Precipitation (mm) Total          | 672           | 0                    | 0                  | 100              | 2.3                  | -                  | 5.6                   | -                   |

Note : Operational time includes periods of data collection and instrument calibration



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - WAPASU (AMS17)  
FEBRUARY 2023

MONTHLY SUMMARY FOR AIR QUALITY/ METEOROLOGICAL MONITORING MEASUREMENTS

| Parameter                         | Number | Mean   | StnDev | Total | Percentile |       |       |        |      |      |      |
|-----------------------------------|--------|--------|--------|-------|------------|-------|-------|--------|------|------|------|
|                                   |        |        |        |       | Min        | P10   | Q1    | Median | Q3   | P90  | Max  |
| SO2 (ppb) Average                 | 640    | 1.11   | 2.9    | -     | 0          | 0     | 0     | 0.2    | 0.7  | 2.6  | 28   |
| H2S (ppb) Average                 | 638    | 0.15   | 0.2    | -     | 0          | 0     | 0     | 0.1    | 0.2  | 0.3  | 1.9  |
| THC (ppm) Average                 | 640    | 2.32   | 0.1    | -     | 2.2        | 2.3   | 2.3   | 2.3    | 2.3  | 2.4  | 2.9  |
| O3 (ppb) Average                  | 640    | 29.62  | 8.9    | -     | 2.2        | 17.5  | 24.9  | 31     | 35.9 | 39.2 | 47.7 |
| NO2 (ppb) Average                 | 639    | 5.21   | 5.7    | -     | 0          | 0.5   | 1.4   | 3      | 6.9  | 12.7 | 30   |
| NO (ppb) Average                  | 639    | 0.89   | 2.4    | -     | 0          | 0     | 0     | 0.1    | 0.7  | 2.2  | 30.6 |
| NOX (ppb) Average                 | 639    | 6.09   | 7.1    | -     | 0          | 0.6   | 1.6   | 3.5    | 8.2  | 15.1 | 58.8 |
| PM2.5 (ug/m3) Average             | 671    | 3.08   | 1.7    | -     | 0.4        | 1.2   | 1.9   | 2.7    | 3.9  | 5.4  | 10.5 |
| Temperature 2 m (C) Average       | 672    | -16.11 | 9.6    | -     | -38.7      | -29.5 | -22.5 | -16.1  | -8.6 | -2.7 | 1.6  |
| Relative Humidity (%) Average     | 672    | 78.81  | 9.6    | -     | 52.2       | 65.5  | 72.8  | 79.2   | 86.2 | 91   | 98.9 |
| Wind Speed 10 m (km/h) Average    | 670    | 7.8    | 4      | -     | 0          | 3     | 4     | 7      | 10   | 14   | 24   |
| Wind Direction 10 m (deg) Average | 670    | -      | -      | -     | -          | -     | -     | -      | -    | -    | -    |
| Precipitation (mm) Total          | 672    | -      | -      | 24.79 | -          | -     | -     | -      | -    | -    | -    |

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - WAPASU (AMS17)  
 FEBRUARY 2023

OPERATIONAL NOTES

| Parameter                  | Period<br>Start   | Period<br>End     | Duration<br>(Hours) | Notes                                 |
|----------------------------|-------------------|-------------------|---------------------|---------------------------------------|
| H2S, O3, SO2, THC          | 23 Feb 2023 14:00 | 23 Feb 2023 14:00 | 1                   | Maintenance - sample manifold cleaned |
| Wind Speed, Wind Direction | 01 Feb 2023 18:00 | 01 Feb 2023 18:00 | 1                   | Flat line in sensor output signal     |
| Wind Speed, Wind Direction | 28 Feb 2023 08:00 | 28 Feb 2023 08:00 | 1                   | Flat line in sensor output signal     |



Wood Buffalo Environmental Association

Summary of Hour Averages

Sulphur Dioxide (SO<sub>2</sub>) - ppb

Wapasu - February 2023

|  |   |          |                           |      |
|--|---|----------|---------------------------|------|
| Number of Exceedences (AAAQO):             | 1-hr: 0   | 24-hr: 0 | Hours in Service:         | 672  |
| Maximum Value: 28.0 ppb on Feb 11 07:00    | Maximum Daily Average: 6.9 ppb on Feb 11  |          | Hours of Data:            | 640  |
| Minimum Value: 0.0 ppb on Feb 2 03:00      | Minimum Daily Average: 0.0 ppb on Feb 27  |          | Hours of Missing Data:    | 32   |
| Maximum Diurnal Average: 2.3 ppb at hour 4 | Minimum Diurnal Average: 0.5 ppb at hour 20   |          | Hours of Calibration:     | 31   |
| Monthly Average: 1.11 ppb                  | Percentiles: P <sub>1</sub> = 0.0 P <sub>10</sub> = 0.0 Q <sub>1</sub> = 0.0 Median = 0.2 Q <sub>3</sub> = 0.7 P <sub>90</sub> = 2.6 P <sub>99</sub> = 15.8 |          | Percent Operational Time: | 99.9 |

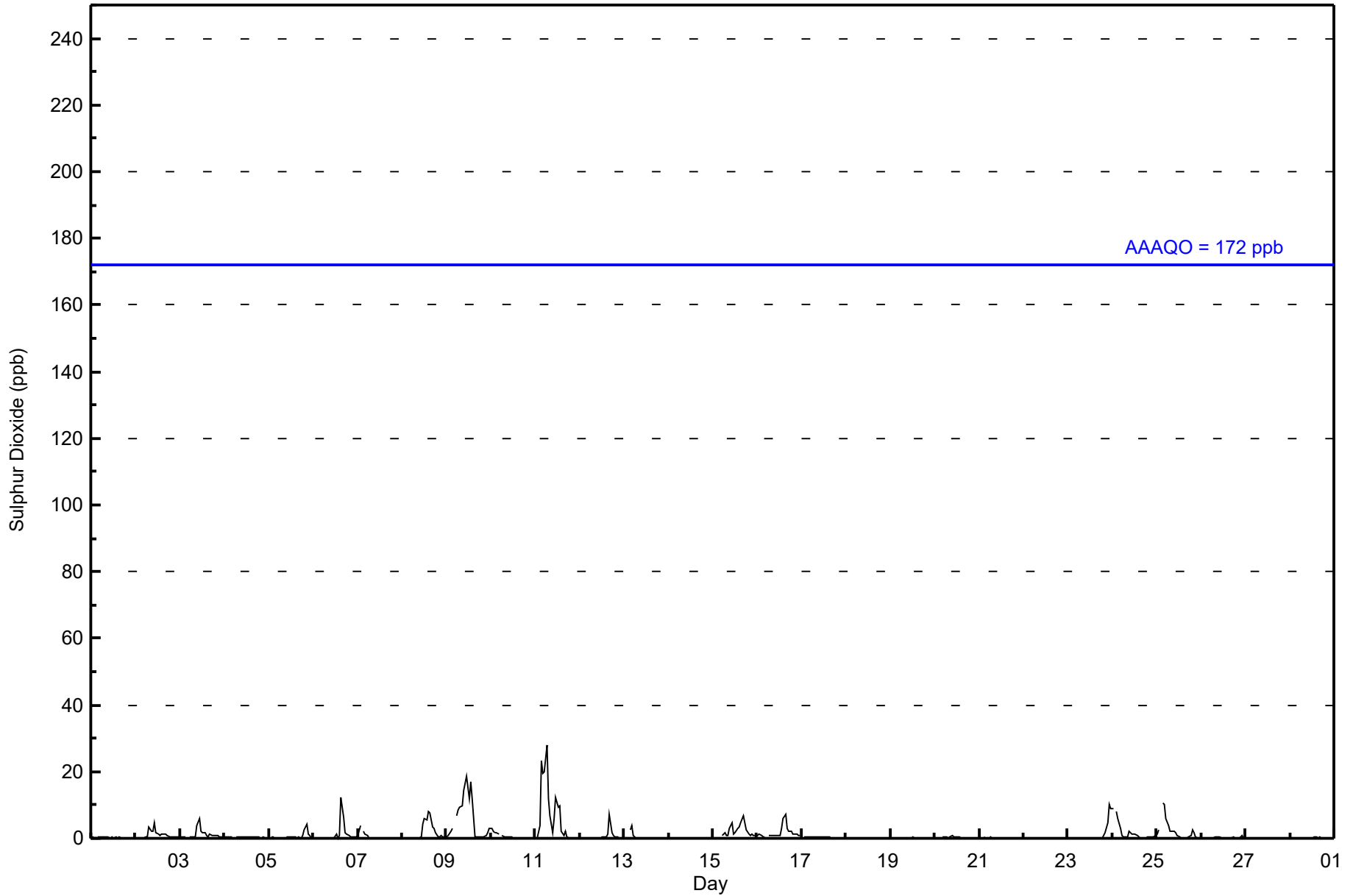
| Day    | Hourly Period Ending At (MST) |     |     |      |      |      |      |      |     |      |      |      |      |      |      |      |     |     |     |     |     |     |      |     | Daily Average | Daily Maximum |      |      |      |      |      |     |      |      |      |      |      |      |      |     |     |     |     |     |     |      |     |                 |
|--------|-------------------------------|-----|-----|------|------|------|------|------|-----|------|------|------|------|------|------|------|-----|-----|-----|-----|-----|-----|------|-----|---------------|---------------|------|------|------|------|------|-----|------|------|------|------|------|------|------|-----|-----|-----|-----|-----|-----|------|-----|-----------------|
|        | 1                             | 2   | 3   | 4    | 5    | 6    | 7    | 8    | 9   | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17  | 18  | 19  | 20  | 21  | 22  | 23   | 24  |               |               |      |      |      |      |      |     |      |      |      |      |      |      |      |     |     |     |     |     |     |      |     |                 |
| 1-Feb  | 0.3                           | 0.3 | Z   | 0.3  | 0.3  | 0.3  | 0.3  | 0.3  | 0.3 | 0.2  | 0.2  | 0.3  | 0.2  | 0.2  | 0.2  | 0.2  | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.0  | 0.2 | 0.3           |               |      |      |      |      |      |     |      |      |      |      |      |      |      |     |     |     |     |     |     |      |     |                 |
| 2-Feb  | 0.1                           | 0.0 | 0.0 | Z    | 0.1  | 0.3  | 0.4  | 3.4  | 2.3 | 2.0  | 4.5  | 1.6  | 1.1  | 1.1  | 1.2  | 1.2  | 1.1 | 0.8 | 0.5 | 0.6 | 0.5 | 0.5 | 0.6  | 0.5 | 1.1           | 4.5           |      |      |      |      |      |     |      |      |      |      |      |      |      |     |     |     |     |     |     |      |     |                 |
| 3-Feb  | 0.5                           | 0.4 | 0.5 | 0.4  | Z    | 0.4  | 0.3  | 0.2  | 0.6 | 3.7  | 5.8  | 2.3  | 1.8  | 1.6  | 0.9  | 0.5  | 1.1 | 1.0 | 0.8 | 0.8 | 0.7 | 0.5 | 0.4  | 0.4 | 1.1           | 5.8           |      |      |      |      |      |     |      |      |      |      |      |      |      |     |     |     |     |     |     |      |     |                 |
| 4-Feb  | 0.3                           | 0.3 | 0.3 | 0.3  | 0.4  | Z    | 0.6  | 0.3  | 0.3 | 0.3  | 0.3  | 0.3  | 0.3  | 0.2  | 0.2  | 0.3  | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2  | 0.2 | 0.3           | 0.6           |      |      |      |      |      |     |      |      |      |      |      |      |      |     |     |     |     |     |     |      |     |                 |
| 5-Feb  | Z                             | 0.3 | 0.2 | 0.2  | 0.2  | 0.2  | 0.1  | 0.2  | 0.2 | 0.2  | 0.4  | 0.4  | 0.4  | 0.3  | 0.4  | 0.2  | 0.2 | 0.2 | 0.7 | 2.4 | 4.2 | 1.3 | 0.7  | 0.0 | 0.6           | 4.2           |      |      |      |      |      |     |      |      |      |      |      |      |      |     |     |     |     |     |     |      |     |                 |
| 6-Feb  | 0.0                           | Z   | 0.0 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0 | 0.0  | 0.0  | 0.1  | 1.1  | 0.2  | 0.7  | 12.2 | 6.4 | 1.9 | 1.4 | 0.7 | 0.4 | 0.3 | 0.3  | 0.3 | 1.1           | 12.2          |      |      |      |      |      |     |      |      |      |      |      |      |      |     |     |     |     |     |     |      |     |                 |
| 7-Feb  | 0.8                           | 3.9 | Z   | 2.2  | 1.2  | 0.7  | 0.2  | 0.1  | 0.1 | 0.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0 | 0.4           | 3.9           |      |      |      |      |      |     |      |      |      |      |      |      |      |     |     |     |     |     |     |      |     |                 |
| 8-Feb  | 0.0                           | 0.0 | 0.0 | Z    | 0.0  | 0.0  | 0.0  | 0.0  | 0.0 | 0.0  | 0.3  | 4.3  | 5.9  | 5.4  | 8.0  | 7.8  | 3.6 | 3.1 | 1.5 | 0.5 | 0.5 | 0.7 | 0.5  | 0.5 | 1.9           | 8.0           |      |      |      |      |      |     |      |      |      |      |      |      |      |     |     |     |     |     |     |      |     |                 |
| 9-Feb  | 0.5                           | 0.7 | 2.2 | 3.0  | Z    | 6.6  | 8.4  | 9.3  | 9.9 | 14.5 | 16.5 | 18.7 | 12.1 | 17.0 | 11.7 | 0.5  | 0.5 | 0.5 | 0.6 | 0.4 | 0.5 | 0.6 | 1.8  | 2.9 | 6.1           | 18.7          |      |      |      |      |      |     |      |      |      |      |      |      |      |     |     |     |     |     |     |      |     |                 |
| 10-Feb | 2.9                           | 2.3 | 1.9 | 1.9  | 1.1  | Z    | 0.7  | 0.4  | 0.5 | 0.5  | 0.3  | 0.3  | 0.1  | 0.1  | 0.1  | 0.0  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0 | 0.6           | 2.9           |      |      |      |      |      |     |      |      |      |      |      |      |      |     |     |     |     |     |     |      |     |                 |
| 11-Feb | Z                             | 0.0 | 3.8 | 23.3 | 19.4 | 19.9 | 28.0 | 12.0 | 6.8 | 1.9  | 5.8  | 12.4 | 9.2  | 9.8  | 2.1  | 0.9  | 2.1 | 0.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0 | 6.9           | 28.0          |      |      |      |      |      |     |      |      |      |      |      |      |      |     |     |     |     |     |     |      |     |                 |
| 12-Feb | 0.3                           | Z   | 0.1 | 0.0  | 0.1  | 0.1  | 0.0  | 0.0  | 0.0 | 0.0  | 0.0  | 0.1  | 0.6  | 0.4  | 0.2  | 1.4  | 7.4 | 1.7 | 1.0 | 0.5 | 0.2 | 0.1 | 0.1  | 0.2 | 0.6           | 7.4           |      |      |      |      |      |     |      |      |      |      |      |      |      |     |     |     |     |     |     |      |     |                 |
| 13-Feb | 0.2                           | 0.2 | Z   | 2.6  | 3.7  | 0.9  | 0.0  | 0.0  | 0.0 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0 | 0.3           | 3.7           |      |      |      |      |      |     |      |      |      |      |      |      |      |     |     |     |     |     |     |      |     |                 |
| 14-Feb | 0.0                           | 0.1 | 0.1 | Z    | 0.1  | 0.0  | 0.0  | 0.0  | 0.0 | 0.1  | 0.1  | C    | C    | C    | 0.1  | 0.0  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0 | 0.0           | 0.1           | 0.1  |      |      |      |      |     |      |      |      |      |      |      |      |     |     |     |     |     |     |      |     |                 |
| 15-Feb | 0.0                           | 0.1 | 0.1 | 0.0  | Z    | 1.0  | 1.6  | 1.0  | 0.9 | 3.0  | 4.8  | 1.3  | 1.8  | 3.1  | 3.4  | 4.8  | 6.7 | 4.7 | 2.5 | 1.1 | 1.0 | 1.2 | 1.0  | 0.8 | 2.0           | 6.7           |      |      |      |      |      |     |      |      |      |      |      |      |      |     |     |     |     |     |     |      |     |                 |
| 16-Feb | 0.8                           | 1.2 | 0.8 | 0.6  | 0.5  | Z    | 0.7  | 0.7  | 0.7 | 0.8  | 1.0  | 1.0  | 0.7  | 3.1  | 6.0  | 7.3  | 3.1 | 2.2 | 2.2 | 1.3 | 1.4 | 1.2 | 0.8  | 0.7 | 1.7           | 7.3           |      |      |      |      |      |     |      |      |      |      |      |      |      |     |     |     |     |     |     |      |     |                 |
| 17-Feb | Z                             | 0.5 | 0.4 | 0.5  | 0.5  | 0.5  | 0.5  | 0.4  | 0.4 | 0.3  | 0.3  | 0.3  | 0.5  | 0.5  | 0.4  | 0.2  | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0 | 0.3           | 0.5           |      |      |      |      |      |     |      |      |      |      |      |      |      |     |     |     |     |     |     |      |     |                 |
| 18-Feb | 0.0                           | Z   | 0.1 | 0.0  | 0.0  | 0.0  | 0.1  | 0.0  | 0.0 | 0.1  | 0.1  | 0.0  | 0.1  | 0.0  | 0.1  | 0.1  | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.1  | 0.1 | 0.0           | 0.1           | 0.1  |      |      |      |      |     |      |      |      |      |      |      |      |     |     |     |     |     |     |      |     |                 |
| 19-Feb | 0.2                           | 0.2 | Z   | 0.2  | 0.1  | 0.2  | 0.2  | 0.0  | 0.0 | 0.0  | 0.1  | 0.2  | 0.3  | 0.1  | 0.1  | 0.2  | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0 | 0.1           | 0.3           | 0.3  |      |      |      |      |     |      |      |      |      |      |      |      |     |     |     |     |     |     |      |     |                 |
| 20-Feb | 0.0                           | 0.0 | 0.0 | Z    | 0.2  | 0.3  | 0.4  | 0.1  | 0.6 | 1.0  | 0.6  | 0.4  | 0.3  | 0.3  | 0.1  | 0.0  | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0 | 0.2           | 1.0           |      |      |      |      |      |     |      |      |      |      |      |      |      |     |     |     |     |     |     |      |     |                 |
| 21-Feb | 0.0                           | 0.1 | 0.0 | 0.2  | Z    | 0.2  | 0.2  | 0.2  | 0.2 | 0.2  | 0.1  | 0.1  | 0.1  | 0.1  | 0.1  | 0.1  | 0.0 | 0.1 | 0.0 | 0.1 | 0.1 | 0.1 | 0.1  | 0.1 | 0.1           | 0.2           | 0.2  |      |      |      |      |     |      |      |      |      |      |      |      |     |     |     |     |     |     |      |     |                 |
| 22-Feb | 0.1                           | 0.1 | 0.0 | 0.1  | 0.1  | Z    | 0.1  | 0.1  | 0.1 | 0.1  | 0.1  | 0.1  | 0.1  | 0.1  | 0.1  | 0.2  | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0 | 0.1           | 0.2           |      |      |      |      |      |     |      |      |      |      |      |      |      |     |     |     |     |     |     |      |     |                 |
| 23-Feb | Z                             | 0.0 | 0.0 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0 | 0.0  | 0.0  | 0.0  | 0.0  | M    | 0.0  | 0.0  | 0.0 | 0.0 | 0.0 | 1.0 | 1.8 | 4.7 | 10.2 | 9.1 | 1.2           | 10.2          |      |      |      |      |      |     |      |      |      |      |      |      |      |     |     |     |     |     |     |      |     |                 |
| 24-Feb | 9.0                           | Z   | 8.2 | 6.1  | 2.9  | 1.0  | 0.5  | 0.3  | 0.5 | 2.0  | 1.4  | 1.4  | 1.4  | 0.7  | 0.3  | 0.0  | 0.1 | 0.1 | 0.1 | 0.3 | 0.3 | 0.3 | 0.4  | 0.6 | 1.7           | 9.0           |      |      |      |      |      |     |      |      |      |      |      |      |      |     |     |     |     |     |     |      |     |                 |
| 25-Feb | 1.1                           | 2.6 | Z   | 10.5 | 10.3 | 5.7  | 4.0  | 2.2  | 2.3 | 1.9  | 1.8  | 0.8  | 0.3  | 0.2  | 0.1  | 0.0  | 0.0 | 0.2 | 0.9 | 2.7 | 1.5 | 0.5 | 0.1  | 0.1 | 2.2           | 10.5          |      |      |      |      |      |     |      |      |      |      |      |      |      |     |     |     |     |     |     |      |     |                 |
| 26-Feb | 0.0                           | 0.0 | 0.0 | Z    | 0.0  | 0.0  | 0.0  | 0.5  | 0.4 | 0.4  | 0.2  | 0.2  | 0.2  | 0.0  | 0.0  | 0.1  | 0.0 | 0.6 | 0.1 | 0.0 | 0.0 | 0.4 | 1.0  | 0.2 | 0.2           | 1.0           |      |      |      |      |      |     |      |      |      |      |      |      |      |     |     |     |     |     |     |      |     |                 |
| 27-Feb | 0.1                           | 0.1 | 0.2 | 0.1  | Z    | 0.1  | 0.1  | 0.0  | 0.0 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0 | 0.0           | 0.2           | 0.2  |      |      |      |      |     |      |      |      |      |      |      |      |     |     |     |     |     |     |      |     |                 |
| 28-Feb | 0.0                           | 0.0 | 0.0 | 0.0  | 0.0  | Z    | 0.0  | 0.0  | 0.0 | 0.0  | 0.0  | 0.0  | 0.0  | 0.4  | 0.5  | 0.2  | 0.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0 | 0.1           | 0.5           | 0.5  |      |      |      |      |     |      |      |      |      |      |      |      |     |     |     |     |     |     |      |     |                 |
|        |                               |     |     |      |      |      |      |      |     |      |      |      |      |      |      |      |     |     |     |     |     |     |      | 0.7 | 0.6           | 0.8           | 2.3  | 1.8  | 1.7  | 1.7  | 1.1  | 1.0 | 1.2  | 1.6  | 1.7  | 1.4  | 1.7  | 1.3  | 1.4  | 1.2 | 0.6 | 0.5 | 0.5 | 0.5 | 0.5 | 0.7  | 0.6 | Diurnal Average |
|        |                               |     |     |      |      |      |      |      |     |      |      |      |      |      |      |      |     |     |     |     |     |     |      | 9.0 | 3.9           | 8.2           | 23.3 | 19.4 | 19.9 | 28.0 | 12.0 | 9.9 | 14.5 | 16.5 | 18.7 | 12.1 | 17.0 | 11.7 | 12.2 | 7.4 | 4.7 | 2.5 | 2.7 | 4.2 | 4.7 | 10.2 | 9.1 | Diurnal Maximum |

Z - zerospan      C - Calibration      M - Maintenance  
 Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 172 ppb    24-hr 48 ppb



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Sulphur Dioxide (SO<sub>2</sub>) - ppb**  
**Wapasu - February 2023**





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Sulphur Dioxide (SO<sub>2</sub>) - ppb  
Wapasu - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 10                            | 627                    | 97.97    | 97.97               |
| 11 - 20                           | 11                     | 1.72     | 99.69               |
| 21 - 60                           | 2                      | 0.31     | 100.00              |
| 61 - 110                          | 0                      | 0.00     | 100.00              |
| 111 - 172                         | 0                      | 0.00     | 100.00              |
| > 172                             | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 640

Total Number of Hours: 672



**Wood Buffalo Environmental Association**  
**Frequency Distribution**

**Sulphur Dioxide (SO<sub>2</sub>) - ppb**  
**Wapasu - February 2023**

| <b>Concentration</b><br><b>Ranges (ppb)</b> | <b>Wind Direction</b> |            |           |            |          |            |           |            |          |            |           |            |          |            |           |            | <b>Totals</b> |
|---|-----------------------|------------|-----------|------------|----------|------------|-----------|------------|----------|------------|-----------|------------|----------|------------|-----------|------------|---------------|
|   | <b>N</b>              | <b>NNE</b> | <b>NE</b> | <b>ENE</b> | <b>E</b> | <b>ESE</b> | <b>SE</b> | <b>SSE</b> | <b>S</b> | <b>SSW</b> | <b>SW</b> | <b>WSW</b> | <b>W</b> | <b>WNW</b> | <b>NW</b> | <b>NNW</b> |               |
| 0 - 10                                      | 99                    | 52         | 43        | 21         | 15       | 17         | 63        | 83         | 48       | 33         | 35        | 23         | 16       | 5          | 11        | 61         | 625           |
| 11 - 20                                     | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 1          | 5        | 5          | 0         | 0          | 0        | 0          | 0         | 0          | 11            |
| 21 - 60                                     | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 2          | 0         | 0          | 0        | 0          | 0         | 0          | 2             |
| 61 - 110                                    | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0             |
| 111 - 172                                   | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0             |
| > 172                                       | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0             |
| <b>Totals</b>                               | 99                    | 52         | 43        | 21         | 15       | 17         | 63        | 84         | 53       | 40         | 35        | 23         | 16       | 5          | 11        | 61         | 638           |

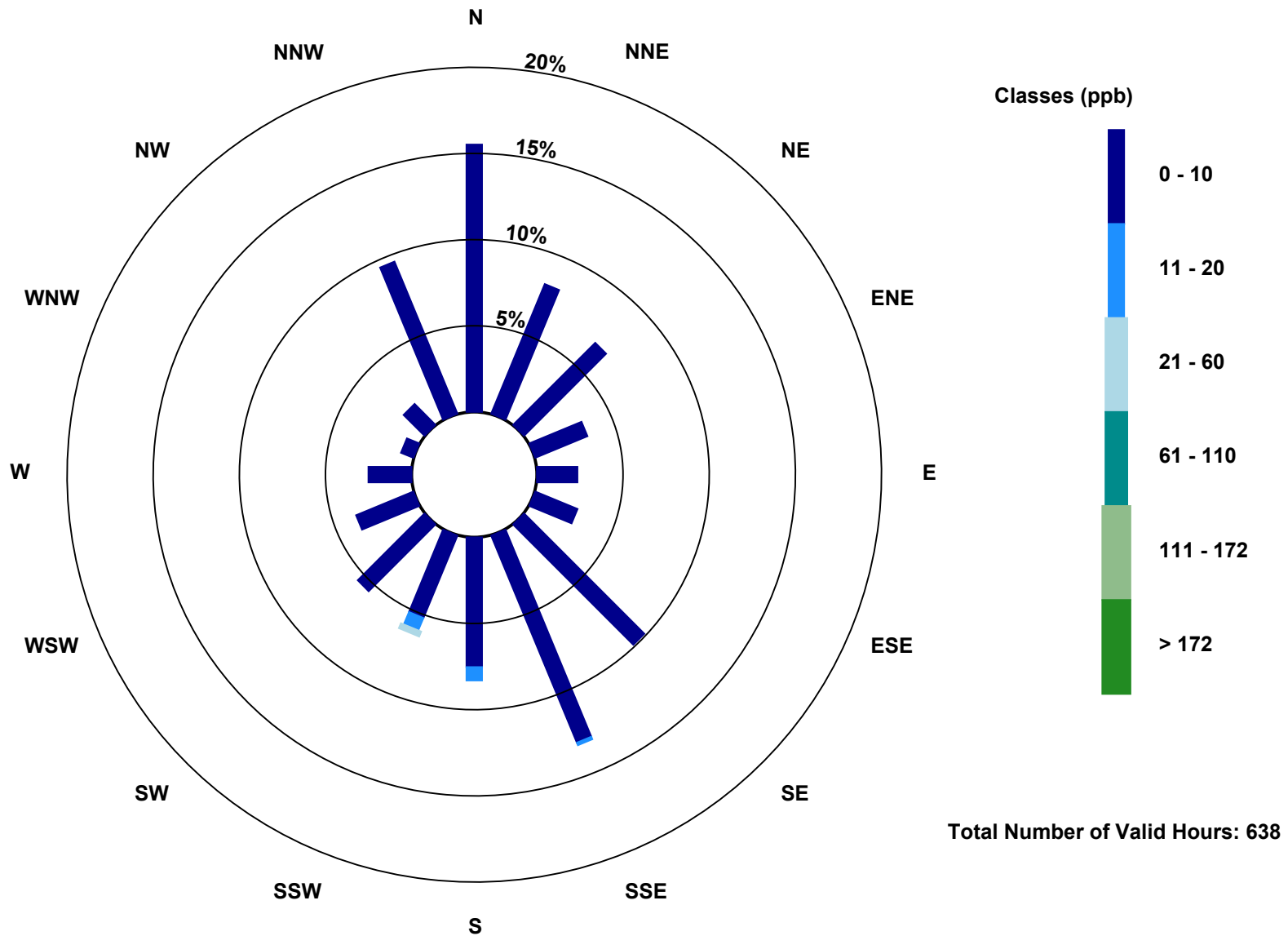
Total Number of Valid Hours: 638

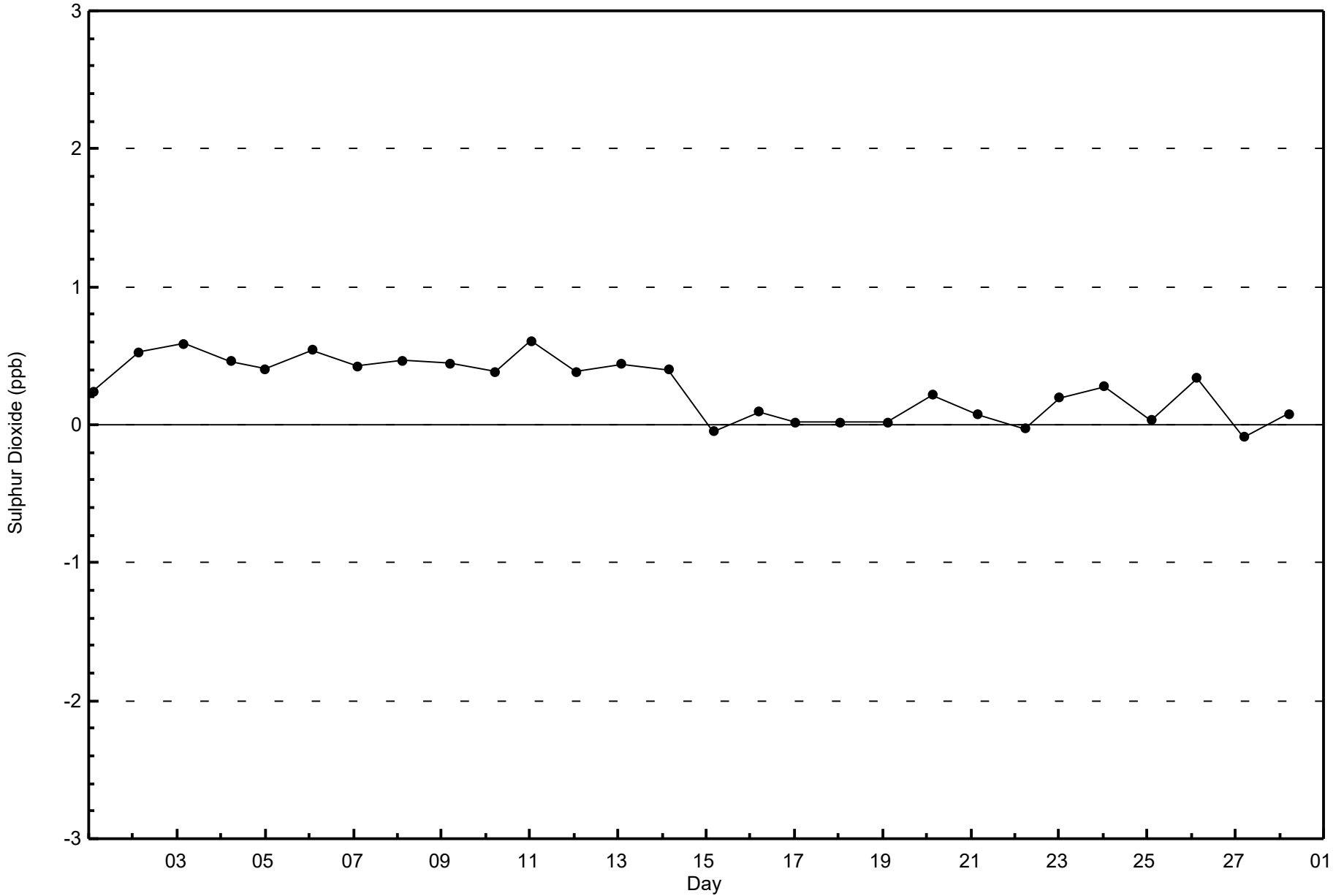
Total Number of Hours: 672



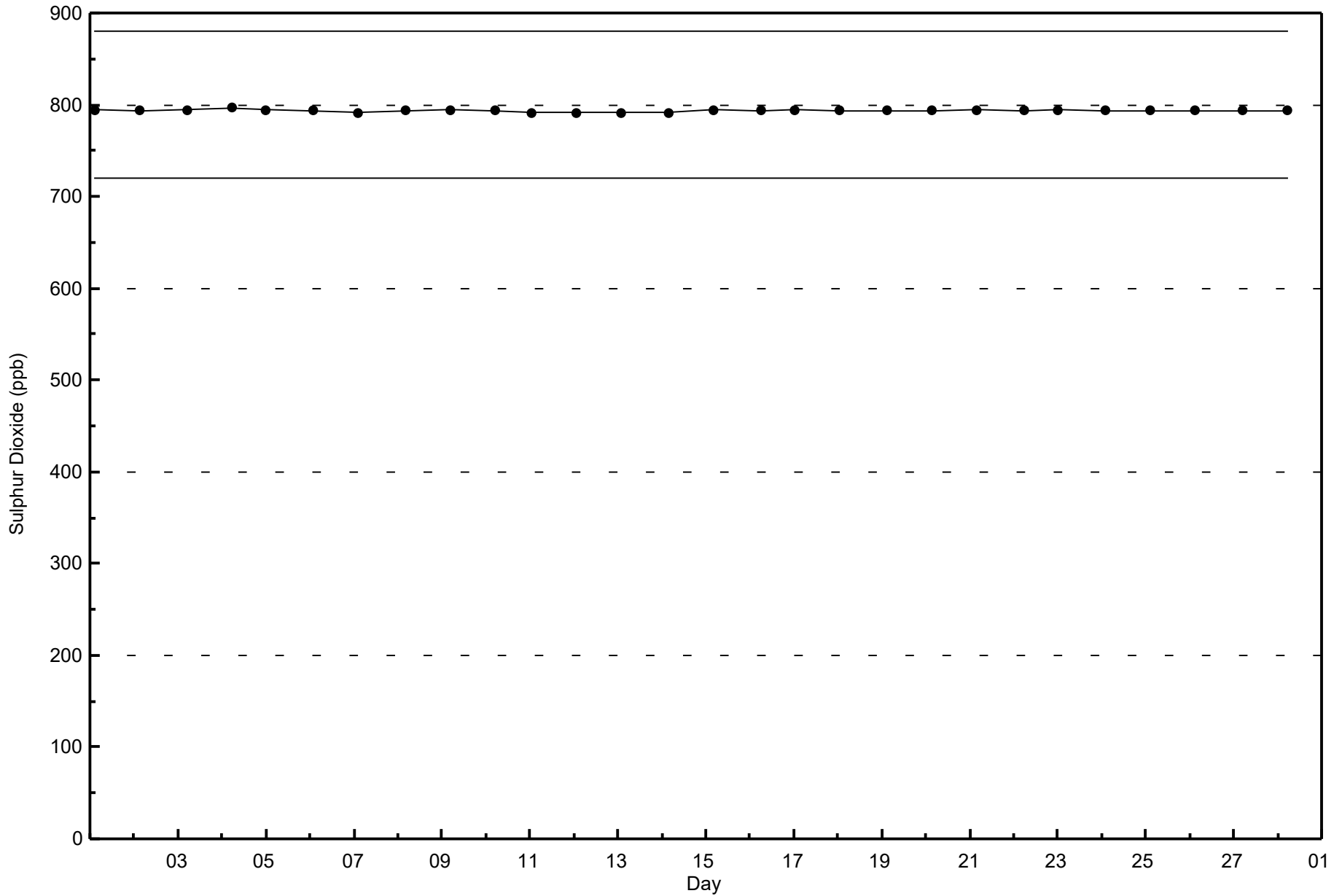
Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Sulphur Dioxide (SO<sub>2</sub>) - ppb  
Wapasu

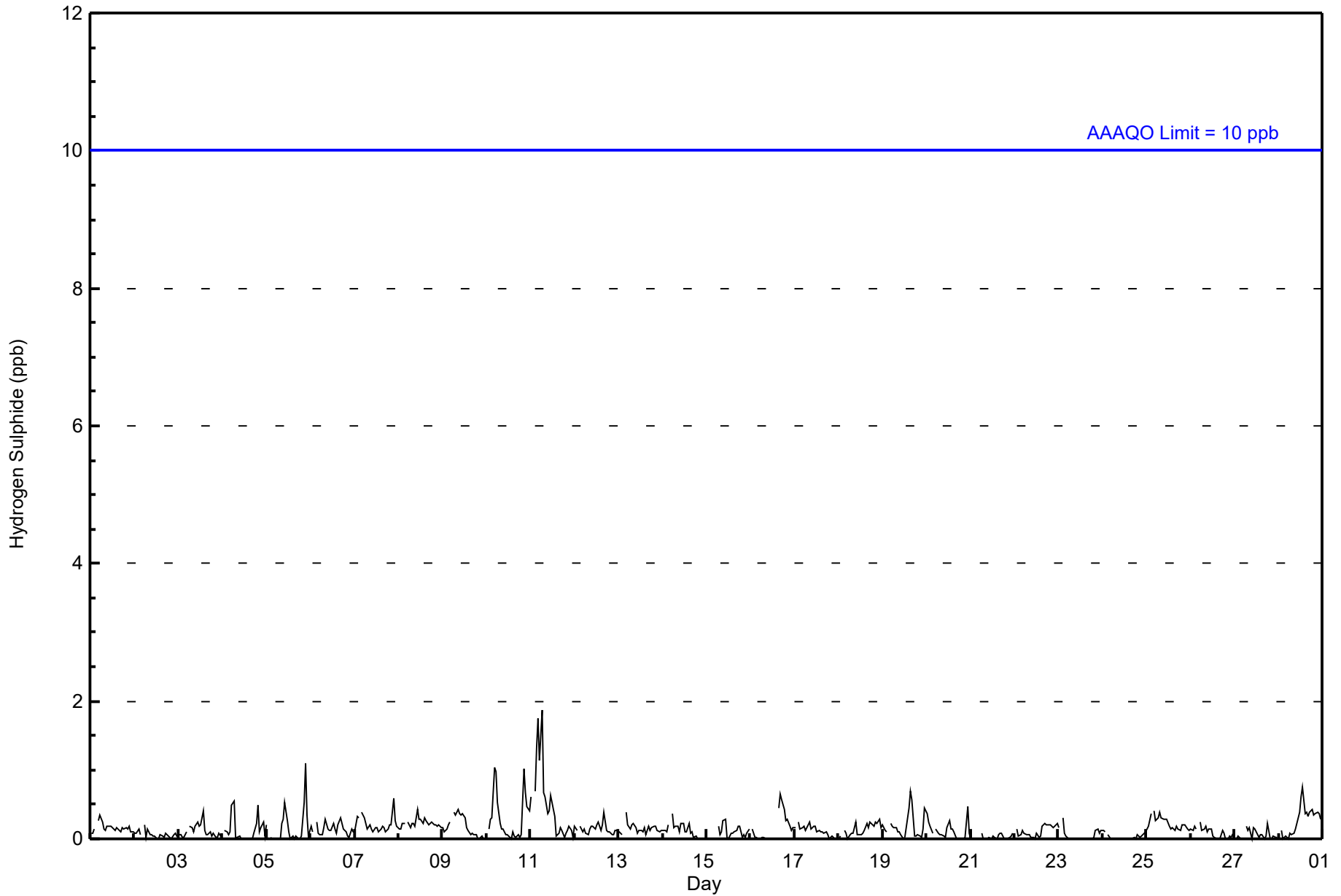














**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Hydrogen Sulphide (H<sub>2</sub>S) - ppb**  
**Wapasu - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 2                             | 638                    | 100.00   | 100.00              |
| 3 - 4                             | 0                      | 0.00     | 100.00              |
| 5 - 7                             | 0                      | 0.00     | 100.00              |
| 8 - 11                            | 0                      | 0.00     | 100.00              |
| > 11                              | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 638

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Hydrogen Sulphide (H<sub>2</sub>S) - ppb  
Wapasu - February 2023**

| <b>Concentration<br/>Ranges (ppb)</b> | <b>Wind Direction</b> |            |           |            |          |            |           |            |          |            |           |            |          |            |           | <b>Totals</b> |            |
|---------------------------------------|-----------------------|------------|-----------|------------|----------|------------|-----------|------------|----------|------------|-----------|------------|----------|------------|-----------|---------------|------------|
|                                       | <b>N</b>              | <b>NNE</b> | <b>NE</b> | <b>ENE</b> | <b>E</b> | <b>ESE</b> | <b>SE</b> | <b>SSE</b> | <b>S</b> | <b>SSW</b> | <b>SW</b> | <b>WSW</b> | <b>W</b> | <b>WNW</b> | <b>NW</b> |               | <b>NNW</b> |
| 0 - 2                                 | 104                   | 52         | 41        | 24         | 15       | 16         | 64        | 85         | 51       | 39         | 30        | 23         | 16       | 5          | 12        | 59            | 636        |
| 3 - 4                                 | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0             | 0          |
| 5 - 7                                 | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0             | 0          |
| 8 - 11                                | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0             | 0          |
| > 11                                  | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0             | 0          |
| <b>Totals</b>                         | 104                   | 52         | 41        | 24         | 15       | 16         | 64        | 85         | 51       | 39         | 30        | 23         | 16       | 5          | 12        | 59            | 636        |

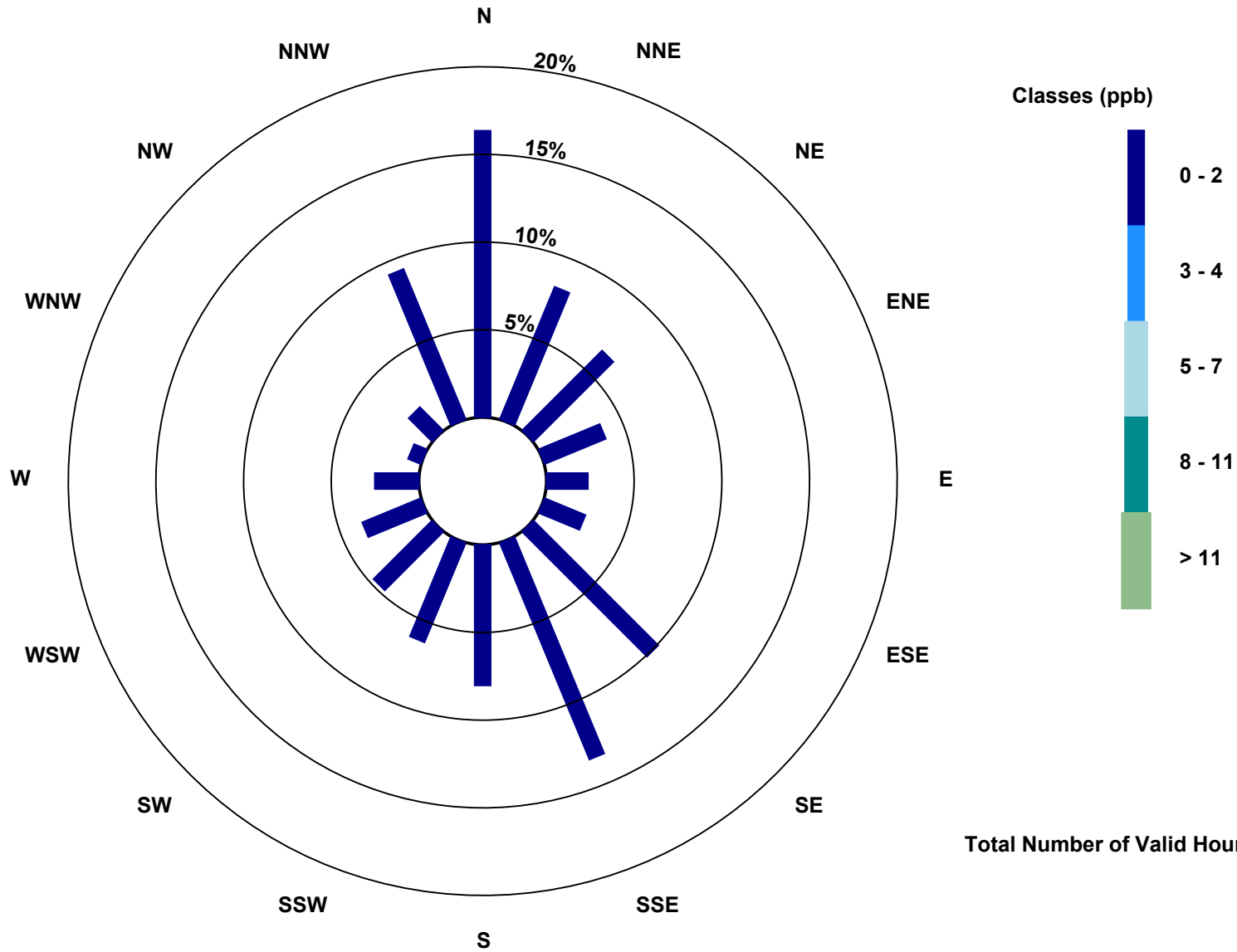
Total Number of Valid Hours: 636

Total Number of Hours: 672

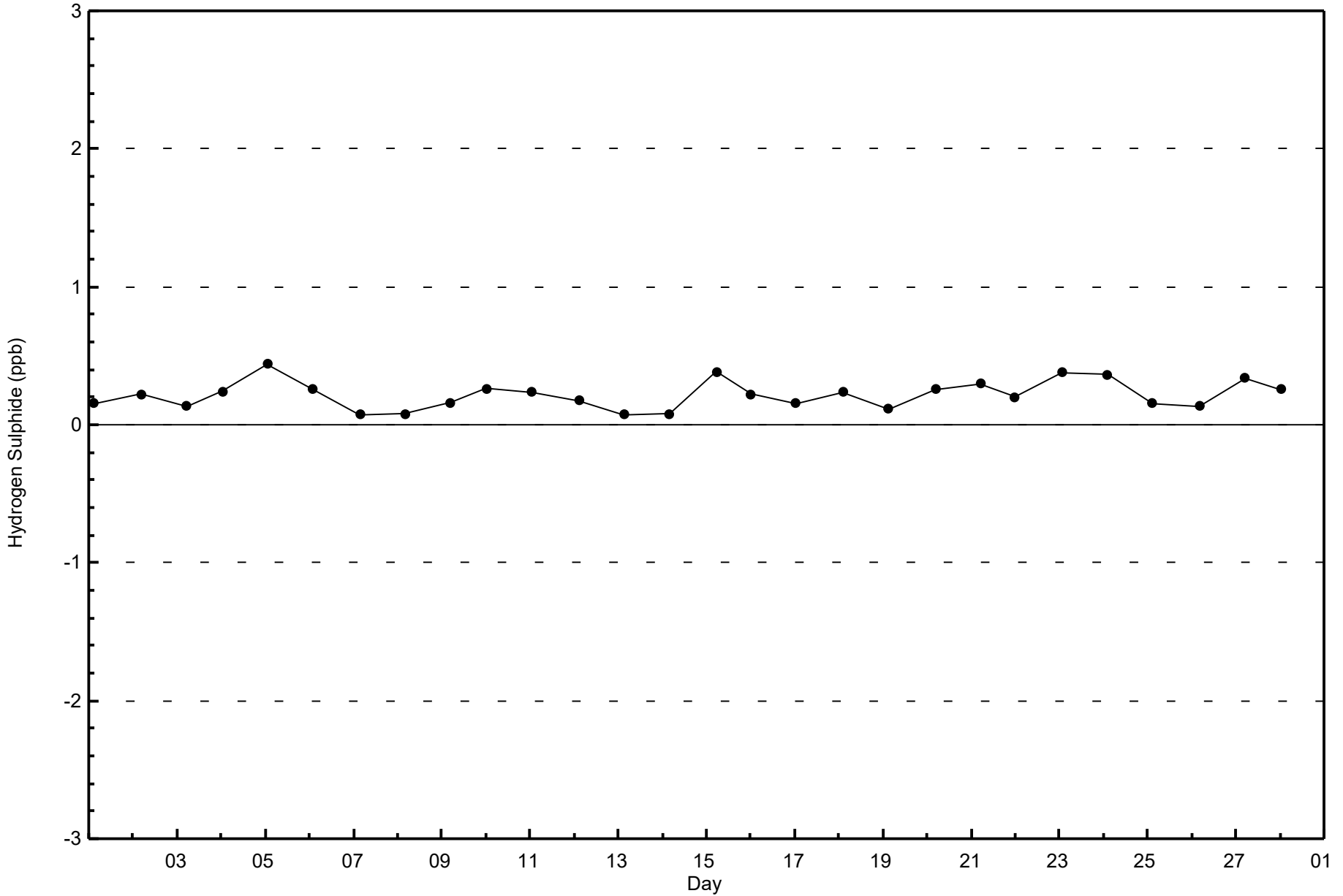


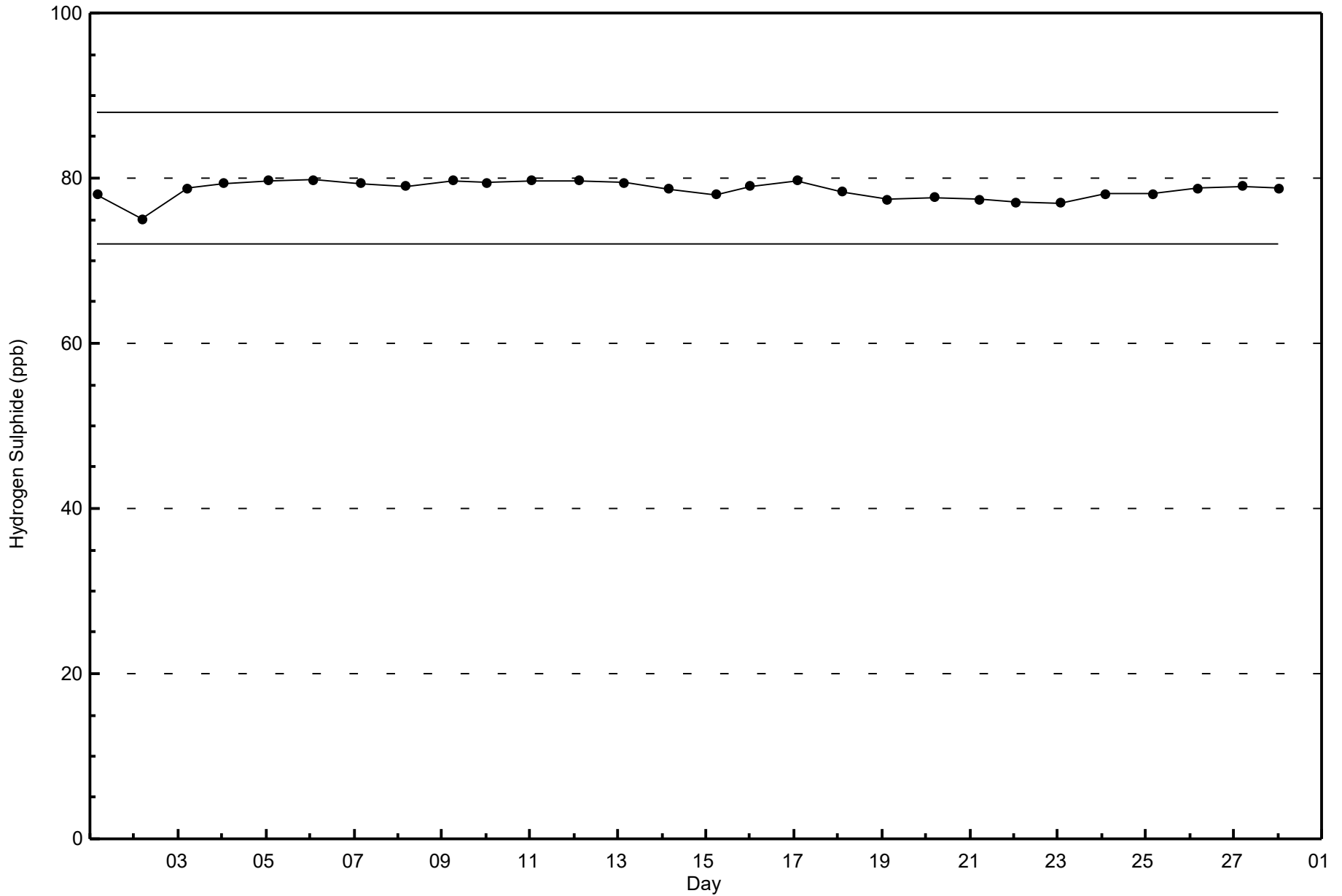
Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Hydrogen Sulphide (H<sub>2</sub>S) - ppb  
Wapasu



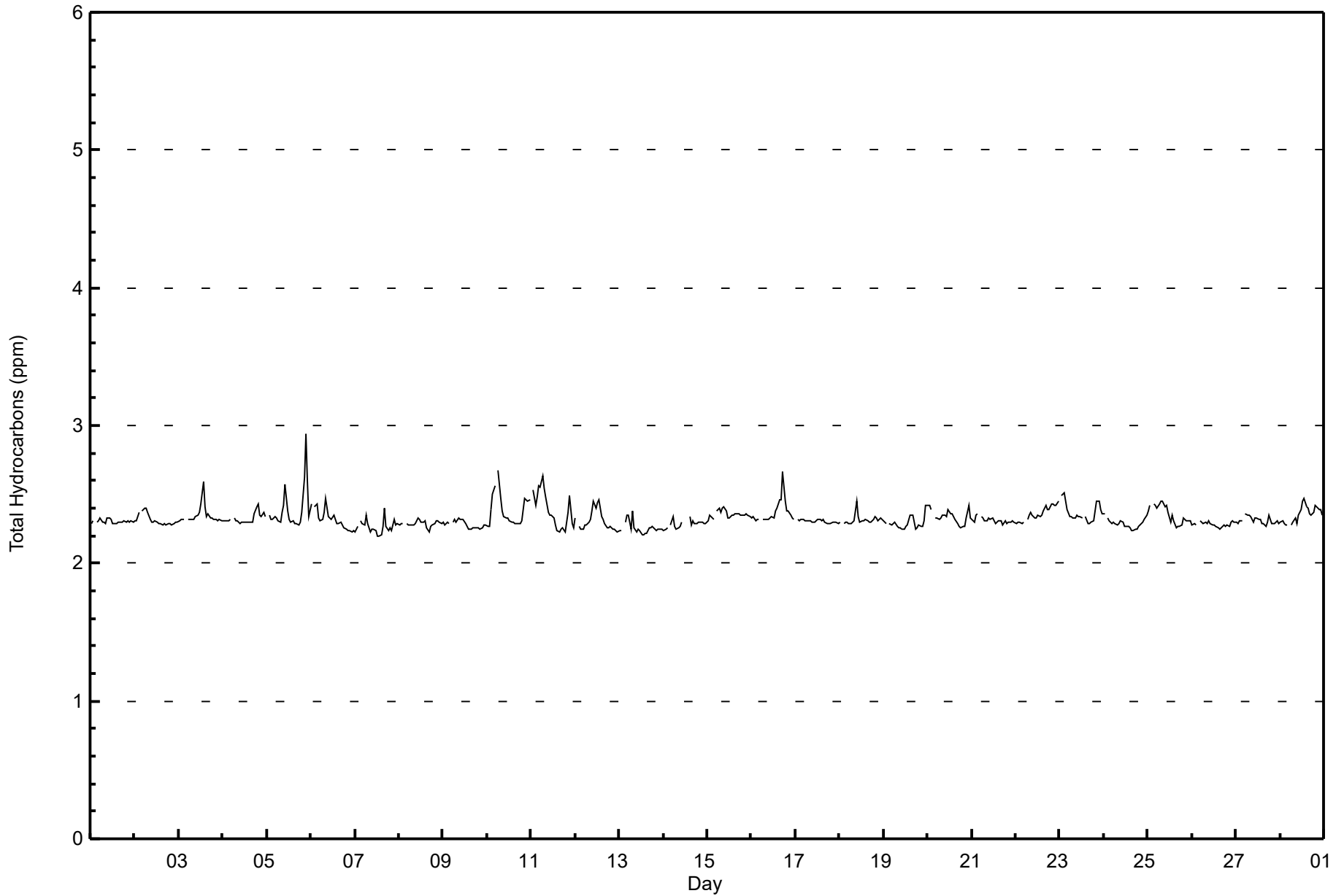
Total Number of Valid Hours: 636













**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Total Hydrocarbons (THC) - ppm**  
**Wapasu - February 2023**

| <b>Concentration Ranges (ppm)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 2.0                           | 0                      | 0.00     | 0.00                |
| 2.1 - 3.0                         | 640                    | 100.00   | 100.00              |
| 3.1 - 10.0                        | 0                      | 0.00     | 100.00              |
| > 10.0                            | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 640

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Total Hydrocarbons (THC) - ppm  
Wapasu - February 2023**

| <b>Concentration<br/>Ranges (ppm)</b> | <b>Wind Direction</b> |     |    |     |    |     |    |     |    |     |    |     |    |     |    |     | <b>Totals</b> |
|---------------------------------------|-----------------------|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|---------------|
|                                       | N                     | NNE | NE | ENE | E  | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |               |
| 0 - 2.0                               | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| 2.1 - 3.0                             | 99                    | 52  | 43 | 21  | 15 | 17  | 63 | 84  | 53 | 40  | 35 | 23  | 16 | 5   | 11 | 61  | 638           |
| 3.1 - 10.0                            | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| > 10.0                                | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| <b>Totals</b>                         | 99                    | 52  | 43 | 21  | 15 | 17  | 63 | 84  | 53 | 40  | 35 | 23  | 16 | 5   | 11 | 61  | 638           |

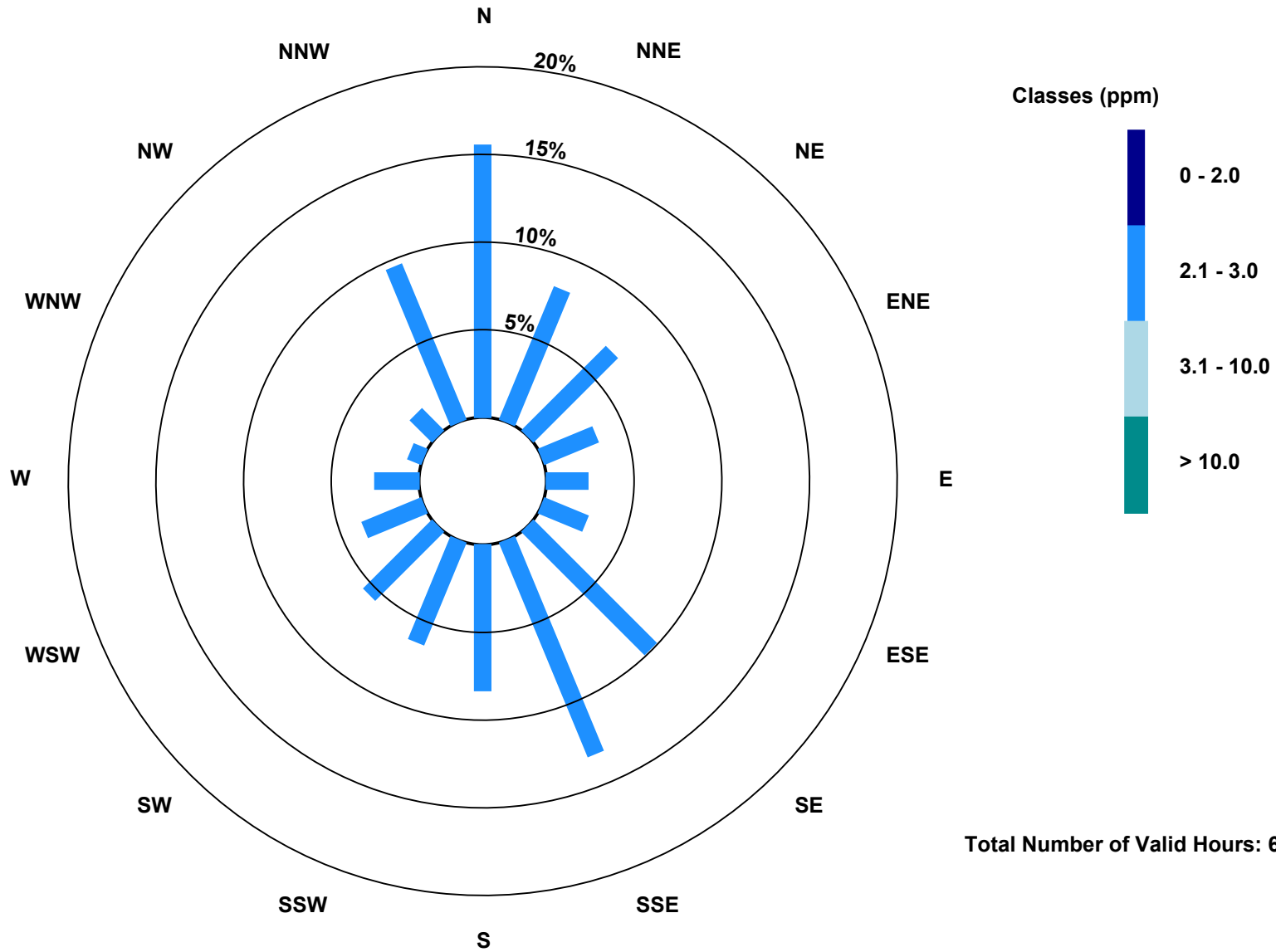
Total Number of Valid Hours: 638

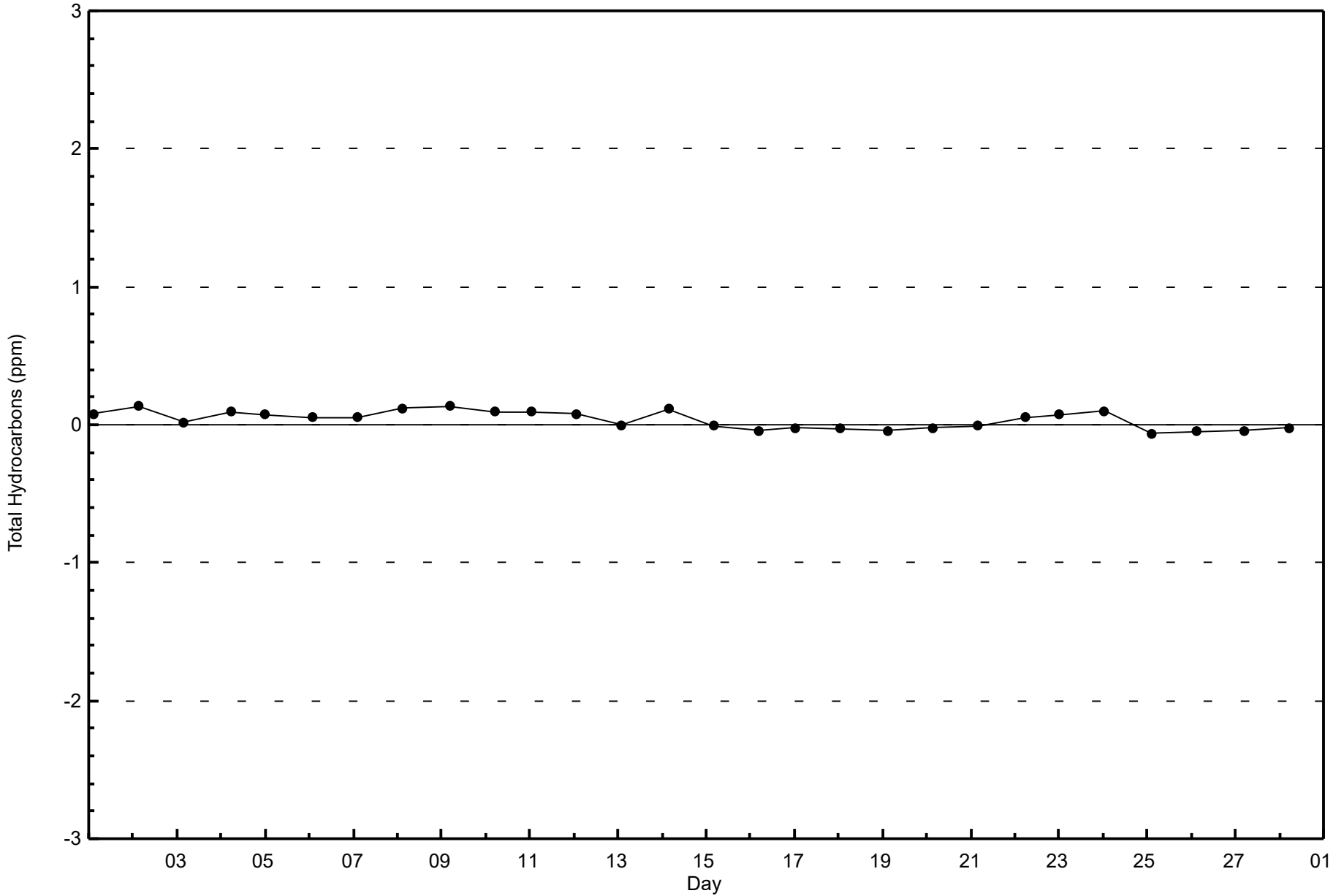
Total Number of Hours: 672

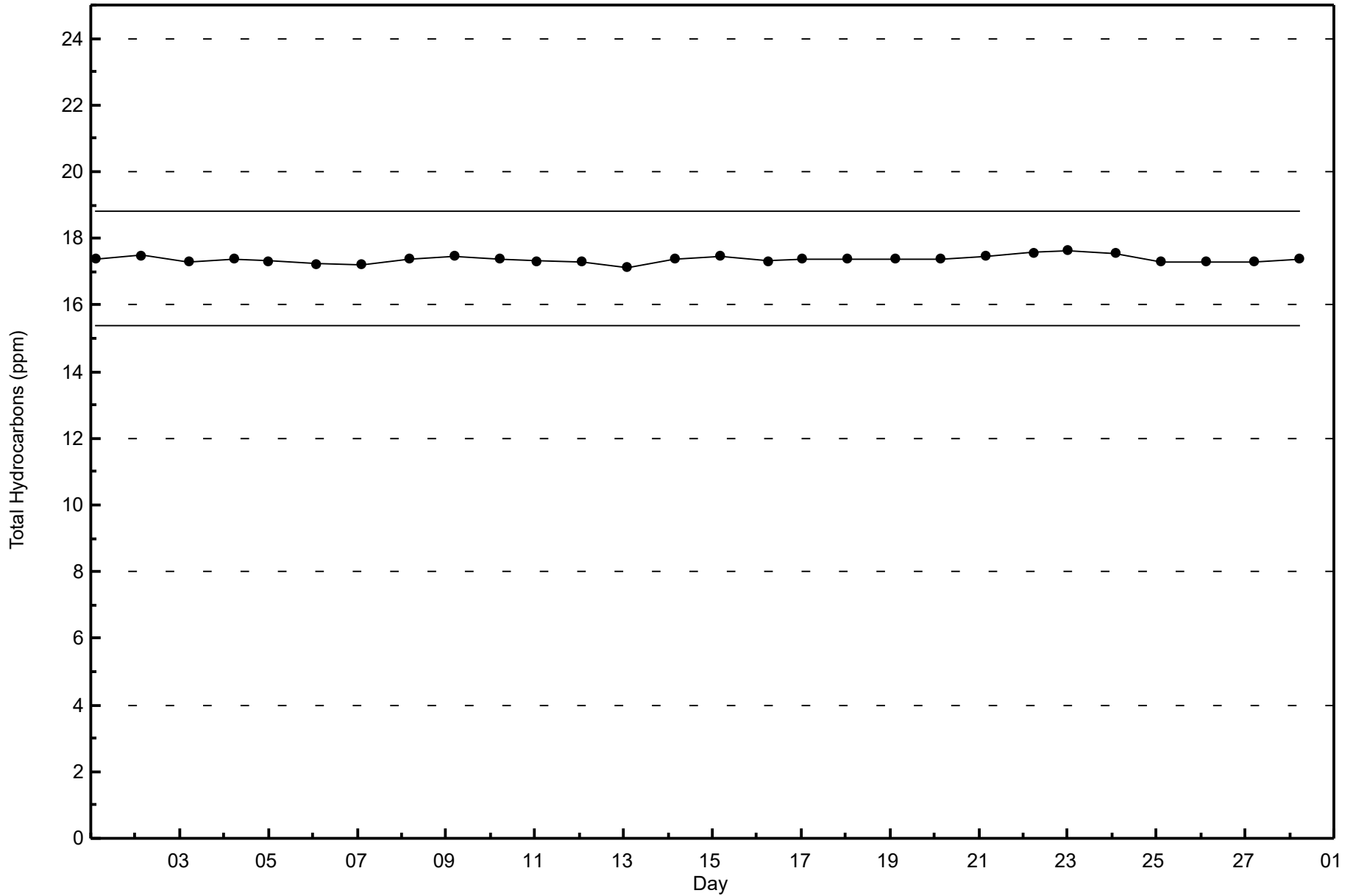


Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Total Hydrocarbons (THC) - ppm  
Wapasu









# Wood Buffalo Environmental Association

## Summary of Hour Averages

Ozone (O<sub>3</sub>) - ppb

Wapasu - February 2023

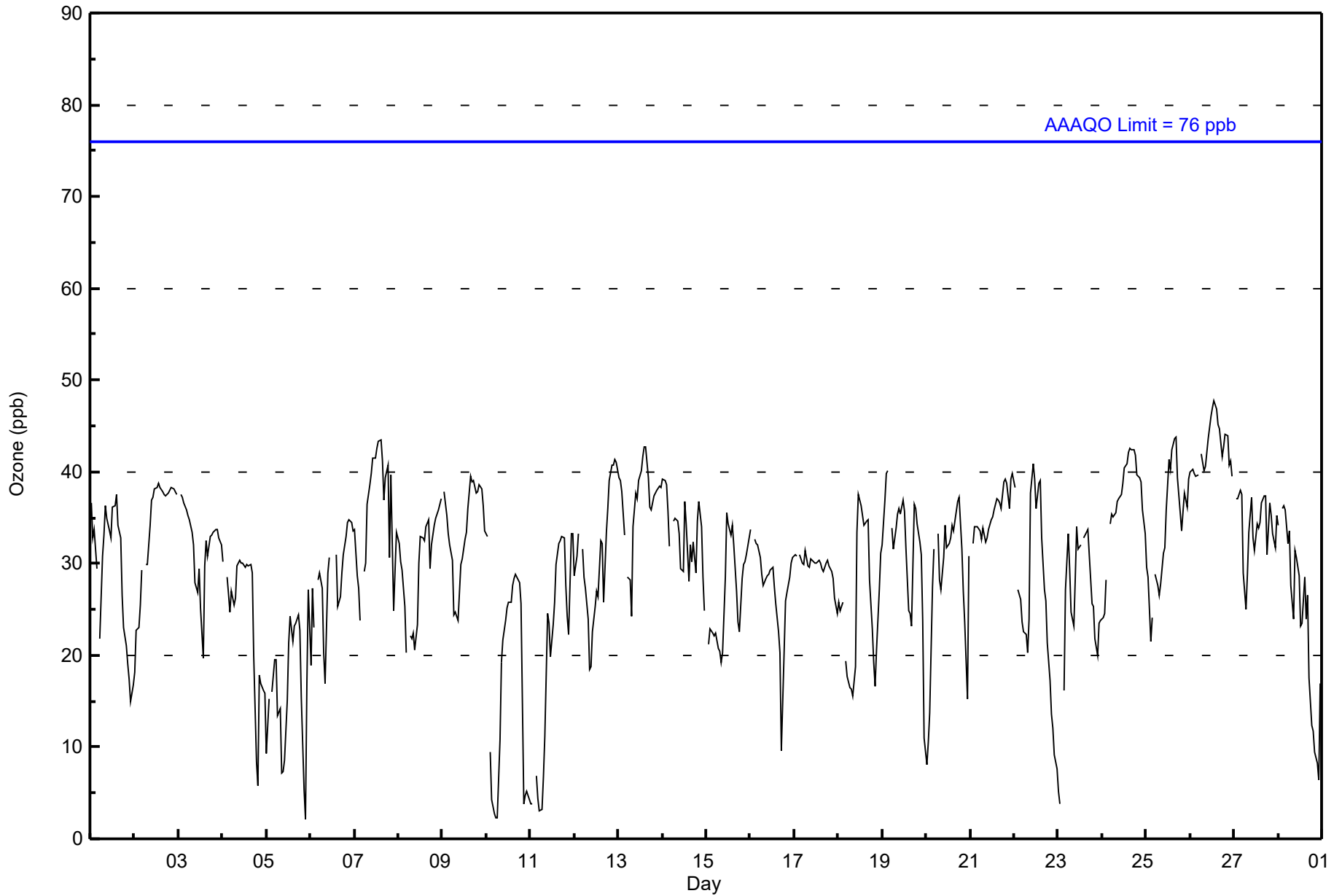
| Number of Exceedences (AAAQO):                                     |                               | 1-hr: 0  | 24-hr: 0 | Hours in Service: |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                           |      | 672  |      |      |      |               |               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
|--|-------------------------------|--|----------|-------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|---------------------------|------|------|------|------|------|---------------|---------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----------------|--|
| Maximum Value: 47.7 ppb on Feb 26 14:00                            |                               | Maximum Daily Average: 42.6 ppb on Feb 26  |          |                   |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Hours of Data:            | 640  |      |      |      |      |               |               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| Minimum Value: 2.2 ppb on Feb 5 22:00                              |                               | Minimum Daily Average: 16.2 ppb on Feb 5   |          |                   |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Hours of Missing Data:    | 32   |      |      |      |      |               |               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| Maximum Diurnal Average: 33.8 ppb at hour 15                       |                               | Minimum Diurnal Average: 26.2 ppb at hour 8  |          |                   |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Hours of Calibration:     | 31   |      |      |      |      |               |               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| Monthly Average: 29.62 ppb   |                               | Percentiles: P <sub>1</sub> = 3.7 P <sub>10</sub> = 17.5 Q <sub>1</sub> = 24.9 Median = 31.0 Q <sub>3</sub> = 35.9 P <sub>90</sub> = 39.2 P <sub>99</sub> = 44.1 |          |                   |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Percent Operational Time: | 99.9 |      |      |      |      |               |               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| Day  | Hourly Period Ending At (MST) |  |          |                   |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                           |      |      |      |      |      | Daily Average | Daily Maximum |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
|  | 1                             | 2  | 3        | 4                 | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19                        | 20   | 21   | 22   | 23   | 24   |               |               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 1-Feb  | 36.6                          | 32.8   | 33.7     | 29.4              | Z    | 21.9 | 30.9 | 33.1 | 36.4 | 34.9 | 33.6 | 32.8 | 36.2 | 36.3 | 37.5 | 34.2 | 32.8 | 26.5 | 23.1                      | 21.1 | 19.1 | 17.4 | 15.0 | 16.8 | 29.2          | 37.5          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 2-Feb  | 18.2                          | 22.8   | 23.1     | 25.5              | Z    | 29.3 | Z    | 29.9 | 29.9 | 34.2 | 36.9 | 37.2 | 38.2 | 38.3 | 38.8 | 38.2 | 37.8 | 37.5 | 37.4                      | 37.6 | 37.9 | 38.4 | 38.1 | 37.8 | 37.5          | 33.9          | 38.8 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 3-Feb  | Z                             | 37.5   | 37.2     | 36.5              | 35.8 | 35.3 | 34.7 | 33.4 | 32.1 | 28.0 | 26.8 | 29.4 | 25.2 | 19.7 | 29.8 | 32.4 | 30.9 | 33.0 | 33.0                      | 33.4 | 33.7 | 33.7 | 32.9 | 32.0 | 32.0          | 37.5          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 4-Feb  | 30.1                          | Z  | 28.6     | 26.8              | 24.7 | 27.0 | 25.4 | 26.2 | 29.8 | 30.3 | 30.0 | 30.1 | 29.6 | 29.8 | 29.7 | 29.9 | 29.0 | 20.0 | 8.3                       | 5.8  | 17.9 | 16.9 | 16.1 | 15.8 | 24.2          | 30.3          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 5-Feb  | 9.3                           | 15.2   | Z        | 16.0              | 19.5 | 19.6 | 13.5 | 14.2 | 7.2  | 7.4  | 8.5  | 15.2 | 21.3 | 24.2 | 21.5 | 23.2 | 23.5 | 24.4 | 22.7                      | 15.4 | 5.3  | 2.2  | 16.9 | 27.2 | 16.2          | 27.2          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 6-Feb  | 18.8                          | 27.3   | 23.0     | Z                 | 28.3 | 29.1 | 27.2 | 20.3 | 17.0 | 28.9 | 30.7 | C    | C    | C    | 31.0 | 25.3 | 26.3 | 29.0 | 31.0                      | 32.9 | 34.4 | 34.7 | 34.5 | 33.6 | 28.2          | 34.7          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 7-Feb  | 33.7                          | 28.7   | 27.3     | 23.8              | Z    | 29.1 | 30.1 | 36.5 | 38.6 | 39.8 | 41.4 | 41.5 | 42.5 | 43.3 | 43.4 | 41.2 | 36.9 | 39.3 | 40.8                      | 30.7 | 39.7 | 24.9 | 29.3 | 33.4 | 35.5          | 43.4          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 8-Feb  | 32.2                          | 30.3   | 29.4     | 25.4              | 20.3 | Z    | 22.2 | 21.8 | 22.4 | 20.6 | 23.3 | 30.1 | 33.0 | 32.7 | 32.5 | 34.1 | 34.8 | 29.5 | 32.0                      | 34.2 | 35.0 | 35.4 | 35.8 | 37.1 | 29.8          | 37.1          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 9-Feb  | Z                             | 37.9   | 35.3     | 33.2              | 32.1 | 30.3 | 24.5 | 24.7 | 23.8 | 26.9 | 29.8 | 30.5 | 32.6 | 33.3 | 36.0 | 39.5 | 39.0 | 39.0 | 37.6                      | 37.9 | 38.5 | 38.1 | 36.2 | 33.5 | 33.5          | 39.5          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 10-Feb   | 33.0                          | Z  | 9.5      | 4.3               | 2.7  | 2.3  | 2.2  | 10.9 | 19.3 | 21.6 | 23.8 | 25.2 | 25.8 | 25.8 | 27.5 | 28.4 | 28.9 | 28.3 | 27.9                      | 25.6 | 3.8  | 4.7  | 5.2  | 4.3  | 17.0          | 33.0          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 11-Feb   | 3.7                           | 3.8  | Z        | 6.9               | 4.5  | 3.0  | 3.1  | 6.8  | 11.1 | 24.6 | 23.4 | 19.8 | 23.3 | 25.8 | 29.9 | 32.2 | 32.5 | 33.0 | 32.8                      | 27.7 | 24.2 | 22.2 | 33.3 | 33.2 | 20.0          | 33.3          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 12-Feb   | 28.6                          | 30.9   | 33.3     | Z                 | 31.5 | 28.5 | 27.3 | 23.9 | 18.5 | 18.8 | 22.6 | 25.3 | 27.0 | 26.4 | 32.5 | 32.1 | 25.7 | 33.4 | 36.0                      | 39.0 | 40.7 | 40.8 | 41.3 | 41.0 | 30.7          | 41.3          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 13-Feb   | 39.4                          | 39.1   | 37.9     | 33.2              | Z    | 28.5 | 28.2 | 24.2 | 34.1 | 37.7 | 37.1 | 39.1 | 40.1 | 41.6 | 42.8 | 42.7 | 39.4 | 36.1 | 35.9                      | 37.3 | 37.6 | 38.0 | 38.4 | 38.3 | 36.8          | 42.8          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 14-Feb   | 39.2                          | 39.1   | 38.5     | 35.7              | 31.9 | Z    | 34.6 | 34.9 | 34.6 | 33.2 | 29.5 | 29.2 | 36.8 | 34.4 | 28.1 | 32.0 | 30.2 | 32.4 | 29.0                      | 34.7 | 36.7 | 33.9 | 28.5 | 24.8 | 33.1          | 39.2          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 15-Feb   | Z                             | 21.1   | 22.8     | 22.4              | 22.1 | 22.5 | 20.7 | 20.5 | 19.2 | 20.2 | 28.6 | 35.5 | 34.2 | 33.1 | 34.1 | 32.0 | 27.0 | 23.7 | 22.6                      | 28.3 | 29.9 | 30.2 | 31.0 | 32.7 | 26.7          | 35.5          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 16-Feb   | 33.7                          | Z  | 32.6     | 32.2              | 32.0 | 30.6 | 28.8 | 27.6 | 28.4 | 28.7 | 28.9 | 29.3 | 29.5 | 27.5 | 25.7 | 22.5 | 20.3 | 9.7  | 20.5                      | 25.9 | 26.9 | 28.6 | 30.1 | 30.7 | 27.4          | 33.7          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 17-Feb   | 30.9                          | 30.8   | Z        | 30.9              | 30.0 | 29.8 | 31.4 | 29.8 | 29.6 | 30.5 | 30.2 | 30.0 | 30.1 | 30.4 | 30.1 | 29.5 | 29.2 | 30.0 | 30.4                      | 29.8 | 29.1 | 28.3 | 26.2 | 24.6 | 29.6          | 31.4          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 18-Feb   | 25.7                          | 24.9   | 25.8     | Z                 | 19.4 | 17.7 | 16.5 | 16.4 | 15.5 | 18.7 | 33.4 | 37.5 | 36.3 | 35.3 | 34.1 | 34.7 | 34.8 | 28.2 | 22.8                      | 19.2 | 16.7 | 20.6 | 27.2 | 31.1 | 25.8          | 37.5          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 19-Feb   | 32.0                          | 36.9   | 39.8     | 40.1              | Z    | 33.8 | 31.6 | 33.9 | 35.4 | 36.0 | 35.4 | 36.9 | 35.6 | 31.8 | 24.9 | 24.5 | 23.2 | 36.5 | 35.9                      | 34.3 | 32.4 | 31.0 | 23.8 | 11.0 | 32.0          | 40.1          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 20-Feb   | 8.1                           | 10.6   | 13.7     | 27.4              | 31.5 | Z    | 33.2 | 28.2 | 27.2 | 30.7 | 34.2 | 31.7 | 32.2 | 32.8 | 34.1 | 33.6 | 35.7 | 36.7 | 37.2                      | 31.6 | 27.1 | 23.7 | 15.3 | 30.8 | 28.1          | 37.2          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 21-Feb   | Z                             | 32.3   | 34.0     | 34.0              | 34.0 | 33.6 | 32.6 | 33.9 | 32.3 | 32.8 | 33.7 | 34.8 | 35.1 | 35.9 | 37.0 | 36.8 | 36.6 | 36.0 | 38.8                      | 39.2 | 38.7 | 36.0 | 39.2 | 39.8 | 35.5          | 39.8          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 22-Feb   | 38.3                          | Z  | 27.2     | 26.1              | 23.6 | 22.6 | 22.3 | 20.3 | 23.9 | 37.7 | 40.9 | 39.2 | 35.9 | 38.8 | 39.1 | 32.8 | 27.2 | 26.0 | 21.3                      | 17.2 | 13.6 | 12.0 | 9.1  | 7.6  | 26.2          | 40.9          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 23-Feb   | 5.2                           | 3.8  | Z        | 16.1              | 27.1 | 33.2 | 29.4 | 24.7 | 23.2 | 28.4 | 34.0 | 31.6 | 32.1 | M    | 32.9 | 33.3 | 33.7 | 30.9 | 25.6                      | 25.2 | 21.7 | 20.0 | 23.6 | 23.8 | 25.4          | 34.0          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 24-Feb   | 24.2                          | 24.6   | 28.3     | Z                 | 34.3 | 35.4 | 35.1 | 35.5 | 36.8 | 37.1 | 37.6 | 38.7 | 40.4 | 40.9 | 42.1 | 42.6 | 42.3 | 42.4 | 41.7                      | 39.6 | 39.4 | 38.9 | 35.9 | 33.3 | 36.8          | 42.6          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 25-Feb   | 29.6                          | 28.5   | 21.5     | 24.2              | Z    | 28.8 | 27.7 | 26.6 | 27.7 | 31.1 | 31.7 | 35.8 | 41.3 | 40.2 | 42.4 | 43.6 | 43.7 | 39.4 | 35.6                      | 33.6 | 35.7 | 37.6 | 36.2 | 39.2 | 34.0          | 43.7          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 26-Feb   | 40.0                          | 40.2   | 39.8     | 39.5              | 39.7 | Z    | 41.9 | 40.1 | 40.6 | 42.1 | 43.6 | 46.1 | 47.1 | 47.7 | 46.8 | 45.2 | 44.6 | 41.6 | 42.7                      | 44.1 | 44.0 | 40.8 | 41.2 | 39.5 | 42.6          | 47.7          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 27-Feb   | Z                             | 37.0   | 37.0     | 38.0              | 37.6 | 28.9 | 25.1 | 28.9 | 33.3 | 37.2 | 32.8 | 31.4 | 34.3 | 33.8 | 34.5 | 36.6 | 37.4 | 37.4 | 30.9                      | 36.6 | 35.2 | 33.3 | 31.7 | 35.2 | 34.1          | 38.0          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 28-Feb   | 34.2                          | Z  | 36.0     | 36.4              | 35.9 | 32.2 | 33.6 | 27.6 | 23.9 | 31.4 | 30.7 | 28.7 | 23.2 | 23.4 | 28.5 | 23.9 | 26.5 | 17.6 | 12.4                      | 11.7 | 9.4  | 8.2  | 6.4  | 17.0 | 24.3          | 36.4          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 27.2   |                               |  |          |                   |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                           |      |      |      |      | 27.7 | 29.8          | 27.7          | 27.3 | 26.3 | 26.6 | 26.2 | 27.0 | 29.7 | 31.2 | 32.4 | 33.3 | 33.2 | 33.8 | 33.5 | 32.5 | 31.3 | 30.2 | 29.6 | 28.7 | 27.5 | 27.8 | 28.7 | Diurnal Average |  |
| 40.0   |                               |  |          |                   |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                           |      |      |      |      | 40.2 | 39.8          | 40.1          | 39.7 | 35.4 | 41.9 | 40.1 | 40.6 | 42.1 | 43.6 | 46.1 | 47.1 | 47.7 | 46.8 | 45.2 | 44.6 | 42.4 | 42.7 | 44.1 | 44.0 | 40.8 | 41.3 | 41.0 | Diurnal Maximum |  |
| Z - zerospan            C - Calibration            M - Maintenance |                               |  |          |                   |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                           |      |      |      |      |      |               |               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 76 ppb        |                               |  |          |                   |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                           |      |      |      |      |      |               |               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |





Wood Buffalo Environmental Association  
Hourly Averages

Ozone (O<sub>3</sub>) - ppb  
Wapasu - February 2023





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Ozone (O<sub>3</sub>) - ppb**  
**Wapasu - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 20                            | 90                     | 14.06    | 14.06               |
| 21 - 50                           | 550                    | 85.94    | 100.00              |
| 51 - 82                           | 0                      | 0.00     | 100.00              |
| > 83                              | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 640

Total Number of Hours: 672



**Wood Buffalo Environmental Association**  
**Frequency Distribution**

**Ozone (O<sub>3</sub>) - ppb**  
**Wapasu - February 2023**

| <b>Concentration</b><br><b>Ranges (ppb)</b> | <b>Wind Direction</b> |            |           |            |          |            |           |            |          |            |           |            |          |            |           |            | <b>Totals</b> |
|---|-----------------------|------------|-----------|------------|----------|------------|-----------|------------|----------|------------|-----------|------------|----------|------------|-----------|------------|---------------|
|   | <b>N</b>              | <b>NNE</b> | <b>NE</b> | <b>ENE</b> | <b>E</b> | <b>ESE</b> | <b>SE</b> | <b>SSE</b> | <b>S</b> | <b>SSW</b> | <b>SW</b> | <b>WSW</b> | <b>W</b> | <b>WNW</b> | <b>NW</b> | <b>NNW</b> |               |
| 0 - 20                                      | 10                    | 8          | 7         | 6          | 6        | 6          | 10        | 6          | 3        | 10         | 3         | 0          | 1        | 3          | 5         | 6          | 90            |
| 21 - 50                                     | 95                    | 45         | 33        | 16         | 8        | 9          | 53        | 79         | 49       | 30         | 31        | 22         | 14       | 3          | 7         | 54         | 548           |
| 51 - 82                                     | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0             |
| > 83  | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0             |
| <b>Totals</b>                               | 105                   | 53         | 40        | 22         | 14       | 15         | 63        | 85         | 52       | 40         | 34        | 22         | 15       | 6          | 12        | 60         | 638           |

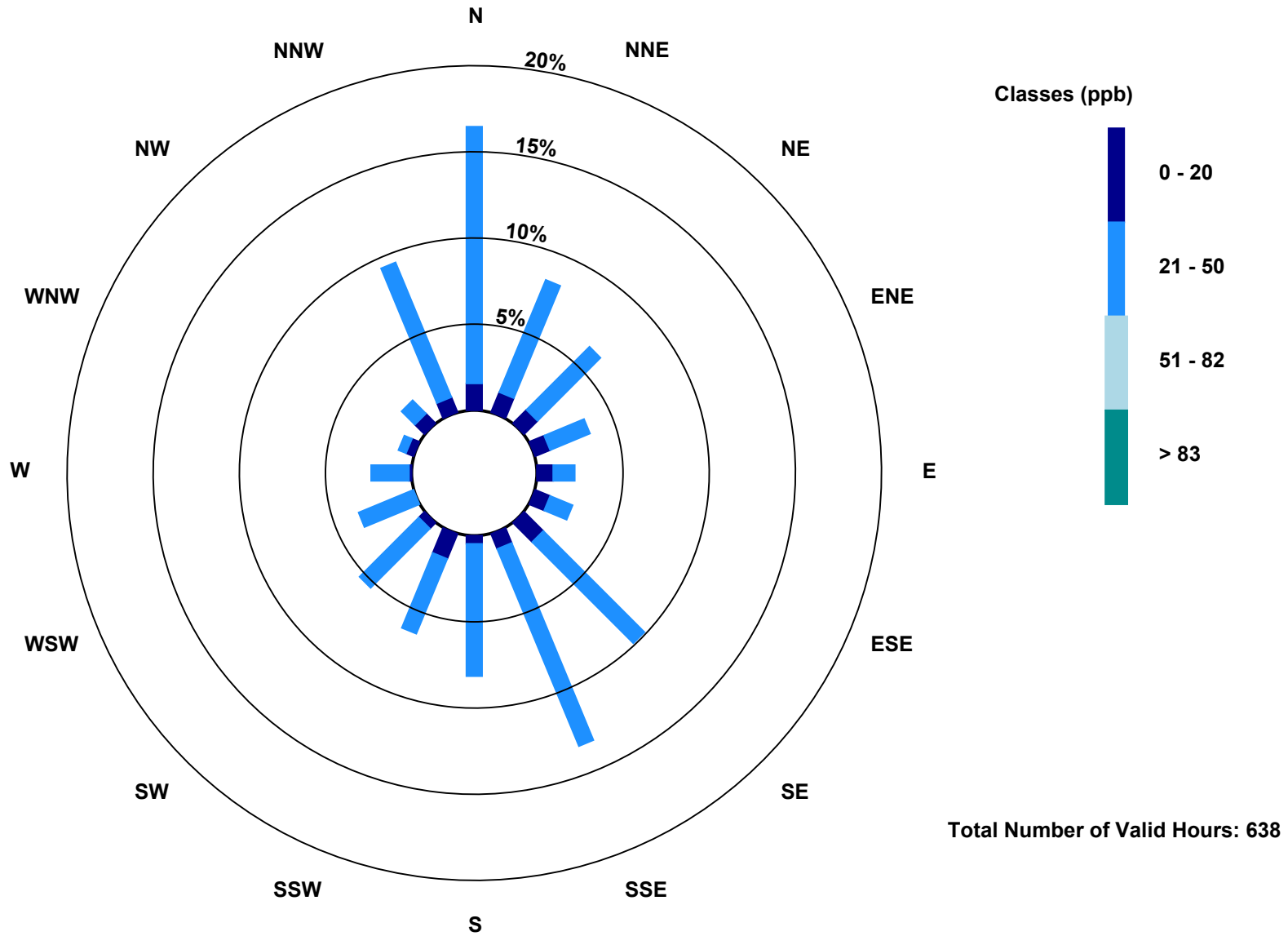
Total Number of Valid Hours: 638

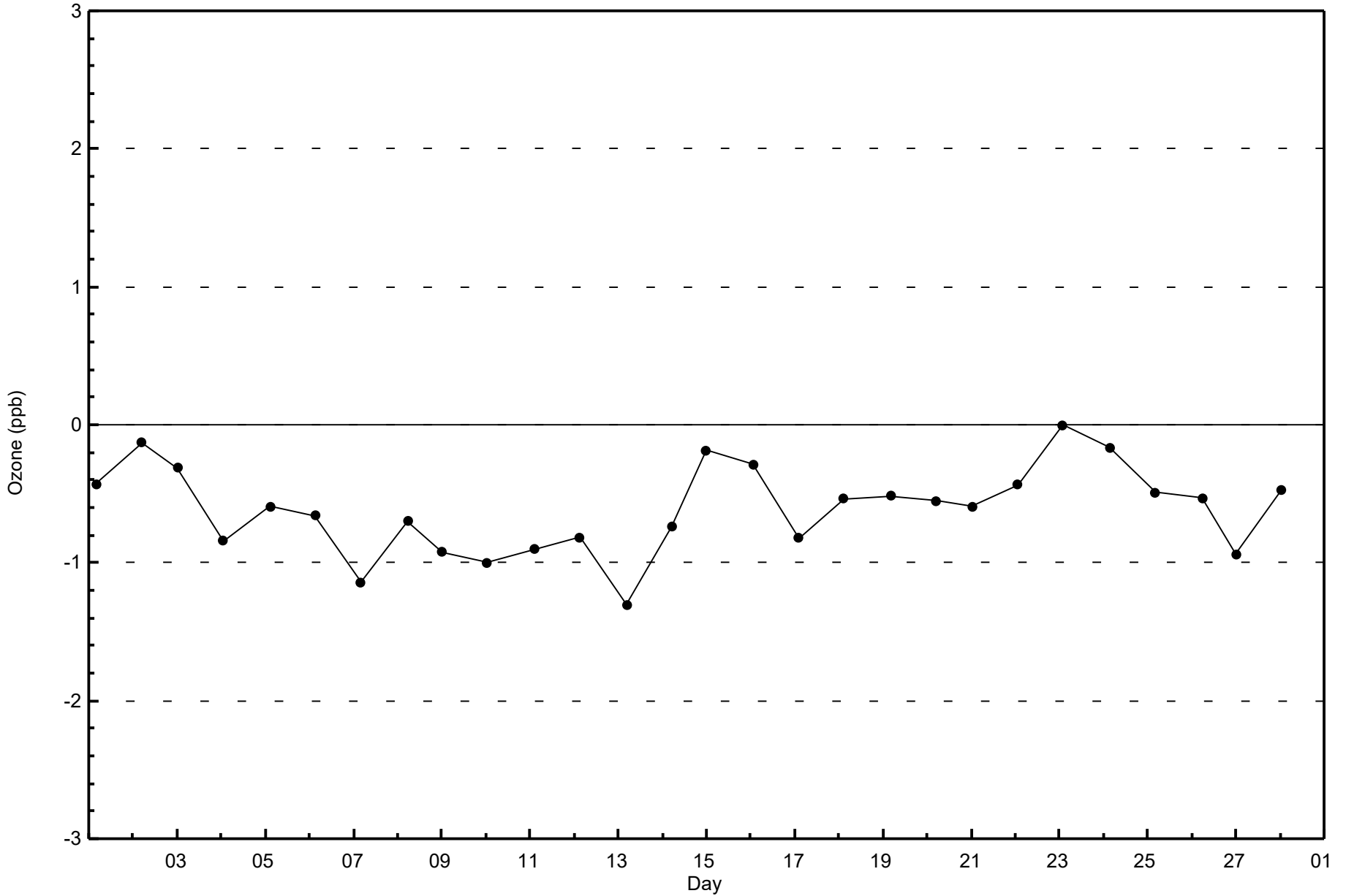
Total Number of Hours: 672

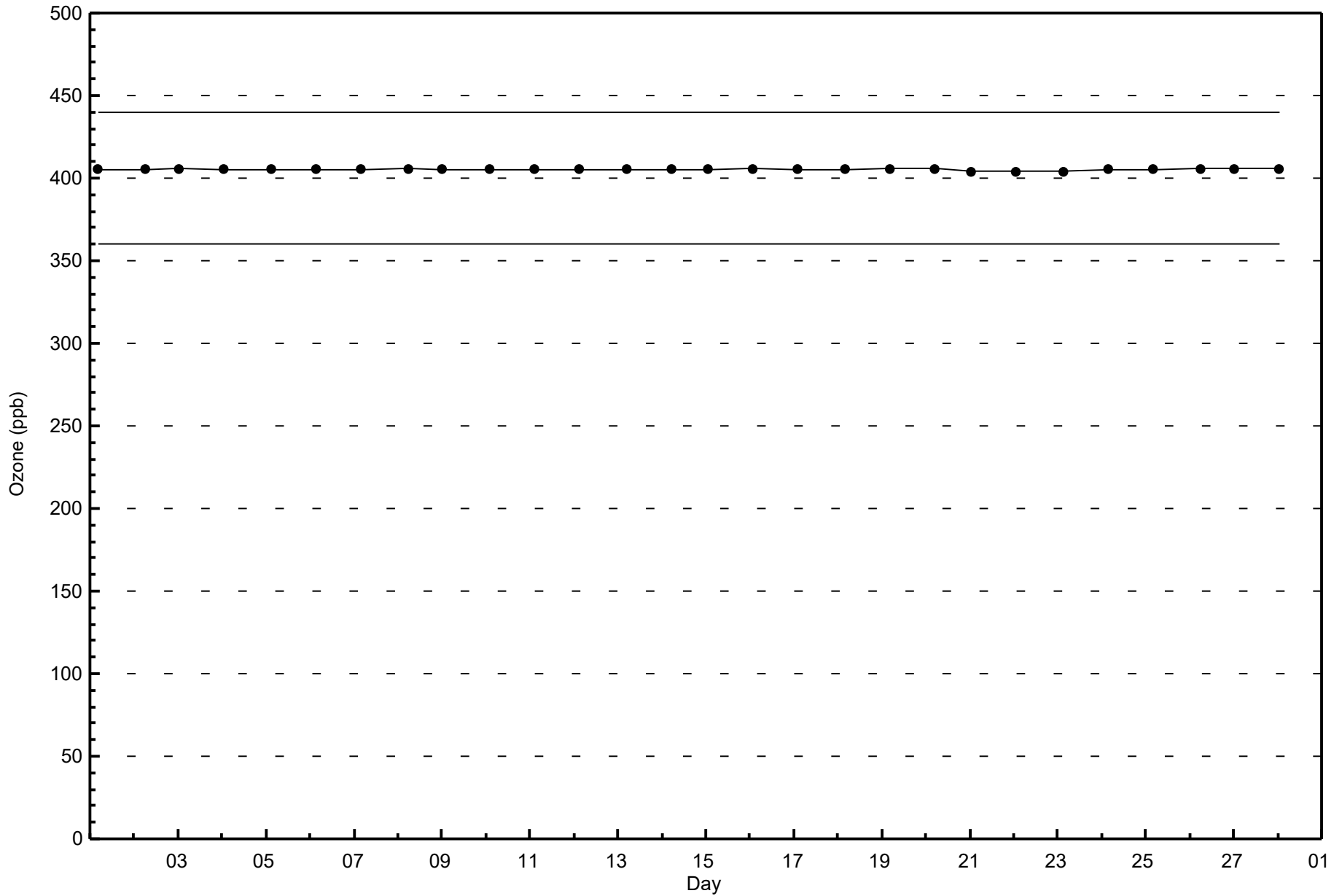


Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Ozone (O<sub>3</sub>) - ppb  
Wapasu









**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

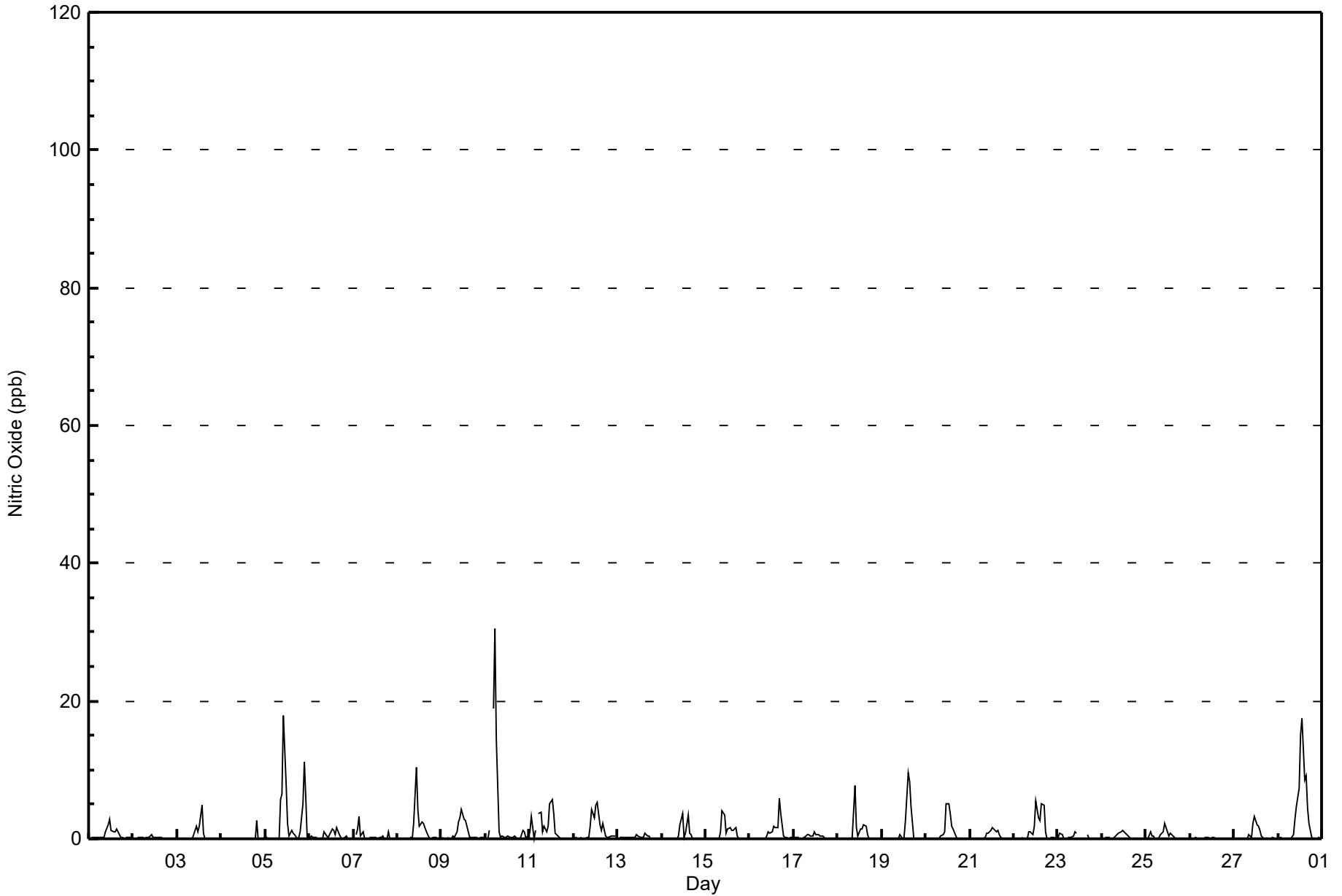
**Nitric Oxide (NO) - ppb**  
**Wapasu - February 2023**

| Maximum Value: 30.6 ppb on Feb 10 06:00     |                               | Maximum Daily Average: 3.2 ppb on Feb 28  |     | Hours in Service: 672           |      |      |      |      |     |     |      |      |      |      |      |     |     |     |     |     |     |      |      |     |                 |                 |     |
|---|-------------------------------|---|-----|---------------------------------|------|------|------|------|-----|-----|------|------|------|------|------|-----|-----|-----|-----|-----|-----|------|------|-----|-----------------|-----------------|-----|
| Minimum Value: 0.0 ppb on Feb 2 18:00       |                               | Minimum Daily Average: 0.0 ppb on Feb 26  |     | Hours of Data: 639              |      |      |      |      |     |     |      |      |      |      |      |     |     |     |     |     |     |      |      |     |                 |                 |     |
| Maximum Diurnal Average: 2.3 ppb at hour 11 |                               | Minimum Diurnal Average: 0.1 ppb at hour 24   |     | Hours of Missing Data: 33       |      |      |      |      |     |     |      |      |      |      |      |     |     |     |     |     |     |      |      |     |                 |                 |     |
| Monthly Average: 0.89 ppb                   |                               | Percentiles: P <sub>1</sub> = 0.0 P <sub>10</sub> = 0.0 Q <sub>1</sub> = 0.0 Median = 0.1 Q <sub>3</sub> = 0.7 P <sub>90</sub> = 2.2 P <sub>99</sub> = 10.8 |     | Hours of Calibration: 33        |      |      |      |      |     |     |      |      |      |      |      |     |     |     |     |     |     |      |      |     |                 |                 |     |
|   |                               |   |     | Percent Operational Time: 100.0 |      |      |      |      |     |     |      |      |      |      |      |     |     |     |     |     |     |      |      |     |                 |                 |     |
| Day   | Hourly Period Ending At (MST) |   |     |                                 |      |      |      |      |     |     |      |      |      |      |      |     |     |     |     |     |     |      |      |     | Daily Average   | Daily Maximum   |     |
|   | 1                             | 2   | 3   | 4                               | 5    | 6    | 7    | 8    | 9   | 10  | 11   | 12   | 13   | 14   | 15   | 16  | 17  | 18  | 19  | 20  | 21  | 22   | 23   | 24  |                 |                 |     |
| 1-Feb                                       | Z                             | 0.3   | 0.3 | 0.2                             | 0.2  | 0.3  | 0.2  | 0.2  | 0.2 | 1.0 | 2.1  | 2.9  | 1.2  | 1.1  | 1.0  | 1.4 | 0.6 | 0.2 | 0.1 | 0.1 | 0.3 | 0.1  | 0.2  | 0.1 | 0.6             | 2.9             |     |
| 2-Feb                                       | 0.1                           | Z   | 0.2 | 0.1                             | 0.2  | 0.1  | 0.0  | 0.1  | 0.1 | 0.3 | 0.6  | 0.2  | 0.2  | 0.2  | 0.1  | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0  | 0.0 | 0.1             | 0.6             |     |
| 3-Feb                                       | 0.0                           | 0.0   | Z   | 0.0                             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0 | 0.7 | 1.8  | 0.9  | 1.9  | 4.9  | 0.8  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0  | 0.0 | 0.5             | 4.9             |     |
| 4-Feb                                       | 0.0                           | 0.0   | 0.0 | Z                               | 0.0  | 0.0  | 0.0  | 0.0  | 0.0 | 0.0 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0 | 0.0 | 0.0 | 0.1 | 2.7 | 0.0 | 0.0  | 0.1  | 0.1 | 2.7             | 0.1             |     |
| 5-Feb                                       | 0.4                           | 0.0   | 0.0 | 0.0                             | Z    | 0.0  | 0.1  | 0.0  | 5.7 | 6.5 | 17.9 | 8.0  | 2.2  | 0.5  | 1.3  | 0.9 | 0.5 | 0.1 | 0.2 | 1.0 | 5.2 | 11.1 | 6.1  | 0.2 | 2.9             | 17.9            |     |
| 6-Feb                                       | 0.2                           | 0.3   | 0.3 | 0.2                             | 0.1  | Z    | 0.1  | 0.1  | 0.9 | 0.4 | 0.3  | 0.6  | 1.4  | 1.3  | 0.6  | 1.6 | 0.7 | 0.2 | 0.1 | 0.3 | 0.3 | 0.1  | 0.1  | 0.1 | 0.4             | 1.6             |     |
| 7-Feb                                       | Z                             | 0.6   | 1.4 | 3.2                             | 0.4  | 1.0  | 0.0  | 0.0  | 0.0 | 0.1 | 0.1  | 0.2  | 0.1  | 0.0  | 0.2  | 0.3 | 0.4 | 0.0 | 0.0 | 0.9 | 0.0 | 0.0  | 0.0  | 0.0 | 0.4             | 3.2             |     |
| 8-Feb                                       | 0.0                           | Z   | 0.0 | 0.0                             | 0.0  | 0.0  | 0.0  | 0.1  | 0.1 | 2.3 | 10.3 | 4.3  | 1.9  | 2.5  | 2.2  | 1.6 | 0.5 | 0.2 | 0.1 | 0.2 | 0.2 | 0.2  | 0.1  | 0.0 | 1.2             | 10.3            |     |
| 9-Feb                                       | 0.0                           | 0.2   | Z   | 0.1                             | 0.1  | 0.0  | 0.4  | 0.2  | 1.0 | 2.3 | 3.1  | 4.3  | 2.8  | 2.7  | 1.8  | 0.3 | 0.2 | 0.2 | 0.1 | 0.2 | 0.1 | 0.1  | 0.2  | 0.1 | 0.9             | 4.3             |     |
| 10-Feb                                      | 0.0                           | 0.1   | 1.3 | Z                               | 19.0 | 30.6 | 14.4 | 1.1  | 0.2 | 0.3 | 0.2  | 0.3  | 0.3  | 0.3  | 0.3  | 0.2 | 0.3 | 0.0 | 0.1 | 0.1 | 1.3 | 0.9  | 0.2  | 0.3 | 3.1             | 30.6            |     |
| 11-Feb                                      | 1.0                           | 3.2   | 0.0 | 1.3                             | Z    | 3.7  | 3.8  | 0.9  | 1.8 | 0.9 | 1.8  | 5.1  | 5.7  | 3.7  | 0.8  | 0.5 | 0.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0  | 0.0 | 1.5             | 5.7             |     |
| 12-Feb                                      | 0.0                           | 0.1   | 0.0 | 0.1                             | 0.1  | Z    | 0.1  | 0.1  | 0.2 | 1.8 | 4.2  | 3.1  | 4.8  | 5.2  | 2.0  | 1.2 | 2.2 | 0.3 | 0.3 | 0.3 | 0.4 | 0.4  | 0.4  | 0.4 | 1.2             | 5.2             |     |
| 13-Feb                                      | Z                             | 0.2   | 0.2 | 0.3                             | 0.3  | 0.2  | 0.2  | 0.2  | 0.2 | 0.2 | 0.6  | 0.3  | 0.2  | 0.1  | 0.2  | 0.8 | 0.4 | 0.3 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0  | 0.0 | 0.2             | 0.8             |     |
| 14-Feb                                      | 0.0                           | Z   | 0.0 | 0.0                             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0 | 0.3 | 2.1  | 3.7  | 0.2  | 0.8  | 3.5  | 0.9 | 0.7 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0  | 0.0 | 0.5             | 3.7             |     |
| 15-Feb                                      | 0.0                           | 0.0   | Z   | 0.0                             | 0.0  | 0.0  | 0.0  | 0.0  | 1.0 | 4.1 | 3.6  | 0.8  | 1.4  | 1.7  | 1.3  | 1.3 | 1.6 | 0.3 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0  | 0.0 | 0.7             | 4.1             |     |
| 16-Feb                                      | 0.0                           | 0.0   | 0.0 | Z                               | 0.0  | 0.0  | 0.0  | 0.0  | 0.0 | 0.4 | 1.0  | 0.8  | 0.9  | 1.8  | 1.7  | 1.7 | 6.0 | 3.7 | 0.4 | 0.1 | 0.2 | 0.1  | 0.1  | 0.2 | 0.8             | 6.0             |     |
| 17-Feb                                      | 0.2                           | 0.2   | 0.1 | 0.3                             | Z    | 0.2  | 0.2  | 0.7  | 0.6 | 0.4 | 0.5  | 0.9  | 0.7  | 0.7  | 0.5  | 0.4 | 0.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0  | 0.0 | 0.3             | 0.9             |     |
| 18-Feb                                      | 0.0                           | 0.1   | 0.0 | 0.0                             | 0.0  | Z    | 0.0  | 0.0  | 0.2 | 7.7 | 1.6  | 0.3  | 1.4  | 1.4  | 2.0  | 1.8 | 0.6 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0  | 0.0 | 0.7             | 7.7             |     |
| 19-Feb                                      | Z                             | 0.0   | 0.0 | 0.0                             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0 | 0.0 | 0.5  | 0.1  | 0.3  | 2.7  | 9.6  | 8.3 | 4.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0  | 0.0 | 1.1             | 9.6             |     |
| 20-Feb                                      | 0.1                           | Z   | 0.0 | 0.0                             | 0.0  | 0.0  | 0.0  | 0.0  | 0.4 | 0.7 | 1.0  | 5.0  | 5.1  | 3.6  | 1.9  | 1.4 | 0.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1  | 0.0  | 0.0 | 0.9             | 5.1             |     |
| 21-Feb                                      | 0.0                           | 0.1   | Z   | 0.0                             | 0.0  | 0.0  | 0.0  | 0.0  | 0.3 | 0.8 | 0.9  | 1.2  | 1.7  | 1.4  | 1.1  | 1.1 | 0.7 | 0.2 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0  | 0.0 | 0.4             | 1.7             |     |
| 22-Feb                                      | 0.0                           | 0.0   | 0.0 | Z                               | 0.1  | 0.0  | 0.0  | 0.0  | 0.9 | 1.1 | 0.5  | 1.9  | 5.6  | 3.0  | 2.7  | 5.1 | 4.8 | 0.9 | 0.0 | 0.0 | 0.2 | 0.2  | 0.2  | 0.0 | 1.2             | 5.6             |     |
| 23-Feb                                      | 0.3                           | 0.9   | 0.6 | 0.0                             | Z    | 0.1  | 0.1  | 0.1  | 0.5 | 1.0 | 0.7  | C    | C    | C    | C    | C   | 0.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0  | 0.0 | 0.3             | 1.0             |     |
| 24-Feb                                      | 0.0                           | 0.0   | 0.2 | 0.2                             | 0.2  | Z    | 0.1  | 0.3  | 0.6 | 0.7 | 1.0  | 1.2  | 1.0  | 0.7  | 0.3  | 0.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0  | 0.0 | 0.3             | 1.2             |     |
| 25-Feb                                      | Z                             | 0.1   | 0.9 | 0.5                             | 0.4  | 0.0  | 0.0  | 0.2  | 0.6 | 1.1 | 2.3  | 1.6  | 0.5  | 0.8  | 0.6  | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0  | 0.0 | 0.4             | 2.3             |     |
| 26-Feb                                      | 0.0                           | Z   | 0.0 | 0.1                             | 0.0  | 0.0  | 0.0  | 0.0  | 0.1 | 0.1 | 0.1  | 0.1  | 0.1  | 0.1  | 0.0  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0  | 0.0 | 0.0             | 0.1             | 0.1 |
| 27-Feb                                      | 0.0                           | 0.0   | Z   | 0.0                             | 0.0  | 0.0  | 0.0  | 0.1  | 0.6 | 0.2 | 2.2  | 3.2  | 2.1  | 1.8  | 1.3  | 0.4 | 0.0 | 0.1 | 0.0 | 0.1 | 0.1 | 0.1  | 0.1  | 0.0 | 0.5             | 3.2             |     |
| 28-Feb                                      | 0.0                           | 0.1   | 0.1 | Z                               | 0.0  | 0.0  | 0.1  | 0.0  | 0.7 | 2.7 | 4.8  | 7.3  | 15.0 | 17.5 | 8.6  | 9.2 | 4.4 | 2.1 | 0.2 | 0.0 | 0.0 | 0.0  | 0.2  | 0.0 | 3.2             | 17.5            |     |
|   |                               | 0.1   | 0.3 | 0.2                             | 0.3  | 0.9  | 1.5  | 0.7  | 0.2 | 0.6 | 1.4  | 2.3  | 2.2  | 2.2  | 1.7  | 1.5 | 1.1 | 0.3 | 0.1 | 0.2 | 0.3 | 0.5  | 0.3  | 0.1 | Diurnal Average |                 |     |
|   |                               | 1.0   | 3.2 | 1.4                             | 3.2  | 19.0 | 30.6 | 14.4 | 1.1 | 5.7 | 7.7  | 17.9 | 8.0  | 15.0 | 17.5 | 9.6 | 9.2 | 6.0 | 3.7 | 0.4 | 2.7 | 5.2  | 11.1 | 6.1 | 0.4             | Diurnal Maximum |     |
| Z - zerospan                                |                               | C - Calibration   |     |                                 |      |      |      |      |     |     |      |      |      |      |      |     |     |     |     |     |     |      |      |     |                 |                 |     |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Nitric Oxide (NO) - ppb**  
**Wapasu - February 2023**







**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Nitric Oxide (NO) - ppb  
Wapasu - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 20                            | 638                    | 99.84    | 99.84               |
| 21 - 40                           | 1                      | 0.16     | 100.00              |
| 41 - 80                           | 0                      | 0.00     | 100.00              |
| 81 - 159                          | 0                      | 0.00     | 100.00              |
| > 159                             | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 639

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Nitric Oxide (NO) - ppb  
Wapasu - February 2023**

| <b>Concentration<br/>Ranges (ppb)</b> | <b>Wind Direction</b> |            |           |            |           |            |           |            |           |            |           |            |           |            |           |            | <b>Totals</b> |
|---------------------------------------|-----------------------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|---------------|
|                                       | <b>N</b>              | <b>NNE</b> | <b>NE</b> | <b>ENE</b> | <b>E</b>  | <b>ESE</b> | <b>SE</b> | <b>SSE</b> | <b>S</b>  | <b>SSW</b> | <b>SW</b> | <b>WSW</b> | <b>W</b>  | <b>WNW</b> | <b>NW</b> | <b>NNW</b> |               |
| 0 - 20                                | 102                   | 50         | 42        | 23         | 15        | 16         | 61        | 83         | 54        | 39         | 35        | 23         | 14        | 6          | 12        | 61         | 636           |
| 21 - 40                               | 1                     | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 1             |
| 11 - 80                               | 0                     | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0             |
| 81 - 159                              | 0                     | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0             |
| > 159                                 | 0                     | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0             |
| <b>Totals</b>                         | <b>103</b>            | <b>50</b>  | <b>42</b> | <b>23</b>  | <b>15</b> | <b>16</b>  | <b>61</b> | <b>83</b>  | <b>54</b> | <b>39</b>  | <b>35</b> | <b>23</b>  | <b>14</b> | <b>6</b>   | <b>12</b> | <b>61</b>  | <b>637</b>    |

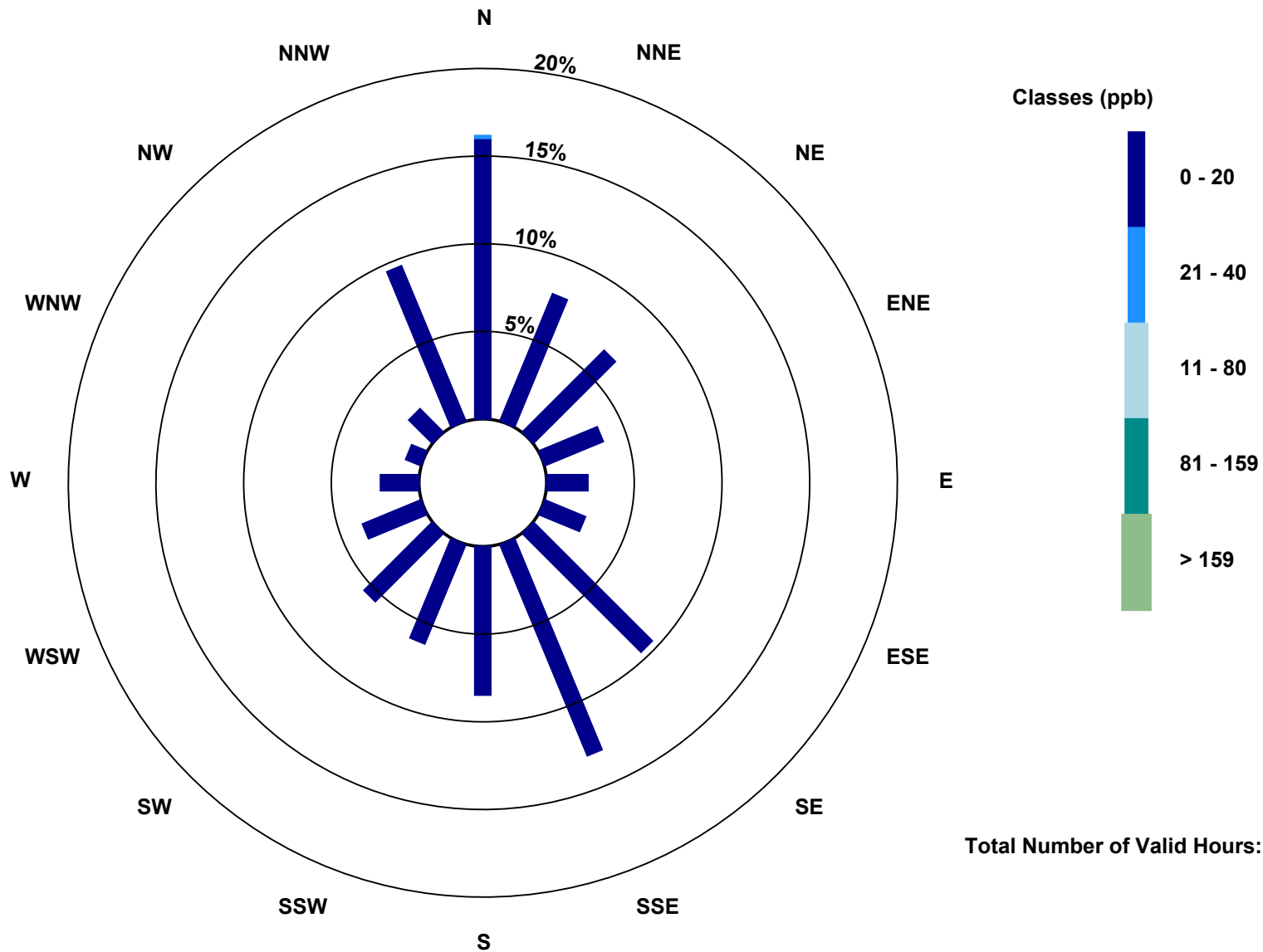
Total Number of Valid Hours: 637

Total Number of Hours: 672

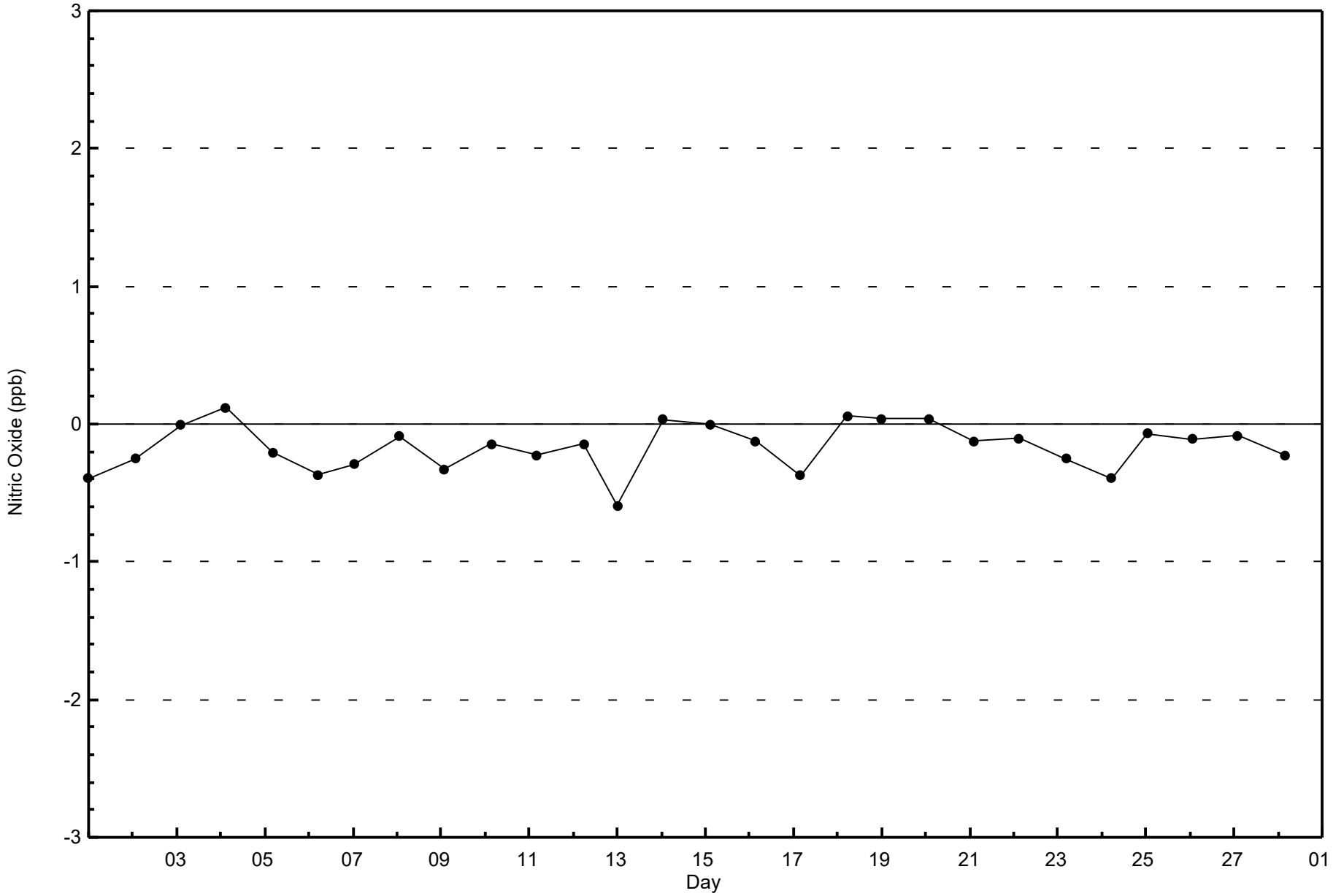


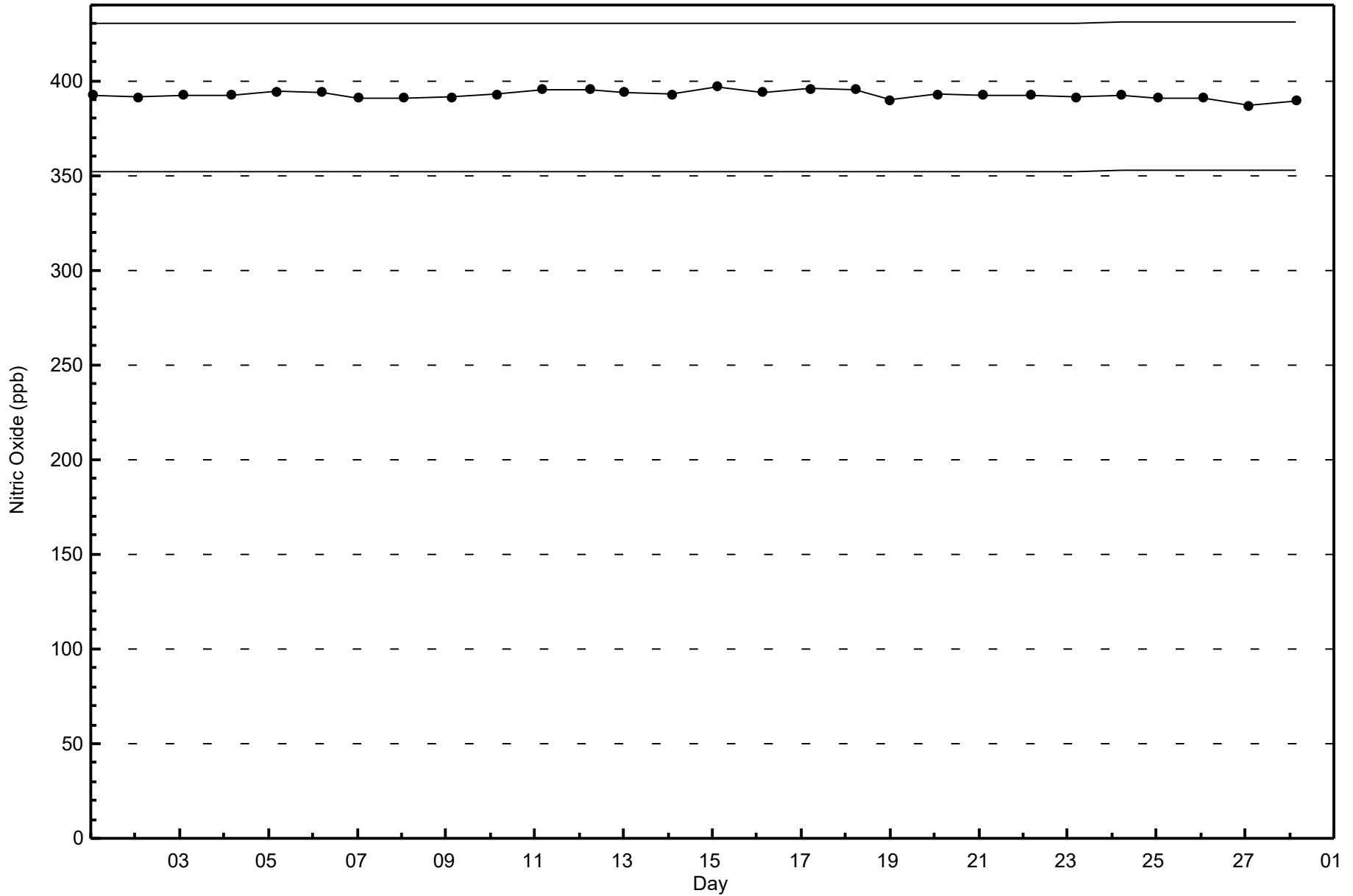
Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Nitric Oxide (NO) - ppb  
Wapasu



Total Number of Valid Hours: 637







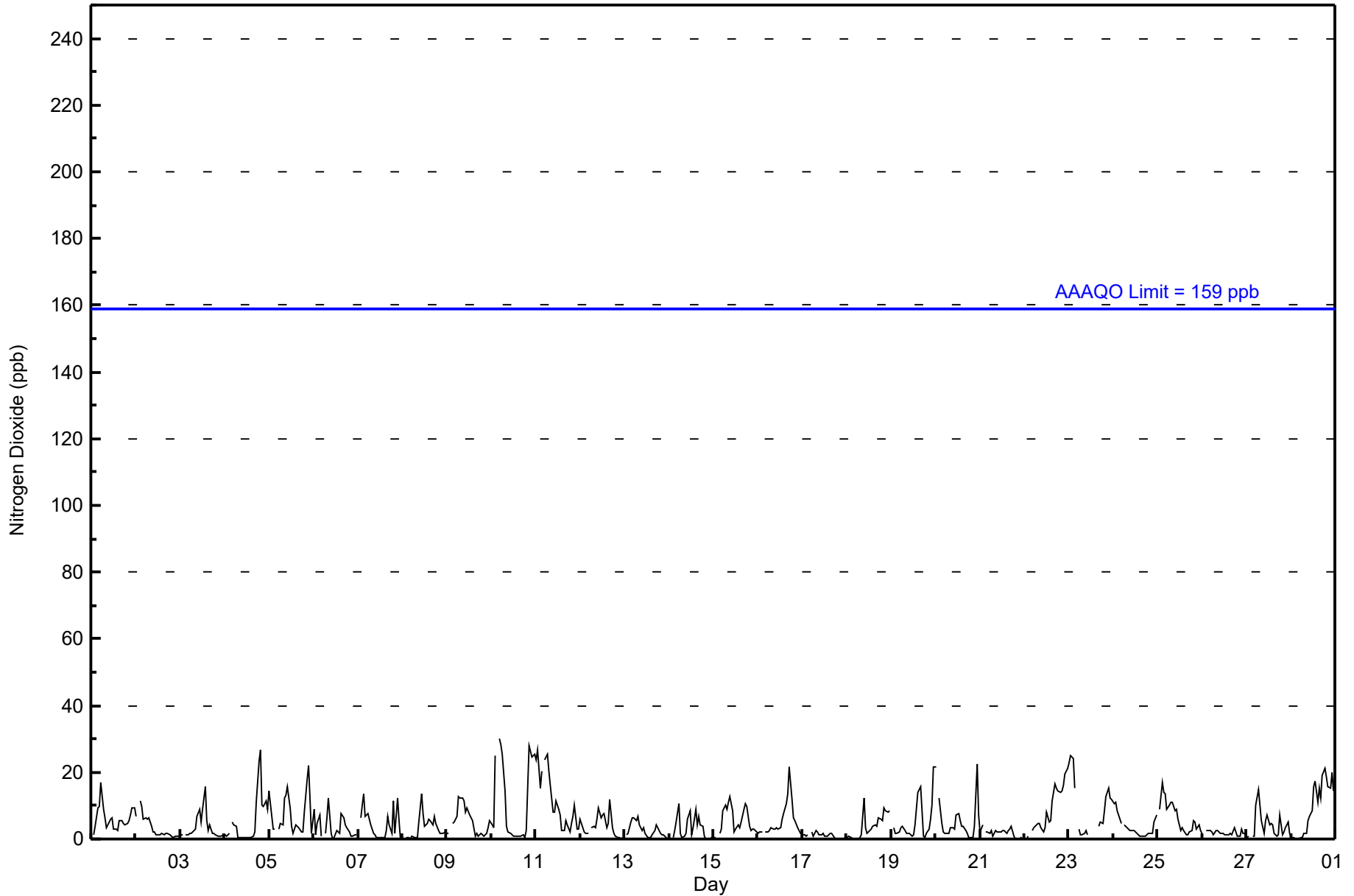
Wood Buffalo Environmental Association

Summary of Hour Averages

Nitrogen Dioxide (NO<sub>2</sub>) - ppb

Wapasu - February 2023

| Number of Exceedences (AAAQO):                               |                               | 1-hr: 0  | 24-hr: 0 | Hours in Service: 672 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                                 |      | 672  |      |      |      |               |               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
|--|-------------------------------|--|----------|-----------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|---------------------------------|------|------|------|------|------|---------------|---------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----------------|--|
| Maximum Value: 30.0 ppb on Feb 10 05:00                      |                               | Maximum Daily Average: 11.3 ppb on Feb 11  |          |                       |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Hours of Data: 639              |      |      |      |      |      |               |               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| Minimum Value: 0.0 ppb on Feb 8 01:00                        |                               | Minimum Daily Average: 1.1 ppb on Feb 17   |          |                       |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Hours of Missing Data: 33       |      |      |      |      |      |               |               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| Maximum Diurnal Average: 6.8 ppb at hour 6                   |                               | Minimum Diurnal Average: 3.9 ppb at hour 13  |          |                       |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Hours of Calibration: 33        |      |      |      |      |      |               |               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| Monthly Average: 5.21 ppb                                    |                               | Percentiles: P <sub>1</sub> = 0.1 P <sub>10</sub> = 0.5 Q <sub>1</sub> = 1.4 Median = 3.0 Q <sub>3</sub> = 6.9 P <sub>90</sub> = 12.7 P <sub>99</sub> = 25.5 |          |                       |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Percent Operational Time: 100.0 |      |      |      |      |      |               |               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| Day  | Hourly Period Ending At (MST) |  |          |                       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                                 |      |      |      |      |      | Daily Average | Daily Maximum |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
|  | 1                             | 2  | 3        | 4                     | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19                              | 20   | 21   | 22   | 23   | 24   |               |               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 1-Feb  | Z                             | 1.4  | 3.7      | 9.3                   | 9.8  | 17.0 | 9.0  | 6.5  | 3.3  | 4.4  | 5.8  | 6.4  | 2.8  | 2.9  | 2.6  | 5.7  | 5.6  | 4.8  | 4.1                             | 4.5  | 5.6  | 7.1  | 9.3  | 9.2  | 6.1           | 17.0          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 2-Feb  | 6.9                           | Z  | 11.4     | 9.8                   | 6.0  | 6.4  | 5.8  | 6.2  | 4.0  | 2.1  | 2.1  | 1.3  | 1.4  | 1.3  | 1.5  | 1.3  | 1.6  | 1.6  | 1.2                             | 0.8  | 0.6  | 0.7  | 1.0  | 0.9  | 3.3           | 11.4          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 3-Feb  | 1.1                           | 1.1  | Z        | 1.3                   | 1.4  | 1.6  | 1.6  | 2.5  | 3.0  | 6.9  | 8.9  | 5.1  | 8.8  | 15.7 | 5.7  | 2.5  | 4.2  | 1.6  | 1.5                             | 1.3  | 1.0  | 0.9  | 0.7  | 1.4  | 3.5           | 15.7          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 4-Feb  | 1.4                           | 0.9  | 1.6      | Z                     | 4.9  | 4.4  | 3.8  | 0.6  | 0.5  | 0.4  | 0.5  | 0.3  | 0.5  | 0.5  | 1.0  | 2.0  | 11.2 | 23.4 | 26.5                            | 10.3 | 9.9  | 11.4 | 8.7  | 5.4  | 26.5          |               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 5-Feb  | 14.3                          | 6.7  | 2.9      | 3.0                   | Z    | 3.1  | 4.6  | 4.3  | 12.1 | 13.2 | 15.6 | 9.3  | 3.8  | 1.6  | 4.1  | 3.9  | 3.5  | 2.0  | 2.3                             | 8.1  | 17.9 | 22.2 | 12.1 | 1.6  | 7.5           | 22.2          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 6-Feb  | 9.1                           | 1.3  | 4.7      | 7.3                   | 0.8  | Z    | 1.7  | 6.5  | 12.3 | 1.6  | 0.2  | 0.6  | 2.7  | 2.1  | 1.9  | 7.5  | 6.2  | 4.3  | 3.4                             | 2.2  | 1.0  | 0.7  | 1.1  | 1.4  | 3.5           | 12.3          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 7-Feb  | Z                             | 6.2  | 10.2     | 13.4                  | 6.6  | 7.8  | 5.8  | 4.2  | 1.9  | 1.4  | 0.5  | 0.5  | 0.5  | 0.4  | 0.5  | 2.7  | 6.8  | 4.1  | 1.7                             | 11.6 | 1.5  | 12.4 | 5.6  | 0.1  | 4.6           | 13.4          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 8-Feb  | 0.0                           | Z  | 0.3      | 0.4                   | 0.1  | 0.9  | 0.5  | 0.4  | 0.5  | 5.1  | 13.7 | 7.5  | 3.7  | 4.8  | 6.1  | 5.7  | 4.1  | 6.8  | 4.7                             | 2.5  | 1.9  | 1.6  | 1.5  | 2.0  | 3.3           | 13.7          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 9-Feb  | 1.9                           | 1.6  | Z        | 4.5                   | 5.2  | 6.6  | 12.5 | 12.4 | 12.2 | 11.3 | 8.2  | 9.2  | 7.2  | 6.5  | 5.4  | 1.0  | 1.6  | 0.9  | 1.7                             | 1.4  | 0.7  | 1.5  | 3.2  | 5.3  | 5.3           | 12.5          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 10-Feb   | 4.1                           | 3.3  | 25.1     | Z                     | 30.0 | 28.2 | 25.4 | 14.6 | 3.7  | 2.1  | 1.5  | 1.2  | 1.0  | 0.9  | 0.7  | 0.7  | 0.8  | 1.1  | 0.6                             | 2.7  | 28.1 | 26.1 | 24.7 | 25.4 | 11.0          | 30.0          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 11-Feb   | 23.8                          | 26.5   | 15.1     | 20.3                  | Z    | 23.6 | 25.5 | 20.2 | 16.1 | 8.0  | 8.2  | 11.6 | 9.0  | 7.0  | 2.7  | 2.6  | 5.3  | 4.1  | 2.0                             | 4.8  | 6.6  | 10.1 | 2.9  | 2.8  | 11.3          | 26.5          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 12-Feb   | 5.9                           | 3.4  | 2.0      | 1.9                   | 1.6  | Z    | 3.6  | 3.8  | 3.6  | 5.8  | 9.4  | 6.4  | 7.3  | 7.7  | 3.6  | 4.5  | 12.0 | 3.5  | 1.8                             | 0.9  | 0.3  | 0.4  | 0.2  | 0.5  | 3.9           | 12.0          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 13-Feb   | Z                             | 1.2  | 1.9      | 5.0                   | 6.4  | 6.3  | 5.4  | 6.8  | 4.4  | 2.5  | 3.6  | 1.7  | 0.4  | 0.3  | 0.6  | 1.4  | 2.6  | 4.4  | 3.4                             | 1.6  | 1.2  | 1.1  | 0.4  | 0.2  | 2.7           | 6.8           |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 14-Feb   | 0.1                           | Z  | 0.6      | 2.4                   | 4.9  | 10.7 | 1.5  | 0.4  | 0.7  | 1.9  | 6.1  | 8.6  | 1.4  | 3.2  | 8.8  | 4.2  | 6.6  | 4.1  | 3.7                             | 1.0  | 0.1  | 0.1  | 0.1  | 0.4  | 3.1           | 10.7          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 15-Feb   | 0.4                           | 0.4  | Z        | 1.8                   | 2.9  | 8.5  | 10.3 | 9.1  | 11.2 | 12.9 | 8.3  | 2.2  | 3.1  | 4.1  | 3.5  | 4.9  | 8.8  | 10.5 | 9.9                             | 3.7  | 2.7  | 2.9  | 2.8  | 2.2  | 5.5           | 12.9          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 16-Feb   | 1.8                           | 2.2  | 2.2      | Z                     | 2.1  | 2.0  | 2.6  | 3.2  | 3.0  | 3.1  | 3.3  | 3.0  | 3.4  | 5.9  | 7.6  | 10.5 | 13.7 | 21.7 | 11.7                            | 6.5  | 5.5  | 3.6  | 2.4  | 1.6  | 5.3           | 21.7          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 17-Feb   | 1.3                           | 1.2  | 0.9      | 1.1                   | Z    | 2.0  | 0.9  | 2.7  | 2.2  | 1.2  | 1.2  | 1.6  | 1.0  | 0.9  | 1.2  | 1.7  | 1.8  | 0.3  | 0.1                             | 0.2  | 0.2  | 0.2  | 0.2  | 0.3  | 1.1           | 2.7           |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 18-Feb   | 0.5                           | 0.9  | 0.3      | 0.0                   | 0.0  | Z    | 0.2  | 0.4  | 1.1  | 12.4 | 3.6  | 1.6  | 2.5  | 2.8  | 3.9  | 4.3  | 3.9  | 6.3  | 5.9                             | 5.5  | 9.2  | 8.5  | 8.2  | 8.3  | 3.9           | 12.4          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 19-Feb   | Z                             | 3.3  | 1.8      | 1.8                   | 2.0  | 3.3  | 3.9  | 2.5  | 1.6  | 1.5  | 1.9  | 0.9  | 1.2  | 4.2  | 14.1 | 14.8 | 15.8 | 1.0  | 0.4                             | 1.7  | 2.9  | 5.9  | 10.1 | 21.5 | 5.1           | 21.5          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 20-Feb   | 21.5                          | Z  | 12.3     | 4.7                   | 2.3  | 1.5  | 1.6  | 1.7  | 3.5  | 3.6  | 3.1  | 7.2  | 7.5  | 5.4  | 3.7  | 4.0  | 2.6  | 1.7  | 0.3                             | 0.5  | 0.5  | 4.0  | 22.4 | 7.2  | 5.3           | 22.4          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 21-Feb   | 2.1                           | 4.4  | Z        | 2.3                   | 2.0  | 1.7  | 2.7  | 1.0  | 2.4  | 2.3  | 2.0  | 2.2  | 2.5  | 2.5  | 1.9  | 2.5  | 3.1  | 3.7  | 0.8                             | 0.0  | 0.1  | 0.1  | 0.3  | 0.1  | 1.9           | 4.4           |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 22-Feb   | 0.1                           | 0.1  | 0.7      | Z                     | 2.4  | 3.6  | 4.3  | 4.5  | 4.7  | 3.5  | 2.0  | 3.6  | 8.2  | 5.1  | 5.4  | 11.5 | 16.4 | 15.3 | 14.3                            | 13.8 | 14.6 | 16.2 | 19.7 | 21.3 | 8.3           | 21.3          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 23-Feb   | 23.0                          | 24.8   | 24.0     | 15.1                  | Z    | 2.9  | 1.3  | 1.3  | 1.7  | 2.4  | 1.4  | C    | C    | C    | C    | C    | 3.8  | 4.9  | 4.5                             | 8.4  | 12.6 | 15.1 | 12.1 | 12.0 | 9.5           | 24.8          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 24-Feb   | 10.8                          | 11.0   | 8.5      | 7.4                   | 4.5  | Z    | 4.4  | 3.6  | 3.1  | 2.5  | 2.7  | 2.7  | 2.1  | 1.4  | 0.9  | 0.8  | 0.7  | 0.9  | 1.1                             | 1.8  | 1.7  | 1.9  | 4.9  | 7.1  | 3.8           | 11.0          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 25-Feb   | Z                             | 8.9  | 16.8     | 13.9                  | 13.4 | 9.0  | 10.1 | 11.2 | 11.1 | 8.6  | 8.9  | 5.9  | 2.7  | 3.5  | 2.5  | 1.4  | 1.2  | 2.0  | 2.7                             | 5.7  | 4.9  | 3.1  | 4.1  | 2.5  | 6.7           | 16.8          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 26-Feb   | 1.9                           | Z  | 2.5      | 2.5                   | 2.7  | 2.1  | 1.3  | 2.4  | 2.6  | 2.2  | 1.8  | 1.5  | 1.4  | 1.2  | 1.3  | 1.5  | 1.1  | 3.3  | 2.2                             | 0.9  | 0.7  | 3.0  | 1.9  | 1.6  | 1.9           | 3.3           |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 27-Feb   | 0.6                           | 0.8  | Z        | 0.7                   | 0.8  | 10.2 | 15.0 | 10.2 | 5.7  | 1.9  | 5.6  | 7.1  | 4.4  | 4.8  | 4.2  | 1.9  | 0.9  | 1.3  | 7.1                             | 1.1  | 2.2  | 3.2  | 4.9  | 1.9  | 4.2           | 15.0          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 28-Feb   | 0.6                           | 0.4  | 0.1      | Z                     | 0.2  | 0.3  | 0.3  | 1.5  | 1.6  | 5.5  | 6.6  | 8.5  | 15.5 | 17.5 | 11.2 | 15.1 | 12.4 | 19.1 | 21.3                            | 18.8 | 15.8 | 15.3 | 19.8 | 14.5 | 9.6           | 21.3          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
|  |                               |  |          |                       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                                 |      |      |      |      | 5.8  | 4.9           | 6.5           | 5.6  | 4.7  | 6.8  | 5.9  | 5.2  | 4.8  | 4.7  | 4.9  | 4.4  | 3.9  | 4.2  | 3.9  | 4.4  | 5.3  | 5.2  | 4.9  | 4.9  | 5.4  | 6.4  | 6.7  | 5.8  | Diurnal Average |  |
|  |                               |  |          |                       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                                 |      |      |      |      | 23.8 | 26.5          | 25.1          | 20.3 | 30.0 | 28.2 | 25.5 | 20.2 | 16.1 | 13.2 | 15.6 | 11.6 | 15.5 | 17.5 | 14.1 | 15.1 | 16.4 | 21.7 | 23.4 | 26.5 | 28.1 | 26.1 | 24.7 | 25.4 | Diurnal Maximum |  |
| Z - zerospan C - Calibration                                 |                               |  |          |                       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                                 |      |      |      |      |      |               |               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 159 ppb |                               |  |          |                       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                                 |      |      |      |      |      |               |               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Nitrogen Dioxide (NO<sub>2</sub>) - ppb  
Wapasu - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 20                            | 615                    | 96.24    | 96.24               |
| 21 - 40                           | 24                     | 3.76     | 100.00              |
| 41 - 80                           | 0                      | 0.00     | 100.00              |
| 81 - 159                          | 0                      | 0.00     | 100.00              |
| > 159                             | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 639

Total Number of Hours: 672





**Wood Buffalo Environmental Association  
Frequency Distribution**

**Nitrogen Dioxide (NO<sub>2</sub>) - ppb  
Wapasu - February 2023**

| <b>Concentration<br/>Ranges (ppb)</b> | <b>Wind Direction</b> |            |           |            |           |            |           |            |           |            |           |            |           |            |           |            | <b>Totals</b> |
|---------------------------------------|-----------------------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|---------------|
|                                       | <b>N</b>              | <b>NNE</b> | <b>NE</b> | <b>ENE</b> | <b>E</b>  | <b>ESE</b> | <b>SE</b> | <b>SSE</b> | <b>S</b>  | <b>SSW</b> | <b>SW</b> | <b>WSW</b> | <b>W</b>  | <b>WNW</b> | <b>NW</b> | <b>NNW</b> |               |
| 0 - 20                                | 98                    | 49         | 37        | 21         | 13        | 16         | 61        | 83         | 54        | 37         | 34        | 23         | 14        | 5          | 10        | 58         | 613           |
| 21 - 40                               | 5                     | 1          | 5         | 2          | 2         | 0          | 0         | 0          | 0         | 2          | 1         | 0          | 0         | 1          | 2         | 3          | 24            |
| 11 - 80                               | 0                     | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0             |
| 81 - 159                              | 0                     | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0             |
| > 159                                 | 0                     | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0             |
| <b>Totals</b>                         | <b>103</b>            | <b>50</b>  | <b>42</b> | <b>23</b>  | <b>15</b> | <b>16</b>  | <b>61</b> | <b>83</b>  | <b>54</b> | <b>39</b>  | <b>35</b> | <b>23</b>  | <b>14</b> | <b>6</b>   | <b>12</b> | <b>61</b>  | <b>637</b>    |

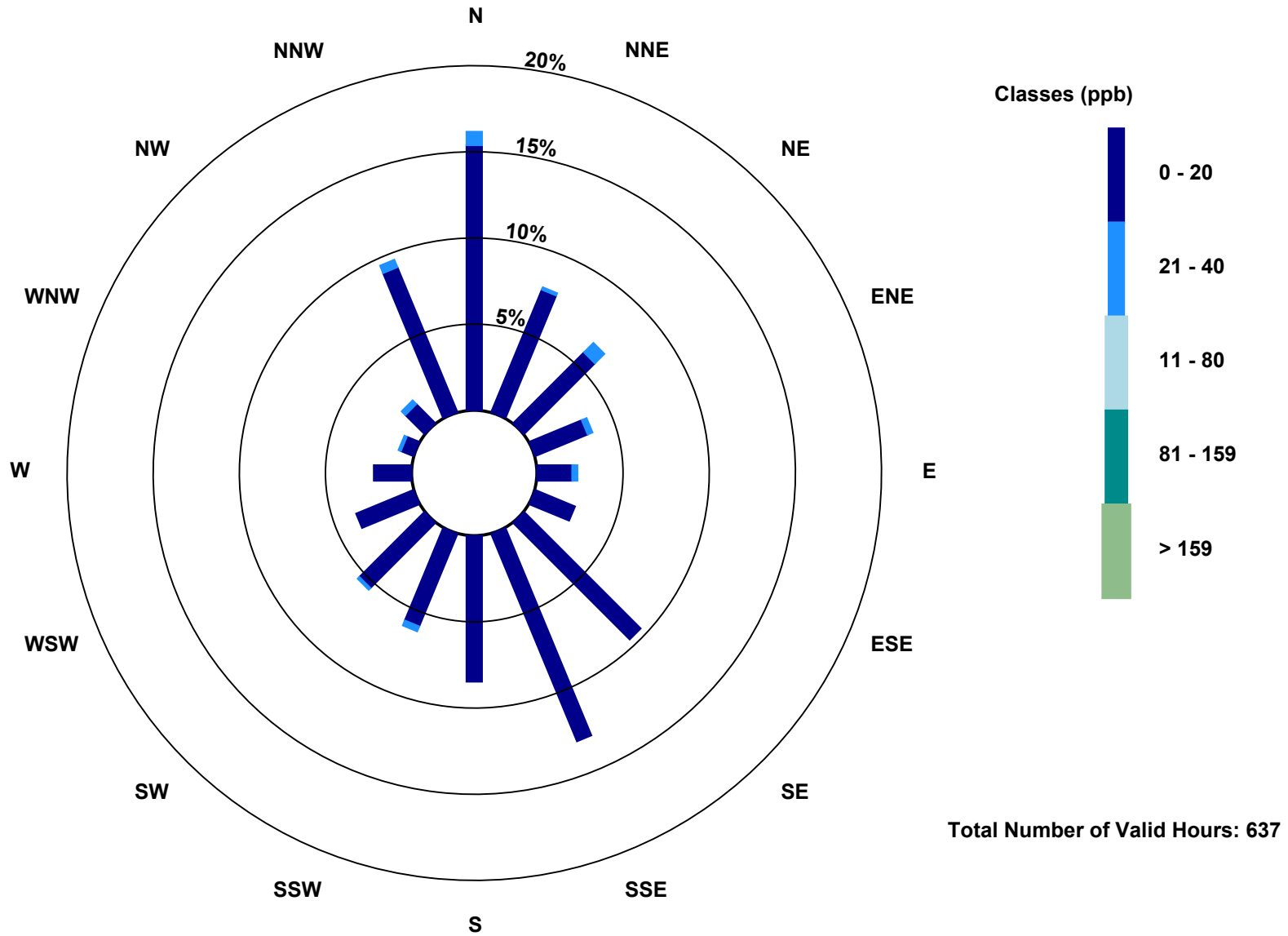
Total Number of Valid Hours: 637

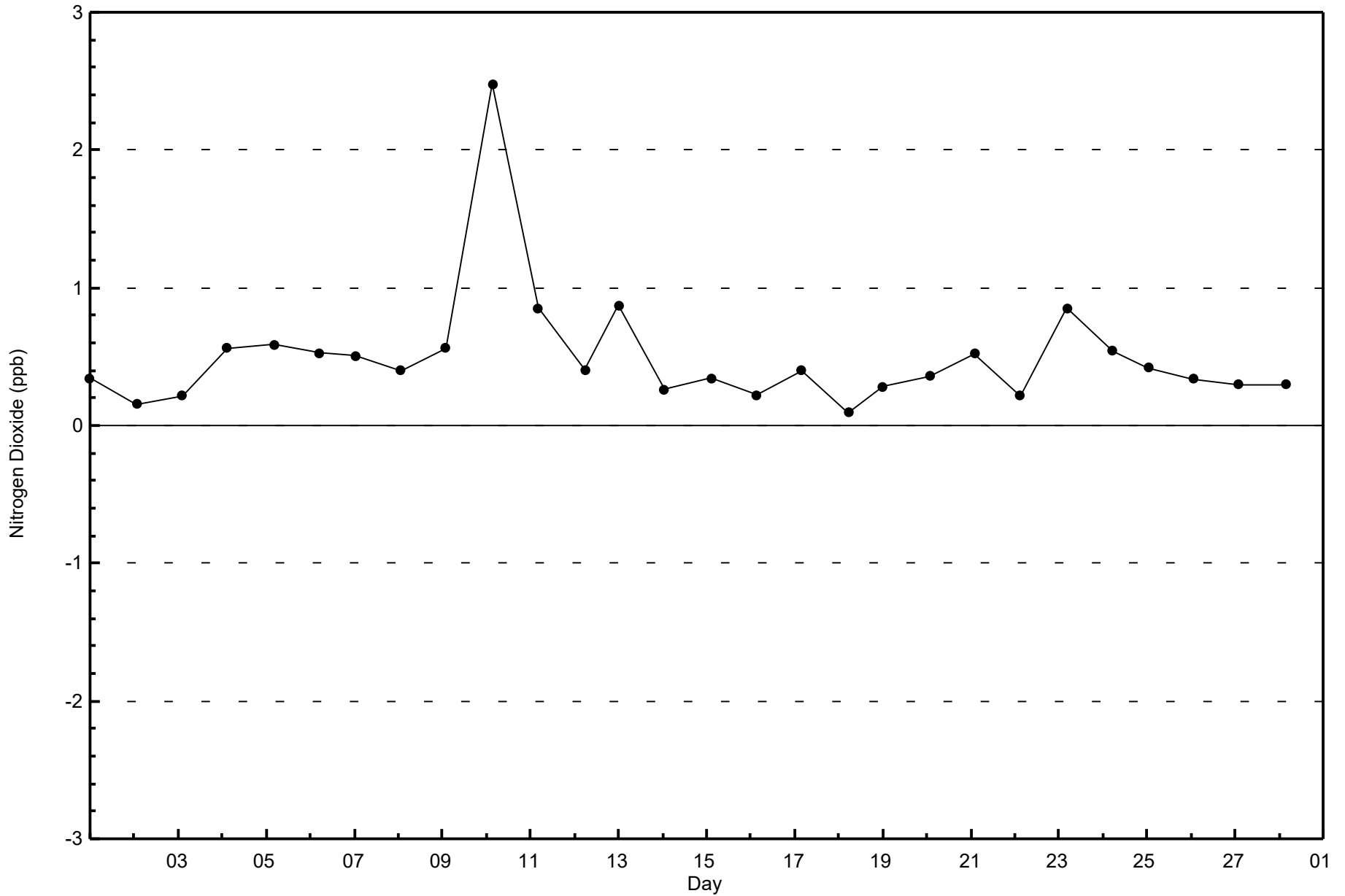
Total Number of Hours: 672

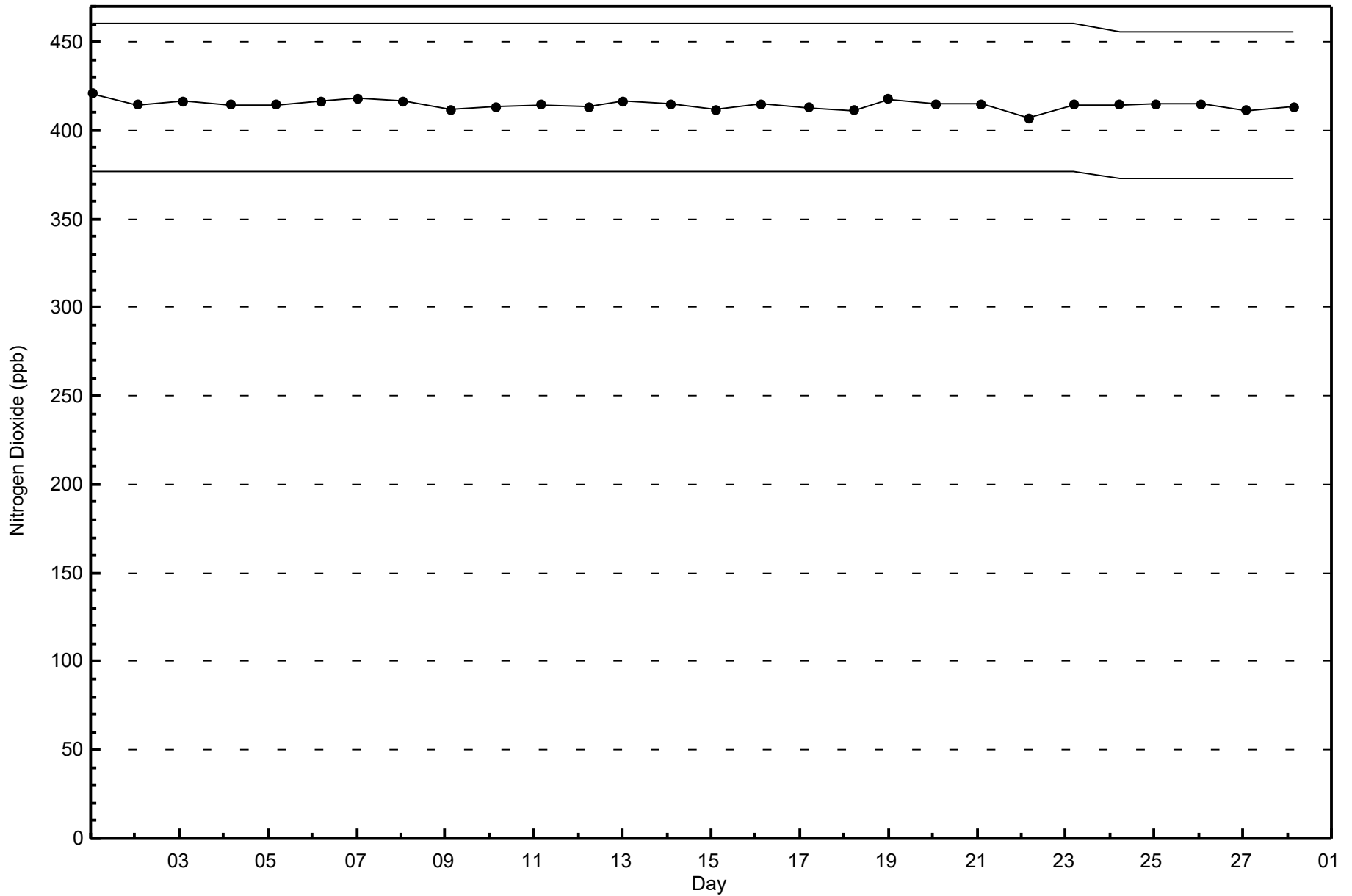


Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Nitrogen Dioxide (NO<sub>2</sub>) - ppb  
Wapasu









Wood Buffalo Environmental Association

Summary of Hour Averages

Nitrogen Oxides (NO<sub>x</sub>) - ppb

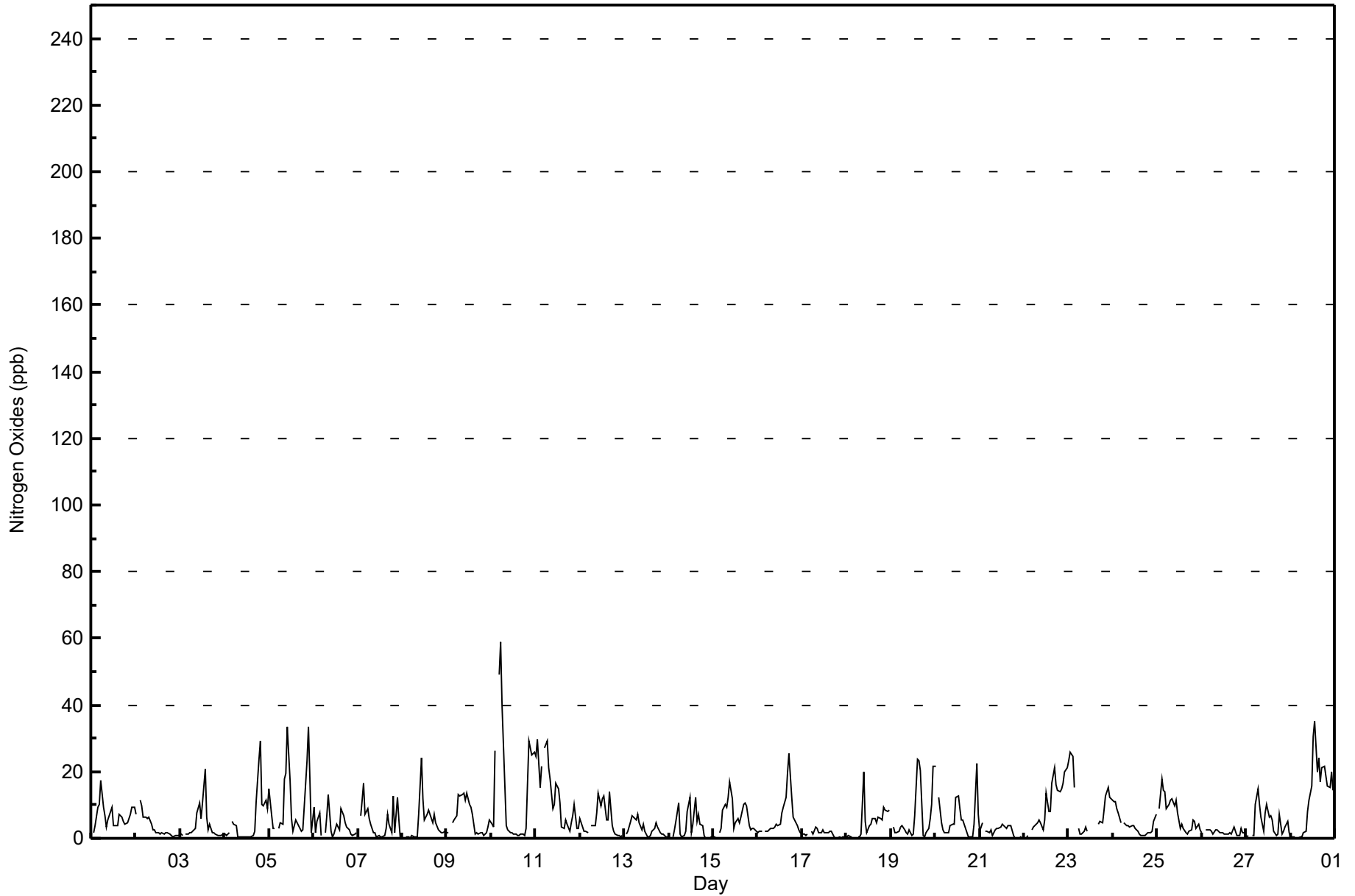
Wapasu - February 2023

| Maximum Value: 58.8 ppb on Feb 10 06:00   |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Maximum Daily Average: 14.1 ppb on Feb 10  |      |      |      |                 | Hours in Service: 672           |               |
|---|-------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|--|------|------|------|-----------------|---------------------------------|---------------|
| Minimum Value: 0.0 ppb on Feb 8 01:00   |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Minimum Daily Average: 1.4 ppb on Feb 17   |      |      |      |                 | Hours of Data: 639              |               |
| Maximum Diurnal Average: 8.3 ppb at hour 6  |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Minimum Diurnal Average: 5.0 ppb at hour 19  |      |      |      |                 | Hours of Missing Data: 33       |               |
| Monthly Average: 6.09 ppb   |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Percentiles: P <sub>1</sub> = 0.1 P <sub>10</sub> = 0.6 Q <sub>1</sub> = 1.6 Median = 3.5 Q <sub>3</sub> = 8.2 P <sub>90</sub> = 15.1 P <sub>99</sub> = 30.2 |      |      |      |                 | Hours of Calibration: 33        |               |
|   |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |      |      |      |                 | Percent Operational Time: 100.0 |               |
| Day   | Hourly Period Ending At (MST) |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |      |      |      |                 | Daily Average                   | Daily Maximum |
|   | 1                             | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20   | 21   | 22   | 23   | 24              |                                 |               |
| 1-Feb   | Z                             | 1.7  | 4.0  | 9.5  | 10.0 | 17.3 | 9.2  | 6.7  | 3.5  | 5.4  | 7.9  | 9.3  | 4.0  | 4.0  | 3.6  | 7.1  | 6.2  | 5.0  | 4.2  | 4.6  | 5.9  | 7.2  | 9.5  | 9.3             | 6.7                             | 17.3          |
| 2-Feb   | 7.0                           | Z    | 11.6 | 9.9  | 6.2  | 6.5  | 5.8  | 6.3  | 4.1  | 2.4  | 2.7  | 1.5  | 1.6  | 1.5  | 1.7  | 1.4  | 1.7  | 1.6  | 1.2  | 0.8  | 0.6  | 0.7  | 1.0  | 0.9             | 3.4                             | 11.6          |
| 3-Feb   | 1.1                           | 1.1  | Z    | 1.3  | 1.4  | 1.6  | 1.6  | 2.5  | 3.0  | 7.6  | 10.7 | 6.0  | 10.7 | 20.6 | 6.5  | 2.5  | 4.2  | 1.6  | 1.5  | 1.3  | 1.0  | 0.9  | 0.7  | 1.4             | 3.9                             | 20.6          |
| 4-Feb   | 1.4                           | 0.9  | 1.6  | Z    | 4.9  | 4.4  | 3.8  | 0.6  | 0.5  | 0.4  | 0.5  | 0.3  | 0.5  | 0.5  | 1.0  | 2.0  | 11.2 | 23.5 | 29.2 | 10.3   | 9.9  | 11.4 | 8.8  | 5.6             | 29.2                            |               |
| 5-Feb   | 14.7                          | 6.7  | 2.9  | 3.0  | Z    | 3.1  | 4.7  | 4.3  | 17.8 | 19.7 | 33.5 | 17.3 | 6.0  | 2.1  | 5.4  | 4.8  | 4.0  | 2.1  | 2.5  | 9.1  | 23.1 | 33.3 | 18.2 | 1.8             | 10.4                            | 33.5          |
| 6-Feb   | 9.3                           | 1.6  | 5.0  | 7.5  | 0.9  | Z    | 1.8  | 6.6  | 13.2 | 2.0  | 0.5  | 1.2  | 4.1  | 3.4  | 2.5  | 9.1  | 6.9  | 4.5  | 3.5  | 2.5  | 1.3  | 0.8  | 1.2  | 1.5             | 4.0                             | 13.2          |
| 7-Feb   | Z                             | 6.8  | 11.6 | 16.6 | 7.0  | 8.8  | 5.8  | 4.2  | 1.9  | 1.5  | 0.6  | 0.7  | 0.6  | 0.4  | 0.7  | 3.0  | 7.2  | 4.1  | 1.7  | 12.5   | 1.5  | 12.4 | 5.6  | 0.1             | 5.0                             | 16.6          |
| 8-Feb   | 0.0                           | Z    | 0.3  | 0.4  | 0.1  | 0.9  | 0.5  | 0.5  | 0.6  | 7.4  | 24.0 | 11.8 | 5.6  | 7.3  | 8.3  | 7.3  | 4.6  | 7.0  | 4.8  | 2.7  | 2.1  | 1.8  | 1.6  | 2.0             | 4.4                             | 24.0          |
| 9-Feb   | 1.9                           | 1.8  | Z    | 4.6  | 5.3  | 6.6  | 12.9 | 12.6 | 13.2 | 13.6 | 11.3 | 13.5 | 10.0 | 9.2  | 7.2  | 1.3  | 1.8  | 1.1  | 1.8  | 1.6  | 0.8  | 1.6  | 3.4  | 5.4             | 6.2                             | 13.6          |
| 10-Feb  | 4.1                           | 3.4  | 26.4 | Z    | 49.0 | 58.8 | 39.8 | 15.7 | 3.9  | 2.4  | 1.7  | 1.5  | 1.3  | 1.2  | 1.0  | 0.9  | 1.1  | 1.1  | 0.7  | 2.8  | 29.4 | 27.0 | 24.9 | 25.7            | 14.1                            | 58.8          |
| 11-Feb  | 24.8                          | 29.7 | 15.1 | 21.6 | Z    | 27.3 | 29.3 | 21.1 | 17.9 | 8.9  | 10.0 | 16.7 | 14.7 | 10.7 | 3.5  | 3.1  | 5.6  | 4.1  | 2.0  | 4.8  | 6.6  | 10.1 | 2.9  | 2.8             | 12.7                            | 29.7          |
| 12-Feb  | 5.9                           | 3.5  | 2.0  | 2.0  | 1.7  | Z    | 3.7  | 3.9  | 3.8  | 7.6  | 13.6 | 9.5  | 12.1 | 12.9 | 5.6  | 5.7  | 14.2 | 3.8  | 2.1  | 1.2  | 0.7  | 0.8  | 0.6  | 0.9             | 5.1                             | 14.2          |
| 13-Feb  | Z                             | 1.4  | 2.1  | 5.3  | 6.7  | 6.5  | 5.6  | 7.0  | 4.6  | 2.7  | 4.2  | 2.0  | 0.6  | 0.4  | 0.8  | 2.2  | 3.0  | 4.7  | 3.4  | 1.6  | 1.2  | 1.1  | 0.4  | 0.2             | 2.9                             | 7.0           |
| 14-Feb  | 0.1                           | Z    | 0.6  | 2.4  | 4.9  | 10.7 | 1.5  | 0.4  | 0.7  | 2.2  | 8.2  | 12.3 | 1.6  | 4.0  | 12.3 | 5.1  | 7.3  | 4.2  | 3.7  | 1.0  | 0.1  | 0.1  | 0.1  | 0.4             | 3.7                             | 12.3          |
| 15-Feb  | 0.4                           | 0.4  | Z    | 1.8  | 2.9  | 8.5  | 10.3 | 9.1  | 12.2 | 17.0 | 11.9 | 3.0  | 4.5  | 5.8  | 4.8  | 6.2  | 10.4 | 10.8 | 9.9  | 3.7  | 2.7  | 2.9  | 2.8  | 2.2             | 6.3                             | 17.0          |
| 16-Feb  | 1.8                           | 2.2  | 2.2  | Z    | 2.1  | 2.0  | 2.6  | 3.2  | 3.0  | 3.5  | 4.3  | 3.8  | 4.3  | 7.7  | 9.3  | 12.2 | 19.7 | 25.4 | 12.1 | 6.6  | 5.7  | 3.7  | 2.5  | 1.8             | 6.2                             | 25.4          |
| 17-Feb  | 1.5                           | 1.4  | 1.0  | 1.4  | Z    | 2.2  | 1.1  | 3.4  | 2.8  | 1.6  | 1.7  | 2.5  | 1.7  | 1.6  | 1.7  | 2.1  | 2.2  | 0.3  | 0.1  | 0.2  | 0.2  | 0.2  | 0.2  | 0.3             | 1.4                             | 3.4           |
| 18-Feb  | 0.5                           | 1.0  | 0.3  | 0.0  | 0.0  | Z    | 0.2  | 0.4  | 1.3  | 20.1 | 5.2  | 1.9  | 3.9  | 4.2  | 5.9  | 6.1  | 4.5  | 6.4  | 5.9  | 5.5  | 9.2  | 8.5  | 8.2  | 8.3             | 4.7                             | 20.1          |
| 19-Feb  | Z                             | 3.3  | 1.8  | 1.8  | 2.0  | 3.3  | 3.9  | 2.5  | 1.6  | 1.5  | 2.4  | 1.0  | 1.5  | 6.9  | 23.7 | 23.1 | 20.5 | 1.0  | 0.4  | 1.7  | 2.9  | 5.9  | 10.1 | 21.5            | 6.3                             | 23.7          |
| 20-Feb  | 21.6                          | Z    | 12.3 | 4.7  | 2.3  | 1.5  | 1.6  | 1.7  | 3.9  | 4.3  | 4.1  | 12.2 | 12.6 | 9.0  | 5.6  | 5.4  | 3.0  | 1.7  | 0.3  | 0.5  | 0.5  | 4.1  | 22.4 | 7.2             | 6.2                             | 22.4          |
| 21-Feb  | 2.1                           | 4.5  | Z    | 2.3  | 2.0  | 1.7  | 2.7  | 1.0  | 2.7  | 3.1  | 2.9  | 3.4  | 4.2  | 3.9  | 3.0  | 3.6  | 3.8  | 3.9  | 0.8  | 0.0  | 0.1  | 0.1  | 0.3  | 0.1             | 2.3                             | 4.5           |
| 22-Feb  | 0.1                           | 0.1  | 0.7  | Z    | 2.5  | 3.6  | 4.3  | 4.5  | 5.6  | 4.6  | 2.5  | 5.5  | 13.8 | 8.1  | 8.1  | 16.6 | 21.2 | 16.2 | 14.3 | 13.8   | 14.8 | 16.4 | 19.9 | 21.3            | 9.5                             | 21.3          |
| 23-Feb  | 23.3                          | 25.7 | 24.6 | 15.1 | Z    | 3.0  | 1.4  | 1.4  | 2.2  | 3.4  | 2.1  | C    | C    | C    | C    | C    | 4.4  | 4.9  | 4.5  | 8.4  | 12.6 | 15.1 | 12.1 | 12.0            | 9.8                             | 25.7          |
| 24-Feb  | 10.8                          | 11.0 | 8.7  | 7.6  | 4.7  | Z    | 4.5  | 3.9  | 3.7  | 3.2  | 3.7  | 3.9  | 3.1  | 2.1  | 1.2  | 1.0  | 0.7  | 0.9  | 1.1  | 1.8  | 1.7  | 1.9  | 4.9  | 7.1             | 4.1                             | 11.0          |
| 25-Feb  | Z                             | 9.0  | 17.7 | 14.4 | 13.8 | 9.0  | 10.1 | 11.4 | 11.7 | 9.7  | 11.2 | 7.5  | 3.2  | 4.3  | 3.1  | 1.5  | 1.3  | 2.0  | 2.7  | 5.7  | 4.9  | 3.1  | 4.1  | 2.5             | 7.1                             | 17.7          |
| 26-Feb  | 1.9                           | Z    | 2.5  | 2.6  | 2.7  | 2.1  | 1.3  | 2.4  | 2.7  | 2.3  | 1.9  | 1.6  | 1.5  | 1.3  | 1.3  | 1.5  | 1.1  | 3.3  | 2.2  | 0.9  | 0.7  | 3.0  | 1.9  | 1.6             | 1.9                             | 3.3           |
| 27-Feb  | 0.6                           | 0.8  | Z    | 0.7  | 0.8  | 10.2 | 15.0 | 10.3 | 6.3  | 2.1  | 7.8  | 10.3 | 6.5  | 6.6  | 5.5  | 2.3  | 0.9  | 1.4  | 7.1  | 1.2  | 2.3  | 3.3  | 4.9  | 1.9             | 4.7                             | 15.0          |
| 28-Feb  | 0.6                           | 0.5  | 0.2  | Z    | 0.2  | 0.3  | 0.4  | 1.5  | 2.3  | 8.2  | 11.4 | 15.8 | 30.5 | 35.0 | 19.8 | 24.3 | 16.8 | 21.2 | 21.5 | 18.8   | 15.8 | 15.3 | 20.0 | 14.5            | 12.8                            | 35.0          |
|   |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |      |      |      | Diurnal Average |                                 |               |
|   |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |      |      |      | Diurnal Maximum |                                 |               |
| 5.9 5.1 6.8 5.9 5.6 8.3 6.6 5.3 5.4 6.0 7.2 6.5 6.1 6.5 5.7 5.9 6.4 5.6 5.0 5.2 5.7 6.8 7.0 5.8                         |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |      |      |      |                 |                                 |               |
| 24.8 29.7 26.4 21.6 49.0 58.8 39.8 21.1 17.9 20.1 33.5 17.3 30.5 35.0 23.7 24.3 21.2 25.4 23.5 29.2 29.4 33.3 24.9 25.7 |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |      |      |      |                 |                                 |               |
| Z - zerospan C - Calibration  |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |      |      |      |                 |                                 |               |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Nitrogen Oxides (NO<sub>x</sub>) - ppb**  
**Wapasu - February 2023**





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Nitrogen Oxides (NO<sub>x</sub>) - ppb  
Wapasu - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 20                            | 601                    | 94.05    | 94.05               |
| 21 - 40                           | 36                     | 5.63     | 99.69               |
| 41 - 80                           | 2                      | 0.31     | 100.00              |
| 81 - 159                          | 0                      | 0.00     | 100.00              |
| > 159                             | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 639

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Nitrogen Oxides (NO<sub>x</sub>) - ppb  
Wapasu - February 2023**

| Concentration<br>Ranges (ppb) | Wind Direction |     |    |     |    |     |    |     |    |     |    |     |    |     |    |     | Totals |
|-------------------------------|----------------|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|--------|
|                               | N              | NNE | NE | ENE | E  | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |        |
| 0 - 20                        | 95             | 49  | 37 | 21  | 13 | 16  | 61 | 83  | 53 | 35  | 33 | 23  | 13 | 5   | 7  | 55  | 599    |
| 21 - 40                       | 6              | 1   | 5  | 2   | 2  | 0   | 0  | 0   | 1  | 4   | 2  | 0   | 1  | 1   | 5  | 6   | 36     |
| 11 - 80                       | 2              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 2      |
| 81 - 159                      | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| > 159                         | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| <b>Totals</b>                 | 103            | 50  | 42 | 23  | 15 | 16  | 61 | 83  | 54 | 39  | 35 | 23  | 14 | 6   | 12 | 61  | 637    |

Total Number of Valid Hours: 637

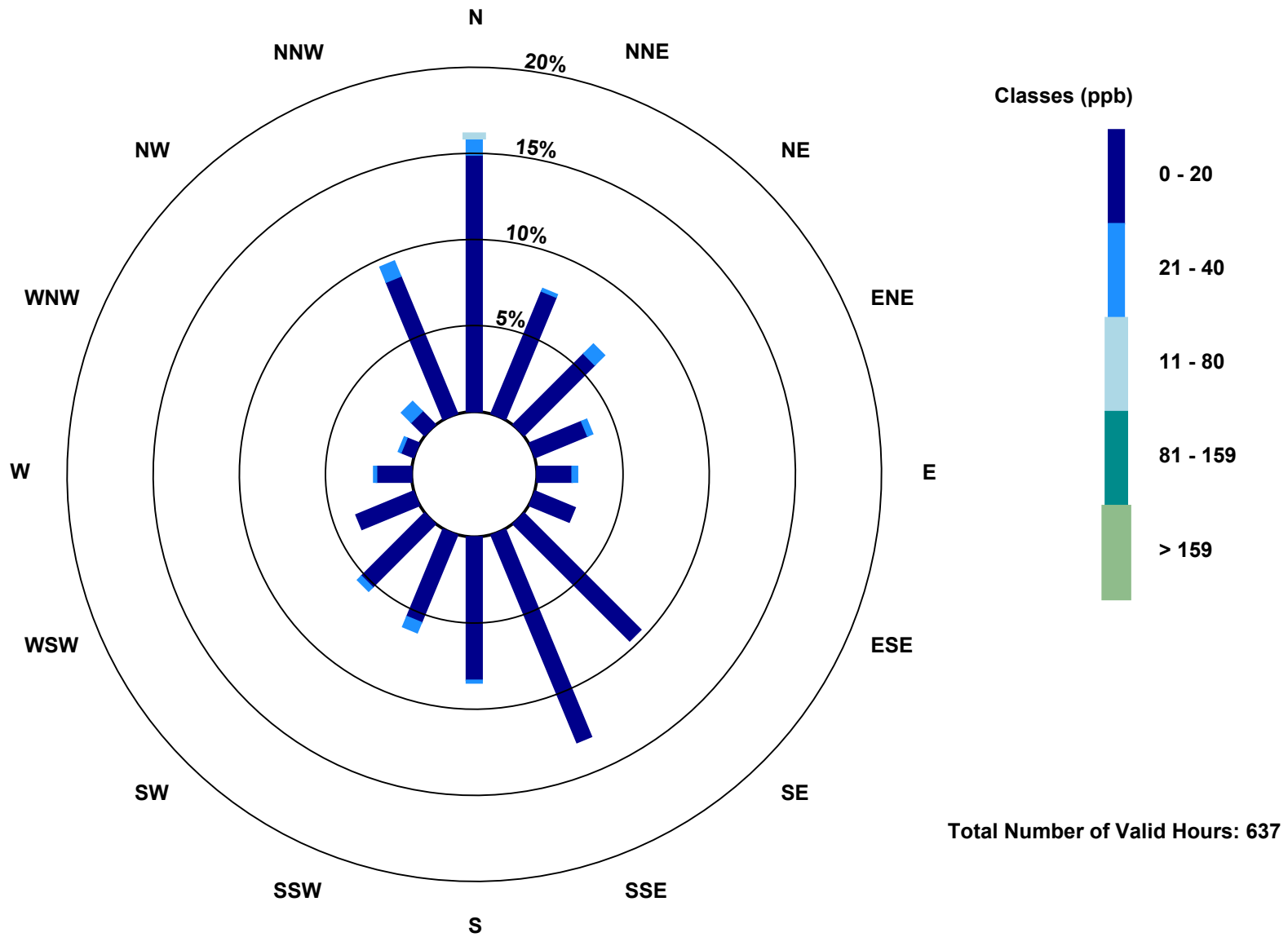
Total Number of Hours: 672

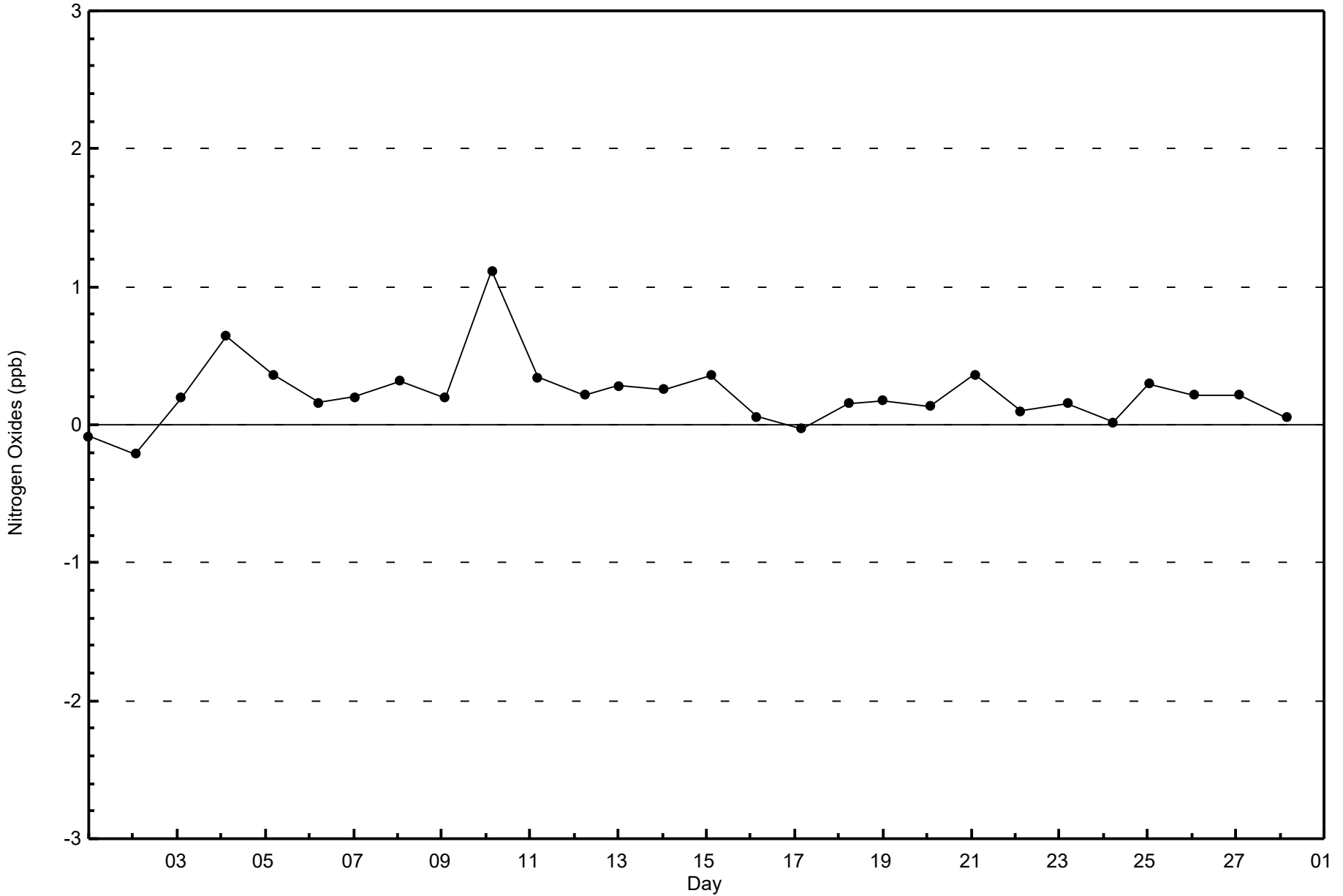


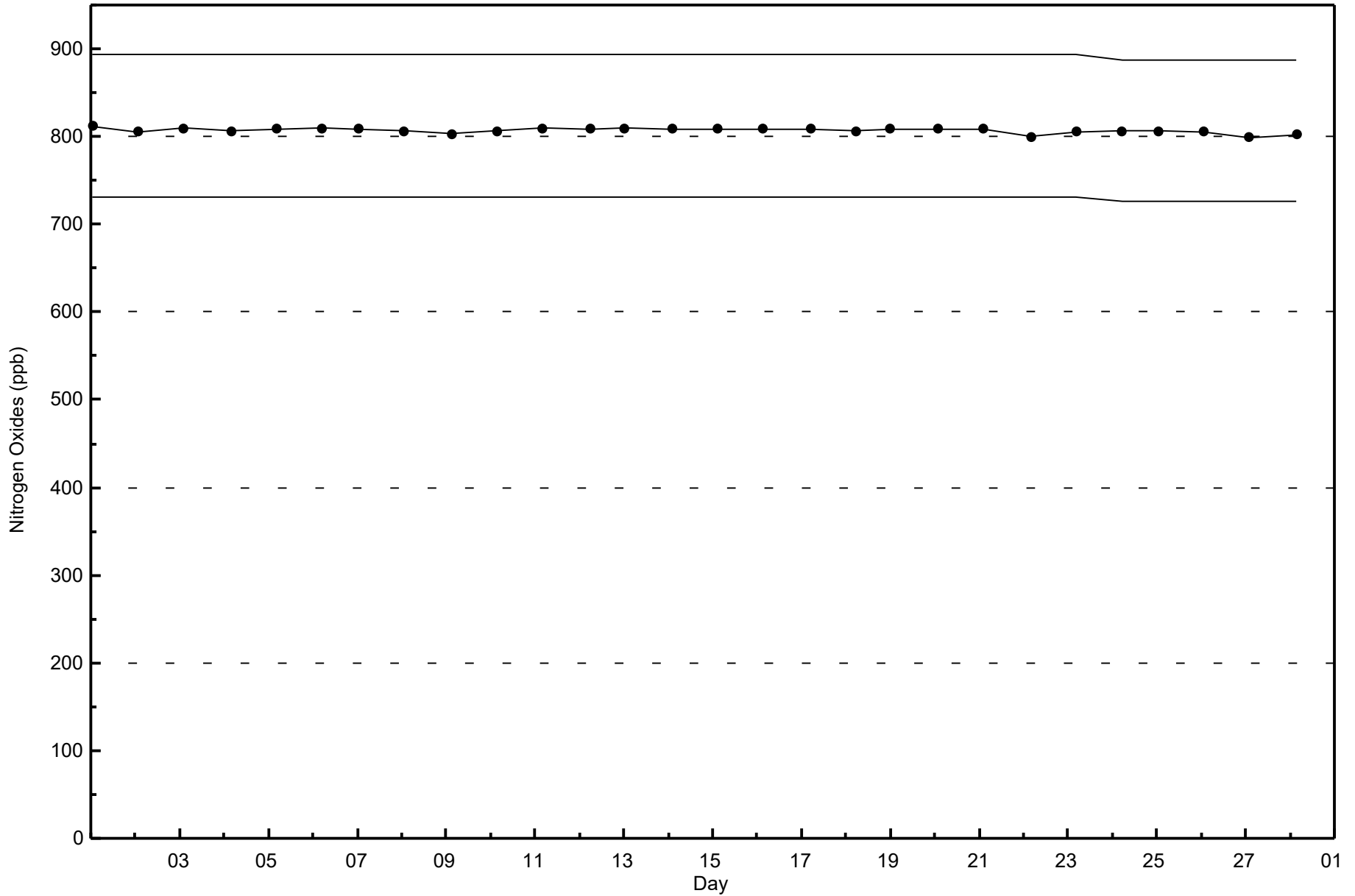


Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Nitrogen Oxides (NO<sub>x</sub>) - ppb  
Wapasu

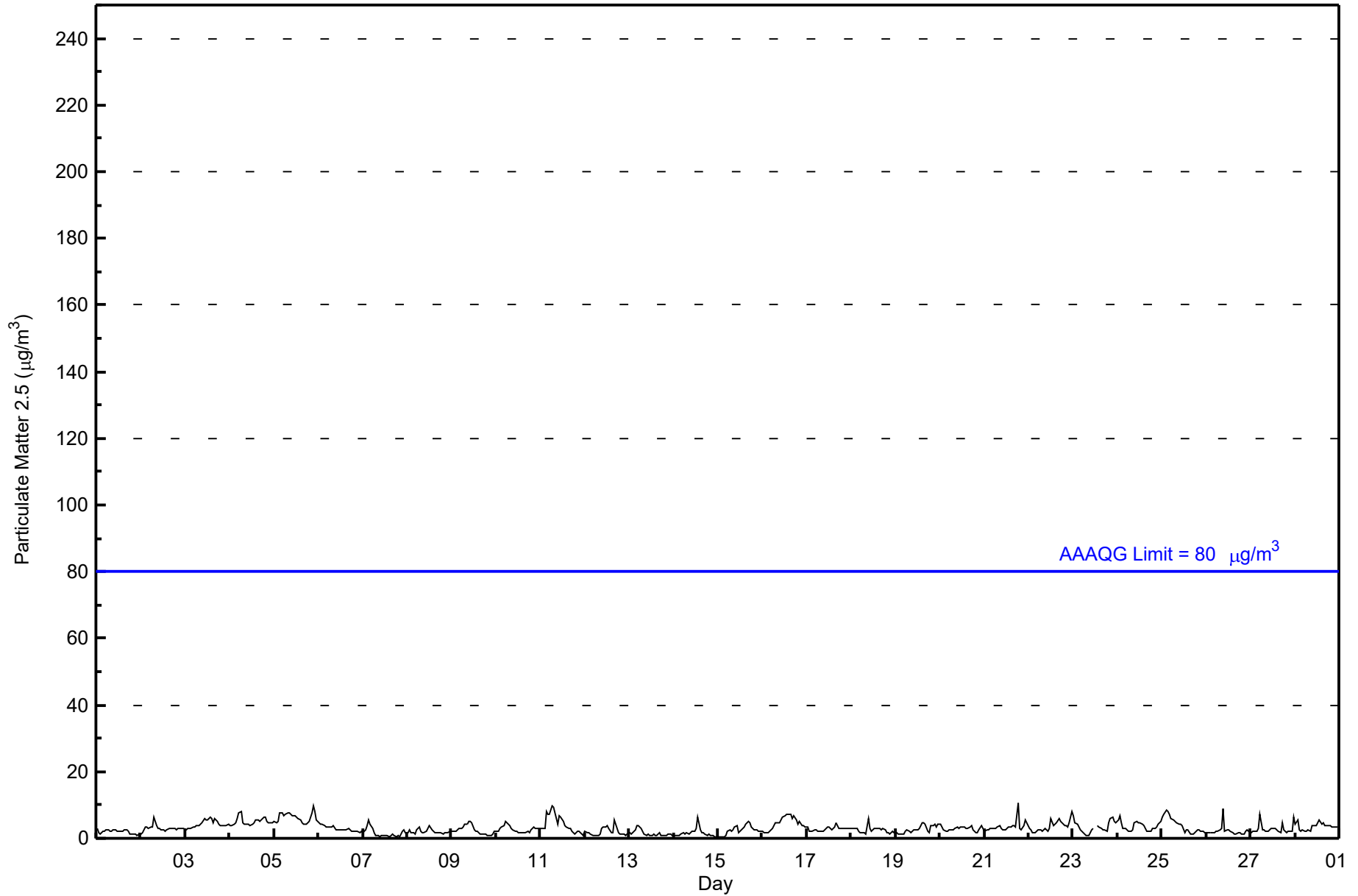








| Number of Exceedences (AAAQO):   |                               | 1-hr: 0 |     | 24-hr: 0   |     | Hours in Service:         |     |     |     |     |     |     |     |     |     |     |     |     |      | 672   |     |     |     |     |               |               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |     |     |                 |
|--|-------------------------------|---------|-----|--|-----|---------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|-------|-----|-----|-----|-----|---------------|---------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|-----|-----|-----|-----|-----|-----------------|
| Maximum Value: 10.5 µg/m <sup>3</sup> on Feb 21 19:00  |                               |         |     | Maximum Daily Average: 6.3 µg/m <sup>3</sup> on Feb 5  |     | Hours of Data:            |     |     |     |     |     |     |     |     |     |     |     |     |      | 671   |     |     |     |     |               |               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |     |     |                 |
| Minimum Value: 0.4 µg/m <sup>3</sup> on Feb 15 02:00   |                               |         |     | Minimum Daily Average: 1.5 µg/m <sup>3</sup> on Feb 13   |     | Hours of Missing Data:    |     |     |     |     |     |     |     |     |     |     |     |     |      | 1     |     |     |     |     |               |               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |     |     |                 |
| Maximum Diurnal Average: 3.5 µg/m <sup>3</sup> at hour 10  |                               |         |     | Minimum Diurnal Average: 2.6 µg/m <sup>3</sup> at hour 20  |     | Hours of Calibration:     |     |     |     |     |     |     |     |     |     |     |     |     |      | 1     |     |     |     |     |               |               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |     |     |                 |
| Monthly Average: 3.08 µg/m <sup>3</sup>  |                               |         |     | Percentiles: P <sub>1</sub> = 0.6 P <sub>10</sub> = 1.2 Q <sub>1</sub> = 1.9 Median = 2.7 Q <sub>3</sub> = 3.9 P <sub>90</sub> = 5.4 P <sub>99</sub> = 8.1 |     | Percent Operational Time: |     |     |     |     |     |     |     |     |     |     |     |     |      | 100.0 |     |     |     |     |               |               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |     |     |                 |
| Day  | Hourly Period Ending At (MST) |         |     |  |     |                           |     |     |     |     |     |     |     |     |     |     |     |     |      |       |     |     |     |     | Daily Average | Daily Maximum |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |     |     |                 |
|  | 1                             | 2       | 3   | 4  | 5   | 6                         | 7   | 8   | 9   | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19   | 20    | 21  | 22  | 23  | 24  |               |               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |     |     |                 |
| 1-Feb  | 2.8                           | 1.5     | 1.4 | 2.0  | 2.3 | 2.7                       | 2.6 | 2.3 | 1.9 | 2.4 | 2.6 | 2.3 | 2.0 | 2.2 | 2.3 | 2.6 | 2.7 | 2.0 | 1.4  | 1.2   | 1.1 | 1.1 | 1.0 | 1.2 | 2.0           | 2.8           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |     |     |                 |
| 2-Feb  | 1.2                           | 1.8     | 3.2 | 3.4  | 3.1 | 3.4                       | 3.3 | 6.3 | 3.8 | 2.8 | 2.9 | 2.6 | 2.5 | 2.3 | 2.5 | 2.8 | 3.0 | 3.1 | 3.0  | 2.7   | 2.9 | 2.9 | 2.9 | 2.9 | 3.0           | 6.3           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |     |     |                 |
| 3-Feb  | 2.7                           | 2.8     | 2.9 | 3.2  | 3.4 | 3.4                       | 3.7 | 3.9 | 4.2 | 4.7 | 6.0 | 5.5 | 5.4 | 6.4 | 5.8 | 4.6 | 5.8 | 5.0 | 4.1  | 3.9   | 3.8 | 4.0 | 4.0 | 4.1 | 4.3           | 6.4           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |     |     |                 |
| 4-Feb  | 3.9                           | 3.8     | 4.2 | 4.7  | 5.8 | 7.8                       | 7.9 | 4.6 | 4.1 | 4.1 | 4.2 | 4.0 | 4.2 | 4.7 | 5.3 | 5.3 | 5.0 | 5.5 | 6.3  | 6.3   | 5.1 | 4.9 | 4.9 | 4.7 | 5.1           | 7.9           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |     |     |                 |
| 5-Feb  | 4.9                           | 4.5     | 5.1 | 7.7  | 7.7 | 6.9                       | 7.1 | 7.6 | 7.6 | 7.3 | 7.0 | 6.9 | 6.5 | 5.8 | 5.5 | 4.6 | 4.4 | 4.2 | 4.5  | 5.2   | 7.7 | 9.9 | 8.1 | 5.5 | 6.3           | 9.9           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |     |     |                 |
| 6-Feb  | 4.8                           | 4.4     | 4.3 | 3.9  | 3.5 | 3.2                       | 3.3 | 3.5 | 3.7 | 2.6 | 2.4 | 2.4 | 2.4 | 2.3 | 2.3 | 2.7 | 3.0 | 2.6 | 2.2  | 2.1   | 2.2 | 2.1 | 1.9 | 1.9 | 2.9           | 4.8           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |     |     |                 |
| 7-Feb  | 1.8                           | 2.4     | 3.9 | 5.4  | 4.1 | 3.1                       | 1.5 | 1.0 | 0.8 | 0.6 | 0.7 | 0.9 | 0.7 | 0.6 | 0.5 | 0.7 | 1.3 | 0.8 | 0.5  | 0.7   | 0.5 | 2.3 | 2.7 | 1.6 | 1.6           | 5.4           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |     |     |                 |
| 8-Feb  | 1.6                           | 2.6     | 1.7 | 1.6  | 1.4 | 2.7                       | 3.3 | 2.0 | 1.6 | 1.7 | 2.0 | 3.0 | 3.7 | 2.5 | 2.2 | 1.8 | 1.5 | 1.7 | 1.5  | 1.5   | 1.5 | 1.6 | 1.5 | 1.9 | 2.0           | 3.7           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |     |     |                 |
| 9-Feb  | 2.0                           | 2.1     | 2.3 | 2.5  | 2.8 | 3.1                       | 3.5 | 4.1 | 4.1 | 5.0 | 5.1 | 4.6 | 2.3 | 2.0 | 1.9 | 1.2 | 1.2 | 1.1 | 1.1  | 0.9   | 0.8 | 1.0 | 1.4 | 1.9 | 2.4           | 5.1           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |     |     |                 |
| 10-Feb   | 2.3                           | 2.2     | 3.0 | 3.3  | 3.9 | 5.1                       | 4.5 | 3.7 | 2.8 | 2.4 | 2.3 | 2.1 | 1.9 | 1.8 | 1.8 | 1.8 | 2.3 | 1.8 | 2.7  | 3.3   | 3.1 | 2.9 | 3.0 | 2.7 | 5.1           |               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |     |     |                 |
| 11-Feb   | 2.8                           | 3.2     | 3.0 | 8.0  | 7.3 | 7.3                       | 9.7 | 9.3 | 7.6 | 4.3 | 6.7 | 6.2 | 5.1 | 4.0 | 3.3 | 2.8 | 3.0 | 2.2 | 1.4  | 1.8   | 2.3 | 1.9 | 1.1 | 1.1 | 4.4           | 9.7           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |     |     |                 |
| 12-Feb   | 1.9                           | 1.8     | 1.5 | 1.1  | 0.9 | 0.9                       | 0.9 | 1.0 | 1.1 | 3.1 | 3.3 | 3.5 | 3.6 | 3.1 | 1.8 | 1.8 | 5.3 | 3.1 | 1.5  | 1.1   | 1.1 | 1.1 | 1.0 | 1.5 | 2.0           | 5.3           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |     |     |                 |
| 13-Feb   | 1.6                           | 1.5     | 1.7 | 2.7  | 3.9 | 3.7                       | 2.8 | 2.2 | 1.2 | 0.9 | 1.1 | 1.0 | 1.0 | 1.3 | 0.9 | 0.9 | 1.5 | 1.0 | 1.0  | 1.0   | 1.0 | 1.1 | 1.1 | 0.9 | 1.5           | 3.9           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |     |     |                 |
| 14-Feb   | 0.8                           | 0.9     | 0.8 | 1.0  | 1.4 | 1.8                       | 1.3 | 1.5 | 1.4 | 1.6 | 2.0 | 2.1 | 2.9 | 6.2 | 2.3 | 1.8 | 1.5 | 1.1 | 1.0  | 1.5   | 0.8 | 0.7 | 0.6 | 0.5 | 1.6           | 6.2           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |     |     |                 |
| 15-Feb   | 0.5                           | 0.4     | 0.5 | 0.6  | 0.8 | 2.0                       | 2.6 | 2.3 | 2.6 | 3.4 | 3.8 | 1.9 | 2.1 | 2.9 | 3.3 | 4.2 | 5.1 | 4.5 | 3.6  | 2.7   | 2.4 | 2.4 | 2.1 | 2.1 | 2.4           | 5.1           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |     |     |                 |
| 16-Feb   | 2.0                           | 1.8     | 1.7 | 1.8  | 1.9 | 2.8                       | 3.9 | 4.8 | 4.8 | 4.8 | 5.6 | 6.5 | 6.8 | 7.0 | 7.2 | 7.1 | 5.7 | 6.6 | 5.7  | 4.1   | 4.9 | 3.6 | 3.8 | 3.2 | 4.5           | 7.2           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |     |     |                 |
| 17-Feb   | 3.2                           | 2.2     | 2.2 | 2.2  | 2.5 | 2.5                       | 2.1 | 2.2 | 2.3 | 2.3 | 2.9 | 3.3 | 3.5 | 2.4 | 2.8 | 3.4 | 4.8 | 2.9 | 3.0  | 3.0   | 3.0 | 3.0 | 2.9 | 2.8 | 2.8           | 4.8           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |     |     |                 |
| 18-Feb   | 2.8                           | 2.9     | 2.9 | 2.8  | 2.0 | 1.6                       | 1.5 | 1.5 | 1.5 | 6.1 | 3.1 | 2.2 | 3.0 | 2.8 | 3.1 | 3.0 | 2.6 | 3.0 | 2.5  | 1.9   | 1.7 | 1.4 | 2.2 | 1.6 | 2.5           | 6.1           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |     |     |                 |
| 19-Feb   | 2.1                           | 1.4     | 1.2 | 1.2  | 1.3 | 2.0                       | 2.6 | 2.1 | 1.7 | 2.2 | 2.7 | 2.4 | 2.4 | 2.9 | 4.5 | 4.6 | 4.1 | 2.0 | 1.9  | 3.8   | 3.6 | 4.4 | 3.5 | 4.3 | 2.7           | 4.6           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |     |     |                 |
| 20-Feb   | 4.1                           | 3.4     | 2.5 | 2.0  | 2.0 | 2.5                       | 2.5 | 2.6 | 3.1 | 3.4 | 2.9 | 3.2 | 3.6 | 3.3 | 2.9 | 2.8 | 3.4 | 4.0 | 2.3  | 1.8   | 1.6 | 2.4 | 3.8 | 2.9 | 2.9           | 4.1           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |     |     |                 |
| 21-Feb   | 2.3                           | 2.4     | 2.6 | 2.8  | 2.8 | 3.1                       | 2.9 | 3.4 | 3.7 | 3.0 | 2.7 | 2.7 | 3.0 | 3.2 | 3.5 | 3.7 | 3.7 | 3.3 | 10.5 | 3.0   | 2.5 | 3.6 | 5.5 | 4.5 | 3.5           | 10.5          |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |     |     |                 |
| 22-Feb   | 3.1                           | 2.5     | 1.6 | 1.8  | 2.1 | 2.3                       | 2.4 | 2.1 | 2.4 | 2.8 | 2.1 | 3.2 | 5.8 | 3.8 | 4.1 | 4.8 | 5.9 | 5.2 | 4.5  | 4.0   | 3.7 | 3.5 | 4.8 | 7.9 | 3.6           | 7.9           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |     |     |                 |
| 23-Feb   | 6.7                           | 4.7     | 4.1 | 3.5  | 2.7 | 1.6                       | 1.3 | 1.0 | 1.0 | 1.7 | 2.4 | 3.1 | C   | 3.6 | 3.4 | 3.0 | 2.5 | 2.5 | 2.0  | 4.5   | 5.8 | 6.4 | 5.1 | 4.8 | 3.4           | 6.7           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |     |     |                 |
| 24-Feb   | 5.4                           | 6.9     | 4.5 | 3.1  | 2.8 | 2.4                       | 2.3 | 2.2 | 2.7 | 4.8 | 5.2 | 4.6 | 4.6 | 4.1 | 3.8 | 2.9 | 2.3 | 2.1 | 2.2  | 2.9   | 3.1 | 3.4 | 4.3 | 5.3 | 3.7           | 6.9           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |     |     |                 |
| 25-Feb   | 6.3                           | 7.4     | 8.3 | 8.1  | 7.2 | 6.0                       | 5.4 | 5.2 | 4.6 | 4.1 | 4.3 | 3.6 | 1.9 | 2.4 | 2.5 | 1.3 | 1.1 | 1.3 | 1.9  | 2.7   | 2.4 | 1.9 | 2.0 | 1.8 | 3.9           | 8.3           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |     |     |                 |
| 26-Feb   | 1.7                           | 1.7     | 1.6 | 1.5  | 1.6 | 1.9                       | 2.3 | 2.3 | 2.8 | 8.9 | 2.3 | 2.5 | 2.3 | 2.0 | 1.6 | 1.2 | 1.2 | 1.6 | 1.6  | 1.3   | 1.4 | 2.0 | 2.5 | 2.3 | 2.2           | 8.9           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |     |     |                 |
| 27-Feb   | 1.9                           | 2.0     | 2.0 | 2.2  | 2.9 | 7.1                       | 2.3 | 2.4 | 2.3 | 2.0 | 2.5 | 2.9 | 2.8 | 2.8 | 2.6 | 2.1 | 1.7 | 4.5 | 2.4  | 1.7   | 2.1 | 2.2 | 2.2 | 6.4 | 2.7           | 7.1           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |     |     |                 |
| 28-Feb   | 4.4                           | 5.7     | 2.4 | 2.2  | 2.3 | 2.2                       | 2.3 | 2.6 | 2.1 | 3.6 | 3.8 | 3.9 | 4.6 | 5.3 | 4.2 | 4.7 | 4.0 | 3.9 | 3.7  | 3.6   | 3.3 | 3.3 | 3.4 | 3.3 | 3.5           | 5.7           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |     |     |                 |
|  |                               |         |     |  |     |                           |     |     |     |     |     |     |     |     |     |     |     |     |      |       |     |     |     | 2.9 | 2.9           | 2.8           | 3.1 | 3.1 | 3.4 | 3.3 | 3.2 | 3.0 | 3.5 | 3.4 | 3.3 | 3.4 | 3.4 | 3.1 | 3.0 | 3.2 | 3.0 | 2.8  | 2.6 | 2.7 | 2.9 | 3.0 | 3.1 | Diurnal Average |
|  |                               |         |     |  |     |                           |     |     |     |     |     |     |     |     |     |     |     |     |      |       |     |     |     | 6.7 | 7.4           | 8.3           | 8.1 | 7.7 | 7.8 | 9.7 | 9.3 | 7.6 | 8.9 | 7.0 | 6.9 | 6.8 | 7.0 | 7.2 | 7.1 | 5.9 | 6.6 | 10.5 | 6.3 | 7.7 | 9.9 | 8.1 | 7.9 | Diurnal Maximum |
| C - Calibration  |                               |         |     |  |     |                           |     |     |     |     |     |     |     |     |     |     |     |     |      |       |     |     |     |     |               |               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |     |     |                 |
| Alberta Ambient Air Quality Guideline/Objectives: 1-hr 80 µg/m <sup>3</sup> 24-hr 29 µg/m <sup>3</sup> |                               |         |     |  |     |                           |     |     |     |     |     |     |     |     |     |     |     |     |      |       |     |     |     |     |               |               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |     |     |                 |





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Particulate Matter 2.5 (PM<sub>2.5</sub>) -  $\mu\text{g}/\text{m}^3$   
Wapasu - February 2023**

| <b>Concentration Ranges (<math>\mu\text{g}/\text{m}^3</math>)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---|------------------------|----------|---------------------|
| 0 - 5   | 607                    | 90.46    | 90.46               |
| 6 - 15  | 64                     | 9.54     | 100.00              |
| 16 - 25   | 0                      | 0.00     | 100.00              |
| 26 - 80   | 0                      | 0.00     | 100.00              |
| > 81.0  | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 671

Total Number of Hours: 672



**Wood Buffalo Environmental Association**  
**Frequency Distribution**

**Particulate Matter 2.5 (PM<sub>2.5</sub>) - μg/m<sup>3</sup>**  
**Wapasu - February 2023**

| Concentration<br>Ranges (μg/m <sup>3</sup> ) | Wind Direction |     |    |     |    |     |    |     |    |     |    |     |    |     |    |     | Totals |
|--|----------------|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|--------|
|  | N              | NNE | NE | ENE | E  | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |        |
| 0 - 5  | 97             | 48  | 42 | 23  | 14 | 17  | 65 | 83  | 49 | 29  | 29 | 21  | 15 | 5   | 12 | 56  | 605    |
| 6 - 15                                       | 9              | 7   | 2  | 2   | 1  | 0   | 1  | 6   | 6  | 12  | 8  | 2   | 1  | 1   | 1  | 5   | 64     |
| 16 - 25                                      | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| 26 - 80                                      | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| > 81.0                                       | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| <b>Totals</b>                                | 106            | 55  | 44 | 25  | 15 | 17  | 66 | 89  | 55 | 41  | 37 | 23  | 16 | 6   | 13 | 61  | 669    |

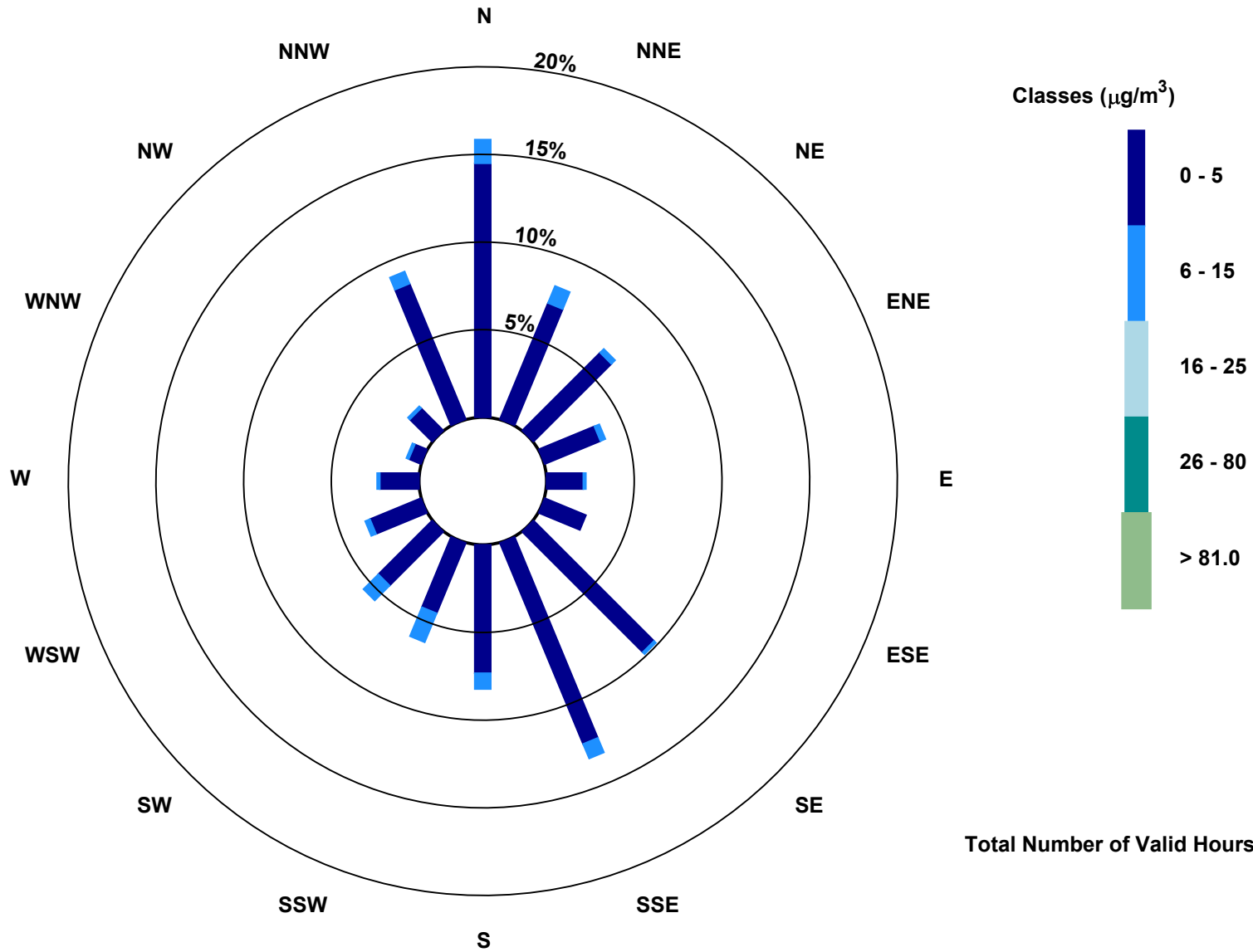
Total Number of Valid Hours: 669

Total Number of Hours: 672



Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Particulate Matter 2.5 (PM<sub>2.5</sub>) -  $\mu\text{g}/\text{m}^3$   
Wapasu







**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

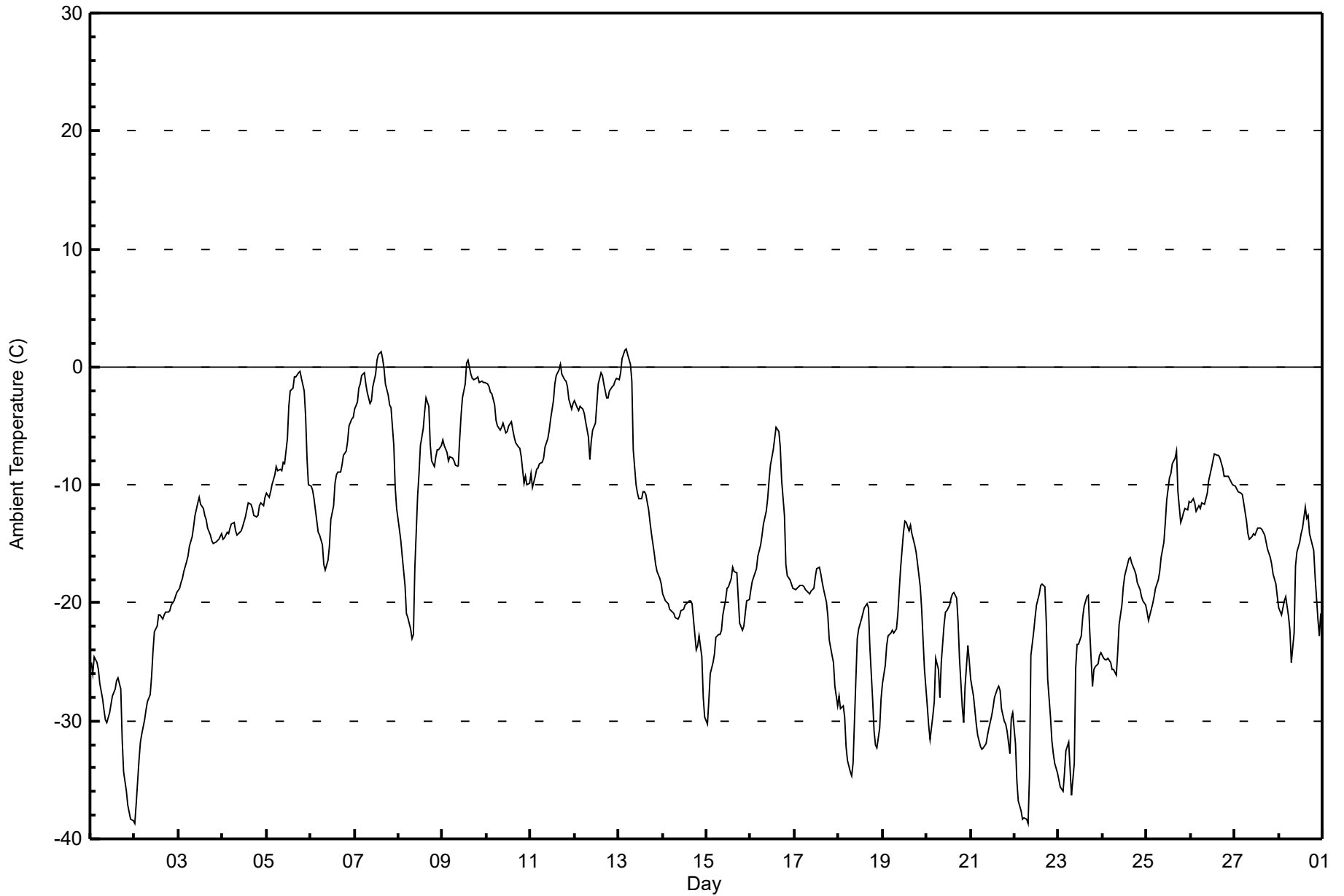
**Ambient Temperature (AT) - C**  
**Wapasu - February 2023**

| Maximum Value: 1.6 C on Feb 13 05:00      Maximum Daily Average: -2.4 C on Feb 7  |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Hours in Service:         | 672   |       |               |               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |  |
|---|-------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------------------------|-------|-------|---------------|---------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-----------------|--|
| Minimum Value: -38.7 C on Feb 2 01:00      Minimum Daily Average: -29.9 C on Feb 1  |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Hours of Data:            | 672   |       |               |               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |  |
| Maximum Diurnal Average: -12.1 C at hour 15      Minimum Diurnal Average: -18.9 C at hour 8   |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Hours of Missing Data:    | 0     |       |               |               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |  |
| Monthly Average: -16.11 C      Percentiles: P <sub>1</sub> = -37.9 P <sub>10</sub> = -29.5 Q <sub>1</sub> = -22.5 Median = -16.1 Q <sub>3</sub> = -8.6 P <sub>90</sub> = -2.7 P <sub>99</sub> = 0.6 |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Hours of Calibration:     | 0     |       |               |               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |  |
|   |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Percent Operational Time: | 100.0 |       |               |               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |  |
| Day   | Hourly Period Ending At (MST) |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                           |       |       | Daily Average | Daily Maximum |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |  |
|   | 1                             | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     | 10    | 11    | 12    | 13    | 14    | 15    | 16    | 17    | 18    | 19    | 20    | 21    | 22                        | 23    | 24    |               |               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |  |
| 1-Feb   | -25.0                         | -26.0 | -24.6 | -25.1 | -25.6 | -26.9 | -28.1 | -29.1 | -29.9 | -30.1 | -29.3 | -28.6 | -27.9 | -27.3 | -26.6 | -26.4 | -27.3 | -31.6 | -34.3 | -36.0 | -37.1 | -37.8                     | -38.3 | -38.5 | -29.9         | -24.6         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |  |
| 2-Feb   | -38.7                         | -37.0 | -33.3 | -31.8 | -31.1 | -29.9 | -29.1 | -28.4 | -27.7 | -26.2 | -24.1 | -22.5 | -22.0 | -21.1 | -21.0 | -21.4 | -21.0 | -20.8 | -20.8 | -20.7 | -20.2 | -19.8                     | -19.5 | -19.1 | -25.3         | -19.1         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |  |
| 3-Feb   | -18.7                         | -18.3 | -18.0 | -17.3 | -16.5 | -16.0 | -15.2 | -14.3 | -13.5 | -12.6 | -11.5 | -11.1 | -11.6 | -12.0 | -12.6 | -12.9 | -13.7 | -14.3 | -14.7 | -15.0 | -14.9 | -14.8                     | -14.6 | -14.2 | -14.5         | -11.1         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |  |
| 4-Feb   | -14.6                         | -14.5 | -14.1 | -14.2 | -13.7 | -13.3 | -13.2 | -14.0 | -14.2 | -14.0 | -13.9 | -13.6 | -12.7 | -12.1 | -11.5 | -11.6 | -12.0 | -12.6 | -12.7 | -12.6 | -11.7 | -11.6                     | -11.8 | -11.1 | -13.0         | -11.1         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |  |
| 5-Feb   | -10.7                         | -11.0 | -10.6 | -10.0 | -9.1  | -8.4  | -8.8  | -8.7  | -8.8  | -8.1  | -8.2  | -6.1  | -3.4  | -2.1  | -1.8  | -0.8  | -0.9  | -0.5  | -0.4  | -1.0  | -2.1  | -4.2                      | -7.8  | -10.0 | -6.0          | -0.4          |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |  |
| 6-Feb   | -10.1                         | -10.5 | -11.1 | -13.1 | -14.0 | -14.3 | -15.1 | -16.8 | -17.2 | -16.4 | -15.2 | -13.0 | -11.7 | -9.9  | -9.2  | -8.9  | -8.9  | -8.3  | -7.5  | -7.1  | -6.3  | -4.9                      | -4.4  | -4.3  | -10.8         | -4.3          |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |  |
| 7-Feb   | -3.6                          | -3.0  | -1.8  | -1.4  | -0.7  | -0.4  | -1.4  | -2.2  | -3.1  | -2.8  | -1.7  | -0.6  | 0.6   | 1.0   | 1.3   | 0.8   | -0.1  | -1.4  | -2.4  | -3.3  | -3.5  | -6.7                      | -10.2 | -12.0 | -2.4          | 1.3           |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |  |
| 8-Feb   | -13.7                         | -14.7 | -16.0 | -18.5 | -20.9 | -21.2 | -22.2 | -23.1 | -22.7 | -17.1 | -11.0 | -9.0  | -6.6  | -5.3  | -3.9  | -2.7  | -3.3  | -6.6  | -8.0  | -8.4  | -7.6  | -7.0                      | -7.0  | -6.6  | -11.8         | -2.7          |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |  |
| 9-Feb   | -6.2                          | -6.6  | -7.2  | -7.9  | -7.6  | -7.8  | -8.0  | -8.3  | -8.4  | -6.1  | -4.1  | -2.6  | -1.4  | 0.3   | 0.6   | -0.6  | -0.9  | -1.0  | -1.0  | -0.9  | -1.3  | -1.2                      | -1.3  | -1.3  | -3.8          | 0.6           |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |  |
| 10-Feb  | -1.5                          | -1.6  | -2.1  | -2.3  | -3.3  | -4.5  | -5.0  | -5.4  | -5.2  | -4.8  | -5.6  | -5.5  | -5.0  | -4.7  | -5.4  | -5.9  | -6.4  | -6.7  | -6.9  | -7.7  | -9.9  | -9.3                      | -10.0 | -9.9  | -5.6          | -1.5          |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |  |
| 11-Feb  | -9.1                          | -10.2 | -9.3  | -8.7  | -8.6  | -8.2  | -8.1  | -7.8  | -6.8  | -6.1  | -5.4  | -4.4  | -2.9  | -1.4  | -0.8  | -0.3  | 0.2   | -0.6  | -1.0  | -1.3  | -1.7  | -2.7                      | -3.5  | -3.1  | -4.7          | 0.2           |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |  |
| 12-Feb  | -2.9                          | -3.5  | -3.7  | -3.3  | -3.6  | -3.9  | -4.6  | -5.9  | -7.9  | -6.4  | -5.4  | -4.8  | -3.1  | -1.4  | -0.5  | -0.8  | -1.5  | -2.6  | -2.6  | -2.1  | -1.7  | -1.5                      | -1.3  | -1.0  | -3.2          | -0.5          |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |  |
| 13-Feb  | -1.1                          | -0.5  | 0.6   | 1.4   | 1.6   | 1.1   | 0.2   | -1.2  | -7.1  | -10.0 | -10.7 | -11.2 | -11.1 | -10.5 | -10.6 | -10.8 | -12.1 | -13.1 | -14.1 | -15.8 | -16.8 | -17.3                     | -18.0 | -18.4 | -8.6          | 1.6           |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |  |
| 14-Feb  | -19.2                         | -19.8 | -20.0 | -20.1 | -20.5 | -20.8 | -21.0 | -21.3 | -21.4 | -21.2 | -20.7 | -20.6 | -20.2 | -20.0 | -19.8 | -19.8 | -20.1 | -21.3 | -24.0 | -23.7 | -22.8 | -24.6                     | -28.0 | -29.7 | -21.7         | -19.2         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |  |
| 15-Feb  | -30.3                         | -28.3 | -26.0 | -25.1 | -24.3 | -22.9 | -22.6 | -22.7 | -22.3 | -21.0 | -19.7 | -18.8 | -18.6 | -17.9 | -17.0 | -17.3 | -17.5 | -19.5 | -21.7 | -22.3 | -22.0 | -20.9                     | -19.8 | -19.7 | -21.6         | -17.0         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |  |
| 16-Feb  | -18.9                         | -18.2 | -17.4 | -17.1 | -16.0 | -15.0 | -14.2 | -13.3 | -12.3 | -11.1 | -9.7  | -8.3  | -7.0  | -6.0  | -5.1  | -5.4  | -6.8  | -9.6  | -12.6 | -16.7 | -17.7 | -18.1                     | -18.4 | -18.8 | -13.1         | -5.1          |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |  |
| 17-Feb  | -18.9                         | -18.7 | -18.7 | -18.5 | -18.5 | -18.6 | -18.8 | -19.1 | -19.2 | -19.0 | -18.8 | -17.8 | -17.1 | -17.0 | -17.5 | -18.3 | -18.9 | -20.0 | -21.2 | -23.2 | -24.4 | -25.1                     | -27.1 | -28.7 | -20.1         | -17.0         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |  |
| 18-Feb  | -27.9                         | -29.0 | -28.8 | -29.6 | -32.1 | -33.4 | -34.3 | -34.7 | -33.6 | -26.5 | -23.0 | -22.2 | -21.4 | -20.9 | -20.4 | -20.0 | -20.4 | -23.8 | -28.2 | -30.9 | -32.1 | -32.3                     | -30.7 | -28.2 | -27.7         | -20.0         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |  |
| 19-Feb  | -26.8                         | -25.2 | -23.7 | -22.8 | -22.5 | -22.3 | -22.5 | -22.2 | -20.9 | -18.9 | -17.0 | -14.1 | -13.1 | -13.2 | -13.9 | -13.4 | -14.1 | -15.1 | -15.6 | -16.7 | -18.7 | -20.6                     | -23.1 | -25.7 | -19.3         | -13.1         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |  |
| 20-Feb  | -28.7                         | -30.4 | -31.6 | -29.6 | -28.3 | -24.7 | -25.6 | -28.0 | -25.1 | -21.8 | -20.8 | -20.6 | -20.2 | -19.6 | -19.2 | -19.2 | -19.6 | -21.6 | -24.7 | -28.8 | -30.1 | -27.1                     | -23.6 | -24.9 | -24.7         | -19.2         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |  |
| 21-Feb  | -26.5                         | -27.9 | -29.1 | -30.2 | -31.3 | -32.1 | -32.4 | -32.3 | -31.9 | -31.3 | -30.6 | -29.5 | -28.8 | -28.0 | -27.3 | -27.1 | -27.4 | -29.0 | -30.1 | -30.3 | -30.9 | -32.7                     | -29.8 | -29.4 | -29.8         | -26.5         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |  |
| 22-Feb  | -31.9                         | -35.1 | -36.8 | -37.6 | -38.4 | -38.3 | -38.3 | -38.7 | -34.7 | -24.4 | -22.4 | -21.2 | -20.1 | -19.2 | -18.6 | -18.5 | -18.7 | -21.6 | -26.5 | -29.7 | -31.6 | -32.8                     | -33.6 | -34.4 | -29.3         | -18.5         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |  |
| 23-Feb  | -35.0                         | -35.6 | -36.0 | -34.4 | -32.5 | -31.8 | -34.0 | -36.3 | -33.6 | -25.5 | -23.6 | -23.5 | -22.8 | -21.3 | -20.3 | -19.5 | -19.4 | -22.3 | -27.1 | -25.7 | -25.4 | -25.2                     | -24.5 | -24.2 | -27.5         | -19.4         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |  |
| 24-Feb  | -24.7                         | -24.9 | -24.9 | -24.7 | -25.1 | -25.6 | -25.6 | -26.1 | -24.3 | -21.9 | -20.2 | -18.7 | -17.7 | -16.8 | -16.3 | -16.1 | -16.7 | -17.2 | -17.6 | -18.3 | -18.9 | -19.5                     | -19.9 | -20.2 | -20.9         | -16.1         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |  |
| 25-Feb  | -20.8                         | -21.5 | -20.6 | -20.1 | -19.4 | -18.8 | -18.1 | -17.4 | -16.2 | -14.8 | -13.2 | -11.3 | -9.4  | -9.1  | -8.2  | -7.7  | -7.2  | -10.6 | -13.2 | -12.8 | -12.4 | -12.0                     | -12.1 | -11.4 | -14.1         | -7.2          |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |  |
| 26-Feb  | -11.5                         | -11.1 | -11.6 | -12.3 | -11.8 | -12.1 | -11.6 | -11.7 | -11.2 | -10.7 | -9.6  | -8.6  | -7.9  | -7.4  | -7.5  | -7.4  | -7.8  | -8.6  | -9.3  | -9.3  | -9.3  | -9.5                      | -9.7  | -10.0 | -9.9          | -7.4          |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |  |
| 27-Feb  | -10.1                         | -10.3 | -10.6 | -10.7 | -10.9 | -11.5 | -13.1 | -14.1 | -14.6 | -14.4 | -14.2 | -14.2 | -13.7 | -13.7 | -13.7 | -13.8 | -14.3 | -14.8 | -15.5 | -16.2 | -16.7 | -17.6                     | -18.4 | -19.5 | -14.0         | -10.1         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |  |
| 28-Feb  | -20.4                         | -21.0 | -20.4 | -19.8 | -19.5 | -21.2 | -22.4 | -25.1 | -22.6 | -16.9 | -15.7 | -14.9 | -14.1 | -13.6 | -11.9 | -12.8 | -12.6 | -14.2 | -15.0 | -15.6 | -17.8 | -21.4                     | -22.8 | -20.9 | -18.0         | -11.9         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |  |
|   |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | -18.1                     | -18.4 | -18.1 | -18.0         | -18.0         | -18.0 | -18.3 | -18.9 | -18.4 | -16.4 | -15.2 | -14.2 | -13.2 | -12.5 | -12.1 | -12.1 | -12.5 | -13.9 | -15.3 | -16.1 | -16.6 | -17.1 | -17.5 | -17.7 | Diurnal Average |  |
|   |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | -1.1                      | -0.5  | 0.6   | 1.4           | 1.6           | 1.1   | 0.2   | -1.2  | -3.1  | -2.8  | -1.7  | -0.6  | 0.6   | 1.0   | 1.3   | 0.8   | 0.2   | -0.5  | -0.4  | -0.9  | -1.3  | -1.2  | -1.3  | -1.0  | Diurnal Maximum |  |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Ambient Temperature (AT) - C**  
**Wapasu - February 2023**





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Ambient Temperature (AT) - C  
Wapasu - February 2023**

| <b>Concentration Ranges (C)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---------------------------------|------------------------|----------|---------------------|
| -50 - -20                       | 237                    | 35.27    | 35.27               |
| -20 - 0                         | 423                    | 62.95    | 98.21               |
| 0 - 10                          | 12                     | 1.79     | 100.00              |
| 10 - 20                         | 0                      | 0.00     | 100.00              |
| > 20                            | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 672

Total Number of Hours: 672



**Wood Buffalo Environmental Association**

**Summary of Hour Averages**

**Relative Humidity (RH) - %**

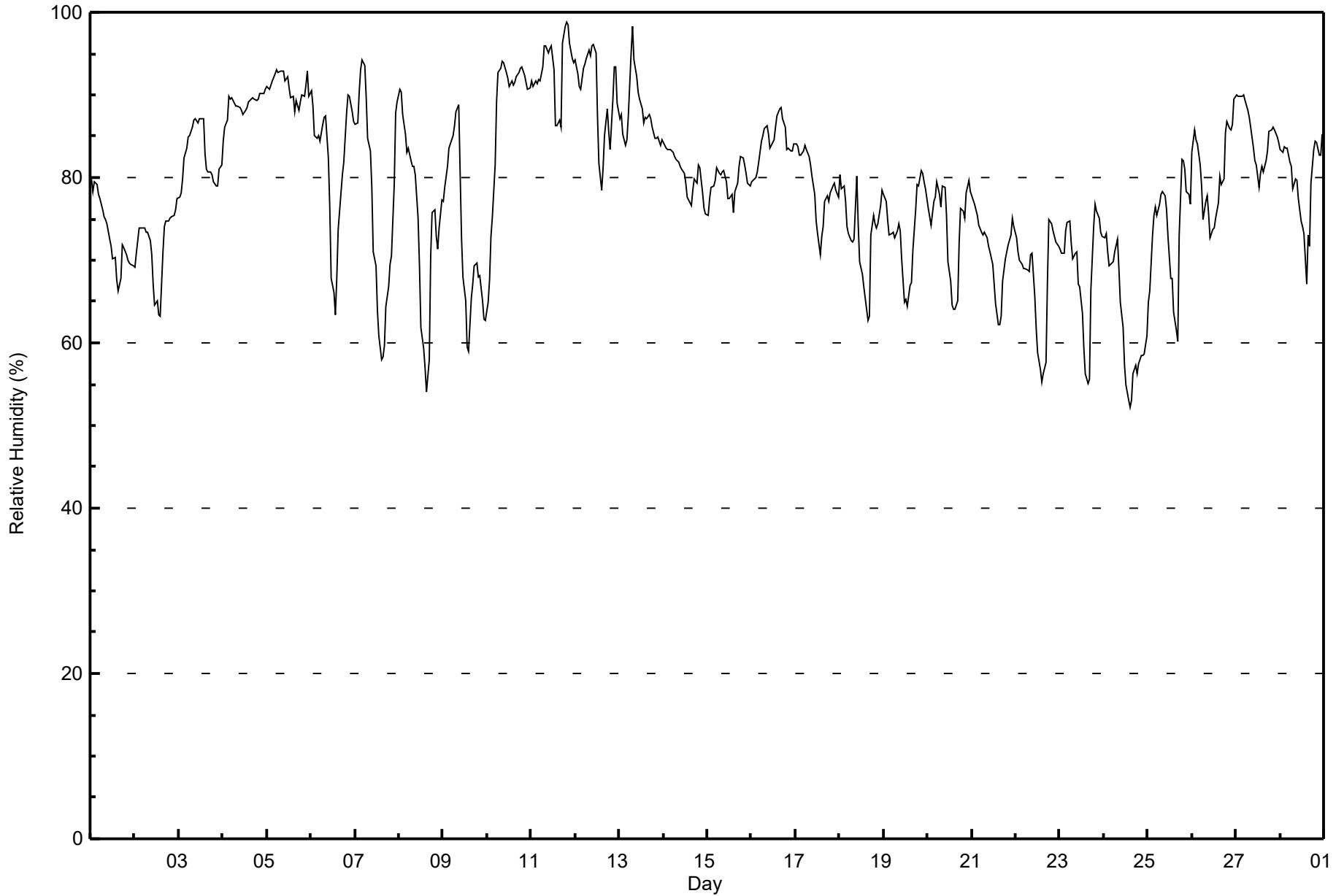
**Wapasu - February 2023**

| Maximum Value: 98.9 % on Feb 11 20:00      Maximum Daily Average: 93.2 % on Feb 11   |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Hours in Service: 672<br>Hours of Data: 672  |      |                 |               |               |      |
|--|-------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|--|------|-----------------|---------------|---------------|------|
| Minimum Value: 52.2 % on Feb 24 15:00      Minimum Daily Average: 62.4 % on Feb 24<br>Maximum Diurnal Average: 82.1 % at hour 8      Minimum Diurnal Average: 71.5 % at hour 15<br>Monthly Average: 78.81 %      Percentiles: P <sub>1</sub> = 55.5 P <sub>10</sub> = 65.5 Q <sub>1</sub> = 72.8 Median = 79.2 Q <sub>3</sub> = 86.2 P <sub>90</sub> = 91.0 P <sub>99</sub> = 96.0 |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Hours of Missing Data: 0<br>Hours of Calibration: 0<br>Percent Operational Time: 100.0 |      |                 |               |               |      |
| Day  | Hourly Period Ending At (MST) |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |      |                 | Daily Average | Daily Maximum |      |
|  | 1                             | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20   | 21   | 22   | 23   | 24              |               |               |      |
| 1-Feb  | 79.9                          | 78.4 | 79.5 | 79.2 | 77.9 | 77.4 | 76.1 | 75.3 | 74.9 | 74.4 | 72.6 | 71.6 | 70.2 | 70.4 | 67.6 | 66.2 | 67.7 | 71.9 | 71.5 | 70.7 | 70.1 | 69.7   | 69.4 | 69.3            | 73.0          | 79.9          |      |
| 2-Feb  | 69.1                          | 70.8 | 73.9 | 73.9 | 73.8 | 74.0 | 73.4 | 73.4 | 72.3 | 70.7 | 67.1 | 64.6 | 65.0 | 63.3 | 63.2 | 71.1 | 74.1 | 74.7 | 74.8 | 75.1 | 75.2 | 75.4   | 76.2 | 77.4            | 71.8          | 77.4          |      |
| 3-Feb  | 77.6                          | 78.2 | 79.8 | 82.4 | 83.6 | 84.9 | 85.0 | 86.2 | 87.0 | 87.1 | 86.6 | 87.1 | 87.0 | 87.1 | 82.8 | 80.9 | 80.7 | 80.7 | 80.3 | 79.5 | 79.0 | 79.0   | 81.0 | 81.6            | 82.7          | 87.1          |      |
| 4-Feb  | 84.4                          | 86.1 | 86.9 | 89.9 | 89.5 | 89.6 | 89.1 | 88.7 | 88.6 | 88.5 | 88.1 | 87.7 | 88.1 | 88.6 | 89.1 | 89.6 | 89.6 | 89.5 | 89.4 | 89.4 | 90.1 | 90.2   | 90.2 | 90.7            | 88.8          | 90.7          |      |
| 5-Feb  | 91.0                          | 90.8 | 91.2 | 91.8 | 92.5 | 93.0 | 92.7 | 92.8 | 92.8 | 93.0 | 91.7 | 92.2 | 90.9 | 89.7 | 89.8 | 88.0 | 89.2 | 88.1 | 89.1 | 90.0 | 89.8 | 91.2   | 92.9 | 89.8            | 91.0          | 93.0          |      |
| 6-Feb  | 90.5                          | 88.6 | 85.0 | 84.7 | 85.1 | 84.5 | 86.5 | 87.2 | 87.4 | 82.3 | 76.4 | 67.7 | 66.1 | 63.4 | 67.8 | 73.7 | 78.2 | 80.4 | 81.9 | 87.8 | 90.0 | 89.9   | 87.9 | 86.7            | 81.7          | 90.5          |      |
| 7-Feb  | 86.5                          | 86.6 | 90.4 | 93.0 | 94.2 | 93.6 | 89.6 | 84.7 | 83.3 | 78.8 | 70.9 | 69.3 | 63.9 | 60.8 | 57.9 | 58.2 | 59.6 | 64.3 | 66.8 | 69.4 | 70.4 | 79.1   | 87.8 | 89.2            | 77.0          | 94.2          |      |
| 8-Feb  | 90.7                          | 90.3 | 87.6 | 85.2 | 83.0 | 83.6 | 82.0 | 81.4 | 81.4 | 80.3 | 75.0 | 69.4 | 61.9 | 59.3 | 56.9 | 54.1 | 58.0 | 70.6 | 75.7 | 76.1 | 72.8 | 71.4   | 73.8 | 77.2            | 74.9          | 90.7          |      |
| 9-Feb  | 77.1                          | 78.9 | 81.3 | 83.6 | 84.1 | 85.0 | 86.3 | 87.9 | 88.8 | 80.7 | 72.7 | 68.0 | 65.1 | 59.5 | 59.0 | 65.5 | 67.0 | 69.4 | 69.6 | 68.0 | 68.2 | 65.2   | 62.8 | 62.8            | 73.2          | 88.8          |      |
| 10-Feb   | 64.9                          | 67.7 | 72.9 | 75.3 | 81.5 | 89.1 | 92.7 | 93.2 | 94.1 | 93.8 | 92.7 | 92.1 | 91.1 | 91.7 | 91.2 | 91.4 | 92.3 | 92.8 | 93.2 | 93.4 | 92.3 | 91.5   | 90.7 | 90.8            | 88.0          | 94.1          |      |
| 11-Feb   | 91.7                          | 91.1 | 91.7 | 91.4 | 91.8 | 91.6 | 93.4 | 96.0 | 96.0 | 95.1 | 95.6 | 95.9 | 93.0 | 86.2 | 86.2 | 87.0 | 86.1 | 96.3 | 98.3 | 98.9 | 98.5 | 96.4   | 94.3 | 94.0            | 93.2          | 98.9          |      |
| 12-Feb   | 94.2                          | 92.5 | 91.0 | 90.7 | 93.2 | 93.7 | 94.4 | 95.5 | 94.7 | 95.9 | 96.1 | 95.1 | 87.5 | 81.6 | 78.5 | 81.2 | 85.1 | 88.3 | 85.5 | 83.3 | 89.5 | 93.4   | 93.5 | 89.0            | 90.1          | 96.1          |      |
| 13-Feb   | 87.2                          | 87.6 | 85.3 | 83.9 | 84.7 | 87.5 | 95.1 | 98.4 | 94.2 | 92.2 | 90.3 | 89.5 | 88.4 | 86.7 | 87.3 | 87.1 | 87.6 | 87.2 | 86.1 | 84.7 | 84.8 | 84.9   | 83.9 | 84.6            | 87.9          | 98.4          |      |
| 14-Feb   | 84.3                          | 83.6 | 83.3 | 83.4 | 83.4 | 83.0 | 82.6 | 82.2 | 81.9 | 81.4 | 80.9 | 80.5 | 79.3 | 77.6 | 76.9 | 76.6 | 78.5 | 79.9 | 79.4 | 81.5 | 81.3 | 78.2   | 76.3 | 75.6            | 80.5          | 84.3          |      |
| 15-Feb   | 75.5                          | 77.5 | 78.9 | 78.9 | 79.7 | 81.3 | 80.6 | 80.4 | 80.6 | 80.8 | 79.5 | 77.5 | 77.5 | 78.0 | 75.8 | 78.3 | 79.3 | 81.4 | 82.6 | 82.4 | 81.5 | 80.6   | 79.3 | 78.9            | 79.5          | 82.6          |      |
| 16-Feb   | 79.5                          | 79.7 | 80.0 | 80.7 | 81.9 | 84.4 | 85.1 | 86.0 | 86.2 | 85.3 | 83.6 | 83.9 | 84.6 | 86.1 | 87.5 | 88.4 | 88.5 | 87.1 | 86.1 | 83.5 | 83.5 | 83.2   | 83.3 | 84.0            | 84.2          | 88.5          |      |
| 17-Feb   | 84.1                          | 83.7 | 82.7 | 82.7 | 83.2 | 83.9 | 83.3 | 82.6 | 81.5 | 80.1 | 78.0 | 74.8 | 73.3 | 70.6 | 72.9 | 74.0 | 77.1 | 77.7 | 77.1 | 78.2 | 79.1 | 79.2   | 78.4 | 77.7            | 79.0          | 84.1          |      |
| 18-Feb   | 80.3                          | 78.6 | 79.0 | 77.1 | 74.0 | 73.2 | 72.4 | 72.2 | 72.5 | 80.2 | 74.4 | 69.9 | 68.3 | 66.8 | 65.4 | 62.7 | 63.3 | 73.1 | 75.5 | 74.4 | 74.0 | 74.4   | 76.7 | 78.4            | 73.2          | 80.3          |      |
| 19-Feb   | 77.9                          | 77.1 | 74.9 | 73.1 | 73.3 | 73.3 | 72.8 | 73.5 | 74.4 | 73.6 | 70.2 | 65.0 | 65.3 | 64.5 | 67.0 | 67.2 | 71.2 | 76.1 | 79.1 | 78.9 | 80.8 | 80.4   | 79.5 | 78.6            | 73.7          | 80.8          |      |
| 20-Feb   | 76.2                          | 75.3 | 74.3 | 77.1 | 77.6 | 79.4 | 77.9 | 76.4 | 78.9 | 78.9 | 75.5 | 69.9 | 67.5 | 64.7 | 64.0 | 64.0 | 65.2 | 72.0 | 76.3 | 76.0 | 75.1 | 78.2   | 79.6 | 78.4            | 74.1          | 79.6          |      |
| 21-Feb   | 77.9                          | 76.7 | 76.1 | 75.4 | 74.2 | 73.5 | 73.1 | 73.4 | 72.8 | 71.8 | 71.0 | 69.5 | 67.1 | 64.8 | 62.3 | 62.2 | 63.3 | 67.5 | 70.1 | 70.9 | 71.8 | 73.1   | 75.0 | 74.1            | 71.1          | 77.9          |      |
| 22-Feb   | 72.7                          | 71.0 | 69.9 | 69.5 | 68.9 | 69.0 | 68.8 | 68.6 | 70.8 | 70.9 | 65.5 | 61.6 | 58.8 | 56.8 | 55.2 | 56.3 | 57.5 | 67.2 | 74.9 | 74.4 | 73.5 | 72.9   | 72.3 | 71.7            | 67.4          | 74.9          |      |
| 23-Feb   | 71.4                          | 70.9 | 70.8 | 73.6 | 74.6 | 74.8 | 72.0 | 70.1 | 70.8 | 71.0 | 67.1 | 66.8 | 63.5 | 59.4 | 56.4 | 55.2 | 55.6 | 66.4 | 74.0 | 76.8 | 75.9 | 75.1   | 73.4 | 72.8            | 69.1          | 76.8          |      |
| 24-Feb   | 72.7                          | 73.2 | 71.1 | 69.4 | 69.7 | 69.8 | 71.0 | 72.5 | 69.0 | 64.8 | 61.9 | 57.3 | 54.8 | 53.0 | 52.2 | 53.0 | 56.3 | 57.2 | 56.3 | 57.4 | 58.4 | 58.4   | 58.6 | 60.8            | 62.4          | 73.2          |      |
| 25-Feb   | 64.9                          | 66.2 | 73.1 | 75.4 | 76.5 | 75.4 | 76.8 | 78.0 | 78.2 | 77.9 | 76.1 | 72.9 | 72.9 | 67.7 | 67.8 | 63.7 | 61.5 | 60.1 | 73.1 | 82.2 | 82.0 | 80.9   | 78.3 | 77.9            | 76.7          | 73.5          | 82.2 |
| 26-Feb   | 83.1                          | 85.7 | 84.6 | 84.0 | 81.5 | 79.0 | 74.9 | 77.1 | 77.9 | 75.5 | 72.7 | 73.6 | 74.0 | 75.1 | 76.9 | 80.1 | 79.2 | 79.8 | 85.5 | 86.8 | 86.0 | 85.8   | 86.4 | 89.4            | 80.6          | 89.4          |      |
| 27-Feb   | 90.0                          | 89.8 | 89.8 | 89.8 | 90.0 | 89.4 | 88.2 | 87.4 | 86.1 | 83.6 | 82.1 | 81.5 | 78.9 | 80.5 | 81.4 | 80.7 | 82.0 | 83.3 | 85.6 | 85.8 | 86.1 | 85.7   | 85.0 | 84.2            | 85.3          | 90.0          |      |
| 28-Feb   | 83.3                          | 83.1 | 83.7 | 83.5 | 83.5 | 81.9 | 81.4 | 78.6 | 79.9 | 79.7 | 77.4 | 74.8 | 74.1 | 73.3 | 67.0 | 73.1 | 71.6 | 79.3 | 83.4 | 84.5 | 84.3 | 82.8   | 82.7 | 85.3            | 79.7          | 85.3          |      |
| 80.7 80.7 81.0 81.4 81.7 82.1 82.0 82.1 82.0 81.0 78.3 76.1 74.0 72.4 71.5 72.4 73.7 77.7 79.7 80.0 80.1 80.1 80.3 80.3  |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |      | Diurnal Average |               |               |      |
| 94.2 92.5 91.7 93.0 94.2 93.7 95.1 98.4 96.0 95.9 96.1 95.9 93.0 91.7 91.2 91.4 92.3 96.3 98.3 98.9 98.5 96.4 94.3 94.0  |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |      | Diurnal Maximum |               |               |      |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Relative Humidity (RH) - %**  
**Wapasu - February 2023**





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Relative Humidity (RH) - %**  
**Wapasu - February 2023**

| <b>Concentration Ranges (%)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---------------------------------|------------------------|----------|---------------------|
| 0 - 20                          | 0                      | 0.00     | 0.00                |
| 20 - 40                         | 0                      | 0.00     | 0.00                |
| 40 - 60                         | 30                     | 4.46     | 4.46                |
| 60 - 80                         | 329                    | 48.96    | 53.42               |
| 80 - 100                        | 313                    | 46.58    | 100.00              |

Total Number of Valid Hours: 672

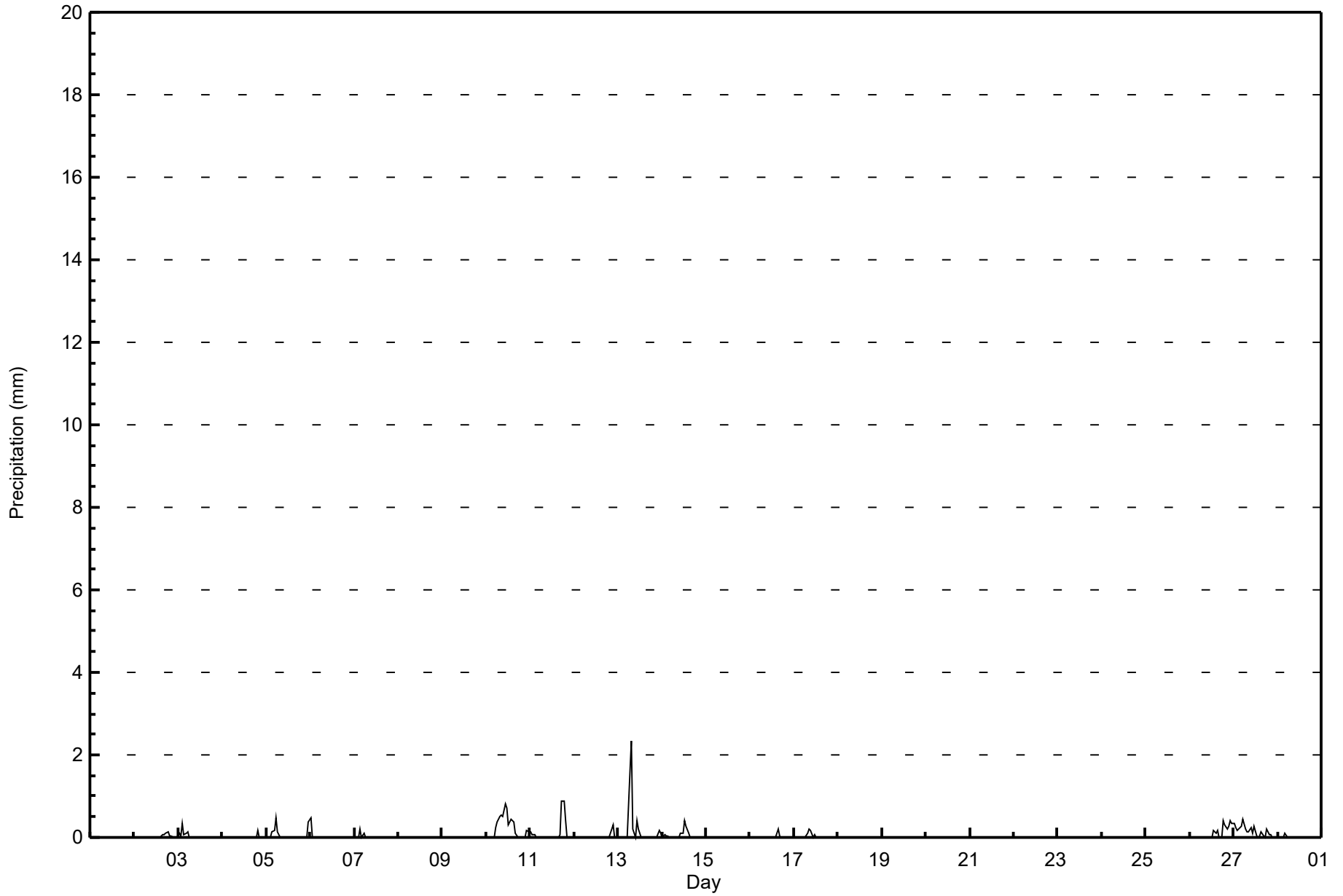
Total Number of Hours: 672





**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Precipitation (PC) - mm**  
**Wapasu - February 2023**







**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

**Wind Speed (WS) - km/h**  
**Wapasu - February 2023**

|  |   |                                |
|--|---|--------------------------------|
| Maximum Speed: 24 km/h on Feb 2 18:00              | Maximum Daily Speed Average: 15.5 km/h on Feb 2   | Hours in Service: 672          |
| Minimum Speed Value: 0 km/h on Feb 11 00:00        | Minimum Daily Speed Average: 1.2 km/h on Feb 23   | Hours of Data: 670             |
| Maximum Diurnal Speed Average: 2.5 km/h at hour 23 | Minimum Diurnal Speed Average: 0.3 km/h at hour 10  | Hours of Missing Data: 2       |
| Monthly Average Velocity: 0.7 km/h 157.1 deg       | Percentiles: P <sub>1</sub> = 1 P <sub>10</sub> = 3 Q <sub>1</sub> = 4 Median = 7 Q <sub>3</sub> = 10 P <sub>90</sub> = 14 P <sub>99</sub> = 21 | Percent Operational Time: 99.7 |

| Day    | Hourly Period Ending At (MST) |       |          |       |       |       |       |           |       |       |       |       |       |       |       |       |       |       |       |       |       |       |        |       | Daily Average | Daily Maximum |
|--------|-------------------------------|-------|----------|-------|-------|-------|-------|-----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|-------|---------------|---------------|
|        | 1                             | 2     | 3        | 4     | 5     | 6     | 7     | 8         | 9     | 10    | 11    | 12    | 13    | 14    | 15    | 16    | 17    | 18    | 19    | 20    | 21    | 22    | 23     | 24    |               |               |
| 1-Feb  | NE4                           | ESE2  | N6 NNW13 | NNW14 | NNW11 | N9    | N10   | N11 NNW12 | NNW14 | NNW13 | NNW10 | NNW11 | NNW12 | NNW8  | NW3   | UO    | SE3   | ESE3  | SE3   | SE4   | SE4   | SE4   | NNW6.2 | NNW14 |               |               |
| 2-Feb  | SE7                           | SE7   | SSE7     | SSE7  | SSE8  | SSE7  | SSE10 | SSE12     | SSE14 | SSE14 | SSE16 | SSE17 | SSE19 | SSE18 | SSE22 | SSE21 | SE23  | SSE24 | SSE23 | SSE23 | SSE21 | SSE18 | SSE20  | SSE17 | SSE15.5       | SSE24         |
| 3-Feb  | SSE18                         | SSE17 | SSE16    | SSE17 | SSE13 | S12   | S12   | S9        | S8    | SSW8  | WSW9  | W7    | NNW9  | N8    | N9    | N8    | NNE7  | NNE7  | NNE6  | NE5   | NE5   | NNE3  | ENE3   | ESE2  | SSE3.0        | SSE18         |
| 4-Feb  | N3                            | ENE3  | NE2      | NNE3  | NE3   | ENE3  | NNW2  | NNW5      | NNE4  | N5    | N5    | NNE5  | NNE4  | N5    | NNW4  | N4    | NNW4  | NNW3  | N3    | NE3   | N1    | N3    | ENE1   | NNW2  | N2.8          | N5            |
| 5-Feb  | NNE1                          | NNE2  | ENE2     | SSE1  | SSE3  | SSW1  | NNE2  | NNW2      | SSW1  | NNW2  | W3    | SSW4  | S6    | S7    | S6    | S6    | S8    | S8    | S8    | SSW7  | SW11  | NW8   | N14    | N11   | SW1.6         | N14           |
| 6-Feb  | NW8                           | NW9   | WNW9     | W8    | W8    | W7    | W6    | NW3       | NNE5  | NE6   | ENE5  | ESE1  | SSW6  | S6    | SSW7  | SSE6  | SSE8  | SE9   | SE14  | SSE15 | SSE11 | SSE12 | SSE12  | S9    | S3.3          | SSE15         |
| 7-Feb  | S8                            | SSW11 | SW15     | SW11  | SW11  | WSW15 | W11   | WSW11     | WSW10 | WSW12 | WSW15 | WSW15 | WSW18 | WSW21 | W18   | W15   | W11   | W7    | WSW7  | SW7   | WSW7  | NW6   | NNE6   | NNE7  | WSW9.6        | WSW21         |
| 8-Feb  | NE5                           | NNE4  | NE3      | NE3   | ESE2  | ENE4  | E2    | E3        | SE3   | SE4   | SSW4  | SSW7  | S7    | SSW7  | SSW6  | S5    | S4    | SSE6  | SSE7  | SSE9  | SSE10 | SSE9  | SSE9   | SSE9  | SSE3.8        | SSE10         |
| 9-Feb  | SSE11                         | SSE10 | SSE8     | S8    | S7    | S8    | SSW9  | S8        | SSW8  | SSW10 | S8    | SSW10 | S8    | S8    | S11   | S8    | SSE8  | SSE9  | SE9   | SE9   | SSE7  | SSE7  | S6     | S5    | S7.9          | SSE11         |
| 10-Feb | SSE5                          | NE2   | ENE4     | NE3   | N5    | N4    | NE4   | NNE4      | NNE4  | N5    | N5    | N5    | NNE6  | N5    | NNE6  | NNE6  | NE6   | NE6   | NNE5  | N5    | N3    | NW4   | NW1    | E0    | NNE3.8        | NNE6          |
| 11-Feb | WNW2                          | SW2   | S4       | SSW6  | SSW4  | SSW6  | SSW6  | S6        | SW9   | SW8   | SW12  | SSW9  | SSW11 | SSW10 | S10   | SSW10 | SW14  | WSW13 | W10   | W8    | W7    | WSW6  | SW8    | SW10  | SW7.2         | SW14          |
| 12-Feb | SW8                           | SW9   | SW10     | WSW9  | WSW5  | SW5   | SW6   | SW4       | ENE1  | E2    | WNW2  | E2    | SSW4  | SW5   | S6    | S7    | SSE9  | SE10  | SE12  | SSE13 | SSE15 | SSE16 | SSE17  | SSE19 | S6.3          | SSE19         |
| 13-Feb | SSE15                         | S10   | S10      | SW10  | SW9   | WSW13 | WSW12 | NNW10     | NNW17 | NNW19 | NNW19 | N16   | N18   | N20   | N20   | N19   | NNW17 | NNW15 | N15   | N17   | N15   | N15   | N14    | N12   | NNW9.2        | N20           |
| 14-Feb | N13                           | N11   | N8       | NNW8  | NNW10 | NNW8  | NNE7  | NNE6      | N7    | N7    | NNW6  | N7    | N7    | N6    | N6    | N6    | N6    | N4    | NNE4  | NNE5  | NNE5  | ENE3  | ENE4   | NE3   | N6.2          | N13           |
| 15-Feb | ESE3                          | SSE3  | SE3      | SE3   | SSE2  | SSW3  | SSE3  | SSE3      | S3    | S3    | SW4   | WSW4  | W5    | WSW4  | S4    | S4    | S4    | S4    | SSE5  | SSE5  | SSE7  | SE7   | SSE10  | SSE10 | S3.6          | SSE10         |
| 16-Feb | SSE11                         | SSE9  | SSE11    | SSE12 | SSE11 | SSE10 | SSE12 | SSE12     | SSE12 | SSE11 | S11   | S10   | SSW11 | SW11  | SW9   | WSW10 | WNW8  | N12   | N11   | N12   | NNE10 | N11   | N10    | N8    | SSE3.0        | N12           |
| 17-Feb | NNE7                          | NNE6  | NNE7     | NNE7  | NNE7  | NNE6  | NNE6  | N5        | N5    | N5    | N7    | N6    | N8    | N8    | NNE7  | NNE7  | NNE7  | NE8   | NE7   | NE6   | NE5   | NE5   | NE4    | NE4   | NNE6.0        | N8            |
| 18-Feb | NE5                           | ENE4  | ENE4     | E4    | ESE3  | ESE2  | E3    | E3        | ENE2  | NNE4  | N8    | N8    | NNW8  | NNW7  | NNW7  | N5    | N4    | N2    | ESE3  | SE5   | SE4   | SE5   | SE5    | SE6   | NE2.2         | N8            |
| 19-Feb | SE7                           | SE8   | SE8      | SE12  | SE11  | SE10  | SE11  | SE10      | SE11  | SE11  | SSE3  | SSE6  | S8    | WNW2  | NNW7  | N8    | NNW7  | NNE6  | NNE4  | N4    | N4    | N5    | N4     | NNW3  | SE3.1         | SE12          |
| 20-Feb | NE3                           | ENE3  | NE3      | ENE5  | NE5   | NE6   | NE4   | ENE4      | ENE3  | N3    | NNW11 | N12   | N10   | N9    | N8    | N7    | N7    | NE5   | NE4   | E3    | ENE3  | NNW6  | NNW10  | N11   | NNE5.2        | N12           |
| 21-Feb | N12                           | N13   | N12      | N11   | N11   | N11   | N11   | N14       | N14   | N13   | NNW14 | NNW15 | NNW15 | NNW15 | N13   | NNW14 | NNW12 | N8    | NNE6  | NNE6  | NE5   | NNE4  | NNE7   | NE6   | N10.6         | NNW15         |
| 22-Feb | NE2                           | SE1   | SE3      | SE3   | SE4   | SE3   | ESE3  | SE3       | NE3   | NNE7  | NNE9  | N9    | N6    | NNW6  | NW5   | NNW6  | N5    | NE3   | SE3   | E3    | SE4   | ESE4  | ESE4   | E4    | NE2.2         | N9            |
| 23-Feb | ENE3                          | NE4   | NE3      | NE5   | ENE5  | ENE5  | E4    | SE3       | SE2   | NNW2  | N9    | N10   | NNW7  | NW4   | W4    | SW2   | SW4   | S3    | SE5   | SSE7  | SSE7  | SSE7  | SSE8   | S7    | E1.2          | N10           |
| 24-Feb | SSE7                          | SSE8  | SSE9     | S9    | SSE9  | SSE9  | S9    | S9        | S10   | S13   | SSW15 | SSW18 | SSW15 | SSW15 | S16   | S14   | S13   | S14   | S15   | SSW13 | SSW13 | SSW12 | SSW12  | SSW11 | S11.9         | SSW18         |
| 25-Feb | SSW11                         | SSW10 | SSW11    | SW13  | SW12  | SW11  | SW10  | SW11      | SW10  | SW10  | SW9   | SW10  | WSW9  | SW13  | SW8   | WSW7  | WSW3  | SE4   | SE6   | SE7   | SE6   | SE5   | SE7    | SE7   | SSW7.2        | SW13          |
| 26-Feb | SE7                           | SE7   | SE8      | SE10  | SE9   | SE10  | SE11  | SE12      | SE13  | SE13  | SE15  | SE13  | SE11  | SE9   | ESE8  | ESE9  | ESE9  | E8    | E9    | ENE9  | ENE10 | E7    | E5     | NE3   | ESE8.8        | SE15          |
| 27-Feb | NE4                           | NNE3  | NNE4     | NNE4  | N5    | NNW9  | NNW10 | NNW10     | NNW10 | N12   | NNW12 | NNW12 | NNW11 | NNW12 | NNW14 | N12   | N11   | N9    | N10   | N10   | N8    | NNW6  | N5     | NNE4  | N8.4          | NNW14         |
| 28-Feb | NNE4                          | NNE4  | NE5      | NE5   | NE4   | NNE4  | NE4   | UO        | E2    | N3    | NNW5  | NNW6  | NW5   | NW5   | NW4   | N6    | NNW4  | NW3   | NNE0  | SSW1  | SE3   | SE5   | SE6    | SE6   | NNE2.0        | SSE6          |

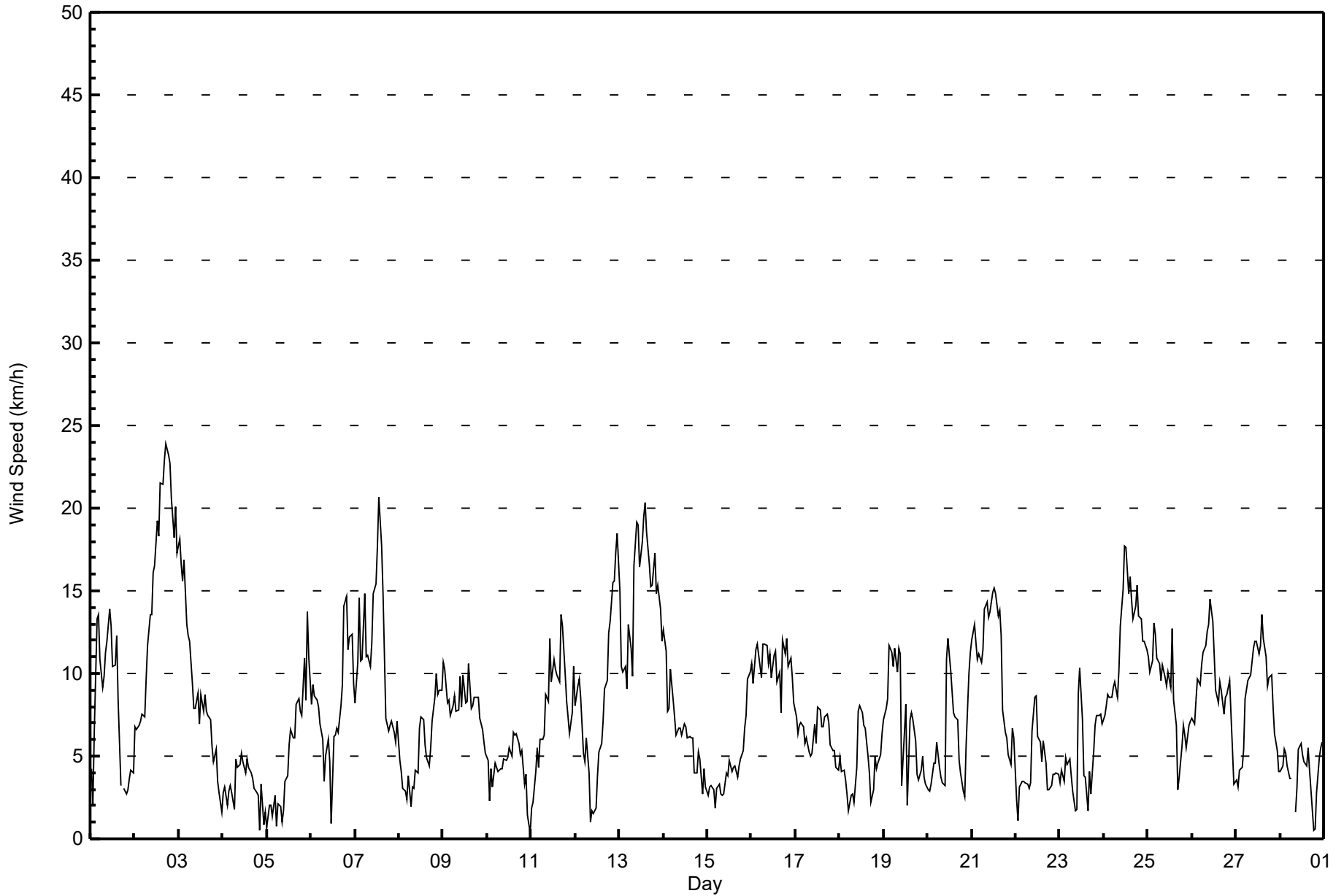
|   |                                    |
|---|------------------------------------|
| SE2.2 SE1.9 SSE2.0 SSE1.8 S1.4 SSW1.4 S1.4 SSE0.9 SE0.6 NW0.3 NNW2.0 NNW1.9 W2.1 NNW2.3 NNW1.7 NW1.2 NW0.6 E1.2 ESE2.2 ESE2.5 SE2.4 SE1.8 ESE2.5 SE2.2 SSE18 SSE17 SSE16 SSE17 NNW14 WSW15 S12 N14 NNW17 NNW19 NNW19 SSW18 SSE19 WSW21 SSE22 SSE21 SE23 SSE24 SSE23 SSE23 SSE21 SSE18 SSE20 SSE19 | Diurnal Average<br>Diurnal Maximum |
|---|------------------------------------|

UO - Unstable Operation  
 All monthly, daily, and diurnal averages have been calculated using vector methods



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Wind Speed (WS) - km/h**  
**Wapasu - February 2023**





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Wind Speed (WS) - km/h  
Wapasu - February 2023**

| <b>Wind Speed Ranges (km/h)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---------------------------------|------------------------|----------|---------------------|
| 0 - 5                           | 240                    | 35.82    | 35.82               |
| 6 - 11                          | 308                    | 45.97    | 81.79               |
| 12 - 19                         | 111                    | 16.57    | 98.36               |
| 20 - 28                         | 11                     | 1.64     | 100.00              |
| 29 - 38                         | 0                      | 0.00     | 100.00              |
| > 38                            | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 670

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Wind Speed (WS) - km/h  
Wapasu - February 2023**

| <b>Wind Speed<br/>Ranges (km/h)</b> | <b>Wind Direction</b> |            |           |            |           |            |           |            |           |            |           |            |           |            |           |            | <b>Totals</b> |
|-------------------------------------|-----------------------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|---------------|
|                                     | <b>N</b>              | <b>NNE</b> | <b>NE</b> | <b>ENE</b> | <b>E</b>  | <b>ESE</b> | <b>SE</b> | <b>SSE</b> | <b>S</b>  | <b>SSW</b> | <b>SW</b> | <b>WSW</b> | <b>W</b>  | <b>WNW</b> | <b>NW</b> | <b>NNW</b> |               |
| 0 - 5                               | 32                    | 28         | 36        | 23         | 12        | 14         | 27        | 10         | 11        | 8          | 7         | 4          | 3         | 4          | 9         | 12         | 240           |
| 6 - 11                              | 49                    | 27         | 8         | 2          | 3         | 3          | 30        | 45         | 36        | 25         | 24        | 10         | 11        | 2          | 4         | 29         | 308           |
| 12 - 19                             | 23                    | 0          | 0         | 0          | 0         | 0          | 8         | 27         | 8         | 8          | 6         | 8          | 2         | 0          | 0         | 21         | 111           |
| 20 - 28                             | 2                     | 0          | 0         | 0          | 0         | 0          | 1         | 7          | 0         | 0          | 0         | 1          | 0         | 0          | 0         | 0          | 11            |
| 29 - 38                             | 0                     | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0             |
| > 38                                | 0                     | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0             |
| <b>Totals</b>                       | <b>106</b>            | <b>55</b>  | <b>44</b> | <b>25</b>  | <b>15</b> | <b>17</b>  | <b>66</b> | <b>89</b>  | <b>55</b> | <b>41</b>  | <b>37</b> | <b>23</b>  | <b>16</b> | <b>6</b>   | <b>13</b> | <b>62</b>  | <b>670</b>    |

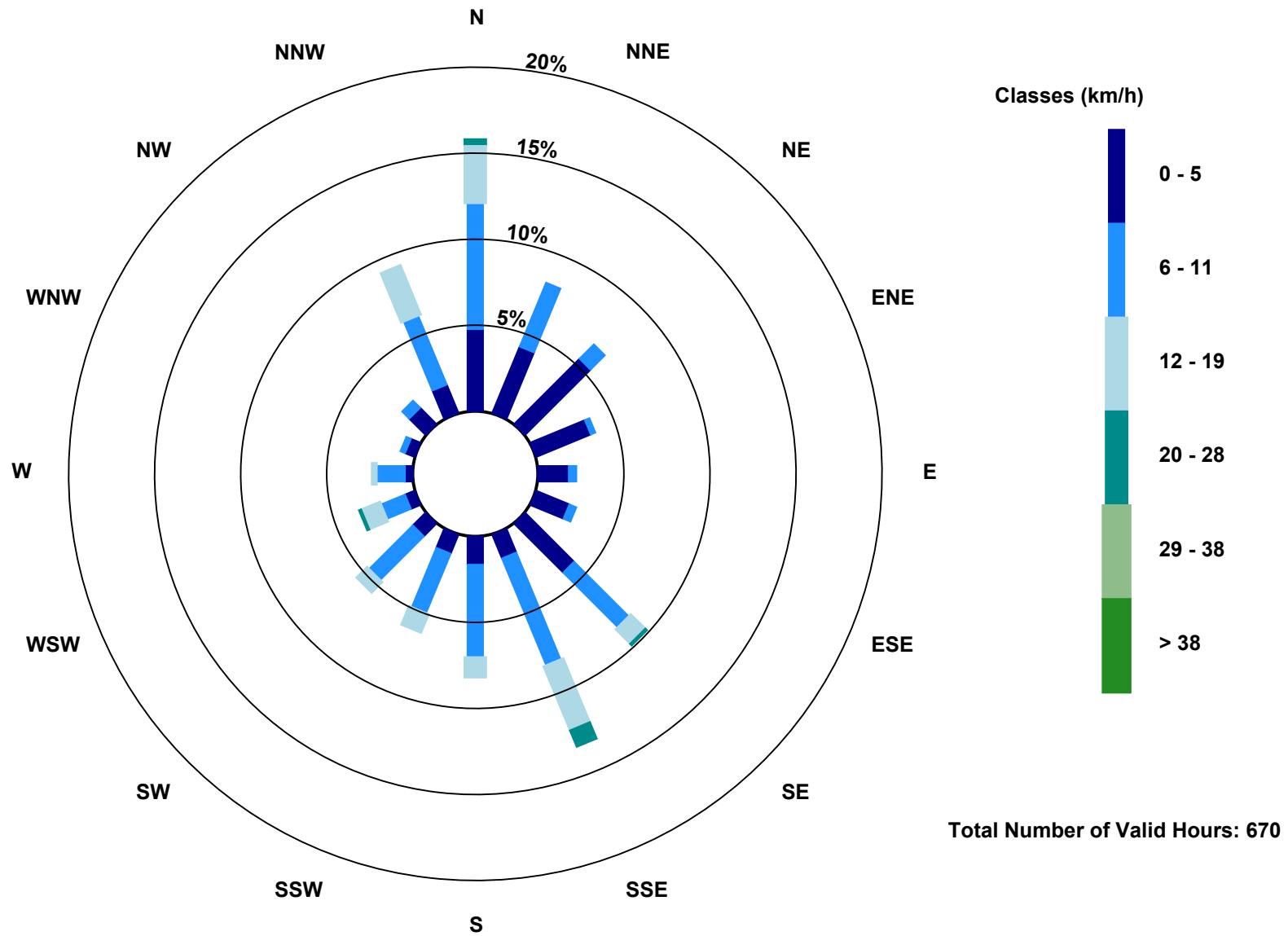
Total Number of Valid Hours: 670

Total Number of Hours: 672



Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Wind Speed (WS) - km/h  
Wapasu





**Wood Buffalo Environmental Association**  
**Summary of Hour Standard Deviations**

**Wind Speed (WS) - km/h**  
**Wapasu - February 2023**

| Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0<br>Maximum Value: 7 km/h on Feb 2 21:00<br>Minimum Value: 0 km/h on Feb 8 08:00<br>Percentiles: P <sub>1</sub> = 1 P <sub>10</sub> = 1 Q <sub>1</sub> = 1 Median = 2 Q <sub>3</sub> = 3 P <sub>90</sub> = 4 P <sub>99</sub> = 6 |                               |   |   |   |   |   |   |    |   |    |    |    |    |    |    |    | Hours in Service: 672<br>Hours of Data: 670<br>Hours of Missing Data: 2<br>Hours of Calibration: 0<br>Percent Operational Time: 99.7 |    |    |    |    |    |    |    |               |   |
|---|-------------------------------|---|---|---|---|---|---|----|---|----|----|----|----|----|----|----|--|----|----|----|----|----|----|----|---------------|---|
| Day   | Hourly Period Ending At (MST) |   |   |   |   |   |   |    |   |    |    |    |    |    |    |    |  |    |    |    |    |    |    |    | Daily Maximum |   |
|   | 1                             | 2 | 3 | 4 | 5 | 6 | 7 | 8  | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17   | 18 | 19 | 20 | 21 | 22 | 23 | 24 |               |   |
| 1-Feb   | 1                             | 1 | 3 | 4 | 3 | 3 | 3 | 3  | 3 | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 1  | UO | 1  | 1  | 1  | 1  | 1  | 1  | 1             | 4 |
| 2-Feb   | 1                             | 1 | 1 | 1 | 1 | 2 | 3 | 3  | 3 | 4  | 5  | 5  | 5  | 5  | 6  | 6  | 6  | 7  | 6  | 6  | 7  | 6  | 6  | 5  | 7             |   |
| 3-Feb   | 5                             | 5 | 5 | 5 | 4 | 4 | 4 | 3  | 2 | 2  | 2  | 2  | 2  | 3  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 1  | 1  | 5             |   |
| 4-Feb   | 1                             | 1 | 1 | 1 | 1 | 2 | 1 | 2  | 1 | 1  | 1  | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 2  | 2  | 2  | 2             |   |
| 5-Feb   | 1                             | 1 | 1 | 1 | 1 | 1 | 1 | 1  | 1 | 2  | 2  | 2  | 2  | 2  | 3  | 3  | 3  | 3  | 2  | 2  | 3  | 3  | 4  | 3  | 4             |   |
| 6-Feb   | 2                             | 3 | 3 | 3 | 3 | 2 | 2 | 1  | 1 | 2  | 2  | 1  | 2  | 2  | 2  | 2  | 3  | 3  | 3  | 4  | 4  | 4  | 4  | 3  | 4             |   |
| 7-Feb   | 3                             | 4 | 4 | 3 | 3 | 5 | 4 | 3  | 2 | 3  | 5  | 5  | 6  | 6  | 6  | 5  | 5  | 2  | 1  | 2  | 2  | 2  | 2  | 2  | 6             |   |
| 8-Feb   | 1                             | 1 | 1 | 1 | 1 | 1 | 1 | 0  | 1 | 1  | 2  | 2  | 2  | 2  | 2  | 2  | 1  | 1  | 1  | 2  | 2  | 2  | 2  | 2  | 2             |   |
| 9-Feb   | 3                             | 3 | 2 | 3 | 2 | 2 | 2 | 2  | 2 | 3  | 3  | 4  | 2  | 3  | 4  | 3  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 1  | 4             |   |
| 10-Feb  | 1                             | 1 | 1 | 1 | 2 | 1 | 1 | 1  | 1 | 1  | 1  | 1  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 1  | 2  | 2  | 2  | 1  | 2             |   |
| 11-Feb  | 2                             | 2 | 2 | 2 | 1 | 2 | 2 | 2  | 3 | 2  | 5  | 3  | 3  | 3  | 3  | 3  | 4  | 4  | 4  | 3  | 2  | 2  | 2  | 3  | 5             |   |
| 12-Feb  | 2                             | 2 | 2 | 3 | 1 | 1 | 1 | 2  | 2 | 1  | 2  | 1  | 1  | 2  | 2  | 2  | 3  | 2  | 3  | 3  | 4  | 5  | 4  | 5  | 5             |   |
| 13-Feb  | 5                             | 4 | 3 | 3 | 3 | 4 | 3 | 4  | 4 | 4  | 5  | 5  | 6  | 6  | 6  | 6  | 5  | 4  | 4  | 5  | 5  | 5  | 5  | 4  | 6             |   |
| 14-Feb  | 4                             | 4 | 3 | 3 | 3 | 2 | 2 | 2  | 2 | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 1  | 1  | 1  | 1  | 0  | 1  | 4             |   |
| 15-Feb  | 1                             | 1 | 1 | 1 | 1 | 1 | 1 | 1  | 1 | 1  | 2  | 2  | 2  | 1  | 2  | 2  | 1  | 1  | 1  | 1  | 1  | 2  | 2  | 3  | 3             |   |
| 16-Feb  | 3                             | 2 | 3 | 3 | 3 | 3 | 3 | 3  | 3 | 4  | 4  | 3  | 4  | 3  | 3  | 3  | 3  | 3  | 4  | 5  | 4  | 4  | 3  | 3  | 5             |   |
| 17-Feb  | 3                             | 2 | 2 | 2 | 2 | 2 | 2 | 2  | 2 | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 1  | 1  | 1  | 3             |   |
| 18-Feb  | 2                             | 1 | 1 | 1 | 1 | 1 | 1 | 1  | 1 | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 2             |   |
| 19-Feb  | 1                             | 2 | 2 | 3 | 3 | 2 | 3 | 2  | 3 | 3  | 3  | 2  | 3  | 2  | 2  | 2  | 2  | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 3             |   |
| 20-Feb  | 1                             | 1 | 1 | 1 | 1 | 1 | 1 | 1  | 2 | 4  | 3  | 3  | 3  | 3  | 2  | 2  | 3  | 1  | 1  | 1  | 1  | 3  | 2  | 3  | 4             |   |
| 21-Feb  | 3                             | 4 | 3 | 3 | 3 | 3 | 4 | 4  | 4 | 4  | 4  | 4  | 4  | 4  | 4  | 4  | 3  | 3  | 2  | 2  | 1  | 1  | 2  | 1  | 4             |   |
| 22-Feb  | 2                             | 1 | 1 | 1 | 1 | 1 | 0 | 1  | 1 | 3  | 3  | 3  | 2  | 2  | 2  | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 3             |   |
| 23-Feb  | 1                             | 1 | 1 | 1 | 1 | 1 | 1 | 1  | 1 | 2  | 3  | 3  | 2  | 2  | 2  | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 3             |   |
| 24-Feb  | 1                             | 2 | 2 | 2 | 2 | 2 | 3 | 2  | 4 | 4  | 5  | 6  | 6  | 6  | 5  | 5  | 5  | 5  | 5  | 4  | 4  | 4  | 4  | 4  | 6             |   |
| 25-Feb  | 3                             | 3 | 4 | 4 | 3 | 3 | 3 | 2  | 2 | 2  | 3  | 2  | 3  | 3  | 3  | 3  | 2  | 1  | 1  | 1  | 1  | 1  | 2  | 1  | 4             |   |
| 26-Feb  | 2                             | 1 | 2 | 2 | 2 | 2 | 3 | 3  | 3 | 4  | 4  | 4  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 2  | 1  | 4             |   |
| 27-Feb  | 1                             | 1 | 1 | 1 | 2 | 2 | 2 | 2  | 3 | 3  | 3  | 3  | 3  | 3  | 3  | 4  | 3  | 3  | 3  | 3  | 3  | 2  | 1  | 2  | 4             |   |
| 28-Feb  | 1                             | 1 | 1 | 1 | 1 | 1 | 1 | UO | 1 | 1  | 1  | 2  | 2  | 2  | 2  | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 2             |   |
| Diurnal Maximum   |                               |   |   |   |   |   |   |    |   |    |    |    |    |    |    |    |  |    |    |    |    |    |    | 5  |               |   |
| UO - Unstable Operation   |                               |   |   |   |   |   |   |    |   |    |    |    |    |    |    |    |  |    |    |    |    |    |    |    |               |   |



**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

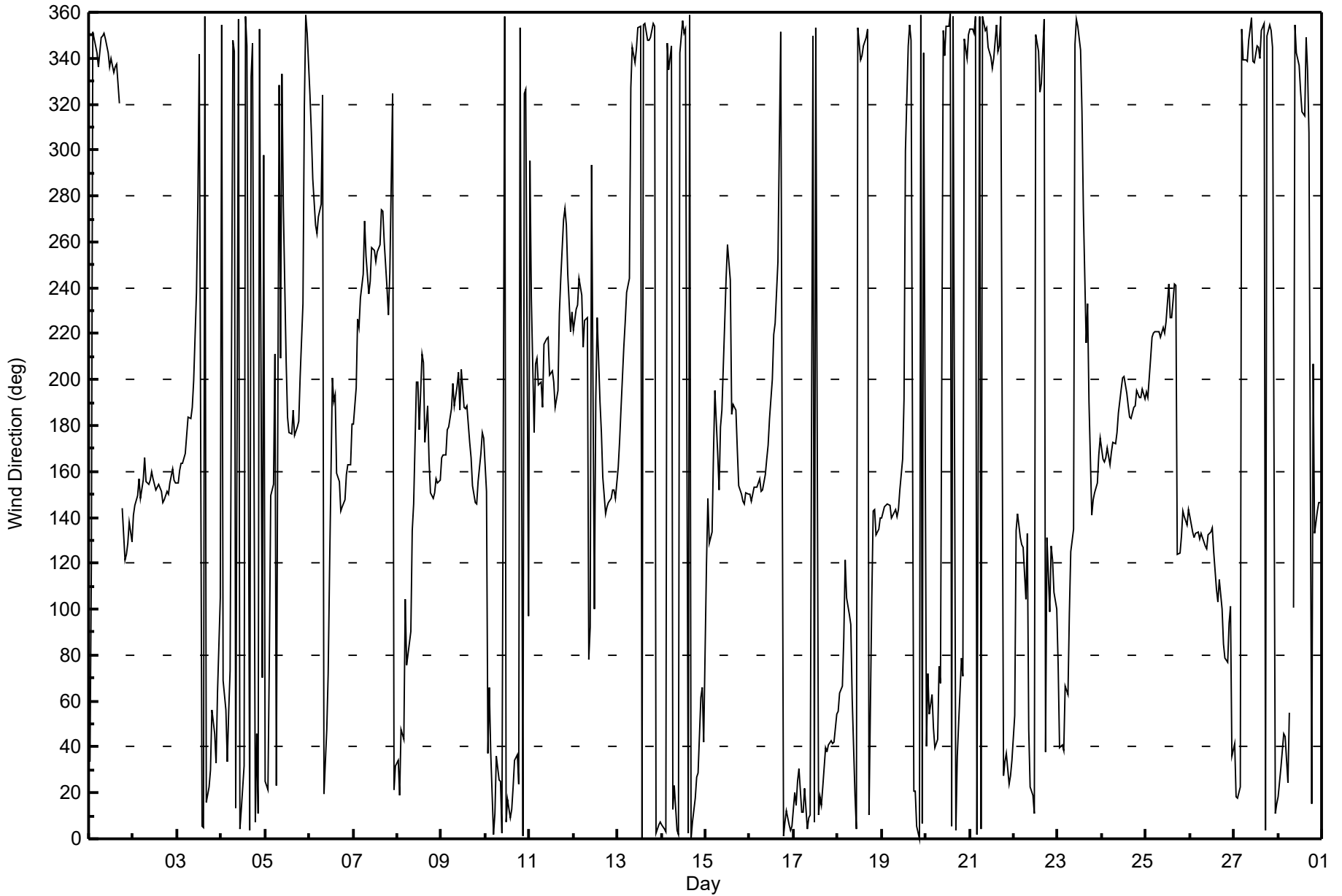
**Wind Direction (WD) - deg**  
**Wapasu - February 2023**

| Direction of Maximum Speed: 147 deg on Feb 2 18:00                                 |                               |       |       |       |       |       |       |       |       |       |   |       |       |       |       |       |      |       |       |       |       |       | Hours in Service:         | 672  |               |
|--|-------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---|-------|-------|-------|-------|-------|------|-------|-------|-------|-------|-------|---------------------------|------|---------------|
| Direction of Maximum Daily Speed Average: 153.3 deg on Feb 2                       |                               |       |       |       |       |       |       |       |       |       |   |       |       |       |       |       |      |       |       |       |       |       | Hours of Data:            | 670  |               |
| Direction of Minimum Speed: 97 deg on Feb 11 00:00                                 |                               |       |       |       |       |       |       |       |       |       | Direction of Minimum Daily Speed Average: 1.2 deg on Feb 23 |       |       |       |       |       |      |       |       |       |       |       | Hours of Missing Data:    | 2    |               |
| Monthly Average Direction: 157.1 deg   |                               |       |       |       |       |       |       |       |       |       |   |       |       |       |       |       |      |       |       |       |       |       | Percent Operational Time: | 99.7 |               |
| Day  | Hourly Period Ending At (MST) |       |       |       |       |       |       |       |       |       |   |       |       |       |       |       |      |       |       |       |       |       |                           |      | Daily Average |
|  | 1                             | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     | 10    | 11  | 12    | 13    | 14    | 15    | 16    | 17   | 18    | 19    | 20    | 21    | 22    | 23                        | 24   |               |
| 1-Feb  | 34                            | 121   | 351   | 345   | 343   | 336   | 349   | 350   | 351   | 348   | 342   | 336   | 340   | 334   | 336   | 338   | 321  | UO    | 144   | 121   | 124   | 129   | 138                       | 129  | 348.1         |
| 2-Feb  | 141                           | 146   | 149   | 157   | 148   | 156   | 166   | 156   | 154   | 156   | 160   | 157   | 152   | 153   | 154   | 151   | 146  | 147   | 152   | 150   | 155   | 161   | 156                       | 155  | 153.3         |
| 3-Feb  | 155                           | 161   | 164   | 164   | 168   | 176   | 184   | 183   | 188   | 200   | 238   | 278   | 342   | 5     | 5     | 358   | 16   | 22    | 30    | 56    | 46    | 33    | 63                        | 105  | 158.6         |
| 4-Feb  | 355                           | 69    | 56    | 33    | 56    | 73    | 348   | 343   | 13    | 357   | 4   | 13    | 32    | 358   | 346   | 4     | 332  | 347   | 7     | 46    | 11    | 353   | 70                        | 298  | 9.8           |
| 5-Feb  | 25                            | 21    | 78    | 149   | 154   | 211   | 23    | 328   | 209   | 333   | 275   | 208   | 184   | 177   | 176   | 187   | 176  | 179   | 182   | 201   | 233   | 319   | 359                       | 351  | 214.0         |
| 6-Feb  | 324                           | 308   | 287   | 267   | 264   | 271   | 277   | 324   | 20    | 48    | 72  | 118   | 201   | 190   | 193   | 160   | 156  | 143   | 145   | 148   | 159   | 163   | 163                       | 181  | 184.7         |
| 7-Feb  | 180                           | 197   | 226   | 223   | 235   | 246   | 269   | 254   | 238   | 243   | 258   | 256   | 251   | 256   | 259   | 274   | 274  | 260   | 240   | 228   | 246   | 325   | 21                        | 32   | 250.3         |
| 8-Feb  | 34                            | 19    | 48    | 44    | 104   | 76    | 85    | 90    | 134   | 146   | 199   | 199   | 178   | 211   | 207   | 172   | 188  | 165   | 151   | 148   | 151   | 157   | 155                       | 156  | 154.5         |
| 9-Feb  | 166                           | 167   | 167   | 178   | 179   | 187   | 198   | 188   | 197   | 203   | 186   | 204   | 188   | 187   | 188   | 172   | 166  | 154   | 146   | 146   | 156   | 168   | 177                       | 175  | 177.3         |
| 10-Feb   | 151                           | 37    | 66    | 38    | 2     | 11    | 36    | 25    | 25    | 2     | 358   | 8     | 17    | 9     | 13    | 23    | 34   | 37    | 24    | 353   | 1     | 325   | 326                       | 97   | 18.7          |
| 11-Feb   | 295                           | 235   | 177   | 207   | 209   | 198   | 199   | 188   | 215   | 218   | 218   | 202   | 204   | 199   | 188   | 196   | 229  | 244   | 270   | 274   | 268   | 246   | 221                       | 229  | 220.3         |
| 12-Feb   | 221                           | 231   | 233   | 244   | 237   | 214   | 226   | 227   | 78    | 92    | 294   | 100   | 192   | 227   | 191   | 177   | 158  | 142   | 144   | 147   | 148   | 152   | 152                       | 148  | 175.1         |
| 13-Feb   | 161                           | 173   | 187   | 214   | 225   | 238   | 244   | 327   | 345   | 338   | 344   | 353   | 354   | 0     | 354   | 355   | 348  | 348   | 349   | 355   | 354   | 3     | 6                         | 7    | 342.2         |
| 14-Feb   | 6                             | 4     | 3     | 347   | 335   | 345   | 13    | 23    | 4     | 2     | 342   | 356   | 351   | 353   | 2     | 359   | 0    | 7     | 18    | 27    | 28    | 62    | 66                        | 42   | 3.8           |
| 15-Feb   | 120                           | 148   | 129   | 134   | 168   | 195   | 168   | 152   | 180   | 187   | 224   | 244   | 259   | 243   | 185   | 189   | 187  | 170   | 154   | 150   | 147   | 146   | 151                       | 150  | 168.8         |
| 16-Feb   | 150                           | 147   | 153   | 153   | 153   | 157   | 151   | 152   | 159   | 166   | 171   | 183   | 200   | 220   | 225   | 251   | 303  | 352   | 1     | 7     | 12    | 6     | 4                         | 5    | 164.0         |
| 17-Feb   | 20                            | 15    | 25    | 30    | 12    | 12    | 22    | 4     | 9     | 10    | 350   | 7     | 353   | 10    | 18    | 15    | 22   | 40    | 38    | 41    | 43    | 41    | 42                        | 54   | 20.4          |
| 18-Feb   | 55                            | 63    | 67    | 87    | 121   | 105   | 98    | 93    | 61    | 19    | 4   | 354   | 339   | 341   | 345   | 349   | 353  | 10    | 105   | 143   | 143   | 133   | 135                       | 140  | 47.1          |
| 19-Feb   | 140                           | 145   | 145   | 146   | 145   | 140   | 141   | 144   | 141   | 143   | 152   | 165   | 191   | 299   | 345   | 354   | 348  | 21    | 21    | 6     | 0     | 359   | 7                         | 342  | 127.7         |
| 20-Feb   | 40                            | 72    | 54    | 63    | 48    | 40    | 43    | 75    | 68    | 352   | 341   | 354   | 354   | 359   | 5     | 358   | 4    | 36    | 51    | 79    | 71    | 348   | 340                       | 350  | 12.7          |
| 21-Feb   | 353                           | 353   | 351   | 358   | 2     | 358   | 4     | 358   | 352   | 353   | 344   | 340   | 336   | 340   | 355   | 343   | 345  | 358   | 28    | 33    | 37    | 24    | 28                        | 34   | 355.5         |
| 22-Feb   | 53                            | 134   | 142   | 131   | 128   | 127   | 105   | 133   | 47    | 23    | 19  | 11    | 351   | 343   | 325   | 329   | 357  | 38    | 131   | 99    | 128   | 122   | 107                       | 100  | 51.2          |
| 23-Feb   | 76                            | 40    | 41    | 39    | 67    | 63    | 99    | 125   | 135   | 346   | 357   | 354   | 344   | 317   | 274   | 216   | 233  | 190   | 141   | 148   | 151   | 155   | 167                       | 174  | 94.3          |
| 24-Feb   | 165                           | 164   | 166   | 170   | 163   | 168   | 173   | 172   | 177   | 186   | 196   | 201   | 201   | 194   | 189   | 184   | 183  | 188   | 188   | 195   | 192   | 192   | 196                       | 192  | 185.9         |
| 25-Feb   | 195                           | 192   | 209   | 219   | 220   | 221   | 221   | 221   | 218   | 223   | 220   | 225   | 242   | 227   | 227   | 242   | 241  | 124   | 125   | 132   | 143   | 140   | 137                       | 143  | 206.1         |
| 26-Feb   | 140                           | 134   | 131   | 133   | 134   | 130   | 133   | 129   | 127   | 126   | 132   | 134   | 136   | 125   | 109   | 103   | 113  | 100   | 85    | 78    | 77    | 94    | 101                       | 36   | 118.9         |
| 27-Feb   | 41                            | 18    | 18    | 23    | 353   | 339   | 339   | 339   | 348   | 357   | 339   | 338   | 345   | 345   | 340   | 352   | 355  | 3     | 350   | 354   | 352   | 345   | 11                        | 15   | 350.9         |
| 28-Feb   | 18                            | 31    | 38    | 46    | 44    | 24    | 55    | UO    | 101   | 354   | 342   | 337   | 326   | 317   | 315   | 349   | 335  | 307   | 15    | 207   | 133   | 143   | 146                       | 146  | 16.0          |
| 130.3  | 143.3                         | 154.5 | 164.8 | 172.9 | 192.4 | 178.4 | 158.2 | 135.5 | 315.5 | 300.8 | 295.0   | 277.1 | 281.5 | 289.7 | 314.4 | 319.2 | 98.0 | 116.2 | 119.2 | 133.8 | 123.8 | 121.1 | 128.4                     |      |               |
| Diurnal Average  |                               |       |       |       |       |       |       |       |       |       |   |       |       |       |       |       |      |       |       |       |       |       |                           |      |               |
| UO - Unstable Operation  |                               |       |       |       |       |       |       |       |       |       |   |       |       |       |       |       |      |       |       |       |       |       |                           |      |               |
| All monthly, daily, and diurnal averages have been calculated using vector methods |                               |       |       |       |       |       |       |       |       |       |   |       |       |       |       |       |      |       |       |       |       |       |                           |      |               |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Wind Direction (WD) - deg**  
**Wapasu - February 2023**







**Wood Buffalo Environmental Association**  
**Summary of Hour Standard Deviations**

**Wind Direction (WD) - deg**  
**Wapasu - February 2023**

| Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0<br>Maximum Value: 105 deg on Feb 6 12:00<br>Minimum Value: 5 deg on Feb 2 01:00<br>Percentiles: P <sub>1</sub> = 8 P <sub>10</sub> = 16 Q <sub>1</sub> = 19 Median = 24 Q <sub>3</sub> = 28 P <sub>90</sub> = 38 P <sub>99</sub> = 84 |                               |    |    |    |    |    |    |    |    |    |    |     |    |    |    |    |    | Hours in Service: 672<br>Hours of Data: 670<br>Hours of Missing Data: 2<br>Hours of Calibration: 0<br>Percent Operational Time: 99.7 |    |    |    |    |    |    |               |  |
|---|-------------------------------|----|----|----|----|----|----|----|----|----|----|-----|----|----|----|----|----|--|----|----|----|----|----|----|---------------|--|
| Day   | Hourly Period Ending At (MST) |    |    |    |    |    |    |    |    |    |    |     |    |    |    |    |    |  |    |    |    |    |    |    | Daily Maximum |  |
|   | 1                             | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12  | 13 | 14 | 15 | 16 | 17 | 18   | 19 | 20 | 21 | 22 | 23 | 24 |               |  |
| 1-Feb   | 26                            | 25 | 23 | 18 | 18 | 14 | 19 | 22 | 24 | 18 | 18 | 19  | 21 | 19 | 17 | 18 | 15 | UO   | 13 | 22 | 23 | 10 | 9  | 12 | 26            |  |
| 2-Feb   | 5                             | 7  | 9  | 13 | 13 | 19 | 23 | 20 | 17 | 22 | 23 | 23  | 20 | 21 | 20 | 21 | 19 | 19   | 19 | 20 | 23 | 24 | 21 | 20 | 24            |  |
| 3-Feb   | 20                            | 25 | 26 | 25 | 28 | 29 | 28 | 29 | 25 | 29 | 22 | 39  | 19 | 25 | 29 | 24 | 29 | 30   | 27 | 32 | 23 | 35 | 26 | 68 |               |  |
| 4-Feb   | 55                            | 24 | 52 | 46 | 26 | 38 | 45 | 37 | 29 | 25 | 25 | 36  | 32 | 23 | 25 | 22 | 25 | 39   | 33 | 42 | 97 | 38 | 81 | 76 |               |  |
| 5-Feb   | 84                            | 43 | 20 | 42 | 23 | 78 | 59 | 63 | 77 | 58 | 54 | 41  | 30 | 33 | 45 | 47 | 27 | 29   | 27 | 25 | 32 | 31 | 27 | 23 | 84            |  |
| 6-Feb   | 19                            | 22 | 29 | 27 | 30 | 28 | 28 | 36 | 24 | 27 | 41 | 105 | 31 | 32 | 29 | 25 | 27 | 18   | 17 | 24 | 23 | 23 | 26 | 30 | 105           |  |
| 7-Feb   | 28                            | 30 | 20 | 20 | 18 | 25 | 26 | 24 | 16 | 20 | 25 | 25  | 24 | 24 | 25 | 27 | 27 | 26   | 19 | 17 | 19 | 29 | 30 | 24 | 30            |  |
| 8-Feb   | 26                            | 33 | 27 | 24 | 29 | 10 | 63 | 16 | 21 | 7  | 35 | 29  | 29 | 26 | 29 | 27 | 22 | 16   | 13 | 15 | 14 | 16 | 15 | 17 | 63            |  |
| 9-Feb   | 22                            | 22 | 23 | 25 | 28 | 25 | 21 | 24 | 23 | 22 | 29 | 26  | 29 | 29 | 27 | 26 | 24 | 18   | 18 | 17 | 21 | 23 | 20 | 22 | 29            |  |
| 10-Feb  | 15                            | 65 | 27 | 31 | 26 | 26 | 21 | 24 | 23 | 24 | 21 | 24  | 27 | 27 | 27 | 28 | 28 | 25   | 27 | 28 | 47 | 33 | 90 | 95 | 95            |  |
| 11-Feb  | 89                            | 58 | 31 | 39 | 29 | 26 | 27 | 28 | 23 | 18 | 18 | 28  | 24 | 26 | 29 | 27 | 18 | 21   | 27 | 27 | 26 | 23 | 17 | 16 | 89            |  |
| 12-Feb  | 17                            | 15 | 14 | 24 | 21 | 15 | 11 | 18 | 84 | 70 | 71 | 62  | 33 | 29 | 34 | 26 | 22 | 17   | 18 | 18 | 17 | 20 | 19 | 19 | 84            |  |
| 13-Feb  | 24                            | 31 | 27 | 26 | 17 | 19 | 20 | 31 | 20 | 16 | 19 | 24  | 25 | 27 | 25 | 24 | 22 | 20   | 20 | 24 | 24 | 27 | 28 | 29 | 31            |  |
| 14-Feb  | 28                            | 28 | 27 | 22 | 16 | 21 | 28 | 28 | 27 | 26 | 25 | 28  | 25 | 27 | 25 | 27 | 24 | 21   | 16 | 19 | 23 | 32 | 8  | 18 | 32            |  |
| 15-Feb  | 20                            | 26 | 31 | 33 | 54 | 19 | 18 | 17 | 20 | 28 | 27 | 43  | 27 | 39 | 35 | 28 | 24 | 14   | 11 | 11 | 12 | 16 | 17 | 18 | 54            |  |
| 16-Feb  | 18                            | 18 | 18 | 19 | 20 | 20 | 19 | 19 | 24 | 26 | 27 | 29  | 27 | 19 | 25 | 22 | 32 | 24   | 25 | 29 | 29 | 28 | 27 | 28 | 32            |  |
| 17-Feb  | 29                            | 29 | 29 | 25 | 29 | 30 | 29 | 28 | 27 | 29 | 22 | 33  | 28 | 30 | 31 | 28 | 31 | 23   | 24 | 22 | 20 | 16 | 16 | 15 | 33            |  |
| 18-Feb  | 18                            | 13 | 12 | 16 | 39 | 54 | 21 | 11 | 44 | 27 | 27 | 26  | 25 | 28 | 26 | 31 | 29 | 50   | 25 | 9  | 9  | 12 | 8  | 8  | 54            |  |
| 19-Feb  | 8                             | 14 | 17 | 17 | 16 | 17 | 18 | 17 | 16 | 20 | 91 | 35  | 28 | 80 | 21 | 21 | 19 | 27   | 25 | 21 | 17 | 21 | 22 | 24 | 91            |  |
| 20-Feb  | 23                            | 19 | 23 | 11 | 25 | 18 | 16 | 17 | 20 | 70 | 22 | 24  | 28 | 28 | 29 | 29 | 27 | 22   | 10 | 19 | 40 | 20 | 15 | 22 | 70            |  |
| 21-Feb  | 22                            | 20 | 20 | 27 | 27 | 23 | 28 | 24 | 22 | 25 | 22 | 20  | 20 | 19 | 25 | 20 | 18 | 26   | 24 | 19 | 18 | 20 | 21 | 19 | 28            |  |
| 22-Feb  | 45                            | 69 | 31 | 17 | 25 | 16 | 16 | 20 | 44 | 27 | 31 | 31  | 33 | 40 | 56 | 32 | 25 | 24   | 33 | 25 | 19 | 20 | 14 | 20 | 69            |  |
| 23-Feb  | 27                            | 18 | 26 | 20 | 12 | 20 | 24 | 34 | 52 | 75 | 27 | 24  | 33 | 58 | 56 | 81 | 29 | 30   | 10 | 6  | 10 | 11 | 13 | 18 | 81            |  |
| 24-Feb  | 12                            | 13 | 17 | 18 | 16 | 23 | 22 | 22 | 26 | 27 | 27 | 27  | 26 | 30 | 29 | 29 | 28 | 28   | 28 | 27 | 26 | 28 | 27 | 27 | 30            |  |
| 25-Feb  | 26                            | 27 | 24 | 17 | 17 | 15 | 15 | 16 | 17 | 18 | 17 | 27  | 18 | 35 | 27 | 49 | 16 | 12   | 11 | 13 | 12 | 13 | 15 | 15 | 49            |  |
| 26-Feb  | 17                            | 13 | 15 | 16 | 16 | 15 | 17 | 18 | 19 | 20 | 18 | 21  | 24 | 24 | 29 | 23 | 25 | 24   | 23 | 24 | 24 | 28 | 31 | 26 | 31            |  |
| 27-Feb  | 24                            | 22 | 25 | 27 | 20 | 19 | 15 | 15 | 20 | 24 | 19 | 19  | 23 | 22 | 17 | 24 | 25 | 26   | 20 | 23 | 21 | 18 | 25 | 24 | 27            |  |
| 28-Feb  | 18                            | 18 | 18 | 18 | 16 | 20 | 13 | UO | 49 | 31 | 28 | 38  | 43 | 49 | 54 | 30 | 26 | 29   | 76 | 85 | 24 | 9  | 5  | 7  | 85            |  |
|   |                               |    |    |    |    |    |    |    |    |    |    |     |    |    |    |    |    | 89 69 52 46 54 78 63 63 84 75 91 105 43 80 56 81 49 50 76 85 97 38 90 95   |    |    |    |    |    |    |               |  |
|   |                               |    |    |    |    |    |    |    |    |    |    |     |    |    |    |    |    | Diurnal Maximum  |    |    |    |    |    |    |               |  |
| UO - Unstable Operation   |                               |    |    |    |    |    |    |    |    |    |    |     |    |    |    |    |    |  |    |    |    |    |    |    |               |  |



## WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY  
MONITORING PROGRAM  
MONTHLY REPORT

### **AMS18 STONY MOUNTAIN FEBRUARY 2023**

Operations, Data Collection,  
QA/QC, Data Validation and Reporting by:  
Wood Buffalo Environmental Association  
Fort McMurray, Alberta

March 31, 2023

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - STONY MOUNTAIN (AMS18)  
FEBRUARY 2023

MONTHLY SUMMARY for  
AMD SECTION III.B.1(c)

| Parameter                             | Hours of Data | Hours of Calibration | Hours without Data | Operational Time | Maximum 1-Hour Value | 1-Hour Exceedances | Maximum 24-Hour Value | 24-Hour Exceedances |
|---------------------------------------|---------------|----------------------|--------------------|------------------|----------------------|--------------------|-----------------------|---------------------|
| SO2(ppb) Average                      | 638           | 31                   | 34                 | 99.55            | 9.9                  | 0                  | 3.3                   | 0                   |
| TRS(ppb) Average                      | 637           | 33                   | 35                 | 99.7             | 0.6                  | 0                  | 0.3                   | 0                   |
| THC(ppm) Average                      | 638           | 31                   | 34                 | 99.55            | 2.2                  | -                  | 2.2                   | -                   |
| NMHC(ppm) Average                     | 638           | 31                   | 34                 | 99.55            | 0.005                | -                  | 0                     | -                   |
| CH4(ppm) Average                      | 638           | 31                   | 34                 | 99.55            | 2.2                  | -                  | 2.2                   | -                   |
| O3 (ppb) Average                      | 639           | 32                   | 33                 | 99.85            | 43.7                 | 0                  | 41.2                  | -                   |
| NO2 (ppb) Average                     | 639           | 33                   | 33                 | 100              | 13.5                 | 0                  | 4.7                   | -                   |
| NO (ppb) Average                      | 639           | 33                   | 33                 | 100              | 19.4                 | -                  | 1                     | -                   |
| NOX (ppb) Average                     | 639           | 33                   | 33                 | 100              | 23.6                 | -                  | 5                     | -                   |
| PM2.5 (ug/m3) Average                 | 671           | 1                    | 1                  | 100              | 24.2                 | 0                  | 6.8                   | 0                   |
| CO(ppm) Average                       | 640           | 31                   | 32                 | 99.85            | 0.2                  | 0                  | 0.2                   | 0                   |
| CO2(ppm) Average                      | 637           | 34                   | 35                 | 99.85            | 452.4                | 0                  | 449.9                 | 0                   |
| Temperature 2 m (C) Average           | 672           | 0                    | 0                  | 100              | 4.2                  | -                  | 1.3                   | -                   |
| Relative Humidity (%) Average         | 672           | 0                    | 0                  | 100              | 96.8                 | -                  | 88.9                  | -                   |
| Wind Speed 20 m (km/h) Average        | 671           | 0                    | 1                  | 99.85            | 29                   | -                  | 19                    | -                   |
| Wind Direction 20 m (deg) Average     | 671           | 0                    | 1                  | 99.85            | -                    | -                  | -                     | -                   |
| Precipitation (mm) Total              | 672           | 0                    | 0                  | 100              | 0.9                  | -                  | 2.9                   | -                   |
| Leaf Wetness (% of range) Average     | 672           | 0                    | 0                  | 100              | 67.3                 | -                  | 10.3                  | -                   |
| Global Solar Radiation (W/m2) Average | 672           | 0                    | 0                  | 100              | 532.5                | -                  | 113.1                 | -                   |

Note : Operational time includes periods of data collection and instrument calibration

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - STONY MOUNTAIN (AMS18)  
 FEBRUARY 2023

MONTHLY SUMMARY FOR AIR QUALITY/ METEOROLOGICAL MONITORING MEASUREMENTS

| Parameter                             | Number | Mean   | StnDev | Total | Percentile |       |       |        |       |       |       |
|---------------------------------------|--------|--------|--------|-------|------------|-------|-------|--------|-------|-------|-------|
|                                       |        |        |        |       | Min        | P10   | Q1    | Median | Q3    | P90   | Max   |
| SO2 (ppb) Average                     | 638    | 0.92   | 1.4    | -     | 0          | 0.1   | 0.2   | 0.4    | 1.1   | 2.3   | 9.9   |
| TRS (ppb) Average                     | 637    | 0.21   | 0.1    | -     | 0.1        | 0.1   | 0.2   | 0.2    | 0.3   | 0.3   | 0.6   |
| THC (ppm) Average                     | 638    | 2.08   | 0      | -     | 2          | 2     | 2.1   | 2.1    | 2.1   | 2.1   | 2.2   |
| NMHC(ppm) Average                     | 638    | 0      | 0      | -     | 0          | 0     | 0     | 0      | 0     | 0     | 0.005 |
| CH4(ppm) Average                      | 638    | 2.08   | 0      | -     | 2          | 2     | 2.1   | 2.1    | 2.1   | 2.1   | 2.2   |
| O3 (ppb) Average                      | 639    | 33.74  | 5.4    | -     | 16.8       | 25.9  | 30.8  | 34.5   | 38    | 40.1  | 43.7  |
| NO2 (ppb) Average                     | 639    | 2.04   | 1.8    | -     | 0.1        | 0.4   | 0.7   | 1.5    | 2.7   | 4.3   | 13.5  |
| NO (ppb) Average                      | 639    | 0.19   | 0.8    | -     | 0          | 0     | 0     | 0      | 0.1   | 0.6   | 19.4  |
| NOX (ppb) Average                     | 639    | 2.23   | 2.1    | -     | 0.1        | 0.5   | 0.8   | 1.6    | 3     | 4.6   | 23.6  |
| PM2.5 (ug/m3) Average                 | 671    | 2.73   | 2      | -     | 0.4        | 1     | 1.4   | 2.2    | 3.5   | 5.5   | 24.2  |
| CO(ppm) Average                       | 640    | 0.15   | 0      | -     | 0.1        | 0.1   | 0.1   | 0.1    | 0.2   | 0.2   | 0.2   |
| CO2(ppm) Average                      | 637    | 440.35 | 4.6    | -     | 431        | 435.3 | 437   | 439.6  | 443.5 | 446.8 | 452.4 |
| Temperature 2 m (C) Average           | 672    | -11.54 | 9.5    | -     | -32.4      | -23.7 | -19.1 | -11.9  | -2.2  | 0.7   | 4.2   |
| Relative Humidity (%) Average         | 672    | 70.39  | 13     | -     | 31.1       | 51.2  | 62.1  | 72.4   | 79.4  | 85.2  | 96.8  |
| Wind Speed 10 m (km/h) Average        | 671    | 12     | 5      | -     | 1          | 6     | 8     | 12     | 16    | 19    | 29    |
| Wind Direction 10 m (deg) Average     | 671    | -      | -      | -     | -          | -     | -     | -      | -     | -     | -     |
| Precipitation (mm) Total              | 672    | -      | -      | 9.55  | -          | -     | -     | -      | -     | -     | -     |
| Surface Wetness (% of range) Average  | 672    | 2.44   | 3.6    | -     | 1          | 1.5   | 1.7   | 1.9    | 2.2   | 3     | 67.3  |
| Global Solar Radiation (W/m2) Average | 672    | 59.12  | 102.1  | -     | 0          | 0     | 0     | 0.6    | 94.1  | 203.9 | 532.5 |

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - STONY MOUNTAIN (AMS18)  
 FEBRUARY 2023

MONTHLY SUMMARY

| Parameter                  | Period<br>Start   | Period<br>End     | Duration<br>(Hours) | Notes   |
|----------------------------|-------------------|-------------------|---------------------|---|
| SO2                        | 03 Feb 2023 12:00 | 03 Feb 2023 13:00 | 2                   | Maintenance - station operator activities         |
| THC/NMHC/CH4               | 03 Feb 2023 12:00 | 03 Feb 2023 13:00 | 2                   | Maintenance - replaced support gas cylinder       |
| TRS                        | 08 Feb 2023 12:00 | 08 Feb 2023 12:00 | 1                   | Maintenance - station operator activities         |
| CO, CO2 O3, SO2, THC, TRS  | 22 Feb 2023 15:00 | 22 Feb 2023 15:00 | 1                   | Maintenance - sample manifold cleaned             |
| Wind Speed, Wind Direction | 14 Feb 2023 08:00 | 14 Feb 2023 08:00 | 1                   | Flat line in sensor output signal - Sensor frozen |



Wood Buffalo Environmental Association

Summary of Hour Averages

Sulphur Dioxide (SO<sub>2</sub>) - ppb  
Stony Mountain - February 2023

|   |  |          |                           |      |
|---|--|----------|---------------------------|------|
| Number of Exceedences (AAAQO):              | 1-hr: 0  | 24-hr: 0 | Hours in Service:         | 672  |
| Maximum Value: 9.9 ppb on Feb 21 11:00      | Maximum Daily Average: 3.3 ppb on Feb 23   |          | Hours of Data:            | 638  |
| Minimum Value: 0.0 ppb on Feb 1 01:00       | Minimum Daily Average: 0.0 ppb on Feb 6  |          | Hours of Missing Data:    | 34   |
| Maximum Diurnal Average: 1.5 ppb at hour 10 | Minimum Diurnal Average: 0.6 ppb at hour 20  |          | Hours of Calibration:     | 31   |
| Monthly Average: 0.92 ppb                   | Percentiles: P <sub>1</sub> = 0.0 P <sub>10</sub> = 0.1 Q <sub>1</sub> = 0.2 Median = 0.4 Q <sub>3</sub> = 1.1 P <sub>90</sub> = 2.3 P <sub>99</sub> = 6.7 |          | Percent Operational Time: | 99.6 |

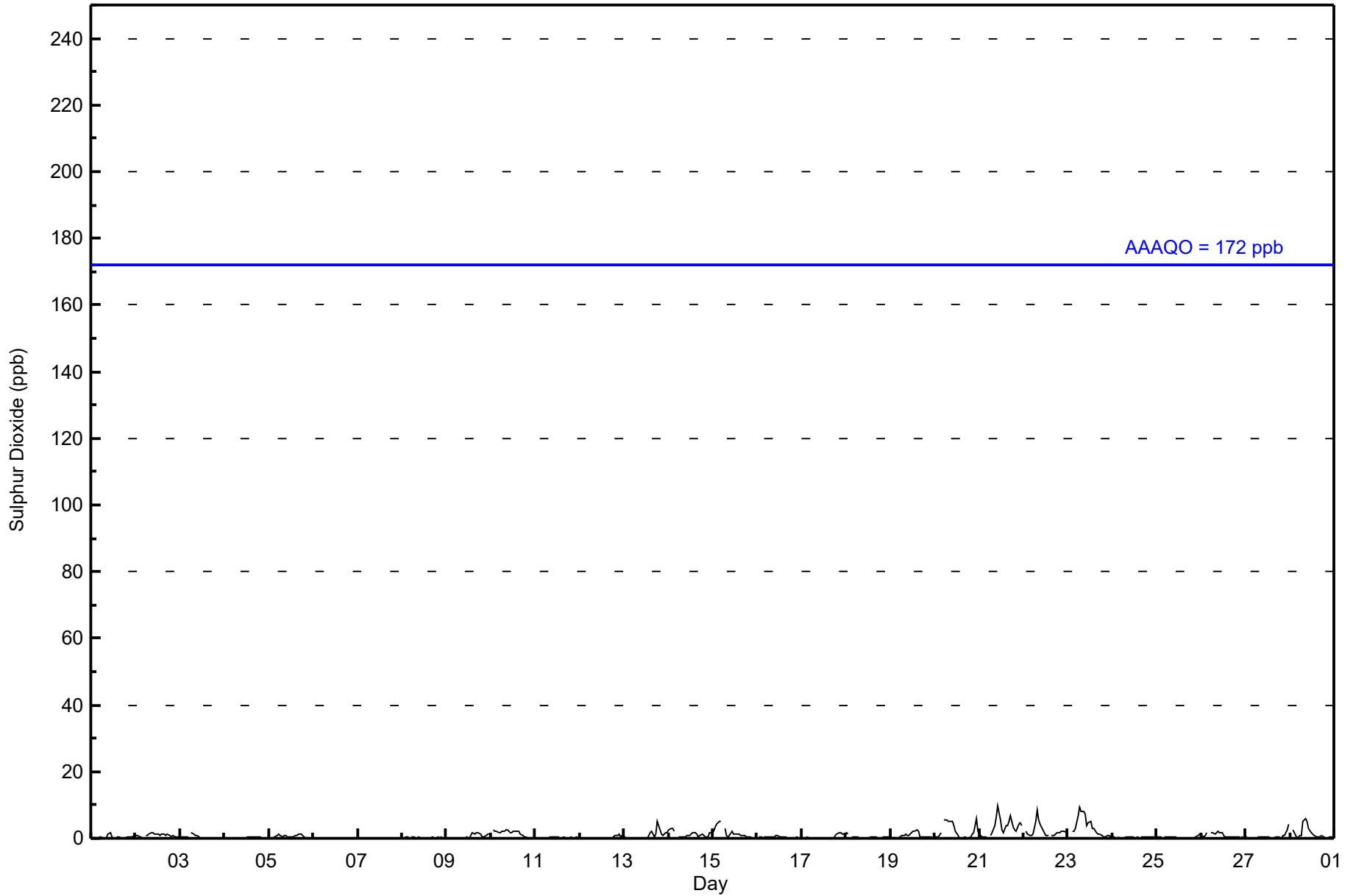
| Day    | Hourly Period Ending At (MST) |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Daily Average | Daily Maximum |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
|--------|-------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---------------|---------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----------------|--|
|        | 1                             | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19  | 20  | 21  | 22  | 23  | 24  |               |               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 1-Feb  | 0.0                           | 0.0 | 0.0 | Z   | 0.4 | 0.4 | 0.0 | 0.1 | 0.0 | 1.3 | 1.6 | 0.5 | 0.0 | 0.1 | 0.3 | 0.3 | 0.2 | 0.1 | 0.2 | 0.3 | 0.5 | 0.3 | 0.5 | 1.0 | 0.4           | 1.6           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 2-Feb  | 0.8                           | 0.7 | 0.6 | 0.3 | Z   | 1.0 | 0.8 | 1.2 | 1.8 | 1.6 | 1.2 | 1.3 | 1.1 | 1.0 | 1.4 | 1.1 | 0.7 | 1.4 | 1.0 | 0.5 | 0.9 | 0.5 | 0.4 | 0.3 | 0.9           | 1.8           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 3-Feb  | 0.2                           | 0.3 | 0.3 | 0.4 | 0.6 | Z   | 1.6 | 1.5 | 1.0 | 0.8 | 0.5 | M   | M   | 0.2 | 0.1 | 0.0 | 0.0 | 0.0 | 0.1 | 0.2 | 0.2 | 0.1 | 0.1 | 0.2 | 0.4           | 1.6           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 4-Feb  | Z                             | 0.2 | 0.2 | 0.2 | 0.1 | 0.1 | 0.1 | 0.2 | 0.1 | 0.1 | 0.2 | 0.2 | 0.4 | 0.3 | 0.4 | 0.5 | 0.5 | 0.6 | 0.6 | 0.3 | 0.1 | 0.1 | 0.1 | 0.0 | 0.2           | 0.6           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 5-Feb  | 0.1                           | Z   | 0.1 | 0.3 | 0.9 | 1.3 | 0.8 | 0.6 | 0.7 | 0.7 | 0.6 | 0.5 | 0.5 | 0.6 | 0.7 | 0.9 | 1.4 | 1.1 | 0.7 | 0.3 | 0.2 | 0.1 | 0.1 | 0.0 | 0.6           | 1.4           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 6-Feb  | 0.1                           | 0.0 | Z   | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.1 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0           | 0.1           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 7-Feb  | 0.0                           | 0.1 | 0.1 | Z   | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.1 | 0.2 | 0.1 | 0.2 | 0.2 | 0.1 | 0.2 | 0.1           | 0.2           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 8-Feb  | 0.2                           | 0.2 | 0.3 | 0.5 | Z   | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 | 0.1 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.3 | 0.2 | 0.3 | 0.2 | 0.1 | 0.2           | 0.5           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 9-Feb  | 0.2                           | 0.1 | 0.1 | 0.2 | 0.2 | Z   | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.8 | 1.5 | 1.5 | 1.6 | 1.5 | 1.1 | 0.6 | 0.6 | 0.9 | 1.1 | 1.5 | 0.6           | 1.6           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 10-Feb | Z                             | 2.4 | 2.2 | 2.1 | 1.9 | 1.9 | 2.3 | 2.3 | 2.7 | 2.5 | 1.6 | 1.8 | 1.9 | 2.3 | 2.2 | 2.0 | 1.4 | 0.7 | 0.3 | 0.3 | 0.2 | 0.0 | 0.0 | 0.1 | 1.5           | 2.7           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 11-Feb | 0.1                           | Z   | 0.0 | 0.1 | 0.1 | 0.1 | 0.0 | 0.1 | 0.2 | 0.4 | 0.3 | 0.4 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.1 | 0.2 | 0.2 | 0.1 | 0.2 | 0.2 | 0.2           | 0.4           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 12-Feb | 0.1                           | 0.2 | Z   | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.1 | 0.1 | 0.2 | 0.1 | 0.2 | 0.1 | 0.1 | 0.1 | 0.2 | 0.9 | 0.7 | 1.3 | 0.4 | 0.7 | 0.3           | 1.3           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 13-Feb | 0.6                           | 0.2 | 0.2 | Z   | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.0 | 0.7 | 1.5 | 2.0 | 0.6 | 1.3 | 5.0 | 2.4 | 1.3 | 1.0 | 1.5 | 1.9 | 0.9           | 5.0           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 14-Feb | 2.6                           | 3.1 | 2.8 | 2.0 | Z   | 0.5 | 0.5 | 0.6 | 0.6 | 0.4 | 0.8 | 0.9 | 1.1 | 1.5 | 1.6 | 1.2 | 0.5 | 0.7 | 1.2 | 0.8 | 0.3 | 0.4 | 1.6 | 1.8 | 1.2           | 3.1           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 15-Feb | 2.3                           | 3.4 | 4.1 | 5.1 | 5.1 | Z   | 3.0 | 0.8 | 0.5 | 0.9 | 2.1 | 1.4 | 1.3 | 1.4 | 1.5 | 1.0 | 0.8 | 0.7 | 0.6 | 0.5 | 0.3 | 0.1 | 0.0 | 0.0 | 1.6           | 5.1           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 16-Feb | Z                             | 0.2 | 0.5 | 0.2 | 0.3 | 0.5 | 0.4 | 0.4 | 0.5 | 0.5 | 0.6 | 0.8 | 0.5 | 0.5 | 0.4 | 0.2 | 0.1 | 0.1 | 0.0 | 0.1 | 0.0 | 0.3 | 0.2 | 0.2 | 0.3           | 0.8           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 17-Feb | 0.4                           | Z   | 0.1 | 0.6 | 0.2 | 0.1 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | C   | C   | C   | 0.0 | 0.0 | 0.0 | 0.0 | 0.8 | 1.4 | 1.6 | 1.5 | 1.2 | 1.2 | 0.5           | 1.6           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 18-Feb | 1.8                           | 1.4 | Z   | 0.4 | 0.4 | 0.3 | 0.3 | 0.2 | 0.2 | 0.1 | 0.2 | 0.2 | 0.2 | 0.3 | 0.3 | 0.2 | 0.3 | 0.2 | 0.2 | 0.1 | 0.3 | 0.6 | 0.3 | 0.4 | 0.4           | 1.8           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 19-Feb | 0.3                           | 0.2 | 0.3 | Z   | 0.5 | 0.6 | 0.8 | 0.8 | 1.2 | 0.7 | 0.9 | 1.6 | 2.3 | 2.1 | 2.4 | 2.0 | 0.3 | 0.2 | 0.2 | 0.3 | 0.3 | 0.3 | 0.3 | 0.2 | 0.8           | 2.4           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 20-Feb | 0.3                           | 0.4 | 0.2 | 1.9 | Z   | 5.6 | 5.4 | 5.1 | 5.2 | 4.9 | 3.7 | 2.0 | 0.8 | 0.2 | 0.1 | 0.1 | 0.3 | 0.1 | 0.2 | 0.3 | 1.3 | 1.9 | 6.0 | 2.3 | 2.1           | 6.0           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 21-Feb | 1.2                           | 0.6 | 0.6 | 0.4 | 0.5 | Z   | 0.8 | 1.9 | 3.8 | 6.3 | 9.9 | 5.5 | 2.4 | 1.8 | 3.8 | 3.7 | 4.9 | 6.6 | 3.5 | 2.4 | 1.9 | 4.2 | 4.7 | 3.6 | 3.3           | 9.9           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 22-Feb | Z                             | 2.3 | 1.3 | 1.0 | 0.8 | 1.2 | 5.2 | 8.7 | 5.3 | 4.1 | 2.5 | 1.5 | 1.0 | 0.8 | M   | 0.7 | 0.8 | 1.3 | 1.7 | 1.8 | 2.1 | 2.2 | 2.0 | 1.9 | 2.3           | 8.7           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 23-Feb | 1.7                           | Z   | 2.1 | 2.0 | 2.8 | 6.7 | 9.3 | 8.1 | 7.9 | 7.1 | 3.8 | 4.7 | 5.2 | 3.0 | 2.8 | 1.8 | 1.3 | 1.1 | 0.8 | 0.5 | 0.6 | 0.7 | 1.0 | 0.6 | 3.3           | 9.3           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 24-Feb | 0.4                           | 0.3 | Z   | 0.2 | 0.2 | 0.2 | 0.3 | 0.2 | 0.3 | 0.2 | 0.4 | 0.3 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.4 | 0.4 | 0.5 | 0.4 | 0.4 | 0.3 | 0.4 | 0.3           | 0.5           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 25-Feb | 0.5                           | 0.5 | 0.5 | Z   | 0.5 | 0.4 | 0.4 | 0.3 | 0.3 | 0.3 | 0.2 | 0.2 | 0.2 | 0.1 | 0.2 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.3 | 0.9 | 1.5 | 0.3           | 1.5           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 26-Feb | 0.7                           | 0.6 | 1.0 | 1.7 | Z   | 1.5 | 1.5 | 1.4 | 1.8 | 2.0 | 1.9 | 1.8 | 1.0 | 0.5 | 0.5 | 0.4 | 0.3 | 0.3 | 0.4 | 0.2 | 0.2 | 0.1 | 0.2 | 0.2 | 0.9           | 2.0           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 27-Feb | 0.2                           | 0.1 | 0.2 | 0.1 | 0.1 | Z   | 0.4 | 0.2 | 0.4 | 0.6 | 0.5 | 0.4 | 0.4 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.3 | 0.2 | 0.2 | 0.8 | 0.8 | 2.3 | 4.3           | 0.6           | 4.3 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 28-Feb | Z                             | 2.5 | 1.7 | 0.7 | 0.2 | 0.7 | 0.8 | 5.0 | 6.0 | 5.1 | 2.8 | 1.8 | 1.3 | 0.7 | 0.5 | 0.4 | 0.3 | 0.8 | 0.6 | 0.2 | 0.2 | 0.3 | 0.3 | 0.3 | 1.4           | 6.0           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
|        |                               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | 0.6 | 0.8           | 0.8           | 0.9 | 0.7 | 1.0 | 1.2 | 1.4 | 1.5 | 1.5 | 1.3 | 1.1 | 0.9 | 0.7 | 0.8 | 0.8 | 0.6 | 0.7 | 0.7 | 0.6 | 0.6 | 0.7 | 0.9 | 0.9 | Diurnal Average |  |
|        |                               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | 2.6 | 3.4           | 4.1           | 5.1 | 5.1 | 6.7 | 9.3 | 8.7 | 7.9 | 7.1 | 9.9 | 5.5 | 5.2 | 3.0 | 3.8 | 3.7 | 4.9 | 6.6 | 5.0 | 2.4 | 2.1 | 4.2 | 6.0 | 4.3 | Diurnal Maximum |  |

Z - zerospan      C - Calibration      M - Maintenance  
 Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 172 ppb    24-hr 48 ppb



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Sulphur Dioxide (SO<sub>2</sub>) - ppb**  
**Stony Mountain - February 2023**





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Sulphur Dioxide (SO<sub>2</sub>) - ppb**  
**Stony Mountain - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 10                            | 638                    | 100.00   | 100.00              |
| 11 - 20                           | 0                      | 0.00     | 100.00              |
| 21 - 60                           | 0                      | 0.00     | 100.00              |
| 61 - 110                          | 0                      | 0.00     | 100.00              |
| 111 - 172                         | 0                      | 0.00     | 100.00              |
| > 172                             | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 638

Total Number of Hours: 672





**Wood Buffalo Environmental Association  
Frequency Distribution**

**Sulphur Dioxide (SO<sub>2</sub>) - ppb  
Stony Mountain - February 2023**

| <b>Concentration<br/>Ranges (ppb)</b> | <b>Wind Direction</b> |            |           |            |          |            |           |            |          |            |           |            |          |            |           |            | <b>Totals</b> |
|---------------------------------------|-----------------------|------------|-----------|------------|----------|------------|-----------|------------|----------|------------|-----------|------------|----------|------------|-----------|------------|---------------|
|                                       | <b>N</b>              | <b>NNE</b> | <b>NE</b> | <b>ENE</b> | <b>E</b> | <b>ESE</b> | <b>SE</b> | <b>SSE</b> | <b>S</b> | <b>SSW</b> | <b>SW</b> | <b>WSW</b> | <b>W</b> | <b>WNW</b> | <b>NW</b> | <b>NNW</b> |               |
| 0 - 10                                | 61                    | 34         | 34        | 27         | 25       | 16         | 14        | 21         | 30       | 79         | 55        | 43         | 47       | 47         | 48        | 56         | 637           |
| 11 - 20                               | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0             |
| 21 - 60                               | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0             |
| 61 - 110                              | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0             |
| 111 - 172                             | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0             |
| > 172                                 | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0             |
| <b>Totals</b>                         | 61                    | 34         | 34        | 27         | 25       | 16         | 14        | 21         | 30       | 79         | 55        | 43         | 47       | 47         | 48        | 56         | 637           |

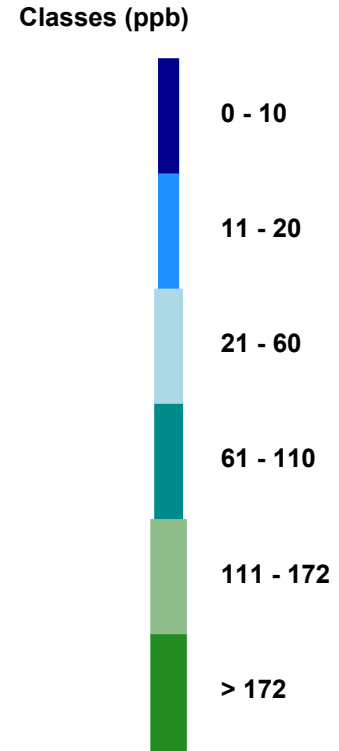
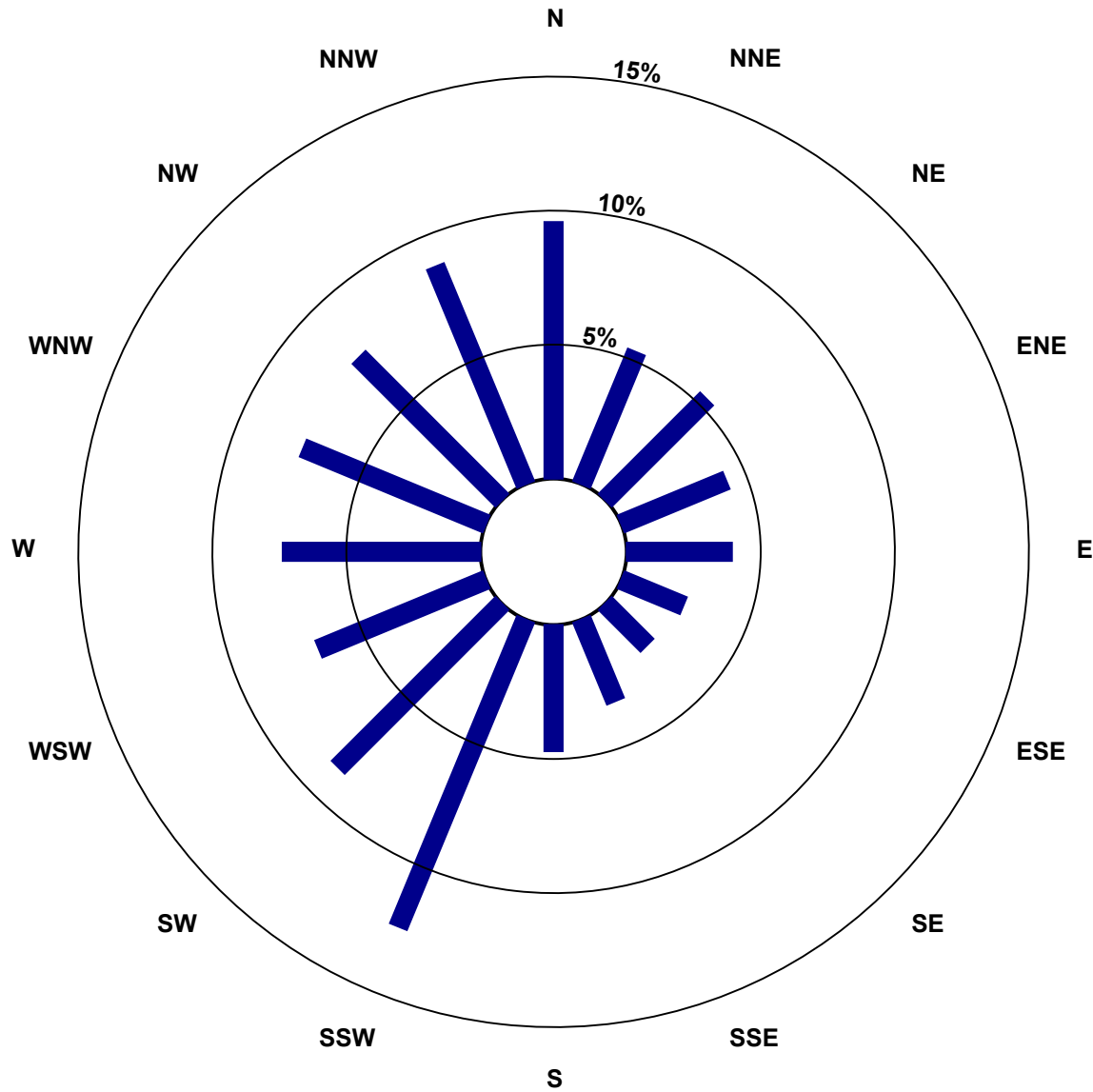
Total Number of Valid Hours: 637

Total Number of Hours: 672

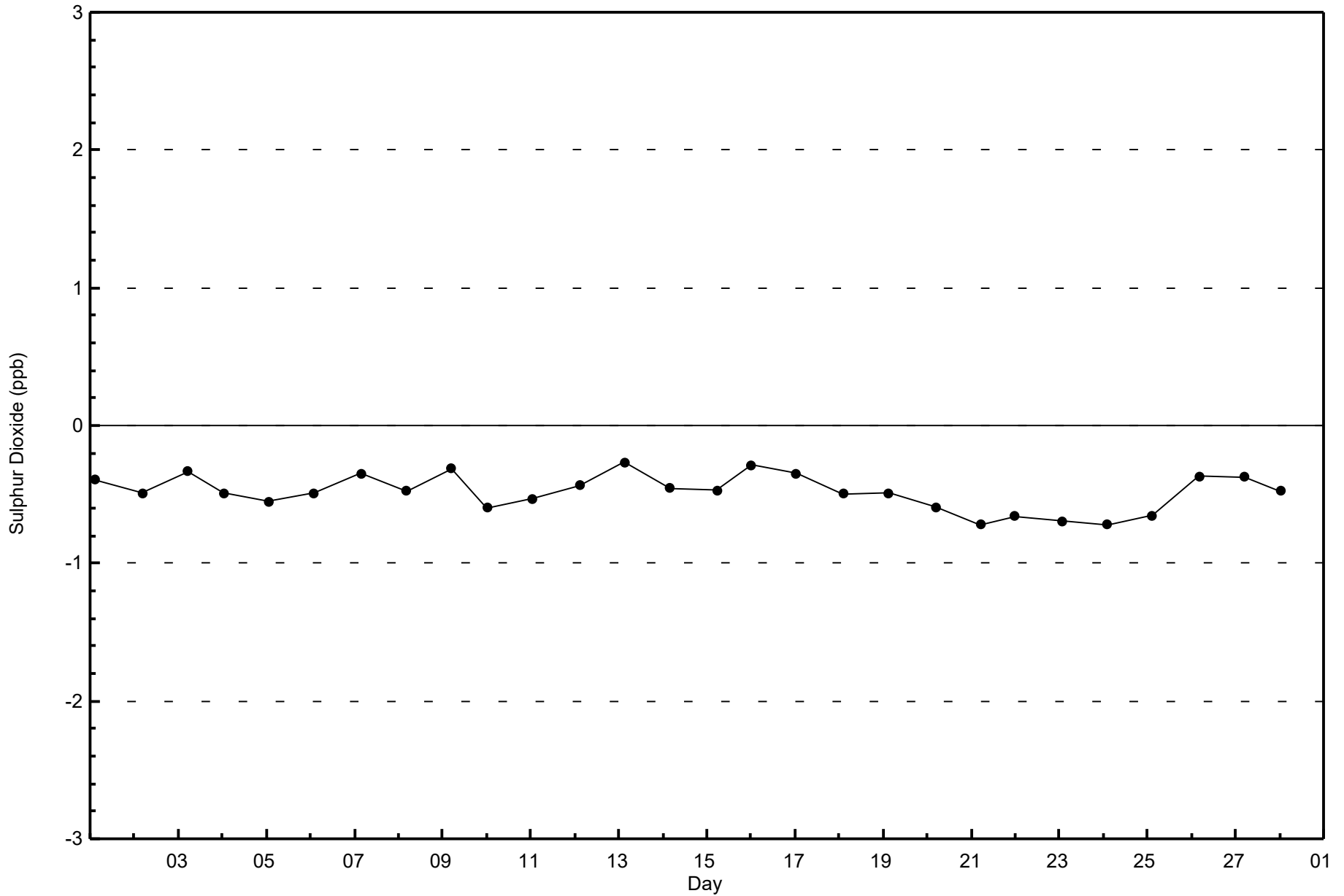


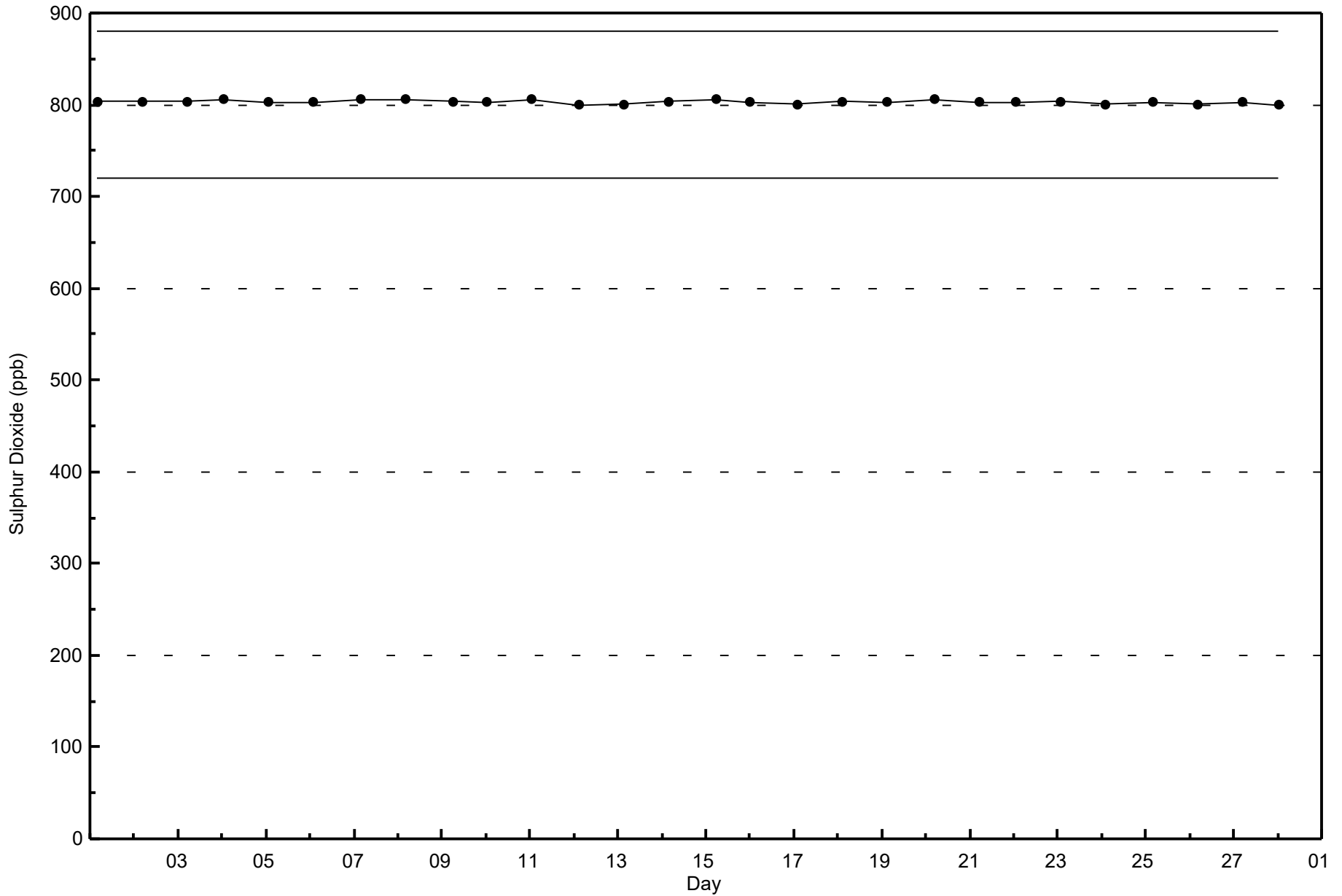
Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Sulphur Dioxide (SO<sub>2</sub>) - ppb  
Stony Mountain



Total Number of Valid Hours: 637



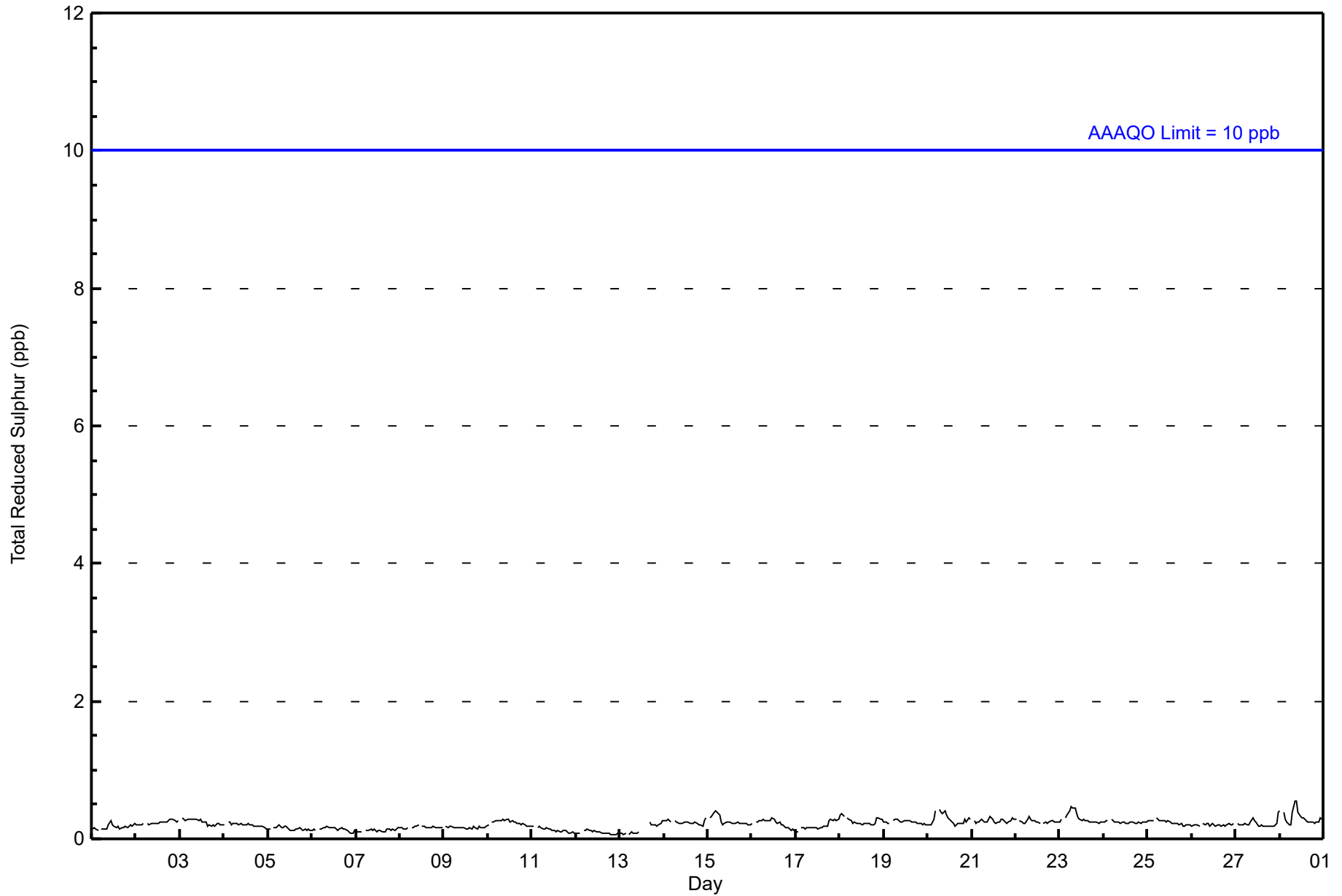






**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Total Reduced Sulphur (TRS) - ppb**  
**Stony Mountain - February 2023**





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Total Reduced Sulphur (TRS) - ppb**  
**Stony Mountain - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 2                             | 637                    | 100.00   | 100.00              |
| 3 - 4                             | 0                      | 0.00     | 100.00              |
| 5 - 7                             | 0                      | 0.00     | 100.00              |
| 8 - 11                            | 0                      | 0.00     | 100.00              |
| > 11                              | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 637

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Total Reduced Sulphur (TRS) - ppb  
Stony Mountain - February 2023**

| <b>Concentration<br/>Ranges (ppb)</b> | <b>Wind Direction</b> |     |    |     |    |     |    |     |    |     |    |     |    |     |    |     | <b>Totals</b> |
|---------------------------------------|-----------------------|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|---------------|
|                                       | N                     | NNE | NE | ENE | E  | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |               |
| 0 - 2                                 | 58                    | 34  | 33 | 25  | 25 | 16  | 14 | 21  | 30 | 79  | 57 | 44  | 48 | 47  | 47 | 58  | 636           |
| 3 - 4                                 | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| 5 - 7                                 | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| 8 - 11                                | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| > 11                                  | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| <b>Totals</b>                         | 58                    | 34  | 33 | 25  | 25 | 16  | 14 | 21  | 30 | 79  | 57 | 44  | 48 | 47  | 47 | 58  | 636           |

Total Number of Valid Hours: 636

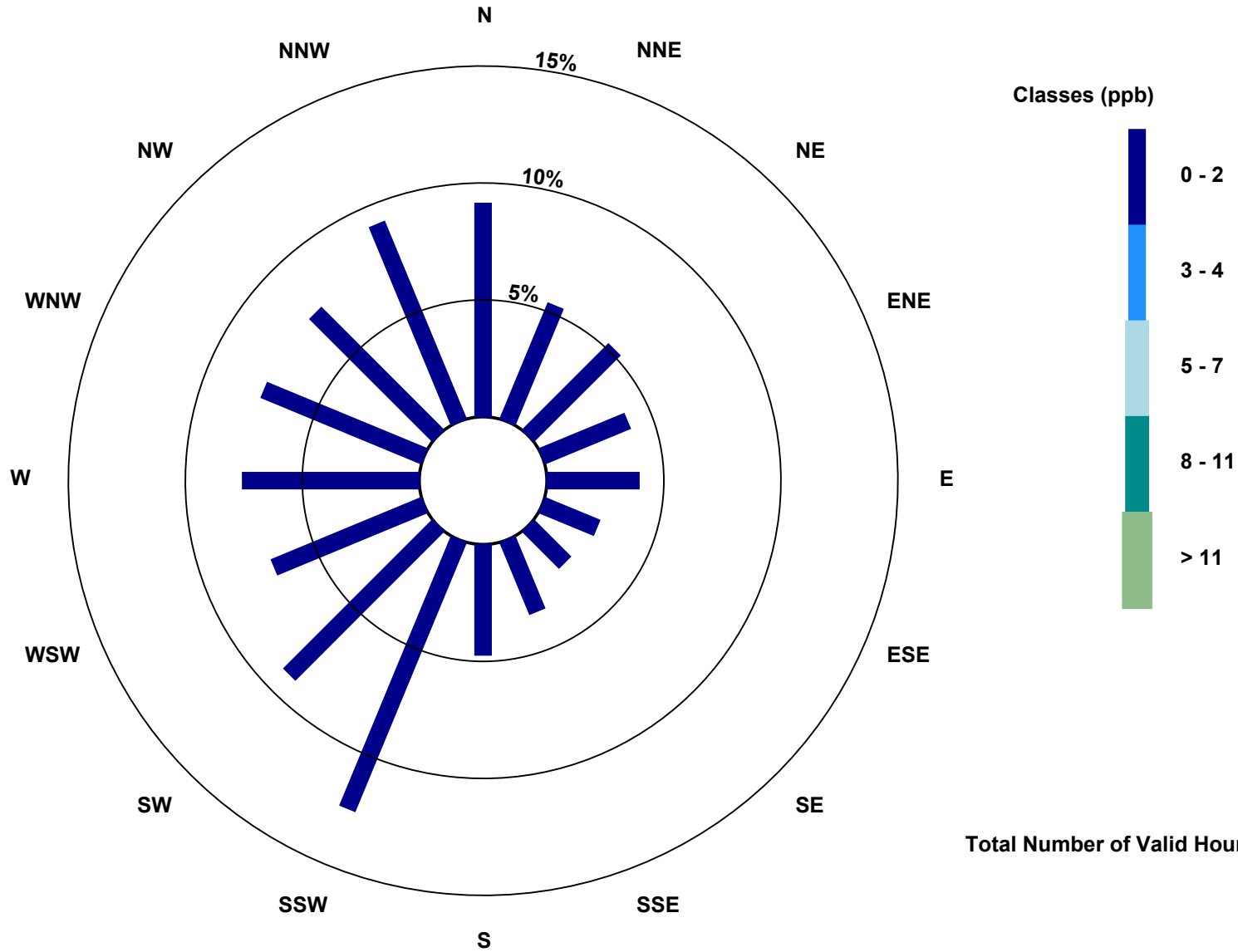
Total Number of Hours: 672

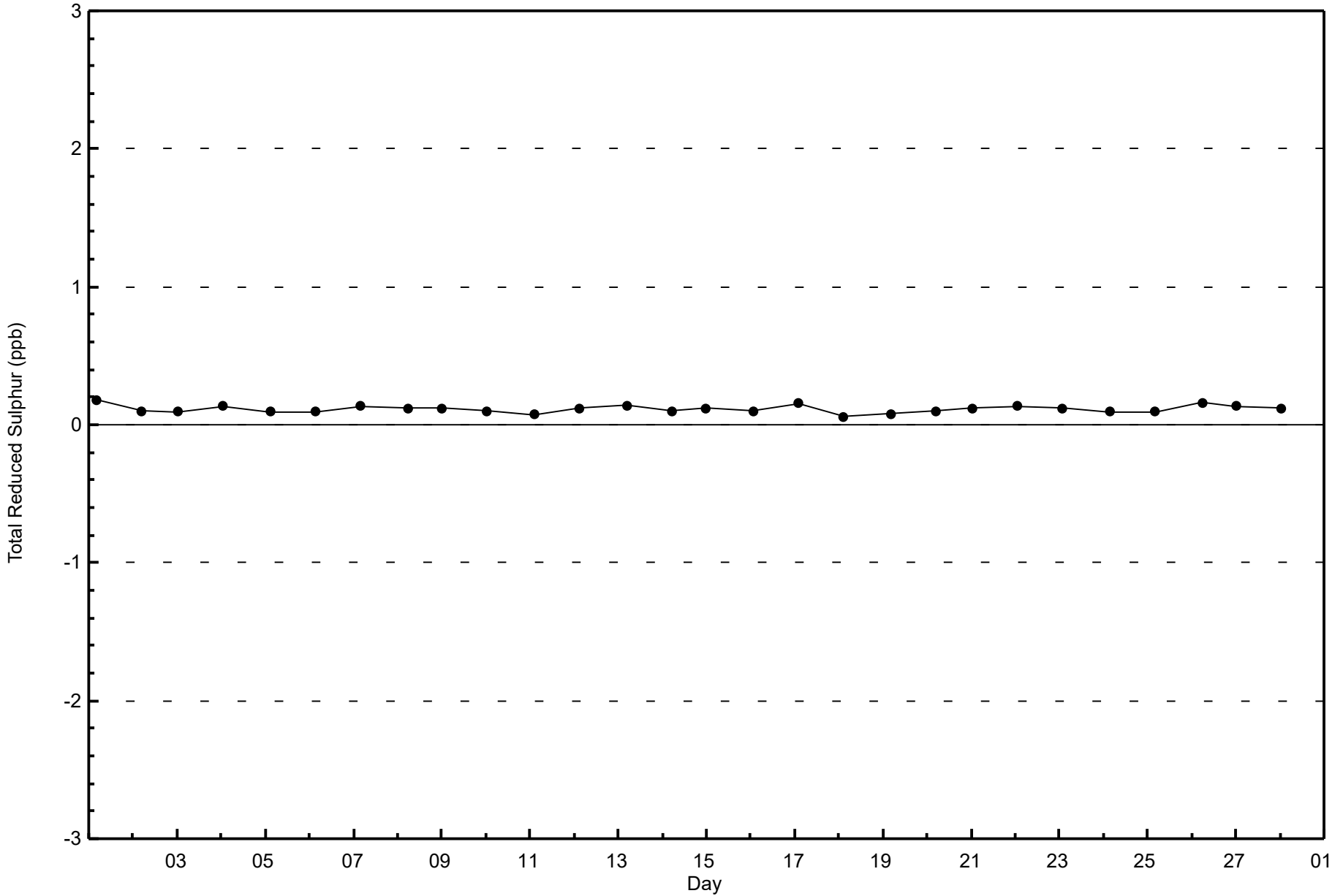


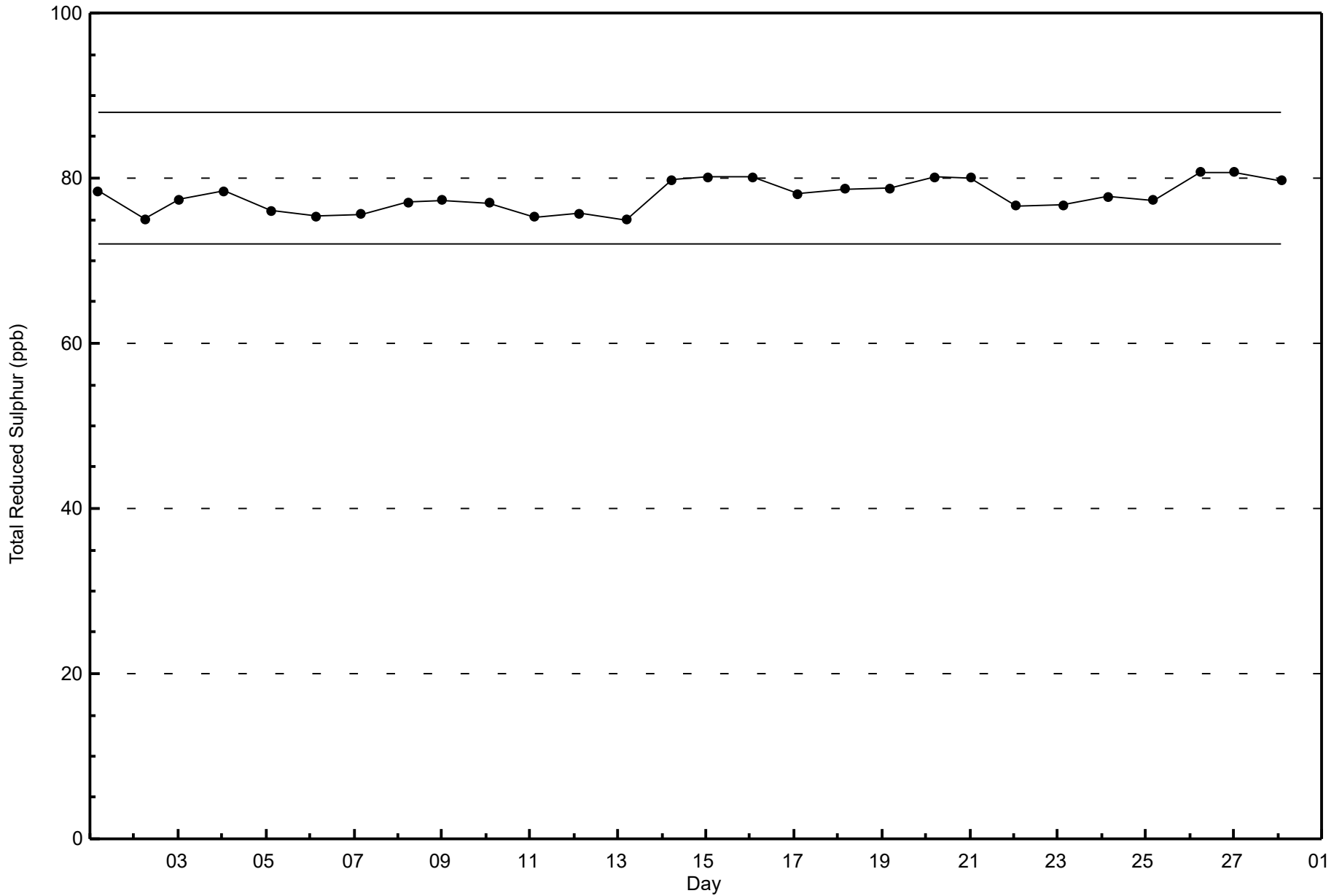


Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Total Reduced Sulphur (TRS) - ppb  
Stony Mountain





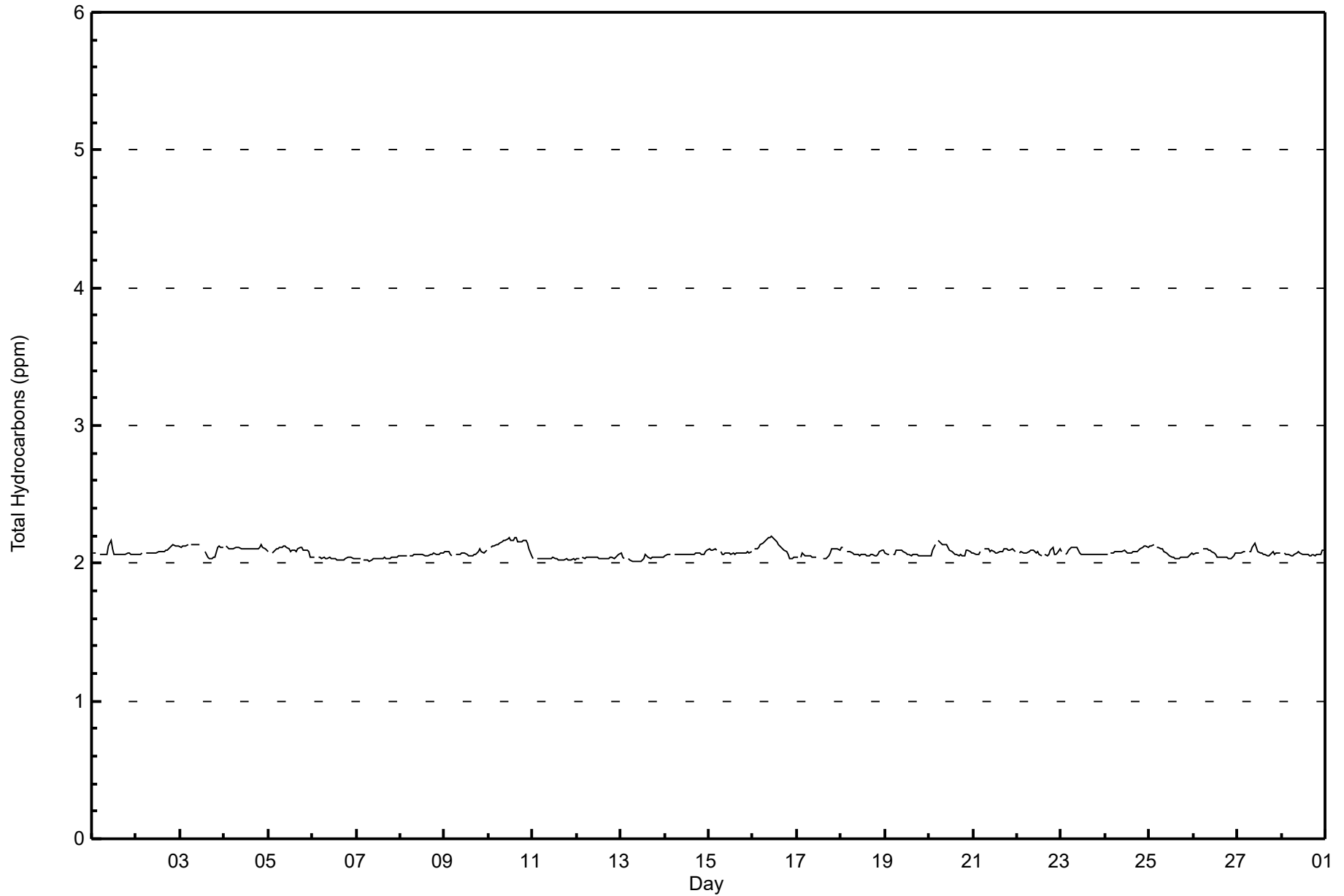






**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Total Hydrocarbons (THC) - ppm**  
**Stony Mountain - February 2023**





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Total Hydrocarbons (THC) - ppm**  
**Stony Mountain - February 2023**

| <b>Concentration Ranges (ppm)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 2.0                           | 149                    | 23.35    | 23.35               |
| 2.1 - 3.0                         | 489                    | 76.65    | 100.00              |
| 3.1 - 10.0                        | 0                      | 0.00     | 100.00              |
| > 10.0                            | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 638

Total Number of Hours: 672



**Wood Buffalo Environmental Association**  
**Frequency Distribution**

**Total Hydrocarbons (THC) - ppm**  
**Stony Mountain - February 2023**

| Concentration<br>Ranges (ppm) | Wind Direction |     |    |     |    |     |    |     |    |     |    |     |    |     |    |     | Totals |
|-------------------------------|----------------|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|--------|
|                               | N              | NNE | NE | ENE | E  | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |        |
| 0 - 2.0                       | 10             | 0   | 0  | 8   | 1  | 0   | 0  | 0   | 3  | 10  | 11 | 27  | 37 | 25  | 9  | 8   | 149    |
| 2.1 - 3.0                     | 51             | 34  | 34 | 19  | 24 | 16  | 14 | 21  | 27 | 69  | 44 | 16  | 10 | 22  | 39 | 48  | 488    |
| 3.1 - 10.0                    | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| > 10.0                        | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| <b>Totals</b>                 | 61             | 34  | 34 | 27  | 25 | 16  | 14 | 21  | 30 | 79  | 55 | 43  | 47 | 47  | 48 | 56  | 637    |

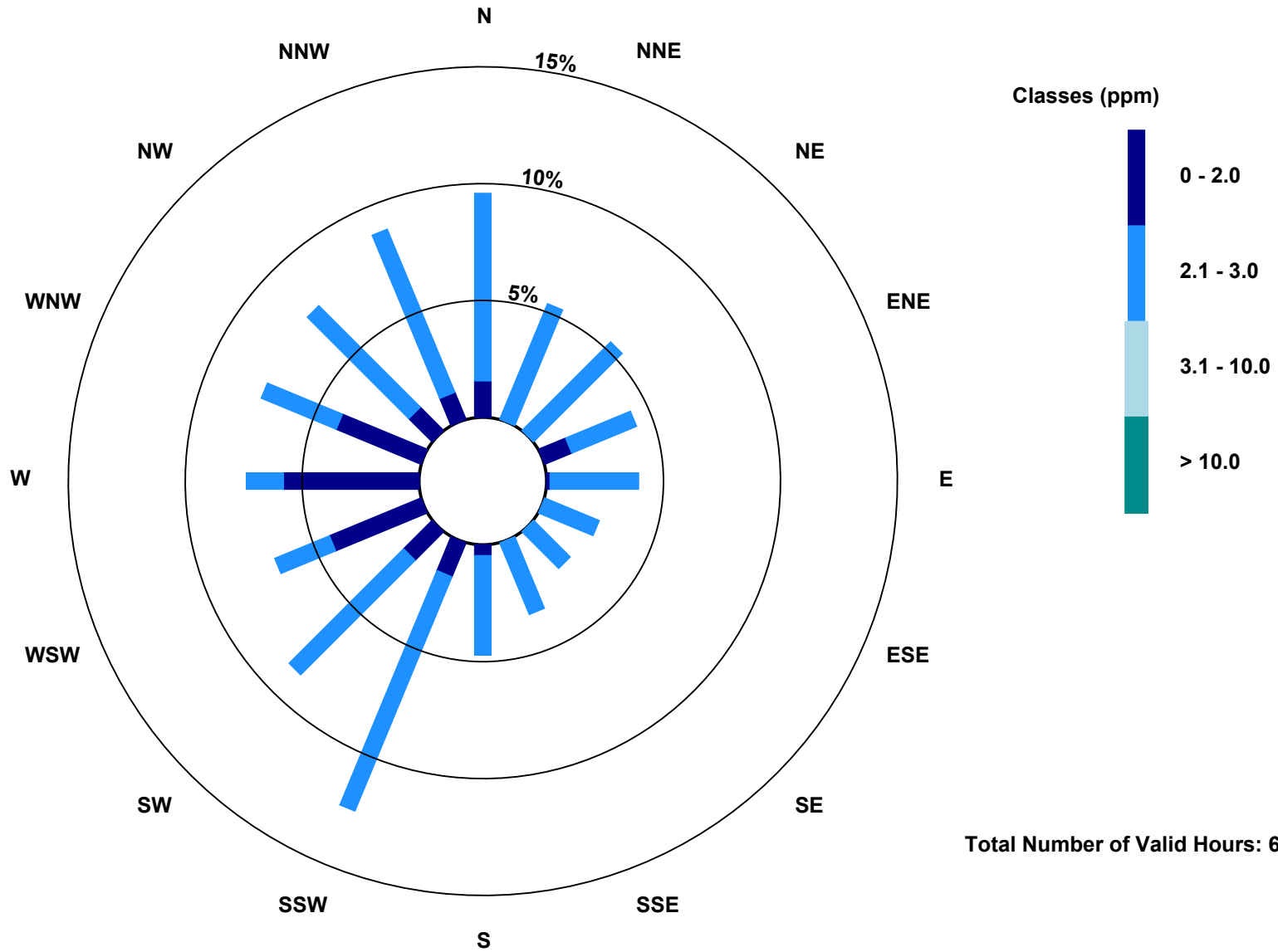
Total Number of Valid Hours: 637

Total Number of Hours: 672

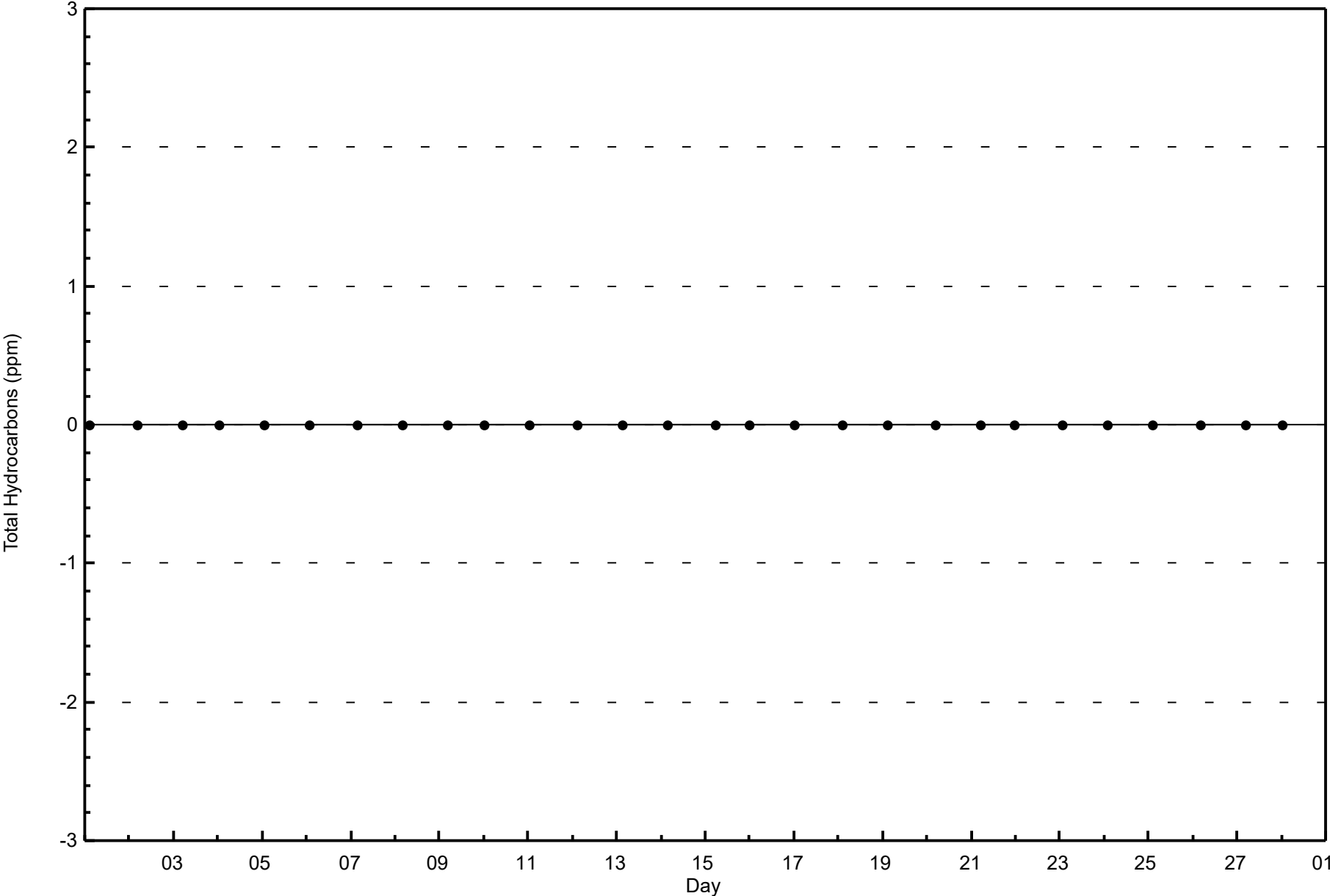


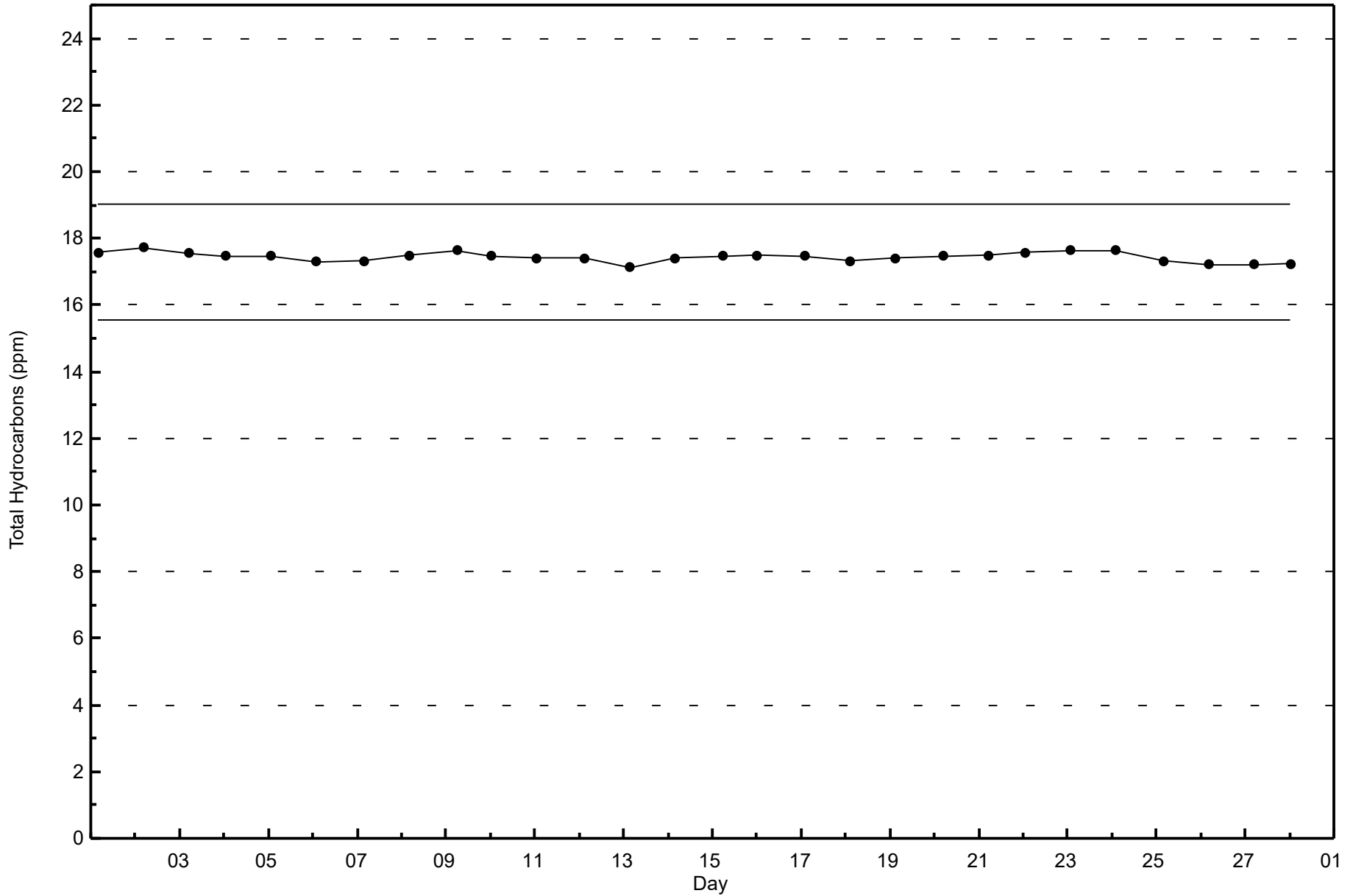
Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Total Hydrocarbons (THC) - ppm  
Stony Mountain

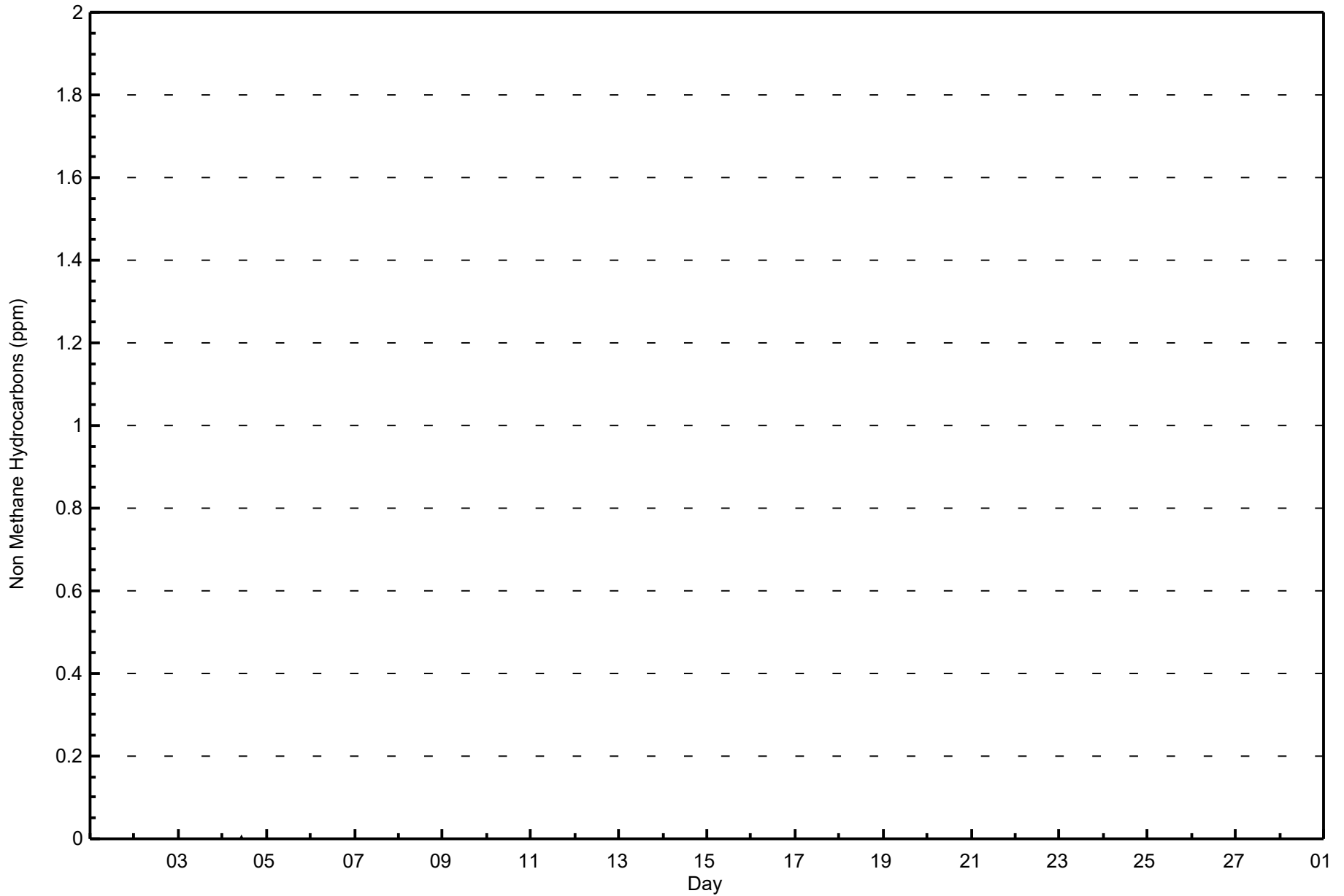














**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Non Methane Hydrocarbons (NMHC) - ppm  
Stony Mountain - February 2023**

| <b>Concentration Ranges (ppm)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 0.005                         | 638                    | 100.00   | 100.00              |
| 0.006 - 0.05                      | 0                      | 0.00     | 100.00              |
| 0.06 - 0.1                        | 0                      | 0.00     | 100.00              |
| > 0.1                             | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 638

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

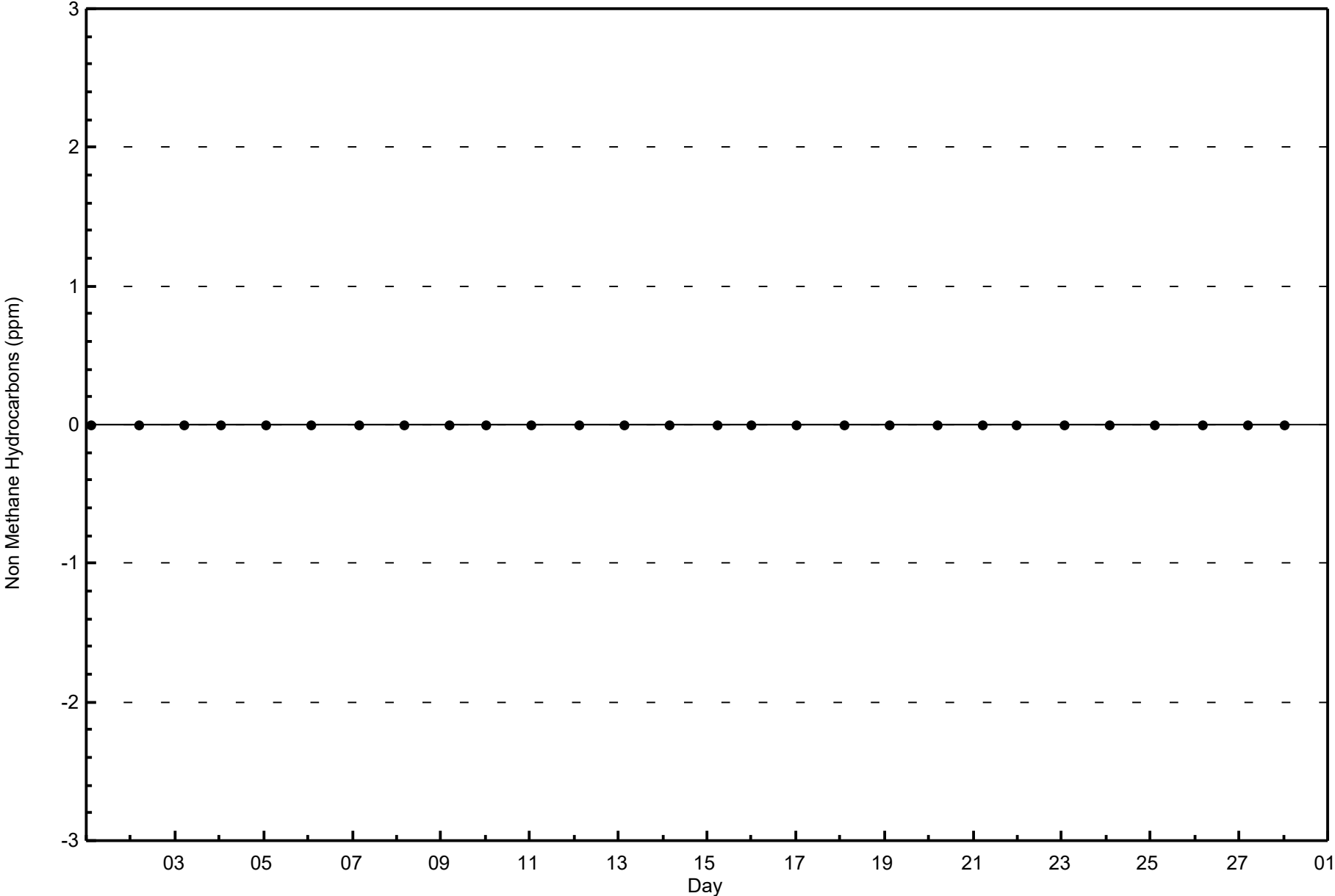
**Non Methane Hydrocarbons (NMHC) - ppm  
Stony Mountain - February 2023**

| <b>Concentration<br/>Ranges (ppm)</b> | <b>Wind Direction</b> |     |    |     |    |     |    |     |    |     |    |     |    |     |    |     | <b>Totals</b> |
|---------------------------------------|-----------------------|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|---------------|
|                                       | N                     | NNE | NE | ENE | E  | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |               |
| 0 - 0.005                             | 61                    | 34  | 34 | 27  | 25 | 16  | 14 | 21  | 30 | 79  | 55 | 43  | 47 | 47  | 48 | 56  | 637           |
| 0.006 - 0.05                          | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| 0.06 - 0.1                            | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| > 0.1                                 | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| <b>Totals</b>                         | 61                    | 34  | 34 | 27  | 25 | 16  | 14 | 21  | 30 | 79  | 55 | 43  | 47 | 47  | 48 | 56  | 637           |

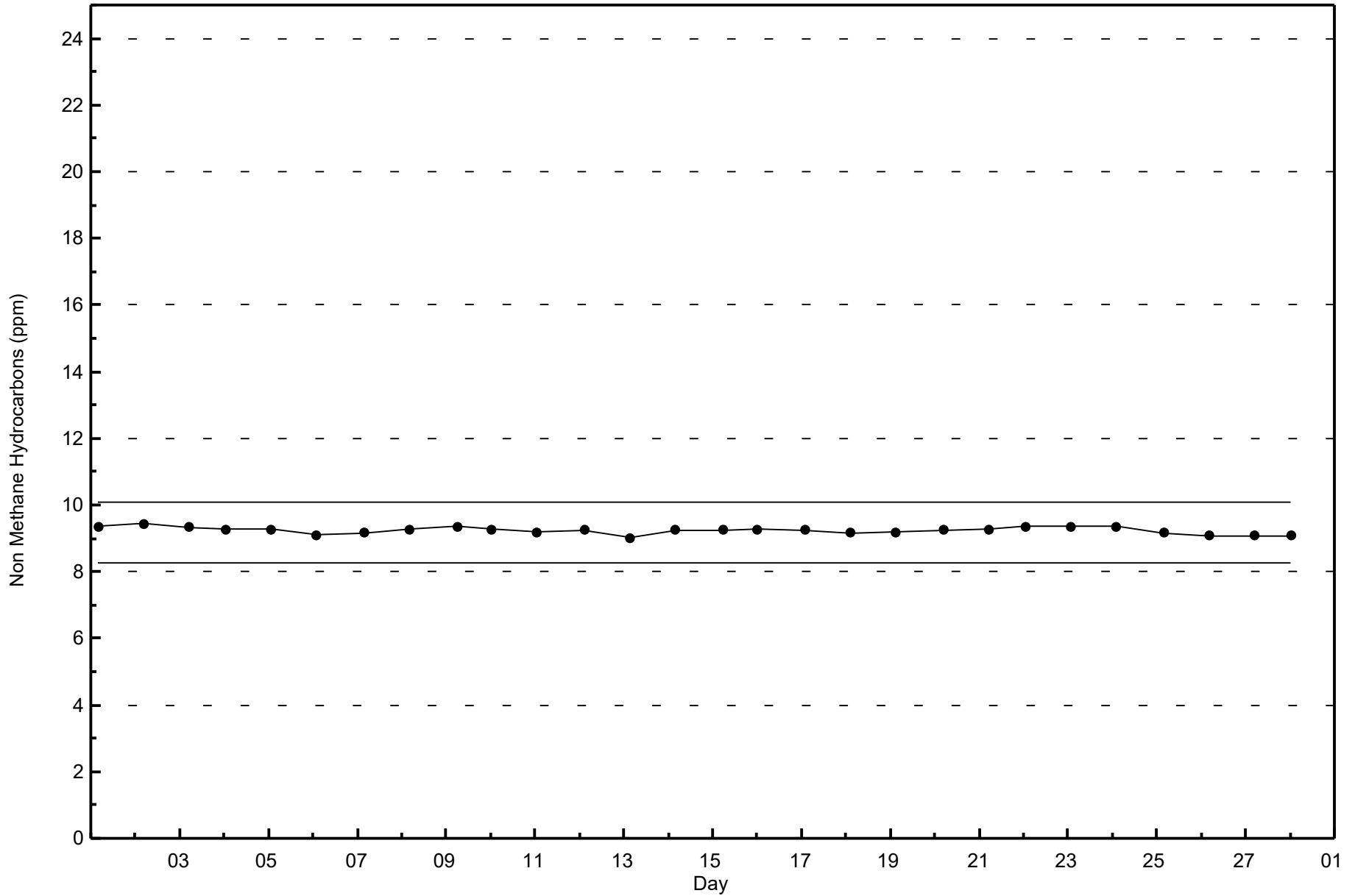
Total Number of Valid Hours: 637

Total Number of Hours: 672

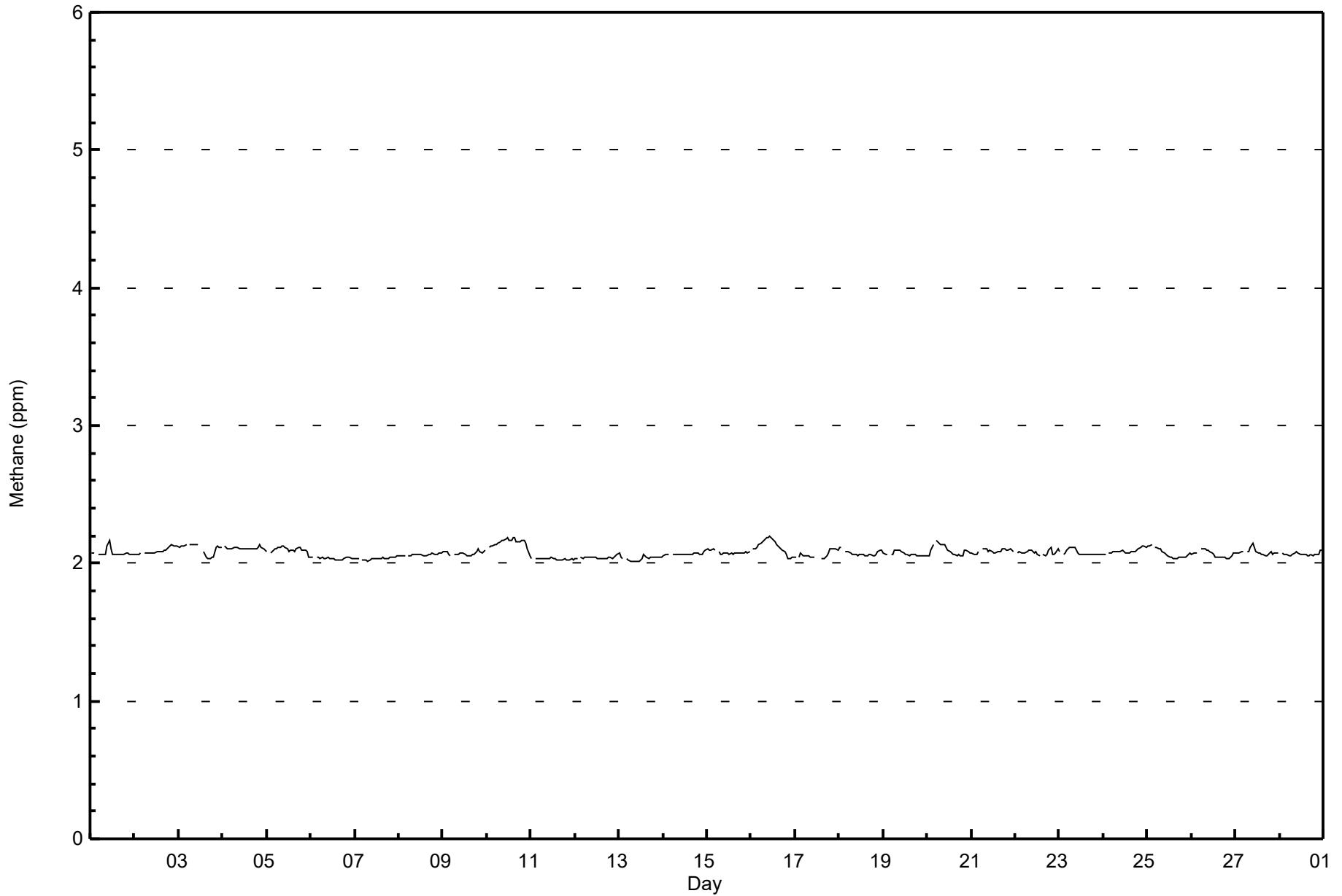














**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Methane (CH<sub>4</sub>) - ppm**  
**Stony Mountain - February 2023**

| <b>Concentration Ranges (ppm)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 2.0                           | 149                    | 23.35    | 23.35               |
| 2.1 - 3.0                         | 489                    | 76.65    | 100.00              |
| 3.1 - 10.0                        | 0                      | 0.00     | 100.00              |
| > 10.0                            | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 638

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Methane (CH<sub>4</sub>) - ppm  
Stony Mountain - February 2023**

| <b>Concentration<br/>Ranges (ppm)</b> | <b>Wind Direction</b> |     |    |     |    |     |    |     |    |     |    |     |    |     |    |     | <b>Totals</b> |
|---------------------------------------|-----------------------|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|---------------|
|                                       | N                     | NNE | NE | ENE | E  | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |               |
| 0 - 2.0                               | 10                    | 0   | 0  | 8   | 1  | 0   | 0  | 0   | 3  | 10  | 11 | 27  | 37 | 25  | 9  | 8   | 149           |
| 2.1 - 3.0                             | 51                    | 34  | 34 | 19  | 24 | 16  | 14 | 21  | 27 | 69  | 44 | 16  | 10 | 22  | 39 | 48  | 488           |
| 3.1 - 10.0                            | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| > 10.0                                | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| <b>Totals</b>                         | 61                    | 34  | 34 | 27  | 25 | 16  | 14 | 21  | 30 | 79  | 55 | 43  | 47 | 47  | 48 | 56  | 637           |

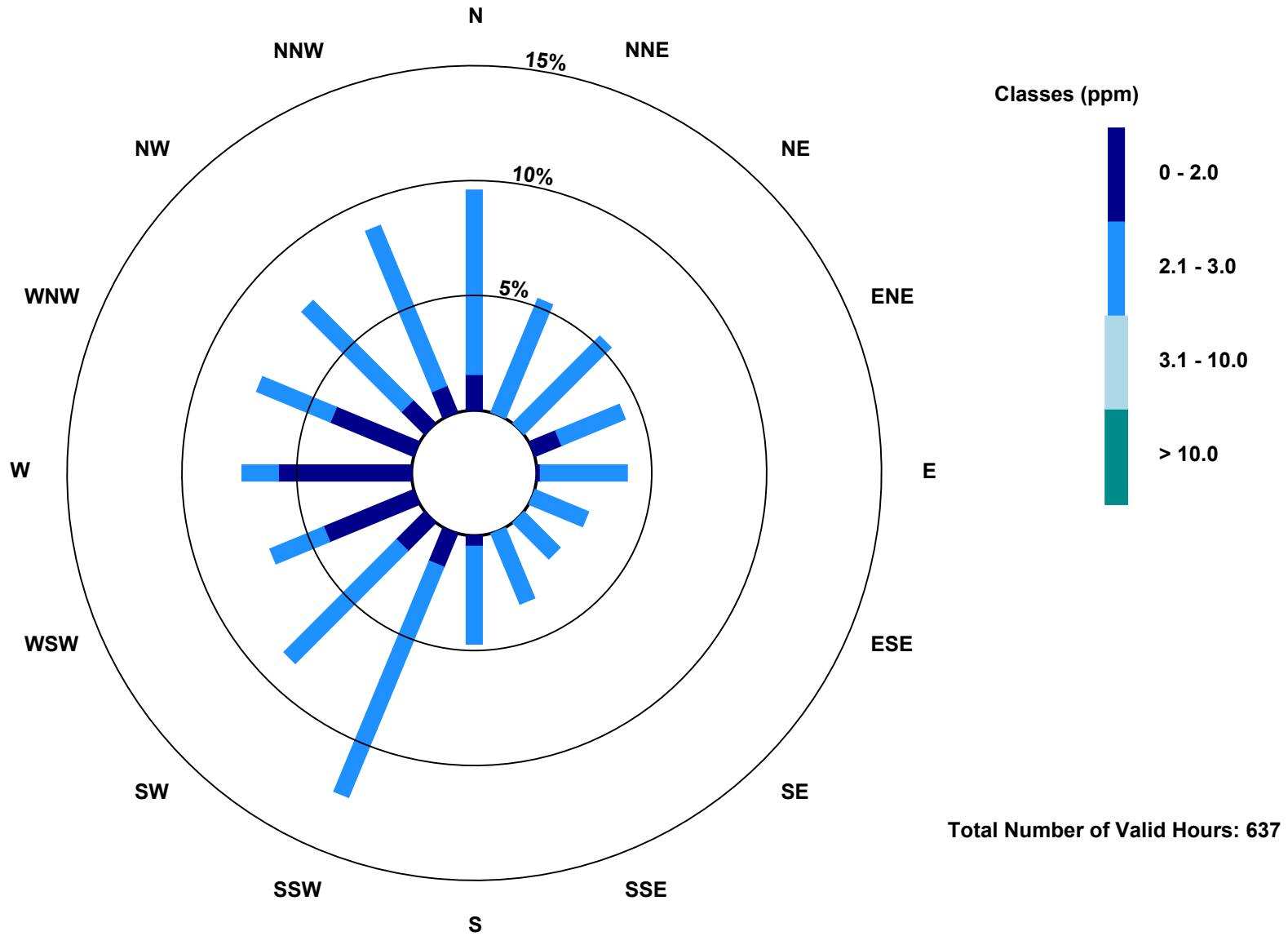
Total Number of Valid Hours: 637

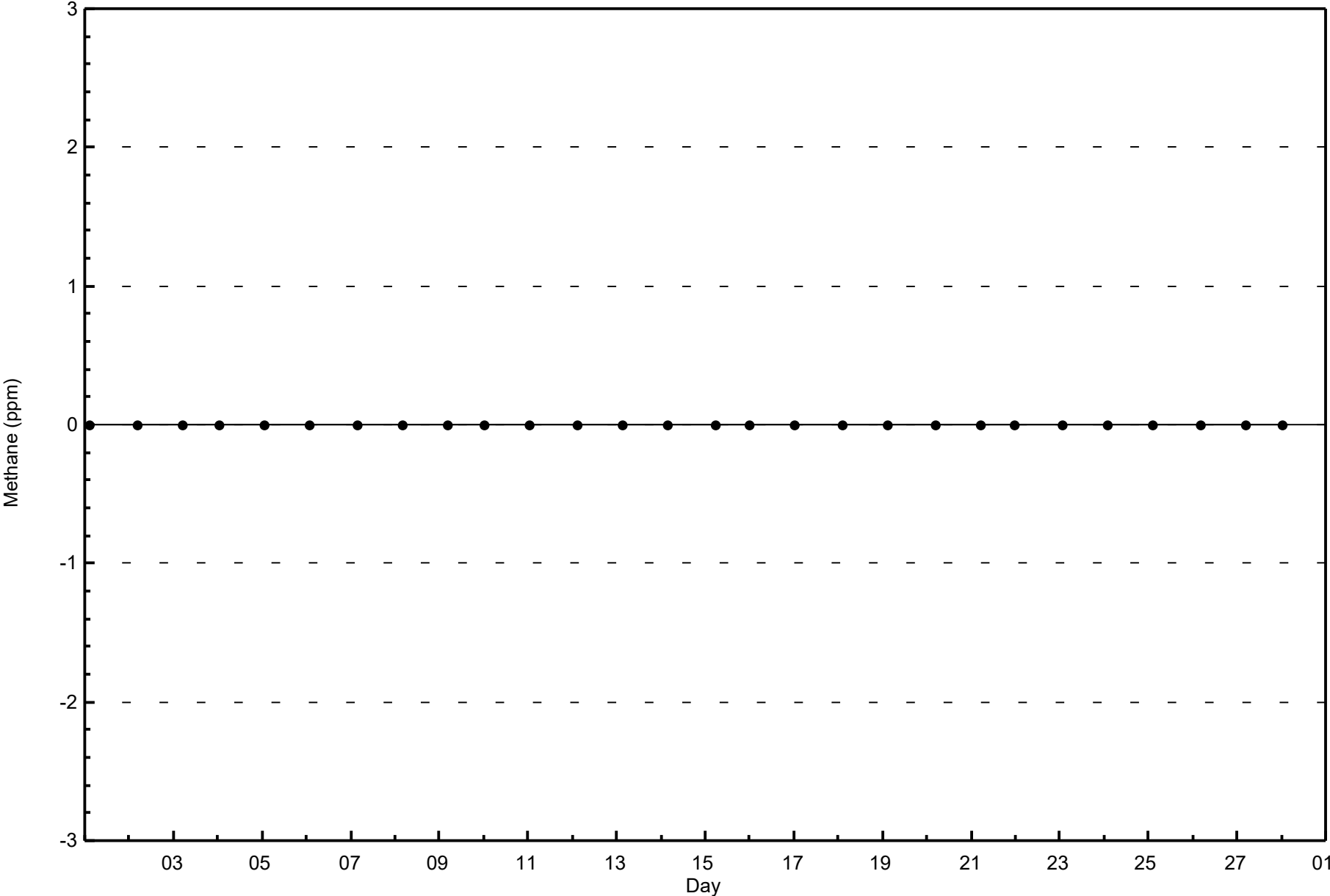
Total Number of Hours: 672

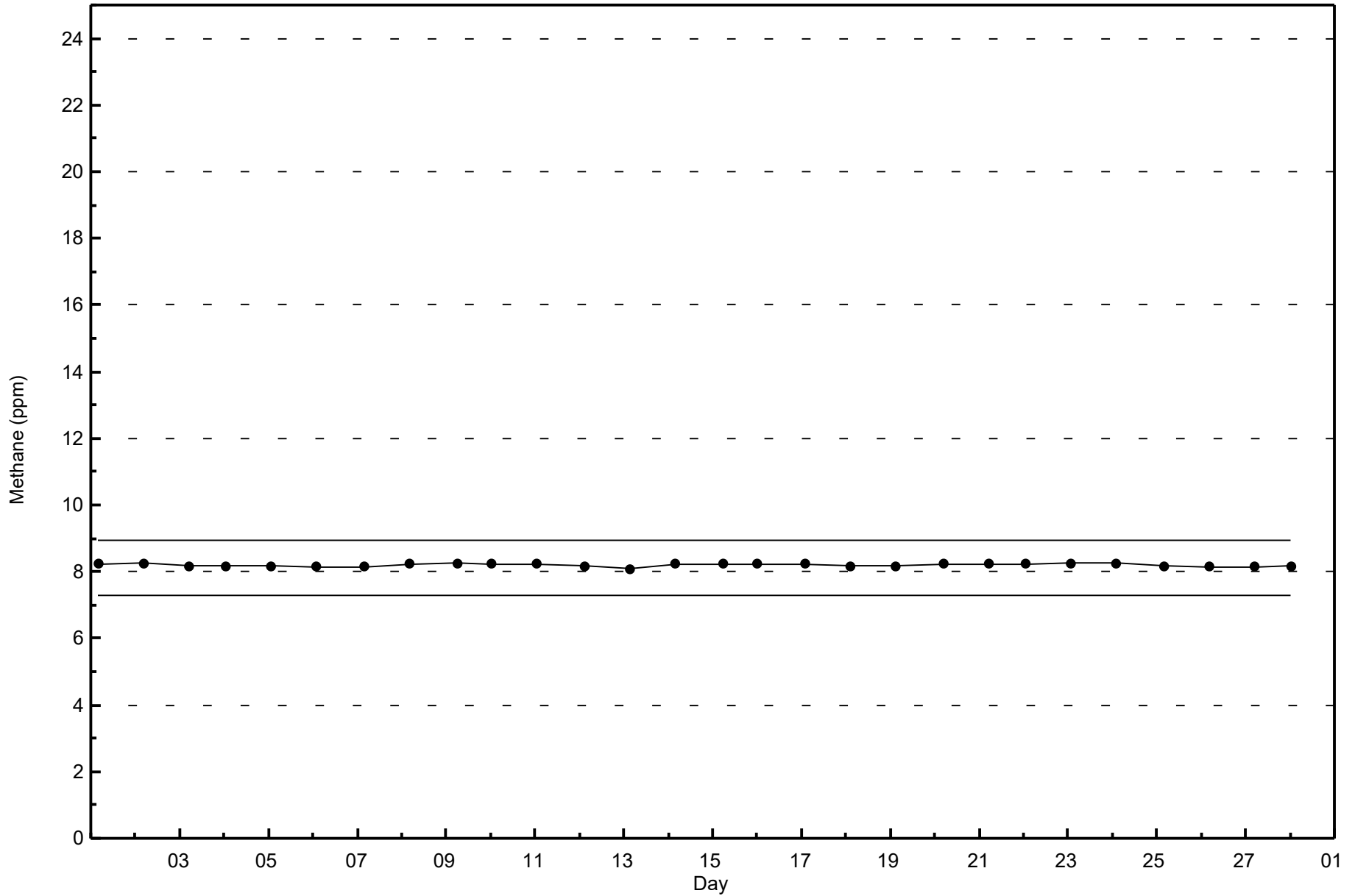


Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Methane (CH<sub>4</sub>) - ppm  
Stony Mountain









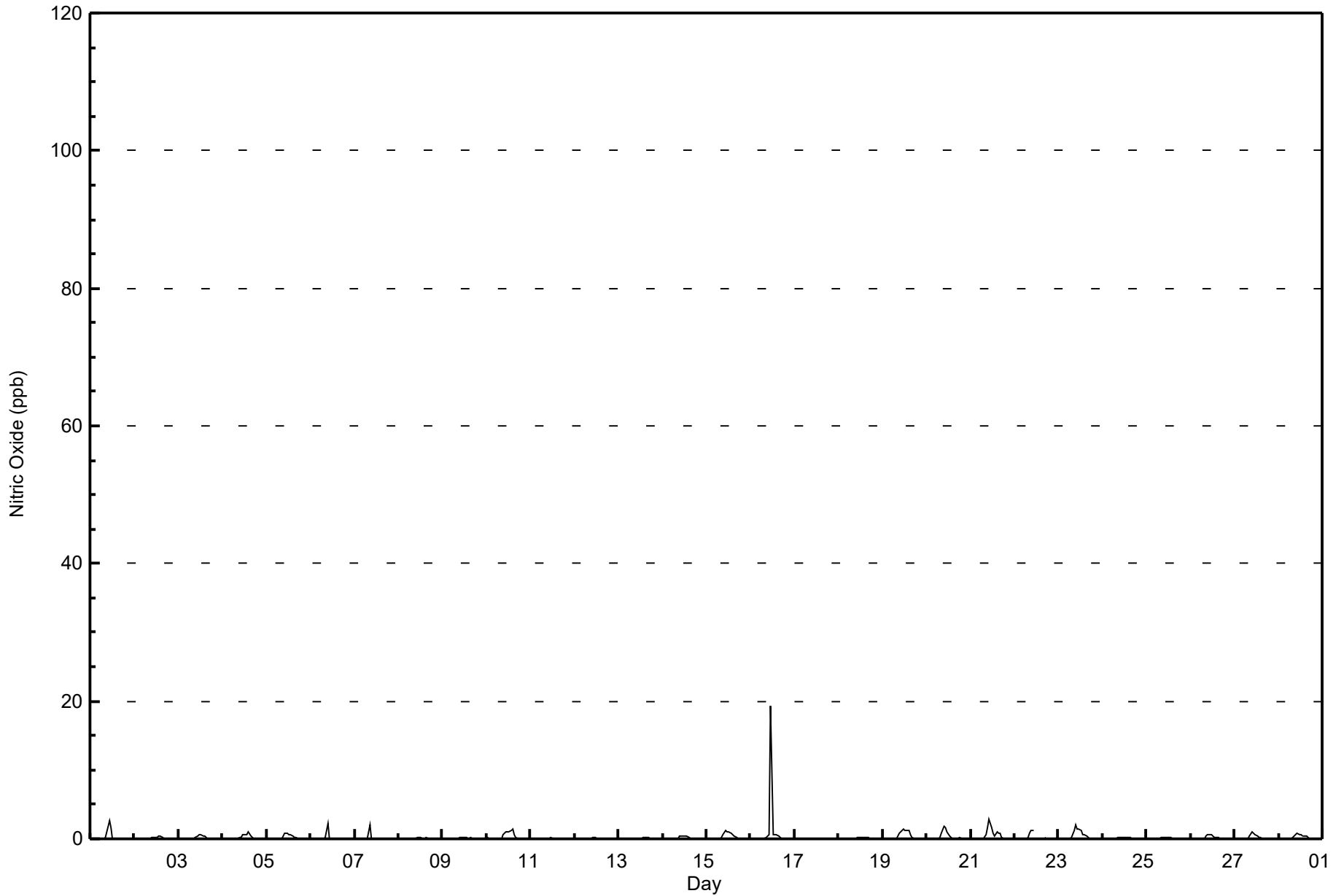


| Maximum Value: 19.4 ppb on Feb 16 12:00     |                               |     |     |     |     |     |     |     |     |     |     |      |     |     |     |     |     |     |     | Maximum Daily Average: 1.0 ppb on Feb 16   |     |     |     |                 | Hours in Service: 672           |               |
|---|-------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|-----|-----|-----|-----|-----|-----|-----|--|-----|-----|-----|-----------------|---------------------------------|---------------|
| Minimum Value: 0.0 ppb on Feb 1 02:00       |                               |     |     |     |     |     |     |     |     |     |     |      |     |     |     |     |     |     |     | Minimum Daily Average: 0.0 ppb on Feb 17   |     |     |     |                 | Hours of Data: 639              |               |
| Maximum Diurnal Average: 1.3 ppb at hour 12 |                               |     |     |     |     |     |     |     |     |     |     |      |     |     |     |     |     |     |     | Minimum Diurnal Average: 0.0 ppb at hour 4   |     |     |     |                 | Hours of Missing Data: 33       |               |
| Monthly Average: 0.19 ppb                   |                               |     |     |     |     |     |     |     |     |     |     |      |     |     |     |     |     |     |     | Percentiles: P <sub>1</sub> = 0.0 P <sub>10</sub> = 0.0 Q <sub>1</sub> = 0.0 Median = 0.0 Q <sub>3</sub> = 0.1 P <sub>90</sub> = 0.6 P <sub>99</sub> = 1.7 |     |     |     |                 | Hours of Calibration: 33        |               |
|   |                               |     |     |     |     |     |     |     |     |     |     |      |     |     |     |     |     |     |     |  |     |     |     |                 | Percent Operational Time: 100.0 |               |
| Day   | Hourly Period Ending At (MST) |     |     |     |     |     |     |     |     |     |     |      |     |     |     |     |     |     |     |  |     |     |     |                 | Daily Average                   | Daily Maximum |
|   | 1                             | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  | 11  | 12   | 13  | 14  | 15  | 16  | 17  | 18  | 19  | 20   | 21  | 22  | 23  | 24              |                                 |               |
| 1-Feb                                       | Z                             | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.2 | 0.9 | 2.7 | 1.6  | 0.1 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0 | 0.0 | 0.0 | 0.0             | 0.2                             | 2.7           |
| 2-Feb                                       | 0.0                           | Z   | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.1 | 0.2  | 0.3 | 0.3 | 0.3 | 0.2 | 0.1 | 0.0 | 0.0 | 0.0  | 0.0 | 0.0 | 0.0 | 0.0             | 0.1                             | 0.3           |
| 3-Feb                                       | 0.0                           | 0.0 | Z   | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.3 | 0.5 | 0.6  | 0.6 | 0.5 | 0.4 | 0.2 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0 | 0.0 | 0.0 | 0.0             | 0.1                             | 0.6           |
| 4-Feb                                       | 0.0                           | 0.0 | 0.0 | Z   | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.3 | 0.6  | 0.5 | 0.6 | 0.9 | 0.5 | 0.1 | 0.0 | 0.0 | 0.0  | 0.0 | 0.0 | 0.0 | 0.0             | 0.2                             | 0.9           |
| 5-Feb                                       | 0.0                           | 0.0 | 0.0 | 0.0 | Z   | 0.0 | 0.0 | 0.0 | 0.1 | 0.4 | 0.7 | 0.7  | 0.6 | 0.6 | 0.5 | 0.3 | 0.1 | 0.0 | 0.0 | 0.0  | 0.0 | 0.0 | 0.0 | 0.0             | 0.2                             | 0.7           |
| 6-Feb                                       | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | Z   | 0.0 | 0.0 | 0.1 | 2.3 | 0.0 | 0.1  | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0 | 0.0 | 0.0 | 0.0             | 0.1                             | 2.3           |
| 7-Feb                                       | Z                             | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 2.0 | 0.0 | 0.0 | 0.0  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0 | 0.0 | 0.0 | 0.0             | 0.1                             | 2.0           |
| 8-Feb                                       | 0.0                           | Z   | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.2 | 0.2  | 0.2 | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0 | 0.0 | 0.0 | 0.0             | 0.0                             | 0.2           |
| 9-Feb                                       | 0.0                           | 0.0 | Z   | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.2 | 0.3  | 0.3 | 0.1 | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0  | 0.0 | 0.0 | 0.0 | 0.0             | 0.1                             | 0.3           |
| 10-Feb                                      | 0.1                           | 0.0 | 0.0 | Z   | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.7 | 1.1 | 1.0  | 1.0 | 1.3 | 1.5 | 0.6 | 0.2 | 0.0 | 0.0 | 0.0  | 0.0 | 0.0 | 0.0 | 0.0             | 0.3                             | 1.5           |
| 11-Feb                                      | 0.0                           | 0.0 | 0.0 | 0.0 | Z   | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1  | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0 | 0.0 | 0.0 | 0.0             | 0.0                             | 0.1           |
| 12-Feb                                      | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | Z   | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.1  | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0 | 0.0 | 0.0 | 0.0             | 0.0                             | 0.1           |
| 13-Feb                                      | Z                             | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0 | 0.1 | 0.2 | 0.2 | 0.1 | 0.0 | 0.0 | 0.0  | 0.0 | 0.0 | 0.0 | 0.0             | 0.0                             | 0.2           |
| 14-Feb                                      | 0.0                           | Z   | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.3 | 0.3 | 0.4  | 0.4 | 0.3 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0 | 0.0 | 0.0 | 0.0             | 0.1                             | 0.4           |
| 15-Feb                                      | 0.0                           | 0.0 | Z   | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.6 | 1.1 | 0.9  | 1.0 | 0.9 | 0.5 | 0.5 | 0.2 | 0.0 | 0.0 | 0.0  | 0.0 | 0.0 | 0.0 | 0.0             | 0.3                             | 1.1           |
| 16-Feb                                      | 0.0                           | 0.0 | 0.0 | Z   | 0.0 | 0.0 | 0.0 | 0.0 | 0.3 | 0.5 | 0.6 | 19.4 | 0.7 | 0.6 | 0.6 | 0.4 | 0.2 | 0.0 | 0.0 | 0.0  | 0.0 | 0.0 | 0.0 | 0.0             | 1.0                             | 19.4          |
| 17-Feb                                      | 0.0                           | 0.0 | 0.0 | 0.0 | Z   | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0  | 0.0 | 0.0 | 0.0 | 0.0             | 0.0                             | 0.1           |
| 18-Feb                                      | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | Z   | 0.0 | 0.0 | 0.1 | 0.1 | 0.1 | 0.1  | 0.1 | 0.2 | 0.1 | 0.2 | 0.2 | 0.0 | 0.0 | 0.0  | 0.0 | 0.0 | 0.0 | 0.0             | 0.1                             | 0.2           |
| 19-Feb                                      | Z                             | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.4 | 0.8 | 1.1 | 1.4  | 1.3 | 1.2 | 1.2 | 0.7 | 0.1 | 0.0 | 0.0 | 0.0  | 0.0 | 0.0 | 0.0 | 0.0             | 0.4                             | 1.4           |
| 20-Feb                                      | 0.0                           | Z   | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.1 | 0.9 | 1.7 | 1.6 | 1.0  | 0.5 | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 | 0.1 | 0.0  | 0.0 | 0.0 | 0.0 | 0.0             | 0.3                             | 1.7           |
| 21-Feb                                      | 0.0                           | 0.0 | Z   | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.7 | 1.7 | 2.8 | 1.7  | 0.8 | 0.5 | 1.0 | 0.9 | 0.7 | 0.3 | 0.0 | 0.0  | 0.0 | 0.0 | 0.0 | 0.0             | 0.5                             | 2.8           |
| 22-Feb                                      | 0.0                           | 0.0 | 0.0 | Z   | 0.0 | 0.0 | 0.0 | 0.1 | 0.8 | 1.3 | 1.2 | C    | C   | C   | C   | C   | 0.1 | 0.0 | 0.0 | 0.0  | 0.0 | 0.0 | 0.0 | 0.0             | 0.2                             | 1.3           |
| 23-Feb                                      | 0.0                           | 0.0 | 0.0 | 0.0 | Z   | 0.0 | 0.0 | 0.2 | 1.1 | 2.1 | 1.5 | 1.4  | 1.2 | 0.7 | 0.5 | 0.3 | 0.1 | 0.0 | 0.0 | 0.0  | 0.0 | 0.0 | 0.0 | 0.0             | 0.4                             | 2.1           |
| 24-Feb                                      | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | Z   | 0.0 | 0.0 | 0.1 | 0.3 | 0.2 | 0.2  | 0.2 | 0.2 | 0.2 | 0.2 | 0.1 | 0.1 | 0.0 | 0.0  | 0.0 | 0.0 | 0.0 | 0.0             | 0.1                             | 0.3           |
| 25-Feb                                      | Z                             | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 | 0.2 | 0.3 | 0.2  | 0.1 | 0.2 | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0  | 0.0 | 0.0 | 0.0 | 0.0             | 0.1                             | 0.3           |
| 26-Feb                                      | 0.0                           | Z   | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.4 | 0.6 | 0.5 | 0.5  | 0.4 | 0.2 | 0.2 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0  | 0.0 | 0.0 | 0.0 | 0.0             | 0.1                             | 0.6           |
| 27-Feb                                      | 0.0                           | 0.0 | Z   | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.3 | 0.9 | 0.8 | 0.6  | 0.3 | 0.2 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0 | 0.0 | 0.0 | 0.0             | 0.1                             | 0.9           |
| 28-Feb                                      | 0.0                           | 0.0 | 0.0 | Z   | 0.0 | 0.0 | 0.0 | 0.1 | 0.3 | 0.7 | 0.8 | 0.6  | 0.6 | 0.5 | 0.4 | 0.3 | 0.2 | 0.1 | 0.0 | 0.0  | 0.0 | 0.0 | 0.0 | 0.0             | 0.2                             | 0.8           |
| 0.0   |                               |     |     |     |     |     |     |     |     |     |     |      |     |     |     |     |     |     |     |  |     |     |     | Diurnal Average |                                 |               |
| 0.1   |                               |     |     |     |     |     |     |     |     |     |     |      |     |     |     |     |     |     |     |  |     |     |     | Diurnal Maximum |                                 |               |
| Z - zerospan      C - Calibration           |                               |     |     |     |     |     |     |     |     |     |     |      |     |     |     |     |     |     |     |  |     |     |     |                 |                                 |               |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Nitric Oxide (NO) - ppb**  
**Stony Mountain - February 2023**





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Nitric Oxide (NO) - ppb**  
**Stony Mountain - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 20                            | 639                    | 100.00   | 100.00              |
| 21 - 40                           | 0                      | 0.00     | 100.00              |
| 41 - 80                           | 0                      | 0.00     | 100.00              |
| 81 - 159                          | 0                      | 0.00     | 100.00              |
| > 159                             | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 639

Total Number of Hours: 672



**Wood Buffalo Environmental Association**  
**Frequency Distribution**

**Nitric Oxide (NO) - ppb**  
**Stony Mountain - February 2023**

| <b>Concentration</b><br><b>Ranges (ppb)</b> | <b>Wind Direction</b> |     |    |     |    |     |    |     |    |     |    |     |    |     |    |     | <b>Totals</b> |
|---|-----------------------|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|---------------|
|   | N                     | NNE | NE | ENE | E  | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |               |
| 0 - 20                                      | 61                    | 33  | 33 | 26  | 25 | 15  | 15 | 19  | 33 | 76  | 57 | 43  | 52 | 46  | 48 | 56  | 638           |
| 21 - 40                                     | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| 41 - 80                                     | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| 81 - 159                                    | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| > 159                                       | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| <b>Totals</b>                               | 61                    | 33  | 33 | 26  | 25 | 15  | 15 | 19  | 33 | 76  | 57 | 43  | 52 | 46  | 48 | 56  | 638           |

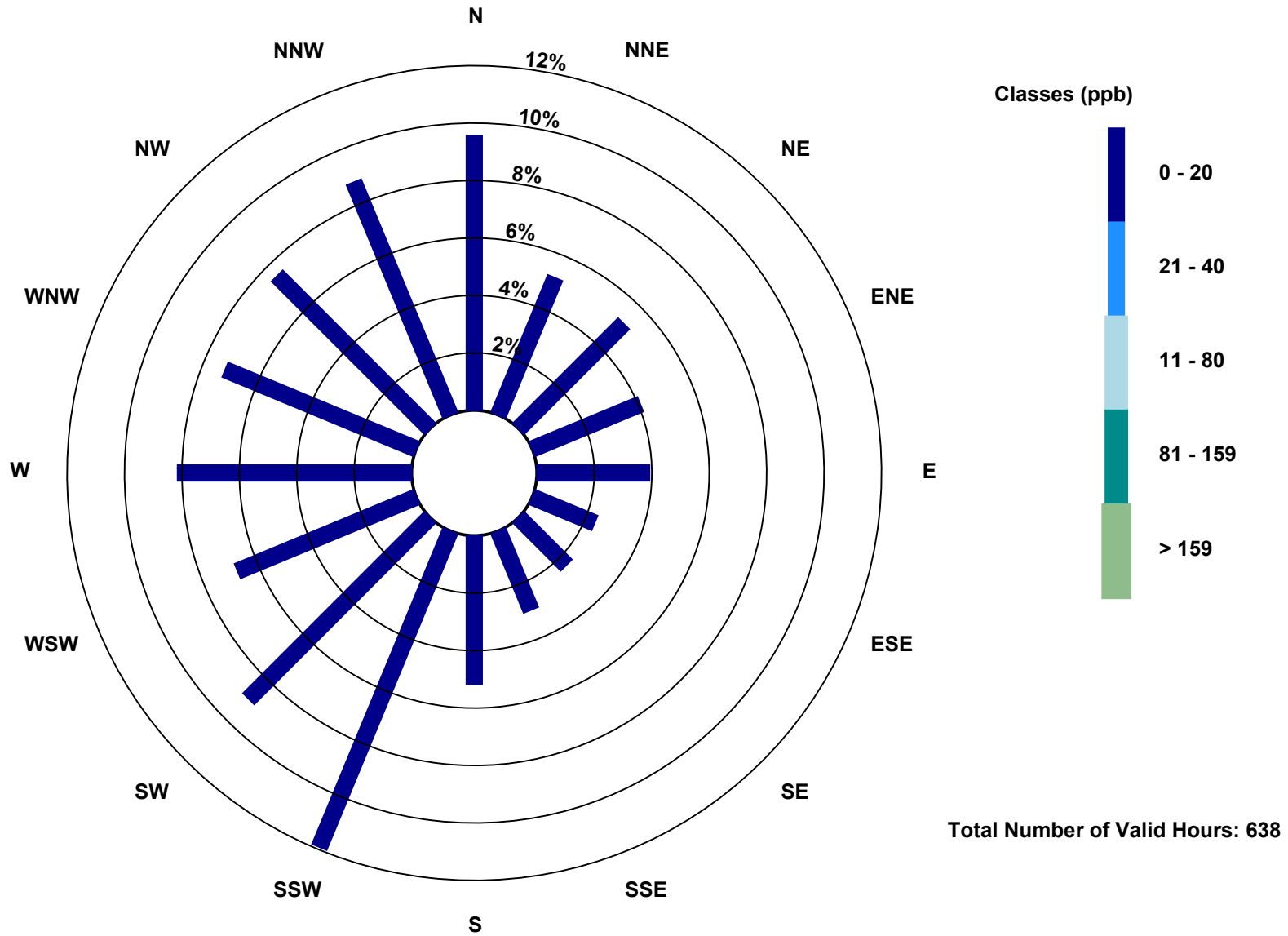
Total Number of Valid Hours: 638

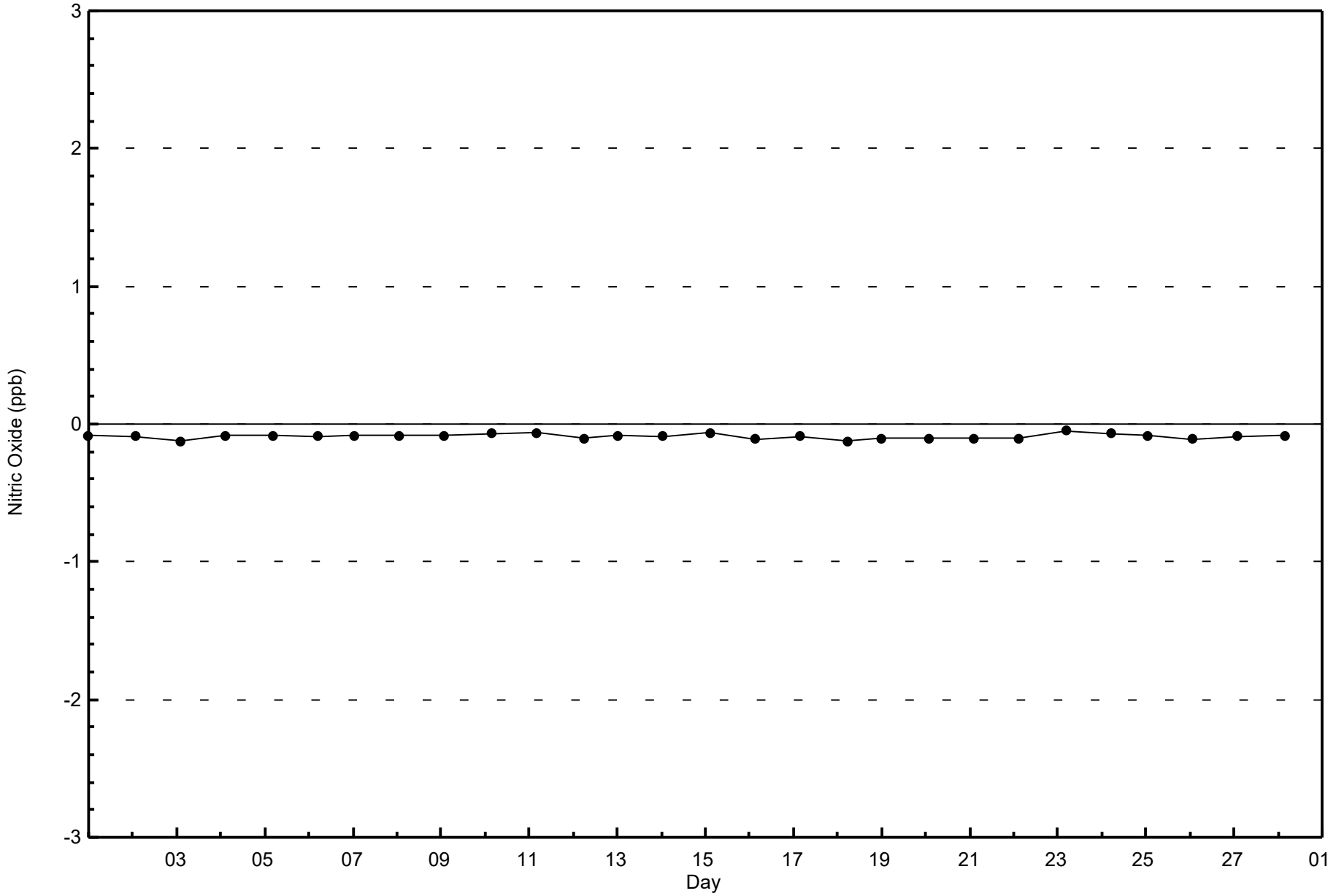
Total Number of Hours: 672

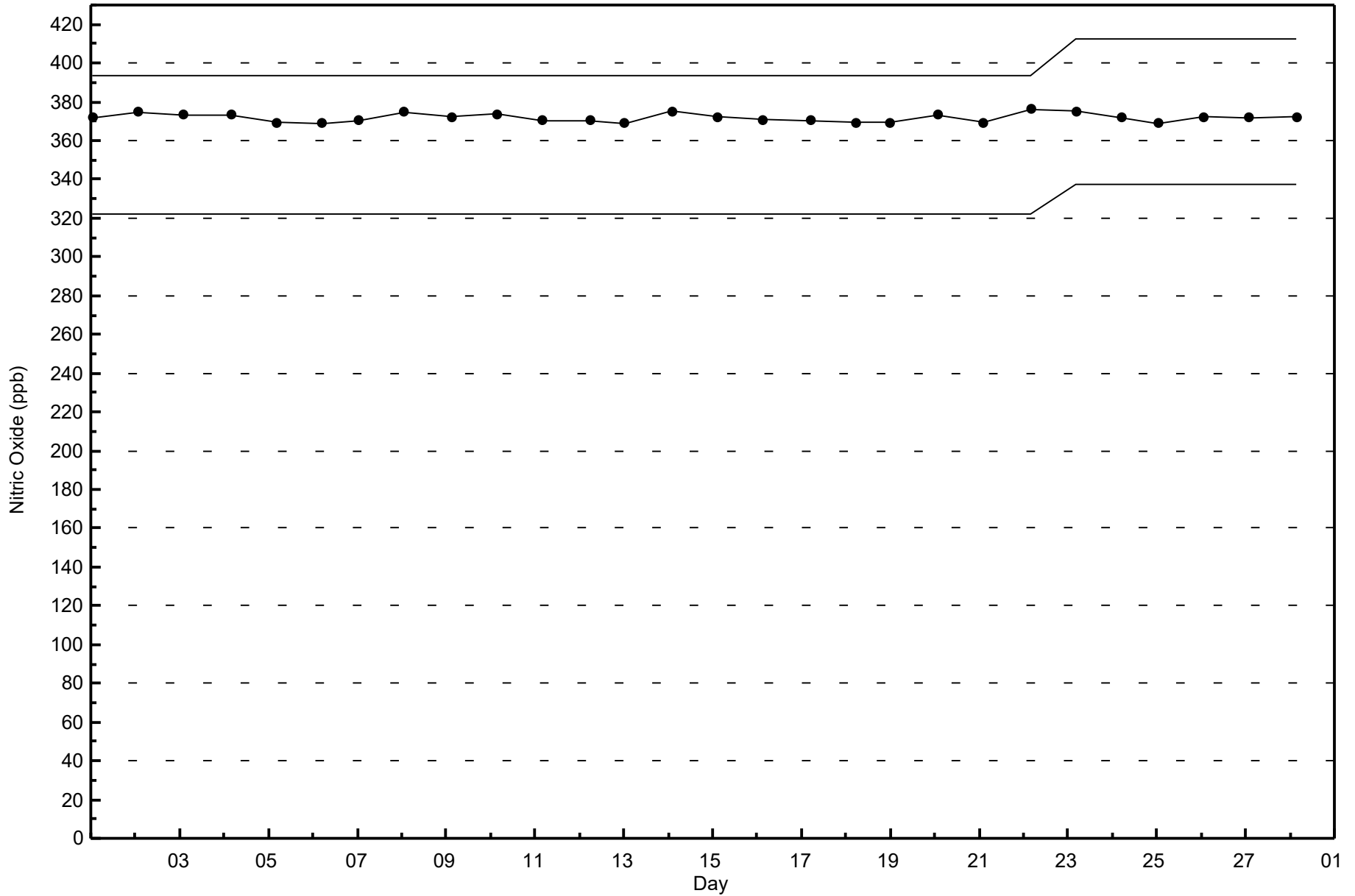


Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Nitric Oxide (NO) - ppb  
Stony Mountain









**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

**Nitrogen Dioxide (NO<sub>2</sub>) - ppb**  
**Stony Mountain - February 2023**

|  |  |          |                           |       |
|--|--|----------|---------------------------|-------|
| Number of Exceedences (AAAQO):             | 1-hr: 0  | 24-hr: 0 | Hours in Service:         | 672   |
| Maximum Value: 13.5 ppb on Feb 20 06:00    | Maximum Daily Average: 4.7 ppb on Feb 10   |          | Hours of Data:            | 639   |
| Minimum Value: 0.1 ppb on Feb 6 04:00      | Minimum Daily Average: 0.5 ppb on Feb 7  |          | Hours of Missing Data:    | 33    |
| Maximum Diurnal Average: 2.9 ppb at hour 6 | Minimum Diurnal Average: 1.4 ppb at hour 14  |          | Hours of Calibration:     | 33    |
| Monthly Average: 2.04 ppb                  | Percentiles: P <sub>1</sub> = 0.2 P <sub>10</sub> = 0.4 Q <sub>1</sub> = 0.7 Median = 1.5 Q <sub>3</sub> = 2.7 P <sub>90</sub> = 4.3 P <sub>99</sub> = 8.6 |          | Percent Operational Time: | 100.0 |

| Day    | Hourly Period Ending At (MST) |     |     |     |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Daily Average | Daily Maximum   |
|--------|-------------------------------|-----|-----|-----|------|------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---------------|-----------------|
|        | 1                             | 2   | 3   | 4   | 5    | 6    | 7    | 8   | 9   | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19  | 20  | 21  | 22  | 23  | 24  |               |                 |
| 1-Feb  | Z                             | 0.8 | 0.6 | 0.2 | 0.4  | 0.3  | 0.2  | 0.6 | 0.7 | 5.1 | 7.0 | 2.6 | 0.4 | 0.3 | 0.4 | 0.4 | 0.4 | 0.9 | 0.4 | 0.7 | 0.8 | 0.5 | 0.6 | 0.6 | 1.1           | 7.0             |
| 2-Feb  | 0.6                           | Z   | 0.6 | 0.6 | 1.1  | 1.3  | 1.2  | 2.2 | 2.3 | 1.1 | 1.0 | 1.2 | 1.6 | 1.9 | 2.2 | 2.1 | 1.6 | 3.1 | 3.2 | 2.6 | 3.1 | 2.8 | 2.6 | 2.5 | 1.8           | 3.2             |
| 3-Feb  | 2.2                           | 2.1 | Z   | 2.3 | 2.6  | 3.3  | 4.1  | 4.1 | 3.7 | 3.2 | 3.2 | 3.0 | 2.8 | 2.4 | 2.0 | 1.5 | 1.3 | 1.1 | 1.0 | 0.9 | 2.4 | 2.4 | 2.7 | 2.2 | 2.5           | 4.1             |
| 4-Feb  | 2.4                           | 2.6 | 2.1 | Z   | 1.9  | 1.9  | 2.1  | 2.6 | 2.7 | 2.2 | 1.5 | 1.4 | 1.6 | 2.0 | 2.5 | 2.8 | 2.9 | 2.8 | 2.9 | 2.6 | 2.2 | 2.2 | 2.1 | 1.6 | 2.2           | 2.9             |
| 5-Feb  | 1.4                           | 1.4 | 1.4 | 1.9 | Z    | 3.2  | 2.9  | 2.9 | 3.1 | 3.7 | 3.2 | 2.7 | 2.4 | 2.7 | 2.9 | 3.1 | 3.9 | 4.2 | 3.8 | 2.7 | 2.6 | 2.4 | 1.9 | 0.9 | 2.7           | 4.2             |
| 6-Feb  | 0.7                           | 0.3 | 0.2 | 0.1 | 0.1  | Z    | 0.2  | 0.3 | 0.6 | 0.6 | 0.5 | 0.4 | 0.4 | 0.4 | 0.5 | 0.5 | 0.6 | 0.8 | 1.1 | 1.3 | 1.6 | 1.5 | 1.2 | 1.2 | 0.7           | 1.6             |
| 7-Feb  | Z                             | 1.2 | 0.9 | 0.8 | 0.7  | 0.7  | 0.6  | 0.8 | 1.0 | 0.2 | 0.3 | 0.3 | 0.3 | 0.3 | 0.5 | 0.4 | 0.5 | 0.4 | 0.3 | 0.4 | 0.4 | 0.5 | 0.5 | 0.5 | 0.5           | 1.2             |
| 8-Feb  | 0.6                           | Z   | 0.7 | 0.8 | 0.7  | 0.6  | 0.6  | 0.6 | 0.7 | 0.9 | 0.9 | 0.8 | 0.7 | 0.5 | 0.4 | 0.5 | 0.6 | 0.8 | 1.0 | 0.9 | 1.0 | 1.3 | 1.4 | 1.4 | 0.8           | 1.4             |
| 9-Feb  | 1.5                           | 1.5 | Z   | 0.9 | 0.7  | 0.8  | 0.8  | 0.8 | 0.9 | 1.1 | 1.2 | 1.1 | 1.1 | 0.8 | 0.9 | 1.4 | 2.0 | 2.5 | 3.3 | 3.2 | 2.2 | 2.1 | 2.7 | 3.4 | 1.6           | 3.4             |
| 10-Feb | 4.3                           | 4.2 | 4.1 | Z   | 4.0  | 4.2  | 4.4  | 4.4 | 5.3 | 6.3 | 6.4 | 5.4 | 5.0 | 4.9 | 5.6 | 6.0 | 6.3 | 6.0 | 5.7 | 5.2 | 4.3 | 3.3 | 2.1 | 1.1 | 4.7           | 6.4             |
| 11-Feb | 0.8                           | 0.7 | 0.7 | 0.7 | Z    | 0.7  | 0.6  | 0.6 | 0.7 | 0.8 | 0.6 | 0.6 | 0.6 | 0.5 | 0.5 | 0.6 | 0.7 | 0.7 | 0.6 | 0.4 | 0.3 | 0.3 | 0.3 | 0.3 | 0.6           | 0.8             |
| 12-Feb | 0.3                           | 0.4 | 0.4 | 0.5 | 0.5  | Z    | 0.5  | 0.5 | 0.6 | 0.5 | 0.5 | 0.6 | 0.5 | 0.4 | 0.5 | 0.5 | 0.6 | 0.7 | 1.0 | 1.3 | 1.2 | 1.5 | 1.6 | 2.1 | 0.7           | 2.1             |
| 13-Feb | Z                             | 1.5 | 1.4 | 1.5 | 1.1  | 0.6  | 0.4  | 0.4 | 0.4 | 0.4 | 0.5 | 0.4 | 1.6 | 2.7 | 2.2 | 1.3 | 1.8 | 2.9 | 2.4 | 2.2 | 1.3 | 1.5 | 1.9 | 1.3 | 2.9           |                 |
| 14-Feb | 2.4                           | Z   | 2.4 | 1.7 | 1.4  | 1.2  | 1.3  | 1.4 | 1.4 | 1.7 | 1.2 | 1.3 | 1.4 | 1.2 | 1.1 | 1.3 | 0.9 | 1.2 | 1.7 | 1.2 | 0.4 | 0.5 | 3.7 | 4.8 | 1.6           | 4.8             |
| 15-Feb | 5.3                           | 5.0 | Z   | 7.1 | 6.6  | 6.2  | 5.5  | 2.7 | 2.0 | 2.0 | 2.3 | 1.7 | 1.7 | 1.7 | 1.5 | 1.6 | 1.6 | 1.6 | 1.5 | 2.3 | 3.3 | 2.2 | 1.4 | 1.9 | 3.0           | 7.1             |
| 16-Feb | 2.7                           | 2.8 | 2.7 | Z   | 2.9  | 3.4  | 3.5  | 3.7 | 3.7 | 4.0 | 4.4 | 4.2 | 4.4 | 4.2 | 4.0 | 3.7 | 3.3 | 3.0 | 2.2 | 1.6 | 0.9 | 0.8 | 0.4 | 0.5 | 2.9           | 4.4             |
| 17-Feb | 0.6                           | 0.5 | 0.4 | 1.7 | Z    | 0.3  | 0.3  | 0.3 | 0.2 | 0.2 | 0.3 | 0.3 | 0.4 | 0.4 | 0.3 | 0.3 | 0.3 | 1.2 | 4.5 | 4.3 | 4.1 | 4.9 | 4.5 | 4.6 | 1.5           | 4.9             |
| 18-Feb | 8.8                           | 9.2 | 4.6 | 2.7 | 2.1  | Z    | 1.2  | 0.9 | 0.6 | 0.4 | 0.6 | 0.3 | 0.4 | 0.3 | 0.5 | 0.5 | 1.0 | 0.6 | 0.4 | 0.5 | 1.3 | 1.9 | 1.5 | 1.2 | 1.8           | 9.2             |
| 19-Feb | Z                             | 1.7 | 2.0 | 2.2 | 2.3  | 2.5  | 3.4  | 4.1 | 4.0 | 3.3 | 2.7 | 2.3 | 2.3 | 2.0 | 2.2 | 2.3 | 1.1 | 0.6 | 0.6 | 0.8 | 0.4 | 0.3 | 0.3 | 0.3 | 1.9           | 4.1             |
| 20-Feb | 0.7                           | Z   | 0.9 | 5.3 | 12.6 | 13.5 | 10.9 | 9.0 | 7.8 | 6.3 | 4.0 | 2.6 | 1.5 | 0.7 | 0.4 | 0.4 | 0.5 | 0.4 | 1.0 | 0.9 | 4.1 | 3.9 | 6.0 | 3.6 | 4.2           | 13.5            |
| 21-Feb | 2.0                           | 1.6 | Z   | 2.4 | 3.6  | 5.3  | 4.7  | 4.3 | 3.9 | 3.6 | 4.1 | 2.4 | 1.2 | 1.0 | 1.9 | 2.0 | 3.3 | 5.0 | 5.4 | 4.3 | 4.4 | 7.4 | 6.9 | 6.4 | 3.8           | 7.4             |
| 22-Feb | 4.9                           | 3.9 | 3.2 | Z   | 2.5  | 2.3  | 3.9  | 6.2 | 4.5 | 3.1 | 2.3 | C   | C   | C   | C   | C   | 1.3 | 2.1 | 4.0 | 5.3 | 2.2 | 1.8 | 2.0 | 3.5 | 3.3           | 6.2             |
| 23-Feb | 2.9                           | 2.3 | 2.5 | 3.0 | Z    | 7.6  | 9.1  | 8.2 | 7.6 | 6.4 | 3.6 | 2.7 | 2.4 | 1.5 | 1.5 | 1.4 | 1.2 | 1.0 | 0.9 | 0.6 | 0.8 | 0.8 | 0.9 | 1.0 | 3.0           | 9.1             |
| 24-Feb | 0.9                           | 0.9 | 1.5 | 1.9 | 1.8  | Z    | 1.6  | 1.4 | 1.2 | 1.3 | 1.0 | 0.9 | 0.8 | 0.9 | 0.8 | 1.0 | 1.0 | 1.0 | 1.1 | 1.6 | 2.1 | 2.2 | 2.2 | 2.6 | 1.4           | 2.6             |
| 25-Feb | Z                             | 3.3 | 3.8 | 3.8 | 3.4  | 3.2  | 3.1  | 3.0 | 2.3 | 1.8 | 1.3 | 1.1 | 1.0 | 0.9 | 0.8 | 0.7 | 0.6 | 0.9 | 1.1 | 1.1 | 1.2 | 1.5 | 2.4 | 2.8 | 2.0           | 3.8             |
| 26-Feb | 2.9                           | Z   | 2.8 | 3.5 | 4.0  | 4.6  | 4.9  | 5.1 | 5.5 | 4.7 | 3.9 | 3.4 | 2.2 | 1.3 | 1.5 | 1.3 | 1.1 | 1.2 | 1.1 | 0.8 | 0.9 | 0.8 | 0.8 | 1.0 | 2.6           | 5.5             |
| 27-Feb | 1.3                           | 1.0 | Z   | 0.7 | 0.7  | 0.8  | 1.0  | 1.2 | 2.6 | 3.4 | 2.4 | 1.4 | 1.1 | 0.8 | 0.7 | 0.6 | 0.5 | 0.6 | 0.5 | 0.6 | 1.4 | 1.9 | 2.7 | 3.1 | 1.3           | 3.4             |
| 28-Feb | 2.8                           | 2.3 | 2.1 | Z   | 1.7  | 1.1  | 1.2  | 2.7 | 2.7 | 2.5 | 2.2 | 1.4 | 1.2 | 1.1 | 1.1 | 1.0 | 1.0 | 2.2 | 2.7 | 1.6 | 1.4 | 1.7 | 3.6 | 2.3 | 1.9           | 3.6             |
|        | 2.3                           | 2.2 | 1.8 | 2.0 | 2.5  | 2.9  | 2.7  | 2.7 | 2.6 | 2.5 | 2.3 | 1.7 | 1.5 | 1.4 | 1.5 | 1.5 | 1.5 | 1.7 | 2.0 | 1.9 | 1.9 | 2.0 | 2.2 | 2.1 |               | Diurnal Average |
|        | 8.8                           | 9.2 | 4.6 | 7.1 | 12.6 | 13.5 | 10.9 | 9.0 | 7.8 | 6.4 | 7.0 | 5.4 | 5.0 | 4.9 | 5.6 | 6.0 | 6.3 | 6.0 | 5.7 | 5.3 | 4.4 | 7.4 | 6.9 | 6.4 |               | Diurnal Maximum |

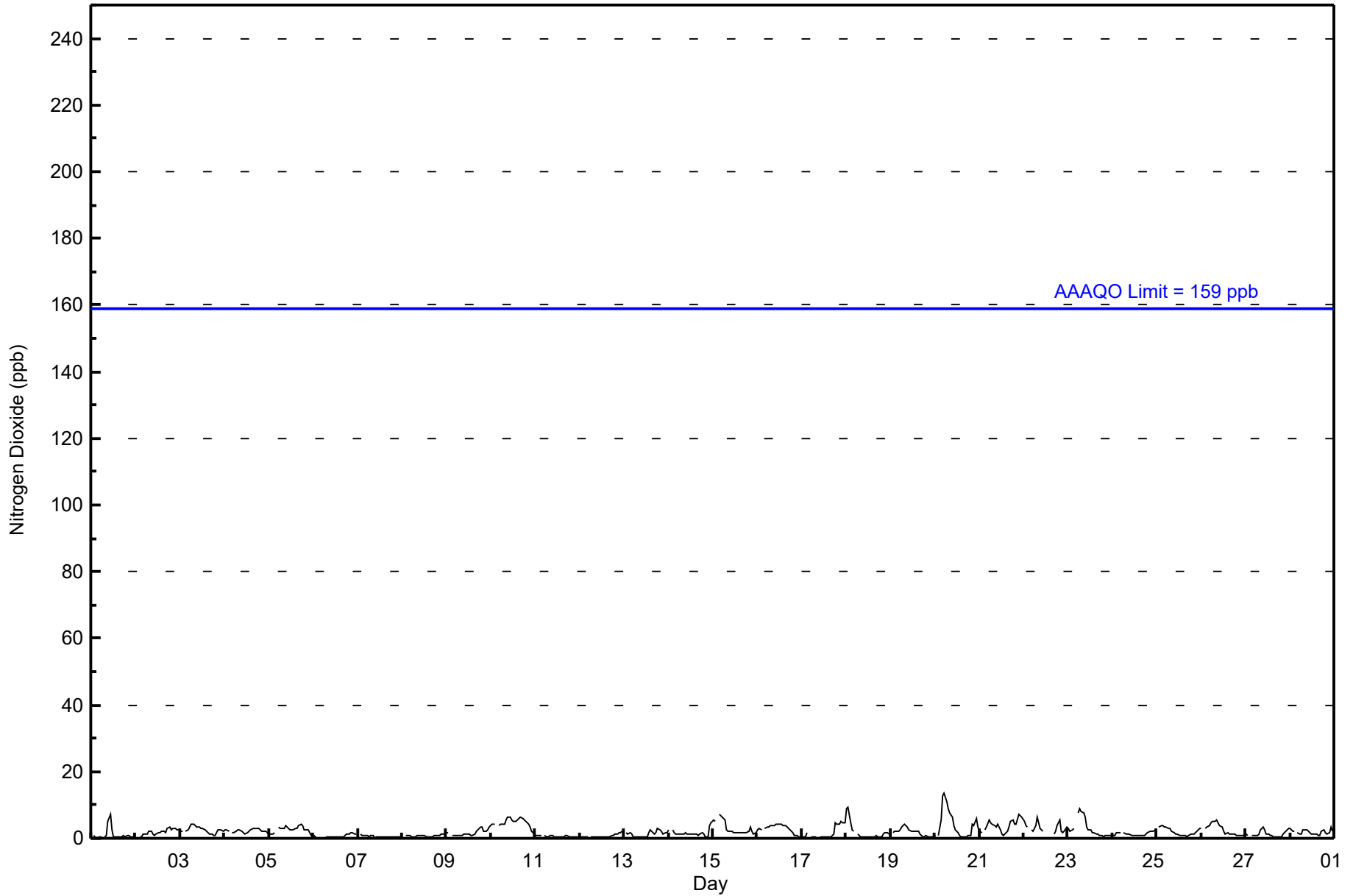
Z - zerospan      C - Calibration  
 Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 159 ppb





**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Nitrogen Dioxide (NO<sub>2</sub>) - ppb**  
**Stony Mountain - February 2023**





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Nitrogen Dioxide (NO<sub>2</sub>) - ppb**  
**Stony Mountain - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 20                            | 639                    | 100.00   | 100.00              |
| 21 - 40                           | 0                      | 0.00     | 100.00              |
| 41 - 80                           | 0                      | 0.00     | 100.00              |
| 81 - 159                          | 0                      | 0.00     | 100.00              |
| > 159                             | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 639

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Nitrogen Dioxide (NO<sub>2</sub>) - ppb  
Stony Mountain - February 2023**

| <b>Concentration<br/>Ranges (ppb)</b> | <b>Wind Direction</b> |            |           |            |           |            |           |            |           |            |           |            |           |            |           |            | <b>Totals</b> |
|---------------------------------------|-----------------------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|---------------|
|                                       | <b>N</b>              | <b>NNE</b> | <b>NE</b> | <b>ENE</b> | <b>E</b>  | <b>ESE</b> | <b>SE</b> | <b>SSE</b> | <b>S</b>  | <b>SSW</b> | <b>SW</b> | <b>WSW</b> | <b>W</b>  | <b>WNW</b> | <b>NW</b> | <b>NNW</b> |               |
| 0 - 20                                | 61                    | 33         | 33        | 26         | 25        | 15         | 15        | 19         | 33        | 76         | 57        | 43         | 52        | 46         | 48        | 56         | 638           |
| 21 - 40                               | 0                     | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0             |
| 41 - 80                               | 0                     | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0             |
| 81 - 159                              | 0                     | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0             |
| > 159                                 | 0                     | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0             |
| <b>Totals</b>                         | <b>61</b>             | <b>33</b>  | <b>33</b> | <b>26</b>  | <b>25</b> | <b>15</b>  | <b>15</b> | <b>19</b>  | <b>33</b> | <b>76</b>  | <b>57</b> | <b>43</b>  | <b>52</b> | <b>46</b>  | <b>48</b> | <b>56</b>  | <b>638</b>    |

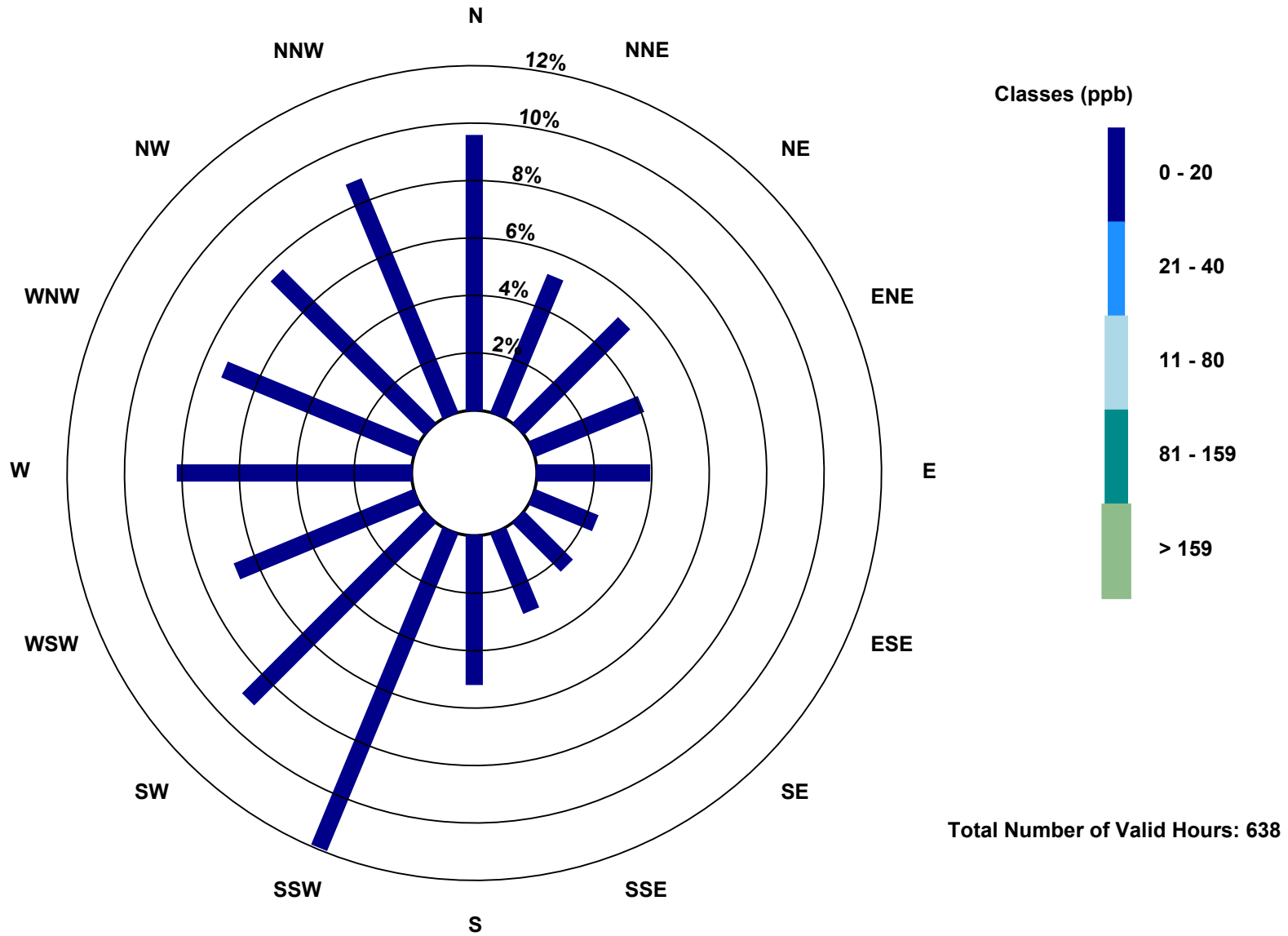
Total Number of Valid Hours: 638

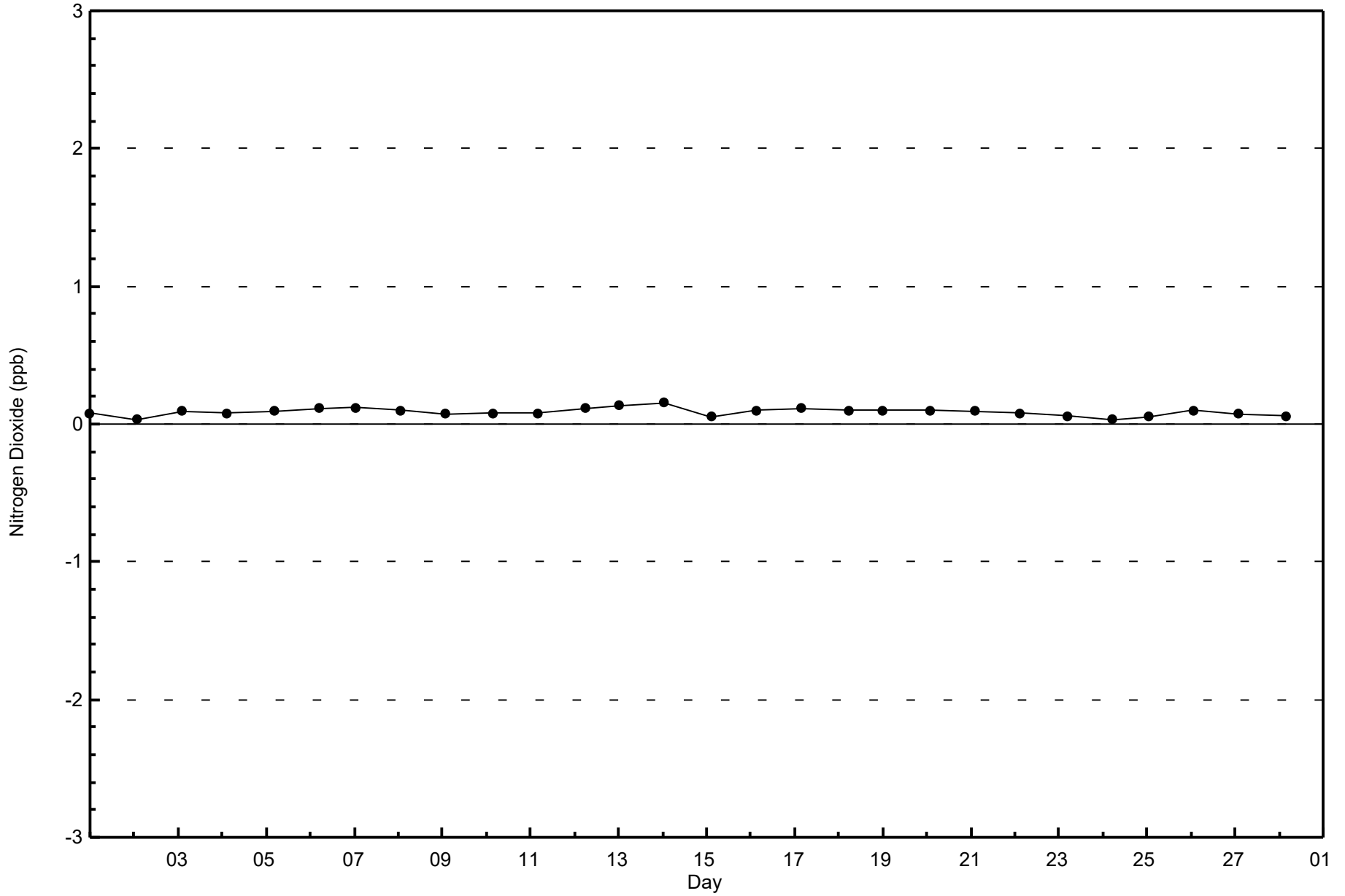
Total Number of Hours: 672

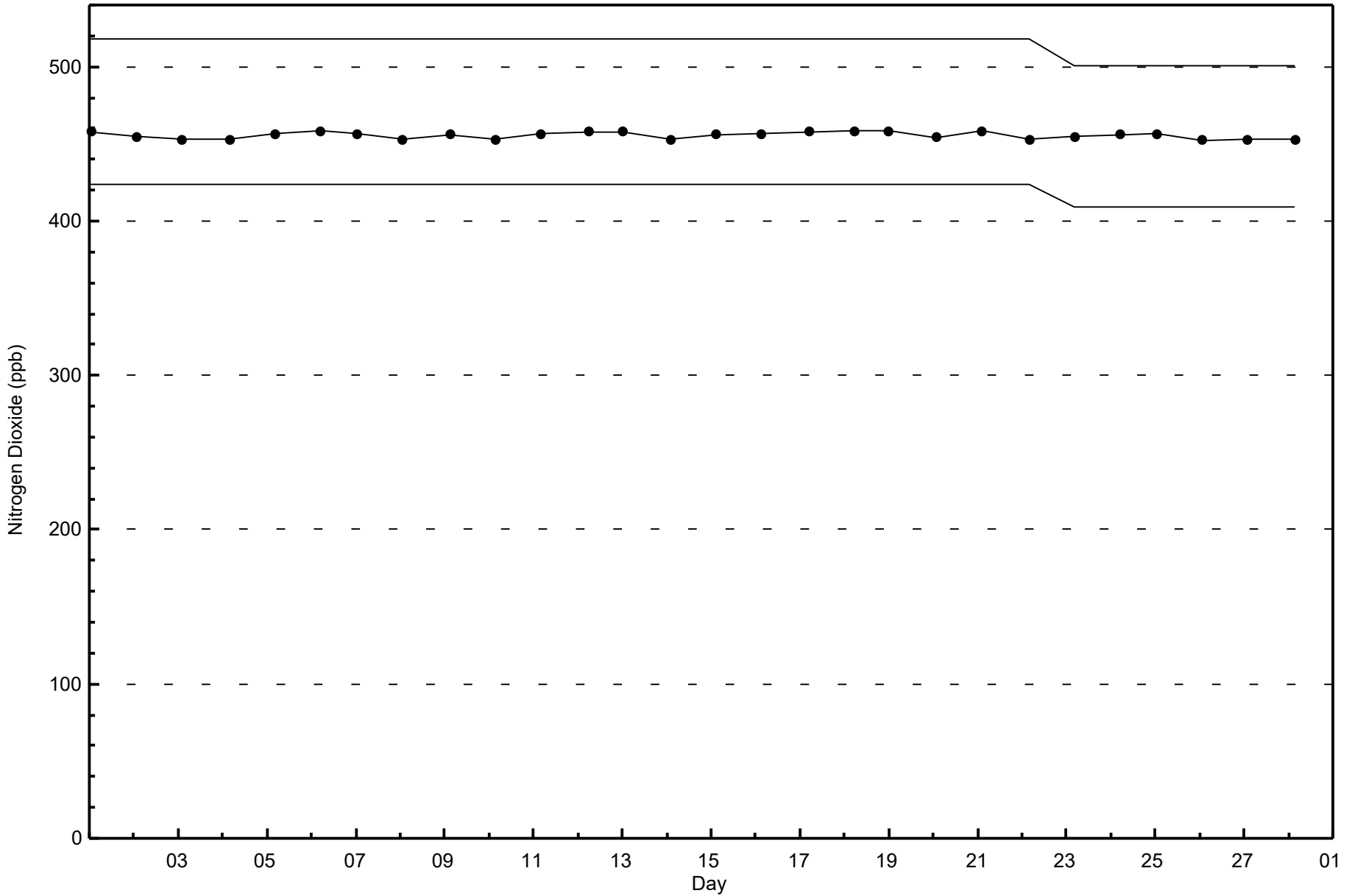


Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Nitrogen Dioxide (NO<sub>2</sub>) - ppb  
Stony Mountain









**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

**Nitrogen Oxides (NO<sub>x</sub>) - ppb**  
**Stony Mountain - February 2023**

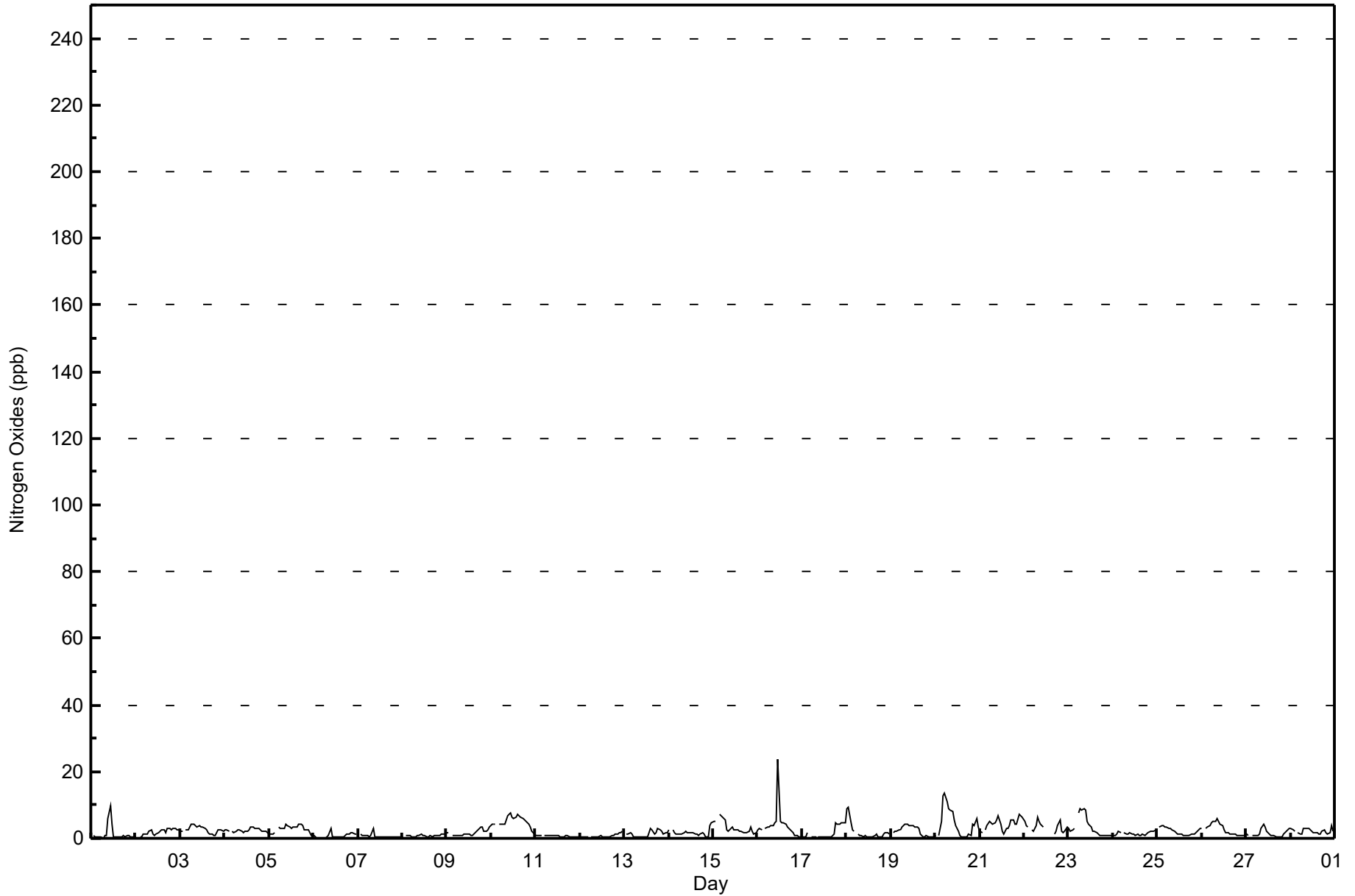
| Maximum Value: 23.6 ppb on Feb 16 12:00     |                               | Maximum Daily Average: 5.0 ppb on Feb 10   |     | Hours in Service: 672           |      |      |      |     |     |     |     |      |     |     |     |     |     |     |     |     |     |     |     |                 |               |               |
|---|-------------------------------|--|-----|---------------------------------|------|------|------|-----|-----|-----|-----|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----------------|---------------|---------------|
| Minimum Value: 0.1 ppb on Feb 6 05:00       |                               | Minimum Daily Average: 0.6 ppb on Feb 11   |     | Hours of Data: 639              |      |      |      |     |     |     |     |      |     |     |     |     |     |     |     |     |     |     |     |                 |               |               |
| Maximum Diurnal Average: 3.1 ppb at hour 10 |                               | Minimum Diurnal Average: 1.6 ppb at hour 17  |     | Hours of Missing Data: 33       |      |      |      |     |     |     |     |      |     |     |     |     |     |     |     |     |     |     |     |                 |               |               |
| Monthly Average: 2.23 ppb                   |                               | Percentiles: P <sub>1</sub> = 0.2 P <sub>10</sub> = 0.5 Q <sub>1</sub> = 0.8 Median = 1.6 Q <sub>3</sub> = 3.0 P <sub>90</sub> = 4.6 P <sub>99</sub> = 9.1 |     | Hours of Calibration: 33        |      |      |      |     |     |     |     |      |     |     |     |     |     |     |     |     |     |     |     |                 |               |               |
|   |                               |  |     | Percent Operational Time: 100.0 |      |      |      |     |     |     |     |      |     |     |     |     |     |     |     |     |     |     |     |                 |               |               |
| Day   | Hourly Period Ending At (MST) |  |     |                                 |      |      |      |     |     |     |     |      |     |     |     |     |     |     |     |     |     |     |     |                 | Daily Average | Daily Maximum |
|   | 1                             | 2  | 3   | 4                               | 5    | 6    | 7    | 8   | 9   | 10  | 11  | 12   | 13  | 14  | 15  | 16  | 17  | 18  | 19  | 20  | 21  | 22  | 23  | 24              |               |               |
| 1-Feb                                       | Z                             | 0.8  | 0.6 | 0.2                             | 0.4  | 0.3  | 0.2  | 0.7 | 0.9 | 6.0 | 9.7 | 4.2  | 0.5 | 0.3 | 0.5 | 0.4 | 0.4 | 0.9 | 0.4 | 0.7 | 0.8 | 0.5 | 0.6 | 0.6             | 1.3           | 9.7           |
| 2-Feb                                       | 0.6                           | Z  | 0.6 | 0.6                             | 1.1  | 1.3  | 1.2  | 2.2 | 2.4 | 1.2 | 1.1 | 1.4  | 1.9 | 2.2 | 2.5 | 2.3 | 1.7 | 3.1 | 3.2 | 2.6 | 3.1 | 2.8 | 2.6 | 2.5             | 1.9           | 3.2           |
| 3-Feb                                       | 2.2                           | 2.1  | Z   | 2.3                             | 2.6  | 3.3  | 4.1  | 4.1 | 3.8 | 3.5 | 3.7 | 3.6  | 3.4 | 2.9 | 2.4 | 1.7 | 1.3 | 1.1 | 1.0 | 0.9 | 2.4 | 2.4 | 2.7 | 2.2             | 2.6           | 4.1           |
| 4-Feb                                       | 2.4                           | 2.6  | 2.1 | Z                               | 1.9  | 1.9  | 2.1  | 2.6 | 2.7 | 2.3 | 1.8 | 2.0  | 2.1 | 2.6 | 3.4 | 3.3 | 3.0 | 2.8 | 2.9 | 2.6 | 2.2 | 2.2 | 2.1 | 1.6             | 2.4           | 3.4           |
| 5-Feb                                       | 1.4                           | 1.4  | 1.4 | 1.9                             | Z    | 3.2  | 2.9  | 2.9 | 3.2 | 4.1 | 3.9 | 3.4  | 3.0 | 3.3 | 3.4 | 3.4 | 4.0 | 4.2 | 3.8 | 2.7 | 2.6 | 2.4 | 1.9 | 0.9             | 2.8           | 4.2           |
| 6-Feb                                       | 0.7                           | 0.3  | 0.2 | 0.1                             | 0.1  | Z    | 0.2  | 0.3 | 0.7 | 2.9 | 0.5 | 0.5  | 0.5 | 0.4 | 0.5 | 0.5 | 0.6 | 0.8 | 1.1 | 1.3 | 1.6 | 1.5 | 1.2 | 1.2             | 0.8           | 2.9           |
| 7-Feb                                       | Z                             | 1.2  | 0.9 | 0.8                             | 0.7  | 0.7  | 0.6  | 0.9 | 3.0 | 0.2 | 0.3 | 0.3  | 0.3 | 0.3 | 0.5 | 0.4 | 0.5 | 0.4 | 0.3 | 0.4 | 0.4 | 0.5 | 0.5 | 0.5             | 0.6           | 3.0           |
| 8-Feb                                       | 0.6                           | Z  | 0.7 | 0.8                             | 0.7  | 0.6  | 0.6  | 0.6 | 0.7 | 1.0 | 1.1 | 1.0  | 0.9 | 0.6 | 0.5 | 0.6 | 0.6 | 0.8 | 1.0 | 0.9 | 1.0 | 1.3 | 1.4 | 1.4             | 0.8           | 1.4           |
| 9-Feb                                       | 1.5                           | 1.5  | Z   | 0.9                             | 0.7  | 0.8  | 0.8  | 0.8 | 0.9 | 1.2 | 1.4 | 1.4  | 1.4 | 0.9 | 1.0 | 1.5 | 2.1 | 2.5 | 3.3 | 3.2 | 2.2 | 2.1 | 2.7 | 3.4             | 1.7           | 3.4           |
| 10-Feb                                      | 4.4                           | 4.2  | 4.1 | Z                               | 4.0  | 4.2  | 4.4  | 4.4 | 5.4 | 7.0 | 7.5 | 6.4  | 6.0 | 6.2 | 7.1 | 6.6 | 6.5 | 6.0 | 5.7 | 5.2 | 4.3 | 3.3 | 2.1 | 1.1             | 5.0           | 7.5           |
| 11-Feb                                      | 0.8                           | 0.7  | 0.7 | 0.7                             | Z    | 0.7  | 0.6  | 0.6 | 0.7 | 0.8 | 0.7 | 0.7  | 0.7 | 0.6 | 0.5 | 0.6 | 0.7 | 0.7 | 0.6 | 0.4 | 0.3 | 0.3 | 0.3 | 0.3             | 0.6           | 0.8           |
| 12-Feb                                      | 0.3                           | 0.4  | 0.4 | 0.5                             | 0.5  | Z    | 0.5  | 0.5 | 0.6 | 0.6 | 0.6 | 0.6  | 0.7 | 0.6 | 0.5 | 0.5 | 0.6 | 0.7 | 1.0 | 1.3 | 1.2 | 1.5 | 1.6 | 2.1             | 0.8           | 2.1           |
| 13-Feb                                      | Z                             | 1.5  | 1.4 | 1.5                             | 1.1  | 0.6  | 0.4  | 0.4 | 0.4 | 0.4 | 0.4 | 0.5  | 0.4 | 1.7 | 2.9 | 2.4 | 1.4 | 1.8 | 2.9 | 2.4 | 2.2 | 1.3 | 1.5 | 1.9             | 1.4           | 2.9           |
| 14-Feb                                      | 2.4                           | Z  | 2.4 | 1.7                             | 1.4  | 1.2  | 1.3  | 1.4 | 1.5 | 2.0 | 1.5 | 1.6  | 1.8 | 1.6 | 1.4 | 1.4 | 0.9 | 1.2 | 1.7 | 1.2 | 0.4 | 0.5 | 3.7 | 4.8             | 1.7           | 4.8           |
| 15-Feb                                      | 5.3                           | 5.0  | Z   | 7.1                             | 6.6  | 6.2  | 5.5  | 2.7 | 2.1 | 2.6 | 3.4 | 2.6  | 2.7 | 2.6 | 2.0 | 2.1 | 1.8 | 1.6 | 1.5 | 2.3 | 3.3 | 2.2 | 1.4 | 1.9             | 3.2           | 7.1           |
| 16-Feb                                      | 2.7                           | 2.8  | 2.7 | Z                               | 2.9  | 3.4  | 3.5  | 3.7 | 4.0 | 4.5 | 5.0 | 23.6 | 5.1 | 4.8 | 4.6 | 4.1 | 3.5 | 3.0 | 2.2 | 1.6 | 0.9 | 0.8 | 0.4 | 0.5             | 3.9           | 23.6          |
| 17-Feb                                      | 0.6                           | 0.5  | 0.4 | 1.7                             | Z    | 0.3  | 0.3  | 0.3 | 0.2 | 0.2 | 0.3 | 0.3  | 0.4 | 0.5 | 0.4 | 0.3 | 0.3 | 1.2 | 4.6 | 4.3 | 4.1 | 4.9 | 4.5 | 4.6             | 1.5           | 4.9           |
| 18-Feb                                      | 8.8                           | 9.2  | 4.6 | 2.7                             | 2.1  | Z    | 1.2  | 0.9 | 0.7 | 0.5 | 0.7 | 0.4  | 0.5 | 0.5 | 0.6 | 0.7 | 1.2 | 0.6 | 0.4 | 0.5 | 1.3 | 1.9 | 1.5 | 1.2             | 1.9           | 9.2           |
| 19-Feb                                      | Z                             | 1.7  | 2.0 | 2.2                             | 2.3  | 2.5  | 3.4  | 4.2 | 4.4 | 4.1 | 3.8 | 3.7  | 3.6 | 3.2 | 3.4 | 3.0 | 1.2 | 0.6 | 0.6 | 0.8 | 0.4 | 0.3 | 0.3 | 0.3             | 2.3           | 4.4           |
| 20-Feb                                      | 0.7                           | Z  | 0.9 | 5.3                             | 12.6 | 13.6 | 10.9 | 9.1 | 8.7 | 8.0 | 5.6 | 3.6  | 2.0 | 0.8 | 0.5 | 0.5 | 0.5 | 0.4 | 1.1 | 0.9 | 4.1 | 3.9 | 6.0 | 3.6             | 4.5           | 13.6          |
| 21-Feb                                      | 2.0                           | 1.6  | Z   | 2.4                             | 3.6  | 5.3  | 4.7  | 4.4 | 4.6 | 5.3 | 6.9 | 4.1  | 2.0 | 1.5 | 2.9 | 2.9 | 4.0 | 5.3 | 5.4 | 4.3 | 4.4 | 7.4 | 6.9 | 6.4             | 4.3           | 7.4           |
| 22-Feb                                      | 4.9                           | 3.9  | 3.2 | Z                               | 2.5  | 2.3  | 3.9  | 6.3 | 5.3 | 4.4 | 3.5 | C    | C   | C   | C   | C   | 1.4 | 2.1 | 4.0 | 5.3 | 2.2 | 1.8 | 2.0 | 3.5             | 3.5           | 6.3           |
| 23-Feb                                      | 2.9                           | 2.3  | 2.5 | 3.0                             | Z    | 7.6  | 9.1  | 8.4 | 8.7 | 8.5 | 5.1 | 4.1  | 3.6 | 2.2 | 2.0 | 1.7 | 1.3 | 1.0 | 0.9 | 0.6 | 0.8 | 0.8 | 0.9 | 1.0             | 3.4           | 9.1           |
| 24-Feb                                      | 0.9                           | 0.9  | 1.5 | 1.9                             | 1.8  | Z    | 1.6  | 1.4 | 1.3 | 1.6 | 1.2 | 1.1  | 1.0 | 1.1 | 1.0 | 1.1 | 1.1 | 1.0 | 1.1 | 1.6 | 2.1 | 2.2 | 2.2 | 2.6             | 1.5           | 2.6           |
| 25-Feb                                      | Z                             | 3.3  | 3.8 | 3.8                             | 3.4  | 3.2  | 3.1  | 3.0 | 2.5 | 2.0 | 1.6 | 1.3  | 1.1 | 1.1 | 0.9 | 0.8 | 0.7 | 0.9 | 1.1 | 1.1 | 1.2 | 1.5 | 2.4 | 2.8             | 2.0           | 3.8           |
| 26-Feb                                      | 2.9                           | Z  | 2.8 | 3.5                             | 4.0  | 4.6  | 4.9  | 5.2 | 5.9 | 5.3 | 4.4 | 3.9  | 2.6 | 1.5 | 1.7 | 1.4 | 1.2 | 1.2 | 1.1 | 0.8 | 0.9 | 0.8 | 0.8 | 1.0             | 2.7           | 5.9           |
| 27-Feb                                      | 1.3                           | 1.0  | Z   | 0.7                             | 0.7  | 0.8  | 1.0  | 1.2 | 2.9 | 4.3 | 3.2 | 2.0  | 1.4 | 1.0 | 0.8 | 0.7 | 0.5 | 0.6 | 0.5 | 0.6 | 1.4 | 1.9 | 2.7 | 3.1             | 1.5           | 4.3           |
| 28-Feb                                      | 2.8                           | 2.3  | 2.1 | Z                               | 1.7  | 1.1  | 1.2  | 2.8 | 3.0 | 3.2 | 3.0 | 2.0  | 1.8 | 1.6 | 1.5 | 1.3 | 1.2 | 2.3 | 2.7 | 1.6 | 1.4 | 1.7 | 3.6 | 2.3             | 2.1           | 3.6           |
|   |                               |  |     |                                 |      |      |      |     |     |     |     |      |     |     |     |     |     |     |     |     |     |     |     | Diurnal Average |               |               |
|   |                               |  |     |                                 |      |      |      |     |     |     |     |      |     |     |     |     |     |     |     |     |     |     |     | Diurnal Maximum |               |               |
|   |                               |  |     |                                 |      |      |      |     |     |     |     |      |     |     |     |     |     |     |     |     |     |     |     | 2.3 8.8         |               |               |
|   |                               |  |     |                                 |      |      |      |     |     |     |     |      |     |     |     |     |     |     |     |     |     |     |     | 2.2 9.2         |               |               |
|   |                               |  |     |                                 |      |      |      |     |     |     |     |      |     |     |     |     |     |     |     |     |     |     |     | 1.8 4.6         |               |               |
|   |                               |  |     |                                 |      |      |      |     |     |     |     |      |     |     |     |     |     |     |     |     |     |     |     | 2.0 7.1         |               |               |
|   |                               |  |     |                                 |      |      |      |     |     |     |     |      |     |     |     |     |     |     |     |     |     |     |     | 2.5 12.6        |               |               |
|   |                               |  |     |                                 |      |      |      |     |     |     |     |      |     |     |     |     |     |     |     |     |     |     |     | 2.9 13.6        |               |               |
|   |                               |  |     |                                 |      |      |      |     |     |     |     |      |     |     |     |     |     |     |     |     |     |     |     | 2.6 10.9        |               |               |
|   |                               |  |     |                                 |      |      |      |     |     |     |     |      |     |     |     |     |     |     |     |     |     |     |     | 2.7 9.1         |               |               |
|   |                               |  |     |                                 |      |      |      |     |     |     |     |      |     |     |     |     |     |     |     |     |     |     |     | 2.9 8.7         |               |               |
|   |                               |  |     |                                 |      |      |      |     |     |     |     |      |     |     |     |     |     |     |     |     |     |     |     | 3.1 8.5         |               |               |
|   |                               |  |     |                                 |      |      |      |     |     |     |     |      |     |     |     |     |     |     |     |     |     |     |     | 2.9 9.7         |               |               |
|   |                               |  |     |                                 |      |      |      |     |     |     |     |      |     |     |     |     |     |     |     |     |     |     |     | 3.0 23.6        |               |               |
|   |                               |  |     |                                 |      |      |      |     |     |     |     |      |     |     |     |     |     |     |     |     |     |     |     | 1.9 6.0         |               |               |
|   |                               |  |     |                                 |      |      |      |     |     |     |     |      |     |     |     |     |     |     |     |     |     |     |     | 1.7 6.2         |               |               |
|   |                               |  |     |                                 |      |      |      |     |     |     |     |      |     |     |     |     |     |     |     |     |     |     |     | 1.8 7.1         |               |               |
|   |                               |  |     |                                 |      |      |      |     |     |     |     |      |     |     |     |     |     |     |     |     |     |     |     | 1.7 6.6         |               |               |
|   |                               |  |     |                                 |      |      |      |     |     |     |     |      |     |     |     |     |     |     |     |     |     |     |     | 1.6 6.5         |               |               |
|   |                               |  |     |                                 |      |      |      |     |     |     |     |      |     |     |     |     |     |     |     |     |     |     |     | 1.7 6.0         |               |               |
|   |                               |  |     |                                 |      |      |      |     |     |     |     |      |     |     |     |     |     |     |     |     |     |     |     | 2.0 5.7         |               |               |
|   |                               |  |     |                                 |      |      |      |     |     |     |     |      |     |     |     |     |     |     |     |     |     |     |     | 1.9 5.3         |               |               |
|   |                               |  |     |                                 |      |      |      |     |     |     |     |      |     |     |     |     |     |     |     |     |     |     |     | 1.9 4.4         |               |               |
|   |                               |  |     |                                 |      |      |      |     |     |     |     |      |     |     |     |     |     |     |     |     |     |     |     | 2.0 7.4         |               |               |
|   |                               |  |     |                                 |      |      |      |     |     |     |     |      |     |     |     |     |     |     |     |     |     |     |     | 2.2 6.9         |               |               |
|   |                               |  |     |                                 |      |      |      |     |     |     |     |      |     |     |     |     |     |     |     |     |     |     |     | 2.1 6.4         |               |               |

Z - zerospan      C - Calibration



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Nitrogen Oxides (NO<sub>x</sub>) - ppb**  
**Stony Mountain - February 2023**







**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Nitrogen Oxides (NO<sub>x</sub>) - ppb  
Stony Mountain - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 20                            | 638                    | 99.84    | 99.84               |
| 21 - 40                           | 1                      | 0.16     | 100.00              |
| 41 - 80                           | 0                      | 0.00     | 100.00              |
| 81 - 159                          | 0                      | 0.00     | 100.00              |
| > 159                             | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 639

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Nitrogen Oxides (NO<sub>x</sub>) - ppb  
Stony Mountain - February 2023**

| <b>Concentration<br/>Ranges (ppb)</b> | <b>Wind Direction</b> |            |           |            |           |            |           |            |           |            |           |            |           |            |           |            | <b>Totals</b> |
|---------------------------------------|-----------------------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|---------------|
|                                       | <b>N</b>              | <b>NNE</b> | <b>NE</b> | <b>ENE</b> | <b>E</b>  | <b>ESE</b> | <b>SE</b> | <b>SSE</b> | <b>S</b>  | <b>SSW</b> | <b>SW</b> | <b>WSW</b> | <b>W</b>  | <b>WNW</b> | <b>NW</b> | <b>NNW</b> |               |
| 0 - 20                                | 61                    | 33         | 33        | 26         | 25        | 15         | 15        | 19         | 33        | 75         | 57        | 43         | 52        | 46         | 48        | 56         | 637           |
| 21 - 40                               | 0                     | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 1          | 0         | 0          | 0         | 0          | 0         | 0          | 1             |
| 11 - 80                               | 0                     | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0             |
| 81 - 159                              | 0                     | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0             |
| > 159                                 | 0                     | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0             |
| <b>Totals</b>                         | <b>61</b>             | <b>33</b>  | <b>33</b> | <b>26</b>  | <b>25</b> | <b>15</b>  | <b>15</b> | <b>19</b>  | <b>33</b> | <b>76</b>  | <b>57</b> | <b>43</b>  | <b>52</b> | <b>46</b>  | <b>48</b> | <b>56</b>  | <b>638</b>    |

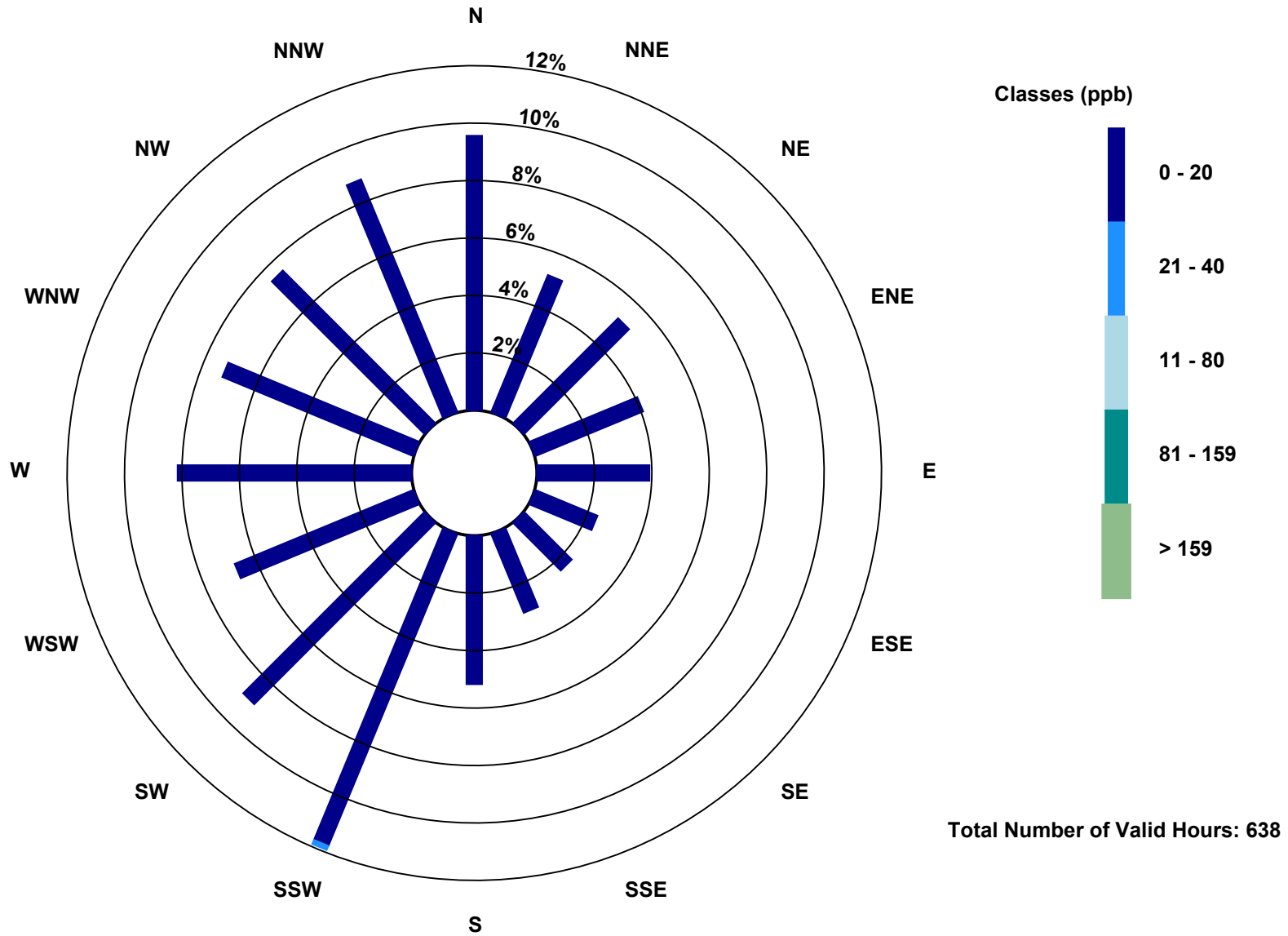
Total Number of Valid Hours: 638

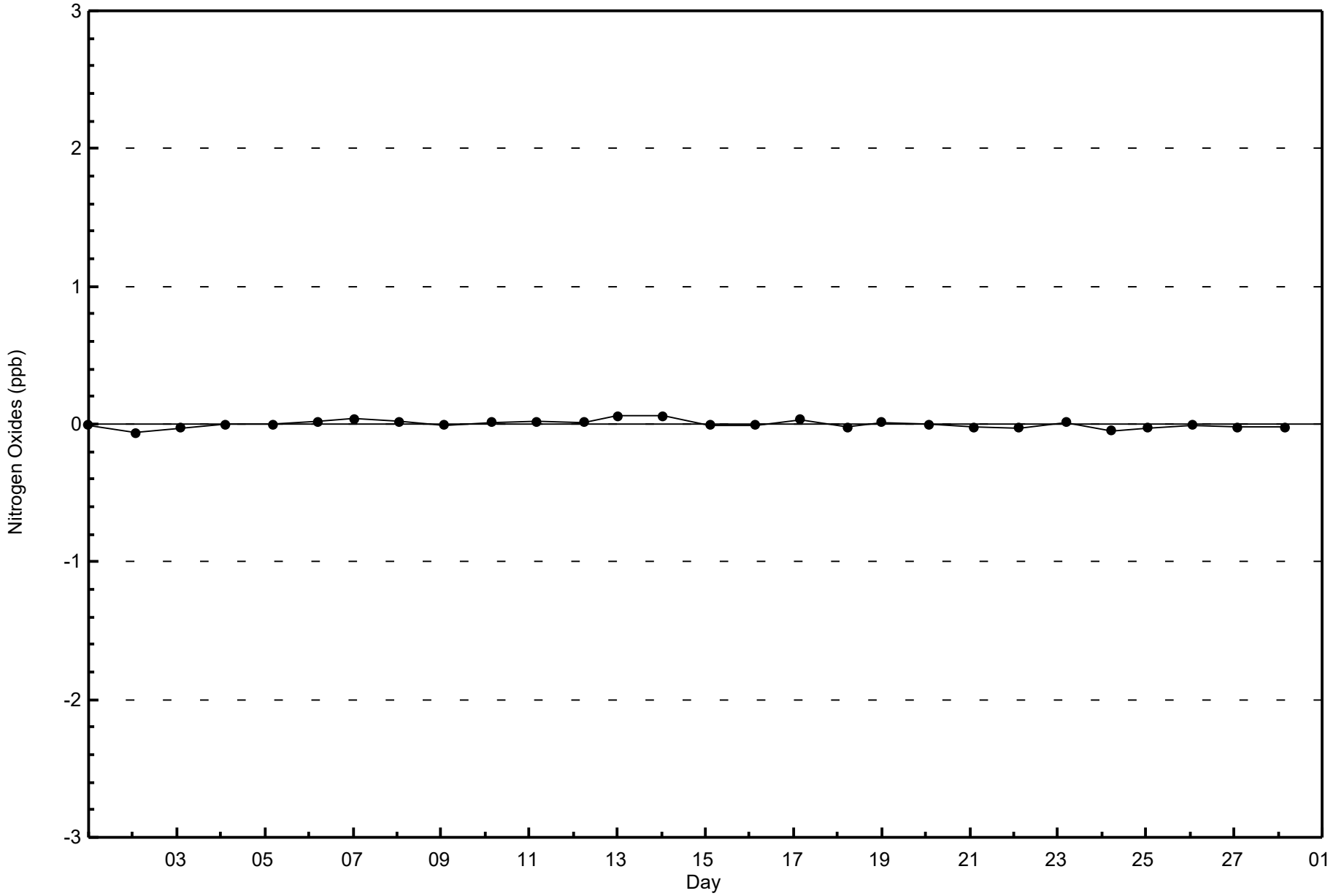
Total Number of Hours: 672

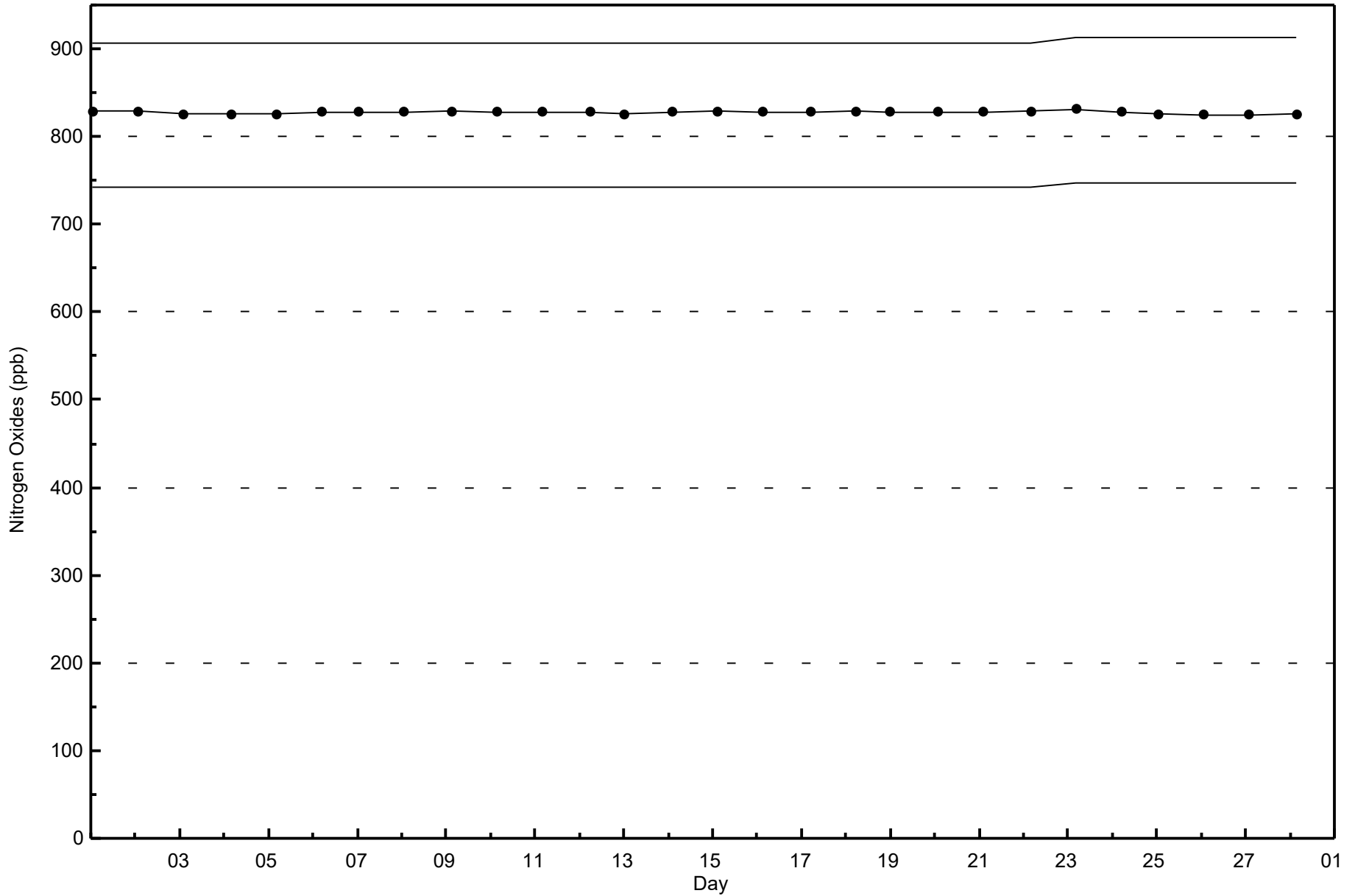


Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Nitrogen Oxides (NO<sub>x</sub>) - ppb  
Stony Mountain









Summary of Hour Averages

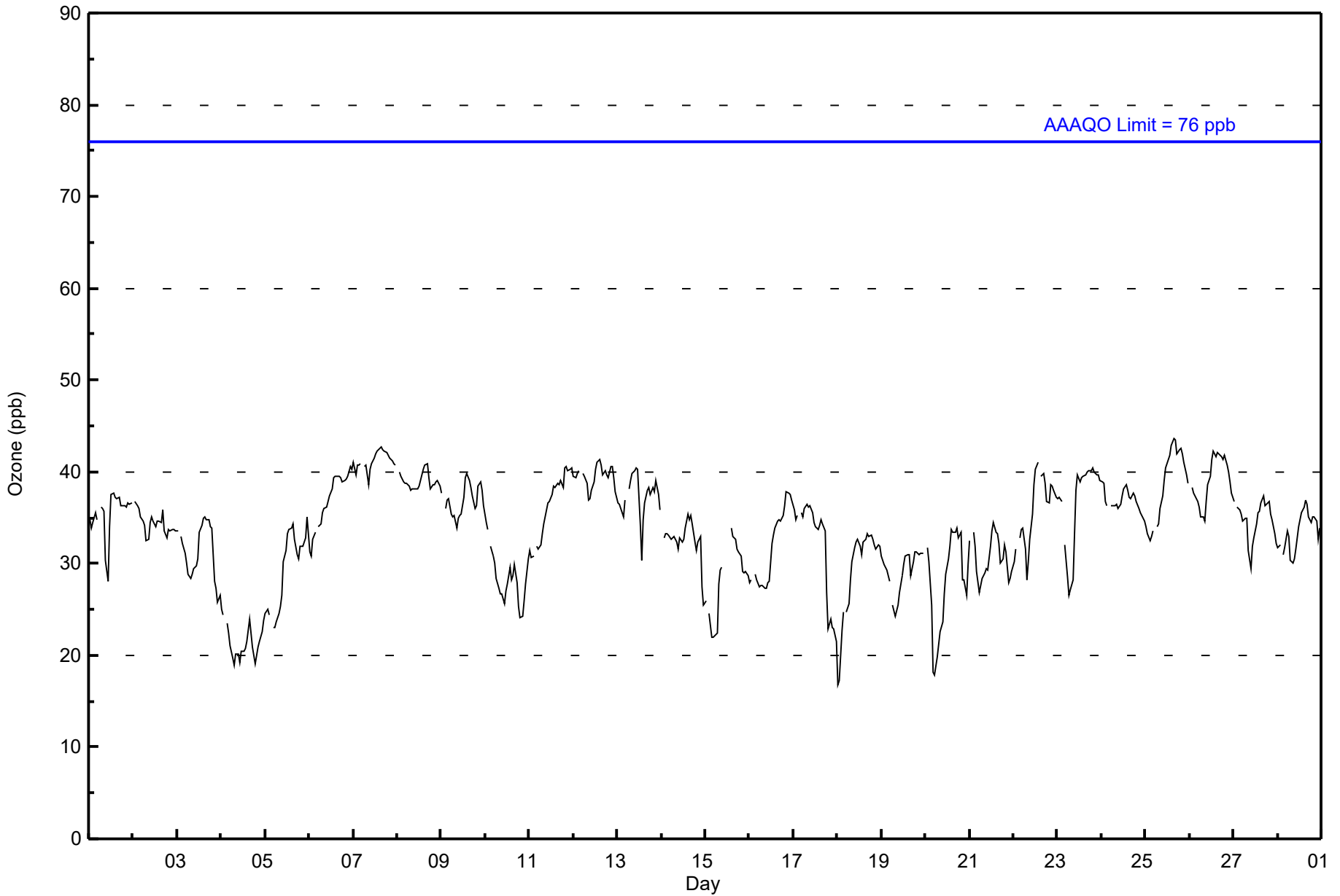
Stony Mountain - February 2023

| Number of Exceedences (AAAQO):                  |                               | 1-hr: 0   |      | 24-hr: 0        |      | Hours in Service:         |      | 672  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |               |                 |  |
|---|-------------------------------|---|------|-----------------|------|---------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|---------------|-----------------|--|
| Maximum Value: 43.7 ppb on Feb 25 16:00         |                               | Maximum Daily Average: 41.2 ppb on Feb 7  |      |                 |      | Hours of Data:            |      | 639  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |               |                 |  |
| Minimum Value: 16.8 ppb on Feb 18 01:00         |                               | Minimum Daily Average: 21.4 ppb on Feb 4  |      |                 |      | Hours of Missing Data:    |      | 33   |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |               |                 |  |
| Maximum Diurnal Average: 36.2 ppb at hour 16    |                               | Minimum Diurnal Average: 30.8 ppb at hour 6   |      |                 |      | Hours of Calibration:     |      | 32   |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |               |                 |  |
| Monthly Average: 33.74 ppb                      |                               | Percentiles: P <sub>1</sub> = 19.4 P <sub>10</sub> = 25.9 Q <sub>1</sub> = 30.8 Median = 34.5 Q <sub>3</sub> = 38.0 P <sub>90</sub> = 40.1 P <sub>99</sub> = 42.4 |      |                 |      | Percent Operational Time: |      | 99.9 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |               |                 |  |
| Day   | Hourly Period Ending At (MST) |   |      |                 |      |                           |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Daily Average | Daily Maximum   |  |
|   | 1                             | 2   | 3    | 4               | 5    | 6                         | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20   | 21   | 22   | 23   | 24   |               |                 |  |
| 1-Feb   | 34.8                          | 33.9  | 34.5 | 35.6            | 34.8 | Z                         | 36.1 | 36.0 | 35.6 | 30.3 | 28.1 | 34.0 | 37.5 | 37.6 | 37.3 | 37.1 | 37.3 | 36.3 | 36.3 | 36.3 | 36.2 | 36.5 | 36.5 | 36.6 | 35.4          | 37.6            |  |
| 2-Feb   | Z                             | 36.8  | 36.2 | 36.0            | 35.1 | 34.6                      | 34.1 | 32.6 | 32.7 | 34.5 | 35.0 | 34.6 | 34.0 | 34.6 | 34.6 | 34.4 | 35.9 | 33.6 | 32.9 | 33.8 | 33.5 | 33.7 | 33.7 | 33.5 | 34.4          | 36.8            |  |
| 3-Feb   | 33.6                          | Z   | 32.9 | 32.1            | 31.2 | 30.0                      | 28.9 | 28.4 | 28.8 | 29.4 | 29.7 | 30.4 | 33.4 | 34.1 | 34.9 | 35.2 | 34.8 | 34.7 | 34.0 | 33.9 | 28.1 | 27.3 | 25.7 | 26.6 | 31.2          | 35.2            |  |
| 4-Feb   | 25.0                          | 24.3  | Z    | 23.6            | 22.5 | 21.1                      | 19.6 | 19.0 | 20.2 | 20.2 | 19.3 | 20.5 | 20.4 | 20.8 | 21.5 | 24.0 | 22.5 | 20.9 | 19.0 | 20.0 | 20.8 | 21.5 | 22.5 | 23.8 | 21.4          | 25.0            |  |
| 5-Feb   | 24.6                          | 25.0  | 24.5 | Z               | 23.0 | 23.1                      | 23.6 | 24.6 | 25.3 | 26.5 | 30.3 | 31.4 | 33.3 | 33.7 | 33.9 | 34.3 | 32.7 | 31.0 | 30.5 | 31.8 | 32.0 | 32.3 | 32.8 | 35.1 | 29.4          | 35.1            |  |
| 6-Feb   | 31.3                          | 30.9  | 32.7 | 33.4            | Z    | 34.0                      | 34.4 | 35.5 | 36.0 | 36.2 | 36.8 | 37.4 | 38.1 | 39.3 | 39.5 | 39.4 | 39.6 | 39.3 | 38.9 | 39.0 | 39.2 | 39.6 | 40.6 | 40.3 | 37.0          | 40.6            |  |
| 7-Feb   | 41.0                          | 39.6  | 40.7 | 40.7            | 40.9 | Z                         | 40.6 | 40.7 | 38.6 | 40.3 | 40.8 | 41.5 | 42.0 | 42.2 | 42.6 | 42.6 | 42.4 | 42.3 | 42.1 | 41.7 | 41.5 | 41.2 | 41.0 | 40.8 | 41.2          | 42.6            |  |
| 8-Feb   | Z                             | 40.0  | 39.5 | 38.9            | 38.7 | 38.7                      | 38.4 | 38.0 | 38.1 | 38.2 | 38.1 | 38.1 | 38.5 | 39.7 | 40.3 | 40.7 | 40.9 | 39.3 | 38.2 | 38.6 | 38.6 | 39.0 | 39.0 | 38.4 | 39.0          | 40.9            |  |
| 9-Feb   | 37.7                          | Z   | 36.0 | 36.9            | 37.0 | 35.4                      | 35.2 | 35.2 | 33.8 | 34.9 | 35.2 | 35.5 | 37.2 | 39.3 | 39.8 | 39.0 | 38.2 | 37.3 | 36.0 | 36.4 | 38.4 | 38.9 | 38.0 | 36.3 | 36.9          | 39.8            |  |
| 10-Feb  | 34.4                          | 33.7  | Z    | 31.8            | 30.8 | 30.0                      | 28.3 | 27.3 | 26.7 | 26.7 | 25.6 | 26.9 | 27.8 | 29.7 | 28.2 | 28.7 | 29.9 | 28.0 | 25.3 | 24.1 | 24.2 | 25.9 | 27.8 | 30.5 | 28.4          | 34.4            |  |
| 11-Feb  | 31.3                          | 30.7  | 30.8 | Z               | 31.8 | 31.6                      | 32.0 | 33.2 | 34.3 | 35.8 | 36.6 | 36.8 | 37.5 | 38.5 | 38.4 | 38.7 | 38.6 | 39.0 | 38.3 | 40.5 | 40.6 | 40.2 | 40.3 | 40.4 | 36.3          | 40.6            |  |
| 12-Feb  | 39.5                          | 39.4  | 39.9 | 40.1            | Z    | 39.8                      | 39.6 | 38.8 | 36.9 | 37.1 | 37.9 | 38.9 | 40.3 | 41.1 | 41.4 | 40.7 | 39.7 | 40.1 | 39.7 | 39.4 | 40.6 | 40.6 | 39.3 | 37.8 | 39.5          | 41.4            |  |
| 13-Feb  | 36.6                          | 36.5  | 36.0 | 35.1            | 36.8 | Z                         | 38.2 | 39.0 | 39.8 | 40.2 | 40.4 | 40.2 | 34.2 | 30.3 | 34.8 | 36.6 | 38.0 | 38.3 | 37.4 | 38.3 | 37.8 | 39.0 | 37.5 | 35.9 | 37.3          | 40.4            |  |
| 14-Feb  | Z                             | 32.8  | 33.2 | 33.3            | 33.1 | 32.6                      | 32.8 | 33.0 | 32.3 | 31.6 | 32.8 | 32.3 | 32.7 | 33.9 | 35.4 | 34.8 | 35.3 | 34.4 | 32.3 | 31.4 | 32.3 | 32.9 | 27.4 | 25.5 | 32.5          | 35.4            |  |
| 15-Feb  | 25.9                          | Z   | 24.6 | 22.0            | 21.9 | 22.1                      | 22.4 | 27.7 | 29.3 | 29.6 | C    | C    | C    | C    | 33.8 | 33.0 | 32.6 | 31.5 | 31.3 | 30.8 | 29.1 | 29.1 | 29.1 | 28.6 | 28.1          | 33.8            |  |
| 16-Feb  | 27.9                          | 28.2  | Z    | 28.8            | 28.2 | 27.5                      | 27.6 | 27.6 | 27.3 | 27.3 | 27.9 | 28.1 | 32.2 | 33.1 | 33.9 | 34.6 | 34.7 | 34.6 | 35.3 | 36.3 | 37.8 | 37.7 | 37.6 | 36.9 | 31.8          | 37.8            |  |
| 17-Feb  | 35.9                          | 34.8  | 35.3 | Z               | 35.5 | 35.1                      | 36.0 | 36.4 | 36.1 | 36.4 | 35.5 | 34.5 | 34.0 | 33.8 | 34.1 | 34.8 | 34.3 | 33.6 | 26.8 | 22.8 | 24.0 | 23.0 | 22.9 | 21.6 | 32.0          | 36.4            |  |
| 18-Feb  | 16.8                          | 17.2  | 22.8 | 24.7            | Z    | 24.7                      | 25.6 | 28.2 | 30.2 | 31.7 | 32.4 | 32.7 | 31.9 | 31.0 | 32.3 | 32.6 | 33.2 | 32.9 | 33.2 | 32.6 | 32.1 | 31.6 | 32.1 | 31.9 | 29.3          | 33.2            |  |
| 19-Feb  | 30.8                          | 29.8  | 29.6 | 29.3            | 28.1 | Z                         | 25.5 | 24.3 | 24.9 | 25.5 | 26.8 | 28.6 | 30.0 | 30.7 | 31.0 | 31.0 | 28.7 | 30.1 | 31.2 | 31.2 | 30.9 | 31.1 | 31.1 | 31.2 | 29.2          | 31.2            |  |
| 20-Feb  | Z                             | 31.7  | 30.1 | 25.4            | 18.2 | 17.9                      | 19.8 | 21.1 | 22.5 | 23.7 | 26.6 | 28.8 | 30.5 | 31.9 | 33.7 | 33.5 | 33.4 | 33.9 | 32.8 | 33.4 | 28.2 | 28.2 | 26.5 | 29.9 | 27.9          | 33.9            |  |
| 21-Feb  | 32.4                          | Z   | 33.5 | 32.0            | 29.2 | 26.8                      | 27.6 | 28.3 | 29.0 | 29.4 | 29.4 | 31.9 | 33.6 | 34.5 | 33.5 | 33.3 | 32.2 | 30.0 | 30.5 | 32.0 | 31.3 | 27.9 | 28.3 | 29.1 | 30.7          | 34.5            |  |
| 22-Feb  | 30.2                          | 31.5  | Z    | 32.8            | 33.7 | 33.8                      | 31.5 | 28.2 | 30.2 | 32.6 | 35.3 | 38.6 | 40.3 | 41.0 | M    | 39.5 | 39.8 | 38.8 | 36.8 | 36.6 | 38.6 | 38.5 | 38.0 | 37.3 | 35.6          | 41.0            |  |
| 23-Feb  | 37.1                          | 37.2  | 36.7 | Z               | 32.0 | 28.6                      | 26.6 | 27.2 | 28.2 | 33.3 | 38.0 | 39.7 | 38.9 | 39.3 | 39.6 | 39.6 | 40.0 | 40.1 | 40.2 | 40.4 | 39.9 | 39.6 | 39.7 | 39.1 | 36.6          | 40.4            |  |
| 24-Feb  | 38.9                          | 38.7  | 36.8 | 36.3            | Z    | 36.2                      | 36.2 | 36.4 | 36.4 | 36.1 | 36.4 | 37.4 | 38.2 | 38.6 | 38.0 | 37.3 | 37.1 | 37.7 | 37.4 | 36.7 | 36.0 | 35.6 | 35.3 | 34.7 | 36.9          | 38.9            |  |
| 25-Feb  | 34.0                          | 33.3  | 32.5 | 32.9            | 33.5 | Z                         | 34.0 | 34.2 | 35.9 | 37.4 | 39.1 | 40.5 | 41.4 | 41.8 | 42.9 | 43.7 | 43.4 | 42.0 | 42.4 | 42.6 | 42.0 | 41.0 | 39.6 | 38.7 | 38.7          | 43.7            |  |
| 26-Feb  | Z                             | 38.3  | 37.7 | 37.4            | 36.8 | 36.1                      | 35.1 | 35.0 | 34.6 | 36.8 | 38.6 | 39.4 | 41.3 | 42.3 | 41.6 | 42.0 | 41.9 | 41.6 | 41.4 | 41.7 | 40.8 | 40.0 | 38.9 | 37.7 | 39.0          | 42.3            |  |
| 27-Feb  | 36.8                          | Z   | 36.2 | 35.8            | 35.4 | 34.7                      | 35.0 | 34.9 | 31.5 | 29.4 | 31.9 | 32.8 | 34.3 | 35.5 | 35.7 | 36.6 | 37.3 | 36.3 | 36.4 | 36.7 | 35.4 | 34.7 | 33.3 | 32.2 | 34.7          | 37.3            |  |
| 28-Feb  | 31.7                          | 32.0  | Z    | 31.0            | 31.8 | 33.6                      | 32.9 | 30.3 | 30.0 | 30.5 | 31.6 | 34.0 | 34.7 | 35.5 | 36.2 | 37.0 | 36.5 | 35.1 | 34.4 | 35.1 | 35.0 | 34.6 | 32.7 | 33.8 | 33.5          | 37.0            |  |
|   |                               | 32.5  | 32.9 | 33.6            | 32.7 | 31.7                      | 30.8 | 31.3 | 31.5 | 31.6 | 32.2 | 33.2 | 34.3 | 35.1 | 35.7 | 35.9 | 36.2 | 36.1 | 35.5 | 34.7 | 34.8 | 34.5 | 34.3 | 33.8 | 33.7          | Diurnal Average |  |
|   |                               | 41.0  | 40.0 | 40.7            | 40.7 | 40.9                      | 39.8 | 40.6 | 40.7 | 39.8 | 40.3 | 40.8 | 41.5 | 42.0 | 42.3 | 42.9 | 43.7 | 43.4 | 42.3 | 42.4 | 42.6 | 42.0 | 41.2 | 41.0 | 40.8          | Diurnal Maximum |  |
| Z - zerospan                                    |                               | C - Calibration   |      | M - Maintenance |      |                           |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |               |                 |  |
| Alberta Ambient Air Quality Objectives (AAAQO): |                               | 1-hr  |      | 76 ppb          |      |                           |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |               |                 |  |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Ozone (O<sub>3</sub>) - ppb**  
**Stony Mountain - February 2023**





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Ozone (O<sub>3</sub>) - ppb**  
**Stony Mountain - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 20                            | 14                     | 2.19     | 2.19                |
| 21 - 50                           | 625                    | 97.81    | 100.00              |
| 51 - 82                           | 0                      | 0.00     | 100.00              |
| > 83                              | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 639

Total Number of Hours: 672





**Wood Buffalo Environmental Association**  
**Frequency Distribution**

**Ozone (O<sub>3</sub>) - ppb**  
**Stony Mountain - February 2023**

| Concentration<br>Ranges (ppb) | Wind Direction |     |    |     |    |     |    |     |    |     |    |     |    |     |    |     | Totals |
|-------------------------------|----------------|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|--------|
|                               | N              | NNE | NE | ENE | E  | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |        |
| 0 - 20                        | 1              | 4   | 1  | 1   | 1  | 0   | 1  | 1   | 0  | 1   | 0  | 0   | 0  | 0   | 3  | 0   | 14     |
| 21 - 50                       | 58             | 30  | 32 | 25  | 22 | 15  | 13 | 19  | 31 | 78  | 57 | 42  | 51 | 47  | 45 | 59  | 624    |
| 51 - 82                       | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| > 83                          | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| <b>Totals</b>                 | 59             | 34  | 33 | 26  | 23 | 15  | 14 | 20  | 31 | 79  | 57 | 42  | 51 | 47  | 48 | 59  | 638    |

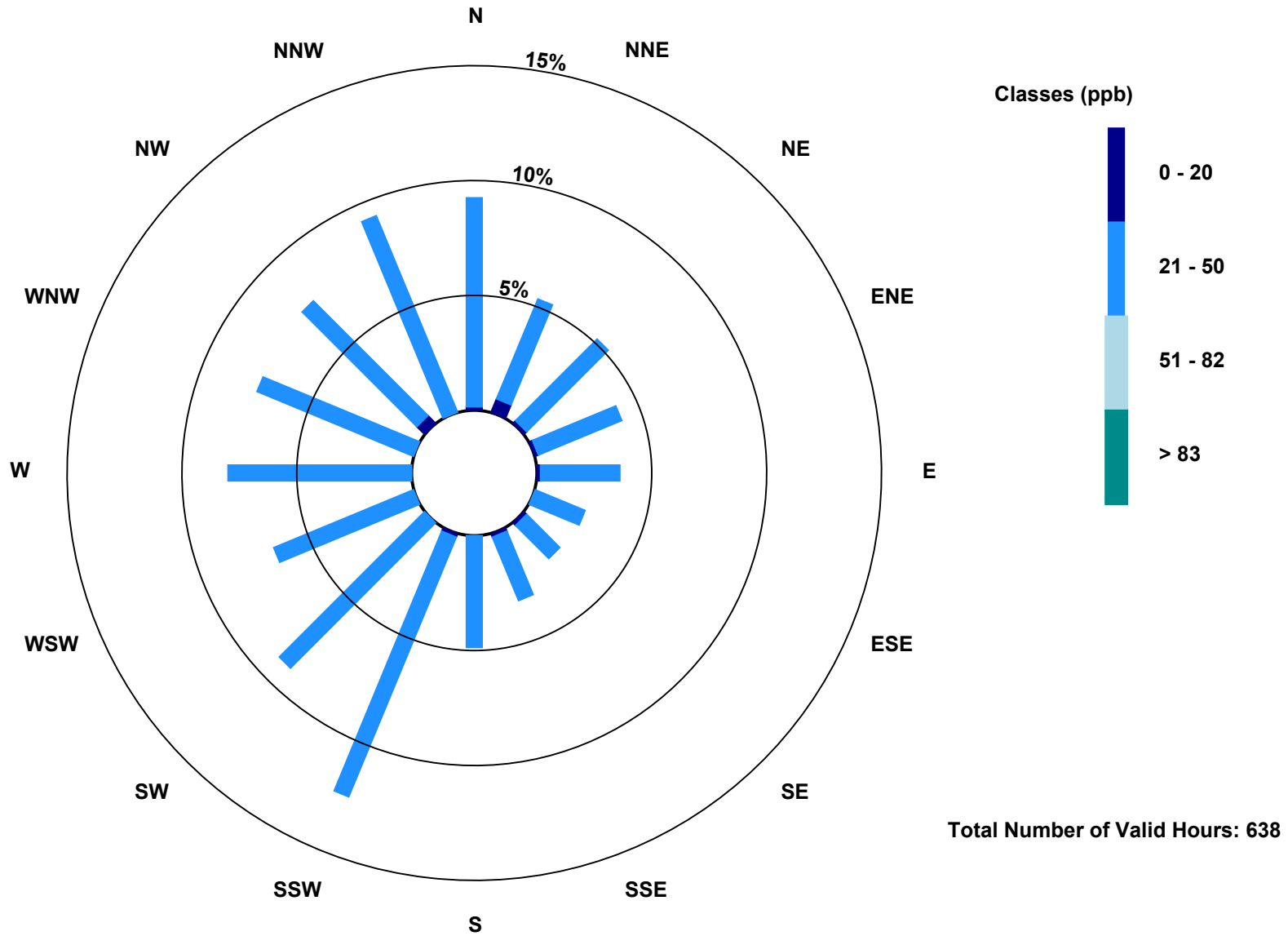
Total Number of Valid Hours: 638

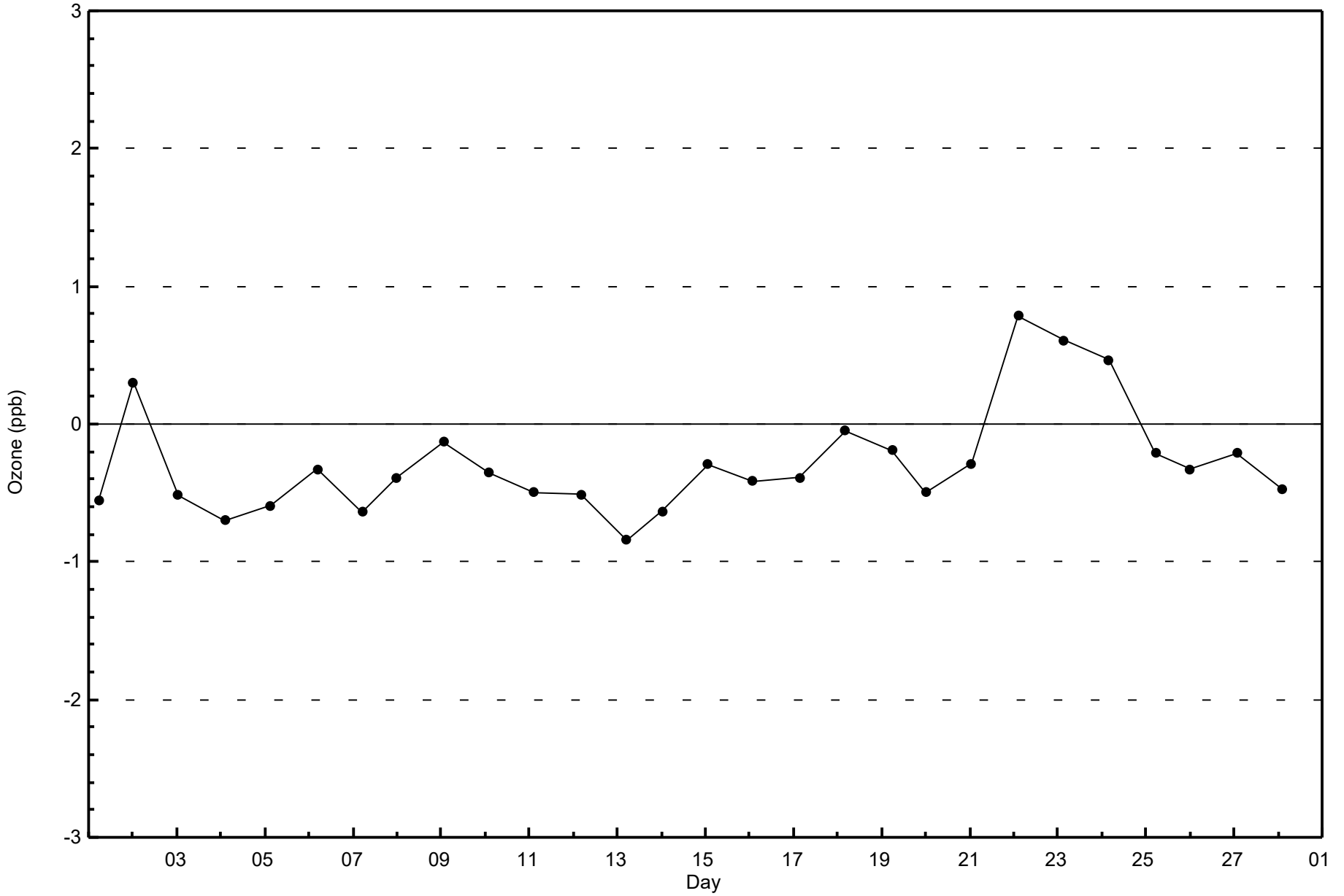
Total Number of Hours: 672

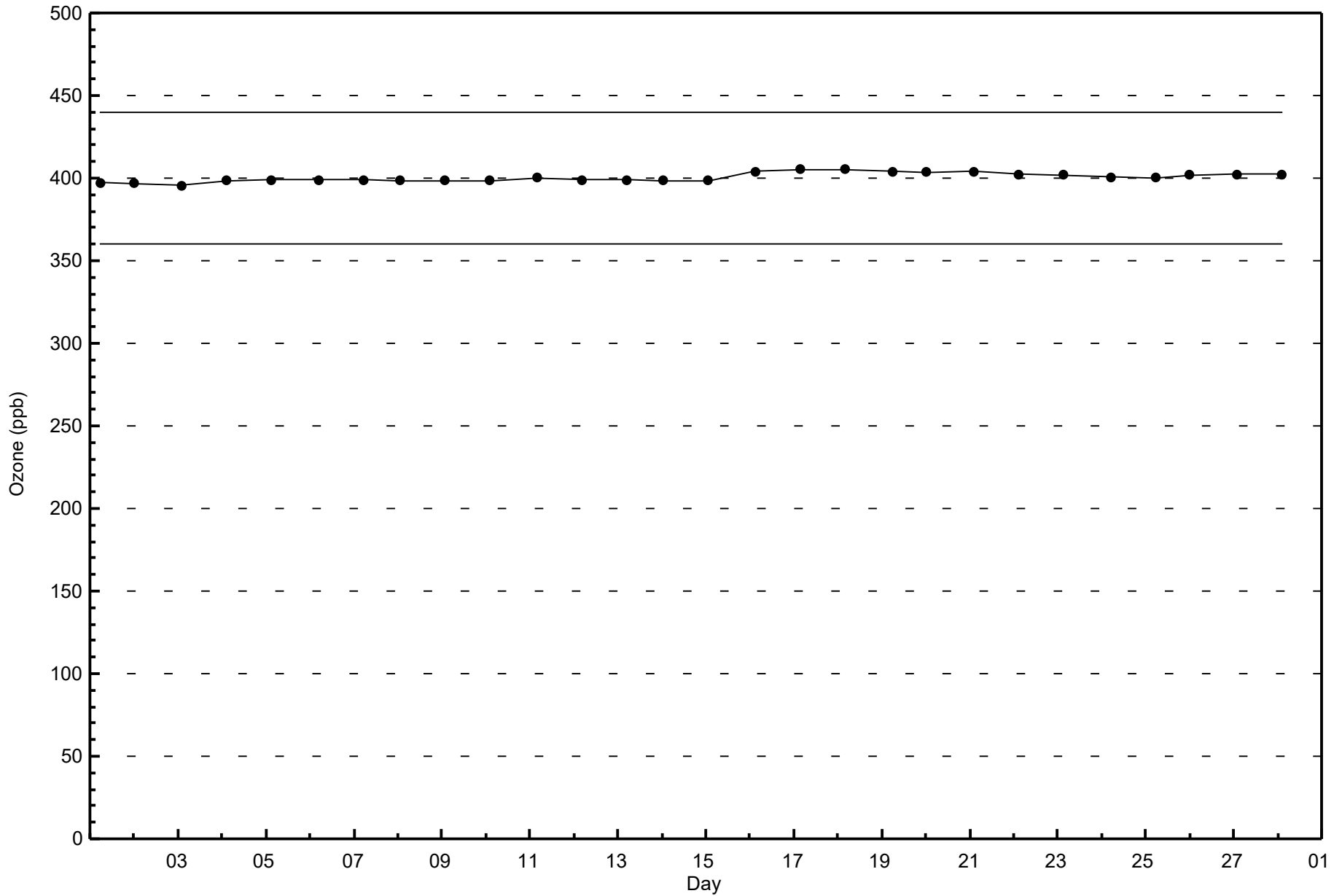


Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Ozone (O<sub>3</sub>) - ppb  
Stony Mountain









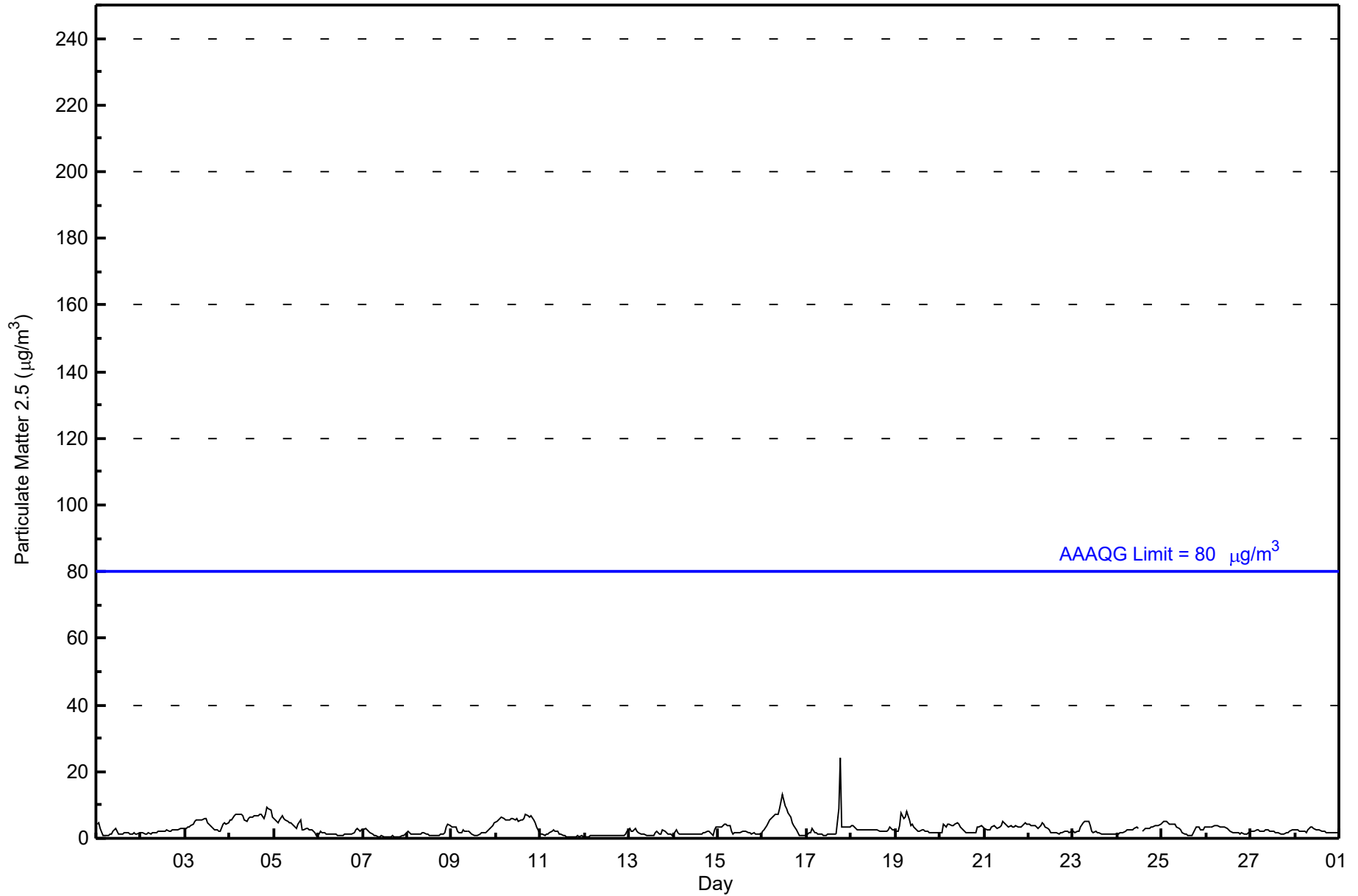
Wood Buffalo Environmental Association

Summary of Hour Averages

Particulate Matter 2.5 (PM<sub>2.5</sub>) - µg/m<sup>3</sup>

Stony Mountain - February 2023

| Number of Exceedences (AAAQO):   |                               | 1-hr: 0  | 24-hr: 0 | Hours in Service: 672 |     |     |     |     |     |     |      |      |     |     |     |     |     |     |                         |     | Daily Average                   |     | Daily Maximum |                 |               |               |     |
|--|-------------------------------|--|----------|-----------------------|-----|-----|-----|-----|-----|-----|------|------|-----|-----|-----|-----|-----|-----|-------------------------|-----|---------------------------------|-----|---------------|-----------------|---------------|---------------|-----|
| Maximum Value: 24.2 µg/m <sup>3</sup> on Feb 17 19:00  |                               | Maximum Daily Average: 6.8 µg/m <sup>3</sup> on Feb 4  |          |                       |     |     |     |     |     |     |      |      |     |     |     |     |     |     | Hours of Data: 671      |     | Hours of Missing Data: 1        |     |               |                 |               |               |     |
| Minimum Value: 0.4 µg/m <sup>3</sup> on Feb 11 17:00   |                               | Minimum Daily Average: 0.9 µg/m <sup>3</sup> on Feb 12   |          |                       |     |     |     |     |     |     |      |      |     |     |     |     |     |     | Hours of Calibration: 1 |     | Percent Operational Time: 100.0 |     |               |                 |               |               |     |
| Maximum Diurnal Average: 3.2 µg/m <sup>3</sup> at hour 7   |                               | Minimum Diurnal Average: 2.2 µg/m <sup>3</sup> at hour 17  |          |                       |     |     |     |     |     |     |      |      |     |     |     |     |     |     |                         |     |                                 |     |               |                 |               |               |     |
| Monthly Average: 2.73 µg/m <sup>3</sup>  |                               | Percentiles: P <sub>1</sub> = 0.5 P <sub>10</sub> = 1.0 Q <sub>1</sub> = 1.4 Median = 2.2 Q <sub>3</sub> = 3.5 P <sub>90</sub> = 5.5 P <sub>99</sub> = 8.8 |          |                       |     |     |     |     |     |     |      |      |     |     |     |     |     |     |                         |     |                                 |     |               |                 |               |               |     |
| Day  | Hourly Period Ending At (MST) |  |          |                       |     |     |     |     |     |     |      |      |     |     |     |     |     |     |                         |     |                                 |     |               |                 | Daily Average | Daily Maximum |     |
|  | 1                             | 2  | 3        | 4                     | 5   | 6   | 7   | 8   | 9   | 10  | 11   | 12   | 13  | 14  | 15  | 16  | 17  | 18  | 19                      | 20  | 21                              | 22  | 23            | 24              |               |               |     |
| 1-Feb  | 4.3                           | 4.7  | 2.9      | 0.8                   | 1.0 | 1.0 | 1.0 | 1.1 | 1.2 | 2.2 | 3.0  | 2.1  | 1.4 | 1.3 | 1.4 | 1.5 | 1.5 | 1.5 | 1.4                     | 1.4 | 1.5                             | 1.4 | 1.5           | 1.5             | 1.8           | 4.7           |     |
| 2-Feb  | 1.6                           | 1.6  | 1.4      | 1.4                   | 1.5 | 1.5 | 1.5 | 1.6 | 1.9 | 2.2 | 2.1  | 2.1  | 2.3 | 2.3 | 2.3 | 2.2 | 2.5 | 2.7 | 2.6                     | 2.6 | 2.8                             | 2.8 | 2.8           | 2.1             | 2.8           |               |     |
| 3-Feb  | 3.0                           | 3.2  | 3.5      | 4.0                   | 4.4 | 5.0 | 5.5 | 5.7 | 5.6 | 5.7 | 5.9  | 5.7  | 4.5 | 3.8 | 3.2 | 2.8 | 2.5 | 2.4 | 2.2                     | 2.1 | 4.4                             | 4.8 | 4.1           | 4.5             | 4.1           | 5.9           |     |
| 4-Feb  | 5.4                           | 5.7  | 7.0      | 7.2                   | 7.1 | 7.1 | 7.2 | 6.7 | 5.3 | 5.0 | 6.1  | 6.2  | 6.2 | 6.7 | 6.7 | 7.2 | 7.3 | 5.9 | 7.3                     | 9.3 | 8.9                             | 8.4 | 6.5           | 6.8             | 9.3           |               |     |
| 5-Feb  | 6.0                           | 5.2  | 4.7      | 5.5                   | 6.6 | 5.9 | 5.4 | 4.9 | 4.6 | 4.6 | 4.1  | 3.4  | 2.9 | 4.2 | 5.4 | 2.4 | 2.4 | 2.8 | 3.0                     | 2.4 | 2.4                             | 2.3 | 1.8           | 1.0             | 3.9           | 6.6           |     |
| 6-Feb  | 1.3                           | 1.9  | 1.6      | 1.6                   | 1.4 | 1.1 | 1.2 | 1.2 | 1.2 | 1.1 | 1.0  | 0.9  | 0.9 | 1.0 | 1.4 | 1.4 | 1.3 | 1.4 | 1.4                     | 1.5 | 2.3                             | 3.1 | 2.3           | 2.6             | 1.5           | 3.1           |     |
| 7-Feb  | 2.4                           | 3.0  | 2.4      | 2.1                   | 1.7 | 1.2 | 1.1 | 0.9 | 0.6 | 0.6 | 0.7  | 0.6  | 0.5 | 0.5 | 0.5 | 0.6 | 0.7 | 0.6 | 0.6                     | 0.5 | 0.5                             | 0.9 | 1.0           | 1.4             | 1.1           | 3.0           |     |
| 8-Feb  | 2.2                           | 1.8  | 1.4      | 1.3                   | 1.2 | 1.1 | 1.2 | 1.3 | 1.6 | 1.6 | 1.4  | 1.2  | 1.0 | 0.8 | 0.7 | 0.7 | 0.6 | 0.8 | 1.3                     | 1.4 | 1.6                             | 3.6 | 4.1           | 3.8             | 1.6           | 4.1           |     |
| 9-Feb  | 3.3                           | 3.4  | 3.2      | 2.1                   | 1.5 | 1.8 | 2.4 | 2.1 | 2.1 | 2.0 | 1.7  | 1.3  | 0.9 | 0.6 | 0.8 | 1.2 | 1.7 | 1.5 | 1.9                     | 2.1 | 2.7                             | 3.3 | 3.8           | 4.6             | 2.2           | 4.6           |     |
| 10-Feb   | 5.1                           | 5.5  | 5.8      | 6.3                   | 6.1 | 5.7 | 5.7 | 5.5 | 5.8 | 5.9 | 5.7  | 5.7  | 5.3 | 5.6 | 5.5 | 5.9 | 7.4 | 6.9 | 6.4                     | 6.6 | 5.5                             | 4.5 | 3.3           | 1.7             | 5.6           | 7.4           |     |
| 11-Feb   | 1.2                           | 1.3  | 0.9      | 1.2                   | 1.3 | 1.7 | 2.2 | 2.3 | 2.3 | 2.1 | 1.5  | 1.2  | 1.0 | 0.7 | 0.5 | 0.5 | 0.4 | 0.6 | 0.6                     | 0.6 | 0.6                             | 0.6 | 0.6           | 0.6             | 1.1           | 2.3           |     |
| 12-Feb   | 0.6                           | 0.6  | 0.6      | 0.7                   | 0.9 | 1.0 | 1.0 | 0.9 | 0.8 | 0.8 | 0.9  | 0.9  | 0.9 | 0.9 | 0.8 | 0.8 | 0.8 | 0.8 | 0.9                     | 1.0 | 1.0                             | 0.9 | 1.0           | 1.4             | 2.1           | 0.9           | 2.1 |
| 13-Feb   | 2.9                           | 2.3  | 2.1      | 2.9                   | 2.0 | 1.5 | 1.4 | 1.3 | 1.2 | 1.0 | 0.8  | 0.8  | 0.8 | 1.0 | 1.8 | 2.1 | 1.2 | 1.3 | 2.7                     | 2.2 | 1.6                             | 1.3 | 1.1           | 1.0             | 1.6           | 2.9           |     |
| 14-Feb   | 1.3                           | 2.4  | 1.7      | 1.2                   | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.2 | 1.3  | 1.2  | 1.2 | 1.1 | 1.1 | 1.3 | 1.5 | 1.6 | 2.1                     | 2.1 | 1.5                             | 1.0 | 2.7           | 3.4             | 1.6           | 3.4           |     |
| 15-Feb   | 3.4                           | 3.2  | 3.4      | 4.1                   | 4.3 | 4.0 | 3.7 | 1.9 | 1.4 | 1.5 | 1.6  | 1.6  | 1.6 | 1.9 | 1.9 | 1.9 | 1.9 | 1.7 | 1.5                     | 1.5 | 1.5                             | 1.3 | 1.1           | 1.5             | 2.2           | 4.3           |     |
| 16-Feb   | 2.1                           | 2.7  | 3.7      | 4.5                   | 5.3 | 6.3 | 6.7 | 7.0 | 7.4 | 9.0 | 10.9 | 13.1 | 9.8 | 8.8 | 7.8 | 6.2 | 4.6 | 3.8 | 2.7                     | 1.6 | 0.9                             | 0.7 | 0.8           | 1.0             | 5.3           | 13.1          |     |
| 17-Feb   | 1.2                           | 1.5  | 1.9      | 2.8                   | 1.6 | 1.6 | 1.4 | 1.1 | 1.1 | 1.0 | 1.0  | 1.1  | 1.3 | 1.3 | 1.3 | 1.4 | 1.5 | 8.8 | 24.2                    | 3.2 | 3.3                             | 3.4 | 3.3           | 3.4             | 3.1           | 24.2          |     |
| 18-Feb   | 3.7                           | 3.8  | 3.1      | 2.7                   | 2.6 | 2.5 | 2.4 | 2.6 | 2.5 | 2.5 | 2.6  | 2.6  | 2.6 | 2.6 | 2.3 | 2.2 | 2.1 | 2.1 | 2.2                     | 2.3 | 2.6                             | 3.3 | 2.5           | 2.5             | 2.6           | 3.8           |     |
| 19-Feb   | 2.3                           | 2.2  | 3.9      | 7.8                   | 5.9 | 6.4 | 7.9 | 5.7 | 3.9 | 4.4 | 3.3  | 2.6  | 2.3 | 2.3 | 2.5 | 2.3 | 2.0 | 1.9 | 1.9                     | 1.9 | 1.9                             | 1.8 | 1.7           | 1.7             | 3.4           | 7.9           |     |
| 20-Feb   | 1.6                           | 1.8  | 4.3      | 3.2                   | 4.2 | 4.3 | 4.0 | 4.0 | 4.4 | 4.8 | 4.1  | 3.4  | 2.7 | 2.3 | 1.9 | 1.8 | 1.7 | 1.6 | 1.7                     | 1.7 | 3.2                             | 3.2 | 4.0           | 3.4             | 3.0           | 4.8           |     |
| 21-Feb   | 2.8                           | 2.4  | 2.4      | 2.5                   | 3.4 | 3.8 | 3.4 | 3.1 | 3.3 | 3.9 | 4.9  | 4.4  | 3.7 | 3.5 | 3.6 | 3.4 | 3.6 | 3.9 | 3.4                     | 3.2 | 3.3                             | 4.2 | 4.6           | 4.3             | 3.5           | 4.9           |     |
| 22-Feb   | 4.2                           | 4.0  | 3.6      | 3.6                   | 3.4 | 3.1 | 3.7 | 4.7 | 4.2 | 3.5 | 2.8  | 2.3  | 1.8 | 1.6 | 1.7 | 1.6 | 1.5 | 1.6 | 1.9                     | 1.9 | 1.9                             | 2.0 | 1.9           | 2.0             | 2.7           | 4.7           |     |
| 23-Feb   | 2.0                           | 1.9  | 2.0      | 2.1                   | 3.4 | 4.6 | 5.2 | 4.9 | 5.0 | 3.7 | 2.2  | 1.7  | 2.0 | 1.8 | 1.7 | 1.5 | 1.3 | 1.2 | 1.2                     | 1.2 | 1.2                             | 1.2 | 1.2           | 1.2             | 2.3           | 5.2           |     |
| 24-Feb   | 1.4                           | 1.6  | 1.6      | 1.8                   | 2.2 | 2.5 | 2.5 | 2.6 | 2.7 | 3.0 | 3.3  | 2.8  | C   | 2.3 | 2.4 | 2.8 | 2.9 | 3.1 | 3.4                     | 3.5 | 3.6                             | 3.9 | 4.0           | 4.3             | 2.8           | 4.3           |     |
| 25-Feb   | 4.6                           | 5.0  | 5.2      | 4.8                   | 4.4 | 4.3 | 4.2 | 4.1 | 3.6 | 3.2 | 2.7  | 1.8  | 1.4 | 1.2 | 1.0 | 0.9 | 0.9 | 1.7 | 3.2                     | 3.5 | 3.3                             | 2.4 | 2.7           | 3.2             | 3.1           | 5.2           |     |
| 26-Feb   | 3.2                           | 3.3  | 3.6      | 3.6                   | 3.6 | 3.7 | 3.7 | 3.5 | 3.6 | 3.5 | 3.2  | 3.0  | 2.6 | 2.1 | 1.8 | 1.7 | 1.6 | 1.5 | 1.4                     | 1.6 | 1.4                             | 1.1 | 1.2           | 1.8             | 2.5           | 3.7           |     |
| 27-Feb   | 2.2                           | 2.2  | 2.2      | 2.4                   | 2.4 | 2.0 | 2.2 | 2.0 | 2.4 | 2.5 | 2.1  | 2.0  | 1.9 | 1.8 | 1.6 | 1.5 | 1.4 | 1.4 | 1.4                     | 1.6 | 1.8                             | 2.0 | 2.3           | 2.6             | 2.0           | 2.6           |     |
| 28-Feb   | 2.5                           | 2.4  | 2.2      | 2.1                   | 2.0 | 1.9 | 1.8 | 2.6 | 3.3 | 3.3 | 2.9  | 2.7  | 2.7 | 2.5 | 2.3 | 2.1 | 2.0 | 1.7 | 1.8                     | 1.8 | 1.6                             | 1.6 | 1.8           | 1.7             | 2.2           | 3.3           |     |
| 2.8 2.9 2.9 3.1 3.1 3.1 3.2 3.1 3.0 3.1 3.0 2.8 2.5 2.4 2.4 2.2 2.2 2.4 3.0 2.3 2.5 2.6 2.6 2.6 2.6    |                               |  |          |                       |     |     |     |     |     |     |      |      |     |     |     |     |     |     |                         |     |                                 |     |               | Diurnal Average |               |               |     |
| 6.0 5.7 7.0 7.8 7.1 7.1 7.9 7.0 7.4 9.0 10.9 13.1 9.8 8.8 7.8 6.7 7.4 8.8 24.2 7.3 9.3 8.9 8.4 6.5     |                               |  |          |                       |     |     |     |     |     |     |      |      |     |     |     |     |     |     |                         |     |                                 |     |               | Diurnal Maximum |               |               |     |
| C - Calibration  |                               |  |          |                       |     |     |     |     |     |     |      |      |     |     |     |     |     |     |                         |     |                                 |     |               |                 |               |               |     |
| Alberta Ambient Air Quality Guideline/Objectives: 1-hr 80 µg/m <sup>3</sup> 24-hr 29 µg/m <sup>3</sup> |                               |  |          |                       |     |     |     |     |     |     |      |      |     |     |     |     |     |     |                         |     |                                 |     |               |                 |               |               |     |





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Particulate Matter 2.5 (PM<sub>2.5</sub>) -  $\mu\text{g}/\text{m}^3$   
Stony Mountain - February 2023**

| <b>Concentration Ranges (<math>\mu\text{g}/\text{m}^3</math>)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---|------------------------|----------|---------------------|
| 0 - 5   | 606                    | 90.31    | 90.31               |
| 6 - 15  | 64                     | 9.54     | 99.85               |
| 16 - 25   | 1                      | 0.15     | 100.00              |
| 26 - 80   | 0                      | 0.00     | 100.00              |
| > 81.0  | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 671

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Particulate Matter 2.5 (PM<sub>2.5</sub>) -  $\mu\text{g}/\text{m}^3$   
Stony Mountain - February 2023**

| Concentration<br>Ranges ( $\mu\text{g}/\text{m}^3$ ) | Wind Direction |     |    |     |    |     |    |     |    |     |    |     |    |     |    |     | Totals |
|--|----------------|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|--------|
|  | N              | NNE | NE | ENE | E  | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |        |
| 0 - 5  | 62             | 33  | 34 | 25  | 21 | 12  | 11 | 18  | 30 | 61  | 49 | 44  | 52 | 50  | 45 | 58  | 605    |
| 6 - 15   | 2              | 2   | 1  | 2   | 5  | 4   | 4  | 3   | 3  | 19  | 11 | 1   | 0  | 0   | 5  | 2   | 64     |
| 16 - 25  | 0              | 1   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 1      |
| 26 - 80  | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| > 81.0   | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| <b>Totals</b>  | 64             | 36  | 35 | 27  | 26 | 16  | 15 | 21  | 33 | 80  | 60 | 45  | 52 | 50  | 50 | 60  | 670    |

Total Number of Valid Hours: 670

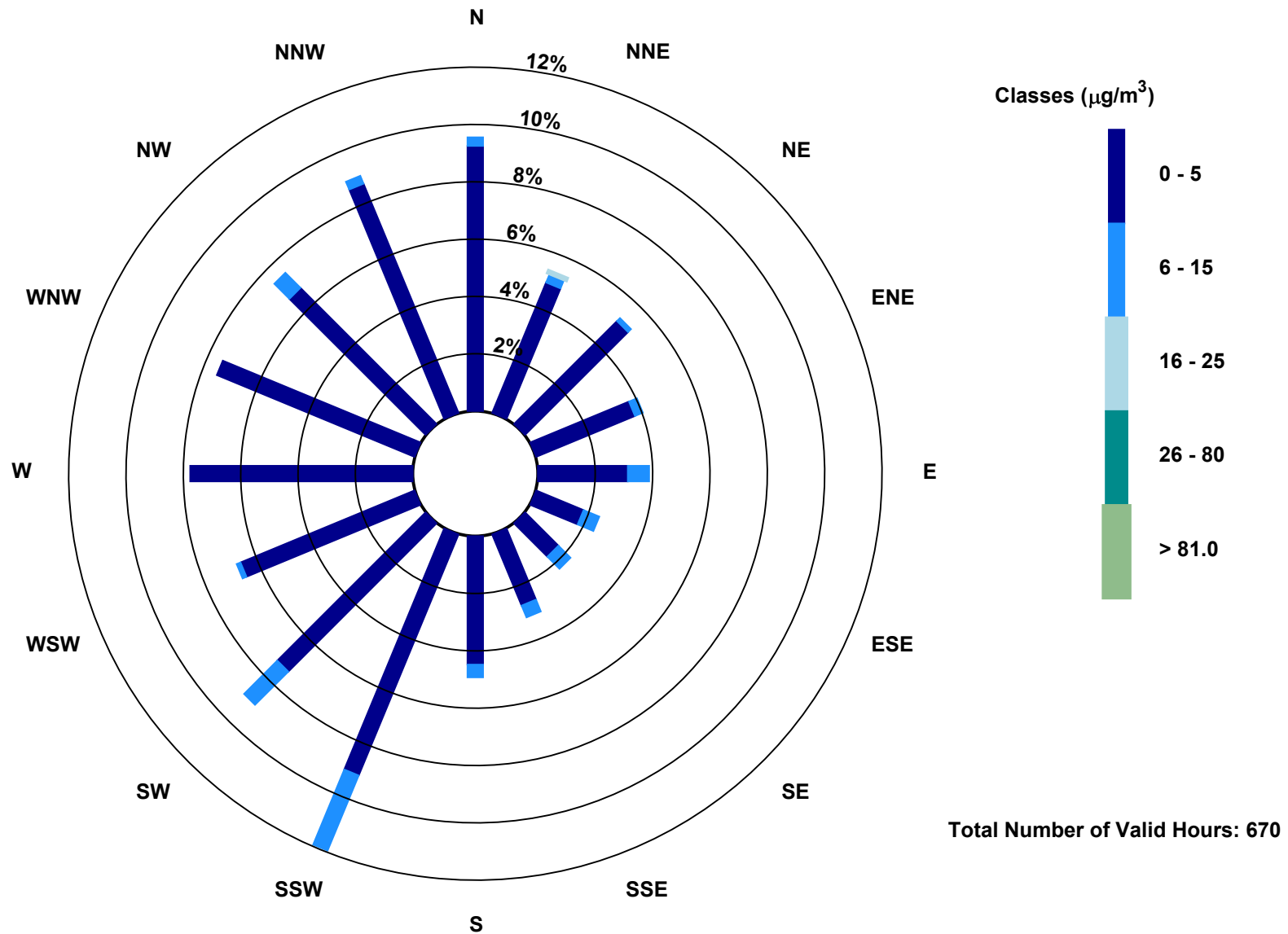
Total Number of Hours: 672





Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Particulate Matter 2.5 (PM<sub>2.5</sub>) -  $\mu\text{g}/\text{m}^3$   
Stony Mountain

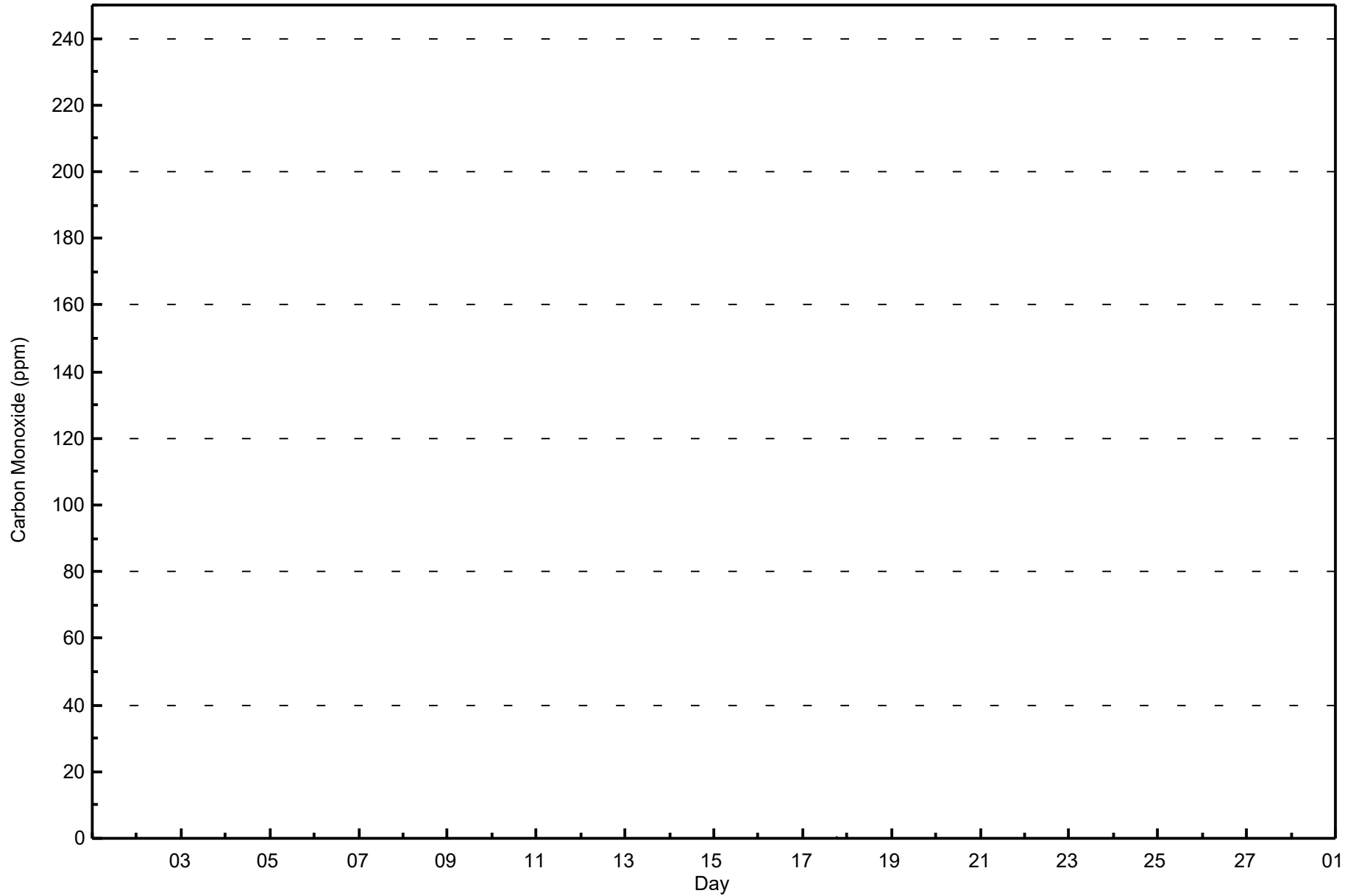






**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Carbon Monoxide (CO) - ppm**  
**Stony Mountain - February 2023**





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Carbon Monoxide (CO) - ppm  
Stony Mountain - February 2023**

| <b>Concentration Ranges (ppm)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 0.3                           | 640                    | 100.00   | 100.00              |
| 0.4 - 0.5                         | 0                      | 0.00     | 100.00              |
| 0.6 - 0.7                         | 0                      | 0.00     | 100.00              |
| 0.8 - 1.4                         | 0                      | 0.00     | 100.00              |
| 1.5 - 10                          | 0                      | 0.00     | 100.00              |
| > 10                              | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 640

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Carbon Monoxide (CO) - ppm  
Stony Mountain - February 2023**

| Concentration<br>Ranges (ppm) | Wind Direction |     |    |     |    |     |    |     |    |     |    |     |    |     |    |     | Totals |
|-------------------------------|----------------|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|--------|
|                               | N              | NNE | NE | ENE | E  | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |        |
| 0 - 0.3                       | 61             | 34  | 35 | 26  | 25 | 15  | 15 | 20  | 32 | 74  | 56 | 43  | 50 | 50  | 46 | 57  | 639    |
| 0.4 - 0.5                     | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| 0.6 - 0.7                     | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| 0.8 - 1.4                     | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| 1.5 - 10                      | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| > 10                          | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| <b>Totals</b>                 | 61             | 34  | 35 | 26  | 25 | 15  | 15 | 20  | 32 | 74  | 56 | 43  | 50 | 50  | 46 | 57  | 639    |

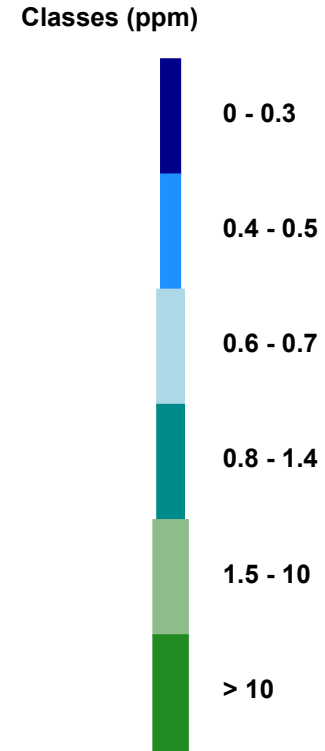
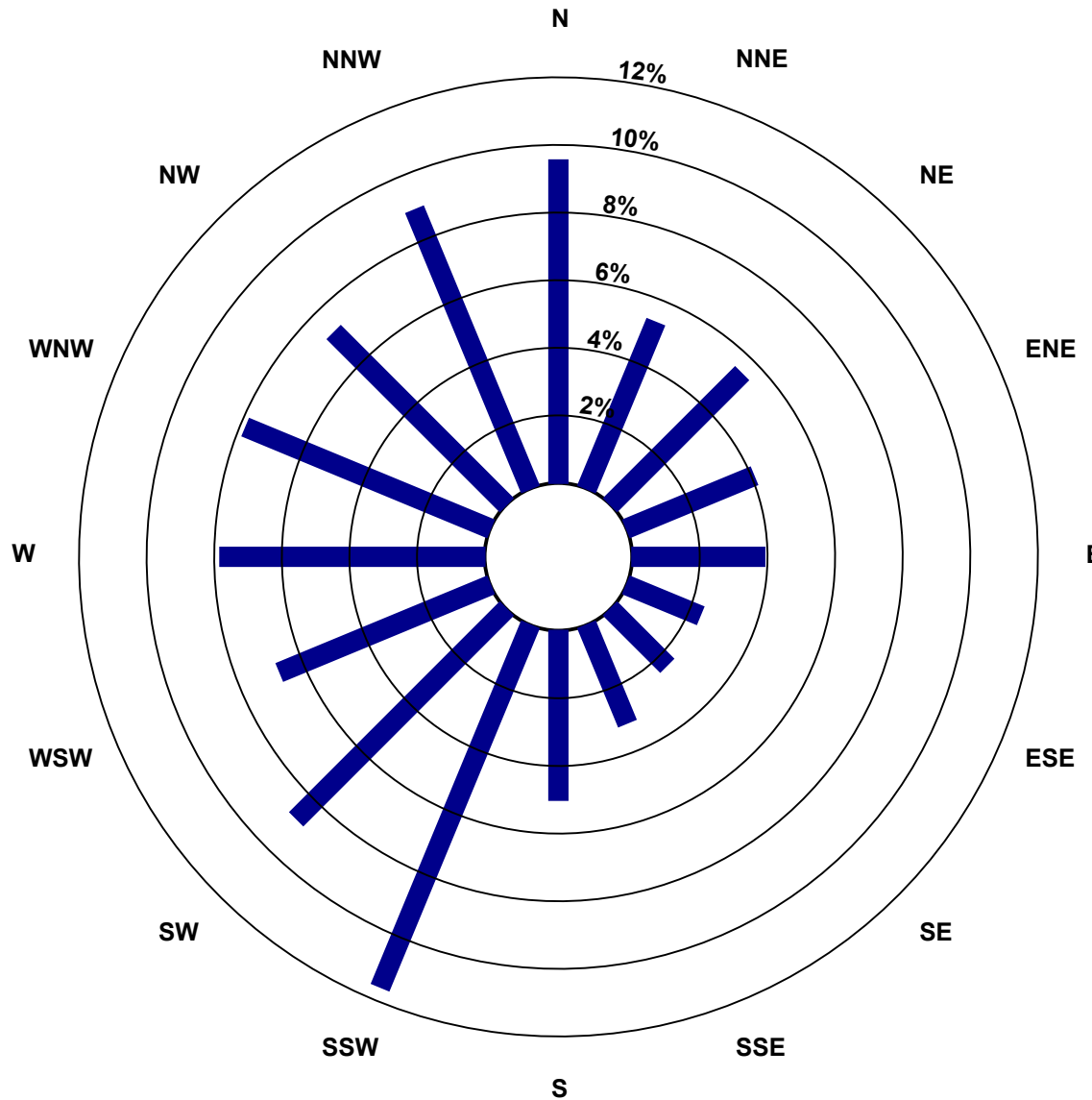
Total Number of Valid Hours: 639

Total Number of Hours: 672



Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Carbon Monoxide (CO) - ppm  
Stony Mountain



Total Number of Valid Hours: 639

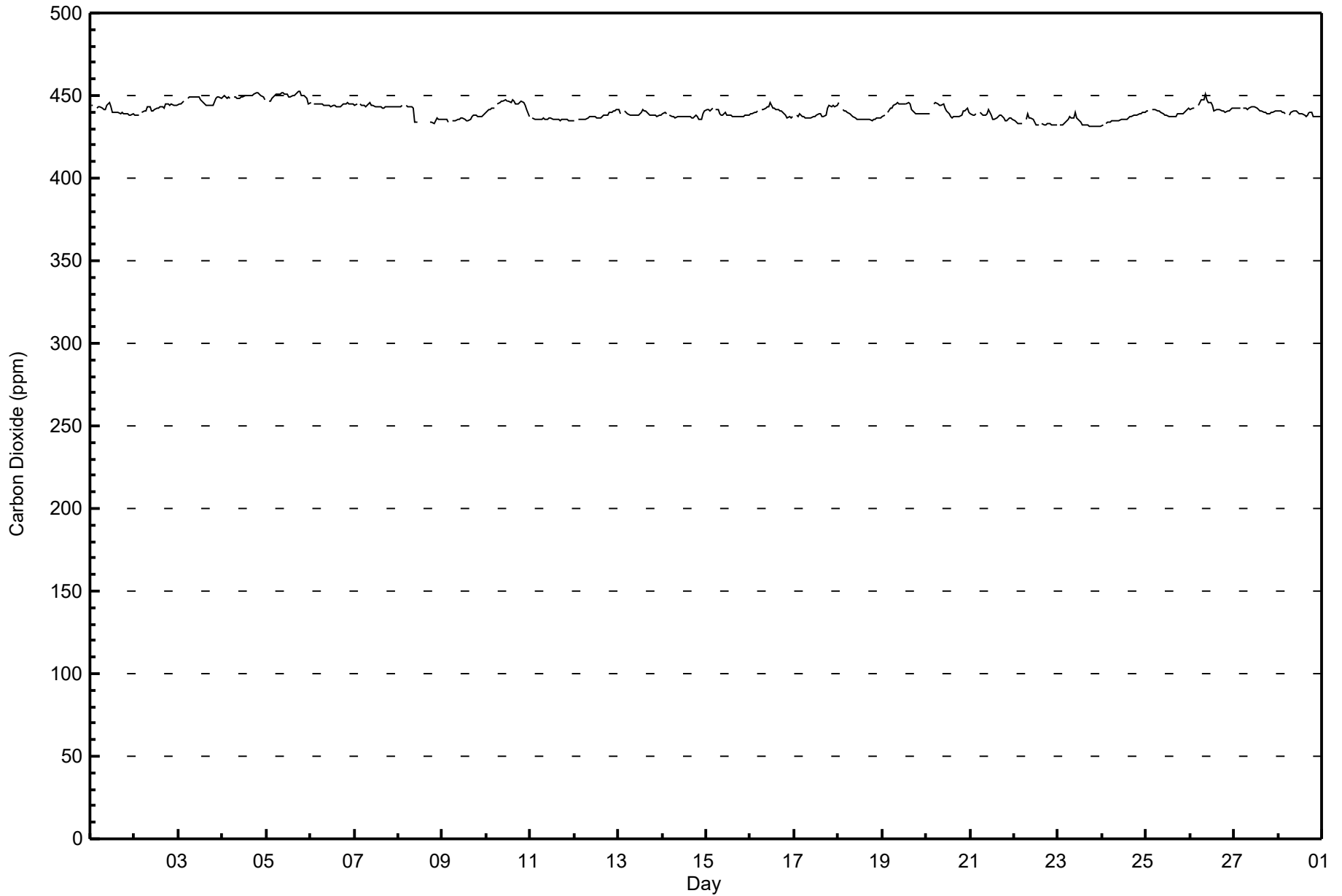


| Number of Exceedences (AAAQO):  |                               | 1-hr: 0  | 24-hr: 0        | Hours in Service: |       |       |       |                 |       |       |       |       |       |       |       |       |       |       |                           |       | 672   |       |       |                 |               |               |
|---|-------------------------------|--|-----------------|-------------------|-------|-------|-------|-----------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------------------------|-------|-------|-------|-------|-----------------|---------------|---------------|
| Maximum Value: 452.4 ppm on Feb 5 19:00   |                               | Maximum Daily Average: 449.9 ppm on Feb 5  |                 |                   |       |       |       |                 |       |       |       |       |       |       |       |       |       |       | Hours of Data:            | 637   |       |       |       |                 |               |               |
| Minimum Value: 431.0 ppm on Feb 23 21:00  |                               | Minimum Daily Average: 433.5 ppm on Feb 23   |                 |                   |       |       |       |                 |       |       |       |       |       |       |       |       |       |       | Hours of Missing Data:    | 35    |       |       |       |                 |               |               |
| Maximum Diurnal Average: 441.5 ppm at hour 9  |                               | Minimum Diurnal Average: 439.6 ppm at hour 17  |                 |                   |       |       |       |                 |       |       |       |       |       |       |       |       |       |       | Hours of Calibration:     | 34    |       |       |       |                 |               |               |
| Monthly Average: 440.35 ppm   |                               | Percentiles: P <sub>1</sub> = 431.7 P <sub>10</sub> = 435.3 Q <sub>1</sub> = 437.0 Median = 439.6 Q <sub>3</sub> = 443.5 P <sub>90</sub> = 446.8 P <sub>99</sub> = 451.2 |                 |                   |       |       |       |                 |       |       |       |       |       |       |       |       |       |       | Percent Operational Time: | 99.9  |       |       |       |                 |               |               |
| Day   | Hourly Period Ending At (MST) |  |                 |                   |       |       |       |                 |       |       |       |       |       |       |       |       |       |       |                           |       |       |       |       |                 | Daily Average | Daily Maximum |
|   | 1                             | 2  | 3               | 4                 | 5     | 6     | 7     | 8               | 9     | 10    | 11    | 12    | 13    | 14    | 15    | 16    | 17    | 18    | 19                        | 20    | 21    | 22    | 23    | 24              |               |               |
| 1-Feb   | 443.7                         | 444.1  | Z               | 442.6             | 443.1 | 443.0 | 442.0 | 441.8           | 441.5 | 443.9 | 445.7 | 443.1 | 440.1 | 439.9 | 439.9 | 439.8 | 439.3 | 439.6 | 439.3                     | 438.7 | 439.1 | 438.5 | 438.4 | 438.8           | 441.1         | 445.7         |
| 2-Feb   | 438.5                         | 438.3  | 438.5           | Z                 | 439.9 | 440.7 | 440.9 | 443.3           | 443.5 | 440.8 | 440.8 | 441.4 | 442.3 | 442.5 | 443.2 | 443.4 | 442.4 | 444.6 | 445.2                     | 444.0 | 444.6 | 444.3 | 444.1 | 444.3           | 442.2         | 445.2         |
| 3-Feb   | 445.1                         | 445.1  | 445.6           | 446.3             | Z     | 447.9 | 448.9 | 449.4           | 449.1 | 448.9 | 449.1 | 449.2 | 447.5 | 446.0 | 444.9 | 443.8 | 444.2 | 443.8 | 444.2                     | 444.3 | 448.7 | 449.4 | 449.1 | 448.0           | 446.9         | 449.4         |
| 4-Feb   | 449.2                         | 449.8  | 448.5           | 448.8             | 448.6 | Z     | 449.3 | 449.1           | 448.5 | 448.5 | 449.5 | 449.4 | 449.7 | 450.0 | 450.1 | 450.1 | 451.2 | 451.9 | 451.5                     | 450.9 | 450.2 | 449.2 | 447.8 | 449.6           | 451.9         |               |
| 5-Feb   | Z                             | 446.8  | 446.9           | 448.0             | 450.0 | 451.0 | 451.0 | 450.9           | 451.4 | 451.7 | 450.9 | 450.4 | 449.5 | 449.3 | 449.8 | 450.0 | 451.2 | 452.4 | 452.4                     | 450.4 | 450.0 | 449.5 | 448.3 | 445.1           | 449.9         | 452.4         |
| 6-Feb   | 445.7                         | Z  | 445.3           | 445.0             | 444.8 | 444.6 | 444.5 | 444.0           | 444.3 | 444.0 | 443.8 | 443.6 | 443.8 | 443.7 | 443.3 | 443.1 | 443.3 | 443.9 | 444.6                     | 445.2 | 445.5 | 445.3 | 444.5 | 444.7           | 444.4         | 445.7         |
| 7-Feb   | 444.1                         | 444.7  | Z               | 444.6             | 444.1 | 443.7 | 443.5 | 443.8           | 446.1 | 444.3 | 444.0 | 443.3 | 442.9 | 442.9 | 443.0 | 442.5 | 442.5 | 442.9 | 442.9                     | 443.0 | 443.2 | 443.2 | 443.3 | 443.2           | 443.6         | 446.1         |
| 8-Feb   | 443.4                         | 443.5  | 443.7           | Z                 | 443.7 | 443.1 | 443.1 | 443.2           | 442.1 | 433.9 | 434.2 | C     | C     | C     | C     | C     | C     | 433.6 | 434.0                     | 433.4 | 434.3 | 436.1 | 436.0 | 435.7           | --            | 443.7         |
| 9-Feb   | 435.5                         | 435.6  | 435.4           | 434.1             | Z     | 435.0 | 435.1 | 435.0           | 435.6 | 435.5 | 436.1 | 436.1 | 435.6 | 434.8 | 434.9 | 436.0 | 437.4 | 438.4 | 438.1                     | 437.6 | 437.2 | 437.6 | 438.4 | 439.4           | 436.3         | 439.4         |
| 10-Feb  | 441.1                         | 441.4  | 441.6           | 442.2             | 442.5 | Z     | 444.6 | 445.5           | 446.5 | 446.8 | 447.5 | 447.0 | 446.6 | 445.7 | 447.1 | 446.7 | 444.6 | 444.9 | 446.1                     | 446.6 | 445.9 | 444.3 | 441.4 | 437.6           | 444.5         | 447.5         |
| 11-Feb  | Z                             | 436.3  | 435.8           | 435.6             | 435.9 | 435.8 | 436.0 | 436.1           | 435.9 | 435.8 | 436.1 | 436.1 | 435.9 | 435.6 | 435.7 | 435.4 | 435.2 | 435.3 | 435.4                     | 435.5 | 435.3 | 435.0 | 434.8 | 434.8           | 435.6         | 436.3         |
| 12-Feb  | 435.1                         | Z  | 435.4           | 435.6             | 435.5 | 435.6 | 435.8 | 436.3           | 437.0 | 437.0 | 437.0 | 437.0 | 436.8 | 436.3 | 436.4 | 437.0 | 438.0 | 438.0 | 438.5                     | 440.0 | 439.5 | 440.9 | 440.9 | 441.9           | 437.5         | 441.9         |
| 13-Feb  | 441.7                         | 439.3  | Z               | 440.5             | 439.8 | 438.8 | 438.4 | 438.4           | 438.5 | 438.2 | 438.1 | 438.3 | 439.6 | 441.6 | 440.8 | 440.4 | 438.9 | 438.4 | 438.5                     | 438.2 | 438.1 | 437.4 | 437.8 | 438.3           | 439.0         | 441.7         |
| 14-Feb  | 438.8                         | 440.0  | 439.3           | Z                 | 437.8 | 437.6 | 436.9 | 436.6           | 437.0 | 437.4 | 437.0 | 436.9 | 437.0 | 437.1 | 436.9 | 437.0 | 436.2 | 436.4 | 437.8                     | 437.4 | 435.9 | 435.7 | 439.3 | 440.7           | 437.5         | 440.7         |
| 15-Feb  | 441.3                         | 441.3  | 441.0           | 442.1             | Z     | 441.4 | 441.3 | 438.8           | 438.5 | 438.5 | 439.5 | 438.1 | 438.3 | 438.1 | 437.6 | 437.2 | 437.3 | 437.2 | 436.9                     | 436.9 | 437.4 | 438.3 | 438.5 | 438.4           | 438.9         | 442.1         |
| 16-Feb  | 438.8                         | 439.0  | 439.8           | 439.8             | 440.6 | Z     | 441.6 | 441.7           | 442.3 | 443.0 | 443.4 | 445.4 | 442.2 | 442.0 | 441.8 | 441.1 | 440.5 | 440.3 | 439.3                     | 438.1 | 436.8 | 436.9 | 436.6 | 437.1           | 440.4         | 445.4         |
| 17-Feb  | Z                             | 438.0  | 437.6           | 439.2             | 437.2 | 437.0 | 436.6 | 436.4           | 436.6 | 436.4 | 436.9 | 437.5 | 438.0 | 438.6 | 439.0 | 437.4 | 437.6 | 438.6 | 442.5                     | 443.9 | 443.4 | 443.7 | 443.6 | 444.1           | 439.1         | 444.1         |
| 18-Feb  | 445.9                         | Z  | 441.6           | 440.5             | 440.5 | 440.2 | 439.3 | 438.1           | 437.0 | 436.4 | 436.0 | 435.6 | 435.6 | 435.7 | 435.5 | 435.7 | 435.8 | 435.3 | 435.2                     | 435.2 | 435.4 | 436.0 | 436.3 | 436.7           | 437.4         | 445.9         |
| 19-Feb  | 437.2                         | 438.2  | Z               | 440.0             | 442.0 | 442.6 | 443.7 | 444.6           | 446.1 | 445.3 | 445.2 | 445.1 | 445.3 | 445.1 | 445.8 | 445.2 | 441.6 | 440.0 | 439.3                     | 439.2 | 439.3 | 439.0 | 438.7 | 438.6           | 442.0         | 446.1         |
| 20-Feb  | 438.6                         | 438.7  | 439.1           | Z                 | 444.8 | 445.7 | 444.8 | 444.2           | 444.5 | 444.6 | 442.4 | 440.5 | 438.8 | 437.4 | 436.8 | 437.0 | 437.3 | 437.1 | 437.5                     | 437.7 | 441.0 | 441.0 | 442.0 | 439.9           | 440.5         | 445.7         |
| 21-Feb  | 438.8                         | 437.9  | 437.9           | 438.6             | Z     | 439.5 | 438.6 | 438.5           | 438.6 | 438.7 | 441.4 | 437.9 | 436.0 | 435.5 | 436.7 | 437.0 | 438.2 | 438.5 | 436.1                     | 435.0 | 434.9 | 436.5 | 436.0 | 435.6           | 437.5         | 441.4         |
| 22-Feb  | 434.8                         | 434.2  | 433.5           | 433.1             | 432.8 | Z     | 435.6 | 438.8           | 436.6 | 436.3 | 436.0 | 433.9 | 432.4 | 431.9 | M     | 432.8 | 431.9 | 432.5 | 433.3                     | 433.3 | 432.5 | 432.2 | 432.3 | 432.4           | 433.8         | 438.8         |
| 23-Feb  | Z                             | 432.4  | 432.4           | 432.8             | 433.9 | 435.9 | 437.4 | 436.9           | 436.6 | 439.5 | 436.3 | 435.7 | 433.5 | 432.1 | 432.0 | 432.0 | 431.9 | 431.2 | 431.4                     | 431.0 | 431.0 | 431.0 | 431.2 | 431.6           | 433.5         | 439.5         |
| 24-Feb  | 432.1                         | Z  | 433.4           | 433.7             | 434.0 | 434.4 | 434.7 | 434.8           | 434.9 | 435.1 | 435.5 | 435.4 | 435.2 | 435.7 | 436.3 | 437.1 | 437.5 | 437.7 | 438.0                     | 438.5 | 438.9 | 439.2 | 439.5 | 439.8           | 436.1         | 439.8         |
| 25-Feb  | 440.4                         | 440.9  | Z               | 441.4             | 441.1 | 441.3 | 441.0 | 440.9           | 440.0 | 439.2 | 438.4 | 437.8 | 437.6 | 437.7 | 437.5 | 437.5 | 437.7 | 438.6 | 438.8                     | 438.9 | 439.1 | 439.6 | 441.2 | 442.7           | 439.5         | 442.7         |
| 26-Feb  | 441.9                         | 442.1  | 442.7           | Z                 | 443.7 | 445.7 | 447.2 | 447.8           | 450.5 | 447.6 | 445.4 | 445.8 | 443.7 | 441.0 | 441.8 | 441.8 | 441.2 | 440.7 | 440.8                     | 439.9 | 440.3 | 440.5 | 441.2 | 442.2           | 443.3         | 450.5         |
| 27-Feb  | 442.6                         | 442.3  | 442.1           | 442.1             | Z     | 442.7 | 442.6 | 441.7           | 442.1 | 443.2 | 443.5 | 443.3 | 442.4 | 441.5 | 440.9 | 440.4 | 439.8 | 439.6 | 439.3                     | 439.3 | 439.8 | 440.1 | 440.4 | 440.8           | 441.4         | 443.5         |
| 28-Feb  | 440.9                         | 440.5  | 440.2           | 440.0             | 438.6 | Z     | 438.3 | 439.8           | 440.6 | 440.5 | 440.4 | 439.2 | 439.0 | 438.6 | 438.1 | 437.5 | 437.8 | 440.0 | 439.6                     | 437.6 | 437.1 | 437.0 | 437.6 | 437.6           | 439.0         | 440.9         |
| 440.6 440.4 439.9 440.3 440.7 441.0 441.2 441.3 441.5 441.1 441.1 440.9 440.2 439.9 440.2 439.8 439.6 439.7 439.9 439.7 439.8 440.0 440.0 439.9 |                               |  |                 |                   |       |       |       |                 |       |       |       |       |       |       |       |       |       |       |                           |       |       |       |       | Diurnal Average |               |               |
| 449.2 449.8 448.5 448.8 450.0 451.0 451.0 450.9 451.4 451.7 450.9 450.4 449.7 450.0 450.1 450.1 451.2 452.4 452.4 451.5 450.9 450.2 449.2 448.0 |                               |  |                 |                   |       |       |       |                 |       |       |       |       |       |       |       |       |       |       |                           |       |       |       |       | Diurnal Maximum |               |               |
| Z - zerospan  |                               |  | C - Calibration |                   |       |       |       | M - Maintenance |       |       |       |       |       |       |       |       |       |       |                           |       |       |       |       |                 |               |               |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Carbon Dioxide (CO<sub>2</sub>) - ppm**  
**Stony Mountain - February 2023**







**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Carbon Dioxide (CO<sub>2</sub>) - ppm**  
**Stony Mountain - February 2023**

| <b>Concentration Ranges (ppm)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 400 - 420                         | 0                      | 0.00     | 0.00                |
| 420 - 440                         | 357                    | 56.04    | 56.04               |
| 440 - 460                         | 280                    | 43.96    | 100.00              |
| 460 - 480                         | 0                      | 0.00     | 100.00              |
| 480 - 500                         | 0                      | 0.00     | 100.00              |
| > 500                             | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 637

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Carbon Dioxide (CO<sub>2</sub>) - ppm  
Stony Mountain - February 2023**

| Concentration<br>Ranges (ppm) | Wind Direction |     |    |     |    |     |    |     |    |     |    |     |    |     |    |     | Totals |
|-------------------------------|----------------|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|--------|
|                               | N              | NNE | NE | ENE | E  | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |        |
| 400 - 420                     | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| 420 - 440                     | 47             | 22  | 24 | 11  | 8  | 8   | 6  | 6   | 17 | 39  | 31 | 27  | 25 | 26  | 19 | 40  | 356    |
| 440 - 460                     | 14             | 13  | 11 | 15  | 17 | 7   | 9  | 14  | 16 | 37  | 26 | 15  | 23 | 20  | 28 | 15  | 280    |
| 460 - 480                     | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| 480 - 500                     | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| > 500                         | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| <b>Totals</b>                 | 61             | 35  | 35 | 26  | 25 | 15  | 15 | 20  | 33 | 76  | 57 | 42  | 48 | 46  | 47 | 55  | 636    |

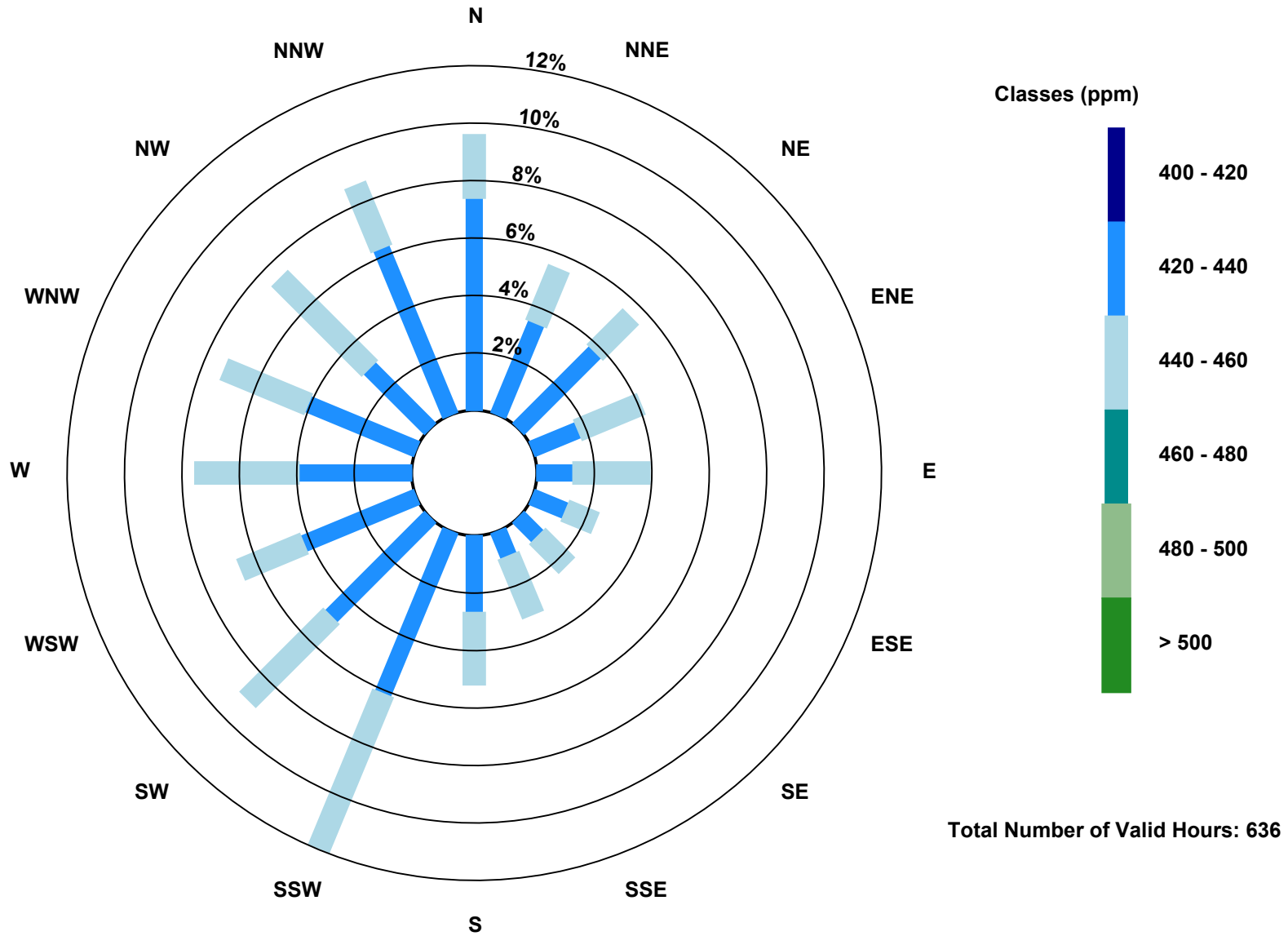
Total Number of Valid Hours: 636

Total Number of Hours: 672



Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Carbon Dioxide (CO<sub>2</sub>) - ppm  
Stony Mountain



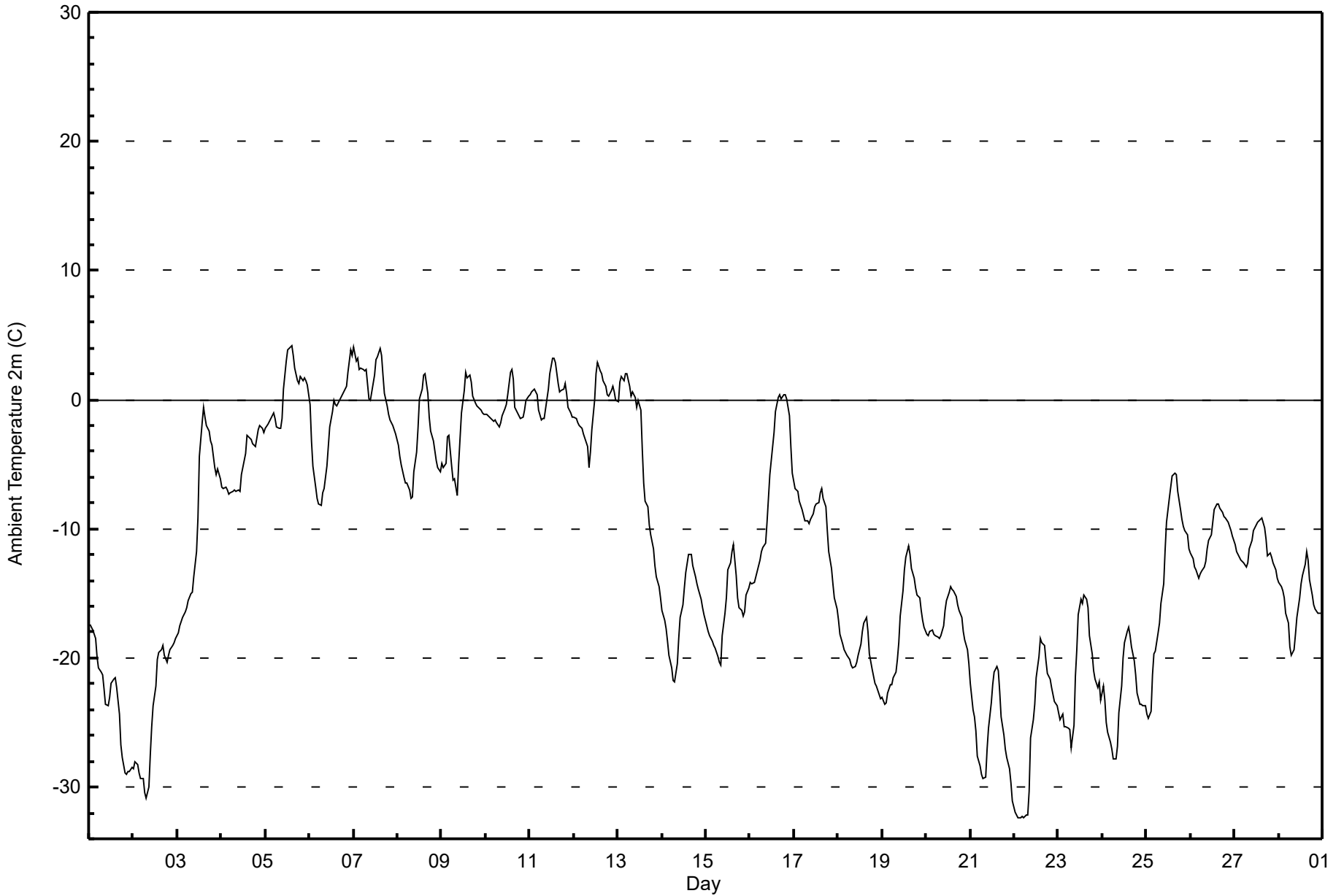


| Maximum Value: 4.2 C on Feb 5 15:00        |                               | Maximum Daily Average: 1.3 C on Feb 7   |       | Hours in Service: 672           |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |               |                 |  |
|--|-------------------------------|---|-------|---------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------------|-----------------|--|
| Minimum Value: -32.4 C on Feb 22 06:00     |                               | Minimum Daily Average: -25.7 C on Feb 21  |       | Hours of Data: 672              |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |               |                 |  |
| Maximum Diurnal Average: -7.7 C at hour 15 |                               | Minimum Diurnal Average: -14.4 C at hour 8  |       | Hours of Missing Data: 0        |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |               |                 |  |
| Monthly Average: -11.54 C                  |                               | Percentiles: P <sub>1</sub> = -32.0 P <sub>10</sub> = -23.7 Q <sub>1</sub> = -19.1 Median = -11.9 Q <sub>3</sub> = -2.2 P <sub>90</sub> = 0.7 P <sub>99</sub> = 3.4 |       | Hours of Calibration: 0         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |               |                 |  |
|  |                               |   |       | Percent Operational Time: 100.0 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |               |                 |  |
| Day  | Hourly Period Ending At (MST) |   |       |                                 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Daily Average | Daily Maximum   |  |
|  | 1                             | 2   | 3     | 4                               | 5     | 6     | 7     | 8     | 9     | 10    | 11    | 12    | 13    | 14    | 15    | 16    | 17    | 18    | 19    | 20    | 21    | 22    | 23    | 24    |               |                 |  |
| 1-Feb                                      | -17.4                         | -17.7   | -17.9 | -18.5                           | -19.9 | -20.7 | -21.1 | -21.3 | -22.4 | -23.6 | -23.7 | -23.1 | -22.0 | -21.6 | -21.6 | -22.3 | -24.4 | -26.7 | -27.7 | -28.9 | -29.0 | -28.8 | -28.8 | -28.5 | -23.2         | -17.4           |  |
| 2-Feb                                      | -28.6                         | -28.0   | -28.2 | -28.9                           | -29.3 | -29.4 | -30.4 | -30.9 | -30.0 | -27.5 | -25.3 | -23.7 | -22.1 | -20.1 | -19.6 | -19.3 | -19.0 | -19.8 | -20.3 | -19.8 | -19.3 | -19.0 | -18.8 | -18.5 | -24.0         | -18.5           |  |
| 3-Feb                                      | -18.1                         | -17.5   | -17.2 | -16.9                           | -16.4 | -16.0 | -15.6 | -15.0 | -14.9 | -13.8 | -11.7 | -9.2  | -4.4  | -1.8  | -0.6  | -1.4  | -2.0  | -2.4  | -3.2  | -3.6  | -5.3  | -5.8  | -5.4  | -6.1  | -9.3          | -0.6            |  |
| 4-Feb                                      | -6.8                          | -6.9  | -6.8  | -7.0                            | -7.3  | -7.2  | -7.1  | -7.0  | -7.1  | -7.0  | -7.1  | -5.8  | -4.7  | -4.1  | -2.8  | -2.9  | -3.1  | -3.5  | -3.7  | -3.0  | -2.3  | -2.0  | -2.2  | -2.5  | -5.0          | -2.0            |  |
| 5-Feb                                      | -2.3                          | -1.9  | -1.7  | -1.5                            | -1.0  | -1.5  | -2.1  | -2.2  | -2.2  | -1.5  | 0.8   | 3.0   | 3.9   | 3.9   | 4.2   | 3.4   | 2.5   | 1.5   | 1.3   | 1.7   | 1.4   | 1.7   | 1.5   | 1.1   | 0.6           | 4.2             |  |
| 6-Feb                                      | -0.3                          | -3.2  | -5.2  | -6.8                            | -7.6  | -8.1  | -8.2  | -7.2  | -6.9  | -5.2  | -3.7  | -2.1  | -1.0  | -0.1  | -0.4  | -0.5  | 0.0   | 0.2   | 0.4   | 0.9   | 1.0   | 2.1   | 3.8   | 3.4   | -2.3          | 3.8             |  |
| 7-Feb                                      | 4.1                           | 3.0   | 3.2   | 2.4                             | 2.4   | 2.3   | 2.2   | 2.3   | 0.1   | 0.0   | 0.6   | 1.9   | 3.2   | 3.3   | 3.9   | 3.4   | 1.9   | 0.5   | -0.5  | -1.2  | -1.6  | -2.0  | -2.3  | -2.6  | 1.3           | 4.1             |  |
| 8-Feb                                      | -3.6                          | -4.4  | -5.1  | -6.0                            | -6.4  | -6.4  | -7.0  | -7.6  | -7.5  | -5.6  | -4.1  | -2.2  | 0.1   | 0.9   | 1.9   | 2.0   | 0.5   | -1.4  | -2.5  | -3.2  | -3.9  | -4.7  | -5.3  | -5.6  | -3.6          | 2.0             |  |
| 9-Feb                                      | -4.9                          | -5.3  | -5.0  | -2.9                            | -2.7  | -5.1  | -6.3  | -6.1  | -7.5  | -4.9  | -2.9  | -1.0  | 0.7   | 2.2   | 1.7   | 1.9   | 1.4   | 0.3   | -0.2  | -0.5  | -0.6  | -0.9  | -1.0  | -1.1  | -2.1          | 2.2             |  |
| 10-Feb                                     | -1.1                          | -1.3  | -1.4  | -1.5                            | -1.6  | -1.5  | -1.8  | -2.1  | -1.8  | -1.2  | -0.7  | -0.4  | 0.4   | 2.1   | 2.4   | 1.6   | -0.6  | -1.1  | -1.2  | -1.4  | -1.3  | -0.8  | -0.1  | 0.3   | -0.7          | 2.4             |  |
| 11-Feb                                     | 0.4                           | 0.6   | 0.8   | 0.6                             | 0.4   | -0.8  | -1.5  | -1.5  | -1.4  | 0.0   | 0.8   | 2.0   | 3.2   | 3.3   | 2.9   | 1.2   | 0.6   | 0.7   | 0.8   | 1.3   | 0.5   | -0.5  | -1.1  | -1.3  | 0.5           | 3.3             |  |
| 12-Feb                                     | -1.4                          | -1.5  | -1.7  | -2.0                            | -2.3  | -2.7  | -3.0  | -3.6  | -5.3  | -4.1  | -2.3  | -0.1  | 2.0   | 2.8   | 2.2   | 2.0   | 1.5   | 1.0   | 0.4   | 0.2   | 0.7   | 1.1   | 0.6   | 0.0   | -0.6          | 2.8             |  |
| 13-Feb                                     | -0.2                          | 1.4   | 1.8   | 1.5                             | 2.0   | 2.0   | 1.1   | 0.3   | 0.6   | 0.2   | -0.6  | 0.0   | -0.8  | -3.9  | -6.5  | -7.9  | -8.3  | -9.6  | -10.5 | -11.5 | -12.8 | -13.7 | -14.5 | -15.4 | -4.4          | 2.0             |  |
| 14-Feb                                     | -16.4                         | -17.1   | -17.7 | -18.7                           | -19.8 | -20.7 | -21.7 | -21.9 | -20.4 | -18.5 | -16.9 | -15.8 | -14.6 | -13.4 | -11.9 | -11.9 | -12.0 | -12.8 | -13.7 | -14.2 | -14.7 | -15.5 | -16.1 | -16.6 | -16.4         | -11.9           |  |
| 15-Feb                                     | -17.5                         | -17.9   | -18.3 | -18.7                           | -19.0 | -19.3 | -19.9 | -20.3 | -20.5 | -18.3 | -16.6 | -15.3 | -13.2 | -12.6 | -11.8 | -11.2 | -13.6 | -15.3 | -16.1 | -16.4 | -16.8 | -16.4 | -15.2 | -14.5 | -16.5         | -11.2           |  |
| 16-Feb                                     | -14.2                         | -14.3   | -14.1 | -13.8                           | -13.2 | -12.4 | -11.8 | -11.4 | -11.1 | -9.5  | -7.7  | -5.8  | -3.6  | -2.5  | -0.9  | 0.1   | 0.3   | 0.1   | 0.4   | 0.4   | 0.1   | -1.2  | -3.6  | -5.7  | -6.5          | 0.4             |  |
| 17-Feb                                     | -6.9                          | -7.0  | -7.1  | -7.8                            | -8.5  | -8.9  | -9.3  | -9.4  | -9.6  | -9.2  | -8.8  | -8.3  | -8.0  | -8.0  | -7.2  | -6.9  | -7.6  | -8.2  | -10.2 | -11.8 | -13.0 | -14.2 | -15.3 | -16.2 | -9.5          | -6.9            |  |
| 18-Feb                                     | -17.1                         | -18.2   | -18.9 | -19.4                           | -19.6 | -19.8 | -20.1 | -20.6 | -20.8 | -20.7 | -20.3 | -19.8 | -18.9 | -17.9 | -17.3 | -16.8 | -18.0 | -19.6 | -20.9 | -21.4 | -21.9 | -22.1 | -22.8 | -23.1 | -19.8         | -16.8           |  |
| 19-Feb                                     | -23.1                         | -23.5   | -23.5 | -22.7                           | -22.0 | -22.0 | -21.5 | -21.0 | -20.2 | -18.8 | -16.8 | -14.8 | -13.2 | -12.2 | -11.3 | -12.0 | -13.0 | -13.8 | -14.6 | -15.1 | -15.3 | -16.3 | -17.1 | -17.6 | -17.6         | -11.3           |  |
| 20-Feb                                     | -18.1                         | -18.3   | -17.9 | -17.9                           | -18.2 | -18.3 | -18.4 | -18.5 | -18.3 | -17.5 | -16.3 | -15.6 | -14.9 | -14.5 | -14.7 | -14.8 | -15.2 | -15.9 | -16.4 | -16.9 | -17.9 | -18.6 | -19.4 | -20.5 | -17.2         | -14.5           |  |
| 21-Feb                                     | -21.9                         | -24.0   | -24.6 | -25.6                           | -27.6 | -28.4 | -29.0 | -29.4 | -29.2 | -27.1 | -25.5 | -23.5 | -22.1 | -21.1 | -20.7 | -20.9 | -22.6 | -24.6 | -26.0 | -27.0 | -27.7 | -28.6 | -29.7 | -31.1 | -25.7         | -20.7           |  |
| 22-Feb                                     | -32.0                         | -32.2   | -32.4 | -32.4                           | -32.2 | -32.4 | -32.2 | -32.2 | -30.4 | -26.2 | -24.8 | -23.6 | -21.5 | -19.9 | -18.5 | -18.8 | -19.1 | -20.2 | -21.2 | -21.6 | -22.3 | -22.8 | -23.4 | -23.7 | -25.7         | -18.5           |  |
| 23-Feb                                     | -24.2                         | -24.8   | -24.4 | -25.3                           | -25.3 | -25.5 | -25.5 | -27.0 | -25.2 | -21.4 | -19.4 | -16.7 | -15.5 | -15.8 | -15.2 | -15.5 | -16.1 | -18.3 | -19.7 | -20.9 | -21.6 | -22.3 | -21.9 | -23.3 | -21.3         | -15.2           |  |
| 24-Feb                                     | -22.2                         | -23.3   | -25.0 | -25.8                           | -26.5 | -27.1 | -27.8 | -27.8 | -26.8 | -24.2 | -22.2 | -20.0 | -18.8 | -18.0 | -17.6 | -18.2 | -19.1 | -20.3 | -21.3 | -22.7 | -23.5 | -23.6 | -23.7 | -23.7 | -22.9         | -17.6           |  |
| 25-Feb                                     | -24.3                         | -24.6   | -24.1 | -21.3                           | -19.7 | -19.5 | -18.0 | -17.3 | -15.8 | -14.3 | -11.7 | -9.5  | -7.7  | -6.8  | -5.9  | -5.7  | -5.9  | -7.1  | -8.5  | -9.3  | -9.8  | -10.1 | -10.4 | -11.5 | -13.3         | -5.7            |  |
| 26-Feb                                     | -11.9                         | -12.4   | -12.9 | -13.2                           | -13.8 | -13.5 | -13.3 | -12.9 | -12.5 | -11.5 | -10.9 | -10.4 | -9.5  | -8.5  | -8.1  | -8.1  | -8.4  | -8.8  | -9.1  | -9.2  | -9.5  | -9.8  | -10.1 | -10.6 | -10.8         | -8.1            |  |
| 27-Feb                                     | -11.2                         | -11.8   | -12.0 | -12.5                           | -12.5 | -12.7 | -12.9 | -12.7 | -11.6 | -10.9 | -10.1 | -9.9  | -9.5  | -9.3  | -9.2  | -9.2  | -9.9  | -10.8 | -12.1 | -11.9 | -12.2 | -12.6 | -13.2 | -13.9 | -11.4         | -9.2            |  |
| 28-Feb                                     | -14.2                         | -14.5   | -14.8 | -15.4                           | -16.5 | -17.3 | -19.1 | -19.8 | -19.3 | -18.1 | -16.9 | -15.3 | -14.3 | -13.6 | -12.7 | -11.8 | -12.4 | -13.9 | -15.1 | -15.8 | -16.2 | -16.5 | -16.5 | -16.6 | -15.7         | -11.8           |  |
|  |                               | -12.7   | -13.1 | -13.3                           | -13.5 | -13.7 | -14.0 | -14.3 | -14.4 | -14.2 | -12.9 | -11.6 | -10.2 | -8.8  | -8.1  | -7.7  | -7.9  | -8.6  | -9.6  | -10.4 | -10.8 | -11.2 | -11.6 | -11.9 | -12.3         | Diurnal Average |  |
|  |                               | 4.1   | 3.0   | 3.2                             | 2.4   | 2.4   | 2.3   | 2.2   | 2.3   | 0.6   | 0.2   | 0.8   | 3.0   | 3.9   | 3.9   | 4.2   | 3.4   | 2.5   | 1.5   | 1.3   | 1.7   | 1.4   | 2.1   | 3.8   | 3.4           | Diurnal Maximum |  |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Ambient Temperature 2m (AT 2m) - C**  
**Stony Mountain - February 2023**





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Ambient Temperature 2m (AT 2m) - C  
Stony Mountain - February 2023**

| <b>Concentration Ranges (C)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---------------------------------|------------------------|----------|---------------------|
| -50 - -20                       | 142                    | 21.13    | 21.13               |
| -20 - 0                         | 432                    | 64.29    | 85.42               |
| 0 - 10                          | 98                     | 14.58    | 100.00              |
| 10 - 20                         | 0                      | 0.00     | 100.00              |
| > 20                            | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 672

Total Number of Hours: 672



**Wood Buffalo Environmental Association**

**Summary of Hour Averages**

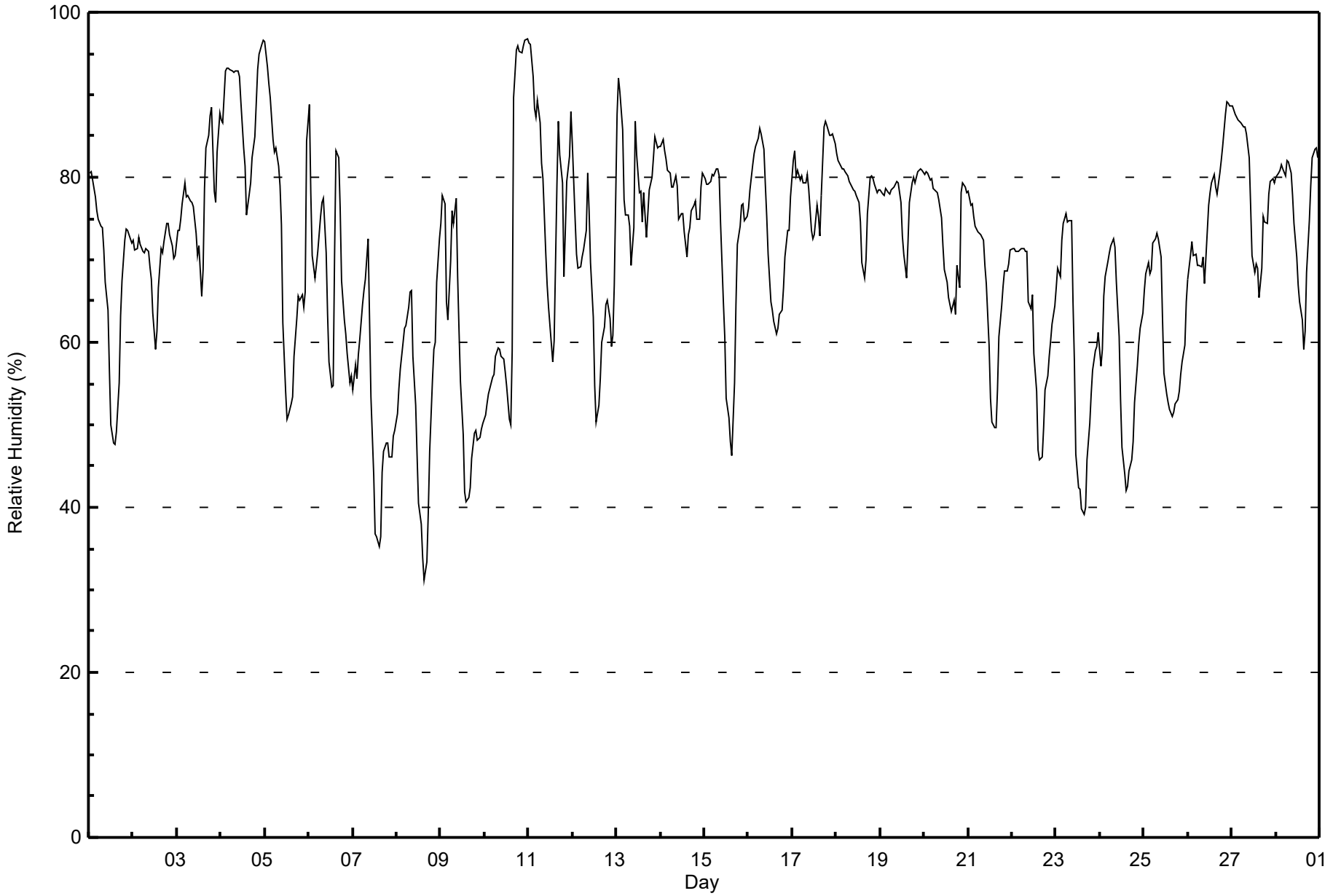
**Relative Humidity (RH) - %  
Stony Mountain - February 2023**

| Maximum Value: 96.8 % on Feb 11 00:00      Maximum Daily Average: 88.9 % on Feb 4  |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Hours in Service: 672<br>Hours of Data: 672  |      |                 |               |               |
|--|-------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|--|------|-----------------|---------------|---------------|
| Minimum Value: 31.1 % on Feb 8 16:00      Minimum Daily Average: 51.6 % on Feb 7<br>Maximum Diurnal Average: 76.4 % at hour 2      Minimum Diurnal Average: 58.2 % at hour 15<br>Monthly Average: 70.39 %      Percentiles: P <sub>1</sub> = 37.6 P <sub>10</sub> = 51.2 Q <sub>1</sub> = 62.1 Median = 72.4 Q <sub>3</sub> = 79.4 P <sub>90</sub> = 85.2 P <sub>99</sub> = 96.0 |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Hours of Missing Data: 0<br>Hours of Calibration: 0<br>Percent Operational Time: 100.0 |      |                 |               |               |
| Day  | Hourly Period Ending At (MST) |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |      |                 | Daily Average | Daily Maximum |
|  | 1                             | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20   | 21   | 22   | 23   | 24              |               |               |
| 1-Feb  | 80.5                          | 80.7 | 79.6 | 77.6 | 75.9 | 74.9 | 74.0 | 74.0 | 71.1 | 67.2 | 63.8 | 56.7 | 50.0 | 47.8 | 47.6 | 49.2 | 55.1 | 63.3 | 67.5 | 72.4 | 73.7 | 73.5   | 73.1 | 72.0            | 67.5          | 80.7          |
| 2-Feb  | 72.4                          | 71.2 | 71.3 | 72.7 | 71.9 | 71.1 | 70.8 | 71.3 | 71.0 | 69.2 | 67.7 | 63.6 | 59.1 | 61.3 | 66.6 | 71.4 | 70.9 | 72.1 | 74.3 | 74.4 | 73.1 | 71.7   | 70.2 | 70.5            | 70.0          | 74.4          |
| 3-Feb  | 73.6                          | 73.6 | 74.9 | 76.8 | 79.3 | 77.7 | 77.7 | 77.2 | 76.9 | 76.5 | 73.2 | 70.5 | 71.6 | 65.5 | 68.7 | 78.6 | 83.6 | 85.2 | 87.5 | 88.4 | 78.3 | 76.9   | 83.0 | 87.8            | 77.6          | 88.4          |
| 4-Feb  | 86.9                          | 86.6 | 92.9 | 93.2 | 93.3 | 93.1 | 93.0 | 92.7 | 92.9 | 92.8 | 92.2 | 89.2 | 83.5 | 81.4 | 75.4 | 77.9 | 79.4 | 82.3 | 84.9 | 89.1 | 93.1 | 95.0   | 96.2 | 96.7            | 88.9          | 96.7          |
| 5-Feb  | 96.4                          | 93.4 | 91.4 | 89.6 | 84.6 | 83.0 | 83.5 | 81.4 | 79.1 | 74.2 | 62.4 | 54.1 | 50.6 | 51.3 | 52.6 | 53.4 | 58.3 | 62.9 | 65.5 | 65.2 | 65.8 | 64.3   | 66.1 | 84.4            | 71.4          | 96.4          |
| 6-Feb  | 88.7                          | 78.1 | 70.5 | 67.8 | 69.4 | 71.1 | 75.2 | 77.0 | 77.4 | 70.8 | 63.4 | 57.7 | 54.6 | 54.7 | 70.6 | 83.2 | 82.4 | 76.2 | 67.4 | 62.7 | 61.1 | 58.6   | 55.1 | 55.9            | 68.7          | 88.7          |
| 7-Feb  | 54.2                          | 57.4 | 55.6 | 58.5 | 60.4 | 64.5 | 66.3 | 67.6 | 72.5 | 62.9 | 53.3 | 43.9 | 36.8 | 36.5 | 35.3 | 36.4 | 44.2 | 46.8 | 47.9 | 47.9 | 46.1 | 46.1   | 48.6 | 49.3            | 51.6          | 72.5          |
| 8-Feb  | 51.3                          | 54.4 | 56.7 | 59.9 | 61.7 | 62.0 | 64.2 | 66.1 | 66.2 | 58.3 | 52.4 | 46.3 | 40.5 | 37.9 | 34.0 | 31.1 | 33.4 | 39.2 | 46.7 | 55.5 | 59.1 | 60.0   | 67.2 | 72.6            | 53.2          | 72.6          |
| 9-Feb  | 74.5                          | 77.9 | 76.8 | 65.0 | 62.6 | 69.8 | 75.9 | 74.4 | 77.5 | 68.0 | 61.4 | 55.3 | 48.8 | 41.9 | 40.6 | 41.2 | 42.4 | 45.9 | 48.9 | 49.3 | 48.2 | 48.5   | 49.5 | 50.2            | 58.1          | 77.9          |
| 10-Feb   | 51.2                          | 52.5 | 53.7 | 54.3 | 55.7 | 56.1 | 58.4 | 59.3 | 59.1 | 58.4 | 57.9 | 56.4 | 54.7 | 50.6 | 49.9 | 58.9 | 89.6 | 95.5 | 95.9 | 95.3 | 95.1 | 95.9   | 96.6 | 96.8            | 68.7          | 96.8          |
| 11-Feb   | 96.3                          | 96.1 | 92.3 | 88.2 | 87.4 | 89.3 | 86.6 | 81.7 | 79.8 | 70.8 | 67.0 | 64.3 | 59.8 | 57.6 | 60.3 | 79.2 | 86.8 | 82.8 | 79.3 | 68.0 | 73.6 | 79.5   | 82.5 | 87.9            | 79.0          | 96.3          |
| 12-Feb   | 84.1                          | 74.9 | 70.7 | 69.0 | 69.1 | 70.3 | 71.2 | 73.6 | 80.5 | 75.9 | 69.7 | 63.1 | 54.7 | 50.4 | 52.4 | 55.6 | 60.0 | 61.9 | 64.5 | 65.0 | 62.8 | 59.4   | 60.9 | 67.0            | 66.1          | 84.1          |
| 13-Feb   | 87.6                          | 92.1 | 90.3 | 85.8 | 77.2 | 75.5 | 75.5 | 74.1 | 69.4 | 73.8 | 86.7 | 82.7 | 78.1 | 78.3 | 74.5 | 78.1 | 72.7 | 75.6 | 78.6 | 79.9 | 82.4 | 84.8   | 83.6 | 83.7            | 80.0          | 92.1          |
| 14-Feb   | 83.8                          | 84.6 | 83.2 | 82.2 | 80.9 | 80.5 | 78.9 | 78.8 | 80.2 | 79.0 | 74.8 | 75.5 | 75.6 | 73.4 | 70.4 | 73.0 | 73.9 | 75.9 | 76.6 | 77.1 | 75.0 | 75.0   | 78.8 | 80.5            | 77.8          | 84.6          |
| 15-Feb   | 79.9                          | 79.1 | 79.2 | 79.5 | 80.3 | 80.1 | 81.0 | 80.9 | 80.2 | 74.3 | 64.8 | 60.7 | 53.2 | 50.9 | 47.9 | 46.3 | 55.0 | 64.5 | 71.9 | 74.1 | 76.7 | 76.8   | 74.7 | 75.2            | 70.3          | 81.0          |
| 16-Feb   | 76.3                          | 78.5 | 81.5 | 82.8 | 83.7 | 84.8 | 85.9 | 85.2 | 83.4 | 79.2 | 75.3 | 70.8 | 65.0 | 63.9 | 62.5 | 61.0 | 61.7 | 63.4 | 63.9 | 66.6 | 70.4 | 73.5   | 73.6 | 77.6            | 73.8          | 85.9          |
| 17-Feb   | 82.1                          | 83.2 | 80.2 | 80.8 | 79.7 | 80.2 | 79.2 | 79.3 | 80.3 | 78.7 | 73.5 | 72.5 | 73.1 | 76.7 | 75.2 | 72.9 | 77.9 | 86.1 | 86.7 | 86.3 | 85.2 | 85.2   | 85.2 | 84.1            | 80.2          | 86.7          |
| 18-Feb   | 82.9                          | 82.0 | 81.4 | 81.1 | 80.9 | 80.6 | 80.2 | 79.6 | 79.1 | 78.6 | 78.2 | 77.9 | 77.0 | 74.6 | 69.7 | 67.8 | 70.0 | 75.7 | 80.0 | 80.2 | 79.9 | 79.1   | 78.2 | 78.5            | 78.0          | 82.9          |
| 19-Feb   | 78.5                          | 78.0 | 77.9 | 78.6 | 78.1 | 78.0 | 78.4 | 78.8 | 79.2 | 79.6 | 79.4 | 76.9 | 72.8 | 70.6 | 67.9 | 72.1 | 76.9 | 79.4 | 79.9 | 79.3 | 80.6 | 80.9   | 81.0 | 80.9            | 77.6          | 81.0          |
| 20-Feb   | 80.4                          | 80.6 | 80.4 | 79.7 | 79.8 | 78.7 | 78.4 | 78.2 | 77.3 | 75.2 | 71.7 | 68.8 | 67.3 | 65.4 | 64.6 | 63.7 | 65.1 | 63.5 | 69.3 | 66.6 | 78.1 | 79.3   | 78.8 | 78.1            | 73.7          | 80.6          |
| 21-Feb   | 78.3                          | 76.6 | 76.8 | 75.2 | 74.1 | 73.4 | 73.2 | 73.1 | 72.4 | 69.4 | 67.1 | 59.7 | 53.3 | 50.3 | 49.6 | 49.7 | 54.2 | 60.7 | 64.4 | 66.9 | 68.6 | 68.6   | 69.4 | 71.2            | 66.5          | 78.3          |
| 22-Feb   | 71.3                          | 71.4 | 71.0 | 71.1 | 71.2 | 71.3 | 71.4 | 71.1 | 71.0 | 64.9 | 64.0 | 65.7 | 58.7 | 54.1 | 47.0 | 45.7 | 46.2 | 49.7 | 54.2 | 56.0 | 58.4 | 60.2   | 62.1 | 64.4            | 62.2          | 71.4          |
| 23-Feb   | 66.6                          | 68.9 | 67.9 | 72.3 | 74.4 | 75.7 | 74.5 | 74.7 | 74.8 | 64.9 | 57.7 | 46.5 | 42.4 | 42.2 | 39.8 | 39.2 | 39.9 | 45.8 | 50.2 | 53.7 | 56.6 | 59.1   | 59.6 | 61.2            | 58.7          | 75.7          |
| 24-Feb   | 57.1                          | 59.2 | 65.5 | 68.0 | 69.9 | 70.8 | 71.7 | 72.5 | 71.5 | 67.2 | 60.7 | 53.0 | 47.2 | 44.1 | 42.1 | 42.5 | 44.4 | 45.8 | 47.9 | 52.8 | 57.1 | 59.8   | 61.8 | 63.5            | 58.2          | 72.5          |
| 25-Feb   | 66.3                          | 68.4 | 69.6 | 68.3 | 68.8 | 72.1 | 72.6 | 73.2 | 72.5 | 70.3 | 62.9 | 56.3 | 53.8 | 52.6 | 51.8 | 51.1 | 51.6 | 52.5 | 53.1 | 54.1 | 56.1 | 57.7   | 59.7 | 64.9            | 61.7          | 73.2          |
| 26-Feb   | 67.6                          | 70.4 | 72.2 | 70.5 | 70.7 | 69.2 | 69.4 | 69.2 | 70.4 | 67.1 | 70.1 | 76.7 | 78.1 | 79.3 | 80.3 | 78.8 | 78.0 | 80.6 | 82.0 | 83.7 | 87.6 | 89.2   | 88.9 | 88.7            | 76.6          | 89.2          |
| 27-Feb   | 88.6                          | 88.1 | 87.6 | 87.0 | 86.8 | 86.6 | 86.2 | 86.1 | 85.2 | 82.4 | 76.7 | 70.6 | 68.5 | 69.5 | 69.1 | 65.5 | 68.9 | 75.2 | 74.7 | 74.5 | 78.0 | 79.5   | 79.8 | 79.4            | 78.9          | 88.6          |
| 28-Feb   | 79.9                          | 80.6 | 80.9 | 81.6 | 81.0 | 80.1 | 82.1 | 81.8 | 80.5 | 77.7 | 74.3 | 70.4 | 67.0 | 65.0 | 62.7 | 59.2 | 61.4 | 68.5 | 74.7 | 79.0 | 82.4 | 83.4   | 83.6 | 82.4            | 75.8          | 83.6          |
| 76.3 76.4 76.1 75.6 75.3 75.7 76.3 76.2 76.1 72.4 68.7 64.5 60.6 58.8 58.2 60.1 63.7 67.0 69.2 70.1 71.5 72.2 73.1 75.2  |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |      | Diurnal Average |               |               |
| 96.4 96.1 92.9 93.2 93.3 93.1 93.0 92.7 92.9 92.8 92.2 89.2 83.5 81.4 80.3 83.2 89.6 95.5 95.9 95.3 95.1 95.9 96.6 96.8  |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |      | Diurnal Maximum |               |               |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Relative Humidity (RH) - %**  
**Stony Mountain - February 2023**



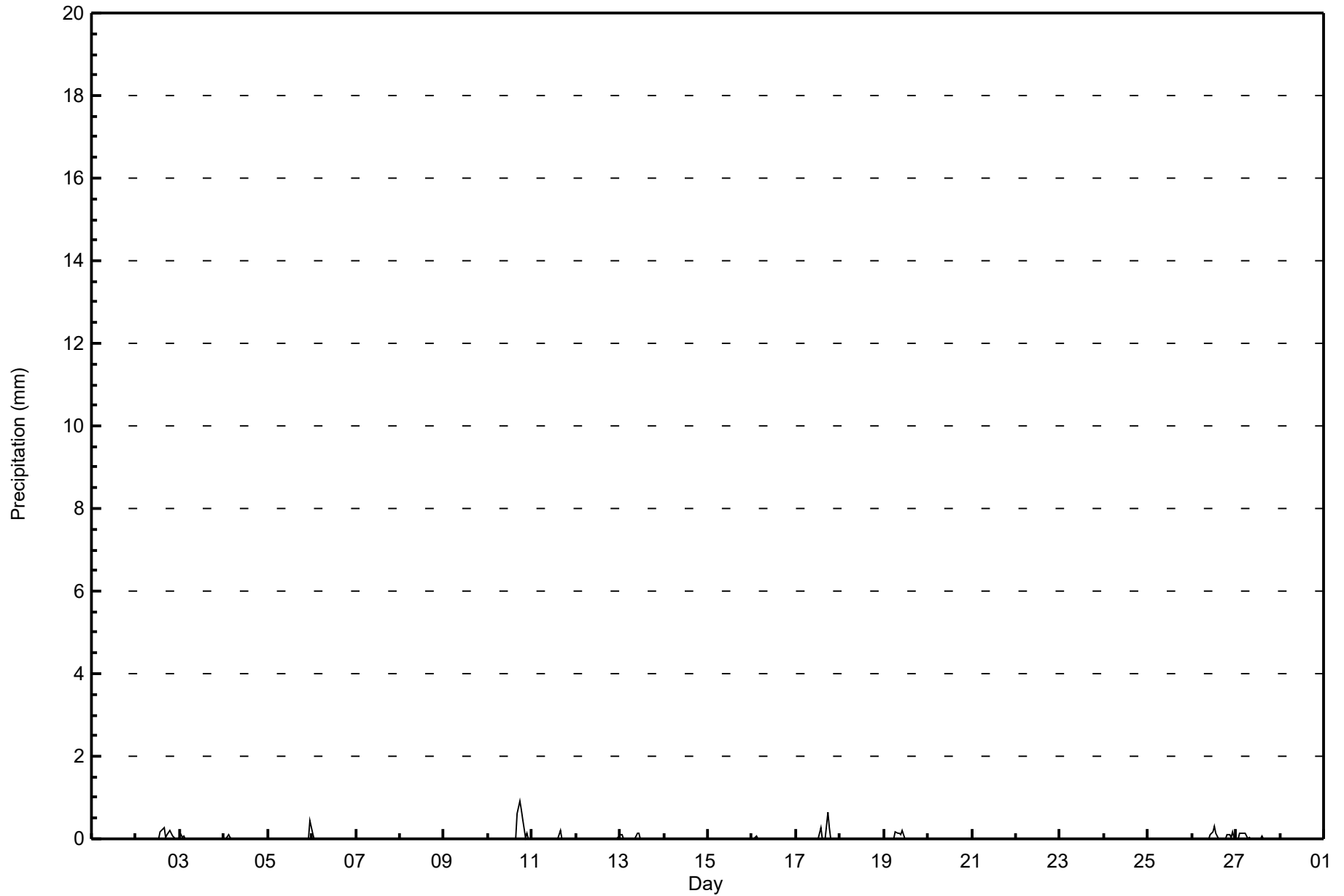






**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Precipitation (PC) - mm**  
**Stony Mountain - February 2023**





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Precipitation (PC) - mm**  
**Stony Mountain - February 2023**

| <b>Concentration Ranges (mm)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|----------------------------------|------------------------|----------|---------------------|
| 0 - 0.3                          | 666                    | 99.11    | 99.11               |
| 0.4 - 0.5                        | 2                      | 0.30     | 99.40               |
| 0.6 - 0.7                        | 3                      | 0.45     | 99.85               |
| 0.8 - 1.4                        | 1                      | 0.15     | 100.00              |
| 1.5 - 10                         | 0                      | 0.00     | 100.00              |
| > 10                             | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 672

Total Number of Hours: 672



**Wood Buffalo Environmental Association**

**Summary of Hour Averages**

**Leaf Wetness (LW) - %**

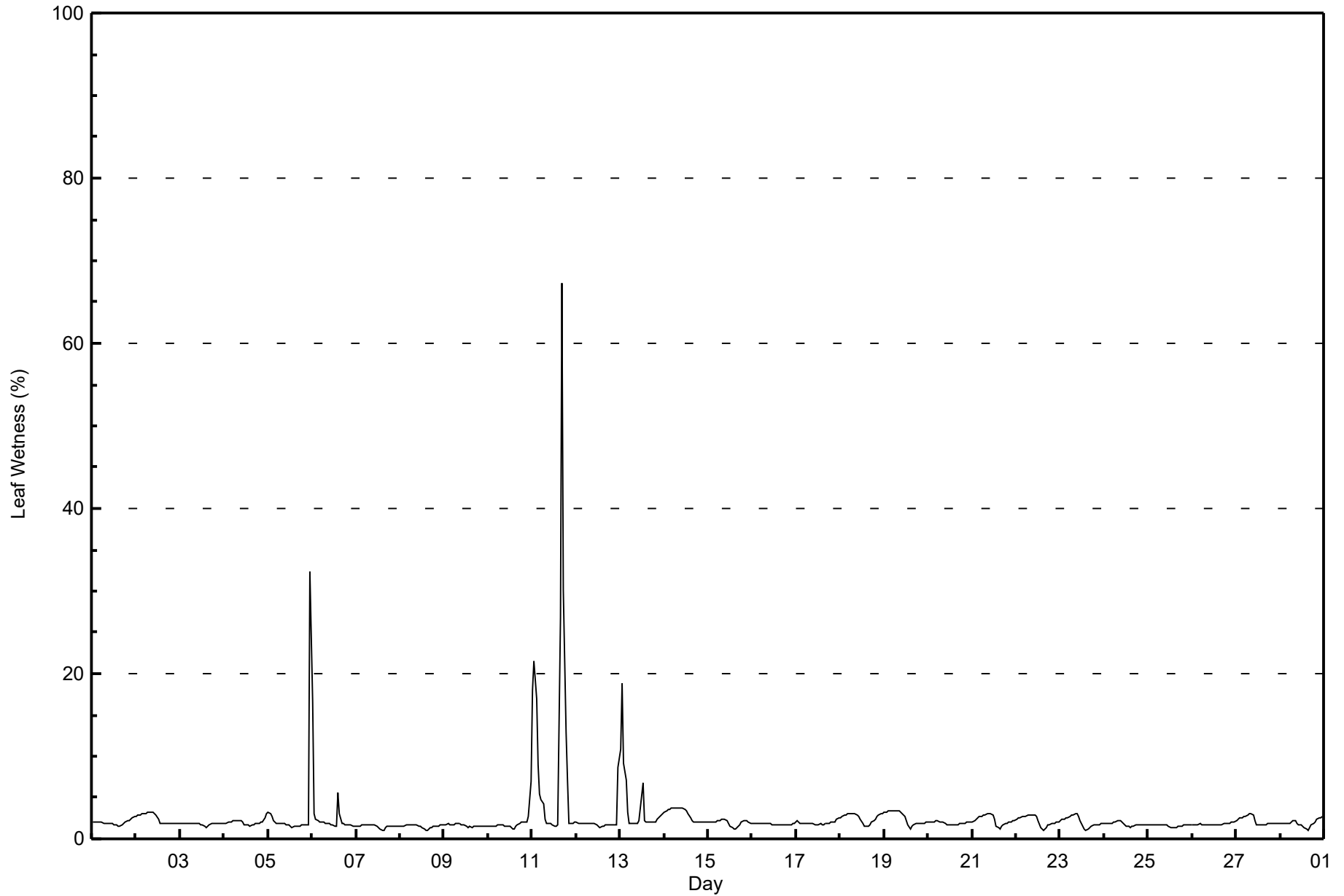
**Stony Mountain - February 2023**

| Maximum Value: 67.3 % on Feb 11 17:00     |                               | Maximum Daily Average: 10.3 % on Feb 11   |      | Hours in Service: 672           |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |     |     |     |      |                 |                 |  |
|---|-------------------------------|---|------|---------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|-----|-----|-----|------|-----------------|-----------------|--|
| Minimum Value: 1.0 % on Feb 28 16:00      |                               | Minimum Daily Average: 1.5 % on Feb 8   |      | Hours of Data: 672              |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |     |     |     |      |                 |                 |  |
| Maximum Diurnal Average: 4.0 % at hour 17 |                               | Minimum Diurnal Average: 1.6 % at hour 14   |      | Hours of Missing Data: 0        |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |     |     |     |      |                 |                 |  |
| Monthly Average: 2.44 %                   |                               | Percentiles: P <sub>1</sub> = 1.1 P <sub>10</sub> = 1.5 Q <sub>1</sub> = 1.7 Median = 1.9 Q <sub>3</sub> = 2.2 P <sub>90</sub> = 3.0 P <sub>99</sub> = 17.2 |      | Hours of Calibration: 0         |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |     |     |     |      |                 |                 |  |
|   |                               |   |      | Percent Operational Time: 100.0 |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |     |     |     |      |                 |                 |  |
| Day                                       | Hourly Period Ending At (MST) |   |      |                                 |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |     |     |     |      | Daily Average   | Daily Maximum   |  |
|   | 1                             | 2   | 3    | 4                               | 5   | 6   | 7   | 8   | 9   | 10  | 11  | 12  | 13  | 14  | 15  | 16   | 17   | 18   | 19   | 20   | 21  | 22  | 23  | 24   |                 |                 |  |
| 1-Feb                                     | 2.0                           | 2.0   | 2.0  | 2.0                             | 2.0 | 2.0 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.8 | 1.7 | 1.6 | 1.4 | 1.5  | 1.8  | 1.9  | 2.0  | 2.1  | 2.3 | 2.4 | 2.5 | 2.6  | 2.0             | 2.6             |  |
| 2-Feb                                     | 2.7                           | 2.8   | 2.9  | 3.0                             | 3.0 | 3.1 | 3.2 | 3.2 | 3.2 | 3.2 | 3.1 | 2.8 | 2.3 | 1.8 | 1.8 | 1.8  | 1.8  | 1.9  | 1.9  | 1.9  | 1.9 | 1.9 | 1.9 | 1.9  | 2.5             | 3.2             |  |
| 3-Feb                                     | 1.9                           | 1.9   | 1.9  | 1.9                             | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.8 | 1.8 | 1.7 | 1.6 | 1.4 | 1.6  | 1.8  | 1.8  | 1.9  | 1.9  | 1.9 | 1.8 | 1.8 | 1.9  | 1.8             | 1.9             |  |
| 4-Feb                                     | 1.9                           | 1.9   | 2.0  | 2.0                             | 2.1 | 2.2 | 2.2 | 2.2 | 2.1 | 2.1 | 2.0 | 1.7 | 1.7 | 1.7 | 1.5 | 1.7  | 1.8  | 1.8  | 1.9  | 1.9  | 2.0 | 2.0 | 2.5 | 3.1  | 2.0             | 3.1             |  |
| 5-Feb                                     | 3.2                           | 3.0   | 2.7  | 2.1                             | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.8 | 1.7 | 1.6 | 1.5 | 1.4 | 1.4 | 1.5  | 1.5  | 1.6  | 1.6  | 1.6  | 1.6 | 1.6 | 1.7 | 32.3 | 3.1             | 32.3            |  |
| 6-Feb                                     | 16.6                          | 3.1   | 2.4  | 2.2                             | 2.0 | 2.0 | 2.0 | 1.9 | 1.9 | 1.8 | 1.7 | 1.7 | 1.5 | 1.5 | 5.7 | 3.1  | 1.9  | 1.8  | 1.8  | 1.7  | 1.7 | 1.7 | 1.6 | 1.6  | 2.7             | 16.6            |  |
| 7-Feb                                     | 1.6                           | 1.6   | 1.6  | 1.6                             | 1.6 | 1.7 | 1.7 | 1.7 | 1.8 | 1.7 | 1.7 | 1.6 | 1.4 | 1.2 | 1.1 | 1.1  | 1.4  | 1.5  | 1.5  | 1.5  | 1.5 | 1.5 | 1.5 | 1.5  | 1.5             | 1.8             |  |
| 8-Feb                                     | 1.5                           | 1.6   | 1.6  | 1.6                             | 1.6 | 1.6 | 1.7 | 1.7 | 1.7 | 1.6 | 1.6 | 1.5 | 1.3 | 1.2 | 1.0 | 1.0  | 1.3  | 1.4  | 1.5  | 1.5  | 1.6 | 1.6 | 1.6 | 1.7  | 1.5             | 1.7             |  |
| 9-Feb                                     | 1.7                           | 1.8   | 1.8  | 1.7                             | 1.7 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.7 | 1.6 | 1.5 | 1.4 | 1.4 | 1.3  | 1.5  | 1.5  | 1.6  | 1.6  | 1.5 | 1.5 | 1.5 | 1.6  | 1.6             | 1.8             |  |
| 10-Feb                                    | 1.6                           | 1.6   | 1.6  | 1.6                             | 1.6 | 1.6 | 1.7 | 1.7 | 1.7 | 1.6 | 1.5 | 1.5 | 1.4 | 1.3 | 1.2 | 1.5  | 1.8  | 1.9  | 2.0  | 2.0  | 2.0 | 2.1 | 2.7 | 7.0  | 1.9             | 7.0             |  |
| 11-Feb                                    | 17.9                          | 21.6  | 16.9 | 9.1                             | 5.4 | 4.8 | 4.2 | 2.4 | 1.9 | 1.8 | 1.8 | 1.8 | 1.6 | 1.6 | 1.7 | 26.8 | 67.3 | 30.2 | 12.9 | 7.2  | 1.9 | 1.9 | 1.9 | 2.0  | 10.3            | 67.3            |  |
| 12-Feb                                    | 2.0                           | 1.9   | 1.9  | 1.9                             | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.8 | 1.7 | 1.6 | 1.4 | 1.5 | 1.5  | 1.6  | 1.7  | 1.7  | 1.8  | 1.7 | 1.7 | 1.7 | 8.6  | 2.0             | 8.6             |  |
| 13-Feb                                    | 10.9                          | 18.9  | 9.2  | 7.1                             | 3.2 | 1.9 | 1.9 | 1.9 | 1.8 | 1.9 | 2.2 | 3.8 | 6.7 | 2.2 | 2.1 | 2.0  | 2.0  | 2.0  | 2.0  | 2.1  | 2.3 | 2.6 | 2.9 | 3.1  | 4.0             | 18.9            |  |
| 14-Feb                                    | 3.2                           | 3.4   | 3.5  | 3.6                             | 3.7 | 3.7 | 3.7 | 3.8 | 3.8 | 3.7 | 3.6 | 3.5 | 3.3 | 3.0 | 2.5 | 2.1  | 2.0  | 2.0  | 2.0  | 2.0  | 2.0 | 2.0 | 2.0 | 2.0  | 2.9             | 3.8             |  |
| 15-Feb                                    | 2.0                           | 2.0   | 2.1  | 2.1                             | 2.1 | 2.1 | 2.2 | 2.3 | 2.4 | 2.4 | 2.2 | 1.9 | 1.5 | 1.4 | 1.2 | 1.2  | 1.6  | 1.8  | 2.0  | 2.2  | 2.2 | 2.2 | 2.1 | 1.9  | 2.0             | 2.4             |  |
| 16-Feb                                    | 1.9                           | 1.9   | 1.9  | 1.9                             | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.8 | 1.8 | 1.7 | 1.7 | 1.6 | 1.6  | 1.6  | 1.7  | 1.7  | 1.7  | 1.7 | 1.8 | 1.8 | 1.9  | 1.8             | 1.9             |  |
| 17-Feb                                    | 2.1                           | 2.1   | 1.9  | 1.9                             | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.8 | 1.8 | 1.8 | 1.7 | 1.8 | 1.7  | 1.7  | 1.8  | 1.9  | 1.9  | 2.0 | 2.0 | 2.1 | 2.3  | 1.9             | 2.5             |  |
| 18-Feb                                    | 2.6                           | 2.7   | 2.9  | 3.0                             | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 2.9 | 2.8 | 2.4 | 1.9 | 1.5 | 1.5 | 1.6  | 1.7  | 2.0  | 2.2  | 2.5  | 2.7 | 2.8 | 3.0 | 3.1  | 2.5             | 3.1             |  |
| 19-Feb                                    | 3.2                           | 3.3   | 3.3  | 3.4                             | 3.4 | 3.4 | 3.4 | 3.3 | 3.3 | 3.2 | 3.1 | 2.8 | 2.2 | 1.7 | 1.3 | 1.5  | 1.7  | 1.8  | 1.8  | 1.9  | 1.9 | 1.9 | 1.9 | 2.0  | 2.5             | 3.4             |  |
| 20-Feb                                    | 2.0                           | 2.1   | 2.1  | 2.1                             | 2.1 | 2.1 | 2.1 | 2.1 | 2.0 | 1.9 | 1.8 | 1.8 | 1.7 | 1.7 | 1.7 | 1.7  | 1.8  | 1.8  | 1.8  | 1.8  | 1.9 | 2.0 | 2.0 | 2.1  | 1.9             | 2.1             |  |
| 21-Feb                                    | 2.1                           | 2.2   | 2.4  | 2.5                             | 2.7 | 2.8 | 2.9 | 2.9 | 3.0 | 3.0 | 3.0 | 2.9 | 2.3 | 1.5 | 1.3 | 1.3  | 1.5  | 1.7  | 1.8  | 1.9  | 2.0 | 2.1 | 2.2 | 2.3  | 2.3             | 3.0             |  |
| 22-Feb                                    | 2.4                           | 2.5   | 2.5  | 2.6                             | 2.7 | 2.8 | 2.9 | 2.9 | 2.9 | 3.0 | 2.9 | 2.8 | 2.2 | 1.3 | 1.2 | 1.1  | 1.3  | 1.7  | 1.8  | 1.8  | 1.9 | 1.9 | 2.0 | 2.1  | 2.2             | 3.0             |  |
| 23-Feb                                    | 2.2                           | 2.3   | 2.4  | 2.5                             | 2.6 | 2.7 | 2.8 | 2.9 | 3.0 | 3.0 | 2.8 | 2.3 | 1.5 | 1.2 | 1.1 | 1.1  | 1.3  | 1.6  | 1.7  | 1.7  | 1.7 | 1.8 | 1.8 | 1.9  | 2.1             | 3.0             |  |
| 24-Feb                                    | 1.8                           | 1.8   | 1.8  | 1.8                             | 1.9 | 2.0 | 2.1 | 2.2 | 2.2 | 2.2 | 1.9 | 1.7 | 1.6 | 1.5 | 1.4 | 1.5  | 1.6  | 1.6  | 1.7  | 1.7  | 1.7 | 1.7 | 1.7 | 1.7  | 1.8             | 2.2             |  |
| 25-Feb                                    | 1.8                           | 1.8   | 1.8  | 1.8                             | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.7 | 1.6 | 1.6 | 1.4 | 1.4 | 1.4 | 1.4  | 1.5  | 1.6  | 1.6  | 1.6  | 1.6 | 1.6 | 1.6 | 1.7  | 1.6             | 1.8             |  |
| 26-Feb                                    | 1.7                           | 1.8   | 1.8  | 1.8                             | 1.8 | 1.8 | 1.8 | 1.7 | 1.7 | 1.6 | 1.6 | 1.7 | 1.7 | 1.6 | 1.7 | 1.7  | 1.7  | 1.8  | 1.8  | 1.9  | 1.9 | 2.0 | 2.0 | 2.1  | 1.8             | 2.1             |  |
| 27-Feb                                    | 2.2                           | 2.4   | 2.5  | 2.6                             | 2.7 | 2.8 | 2.9 | 3.0 | 3.0 | 2.8 | 2.3 | 1.8 | 1.7 | 1.7 | 1.7 | 1.7  | 1.7  | 1.8  | 1.8  | 1.8  | 1.8 | 1.9 | 1.9 | 1.9  | 2.2             | 3.0             |  |
| 28-Feb                                    | 1.9                           | 1.9   | 1.9  | 1.9                             | 1.9 | 1.9 | 2.1 | 2.2 | 2.2 | 1.9 | 1.7 | 1.7 | 1.5 | 1.4 | 1.2 | 1.0  | 1.3  | 1.6  | 1.9  | 2.1  | 2.3 | 2.5 | 2.6 | 2.7  | 1.9             | 2.7             |  |
|   |                               | 3.5   | 3.5  | 3.0                             | 2.6 | 2.4 | 2.3 | 2.3 | 2.3 | 2.2 | 2.1 | 2.0 | 1.9 | 1.6 | 1.6 | 2.5  | 4.0  | 2.8  | 2.2  | 2.0  | 1.9 | 1.9 | 2.0 | 3.6  | Diurnal Average |                 |  |
|   |                               | 17.9  | 21.6 | 16.9                            | 9.1 | 5.4 | 4.8 | 4.2 | 3.8 | 3.8 | 3.7 | 3.6 | 3.8 | 6.7 | 3.0 | 5.7  | 26.8 | 67.3 | 30.2 | 12.9 | 7.2 | 2.7 | 2.8 | 3.0  | 32.3            | Diurnal Maximum |  |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Leaf Wetness (LW) - %**  
**Stony Mountain - February 2023**





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Leaf Wetness (LW) - %**  
**Stony Mountain - February 2023**

| <b>Concentration Ranges (%)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---------------------------------|------------------------|----------|---------------------|
| 0 - 0.3                         | 0                      | 0.00     | 0.00                |
| 0.4 - 0.5                       | 0                      | 0.00     | 0.00                |
| 0.6 - 0.7                       | 0                      | 0.00     | 0.00                |
| 0.8 - 1.4                       | 45                     | 6.70     | 6.70                |
| 1.5 - 10                        | 603                    | 89.73    | 96.43               |
| > 10                            | 11                     | 1.64     | 98.07               |

Total Number of Valid Hours: 672

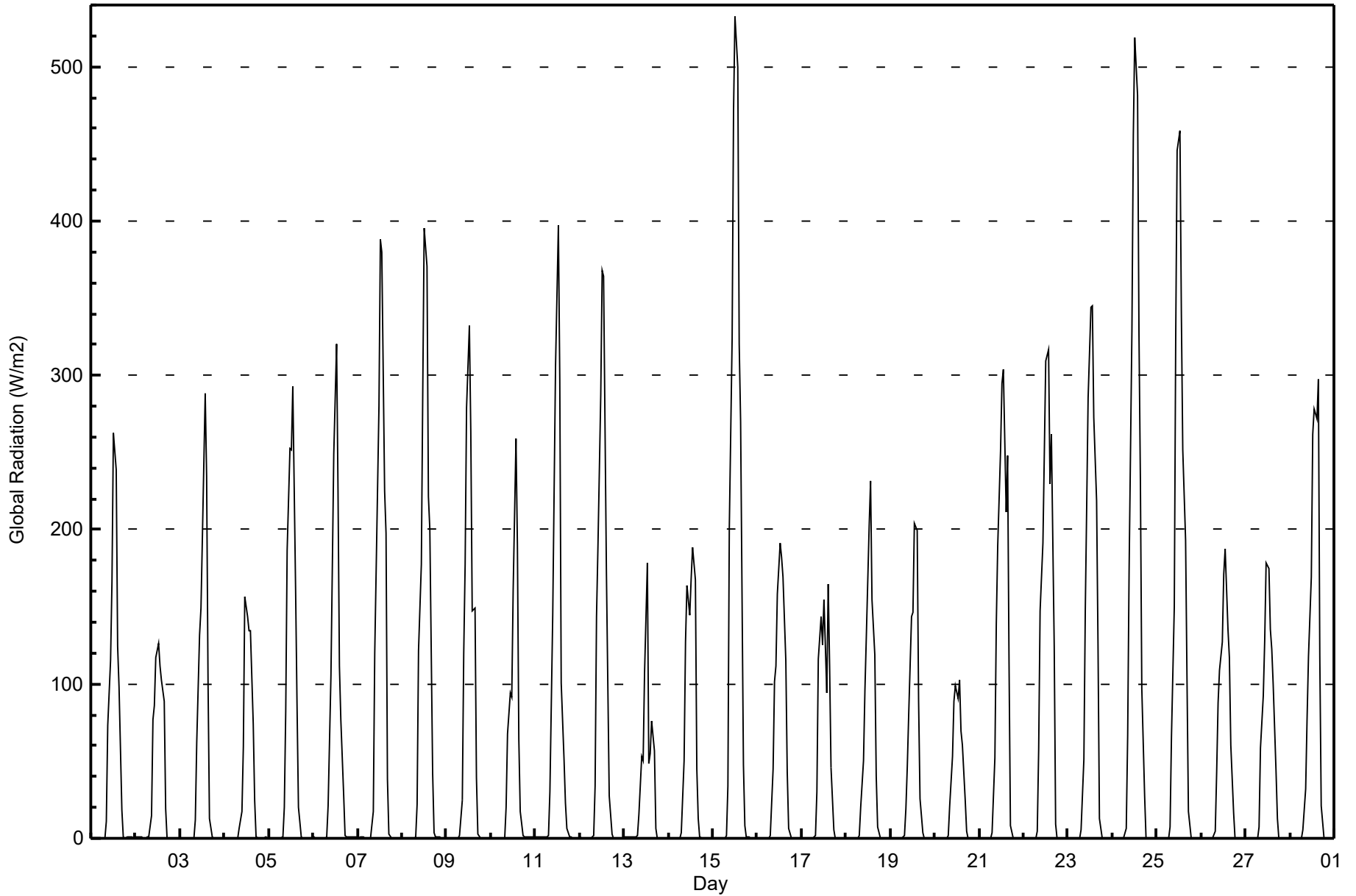
Total Number of Hours: 672



**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

**Global Radiation (GR) - W/m2**  
**Stony Mountain - February 2023**

| Maximum Value: 532.5 W/m2 on Feb 15 13:00      Maximum Daily Average: 113.1 W/m2 on Feb 24   |                               |     |     |     |     |     |     |     |      |       |       |       |       |       |       |       |       |      |     |     |     |     | Hours in Service:         | 672   |               |               |
|--|-------------------------------|-----|-----|-----|-----|-----|-----|-----|------|-------|-------|-------|-------|-------|-------|-------|-------|------|-----|-----|-----|-----|---------------------------|-------|---------------|---------------|
| Minimum Value: 0.0 W/m2 on Feb 1 01:00      Minimum Daily Average: 25.7 W/m2 on Feb 20   |                               |     |     |     |     |     |     |     |      |       |       |       |       |       |       |       |       |      |     |     |     |     | Hours of Data:            | 672   |               |               |
| Maximum Diurnal Average: 269.2 W/m2 at hour 13      Minimum Diurnal Average: 0.1 W/m2 at hour 6  |                               |     |     |     |     |     |     |     |      |       |       |       |       |       |       |       |       |      |     |     |     |     | Hours of Missing Data:    | 0     |               |               |
| Monthly Average: 59.12 W/m2      Percentiles: P <sub>1</sub> = 0.0 P <sub>10</sub> = 0.0 Q <sub>1</sub> = 0.0 Median = 0.6 Q <sub>3</sub> = 94.1 P <sub>90</sub> = 203.9 P <sub>99</sub> = 448.9 |                               |     |     |     |     |     |     |     |      |       |       |       |       |       |       |       |       |      |     |     |     |     | Hours of Calibration:     | 0     |               |               |
|  |                               |     |     |     |     |     |     |     |      |       |       |       |       |       |       |       |       |      |     |     |     |     | Percent Operational Time: | 100.0 |               |               |
| Day  | Hourly Period Ending At (MST) |     |     |     |     |     |     |     |      |       |       |       |       |       |       |       |       |      |     |     |     |     |                           |       | Daily Average | Daily Maximum |
|  | 1                             | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9    | 10    | 11    | 12    | 13    | 14    | 15    | 16    | 17    | 18   | 19  | 20  | 21  | 22  | 23                        | 24    |               |               |
| 1-Feb  | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 10.7 | 73.4  | 115.5 | 166.9 | 263.1 | 239.3 | 124.5 | 98.0  | 17.9  | 0.9  | 0.2 | 0.5 | 0.6 | 0.5 | 0.5                       | 0.4   | 46.4          | 263.1         |
| 2-Feb  | 0.7                           | 0.8 | 0.7 | 0.6 | 0.4 | 0.4 | 0.5 | 0.7 | 15.0 | 76.7  | 85.8  | 117.3 | 125.9 | 112.1 | 102.9 | 88.6  | 19.4  | 0.4  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0                       | 0.0   | 31.2          | 125.9         |
| 3-Feb  | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 12.1 | 62.1  | 131.8 | 149.2 | 194.7 | 288.0 | 234.7 | 101.9 | 13.0  | 1.1  | 0.3 | 0.0 | 0.0 | 0.0 | 0.0                       | 0.0   | 49.5          | 288.0         |
| 4-Feb  | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 6.2  | 17.1  | 59.2  | 156.6 | 144.0 | 134.3 | 134.9 | 73.7  | 25.1  | 0.7  | 0.0 | 0.0 | 0.0 | 0.1 | 0.5                       | 0.2   | 31.4          | 156.6         |
| 5-Feb  | 0.0                           | 0.0 | 0.0 | 0.1 | 0.1 | 0.3 | 0.1 | 0.5 | 20.1 | 82.3  | 186.6 | 252.3 | 251.6 | 292.9 | 160.6 | 86.1  | 19.9  | 0.8  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0                       | 0.4   | 56.4          | 292.9         |
| 6-Feb  | 0.5                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.7 | 20.8 | 105.0 | 176.8 | 248.5 | 320.3 | 225.8 | 112.0 | 76.8  | 28.6  | 2.3  | 0.8 | 0.8 | 0.8 | 0.8 | 0.8                       | 0.6   | 55.1          | 320.3         |
| 7-Feb  | 0.3                           | 0.6 | 0.7 | 0.5 | 0.5 | 0.3 | 0.3 | 0.3 | 17.3 | 119.8 | 173.3 | 279.8 | 388.5 | 379.9 | 225.5 | 197.7 | 38.4  | 2.7  | 0.1 | 0.0 | 0.0 | 0.0 | 0.0                       | 0.1   | 76.1          | 388.5         |
| 8-Feb  | 0.1                           | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.7 | 21.8 | 121.8 | 177.7 | 289.8 | 395.3 | 370.4 | 221.3 | 200.8 | 41.8  | 3.5  | 0.5 | 0.6 | 0.6 | 0.3 | 0.4                       | 0.1   | 77.0          | 395.3         |
| 9-Feb  | 0.0                           | 0.1 | 0.3 | 0.3 | 0.2 | 0.2 | 0.4 | 1.5 | 24.6 | 120.0 | 177.4 | 279.4 | 331.9 | 263.2 | 147.6 | 148.8 | 39.8  | 2.4  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0                       | 0.0   | 64.1          | 331.9         |
| 10-Feb   | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.3 | 19.7 | 67.8  | 94.2  | 91.8  | 160.7 | 259.1 | 189.5 | 63.8  | 17.6  | 1.7  | 0.8 | 0.8 | 0.8 | 0.8 | 1.1                       | 1.3   | 40.5          | 259.1         |
| 11-Feb   | 0.9                           | 0.9 | 1.0 | 1.1 | 1.0 | 0.9 | 0.8 | 1.6 | 30.6 | 144.8 | 226.4 | 306.8 | 397.0 | 296.1 | 100.4 | 51.6  | 23.3  | 6.6  | 0.7 | 0.5 | 0.3 | 0.3 | 0.3                       | 0.4   | 66.4          | 397.0         |
| 12-Feb   | 0.5                           | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 1.8 | 33.5 | 144.0 | 188.5 | 287.4 | 368.2 | 364.4 | 173.0 | 99.5  | 27.2  | 3.0  | 0.1 | 0.0 | 0.1 | 0.0 | 0.0                       | 0.1   | 70.5          | 368.2         |
| 13-Feb   | 0.9                           | 1.2 | 1.1 | 0.9 | 0.8 | 0.8 | 0.7 | 2.0 | 15.3 | 53.1  | 50.2  | 107.0 | 178.2 | 48.1  | 55.2  | 76.2  | 57.0  | 6.2  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0                       | 0.0   | 27.3          | 178.2         |
| 14-Feb   | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.3 | 3.7 | 50.3 | 127.5 | 164.0 | 144.6 | 168.8 | 188.7 | 167.7 | 44.4  | 12.4  | 1.1  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0                       | 0.0   | 44.7          | 188.7         |
| 15-Feb   | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.9 | 34.0 | 201.1 | 324.2 | 471.5 | 532.5 | 500.2 | 320.7 | 269.7 | 47.3  | 8.7  | 0.7 | 0.5 | 0.1 | 0.0 | 0.0                       | 0.0   | 113.0         | 532.5         |
| 16-Feb   | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.8 | 45.1 | 101.2 | 111.3 | 158.2 | 190.9 | 182.0 | 169.6 | 115.1 | 42.7  | 6.5  | 0.2 | 0.2 | 0.2 | 0.0 | 0.0                       | 0.0   | 46.9          | 190.9         |
| 17-Feb   | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.1 | 29.9 | 116.5 | 144.1 | 125.6 | 154.7 | 94.0  | 164.4 | 111.9 | 46.1  | 5.9  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0                       | 0.0   | 41.5          | 164.4         |
| 18-Feb   | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.1 | 20.3 | 50.3  | 96.2  | 130.8 | 202.4 | 231.2 | 154.6 | 119.0 | 40.4  | 7.3  | 0.2 | 0.3 | 0.5 | 0.2 | 0.3                       | 0.2   | 44.0          | 231.2         |
| 19-Feb   | 0.2                           | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 1.4 | 19.4 | 46.6  | 80.3  | 143.5 | 146.5 | 204.0 | 199.4 | 88.4  | 26.0  | 3.9  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0                       | 0.0   | 40.0          | 204.0         |
| 20-Feb   | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.9 | 20.9 | 52.8  | 88.5  | 99.2  | 90.6  | 102.9 | 69.6  | 60.3  | 24.8  | 4.7  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0                       | 0.0   | 25.7          | 102.9         |
| 21-Feb   | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3.7 | 52.5 | 138.8 | 189.6 | 251.1 | 294.8 | 303.9 | 211.1 | 248.1 | 114.9 | 8.3  | 0.1 | 0.0 | 0.0 | 0.0 | 0.0                       | 0.0   | 75.7          | 303.9         |
| 22-Feb   | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 4.4 | 57.5 | 147.7 | 191.7 | 249.5 | 309.2 | 316.8 | 229.4 | 261.7 | 124.7 | 8.8  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0                       | 0.0   | 79.2          | 316.8         |
| 23-Feb   | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 5.4 | 51.2 | 148.1 | 216.3 | 285.1 | 344.3 | 345.2 | 272.6 | 219.0 | 125.8 | 12.4 | 0.1 | 0.0 | 0.0 | 0.1 | 0.2                       | 0.0   | 84.4          | 345.2         |
| 24-Feb   | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 6.4 | 66.8 | 173.3 | 328.9 | 455.8 | 518.9 | 481.3 | 326.8 | 231.5 | 96.9  | 27.6 | 0.2 | 0.1 | 0.0 | 0.0 | 0.0                       | 0.1   | 113.1         | 518.9         |
| 25-Feb   | 0.1                           | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 7.2 | 66.0 | 150.2 | 323.6 | 446.0 | 458.3 | 340.1 | 251.5 | 192.9 | 102.4 | 17.1 | 0.2 | 0.0 | 0.0 | 0.0 | 0.1                       | 0.1   | 98.2          | 458.3         |
| 26-Feb   | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 5.0 | 43.0 | 88.0  | 108.8 | 127.3 | 170.8 | 187.9 | 135.9 | 116.9 | 60.3  | 16.4 | 0.2 | 0.0 | 0.0 | 0.0 | 0.0                       | 0.0   | 44.2          | 187.9         |
| 27-Feb   | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 7.2 | 58.5 | 92.5  | 128.6 | 178.4 | 174.5 | 135.5 | 122.3 | 100.2 | 43.5  | 12.5 | 0.3 | 0.0 | 0.0 | 0.0 | 0.0                       | 0.0   | 43.9          | 178.4         |
| 28-Feb   | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 5.6 | 31.7 | 78.1  | 118.4 | 169.1 | 261.9 | 278.1 | 271.7 | 297.5 | 117.7 | 21.4 | 0.3 | 0.0 | 0.0 | 0.0 | 0.0                       | 0.0   | 68.8          | 297.5         |
|  |                               |     |     |     |     |     |     |     |      |       |       |       |       |       |       |       |       |      |     |     |     |     | Diurnal Average           |       |               |               |
|  |                               |     |     |     |     |     |     |     |      |       |       |       |       |       |       |       |       |      |     |     |     |     | Diurnal Maximum           |       |               |               |
|  |                               |     |     |     |     |     |     |     |      |       |       |       |       |       |       |       |       |      |     |     |     |     |                           |       |               |               |







**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Global Radiation (GR) - W/m2**  
**Stony Mountain - February 2023**

| <b>Concentration Ranges (W/m2)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|------------------------------------|------------------------|----------|---------------------|
| 0 - 20                             | 435                    | 64.73    | 64.73               |
| 21 - 100                           | 77                     | 11.46    | 76.19               |
| 101 - 300                          | 131                    | 19.49    | 95.68               |
| 301 - 600                          | 29                     | 4.32     | 100.00              |
| 601 - 900                          | 0                      | 0.00     | 100.00              |
| > 900                              | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 672

Total Number of Hours: 672



|   |  |                                |
|---|--|--------------------------------|
| Maximum Speed: 29 km/h on Feb 6 01:00             | Maximum Daily Speed Average: 17.6 km/h on Feb 24   | Hours in Service: 672          |
| Minimum Speed Value: 1 km/h on Feb 4 14:00        | Minimum Daily Speed Average: 2.9 km/h on Feb 23  | Hours of Data: 671             |
| Maximum Diurnal Speed Average: 6.6 km/h at hour 8 | Minimum Diurnal Speed Average: 2.7 km/h at hour 18   | Hours of Missing Data: 1       |
| Monthly Average Velocity: 4.5 km/h 260.3 deg      | Percentiles: P <sub>1</sub> = 2 P <sub>10</sub> = 6 Q <sub>1</sub> = 8 Median = 12 Q <sub>3</sub> = 16 P <sub>90</sub> = 19 P <sub>99</sub> = 25 | Percent Operational Time: 99.9 |

| Day   | Hourly Period Ending At (MST) |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 | Daily Average | Daily Maximum |     |
|---|-------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-----------------|---------------|---------------|-----|
|   | 1                             | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     | 10    | 11    | 12    | 13    | 14    | 15    | 16    | 17    | 18    | 19    | 20    | 21    | 22    | 23    | 24              |               |               |     |
| 1-Feb   | NW11                          | NW10  | NNW11 | NNW15 | N15   | N13   | N13   | NNW13 | N20   | N18   | N16   | N17   | NNW16 | NNW13 | NNW14 | NNW14 | N10   | N9    | N8    | NNW7  | NW7   | WNW7  | WNW6  | NW4             | NNW11.5       | N20           |     |
| 2-Feb   | WSW5                          | SW9   | SW10  | SSW11 | SSW14 | SSW14 | S13   | S14   | S16   | S19   | SSE17 | SSE20 | SSE18 | SSE16 | SSE18 | SSE18 | SSE18 | SSE18 | SSE16 | S18   | S20   | S18   | S19   | S16             | S14.7         | S20           |     |
| 3-Feb   | S17                           | SSW19 | SSW21 | SSW22 | SSW22 | SSW20 | SSW22 | SSW26 | SW25  | SW21  | SW14  | SW13  | W15   | NW14  | NNW14 | NW14  | NW12  | NW11  | NNW7  | N8    | SW4   | WNW2  | ENE5  | ENE8            | SW9.1         | SSW26         |     |
| 4-Feb   | S6                            | E4    | E5    | ESE5  | ESE6  | E5    | SE7   | NE5   | E6    | NNE4  | N4    | ENE2  | NNE3  | ESE1  | E3    | ESE3  | E5    | SE5   | SSE7  | SSW12 | SW11  | SSW12 | SSW14 | SW16            | SSE3.1        | SW16          |     |
| 5-Feb   | SW16                          | SW17  | SW14  | SSW14 | SSW18 | SSW18 | SW18  | SW20  | SSW18 | SSW18 | SW17  | SSW14 | SSW17 | SSW16 | SW12  | SW12  | SW14  | SW15  | WSW15 | WSW15 | WSW16 | W19   | NNW22 | NNW20           | SW14.8        | WNW22         |     |
| 6-Feb   | NW29                          | NW26  | NW23  | NW21  | NW20  | NNW15 | W18   | W21   | NNW18 | W13   | W13   | W12   | WSW12 | WSW12 | WSW13 | SW12  | SSW13 | SSW18 | SSW17 | SW17  | SW17  | WSW18 | WSW19 | WSW18           | W13.5         | NW29          |     |
| 7-Feb   | WSW16                         | SW16  | WSW19 | WSW20 | W20   | W20   | W19   | NNW18 | NNW23 | NNW17 | NNW16 | W16   | W17   | W20   | W18   | W18   | W16   | W14   | W14   | W14   | W15   | NNW14 | NNW15 | NNW13           | W16.0         | NW23          |     |
| 8-Feb   | WNN12                         | WNN12 | NW12  | NW11  | WNN12 | WNN12 | WNN12 | WNN13 | WNN16 | WNN16 | WNN12 | WNN10 | W9    | WNN11 | W10   | WNN10 | W8    | WSW10 | SW12  | SW13  | SW14  | SW16  | SW18  | SW18            | W10.6         | SW18          |     |
| 9-Feb   | SW16                          | SW15  | WSW14 | W17   | WSW16 | WSW16 | SW16  | SW17  | SW16  | SW16  | SW14  | SSW13 | SSW16 | SSW16 | SSW14 | S11   | S12   | S14   | S16   | SSW18 | SSW20 | SSW18 | SSW16 | SW13            | SW14.5        | SSW20         |     |
| 10-Feb  | SW9                           | SSW12 | SW12  | SSW11 | SSW11 | SSW7  | S8    | SSE7  | SSW7  | NNE5  | E5    | SW4   | SE4   | NW2   | N6    | NW7   | NW8   | NW9   | NW12  | NW10  | NW10  | WNN10 | WNN11 | WNN12           | W4.2          | WNN12         |     |
| 11-Feb  | WNN12                         | W11   | W14   | WNN15 | WNN14 | W11   | W13   | WSW15 | WSW16 | W17   | W17   | WSW16 | WSW15 | WSW17 | WSW16 | W21   | WSW17 | W13   | WSW14 | WNN23 | WNN24 | WNN18 | WNN15 | W15             | W15.1         | WNN24         |     |
| 12-Feb  | W18                           | W19   | W19   | WNN19 | WNN18 | WNN18 | W17   | WSW12 | SW13  | SW14  | SW14  | WSW12 | WSW11 | WSW12 | WSW12 | SSW10 | SSW13 | SSW14 | S14   | S14   | S16   | SSW19 | SSW22 | SSW19           | SW12.2        | SSW22         |     |
| 13-Feb  | SSW20                         | SW18  | SW20  | SW17  | WSW18 | WSW18 | WSW18 | WSW18 | WSW18 | WSW19 | W16   | W16   | W18   | NW23  | NNW24 | N24   | N22   | N20   | N19   | N19   | N15   | N14   | N13   | N11             | NNW13         | NNW10.7       | N24 |
| 14-Feb  | NNW12                         | NNW10 | N10   | N10   | N9    | N7    | NNE4  | UO    | SE3   | S2    | NW2   | SW3   | SSW5  | SW6   | W9    | WNN8  | NNW12 | N11   | NNW11 | NNW11 | NNW14 | NNW12 | N6    | NNE5            | NNW6.0        | NNW14         |     |
| 15-Feb  | ENE6                          | E5    | E6    | E6    | ESE5  | E4    | ENE4  | E6    | ESE5  | ESE5  | E4    | NE4   | ESE4  | SE7   | SSE6  | WSW5  | SSW7  | SSW8  | SSW8  | SSW8  | S9    | S11   | SSW13 | SSW14           | WSSE3.9       | SSW14         |     |
| 16-Feb  | S14                           | S16   | S17   | SSW20 | SSW20 | SSW20 | SSW23 | SSW24 | SSW26 | SSW25 | SSW24 | SSW23 | SSW23 | SW20  | SW18  | WSW19 | WSW16 | WSW16 | W16   | NW15  | NNW18 | NNW21 | NNW16 | NNW11           | SW13.4        | SSW26         |     |
| 17-Feb  | NNW10                         | N10   | N13   | N12   | NNW13 | NNW12 | NNW11 | NW7   | WNN6  | W8    | W7    | WNN8  | WNN9  | W7    | WNN8  | WNN7  | WNN8  | NNW7  | NNE9  | NE8   | NE10  | NE8   | NE8   | NE9             | NNW6.6        | N13           |     |
| 18-Feb  | NNE9                          | NNE8  | NNE9  | NE9   | NE8   | NE8   | NE8   | NE7   | NNE6  | NNE6  | NE7   | NE6   | NNE6  | NNE5  | NE5   | NE4   | ENE5  | E5    | E6    | ESE7  | SE7   | ESE8  | SE9   | SSE10           | ENE5.2        | SSE10         |     |
| 19-Feb  | SSE11                         | S11   | SSW10 | S12   | S9    | SSE7  | SE8   | SE8   | ESE8  | ESE8  | ESE7  | E7    | E8    | E9    | ENE7  | NE8   | NE8   | NNE7  | NE7   | NNE7  | NNE6  | NNE7  | NNE7  | N6              | ESE4.0        | S12           |     |
| 20-Feb  | N7                            | NNW8  | NNW9  | NNW10 | NW10  | NW10  | NW9   | NNW11 | NW10  | NW12  | NW9   | NW12  | WNN10 | NW12  | NNW12 | NNW11 | N9    | N7    | N6    | N8    | NE6   | NE7   | NNE10 | NE9             | NNW8.1        | NW12          |     |
| 21-Feb  | NE8                           | NNE6  | N8    | N9    | NNW10 | NNW9  | NNW9  | NNW11 | NNW11 | NNW10 | N11   | N11   | NNW12 | N12   | N14   | N13   | N15   | N14   | N12   | N10   | N12   | N15   | N11   | NNE7            | N10.5         | N15           |     |
| 22-Feb  | NNW7                          | NNW8  | NW9   | NW8   | NW9   | NW10  | NW10  | NW10  | NW8   | NW4   | N5    | NNE6  | NNE6  | N6    | N6    | NNE8  | NE9   | NE9   | NE10  | ENE10 | NE11  | NE11  | ENE9  | ENE9            | N5.9          | NE11          |     |
| 23-Feb  | ENE8                          | NE7   | ENE8  | ENE8  | ENE8  | ENE8  | ENE7  | NE5   | NNE4  | ESE1  | SSE5  | NW2   | NNW5  | N8    | N6    | N5    | NNW6  | NW6   | WNN8  | NW7   | N5    | NNE3  | SSE3  | SW12            | NNE2.9        | SW12          |     |
| 24-Feb  | WSW14                         | SW12  | SW14  | SW13  | SW15  | SW16  | SSW17 | SSW17 | SSW16 | SSW13 | S18   | SSW17 | SSW21 | SSW20 | SSW21 | SSW19 | S18   | S19   | SSW19 | SSW23 | SSW26 | SSW23 | SSW21 | SSW21           | SSW17.6       | SSW26         |     |
| 25-Feb  | SW19                          | SSW21 | WSW18 | W17   | W16   | WSW14 | W18   | WSW16 | W14   | W12   | WNN13 | W13   | WNN12 | W11   | W9    | W11   | SW10  | SSW10 | SW14  | SSW12 | SSW13 | S13   | S12   | SW11.9          | WSW11.9       | SW21          |     |
| 26-Feb  | S10                           | SSE10 | SSE9  | SSE10 | SE12  | SE12  | SE10  | SE8   | E6    | E7    | E8    | E11   | E12   | ENE14 | ENE13 | ENE15 | ENE14 | ENE11 | ENE10 | E10   | ENE7  | ENE7  | ENE6  | NE5             | E7.9          | ENE15         |     |
| 27-Feb  | NNE7                          | N5    | NNW7  | NNW8  | NNW8  | NNW10 | NW12  | NW12  | NNW11 | NNW12 | NW13  | NNW14 | NNW13 | NW14  | NNW13 | NW14  | NW14  | NNW13 | NNW12 | NNW8  | N6    | N5    | NNE7  | NNE6            | NNW9.7        | NNW14         |     |
| 28-Feb  | NNE5                          | NNE5  | NNE5  | NE6   | NNE7  | N6    | N5    | N7    | N6    | NNE3  | NNE5  | NE6   | NE6   | NE8   | NE7   | ENE7  | ESE7  | E7    | E8    | ESE7  | E8    | SE9   | SE10  | SSE10           | ENE4.6        | SE10          |     |
| WSW4.9WSW5.4WSW5.4 W5.3 W5.5 W5.5WSW5.9WSW6.0WSW6.2WSW5.5WSW4.7 W4.7 W4.4 W4.4WNN4.1WNN4.1 W3.0 W2.7 W2.8WSW3.1WSW3.0WSW3.4WSW3.6WSW4.2 |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Diurnal Average |               |               |     |
| NNW29 NW26 NNW22 SSW22 SSW22 SSW20 SSW23 SSW26 SSW26 SSW25 SSW24 SSW23 NNW23 NNW24 N24 N22 N20 N19 N19 SSW23 SSW26 SSW23 SSW22 SSW21    |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Diurnal Maximum |               |               |     |

UO - Unstable Operation

All monthly, daily, and diurnal averages have been calculated using vector methods



**Wood Buffalo Environmental Association**  
**Summary of Hour Standard Deviations**

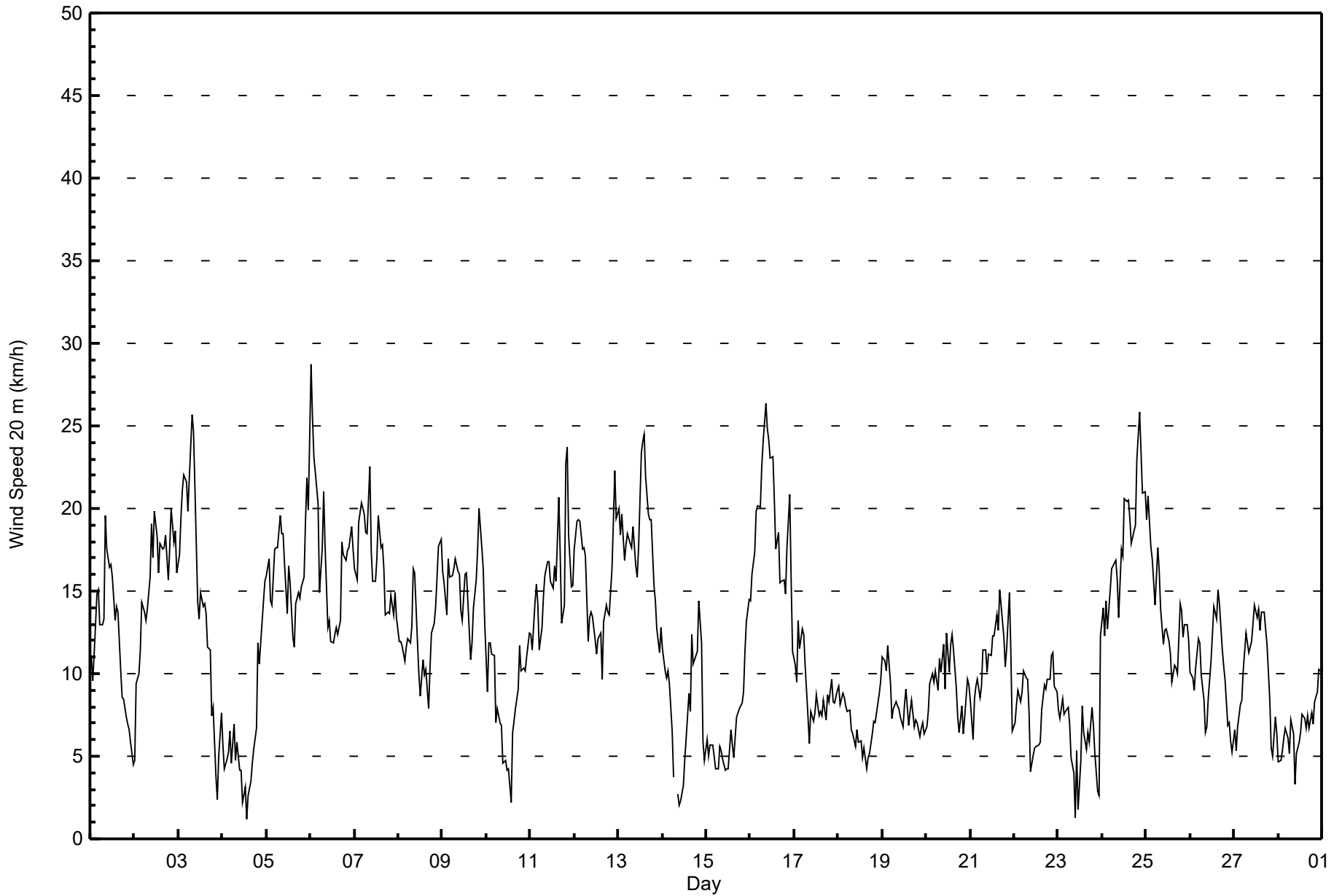
**Wind Speed 20 m (WS20m) - km/h**  
**Stony Mountain - February 2023**

| Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0<br>Maximum Value: 10 km/h on Feb 6 01:00<br>Minimum Value: 0 km/h on Feb 18 21:00<br>Percentiles: P <sub>1</sub> = 1 P <sub>10</sub> = 1 Q <sub>1</sub> = 2 Median = 3 Q <sub>3</sub> = 4 P <sub>90</sub> = 6 P <sub>99</sub> = 7 |                               |   |   |   |   |   |   |    |   |    |    |    |    | Hours in Service: 672<br>Hours of Data: 671<br>Hours of Missing Data: 1<br>Hours of Calibration: 0<br>Percent Operational Time: 99.9 |    |    |    |    |    |    |    |    |    |    |               |  |
|---|-------------------------------|---|---|---|---|---|---|----|---|----|----|----|----|--|----|----|----|----|----|----|----|----|----|----|---------------|--|
| Day   | Hourly Period Ending At (MST) |   |   |   |   |   |   |    |   |    |    |    |    |  |    |    |    |    |    |    |    |    |    |    | Daily Maximum |  |
|   | 1                             | 2 | 3 | 4 | 5 | 6 | 7 | 8  | 9 | 10 | 11 | 12 | 13 | 14   | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |               |  |
| 1-Feb   | 3                             | 2 | 3 | 4 | 5 | 4 | 4 | 4  | 6 | 5  | 5  | 5  | 5  | 5  | 4  | 5  | 3  | 2  | 2  | 1  | 1  | 1  | 1  | 1  | 6             |  |
| 2-Feb   | 2                             | 2 | 2 | 2 | 3 | 3 | 2 | 2  | 3 | 5  | 5  | 5  | 5  | 5  | 5  | 5  | 6  | 5  | 4  | 5  | 6  | 5  | 5  | 5  | 6             |  |
| 3-Feb   | 5                             | 6 | 7 | 6 | 6 | 6 | 6 | 6  | 6 | 6  | 4  | 4  | 5  | 4  | 5  | 5  | 4  | 3  | 2  | 2  | 2  | 1  | 1  | 2  | 7             |  |
| 4-Feb   | 2                             | 1 | 1 | 1 | 1 | 1 | 2 | 1  | 2 | 1  | 2  | 1  | 1  | 1  | 1  | 2  | 1  | 2  | 2  | 3  | 2  | 3  | 3  | 4  | 4             |  |
| 5-Feb   | 3                             | 4 | 3 | 3 | 4 | 4 | 4 | 4  | 4 | 5  | 4  | 3  | 4  | 5  | 3  | 3  | 4  | 4  | 3  | 4  | 4  | 6  | 6  | 6  | 6             |  |
| 6-Feb   | 10                            | 8 | 7 | 7 | 6 | 4 | 5 | 6  | 5 | 4  | 4  | 4  | 4  | 4  | 4  | 4  | 4  | 4  | 4  | 4  | 5  | 5  | 6  | 5  | 10            |  |
| 7-Feb   | 5                             | 4 | 5 | 6 | 6 | 6 | 6 | 6  | 7 | 5  | 6  | 5  | 6  | 7  | 6  | 6  | 5  | 4  | 4  | 4  | 4  | 4  | 4  | 4  | 7             |  |
| 8-Feb   | 3                             | 3 | 3 | 2 | 3 | 3 | 3 | 3  | 4 | 4  | 3  | 3  | 2  | 4  | 3  | 3  | 2  | 3  | 3  | 3  | 3  | 3  | 4  | 4  | 4             |  |
| 9-Feb   | 4                             | 3 | 3 | 5 | 5 | 3 | 3 | 4  | 3 | 3  | 3  | 3  | 4  | 5  | 4  | 3  | 3  | 3  | 3  | 4  | 5  | 4  | 4  | 4  | 5             |  |
| 10-Feb  | 3                             | 3 | 3 | 3 | 3 | 3 | 2 | 1  | 2 | 2  | 2  | 3  | 2  | 2  | 2  | 3  | 2  | 2  | 3  | 3  | 3  | 3  | 3  | 4  | 4             |  |
| 11-Feb  | 4                             | 3 | 4 | 5 | 4 | 3 | 3 | 4  | 4 | 5  | 6  | 5  | 5  | 5  | 6  | 8  | 6  | 5  | 5  | 8  | 8  | 6  | 5  | 5  | 8             |  |
| 12-Feb  | 5                             | 5 | 5 | 5 | 5 | 5 | 5 | 3  | 3 | 3  | 3  | 4  | 3  | 4  | 3  | 3  | 3  | 3  | 3  | 3  | 4  | 5  | 6  | 5  | 6             |  |
| 13-Feb  | 5                             | 5 | 6 | 5 | 5 | 6 | 5 | 5  | 6 | 6  | 5  | 5  | 8  | 7  | 7  | 8  | 6  | 6  | 6  | 5  | 4  | 3  | 3  | 3  | 8             |  |
| 14-Feb  | 2                             | 2 | 2 | 2 | 2 | 1 | 1 | UO | 1 | 1  | 1  | 1  | 2  | 2  | 3  | 3  | 4  | 3  | 3  | 4  | 5  | 3  | 2  | 2  | 5             |  |
| 15-Feb  | 2                             | 1 | 1 | 2 | 1 | 1 | 2 | 2  | 2 | 1  | 2  | 2  | 2  | 3  | 3  | 2  | 2  | 1  | 1  | 1  | 1  | 2  | 3  | 3  | 3             |  |
| 16-Feb  | 4                             | 4 | 4 | 4 | 5 | 4 | 5 | 6  | 6 | 6  | 6  | 6  | 6  | 5  | 5  | 5  | 5  | 5  | 5  | 4  | 5  | 7  | 5  | 3  | 7             |  |
| 17-Feb  | 2                             | 2 | 4 | 4 | 4 | 4 | 3 | 3  | 2 | 2  | 3  | 2  | 3  | 2  | 2  | 3  | 3  | 2  | 3  | 2  | 2  | 2  | 2  | 2  | 4             |  |
| 18-Feb  | 2                             | 2 | 2 | 2 | 2 | 2 | 2 | 2  | 2 | 2  | 1  | 2  | 2  | 2  | 2  | 2  | 1  | 1  | 1  | 1  | 0  | 1  | 1  | 1  | 2             |  |
| 19-Feb  | 2                             | 2 | 2 | 2 | 2 | 1 | 2 | 1  | 1 | 2  | 1  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2             |  |
| 20-Feb  | 1                             | 1 | 2 | 2 | 2 | 2 | 3 | 3  | 2 | 3  | 3  | 3  | 4  | 3  | 4  | 3  | 3  | 2  | 2  | 2  | 2  | 3  | 2  | 3  | 4             |  |
| 21-Feb  | 3                             | 1 | 2 | 2 | 2 | 2 | 2 | 2  | 2 | 3  | 3  | 4  | 3  | 4  | 4  | 4  | 5  | 4  | 3  | 2  | 3  | 4  | 3  | 1  | 5             |  |
| 22-Feb  | 1                             | 1 | 1 | 1 | 2 | 2 | 2 | 2  | 1 | 1  | 2  | 2  | 2  | 2  | 2  | 3  | 2  | 2  | 2  | 2  | 2  | 2  | 1  | 1  | 3             |  |
| 23-Feb  | 1                             | 2 | 2 | 1 | 1 | 1 | 1 | 1  | 1 | 2  | 2  | 2  | 3  | 3  | 2  | 2  | 2  | 1  | 1  | 1  | 1  | 2  | 3  | 2  | 3             |  |
| 24-Feb  | 3                             | 3 | 3 | 3 | 3 | 3 | 4 | 4  | 4 | 4  | 6  | 6  | 6  | 6  | 6  | 6  | 6  | 6  | 5  | 7  | 7  | 7  | 6  | 5  | 7             |  |
| 25-Feb  | 5                             | 5 | 4 | 5 | 4 | 4 | 5 | 4  | 4 | 4  | 4  | 4  | 4  | 4  | 3  | 3  | 4  | 3  | 4  | 3  | 3  | 3  | 3  | 2  | 5             |  |
| 26-Feb  | 2                             | 2 | 2 | 2 | 2 | 2 | 2 | 2  | 2 | 2  | 2  | 3  | 3  | 4  | 4  | 4  | 4  | 3  | 3  | 2  | 2  | 2  | 1  | 1  | 4             |  |
| 27-Feb  | 1                             | 1 | 2 | 2 | 2 | 2 | 3 | 3  | 3 | 3  | 4  | 4  | 4  | 4  | 4  | 4  | 4  | 4  | 3  | 3  | 2  | 1  | 2  | 2  | 4             |  |
| 28-Feb  | 1                             | 2 | 2 | 2 | 2 | 1 | 1 | 2  | 2 | 1  | 1  | 3  | 2  | 3  | 3  | 2  | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 2  | 3             |  |
|   | 10                            | 8 | 7 | 7 | 6 | 6 | 6 | 6  | 7 | 6  | 6  | 6  | 8  | 7  | 7  | 8  | 6  | 6  | 6  | 8  | 8  | 7  | 6  | 6  |               |  |
| Diurnal Maximum   |                               |   |   |   |   |   |   |    |   |    |    |    |    |  |    |    |    |    |    |    |    |    |    |    |               |  |
| UO - Unstable Operation   |                               |   |   |   |   |   |   |    |   |    |    |    |    |  |    |    |    |    |    |    |    |    |    |    |               |  |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Wind Speed 20 m (WS20m) - km/h**  
**Stony Mountain - February 2023**





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Wind Speed 20 m (WS20m) - km/h**  
**Stony Mountain - February 2023**

| <b>Wind Speed Ranges (km/h)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---------------------------------|------------------------|----------|---------------------|
| 0 - 5                           | 67                     | 9.99     | 9.99                |
| 6 - 11                          | 258                    | 38.45    | 48.44               |
| 12 - 19                         | 288                    | 42.92    | 91.36               |
| 20 - 28                         | 57                     | 8.49     | 99.85               |
| 29 - 38                         | 1                      | 0.15     | 100.00              |
| > 38                            | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 671

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Wind Speed 20 m (WS20m) - km/h  
Stony Mountain - February 2023**

| <b>Wind Speed<br/>Ranges (km/h)</b> | <b>Wind Direction</b> |            |           |            |           |            |           |            |           |            |           |            |           |            |           |            | <b>Totals</b> |
|-------------------------------------|-----------------------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|---------------|
|                                     | <b>N</b>              | <b>NNE</b> | <b>NE</b> | <b>ENE</b> | <b>E</b>  | <b>ESE</b> | <b>SE</b> | <b>SSE</b> | <b>S</b>  | <b>SSW</b> | <b>SW</b> | <b>WSW</b> | <b>W</b>  | <b>WNW</b> | <b>NW</b> | <b>NNW</b> |               |
| 0 - 5                               | 7                     | 13         | 6         | 5          | 9         | 8          | 3         | 2          | 1         | 1          | 3         | 2          | 0         | 1          | 5         | 1          | 67            |
| 6 - 11                              | 32                    | 23         | 29        | 18         | 16        | 8          | 10        | 10         | 7         | 13         | 6         | 2          | 12        | 16         | 23        | 33         | 258           |
| 12 - 19                             | 21                    | 0          | 0         | 4          | 1         | 0          | 2         | 8          | 24        | 40         | 45        | 40         | 35        | 29         | 15        | 24         | 288           |
| 20 - 28                             | 4                     | 0          | 0         | 0          | 0         | 0          | 0         | 1          | 1         | 27         | 6         | 1          | 5         | 4          | 6         | 2          | 57            |
| 29 - 38                             | 0                     | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 1         | 0          | 1             |
| > 38                                | 0                     | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0             |
| <b>Totals</b>                       | <b>64</b>             | <b>36</b>  | <b>35</b> | <b>27</b>  | <b>26</b> | <b>16</b>  | <b>15</b> | <b>21</b>  | <b>33</b> | <b>81</b>  | <b>60</b> | <b>45</b>  | <b>52</b> | <b>50</b>  | <b>50</b> | <b>60</b>  | <b>671</b>    |

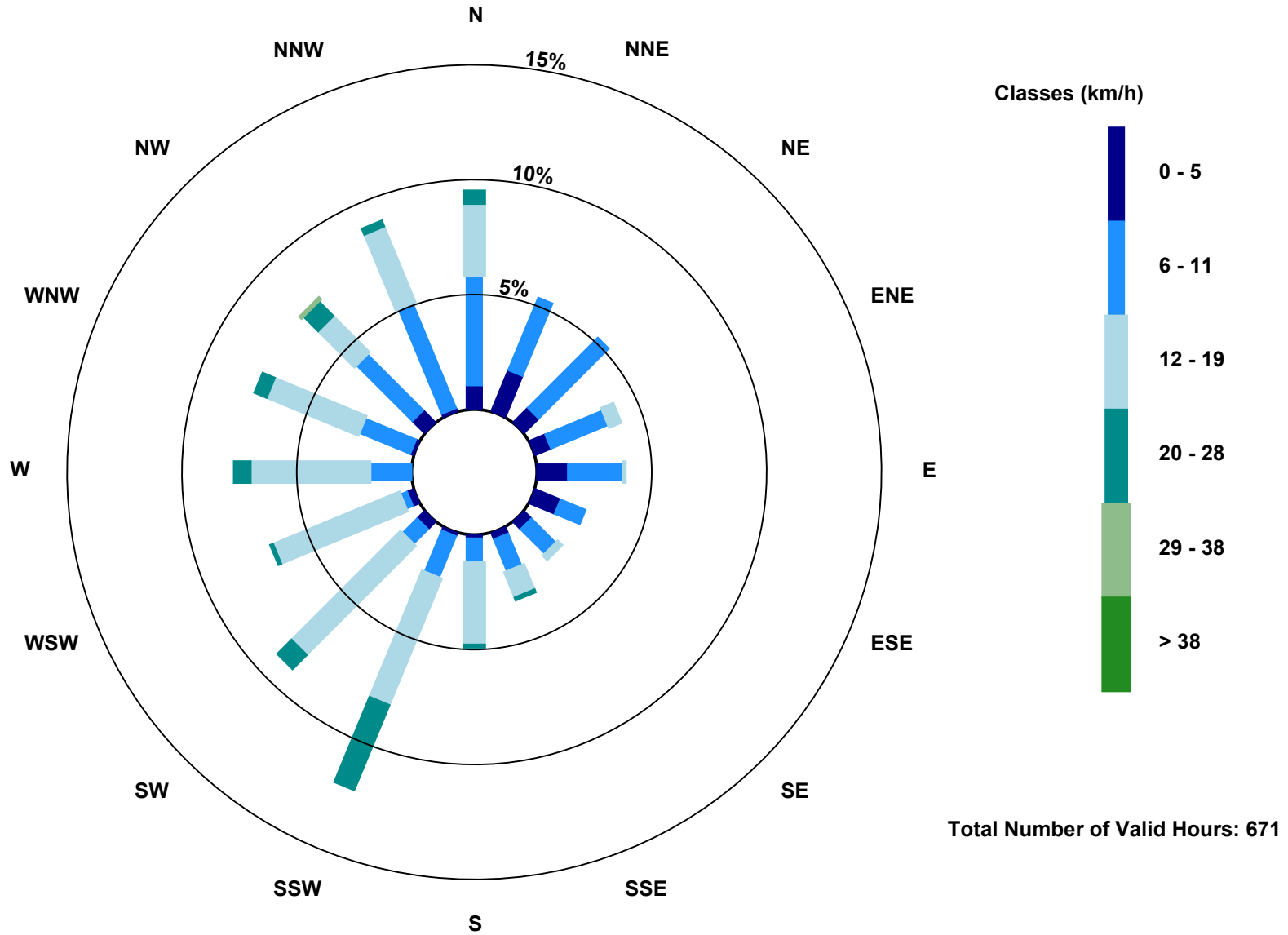
Total Number of Valid Hours: 671

Total Number of Hours: 672



Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Wind Speed 20 m (WS20m) - km/h  
Stony Mountain





**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

**Wind Direction 20 m (WD20m) - deg**  
**Stony Mountain - February 2023**

|   |   |
|---|---|
| Direction of Maximum Speed: 317 deg on Feb 6 01:00<br>Direction of Maximum Daily Speed Average: 204.7 deg on Feb 24 | Hours in Service: 672<br>Hours of Data: 671<br>Hours of Missing Data: 1 |
| Direction of Minimum Speed: 106 deg on Feb 4 14:00<br>Direction of Minimum Daily Speed Average: 2.9 deg on Feb 23   | Percent Operational Time: 99.9  |
| Monthly Average Direction: 260.3 deg  |   |

| Day   | Hourly Period Ending At (MST) |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Daily Average |
|---|-------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---------------|
|   | 1                             | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19  | 20  | 21  | 22  | 23  | 24  |               |
| 1-Feb   | 307                           | 314 | 328 | 341 | 356 | 354 | 350 | 346 | 350 | 351 | 352 | 349 | 345 | 342 | 344 | 343 | 354 | 349 | 351 | 341 | 323 | 302 | 287 | 315 | 341.7         |
| 2-Feb   | 250                           | 220 | 216 | 207 | 200 | 198 | 184 | 184 | 188 | 172 | 166 | 166 | 163 | 156 | 157 | 154 | 158 | 160 | 162 | 171 | 183 | 185 | 187 | 190 | 177.4         |
| 3-Feb   | 189                           | 202 | 195 | 199 | 198 | 209 | 209 | 211 | 215 | 217 | 226 | 234 | 271 | 304 | 327 | 321 | 316 | 322 | 340 | 350 | 218 | 301 | 57  | 73  | 229.0         |
| 4-Feb   | 170                           | 89  | 93  | 115 | 120 | 98  | 130 | 50  | 87  | 19  | 1   | 75  | 26  | 106 | 99  | 117 | 100 | 131 | 160 | 195 | 219 | 210 | 209 | 224 | 157.0         |
| 5-Feb   | 223                           | 223 | 215 | 211 | 209 | 210 | 216 | 217 | 213 | 213 | 216 | 209 | 204 | 202 | 221 | 218 | 230 | 229 | 243 | 246 | 253 | 269 | 282 | 292 | 228.2         |
| 6-Feb   | 317                           | 322 | 315 | 314 | 309 | 289 | 274 | 280 | 284 | 280 | 272 | 264 | 251 | 247 | 246 | 218 | 201 | 201 | 210 | 218 | 221 | 239 | 256 | 249 | 267.5         |
| 7-Feb   | 256                           | 234 | 245 | 251 | 261 | 269 | 269 | 283 | 311 | 293 | 289 | 278 | 277 | 277 | 276 | 266 | 261 | 261 | 276 | 279 | 280 | 293 | 304 | 293 | 273.9         |
| 8-Feb   | 287                           | 293 | 306 | 306 | 300 | 299 | 297 | 290 | 287 | 284 | 290 | 295 | 279 | 294 | 280 | 289 | 270 | 237 | 234 | 229 | 227 | 224 | 223 | 222 | 270.3         |
| 9-Feb   | 217                           | 219 | 239 | 259 | 258 | 238 | 233 | 236 | 229 | 228 | 223 | 211 | 207 | 206 | 201 | 183 | 179 | 180 | 190 | 203 | 213 | 212 | 213 | 216 | 217.4         |
| 10-Feb  | 228                           | 213 | 215 | 209 | 204 | 213 | 182 | 160 | 198 | 33  | 79  | 219 | 127 | 324 | 351 | 326 | 318 | 324 | 310 | 304 | 304 | 295 | 299 | 294 | 262.8         |
| 11-Feb  | 292                           | 273 | 271 | 286 | 290 | 268 | 260 | 257 | 256 | 262 | 261 | 250 | 253 | 252 | 247 | 261 | 258 | 259 | 254 | 291 | 297 | 300 | 285 | 271 | 269.6         |
| 12-Feb  | 265                           | 275 | 281 | 284 | 286 | 289 | 280 | 251 | 229 | 229 | 236 | 246 | 240 | 245 | 242 | 210 | 192 | 197 | 186 | 174 | 186 | 193 | 198 | 202 | 235.7         |
| 13-Feb  | 212                           | 215 | 220 | 221 | 242 | 248 | 255 | 251 | 257 | 263 | 269 | 279 | 321 | 336 | 350 | 353 | 356 | 354 | 355 | 356 | 352 | 351 | 350 | 346 | 297.9         |
| 14-Feb  | 341                           | 336 | 350 | 354 | 356 | 355 | 13  | UO  | 133 | 176 | 312 | 229 | 201 | 216 | 280 | 289 | 329 | 350 | 344 | 337 | 337 | 343 | 5   | 31  | 336.0         |
| 15-Feb  | 76                            | 85  | 91  | 99  | 105 | 81  | 60  | 79  | 106 | 119 | 94  | 43  | 115 | 139 | 160 | 238 | 212 | 213 | 203 | 199 | 187 | 191 | 198 | 199 | 156.7         |
| 16-Feb  | 189                           | 189 | 191 | 194 | 196 | 192 | 196 | 204 | 204 | 207 | 207 | 208 | 210 | 217 | 224 | 237 | 243 | 257 | 277 | 310 | 327 | 336 | 338 | 344 | 222.6         |
| 17-Feb  | 343                           | 351 | 349 | 353 | 340 | 331 | 334 | 326 | 294 | 275 | 275 | 293 | 303 | 280 | 297 | 293 | 297 | 340 | 28  | 49  | 54  | 53  | 51  | 35  | 339.2         |
| 18-Feb  | 30                            | 29  | 30  | 45  | 46  | 44  | 46  | 38  | 30  | 14  | 48  | 38  | 33  | 30  | 39  | 55  | 74  | 97  | 99  | 115 | 131 | 122 | 137 | 158 | 61.6          |
| 19-Feb  | 163                           | 189 | 192 | 183 | 172 | 147 | 138 | 133 | 117 | 118 | 114 | 80  | 89  | 93  | 69  | 37  | 34  | 26  | 35  | 31  | 14  | 26  | 18  | 7   | 102.3         |
| 20-Feb  | 359                           | 346 | 337 | 333 | 321 | 320 | 318 | 329 | 322 | 321 | 310 | 311 | 301 | 315 | 336 | 339 | 350 | 4   | 2   | 10  | 55  | 52  | 33  | 45  | 340.0         |
| 21-Feb  | 46                            | 14  | 7   | 2   | 343 | 332 | 329 | 331 | 334 | 347 | 351 | 351 | 345 | 350 | 357 | 353 | 357 | 354 | 4   | 4   | 5   | 7   | 8   | 15  | 355.1         |
| 22-Feb  | 348                           | 328 | 318 | 315 | 314 | 322 | 313 | 306 | 304 | 313 | 7   | 24  | 20  | 360 | 357 | 25  | 47  | 48  | 53  | 58  | 49  | 52  | 57  | 63  | 6.3           |
| 23-Feb  | 75                            | 55  | 57  | 77  | 75  | 70  | 59  | 56  | 18  | 119 | 162 | 312 | 342 | 11  | 2   | 350 | 345 | 324 | 292 | 320 | 349 | 32  | 165 | 233 | 24.7          |
| 24-Feb  | 249                           | 229 | 219 | 221 | 221 | 215 | 211 | 213 | 211 | 201 | 184 | 197 | 198 | 202 | 195 | 197 | 190 | 189 | 192 | 196 | 200 | 205 | 209 | 208 | 204.7         |
| 25-Feb  | 218                           | 229 | 238 | 262 | 262 | 247 | 261 | 258 | 265 | 279 | 286 | 281 | 282 | 273 | 279 | 265 | 232 | 210 | 215 | 217 | 207 | 199 | 187 | 184 | 243.1         |
| 26-Feb  | 172                           | 164 | 149 | 155 | 144 | 140 | 140 | 132 | 89  | 86  | 84  | 83  | 84  | 73  | 64  | 69  | 67  | 59  | 71  | 82  | 65  | 71  | 58  | 52  | 96.5          |
| 27-Feb  | 15                            | 2   | 348 | 345 | 333 | 328 | 325 | 320 | 327 | 333 | 321 | 330 | 335 | 324 | 331 | 324 | 313 | 329 | 330 | 338 | 8   | 8   | 20  | 23  | 334.8         |
| 28-Feb  | 20                            | 21  | 29  | 45  | 28  | 9   | 355 | 350 | 352 | 23  | 26  | 53  | 49  | 52  | 56  | 60  | 103 | 96  | 90  | 107 | 98  | 127 | 135 | 153 | 63.7          |
| 255.7 251.7 258.7 261.7 261.7 259.4 254.3 254.8 257.4 256.2 256.9 260.8 264.2 273.2 288.4 286.2 276.8 264.4 262.2 258.5 254.4 255.9 247.2 241.7 |                               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |               |
| Diurnal Average   |                               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |               |

UO - Unstable Operation  
 All monthly, daily, and diurnal averages have been calculated using vector methods

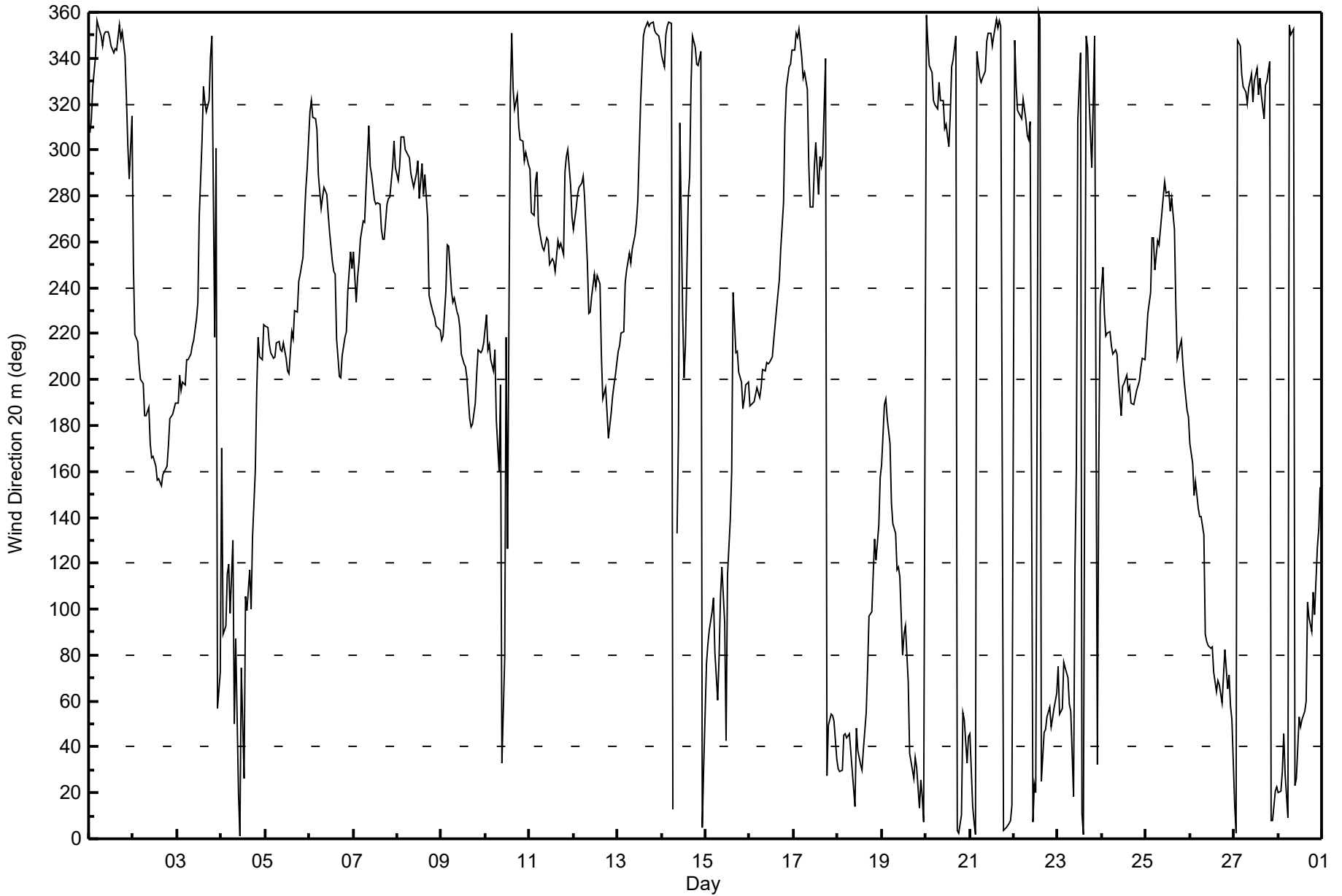




**Wood Buffalo Environmental Association**  
**Summary of Hour Standard Deviations**

**Wind Direction 20 m (WD20m) - deg**  
**Stony Mountain - February 2023**

| Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0<br>Maximum Value: 92 deg on Feb 23 12:00   |                               | Hours in Service: 672<br>Hours of Data: 671<br>Hours of Missing Data: 1<br>Hours of Calibration: 0<br>Percent Operational Time: 99.9 |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |               |  |  |
|--|-------------------------------|--|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|---------------|--|--|
| Minimum Value: 6 deg on Feb 18 22:00   |                               |  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |               |  |  |
| Percentiles: P <sub>1</sub> = 9 P <sub>10</sub> = 13 Q <sub>1</sub> = 16 Median = 20 Q <sub>3</sub> = 23 P <sub>90</sub> = 29 P <sub>99</sub> = 62 |                               |  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |               |  |  |
| Day  | Hourly Period Ending At (MST) |  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    | Daily Maximum |  |  |
|  | 1                             | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |               |  |  |
| 1-Feb  | 20                            | 19   | 17 | 17 | 16 | 17 | 16 | 18 | 16 | 16 | 17 | 18 | 18 | 23 | 20 | 17 | 15 | 12 | 12 | 9  | 12 | 13 | 22 | 46 | 46            |  |  |
| 2-Feb  | 19                            | 8  | 11 | 13 | 13 | 14 | 13 | 13 | 18 | 19 | 19 | 19 | 20 | 20 | 20 | 21 | 20 | 19 | 21 | 24 | 23 | 22 | 23 | 24 | 24            |  |  |
| 3-Feb  | 22                            | 24   | 22 | 21 | 21 | 25 | 21 | 19 | 21 | 20 | 23 | 22 | 28 | 24 | 22 | 22 | 19 | 21 | 17 | 19 | 55 | 55 | 20 | 24 | 55            |  |  |
| 4-Feb  | 23                            | 27   | 20 | 15 | 16 | 20 | 18 | 17 | 29 | 26 | 43 | 55 | 27 | 77 | 62 | 59 | 21 | 27 | 18 | 18 | 18 | 19 | 17 | 19 | 77            |  |  |
| 5-Feb  | 17                            | 18   | 16 | 17 | 17 | 18 | 17 | 18 | 18 | 19 | 21 | 19 | 19 | 23 | 22 | 21 | 20 | 22 | 20 | 19 | 21 | 24 | 22 | 22 | 24            |  |  |
| 6-Feb  | 23                            | 19   | 21 | 22 | 21 | 26 | 23 | 23 | 22 | 25 | 25 | 27 | 29 | 29 | 26 | 25 | 21 | 19 | 19 | 18 | 20 | 23 | 25 | 22 | 29            |  |  |
| 7-Feb  | 26                            | 21   | 22 | 23 | 23 | 24 | 23 | 27 | 21 | 23 | 25 | 25 | 27 | 29 | 25 | 26 | 24 | 23 | 21 | 22 | 22 | 22 | 20 | 22 | 29            |  |  |
| 8-Feb  | 20                            | 22   | 19 | 17 | 19 | 17 | 18 | 20 | 20 | 23 | 23 | 26 | 28 | 26 | 26 | 23 | 20 | 19 | 18 | 17 | 17 | 17 | 17 | 17 | 28            |  |  |
| 9-Feb  | 16                            | 17   | 20 | 23 | 23 | 17 | 17 | 16 | 14 | 17 | 18 | 21 | 21 | 24 | 23 | 22 | 19 | 16 | 17 | 20 | 20 | 19 | 19 | 24 | 24            |  |  |
| 10-Feb   | 29                            | 24   | 22 | 18 | 16 | 29 | 17 | 13 | 43 | 34 | 29 | 66 | 44 | 90 | 21 | 23 | 22 | 20 | 19 | 21 | 19 | 20 | 20 | 21 | 90            |  |  |
| 11-Feb   | 22                            | 24   | 23 | 23 | 23 | 21 | 22 | 22 | 24 | 26 | 26 | 27 | 28 | 26 | 26 | 25 | 25 | 27 | 29 | 23 | 22 | 23 | 24 | 24 | 29            |  |  |
| 12-Feb   | 24                            | 22   | 22 | 21 | 21 | 21 | 21 | 23 | 17 | 19 | 20 | 26 | 27 | 28 | 25 | 28 | 18 | 19 | 17 | 17 | 20 | 18 | 19 | 19 | 28            |  |  |
| 13-Feb   | 19                            | 20   | 22 | 22 | 22 | 24 | 23 | 23 | 25 | 27 | 25 | 24 | 25 | 22 | 16 | 16 | 18 | 15 | 17 | 17 | 15 | 15 | 13 | 13 | 27            |  |  |
| 14-Feb   | 13                            | 12   | 12 | 13 | 12 | 10 | 19 | UO | 17 | 59 | 58 | 52 | 33 | 32 | 34 | 28 | 22 | 17 | 16 | 17 | 18 | 14 | 18 | 30 | 59            |  |  |
| 15-Feb   | 22                            | 19   | 15 | 21 | 16 | 30 | 17 | 18 | 19 | 29 | 46 | 43 | 63 | 43 | 53 | 54 | 25 | 13 | 15 | 12 | 10 | 14 | 16 | 19 | 63            |  |  |
| 16-Feb   | 21                            | 20   | 18 | 18 | 18 | 19 | 18 | 19 | 17 | 20 | 20 | 20 | 20 | 20 | 23 | 24 | 21 | 23 | 23 | 23 | 18 | 18 | 16 | 14 | 24            |  |  |
| 17-Feb   | 13                            | 15   | 16 | 17 | 17 | 19 | 19 | 20 | 32 | 23 | 36 | 30 | 31 | 29 | 28 | 28 | 25 | 20 | 32 | 15 | 13 | 14 | 16 | 15 | 36            |  |  |
| 18-Feb   | 17                            | 16   | 17 | 16 | 16 | 15 | 18 | 19 | 20 | 22 | 18 | 21 | 28 | 29 | 25 | 32 | 14 | 9  | 9  | 13 | 7  | 6  | 8  | 10 | 32            |  |  |
| 19-Feb   | 11                            | 12   | 12 | 12 | 15 | 12 | 11 | 12 | 12 | 15 | 15 | 26 | 21 | 22 | 35 | 21 | 18 | 17 | 19 | 21 | 17 | 16 | 15 | 12 | 35            |  |  |
| 20-Feb   | 11                            | 10   | 13 | 14 | 15 | 18 | 18 | 16 | 18 | 18 | 25 | 23 | 29 | 25 | 23 | 21 | 19 | 16 | 16 | 24 | 15 | 16 | 19 | 18 | 29            |  |  |
| 21-Feb   | 15                            | 13   | 13 | 14 | 13 | 14 | 12 | 12 | 14 | 15 | 17 | 19 | 18 | 21 | 19 | 20 | 16 | 15 | 13 | 11 | 13 | 14 | 13 | 12 | 21            |  |  |
| 22-Feb   | 14                            | 11   | 10 | 12 | 10 | 13 | 14 | 14 | 15 | 30 | 26 | 35 | 30 | 30 | 36 | 27 | 19 | 13 | 12 | 12 | 12 | 12 | 11 | 9  | 36            |  |  |
| 23-Feb   | 10                            | 16   | 14 | 10 | 9  | 10 | 13 | 21 | 24 | 85 | 37 | 92 | 59 | 32 | 41 | 57 | 20 | 20 | 11 | 16 | 11 | 17 | 73 | 18 | 92            |  |  |
| 24-Feb   | 18                            | 17   | 17 | 17 | 17 | 16 | 17 | 18 | 20 | 28 | 25 | 27 | 24 | 26 | 26 | 25 | 24 | 22 | 21 | 22 | 20 | 21 | 22 | 21 | 28            |  |  |
| 25-Feb   | 21                            | 20   | 23 | 25 | 24 | 21 | 24 | 23 | 24 | 30 | 24 | 29 | 30 | 29 | 32 | 31 | 29 | 21 | 21 | 18 | 19 | 19 | 17 | 14 | 32            |  |  |
| 26-Feb   | 14                            | 12   | 13 | 13 | 11 | 12 | 11 | 19 | 16 | 17 | 15 | 15 | 18 | 19 | 16 | 16 | 16 | 16 | 17 | 16 | 14 | 15 | 14 | 21 | 21            |  |  |
| 27-Feb   | 14                            | 11   | 13 | 13 | 16 | 15 | 16 | 18 | 19 | 19 | 24 | 23 | 22 | 22 | 21 | 21 | 22 | 18 | 16 | 20 | 16 | 15 | 18 | 19 | 24            |  |  |
| 28-Feb   | 15                            | 18   | 15 | 22 | 19 | 16 | 11 | 12 | 14 | 28 | 28 | 34 | 34 | 31 | 31 | 30 | 21 | 13 | 14 | 12 | 13 | 8  | 9  | 13 | 34            |  |  |
|  |                               | 29   | 27 | 23 | 25 | 24 | 30 | 24 | 27 | 43 | 85 | 58 | 92 | 63 | 90 | 62 | 59 | 29 | 27 | 32 | 24 | 55 | 55 | 73 | 46            |  |  |
|  |                               | Diurnal Maximum  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |               |  |  |
| UO - Unstable Operation  |                               |  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |               |  |  |





## WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY  
MONITORING PROGRAM  
MONTHLY REPORT

### **AMS19 FIREBAG FEBRUARY 2023**

Operations, Data Collection,  
QA/QC, Data Validation and Reporting by:  
Wood Buffalo Environmental Association  
Fort McMurray, Alberta

June 2, 2023

Revision 01

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - FIREBAG (AMS19)  
FEBRUARY 2023

MONTHLY SUMMARY

| Parameter                         | Hours of Data | Hours of Calibration | Hours without Data | Operational Time | Maximum 1-Hour Value | 1-Hour Exceedances | Maximum 24-Hour Value | 24-Hour Exceedances |
|-----------------------------------|---------------|----------------------|--------------------|------------------|----------------------|--------------------|-----------------------|---------------------|
| SO2 (ppb) Average                 | 621           | 32                   | 51                 | 97.17            | 23.8                 | 0                  | 4.6                   | 0                   |
| H2S (ppb) Average                 | 639           | 33                   | 33                 | 100              | 3.4                  | 0                  | 0.7                   | 0                   |
| THC (ppm) Average                 | 621           | 32                   | 51                 | 97.17            | 2.7                  | -                  | 2.4                   | -                   |
| NO2 (ppb) Average                 | 639           | 33                   | 33                 | 100              | 63.3                 | 0                  | 18                    | -                   |
| NO (ppb) Average                  | 639           | 33                   | 33                 | 100              | 101.6                | -                  | 16.7                  | -                   |
| NOX (ppb) Average                 | 639           | 33                   | 33                 | 100              | 164.9                | -                  | 34.7                  | -                   |
| Temperature 2 m (C) Average       | 672           | 0                    | 0                  | 100              | 1.1                  | -                  | -3                    | -                   |
| Relative Humidity (%) Average     | 672           | 0                    | 0                  | 100              | 100                  | -                  | 95.4                  | -                   |
| Wind Speed 10 m (km/h) Average    | 585           | 0                    | 87                 | 87.05            | 29                   | -                  | 22                    | -                   |
| Wind Direction 10 m (deg) Average | 585           | 0                    | 87                 | 87.05            | -                    | -                  | -                     | -                   |

Note : Operational time includes periods of data collection and instrument calibration

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - FIREBAG (AMS19)  
FEBRUARY 2023

MONTHLY SUMMARY FOR AIR QUALITY/ METEOROLOGICAL MONITORING MEASUREMENTS

| Parameter                         | Number | Mean   | StnDev | Total | Percentile |       |       |        |      |      |       |
|-----------------------------------|--------|--------|--------|-------|------------|-------|-------|--------|------|------|-------|
|                                   |        |        |        |       | Min        | P10   | Q1    | Median | Q3   | P90  | Max   |
| SO2 (ppb) Average                 | 621    | 1.17   | 2.6    | -     | 0          | 0     | 0.1   | 0.3    | 0.9  | 3.3  | 23.8  |
| H2S (ppb) Average                 | 639    | 0.19   | 0.3    | -     | 0          | 0     | 0.1   | 0.1    | 0.2  | 0.4  | 3.4   |
| THC (ppm) Average                 | 621    | 2.27   | 0.1    | -     | 2.1        | 2.2   | 2.2   | 2.3    | 2.3  | 2.3  | 2.7   |
| NO2 (ppb) Average                 | 639    | 6.77   | 9.5    | -     | 0.1        | 0.2   | 1     | 3.7    | 8.4  | 16.6 | 63.3  |
| NO (ppb) Average                  | 639    | 2.98   | 9.3    | -     | 0          | 0     | 0     | 0.5    | 1.7  | 5.7  | 101.6 |
| NOX (ppb) Average                 | 639    | 9.75   | 18     | -     | 0.1        | 0.2   | 1.1   | 4.6    | 10.1 | 21.5 | 164.9 |
| Temperature 2 m (C) Average       | 672    | -16.07 | 9      | -     | -34.3      | -28.5 | -22.9 | -16.6  | -9   | -3   | 1.1   |
| Relative Humidity (%) Average     | 672    | 79.72  | 9.1    | -     | 54.3       | 68    | 74.1  | 79.6   | 85.8 | 93.1 | 100   |
| Wind Speed 10 m (km/h) Average    | 585    | 11.4   | 6      | -     | 0          | 3     | 7     | 10     | 16   | 20   | 29    |
| Wind Direction 10 m (deg) Average | 585    | -      | -      | -     | -          | -     | -     | -      | -    | -    | -     |

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - FIREBAG (AMS19)  
FEBRUARY 2023

OPERATIONAL NOTES

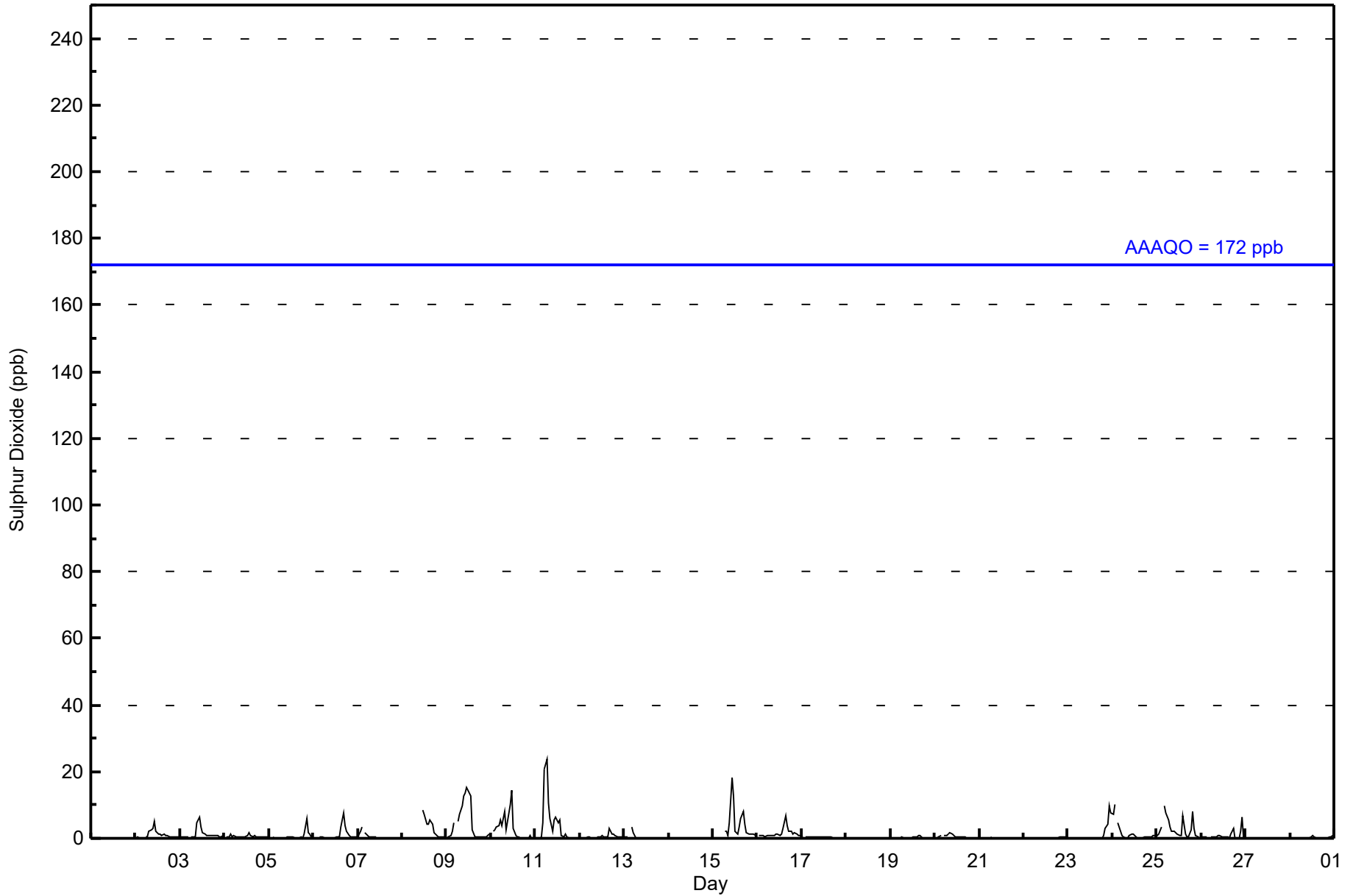
| Parameter                  | Period<br>Start   | Period<br>End     | Duration<br>(Hours) | Notes   |
|----------------------------|-------------------|-------------------|---------------------|---|
| SO2, THC                   | 07 Feb 2023 16:00 | 08 Feb 2023 04:00 | 13                  | Unstable Operation - sample line disconnected         |
| SO2, THC                   | 08 Feb 2023 06:00 | 08 Feb 2023 11:00 | 6                   | Unstable Operation - sample line disconnected         |
| Wind Speed, Wind Direction | 01 Feb 2023 22:00 | 02 Feb 2023 01:00 | 4                   | Flat line in sensor output signal - Sensor frozen     |
| Wind Speed, Wind Direction | 04 Feb 2023 15:00 | 04 Feb 2023 15:00 | 1                   | Flat line in sensor output signal - Sensor frozen     |
| Wind Speed, Wind Direction | 08 Feb 2023 15:00 | 08 Feb 2023 16:00 | 2                   | Maintenance - station operator activities             |
| Wind Speed, Wind Direction | 22 Feb 2023 22:00 | 22 Feb 2023 22:00 | 1                   | Flat line in sensor output signal - Sensor frozen     |
| Wind Speed, Wind Direction | 25 Feb 2023 18:00 | 01 Mar 2023 00:00 | 79                  | Unstable Operation - misalignment of cross arm sensor |





**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Sulphur Dioxide (SO<sub>2</sub>) - ppb**  
**Firebag - February 2023**







**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Sulphur Dioxide (SO<sub>2</sub>) - ppb  
Firebag - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 10                            | 611                    | 98.39    | 98.39               |
| 11 - 20                           | 8                      | 1.29     | 99.68               |
| 21 - 60                           | 2                      | 0.32     | 100.00              |
| 61 - 110                          | 0                      | 0.00     | 100.00              |
| 111 - 172                         | 0                      | 0.00     | 100.00              |
| > 172                             | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 621

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Sulphur Dioxide (SO<sub>2</sub>) - ppb  
Firebag - February 2023**

| <b>Concentration<br/>Ranges (ppb)</b> | <b>Wind Direction</b> |            |           |            |           |            |           |            |           |            |           |            |           |            |           |            | <b>Totals</b> |
|---------------------------------------|-----------------------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|---------------|
|                                       | <b>N</b>              | <b>NNE</b> | <b>NE</b> | <b>ENE</b> | <b>E</b>  | <b>ESE</b> | <b>SE</b> | <b>SSE</b> | <b>S</b>  | <b>SSW</b> | <b>SW</b> | <b>WSW</b> | <b>W</b>  | <b>WNW</b> | <b>NW</b> | <b>NNW</b> |               |
| 0 - 10                                | 34                    | 17         | 12        | 5          | 10        | 20         | 40        | 66         | 57        | 33         | 32        | 15         | 14        | 12         | 63        | 97         | 527           |
| 11 - 20                               | 0                     | 0          | 0         | 0          | 1         | 0          | 0         | 0          | 2         | 3          | 1         | 1          | 0         | 0          | 0         | 0          | 8             |
| 21 - 60                               | 0                     | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 2          | 0         | 0          | 0         | 0          | 0         | 0          | 2             |
| 61 - 110                              | 0                     | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0             |
| 111 - 172                             | 0                     | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0             |
| > 172                                 | 0                     | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0             |
| <b>Totals</b>                         | <b>34</b>             | <b>17</b>  | <b>12</b> | <b>5</b>   | <b>11</b> | <b>20</b>  | <b>40</b> | <b>66</b>  | <b>59</b> | <b>38</b>  | <b>33</b> | <b>16</b>  | <b>14</b> | <b>12</b>  | <b>63</b> | <b>97</b>  | <b>537</b>    |

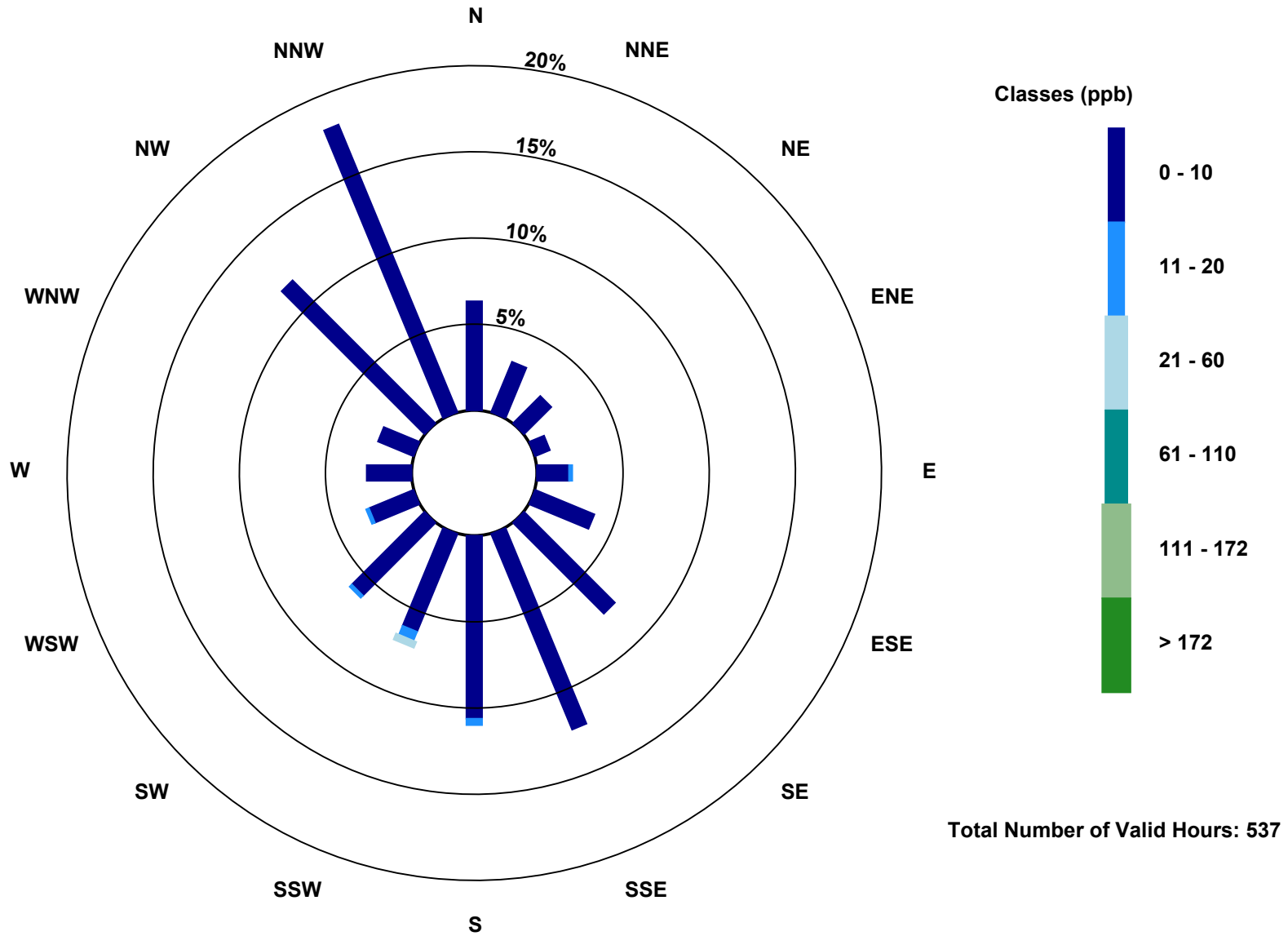
Total Number of Valid Hours: 537

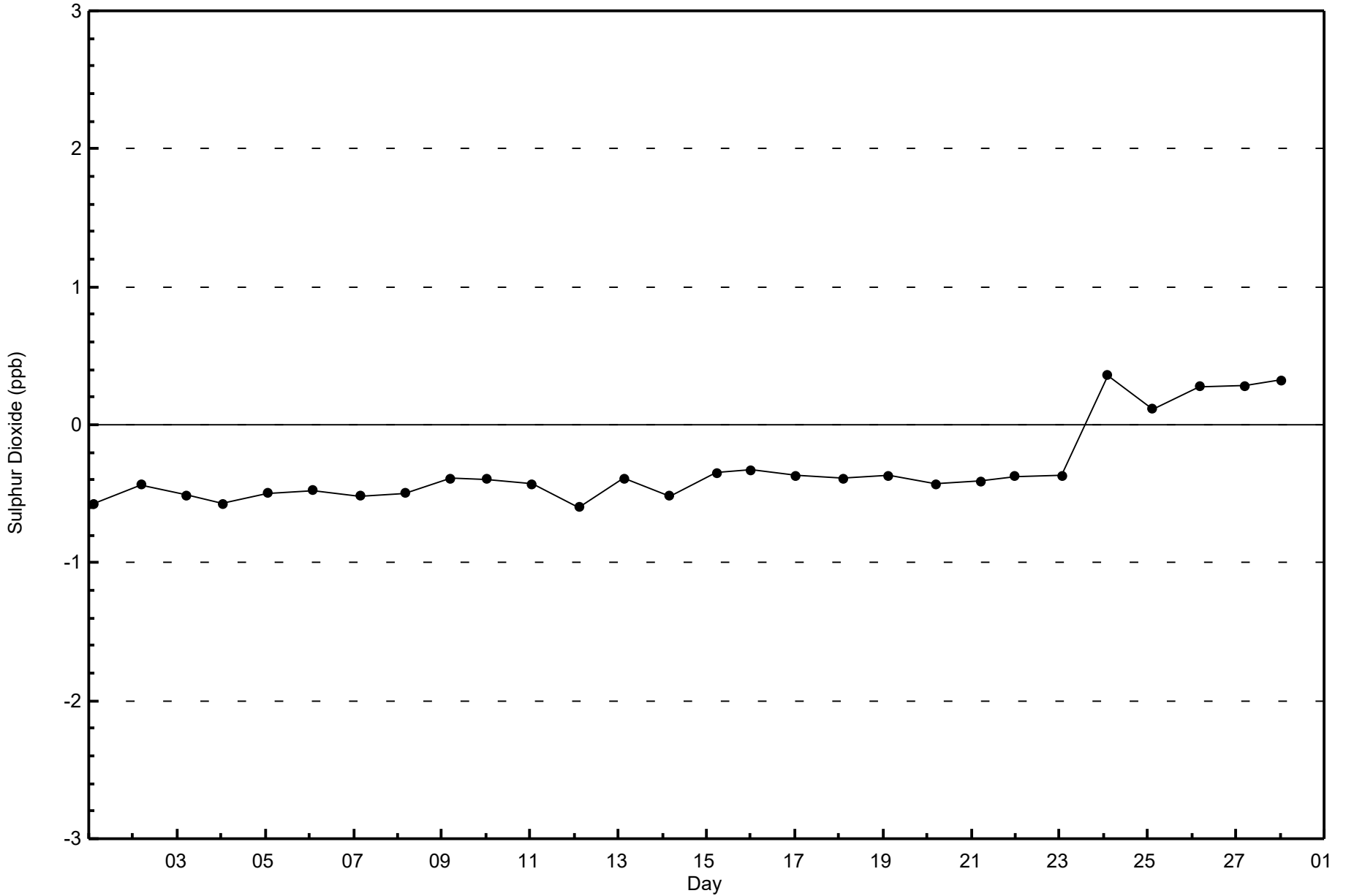
Total Number of Hours: 672

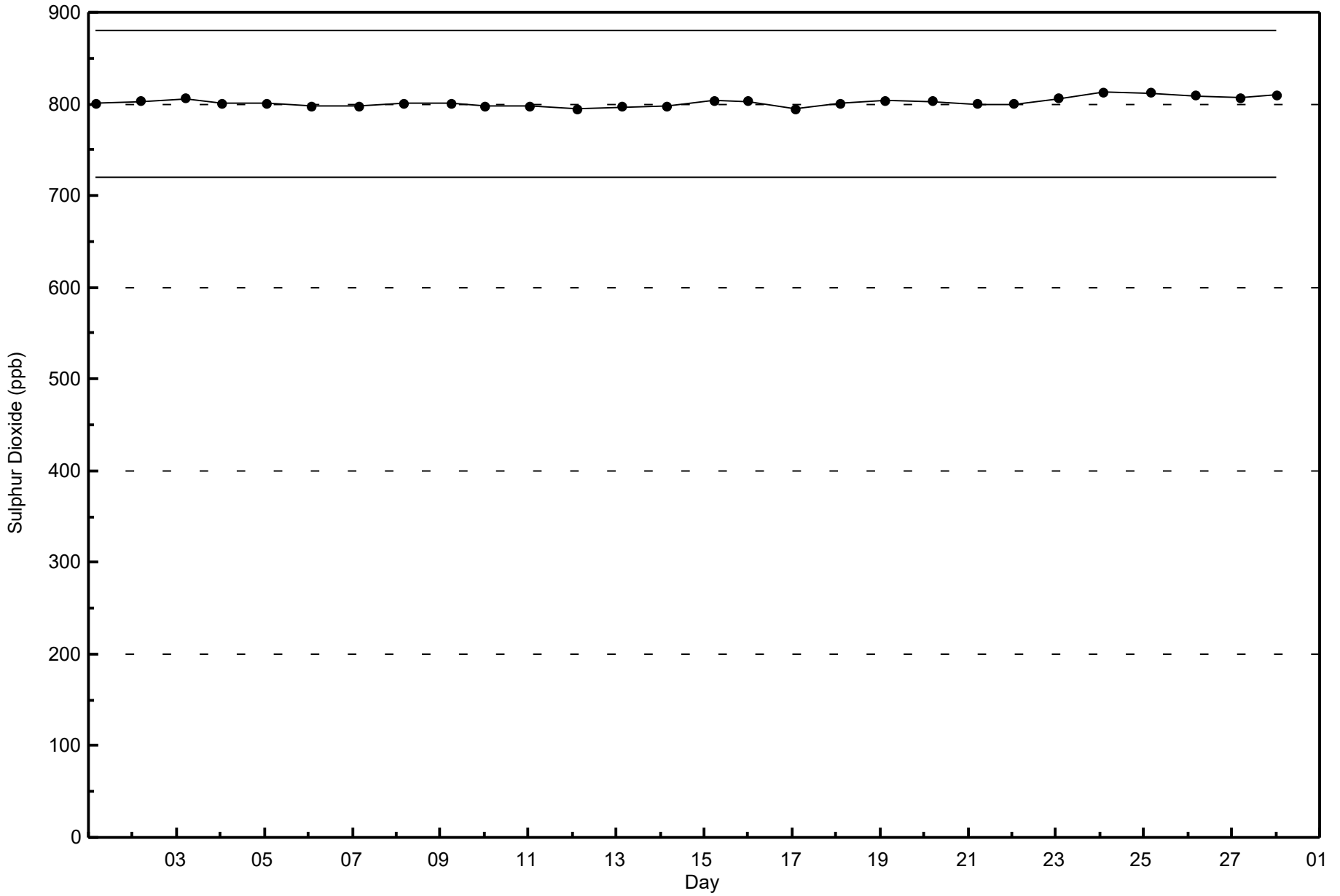


Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Sulphur Dioxide (SO<sub>2</sub>) - ppb  
Firebag

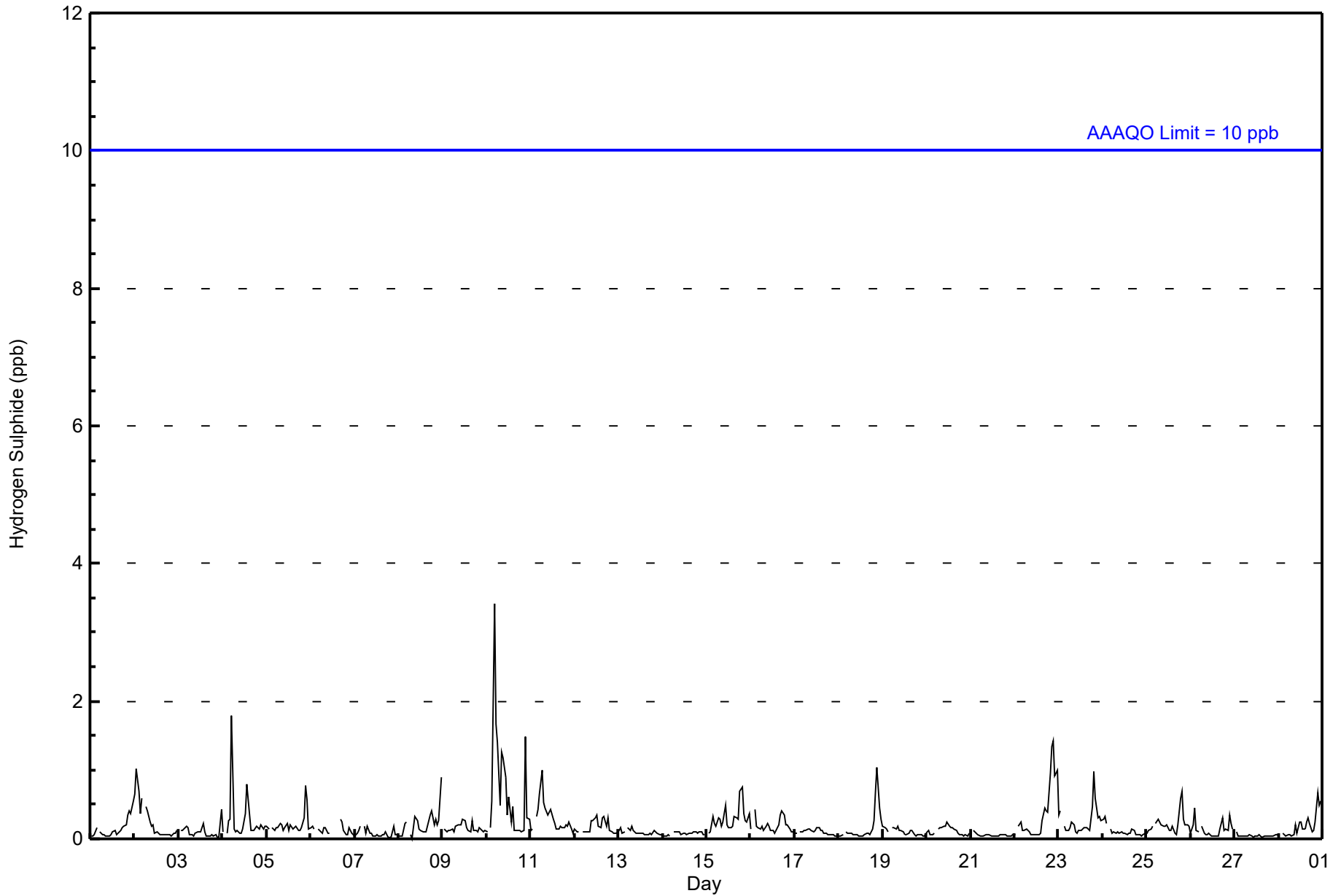








| Number of Exceedences (AAAQO):  |                               | 1-hr: 0  | 24-hr: 0 | Hours in Service: 672 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                                 |     | 672 |     |     |     |               |               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |  |
|---|-------------------------------|--|----------|-----------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---------------------------------|-----|-----|-----|-----|-----|---------------|---------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----------------|-----------------|--|
| Maximum Value: 3.4 ppb on Feb 10 05:00                                  |                               | Maximum Daily Average: 0.7 ppb on Feb 10   |          |                       |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Hours of Data: 639              |     |     |     |     |     |               |               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |  |
| Minimum Value: 0.0 ppb on Feb 8 08:00                                   |                               | Minimum Daily Average: 0.0 ppb on Feb 27   |          |                       |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Hours of Missing Data: 33       |     |     |     |     |     |               |               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |  |
| Maximum Diurnal Average: 0.3 ppb at hour 22                             |                               | Minimum Diurnal Average: 0.1 ppb at hour 16  |          |                       |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Hours of Calibration: 33        |     |     |     |     |     |               |               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |  |
| Monthly Average: 0.19 ppb   |                               | Percentiles: P <sub>1</sub> = 0.0 P <sub>10</sub> = 0.0 Q <sub>1</sub> = 0.1 Median = 0.1 Q <sub>3</sub> = 0.2 P <sub>90</sub> = 0.4 P <sub>99</sub> = 1.3 |          |                       |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Percent Operational Time: 100.0 |     |     |     |     |     |               |               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |  |
| Day   | Hourly Period Ending At (MST) |  |          |                       |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                                 |     |     |     |     |     | Daily Average | Daily Maximum |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |  |
|   | 1                             | 2  | 3        | 4                     | 5   | 6   | 7   | 8   | 9   | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19                              | 20  | 21  | 22  | 23  | 24  |               |               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |  |
| 1-Feb   | 0.0                           | 0.0  | 0.1      | 0.2                   | Z   | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2                             | 0.2 | 0.3 | 0.4 | 0.4 | 0.5 | 0.1           | 0.5           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |  |
| 2-Feb   | 0.6                           | 1.0  | 0.7      | 0.4                   | 0.6 | Z   | 0.5 | 0.4 | 0.2 | 0.2 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1                             | 0.1 | 0.0 | 0.1 | 0.1 | 0.1 | 0.3           | 1.0           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |  |
| 3-Feb   | Z                             | 0.1  | 0.1      | 0.2                   | 0.2 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.1 | 0.0 | 0.0 | 0.0 | 0.1                             | 0.0 | 0.1 | 0.0 | 0.0 | 0.4 | 0.1           | 0.4           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |  |
| 4-Feb   | 0.1                           | Z  | 0.1      | 0.3                   | 0.3 | 1.8 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.4 | 0.8 | 0.6 | 0.1 | 0.1 | 0.1 | 0.2                             | 0.2 | 0.1 | 0.2 | 0.1 | 0.2 | 0.3           | 1.8           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |  |
| 5-Feb   | 0.2                           | 0.2  | Z        | 0.2                   | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.1 | 0.2 | 0.2 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.1 | 0.1                             | 0.2 | 0.3 | 0.8 | 0.6 | 0.1 | 0.2           | 0.8           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |  |
| 6-Feb   | 0.2                           | 0.2  | 0.1      | Z                     | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.1 | 0.1 | C   | C   | C   | C   | C   | 0.3 | 0.2 | 0.1                             | 0.1 | 0.1 | 0.2 | 0.1 | 0.1 | 0.1           | 0.3           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |  |
| 7-Feb   | 0.0                           | 0.1  | 0.1      | 0.2                   | Z   | 0.2 | 0.1 | 0.2 | 0.1 | 0.1 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.1 | 0.1 | 0.1 | 0.1                             | 0.0 | 0.0 | 0.2 | 0.1 | 0.1 | 0.1           | 0.2           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |  |
| 8-Feb   | 0.0                           | 0.0  | 0.0      | 0.2                   | 0.2 | Z   | 0.1 | 0.0 | 0.2 | 0.3 | 0.3 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.3 | 0.3 | 0.4                             | 0.2 | 0.3 | 0.2 | 0.3 | 0.9 | 0.2           | 0.9           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |  |
| 9-Feb   | Z                             | 0.1  | 0.1      | 0.1                   | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.3 | 0.3 | 0.2 | 0.1 | 0.1 | 0.3 | 0.1 | 0.1                             | 0.1 | 0.2 | 0.1 | 0.1 | 0.1 | 0.2           | 0.3           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |  |
| 10-Feb  | 0.1                           | Z  | 0.2      | 0.6                   | 3.4 | 1.7 | 1.4 | 0.5 | 1.3 | 1.2 | 0.9 | 0.3 | 0.6 | 0.2 | 0.5 | 0.1 | 0.1 | 0.1 | 0.1                             | 0.1 | 0.1 | 1.5 | 0.3 | 0.3 | 0.7           | 3.4           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |  |
| 11-Feb  | 0.1                           | 0.1  | Z        | 0.3                   | 0.4 | 0.6 | 1.0 | 0.5 | 0.4 | 0.4 | 0.4 | 0.4 | 0.3 | 0.2 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2                             | 0.2 | 0.2 | 0.2 | 0.1 | 0.1 | 0.3           | 1.0           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |  |
| 12-Feb  | 0.2                           | 0.1  | 0.1      | Z                     | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.3 | 0.3 | 0.3 | 0.3 | 0.2 | 0.2 | 0.3 | 0.3 | 0.2                             | 0.3 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2           | 0.3           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |  |
| 13-Feb  | 0.1                           | 0.2  | 0.1      | 0.1                   | Z   | 0.2 | 0.1 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1                             | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1           | 0.2           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |  |
| 14-Feb  | 0.0                           | 0.1  | 0.1      | 0.1                   | 0.0 | Z   | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1                             | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1           | 0.1           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |  |
| 15-Feb  | Z                             | 0.1  | 0.1      | 0.3                   | 0.2 | 0.2 | 0.3 | 0.3 | 0.2 | 0.2 | 0.5 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.3 | 0.3 | 0.3                             | 0.7 | 0.8 | 0.4 | 0.3 | 0.3 | 0.4           | 0.8           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |  |
| 16-Feb  | 0.2                           | Z  | 0.4      | 0.2                   | 0.2 | 0.2 | 0.2 | 0.1 | 0.2 | 0.2 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.4 | 0.4 | 0.3                             | 0.2 | 0.2 | 0.1 | 0.1 | 0.1 | 0.2           | 0.4           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |  |
| 17-Feb  | 0.1                           | 0.1  | Z        | 0.1                   | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1                             | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 | 0.1           | 0.2           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |  |
| 18-Feb  | 0.0                           | 0.0  | 0.1      | Z                     | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1                             | 0.1 | 0.3 | 0.7 | 1.0 | 0.4 | 0.3           | 1.0           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |  |
| 19-Feb  | 0.2                           | 0.2  | 0.1      | 0.1                   | Z   | 0.2 | 0.2 | 0.1 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1                             | 0.0 | 0.1 | 0.1 | 0.0 | 0.0 | 0.1           | 0.2           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |  |
| 20-Feb  | 0.1                           | 0.1  | 0.1      | 0.1                   | 0.1 | Z   | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.3 | 0.2 | 0.2 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1                             | 0.1 | 0.1 | 0.0 | 0.1 | 0.0 | 0.1           | 0.3           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |  |
| 21-Feb  | Z                             | 0.1  | 0.1      | 0.1                   | 0.1 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.1                             | 0.1 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1           | 0.1           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |  |
| 22-Feb  | 0.1                           | Z  | 0.2      | 0.2                   | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.3 | 0.4 | 0.4 | 0.4                             | 1.0 | 1.3 | 1.4 | 0.9 | 1.0 | 0.4           | 1.4           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |  |
| 23-Feb  | 0.4                           | 0.4  | Z        | 0.2                   | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.1 | 0.1 | 0.5                             | 1.0 | 0.6 | 0.3 | 0.3 | 0.3 | 0.3           | 1.0           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |  |
| 24-Feb  | 0.3                           | 0.3  | 0.2      | Z                     | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1                             | 0.1 | 0.1 | 0.0 | 0.1 | 0.1 | 0.1           | 0.3           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |  |
| 25-Feb  | 0.1                           | 0.1  | 0.1      | 0.2                   | Z   | 0.2 | 0.3 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 | 0.1 | 0.1 | 0.2 | 0.1 | 0.1 | 0.1 | 0.2                             | 0.6 | 0.7 | 0.3 | 0.2 | 0.2 | 0.2           | 0.7           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |  |
| 26-Feb  | 0.1                           | 0.2  | 0.5      | 0.1                   | 0.1 | Z   | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.3 | 0.1                             | 0.1 | 0.1 | 0.3 | 0.2 | 0.1 | 0.1           | 0.5           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |  |
| 27-Feb  | Z                             | 0.1  | 0.0      | 0.0                   | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0                             | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.0           | 0.1           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |  |
| 28-Feb  | 0.0                           | Z  | 0.1      | 0.1                   | 0.0 | 0.1 | 0.1 | 0.0 | 0.1 | 0.2 | 0.1 | 0.3 | 0.3 | 0.1 | 0.1 | 0.2 | 0.3 | 0.2 | 0.1                             | 0.1 | 0.2 | 0.7 | 0.5 | 0.6 | 0.2           | 0.7           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |  |
|   |                               |  |          |                       |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                                 |     |     |     |     | 0.1 | 0.2           | 0.2           | 0.2 | 0.3 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.1 | 0.2 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.3 | 0.2 | 0.2 | Diurnal Average |                 |  |
|   |                               |  |          |                       |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                                 |     |     |     |     | 0.6 | 1.0           | 0.7           | 0.6 | 3.4 | 1.8 | 1.4 | 0.5 | 1.3 | 1.2 | 0.9 | 0.4 | 0.6 | 0.8 | 0.6 | 0.3 | 0.4 | 0.4 | 0.7 | 1.0 | 1.3 | 1.5 | 0.9 | 1.0             | Diurnal Maximum |  |
| Z - zerospan C - Calibration  |                               |  |          |                       |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                                 |     |     |     |     |     |               |               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |  |
| Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 10 ppb 24-hr 3 ppb |                               |  |          |                       |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                                 |     |     |     |     |     |               |               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |  |





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Hydrogen Sulphide (H<sub>2</sub>S) - ppb**  
**Firebag - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 2                             | 638                    | 99.84    | 99.84               |
| 3 - 4                             | 1                      | 0.16     | 100.00              |
| 5 - 7                             | 0                      | 0.00     | 100.00              |
| 8 - 11                            | 0                      | 0.00     | 100.00              |
| > 11                              | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 639

Total Number of Hours: 672





**Wood Buffalo Environmental Association  
Frequency Distribution**

**Hydrogen Sulphide (H<sub>2</sub>S) - ppb  
Firebag - February 2023**

| Concentration<br>Ranges (ppb) | Wind Direction |     |    |     |    |     |    |     |    |     |    |     |    |     |    |     | Totals |
|-------------------------------|----------------|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|--------|
|                               | N              | NNE | NE | ENE | E  | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |        |
| 0 - 2                         | 35             | 20  | 13 | 6   | 10 | 21  | 39 | 63  | 61 | 37  | 35 | 22  | 16 | 14  | 64 | 98  | 554    |
| 3 - 4                         | 0              | 0   | 0  | 0   | 1  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 1      |
| 5 - 7                         | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| 8 - 11                        | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| > 11                          | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| <b>Totals</b>                 | 35             | 20  | 13 | 6   | 11 | 21  | 39 | 63  | 61 | 37  | 35 | 22  | 16 | 14  | 64 | 98  | 555    |

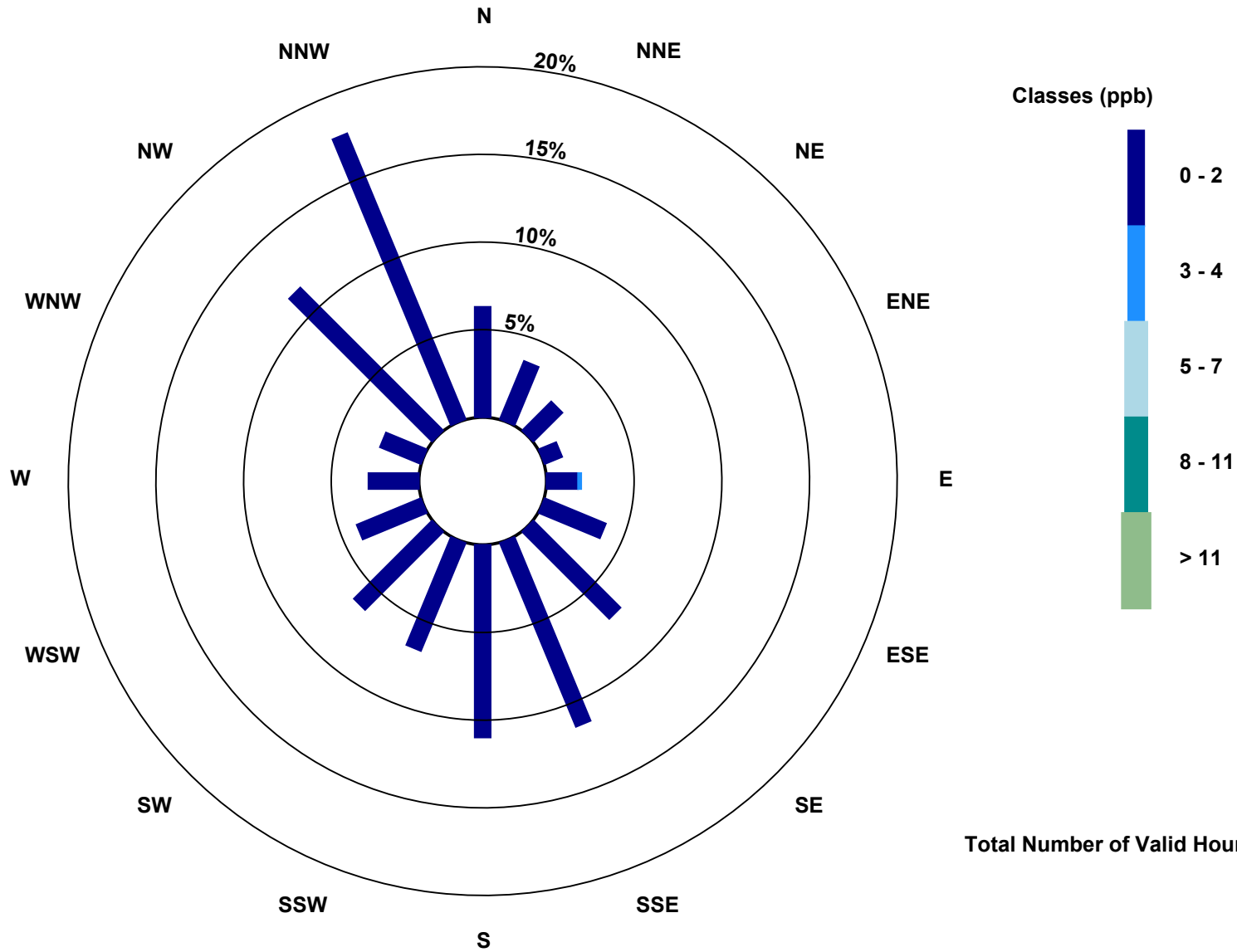
Total Number of Valid Hours: 555

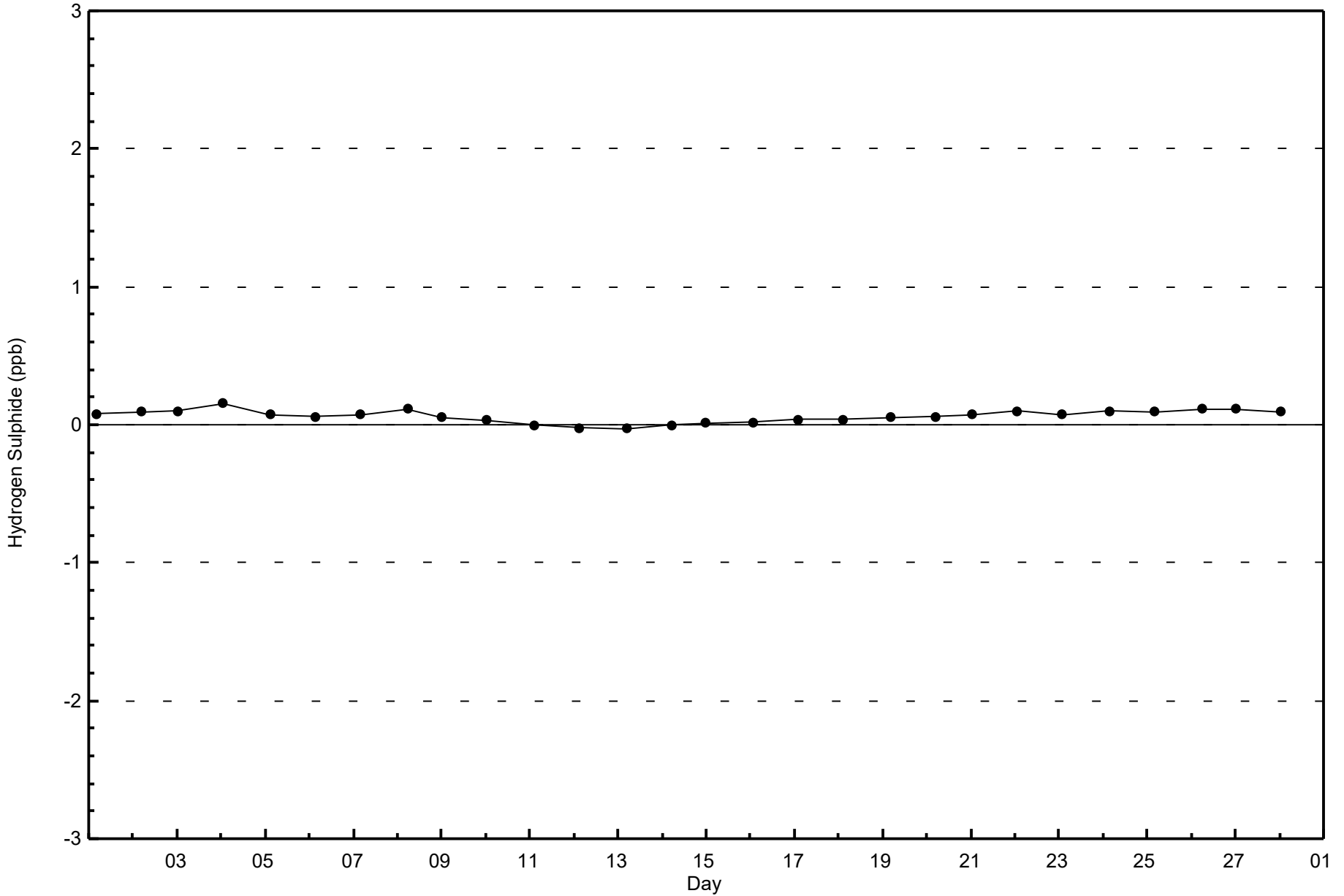
Total Number of Hours: 672

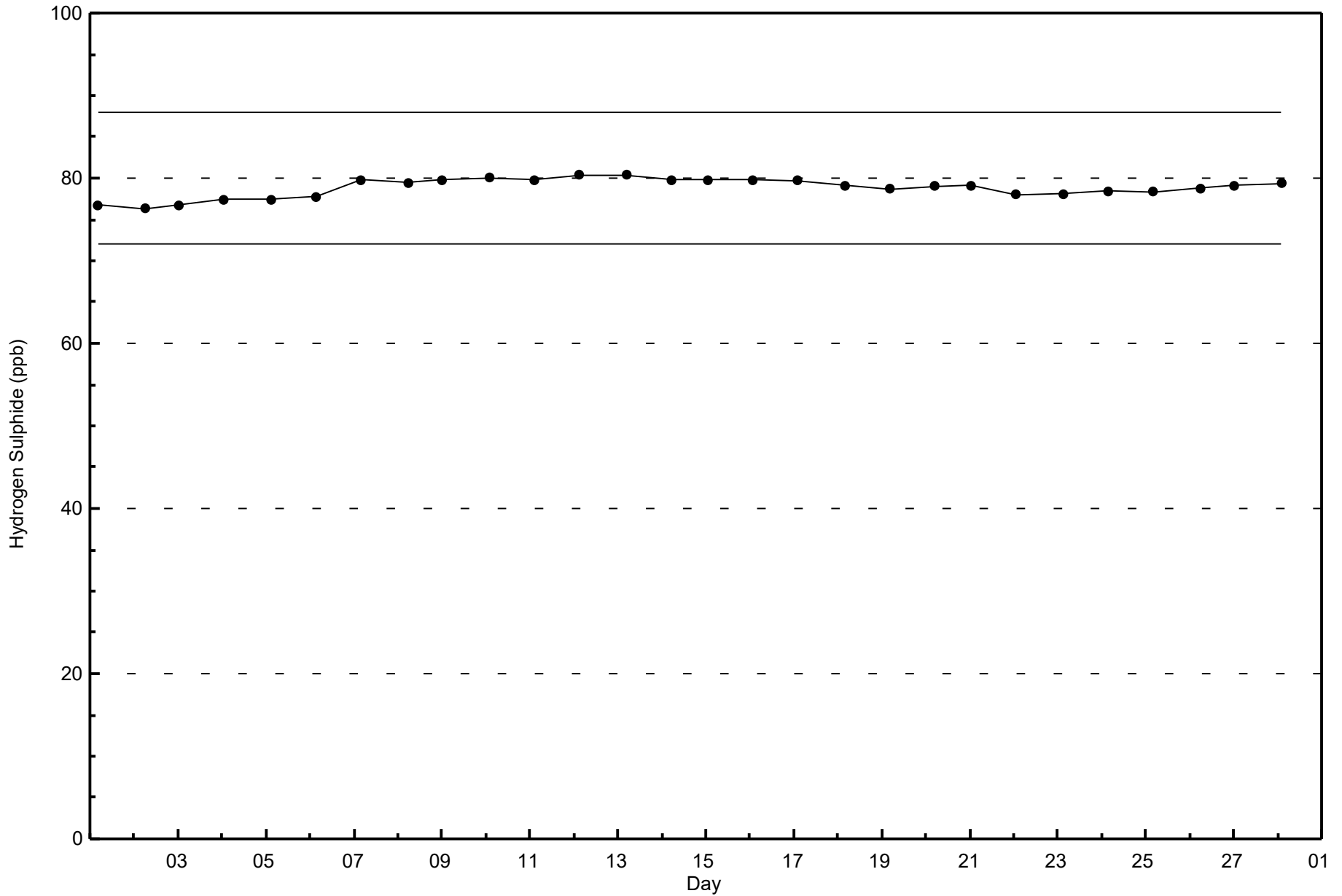


Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Hydrogen Sulphide (H<sub>2</sub>S) - ppb  
Firebag







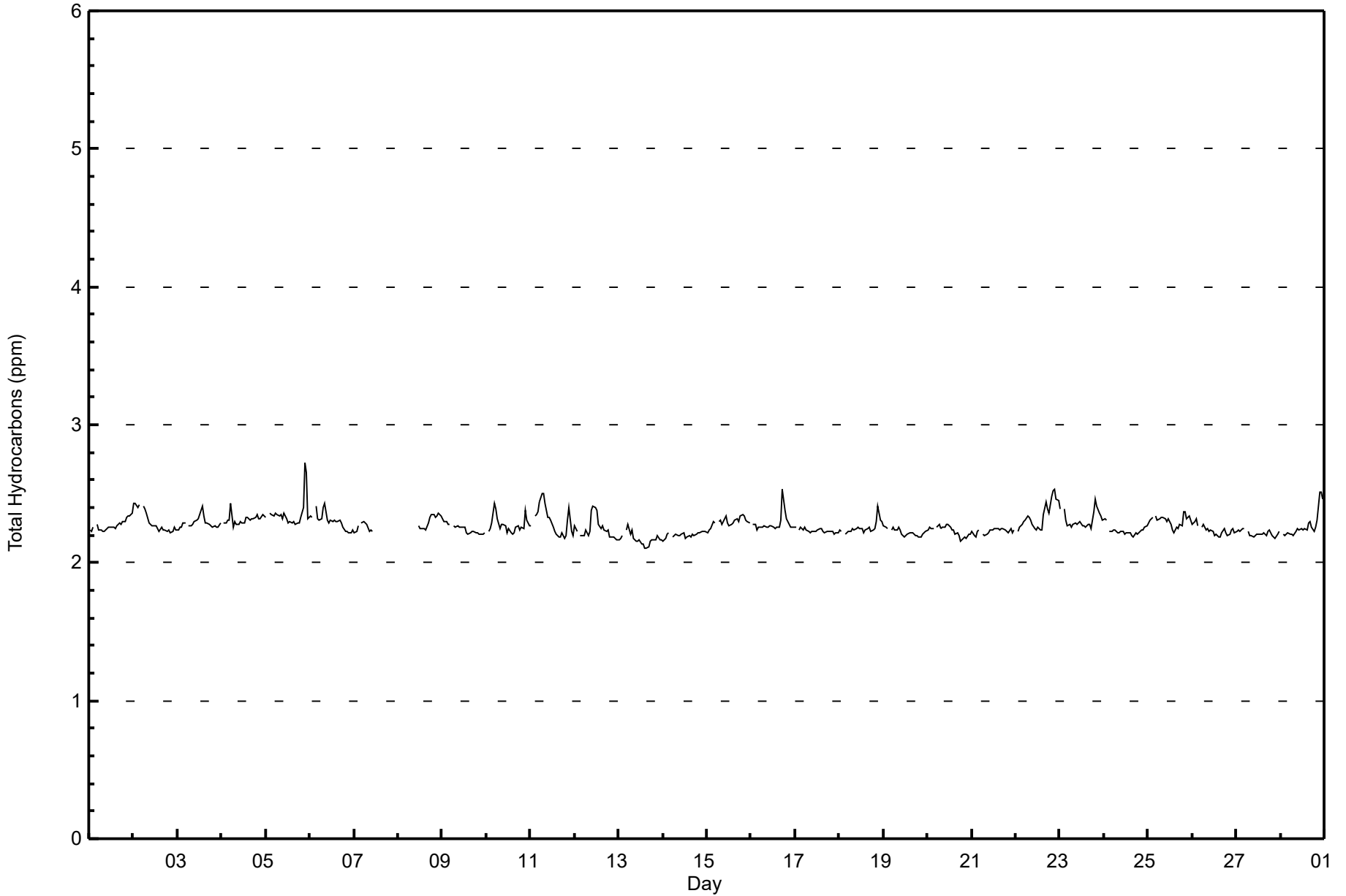


| Maximum Value: 2.7 ppm on Feb 5 22:00       |                               | Maximum Daily Average: 2.4 ppm on Feb 5  |     | Hours in Service: 672          |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |               |               |     |                         |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
|---|-------------------------------|--|-----|--------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----------------|---------------|---------------|-----|-------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----------------|
| Minimum Value: 2.1 ppm on Feb 13 15:00      |                               | Minimum Daily Average: 2.2 ppm on Feb 13   |     | Hours of Data: 621             |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |               |               |     |                         |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| Maximum Diurnal Average: 2.3 ppm at hour 22 |                               | Minimum Diurnal Average: 2.2 ppm at hour 15  |     | Hours of Missing Data: 51      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |               |               |     |                         |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| Monthly Average: 2.27 ppm                   |                               | Percentiles: P <sub>1</sub> = 2.2 P <sub>10</sub> = 2.2 Q <sub>1</sub> = 2.2 Median = 2.3 Q <sub>3</sub> = 2.3 P <sub>90</sub> = 2.3 P <sub>99</sub> = 2.5 |     | Hours of Calibration: 32       |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |               |               |     |                         |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
|   |                               |  |     | Percent Operational Time: 97.2 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |               |               |     |                         |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| Day   | Hourly Period Ending At (MST) |  |     |                                |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 | Daily Average | Daily Maximum |     |                         |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
|   | 1                             | 2  | 3   | 4                              | 5   | 6   | 7   | 8   | 9   | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19  | 20  | 21  | 22  | 23  | 24              |               |               |     |                         |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 1-Feb                                       | 2.2                           | 2.2  | 2.3 | Z                              | 2.3 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.4             | 2.3           | 2.4           |     |                         |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 2-Feb                                       | 2.4                           | 2.4  | 2.4 | 2.4                            | Z   | 2.4 | 2.4 | 2.4 | 2.3 | 2.3 | 2.3 | 2.3 | 2.2 | 2.2 | 2.3 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.3 | 2.2             | 2.3           | 2.4           |     |                         |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 3-Feb                                       | 2.2                           | 2.3  | 2.3 | 2.3                            | 2.3 | Z   | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.4 | 2.4 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3             | 2.3           | 2.4           |     |                         |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 4-Feb                                       | Z                             | 2.3  | 2.3 | 2.3                            | 2.3 | 2.4 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.4 | 2.3 | 2.3 | 2.4 | 2.3             | 2.3           | 2.4           |     |                         |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 5-Feb                                       | 2.3                           | Z  | 2.4 | 2.3                            | 2.3 | 2.4 | 2.3 | 2.3 | 2.3 | 2.3 | 2.4 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.4 | 2.7 | 2.7 | 2.3             | 2.4           | 2.7           |     |                         |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 6-Feb                                       | 2.3                           | 2.3  | Z   | 2.4                            | 2.3 | 2.3 | 2.3 | 2.4 | 2.4 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2             | 2.3           | 2.4           |     |                         |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 7-Feb                                       | 2.2                           | 2.2  | 2.3 | Z                              | 2.3 | 2.3 | 2.3 | 2.3 | 2.2 | 2.2 | 2.2 | C   | C   | C   | C   | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO              | UO            | --            | 2.3 |                         |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 8-Feb                                       | UO                            | UO   | UO  | UO                             | Z   | UO  | UO  | UO  | UO  | UO  | UO  | 2.3 | 2.3 | 2.2 | 2.2 | 2.2 | 2.3 | 2.3 | 2.4 | 2.4 | 2.3 | 2.3 | 2.4 | 2.3             | --            | 2.4           |     |                         |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 9-Feb                                       | 2.3                           | 2.3  | 2.3 | 2.3                            | 2.3 | Z   | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2             | 2.2           | 2.3           | 2.3 |                         |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 10-Feb                                      | Z                             | 2.2  | 2.2 | 2.3                            | 2.4 | 2.4 | 2.3 | 2.2 | 2.3 | 2.3 | 2.3 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.3 | 2.3 | 2.2 | 2.3 | 2.2 | 2.4 | 2.3 | 2.3             | 2.3           | 2.4           |     |                         |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 11-Feb                                      | 2.3                           | Z  | 2.3 | 2.3                            | 2.4 | 2.4 | 2.5 | 2.5 | 2.4 | 2.3 | 2.3 | 2.3 | 2.3 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.3 | 2.4 | 2.2 | 2.2             | 2.3           | 2.5           |     |                         |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 12-Feb                                      | 2.3                           | 2.2  | Z   | 2.2                            | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.4 | 2.4 | 2.4 | 2.4 | 2.3 | 2.3 | 2.3 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2             | 2.2           | 2.4           |     |                         |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 13-Feb                                      | 2.2                           | 2.2  | 2.2 | Z                              | 2.2 | 2.3 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2             | 2.2           | 2.3           |     |                         |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 14-Feb                                      | 2.2                           | 2.2  | 2.2 | Z                              | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2             | 2.2           | 2.2           |     |                         |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 15-Feb                                      | 2.2                           | 2.2  | 2.2 | 2.3                            | 2.3 | Z   | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3             | 2.3           | 2.3           |     |                         |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 16-Feb                                      | Z                             | 2.3  | 2.3 | 2.2                            | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.5 | 2.4 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3             | 2.3           | 2.5           |     |                         |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 17-Feb                                      | 2.3                           | Z  | 2.2 | 2.3                            | 2.2 | 2.3 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.3 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2             | 2.2           | 2.3           |     |                         |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 18-Feb                                      | 2.2                           | 2.2  | Z   | 2.2                            | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.3 | 2.3 | 2.2 | 2.2 | 2.2 | 2.2 | 2.3 | 2.2 | 2.2 | 2.3 | 2.3 | 2.4 | 2.3 | 2.3             | 2.3           | 2.4           |     |                         |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 19-Feb                                      | 2.3                           | 2.3  | 2.3 | Z                              | 2.2 | 2.3 | 2.2 | 2.2 | 2.3 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2             | 2.2           | 2.3           |     |                         |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 20-Feb                                      | 2.2                           | 2.3  | 2.2 | 2.3                            | Z   | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2             | 2.2           | 2.3           |     |                         |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 21-Feb                                      | 2.2                           | 2.2  | 2.2 | 2.2                            | 2.2 | Z   | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.3 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.3 | 2.2 | 2.2             | 2.2           | 2.3           |     |                         |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 22-Feb                                      | Z                             | 2.2  | 2.3 | 2.3                            | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.2 | 2.2 | 2.3 | 2.2 | 2.2 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.5 | 2.5 | 2.5 | 2.5             | 2.5           | 2.5           |     |                         |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 23-Feb                                      | 2.4                           | Z  | 2.4 | 2.3                            | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.2 | 2.4 | 2.5 | 2.4 | 2.4 | 2.4 | 2.3 | 2.3             | 2.3           | 2.5           |     |                         |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 24-Feb                                      | 2.3                           | 2.3  | Z   | 2.2                            | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.3             | 2.3           | 2.3           |     |                         |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 25-Feb                                      | 2.3                           | 2.3  | 2.3 | Z                              | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.2 | 2.2 | 2.3 | 2.2 | 2.2 | 2.3 | 2.3 | 2.4 | 2.4 | 2.3 | 2.3 | 2.3             | 2.3           | 2.4           |     |                         |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 26-Feb                                      | 2.3                           | 2.3  | 2.3 | 2.3                            | Z   | 2.3 | 2.3 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2             | 2.2           | 2.3           |     |                         |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 27-Feb                                      | 2.2                           | 2.2  | 2.2 | 2.3                            | 2.2 | Z   | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2             | 2.2           | 2.3           |     |                         |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 28-Feb                                      | Z                             | 2.2  | 2.2 | 2.2                            | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.3 | 2.3 | 2.3 | 2.2 | 2.3 | 2.3 | 2.5 | 2.5 | 2.5             | 2.3           | 2.5           |     |                         |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
|   |                               |  |     |                                |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | 2.3             | 2.3           | 2.3           | 2.3 | 2.3                     | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.2 | 2.2 | 2.2 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | Diurnal Average |
|   |                               |  |     |                                |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | 2.4             | 2.4           | 2.4           | 2.4 | 2.4                     | 2.4 | 2.5 | 2.5 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.5 | 2.4 | 2.5 | 2.5 | 2.5 | 2.7 | 2.7 | 2.5 | 2.3 | Diurnal Maximum |
| Z - zerospan                                |                               |  |     |                                |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | C - Calibration |               |               |     | UO - Unstable Operation |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Total Hydrocarbons (THC) - ppm**  
**Firebag - February 2023**





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Total Hydrocarbons (THC) - ppm**  
**Firebag - February 2023**

| <b>Concentration Ranges (ppm)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 2.0                           | 0                      | 0.00     | 0.00                |
| 2.1 - 3.0                         | 621                    | 100.00   | 100.00              |
| 3.1 - 10.0                        | 0                      | 0.00     | 100.00              |
| > 10.0                            | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 621

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Total Hydrocarbons (THC) - ppm  
Firebag - February 2023**

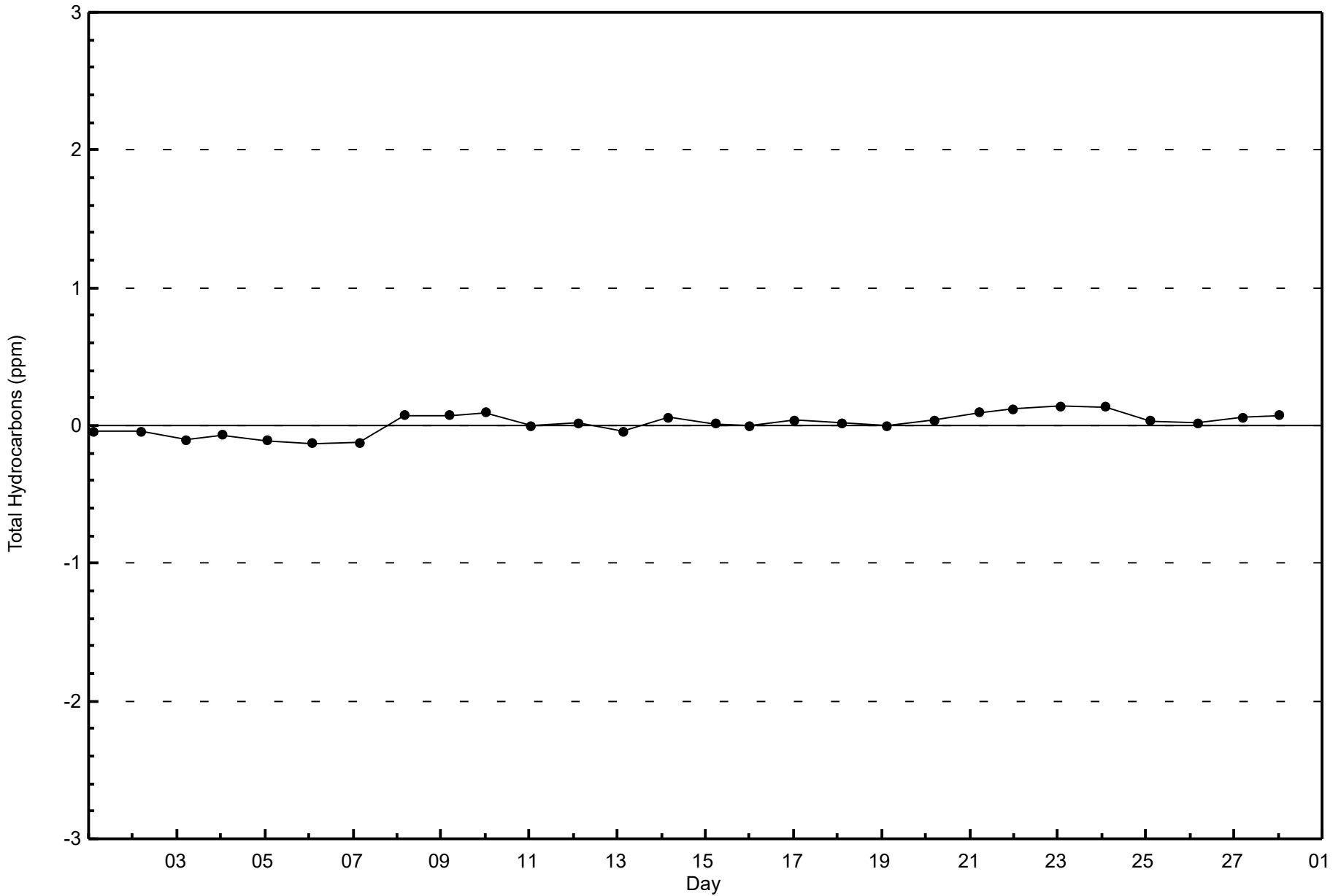
| <b>Concentration<br/>Ranges (ppm)</b> | <b>Wind Direction</b> |     |    |     |    |     |    |     |    |     |    |     |    |     |    |     | <b>Totals</b> |
|---------------------------------------|-----------------------|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|---------------|
|                                       | N                     | NNE | NE | ENE | E  | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |               |
| 0 - 2.0                               | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| 2.1 - 3.0                             | 34                    | 17  | 12 | 5   | 11 | 20  | 40 | 66  | 59 | 38  | 33 | 16  | 14 | 12  | 63 | 97  | 537           |
| 3.1 - 10.0                            | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| > 10.0                                | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| <b>Totals</b>                         | 34                    | 17  | 12 | 5   | 11 | 20  | 40 | 66  | 59 | 38  | 33 | 16  | 14 | 12  | 63 | 97  | 537           |

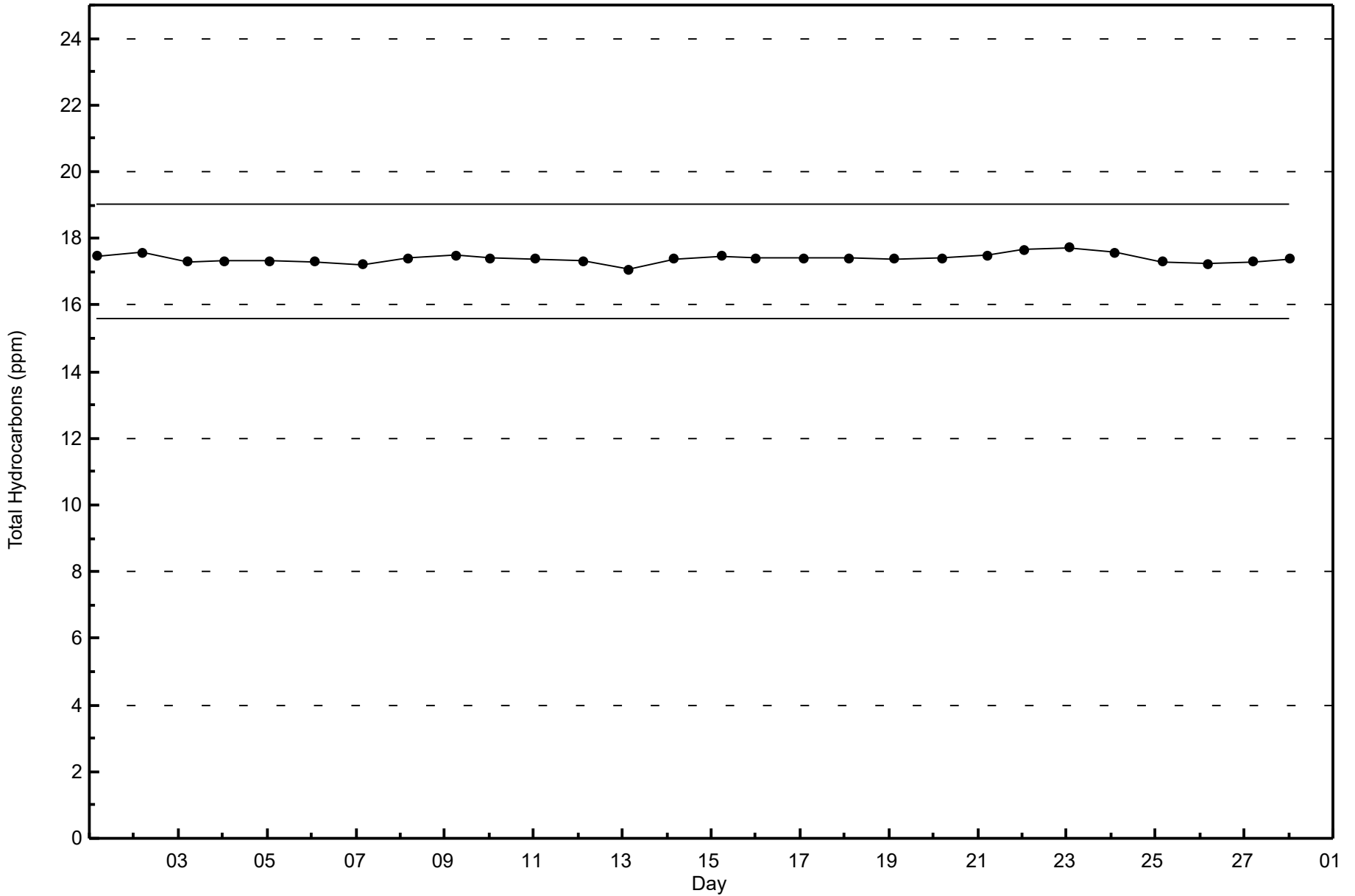
Total Number of Valid Hours: 537

Total Number of Hours: 672











**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

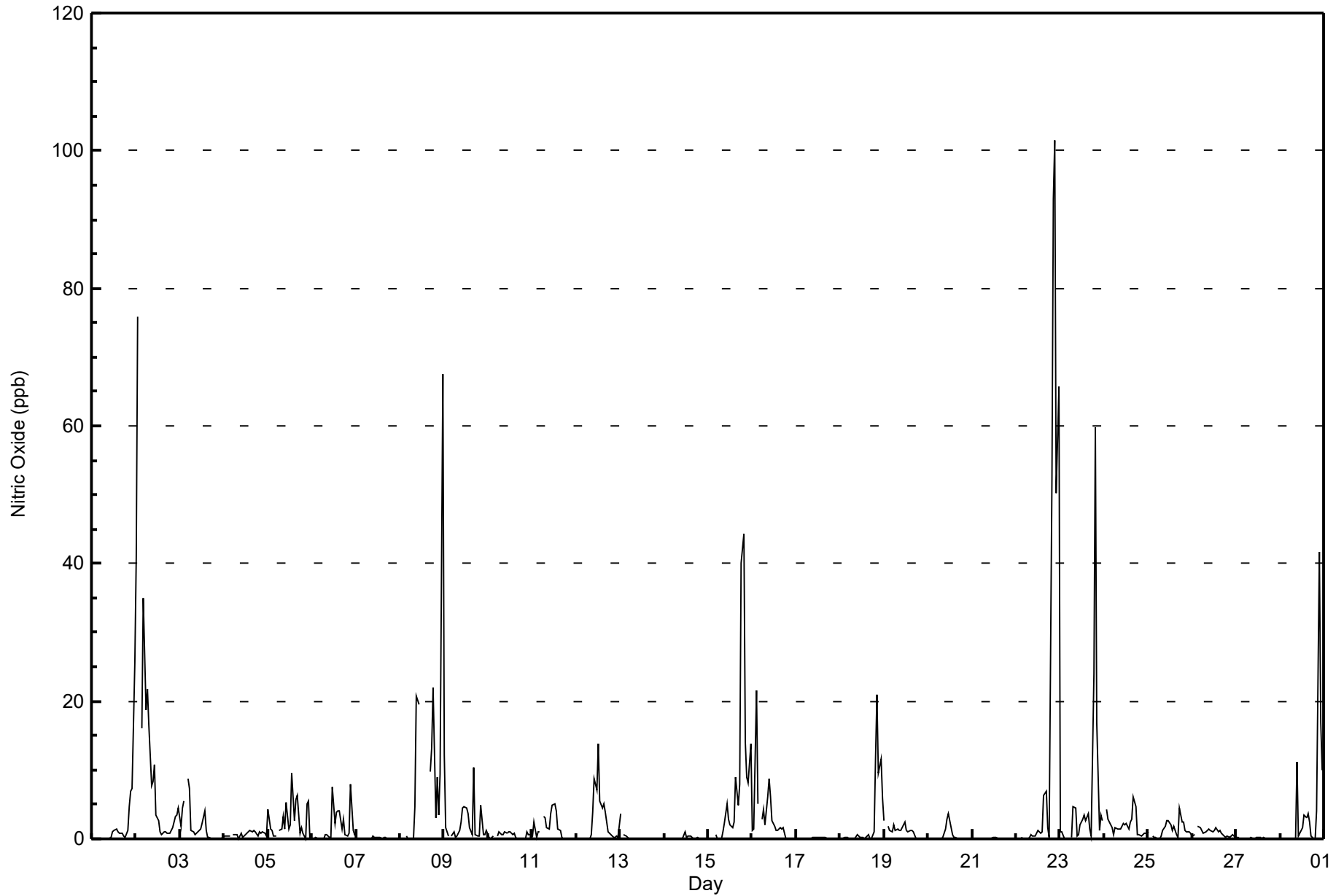
**Nitric Oxide (NO) - ppb**  
**Firebag - February 2023**

| Maximum Value: 101.6 ppb on Feb 22 22:00  |                               |      |      |      |      |      |      |      |     |      |      |     |      |     |     |     |      |      |      | Maximum Daily Average: 16.7 ppb on Feb 22   |      |       |      |                 | Hours in Service:         | 672           |
|---|-------------------------------|------|------|------|------|------|------|------|-----|------|------|-----|------|-----|-----|-----|------|------|------|---|------|-------|------|-----------------|---------------------------|---------------|
| Minimum Value: 0.0 ppb on Feb 1 01:00   |                               |      |      |      |      |      |      |      |     |      |      |     |      |     |     |     |      |      |      | Minimum Daily Average: 0.0 ppb on Feb 21  |      |       |      |                 | Hours of Data:            | 639           |
| Maximum Diurnal Average: 7.2 ppb at hour 24   |                               |      |      |      |      |      |      |      |     |      |      |     |      |     |     |     |      |      |      | Minimum Diurnal Average: 1.3 ppb at hour 8  |      |       |      |                 | Hours of Missing Data:    | 33            |
| Monthly Average: 2.98 ppb   |                               |      |      |      |      |      |      |      |     |      |      |     |      |     |     |     |      |      |      | Percentiles: P <sub>1</sub> = 0.0 P <sub>10</sub> = 0.0 Q <sub>1</sub> = 0.0 Median = 0.5 Q <sub>3</sub> = 1.7 P <sub>90</sub> = 5.7 P <sub>99</sub> = 51.5 |      |       |      |                 | Hours of Calibration:     | 33            |
|   |                               |      |      |      |      |      |      |      |     |      |      |     |      |     |     |     |      |      |      |   |      |       |      |                 | Percent Operational Time: | 100.0         |
| Day   | Hourly Period Ending At (MST) |      |      |      |      |      |      |      |     |      |      |     |      |     |     |     |      |      |      |   |      |       |      |                 | Daily Average             | Daily Maximum |
|   | 1                             | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9   | 10   | 11   | 12  | 13   | 14  | 15  | 16  | 17   | 18   | 19   | 20  | 21   | 22    | 23   | 24              |                           |               |
| 1-Feb   | 0.0                           | Z    | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0 | 0.0  | 0.2  | 1.0 | 1.3  | 1.5 | 1.0 | 0.7 | 0.8  | 0.4  | 0.3  | 1.3   | 4.7  | 6.9   | 7.4  | 25.6            | 2.3                       | 25.6          |
| 2-Feb   | 40.8                          | 75.8 | Z    | 16.1 | 35.0 | 18.6 | 21.7 | 16.5 | 7.6 | 8.3  | 10.8 | 3.4 | 2.7  | 1.1 | 0.7 | 1.1 | 1.1  | 0.8  | 0.8  | 1.2   | 1.6  | 3.2   | 3.4  | 4.6             | 12.0                      | 75.8          |
| 3-Feb   | 1.9                           | 4.5  | 5.4  | Z    | 8.7  | 7.2  | 1.2  | 1.0  | 0.7 | 0.8  | 1.3  | 1.4 | 2.2  | 4.0 | 1.2 | 0.3 | 0.1  | 0.0  | 0.0  | 0.0   | 0.0  | 0.1   | 0.1  | 0.1             | 1.8                       | 8.7           |
| 4-Feb   | 0.4                           | 0.3  | 0.4  | 0.4  | Z    | 0.6  | 0.7  | 0.5  | 0.0 | 0.9  | 0.1  | 0.4 | 0.8  | 1.0 | 1.3 | 1.1 | 1.2  | 0.9  | 0.4  | 1.0   | 0.8  | 1.1   | 0.7  | 0.4             | 0.7                       | 1.3           |
| 5-Feb   | 4.3                           | 1.4  | 1.2  | 0.3  | 0.5  | Z    | 1.2  | 1.3  | 3.2 | 1.4  | 5.3  | 1.5 | 2.0  | 9.6 | 2.6 | 5.6 | 6.3  | 0.9  | 1.6  | 0.7   | 0.1  | 5.0   | 5.4  | 0.0             | 2.7                       | 9.6           |
| 6-Feb   | Z                             | 0.0  | 0.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.7  | 0.6 | 0.2  | 0.2  | 7.4 | 2.3  | 3.8 | 4.0 | 4.1 | 1.5  | 2.9  | 0.7  | 0.4   | 0.8  | 7.9   | 1.2  | 0.6             | 1.7                       | 7.9           |
| 7-Feb   | 0.9                           | Z    | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.1 | 0.4  | 0.2  | 0.2 | 0.2  | 0.2 | 0.1 | 0.2 | 0.3  | 0.0  | 0.0  | 0.0   | 0.0  | 0.1   | 0.0  | 0.0             | 0.1                       | 0.9           |
| 8-Feb   | 0.0                           | 0.0  | Z    | 0.3  | 0.0  | 0.0  | 0.0  | 0.0  | 4.7 | 20.8 | 19.5 | C   | C    | C   | C   | C   | 9.7  | 13.2 | 22.0 | 3.1   | 9.0  | 3.5   | 9.4  | 67.5            | 10.2                      | 67.5          |
| 9-Feb   | 12.3                          | 1.6  | 0.5  | Z    | 0.4  | 1.0  | 0.1  | 0.3  | 1.1 | 2.5  | 4.4  | 4.8 | 4.4  | 3.7 | 1.7 | 0.7 | 10.3 | 0.7  | 0.3  | 0.4   | 5.0  | 0.7   | 0.6  | 1.3             | 2.6                       | 12.3          |
| 10-Feb  | 0.3                           | 0.1  | 0.2  | 0.4  | Z    | 0.4  | 1.1  | 0.6  | 0.5 | 1.0  | 0.9  | 0.9 | 1.0  | 0.5 | 0.9 | 0.3 | 0.1  | 0.0  | 0.0  | 0.1   | 0.0  | 1.0   | 0.6  | 0.6             | 0.5                       | 1.1           |
| 11-Feb  | 0.3                           | 2.5  | 0.2  | 1.0  | 0.9  | Z    | 3.3  | 3.0  | 1.7 | 1.5  | 3.6  | 5.0 | 5.0  | 4.0 | 1.5 | 1.3 | 0.2  | 0.0  | 0.0  | 0.1   | 0.1  | 0.0   | 0.0  | 0.1             | 1.5                       | 5.0           |
| 12-Feb  | Z                             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.1  | 0.0  | 0.6 | 3.8  | 8.7  | 7.2 | 13.9 | 5.5 | 4.4 | 5.1 | 4.0  | 0.9  | 0.9  | 0.7   | 0.2  | 0.2   | 0.3  | 0.2             | 2.5                       | 13.9          |
| 13-Feb  | 3.7                           | Z    | 0.5  | 0.3  | 0.3  | 0.0  | 0.0  | 0.0  | 0.1 | 0.1  | 0.1  | 0.0 | 0.0  | 0.0 | 0.0 | 0.0 | 0.0  | 0.0  | 0.0  | 0.0   | 0.0  | 0.0   | 0.0  | 0.0             | 0.2                       | 3.7           |
| 14-Feb  | 0.0                           | 0.0  | Z    | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0 | 0.1  | 0.1  | 1.1 | 0.2  | 0.4 | 0.4 | 0.2 | 0.0  | 0.0  | 0.1  | 0.0   | 0.0  | 0.0   | 0.0  | 0.0             | 0.1                       | 1.1           |
| 15-Feb  | 0.0                           | 0.0  | 0.0  | Z    | 0.6  | 0.0  | 0.0  | 0.1  | 0.9 | 2.1  | 5.1  | 2.9 | 2.0  | 1.7 | 2.5 | 8.9 | 4.9  | 8.0  | 40.1 | 44.3  | 13.9 | 8.9   | 8.0  | 13.8            | 7.3                       | 44.3          |
| 16-Feb  | 1.2                           | 1.4  | 21.5 | 5.1  | Z    | 2.8  | 4.3  | 2.1  | 6.1 | 8.7  | 6.2  | 2.7 | 1.9  | 1.2 | 1.1 | 1.7 | 1.5  | 1.6  | 0.0  | 0.0   | 0.0  | 0.0   | 0.0  | 0.0             | 3.1                       | 21.5          |
| 17-Feb  | 0.0                           | 0.0  | 0.0  | 0.0  | 0.0  | Z    | 0.0  | 0.0  | 0.1 | 0.1  | 0.2  | 0.2 | 0.3  | 0.3 | 0.2 | 0.2 | 0.1  | 0.0  | 0.0  | 0.0   | 0.0  | 0.0   | 0.1  | 0.0             | 0.1                       | 0.3           |
| 18-Feb  | Z                             | 0.0  | 0.1  | 0.1  | 0.2  | 0.0  | 0.0  | 0.0  | 0.0 | 0.5  | 0.5  | 0.3 | 0.1  | 0.0 | 0.1 | 0.7 | 0.1  | 0.0  | 1.0  | 11.6  | 20.9 | 9.6   | 11.5 | 5.9             | 2.8                       | 20.9          |
| 19-Feb  | 2.7                           | Z    | 1.8  | 1.3  | 1.0  | 2.1  | 1.3  | 1.4  | 1.2 | 1.3  | 1.6  | 2.4 | 1.2  | 1.1 | 1.2 | 1.1 | 1.0  | 0.0  | 0.0  | 0.0   | 0.0  | 0.0   | 0.0  | 0.0             | 1.0                       | 2.7           |
| 20-Feb  | 0.0                           | 0.0  | Z    | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.3 | 1.5  | 2.8  | 3.8 | 1.6  | 0.5 | 0.2 | 0.2 | 0.1  | 0.0  | 0.0  | 0.0   | 0.0  | 0.0   | 0.0  | 0.0             | 0.5                       | 3.8           |
| 21-Feb  | 0.0                           | 0.0  | 0.0  | Z    | 0.0  | 0.0  | 0.0  | 0.0  | 0.0 | 0.0  | 0.0  | 0.2 | 0.2  | 0.2 | 0.1 | 0.0 | 0.0  | 0.0  | 0.0  | 0.0   | 0.0  | 0.0   | 0.0  | 0.0             | 0.0                       | 0.2           |
| 22-Feb  | 0.0                           | 0.0  | 0.0  | 0.3  | Z    | 0.0  | 0.0  | 0.2  | 0.7 | 0.4  | 0.4  | 0.8 | 1.2  | 0.8 | 1.0 | 6.3 | 7.0  | 1.6  | 0.2  | 52.2  | 93.0 | 101.6 | 50.3 | 65.6            | 16.7                      | 101.6         |
| 23-Feb  | 1.1                           | 1.0  | 0.1  | 0.0  | 0.0  | Z    | 0.3  | 4.7  | 4.4 | 0.4  | 0.6  | 2.1 | 2.9  | 3.4 | 2.7 | 3.6 | 1.5  | 0.4  | 24.0 | 59.8  | 16.9 | 1.3   | 3.4  | 2.6             | 6.0                       | 59.8          |
| 24-Feb  | Z                             | 4.2  | 2.8  | 2.4  | 1.6  | 0.7  | 1.6  | 1.4  | 1.4 | 1.4  | 2.3  | 2.1 | 2.1  | 1.4 | 2.5 | 2.9 | 6.1  | 4.7  | 0.6  | 0.7   | 0.5  | 0.5   | 0.9  | 0.9             | 2.0                       | 6.1           |
| 25-Feb  | 1.0                           | Z    | 0.5  | 0.2  | 0.2  | 0.0  | 0.1  | 0.4  | 1.1 | 1.8  | 2.6  | 2.6 | 2.1  | 1.1 | 1.8 | 0.7 | 0.3  | 4.4  | 2.4  | 2.5   | 1.2  | 0.9   | 1.0  | 0.8             | 1.3                       | 4.4           |
| 26-Feb  | 0.5                           | 0.7  | Z    | 1.8  | 1.5  | 1.3  | 0.9  | 1.1  | 1.3 | 1.5  | 1.2  | 1.0 | 1.2  | 1.6 | 1.0 | 1.3 | 0.8  | 0.4  | 0.2  | 0.3   | 0.3  | 0.4   | 0.5  | 0.4             | 0.9                       | 1.8           |
| 27-Feb  | 0.2                           | 0.1  | 0.0  | Z    | 0.0  | 0.0  | 0.0  | 0.0  | 0.1 | 0.1  | 0.1  | 0.1 | 0.2  | 0.1 | 0.1 | 0.1 | 0.0  | 0.0  | 0.0  | 0.0   | 0.0  | 0.0   | 0.0  | 0.0             | 0.1                       | 0.2           |
| 28-Feb  | 0.0                           | 0.0  | 0.0  | 0.0  | Z    | 0.0  | 0.0  | 0.0  | 0.1 | 11.2 | 0.4  | 1.3 | 1.6  | 3.5 | 3.0 | 3.6 | 2.5  | 0.4  | 0.0  | 0.0   | 4.2  | 41.7  | 16.8 | 10.0            | 4.4                       | 41.7          |
| 3.0 4.1 1.5 1.3 2.2 1.5 1.4 1.3 1.4 2.6 2.8 2.1 2.0 1.9 1.4 1.9 2.2 1.5 3.4 6.4 6.2 7.0 4.4 7.2                     |                               |      |      |      |      |      |      |      |     |      |      |     |      |     |     |     |      |      |      |   |      |       |      | Diurnal Average |                           |               |
| 40.8 75.8 21.5 16.1 35.0 18.6 21.7 16.5 7.6 20.8 19.5 7.4 13.9 9.6 4.4 8.9 10.3 13.2 40.1 59.8 93.0 101.6 50.3 67.5 |                               |      |      |      |      |      |      |      |     |      |      |     |      |     |     |     |      |      |      |   |      |       |      | Diurnal Maximum |                           |               |
| Z - zerospan C - Calibration  |                               |      |      |      |      |      |      |      |     |      |      |     |      |     |     |     |      |      |      |   |      |       |      |                 |                           |               |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Nitric Oxide (NO) - ppb**  
**Firebag - February 2023**





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Nitric Oxide (NO) - ppb  
Firebag - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 20                            | 619                    | 96.87    | 96.87               |
| 21 - 40                           | 9                      | 1.41     | 98.28               |
| 41 - 80                           | 9                      | 1.41     | 99.69               |
| 81 - 159                          | 2                      | 0.31     | 100.00              |
| > 159                             | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 639

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Nitric Oxide (NO) - ppb  
Firebag - February 2023**

| <b>Concentration<br/>Ranges (ppb)</b> | <b>Wind Direction</b> |     |    |     |    |     |    |     |    |     |    |     |    |     |    |     | <b>Totals</b> |
|---------------------------------------|-----------------------|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|---------------|
|                                       | N                     | NNE | NE | ENE | E  | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |               |
| 0 - 20                                | 34                    | 19  | 13 | 6   | 9  | 20  | 40 | 57  | 57 | 39  | 31 | 24  | 17 | 14  | 63 | 98  | 541           |
| 21 - 40                               | 0                     | 0   | 0  | 0   | 1  | 1   | 0  | 4   | 2  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 8             |
| 41 - 80                               | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 4   | 0  | 0   | 1  | 0   | 0  | 0   | 1  | 1   | 7             |
| 81 - 159                              | 0                     | 1   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 1             |
| > 159                                 | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| <b>Totals</b>                         | 34                    | 20  | 13 | 6   | 10 | 21  | 40 | 65  | 59 | 39  | 32 | 24  | 17 | 14  | 64 | 99  | 557           |

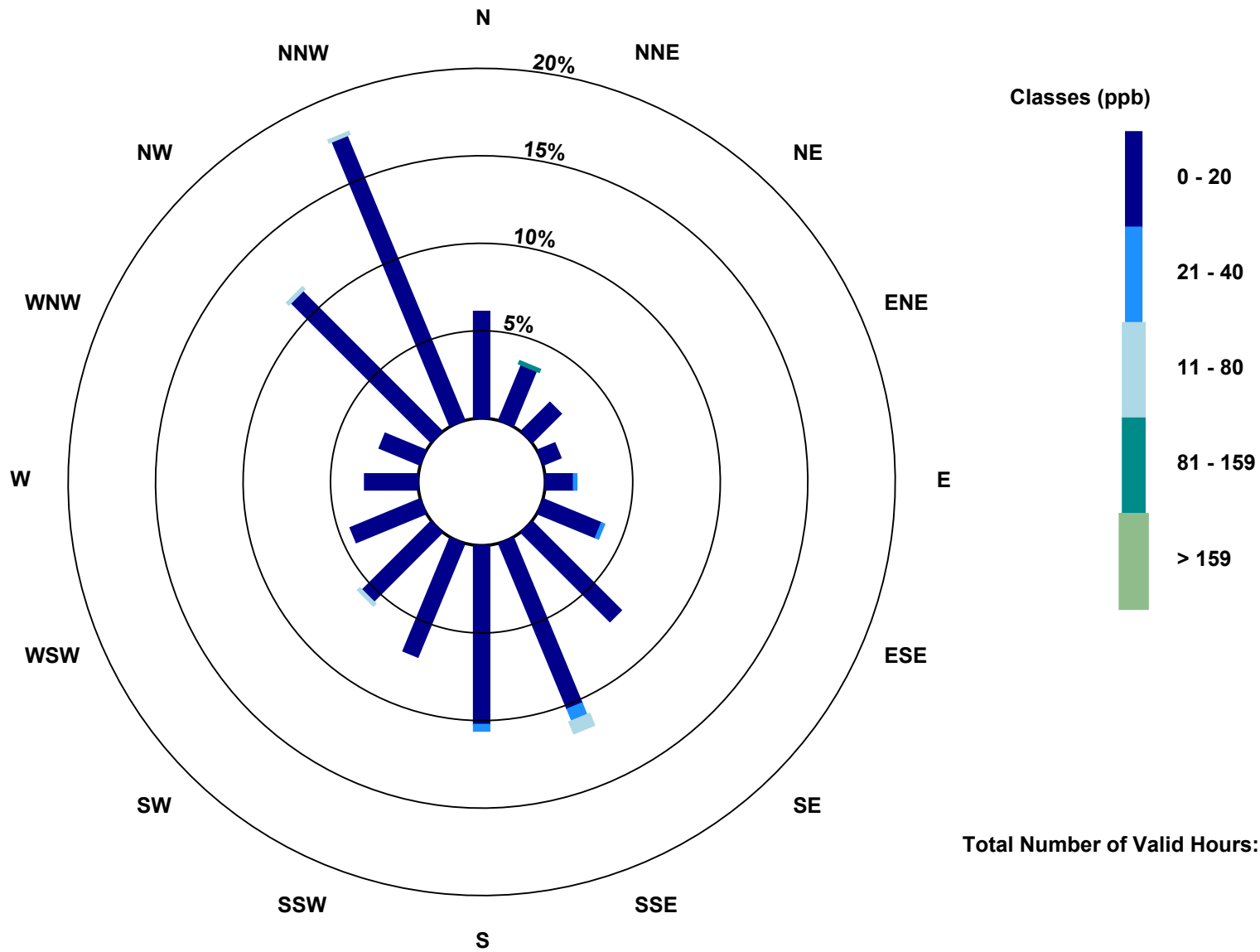
Total Number of Valid Hours: 557

Total Number of Hours: 672



Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Nitric Oxide (NO) - ppb  
Firebag



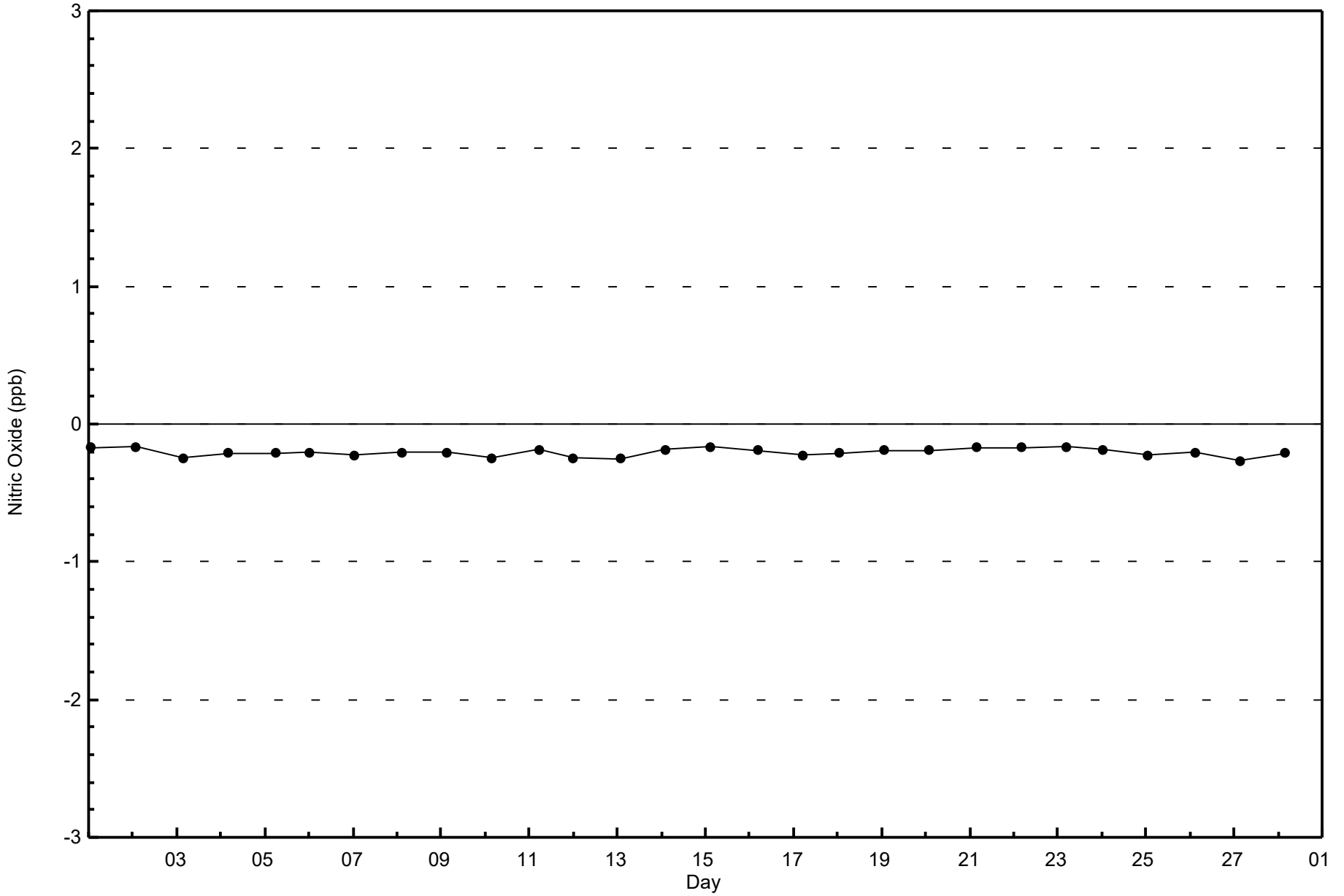
Total Number of Valid Hours: 557

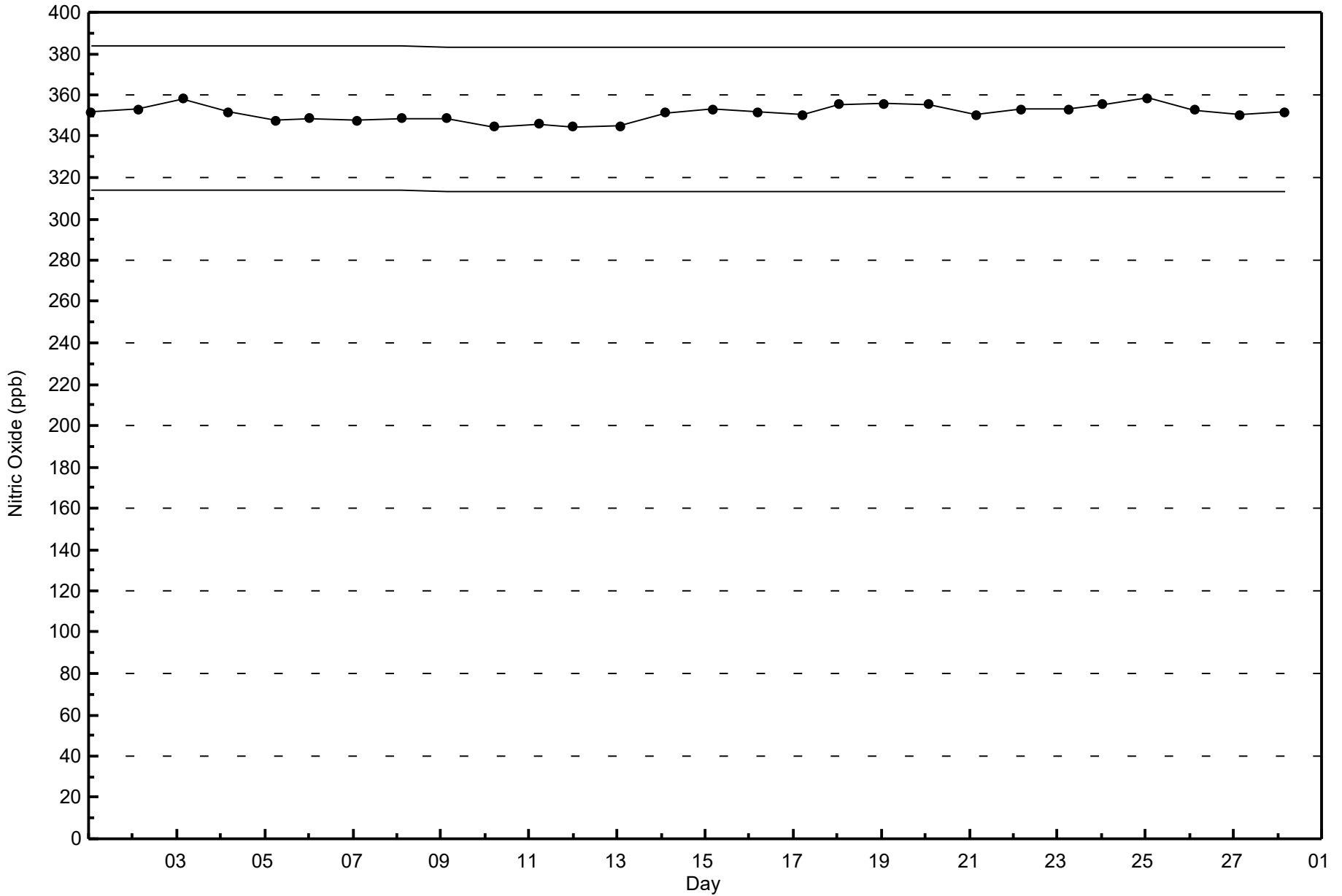




**Wood Buffalo Environmental Association**  
**Zero Responses**

**Nitric Oxide (NO) - ppb**  
**Firebag - February 2023**







# Wood Buffalo Environmental Association

## Summary of Hour Averages

# Nitrogen Dioxide (NO<sub>2</sub>) - ppb

## Firebag - February 2023

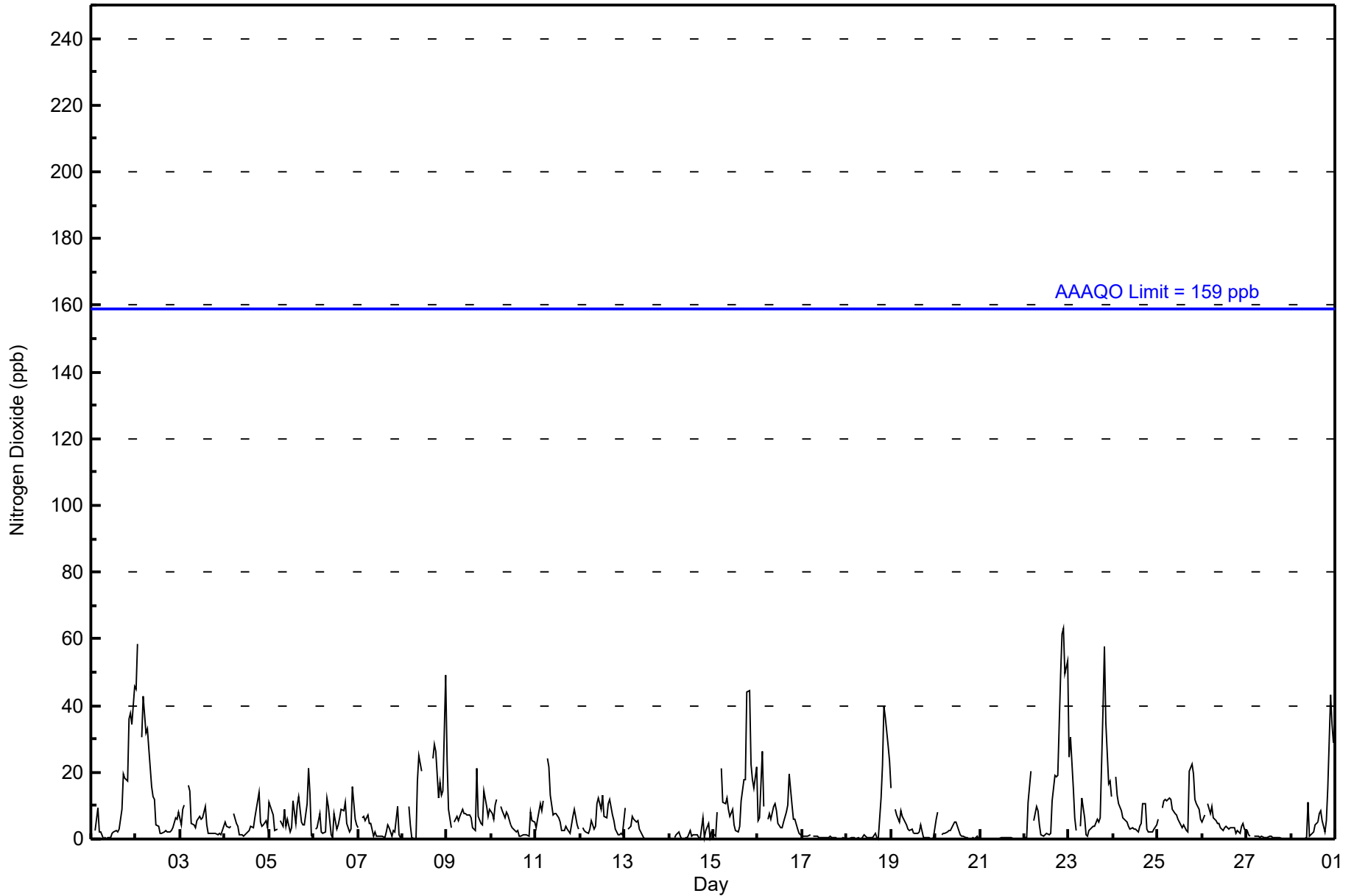
| Number of Exceedences (AAAQO):               |                               | 1-hr: 0  | 24-hr: 0 | Hours in Service: 672 |      |      |      |      |      |      |      |     |      |      |     |      |      |      |                                 |      | 672  |      |      |                 |                 |               |
|--|-------------------------------|--|----------|-----------------------|------|------|------|------|------|------|------|-----|------|------|-----|------|------|------|---------------------------------|------|------|------|------|-----------------|-----------------|---------------|
| Maximum Value: 63.3 ppb on Feb 22 22:00      |                               | Maximum Daily Average: 18.0 ppb on Feb 22  |          |                       |      |      |      |      |      |      |      |     |      |      |     |      |      |      | Hours of Data: 639              |      |      |      |      |                 |                 |               |
| Minimum Value: 0.1 ppb on Feb 13 21:00       |                               | Minimum Daily Average: 0.3 ppb on Feb 21   |          |                       |      |      |      |      |      |      |      |     |      |      |     |      |      |      | Hours of Missing Data: 33       |      |      |      |      |                 |                 |               |
| Maximum Diurnal Average: 12.1 ppb at hour 22 |                               | Minimum Diurnal Average: 2.8 ppb at hour 15  |          |                       |      |      |      |      |      |      |      |     |      |      |     |      |      |      | Hours of Calibration: 33        |      |      |      |      |                 |                 |               |
| Monthly Average: 6.77 ppb                    |                               | Percentiles: P <sub>1</sub> = 0.2 P <sub>10</sub> = 0.2 Q <sub>1</sub> = 1.0 Median = 3.7 Q <sub>3</sub> = 8.4 P <sub>90</sub> = 16.6 P <sub>99</sub> = 49.3 |          |                       |      |      |      |      |      |      |      |     |      |      |     |      |      |      | Percent Operational Time: 100.0 |      |      |      |      |                 |                 |               |
| Day  | Hourly Period Ending At (MST) |  |          |                       |      |      |      |      |      |      |      |     |      |      |     |      |      |      |                                 |      |      |      |      |                 | Daily Average   | Daily Maximum |
|  | 1                             | 2  | 3        | 4                     | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12  | 13   | 14   | 15  | 16   | 17   | 18   | 19                              | 20   | 21   | 22   | 23   | 24              |                 |               |
| 1-Feb  | 0.7                           | Z  | 2.6      | 9.2                   | 2.0  | 2.0  | 0.2  | 0.3  | 0.2  | 0.3  | 0.6  | 1.8 | 2.2  | 2.7  | 2.3 | 3.0  | 9.1  | 19.4 | 18.2                            | 17.2 | 36.2 | 37.6 | 34.4 | 45.6            | 10.8            | 45.6          |
| 2-Feb  | 45.1                          | 58.5   | Z        | 30.7                  | 42.6 | 31.9 | 33.0 | 27.3 | 15.8 | 12.6 | 11.9 | 4.3 | 3.8  | 1.9  | 1.5 | 2.3  | 2.4  | 2.2  | 2.2                             | 2.5  | 3.6  | 6.2  | 6.0  | 7.9             | 15.5            | 58.5          |
| 3-Feb  | 4.4                           | 8.7  | 10.0     | Z                     | 16.1 | 14.2 | 4.5  | 4.1  | 3.5  | 5.5  | 6.6  | 5.8 | 6.2  | 9.8  | 4.2 | 1.8  | 1.9  | 1.9  | 1.8                             | 1.7  | 1.4  | 1.5  | 1.3  | 3.7             | 5.2             | 16.1          |
| 4-Feb  | 5.0                           | 3.9  | 3.2      | 4.0                   | Z    | 7.8  | 4.6  | 3.8  | 1.2  | 1.1  | 0.8  | 1.1 | 2.0  | 2.5  | 3.7 | 3.6  | 6.4  | 8.9  | 13.9                            | 5.0  | 3.9  | 4.3  | 5.4  | 3.5             | 4.3             | 13.9          |
| 5-Feb  | 10.9                          | 8.4  | 7.4      | 2.7                   | 2.9  | Z    | 5.3  | 3.7  | 8.8  | 4.0  | 5.9  | 2.3 | 3.3  | 11.3 | 4.5 | 10.3 | 12.9 | 4.9  | 4.3                             | 4.4  | 10.8 | 21.0 | 13.7 | 0.9             | 7.2             | 21.0          |
| 6-Feb  | Z                             | 3.1  | 3.3      | 7.5                   | 2.3  | 1.8  | 2.3  | 12.1 | 9.7  | 1.2  | 0.6  | 7.8 | 3.0  | 4.2  | 6.4 | 9.1  | 8.5  | 10.9 | 4.6                             | 2.2  | 2.8  | 15.5 | 5.9  | 4.3             | 5.6             | 15.5          |
| 7-Feb  | 3.2                           | Z  | 6.5      | 6.6                   | 5.4  | 7.4  | 4.6  | 4.6  | 0.9  | 2.2  | 0.9  | 0.7 | 0.9  | 0.7  | 0.5 | 2.0  | 4.4  | 3.2  | 1.0                             | 2.5  | 2.0  | 9.7  | 1.3  | 0.3             | 3.1             | 9.7           |
| 8-Feb  | 0.2                           | 0.2  | Z        | 9.8                   | 4.1  | 0.3  | 0.2  | 0.2  | 17.4 | 25.0 | 20.4 | C   | C    | C    | C   | C    | 24.0 | 28.2 | 26.2                            | 12.4 | 16.8 | 13.1 | 14.3 | 49.3            | 14.6            | 49.3          |
| 9-Feb  | 23.9                          | 8.7  | 3.2      | Z                     | 5.1  | 6.8  | 5.4  | 6.7  | 9.0  | 7.6  | 7.6  | 7.1 | 7.4  | 6.4  | 3.6 | 2.7  | 21.2 | 6.9  | 4.8                             | 4.1  | 14.4 | 9.6  | 6.8  | 9.1             | 8.2             | 23.9          |
| 10-Feb                                       | 7.6                           | 6.1  | 10.3     | 11.8                  | Z    | 9.9  | 8.6  | 6.3  | 7.9  | 7.2  | 4.3  | 3.4 | 3.0  | 2.1  | 2.6 | 1.0  | 1.0  | 1.1  | 1.1                             | 1.2  | 1.0  | 7.9  | 5.6  | 4.9             | 5.0             | 11.8          |
| 11-Feb                                       | 3.3                           | 6.0  | 10.6     | 8.3                   | 11.5 | Z    | 24.2 | 21.5 | 13.3 | 7.1  | 7.5  | 7.6 | 6.2  | 5.0  | 2.5 | 2.7  | 3.7  | 3.1  | 1.9                             | 4.2  | 6.7  | 9.1  | 4.4  | 3.1             | 7.5             | 24.2          |
| 12-Feb                                       | Z                             | 3.4  | 2.5      | 2.2                   | 1.7  | 2.9  | 5.5  | 2.8  | 4.0  | 10.4 | 12.3 | 9.1 | 13.2 | 6.7  | 6.2 | 10.5 | 11.8 | 7.0  | 5.3                             | 3.0  | 1.3  | 1.4  | 1.7  | 1.4             | 5.5             | 13.2          |
| 13-Feb                                       | 9.2                           | Z  | 2.8      | 3.7                   | 6.7  | 6.0  | 5.2  | 5.6  | 2.8  | 1.4  | 0.5  | 0.2 | 0.2  | 0.2  | 0.2 | 0.2  | 0.2  | 0.2  | 0.2                             | 0.2  | 0.1  | 0.1  | 0.1  | 0.1             | 2.0             | 9.2           |
| 14-Feb                                       | 0.3                           | 0.2  | Z        | 0.6                   | 1.3  | 2.0  | 1.0  | 0.2  | 0.2  | 0.4  | 0.5  | 2.5 | 0.8  | 1.1  | 1.1 | 1.2  | 0.6  | 0.2  | 6.5                             | 0.3  | 2.5  | 4.7  | 0.4  | 2.1             | 1.3             | 6.5           |
| 15-Feb                                       | 1.3                           | 1.0  | 7.9      | Z                     | 21.3 | 11.2 | 10.4 | 12.2 | 8.7  | 6.9  | 8.8  | 4.4 | 2.7  | 2.3  | 3.7 | 11.4 | 17.7 | 17.6 | 43.9                            | 44.5 | 22.5 | 18.0 | 15.4 | 21.5            | 13.7            | 44.5          |
| 16-Feb                                       | 5.6                           | 6.4  | 26.2     | 9.9                   | Z    | 6.1  | 7.6  | 6.0  | 9.7  | 10.7 | 8.4  | 4.8 | 3.5  | 3.5  | 5.0 | 8.1  | 10.1 | 19.5 | 10.1                            | 6.1  | 5.8  | 2.9  | 1.8  | 1.3             | 7.8             | 26.2          |
| 17-Feb                                       | 1.0                           | 1.0  | 0.8      | 0.9                   | 1.2  | Z    | 0.9  | 0.8  | 0.7  | 0.6  | 0.4  | 0.5 | 0.5  | 0.5  | 0.6 | 0.7  | 0.6  | 0.4  | 0.3                             | 0.2  | 0.2  | 0.2  | 0.3  | 0.2             | 0.6             | 1.2           |
| 18-Feb                                       | Z                             | 0.2  | 0.4      | 0.4                   | 0.6  | 0.2  | 0.4  | 0.2  | 0.2  | 1.2  | 0.9  | 0.5 | 0.4  | 0.3  | 0.4 | 1.6  | 0.6  | 0.2  | 12.3                            | 22.1 | 39.7 | 36.6 | 27.9 | 23.2            | 7.4             | 39.7          |
| 19-Feb                                       | 15.4                          | Z  | 9.1      | 7.0                   | 5.0  | 8.5  | 6.9  | 5.1  | 4.1  | 3.0  | 2.7  | 2.9 | 1.5  | 1.5  | 1.9 | 2.3  | 4.2  | 0.4  | 0.3                             | 0.3  | 0.3  | 0.2  | 0.2  | 0.3             | 3.6             | 15.4          |
| 20-Feb                                       | 6.1                           | 7.9  | Z        | 1.1                   | 1.6  | 1.5  | 2.2  | 2.7  | 2.4  | 4.4  | 4.9  | 5.0 | 2.4  | 1.2  | 1.0 | 1.0  | 0.6  | 0.3  | 0.2                             | 0.2  | 0.3  | 0.2  | 0.8  | 0.2             | 2.1             | 7.9           |
| 21-Feb                                       | 0.2                           | 0.2  | 0.2      | Z                     | 0.2  | 0.2  | 0.2  | 0.2  | 0.2  | 0.2  | 0.2  | 0.5 | 0.4  | 0.5  | 0.5 | 0.4  | 0.5  | 0.5  | 0.2                             | 0.2  | 0.2  | 0.1  | 0.1  | 0.2             | 0.3             | 0.5           |
| 22-Feb                                       | 0.4                           | 0.6  | 11.1     | 20.3                  | Z    | 5.7  | 9.8  | 8.4  | 4.1  | 1.4  | 0.8  | 1.4 | 1.8  | 1.4  | 1.8 | 11.4 | 19.1 | 18.8 | 19.2                            | 49.2 | 61.4 | 63.3 | 49.6 | 53.3            | 18.0            | 63.3          |
| 23-Feb                                       | 24.7                          | 30.7   | 15.3     | 6.2                   | 2.6  | Z    | 3.7  | 12.3 | 6.4  | 1.1  | 1.0  | 2.5 | 3.3  | 4.0  | 3.8 | 6.1  | 5.1  | 6.3  | 38.8                            | 57.8 | 34.9 | 16.6 | 17.4 | 12.8            | 13.6            | 57.8          |
| 24-Feb                                       | Z                             | 18.6   | 13.0     | 10.5                  | 8.5  | 6.2  | 6.0  | 4.9  | 3.7  | 2.8  | 3.5  | 2.9 | 2.8  | 2.3  | 3.7 | 4.6  | 10.4 | 10.5 | 2.9                             | 2.0  | 2.1  | 2.3  | 3.1  | 4.3             | 5.7             | 18.6          |
| 25-Feb                                       | 5.8                           | Z  | 9.4      | 11.3                  | 12.0 | 11.6 | 12.2 | 11.7 | 9.1  | 7.5  | 7.1  | 6.0 | 4.2  | 3.3  | 4.2 | 2.4  | 2.0  | 20.3 | 22.5                            | 19.3 | 12.0 | 10.4 | 8.9  | 6.1             | 9.5             | 22.5          |
| 26-Feb                                       | 5.1                           | 7.4  | Z        | 10.4                  | 7.7  | 9.6  | 6.5  | 5.6  | 4.7  | 4.5  | 3.4  | 2.7 | 3.3  | 3.9  | 3.0 | 3.5  | 3.2  | 3.6  | 1.9                             | 2.5  | 1.9  | 4.0  | 4.7  | 3.1             | 4.6             | 10.4          |
| 27-Feb                                       | 2.7                           | 1.4  | 0.8      | Z                     | 0.7  | 0.7  | 0.9  | 0.4  | 0.9  | 0.3  | 0.3  | 0.5 | 0.8  | 0.8  | 0.5 | 0.6  | 0.3  | 0.3  | 0.3                             | 0.2  | 0.2  | 0.2  | 0.2  | 0.2             | 0.6             | 2.7           |
| 28-Feb                                       | 0.2                           | 0.2  | 0.2      | 0.2                   | Z    | 0.2  | 0.2  | 0.2  | 0.3  | 11.2 | 0.7  | 1.8 | 2.2  | 4.3  | 4.9 | 7.5  | 8.5  | 5.5  | 2.3                             | 5.5  | 15.3 | 43.1 | 34.3 | 28.7            | 7.7             | 43.1          |
|  |                               |  |          |                       |      |      |      |      |      |      |      |     |      |      |     |      |      |      |                                 |      |      |      |      | Diurnal Average | Diurnal Maximum |               |
|  |                               |  |          |                       |      |      |      |      |      |      |      |     |      |      |     |      |      |      |                                 |      |      |      |      | 7.6             | 45.1            |               |
|  |                               |  |          |                       |      |      |      |      |      |      |      |     |      |      |     |      |      |      |                                 |      |      |      |      | 7.9             | 58.5            |               |
|  |                               |  |          |                       |      |      |      |      |      |      |      |     |      |      |     |      |      |      |                                 |      |      |      |      | 6.8             | 26.2            |               |
|  |                               |  |          |                       |      |      |      |      |      |      |      |     |      |      |     |      |      |      |                                 |      |      |      |      | 7.6             | 30.7            |               |
|  |                               |  |          |                       |      |      |      |      |      |      |      |     |      |      |     |      |      |      |                                 |      |      |      |      | 7.1             | 42.6            |               |
|  |                               |  |          |                       |      |      |      |      |      |      |      |     |      |      |     |      |      |      |                                 |      |      |      |      | 6.4             | 31.9            |               |
|  |                               |  |          |                       |      |      |      |      |      |      |      |     |      |      |     |      |      |      |                                 |      |      |      |      | 6.2             | 33.0            |               |
|  |                               |  |          |                       |      |      |      |      |      |      |      |     |      |      |     |      |      |      |                                 |      |      |      |      | 6.1             | 27.3            |               |
|  |                               |  |          |                       |      |      |      |      |      |      |      |     |      |      |     |      |      |      |                                 |      |      |      |      | 5.4             | 17.4            |               |
|  |                               |  |          |                       |      |      |      |      |      |      |      |     |      |      |     |      |      |      |                                 |      |      |      |      | 5.1             | 25.0            |               |
|  |                               |  |          |                       |      |      |      |      |      |      |      |     |      |      |     |      |      |      |                                 |      |      |      |      | 4.4             | 20.4            |               |
|  |                               |  |          |                       |      |      |      |      |      |      |      |     |      |      |     |      |      |      |                                 |      |      |      |      | 3.3             | 9.1             |               |
|  |                               |  |          |                       |      |      |      |      |      |      |      |     |      |      |     |      |      |      |                                 |      |      |      |      | 3.0             | 13.2            |               |
|  |                               |  |          |                       |      |      |      |      |      |      |      |     |      |      |     |      |      |      |                                 |      |      |      |      | 3.1             | 11.3            |               |
|  |                               |  |          |                       |      |      |      |      |      |      |      |     |      |      |     |      |      |      |                                 |      |      |      |      | 2.8             | 6.4             |               |
|  |                               |  |          |                       |      |      |      |      |      |      |      |     |      |      |     |      |      |      |                                 |      |      |      |      | 4.1             | 11.4            |               |
|  |                               |  |          |                       |      |      |      |      |      |      |      |     |      |      |     |      |      |      |                                 |      |      |      |      | 6.8             | 24.0            |               |
|  |                               |  |          |                       |      |      |      |      |      |      |      |     |      |      |     |      |      |      |                                 |      |      |      |      | 7.2             | 28.2            |               |
|  |                               |  |          |                       |      |      |      |      |      |      |      |     |      |      |     |      |      |      |                                 |      |      |      |      | 8.8             | 43.9            |               |
|  |                               |  |          |                       |      |      |      |      |      |      |      |     |      |      |     |      |      |      |                                 |      |      |      |      | 9.7             | 57.8            |               |
|  |                               |  |          |                       |      |      |      |      |      |      |      |     |      |      |     |      |      |      |                                 |      |      |      |      | 10.7            | 61.4            |               |
|  |                               |  |          |                       |      |      |      |      |      |      |      |     |      |      |     |      |      |      |                                 |      |      |      |      | 12.1            | 63.3            |               |
|  |                               |  |          |                       |      |      |      |      |      |      |      |     |      |      |     |      |      |      |                                 |      |      |      |      | 9.5             | 49.6            |               |
|  |                               |  |          |                       |      |      |      |      |      |      |      |     |      |      |     |      |      |      |                                 |      |      |      |      | 10.4            | 53.3            |               |

Z - zerospan C - Calibration  
 Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 159 ppb



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Nitrogen Dioxide (NO<sub>2</sub>) - ppb**  
**Firebag - February 2023**





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Nitrogen Dioxide (NO<sub>2</sub>) - ppb**  
**Firebag - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 20                            | 593                    | 92.80    | 92.80               |
| 21 - 40                           | 32                     | 5.01     | 97.81               |
| 41 - 80                           | 14                     | 2.19     | 100.00              |
| 81 - 159                          | 0                      | 0.00     | 100.00              |
| > 159                             | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 639

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Nitrogen Dioxide (NO<sub>2</sub>) - ppb  
Firebag - February 2023**

| <b>Concentration<br/>Ranges (ppb)</b> | <b>Wind Direction</b> |     |    |     |    |     |    |     |    |     |    |     |    |     |    |     | <b>Totals</b> |
|---------------------------------------|-----------------------|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|---------------|
|                                       | N                     | NNE | NE | ENE | E  | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |               |
| 0 - 20                                | 34                    | 19  | 12 | 6   | 9  | 19  | 37 | 50  | 54 | 38  | 31 | 23  | 17 | 12  | 63 | 96  | 520           |
| 21 - 40                               | 0                     | 0   | 1  | 0   | 1  | 2   | 3  | 9   | 5  | 1   | 0  | 1   | 0  | 2   | 0  | 2   | 27            |
| 11 - 80                               | 0                     | 1   | 0  | 0   | 0  | 0   | 0  | 6   | 0  | 0   | 1  | 0   | 0  | 0   | 1  | 1   | 10            |
| 81 - 159                              | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| > 159                                 | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| <b>Totals</b>                         | 34                    | 20  | 13 | 6   | 10 | 21  | 40 | 65  | 59 | 39  | 32 | 24  | 17 | 14  | 64 | 99  | 557           |

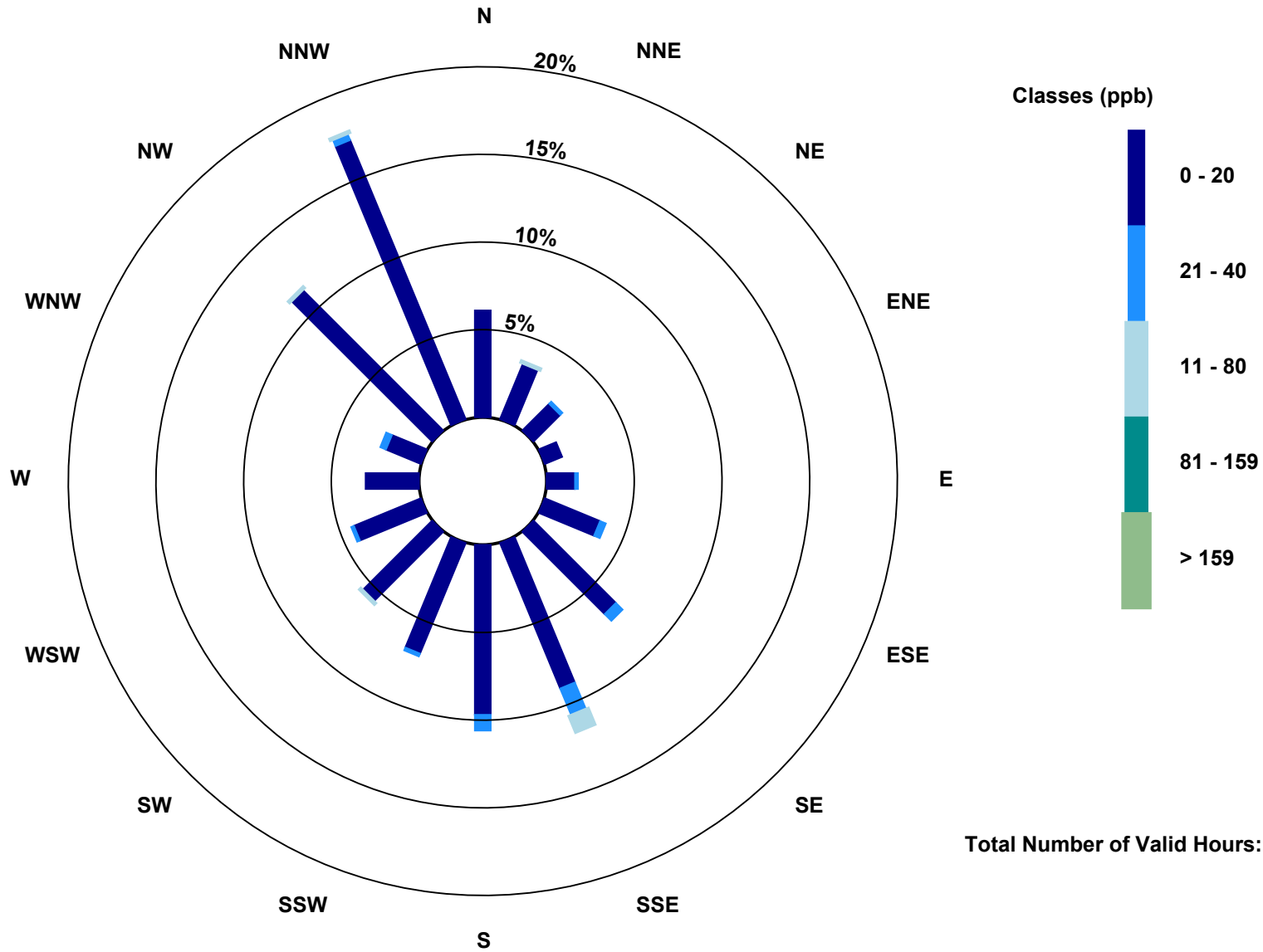
Total Number of Valid Hours: 557

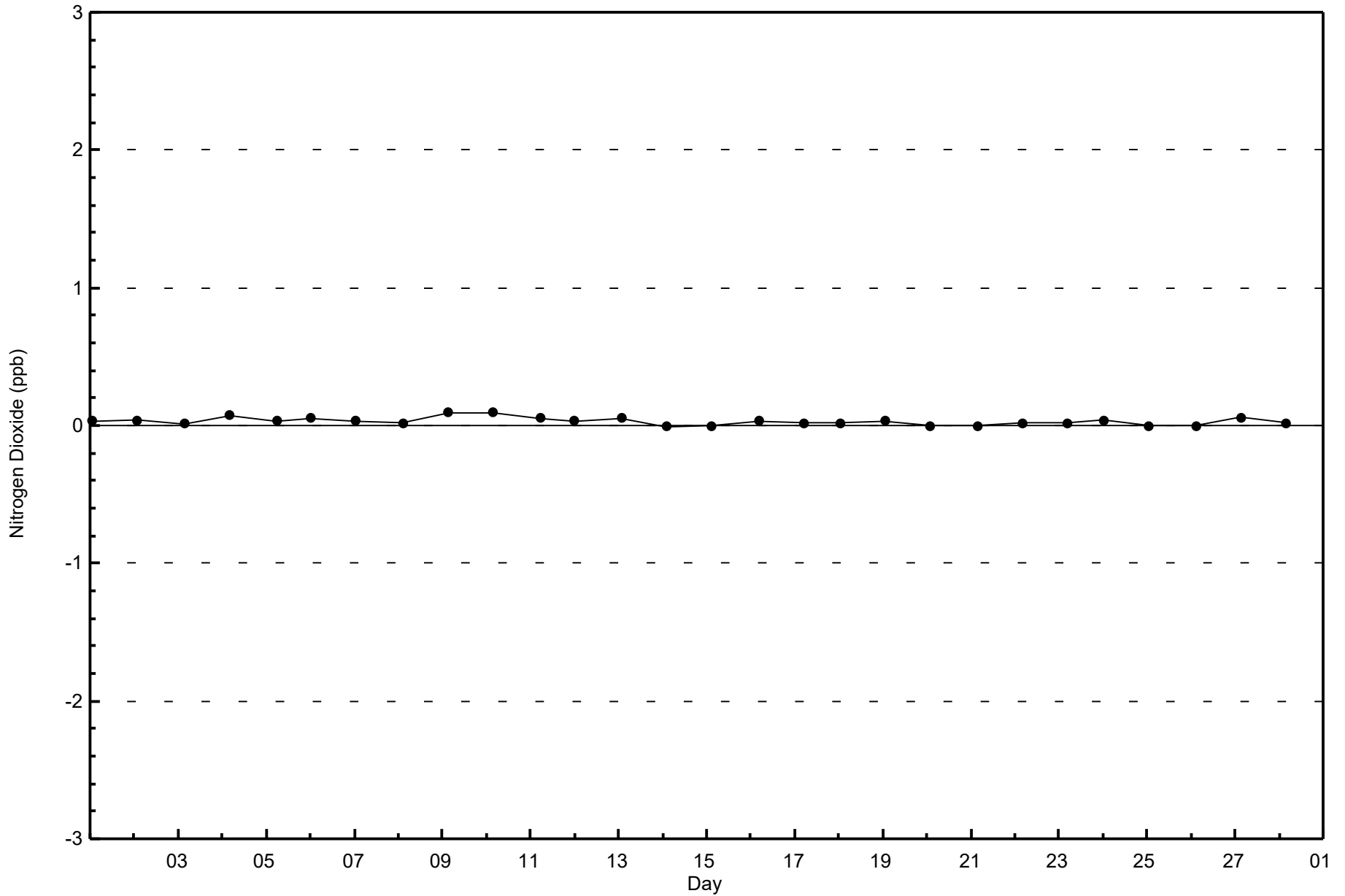
Total Number of Hours: 672



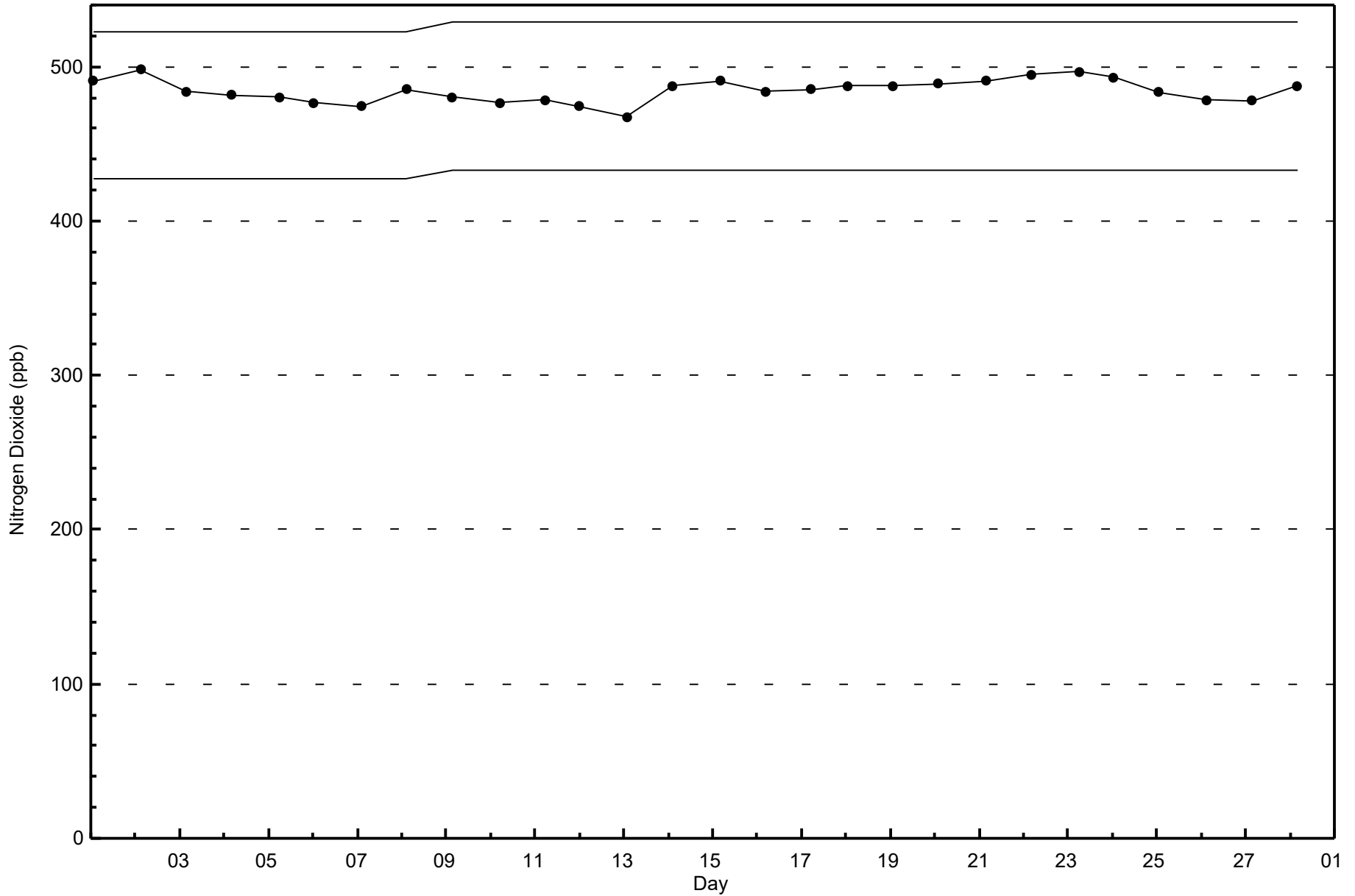
Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Nitrogen Dioxide (NO<sub>2</sub>) - ppb  
Firebag











**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

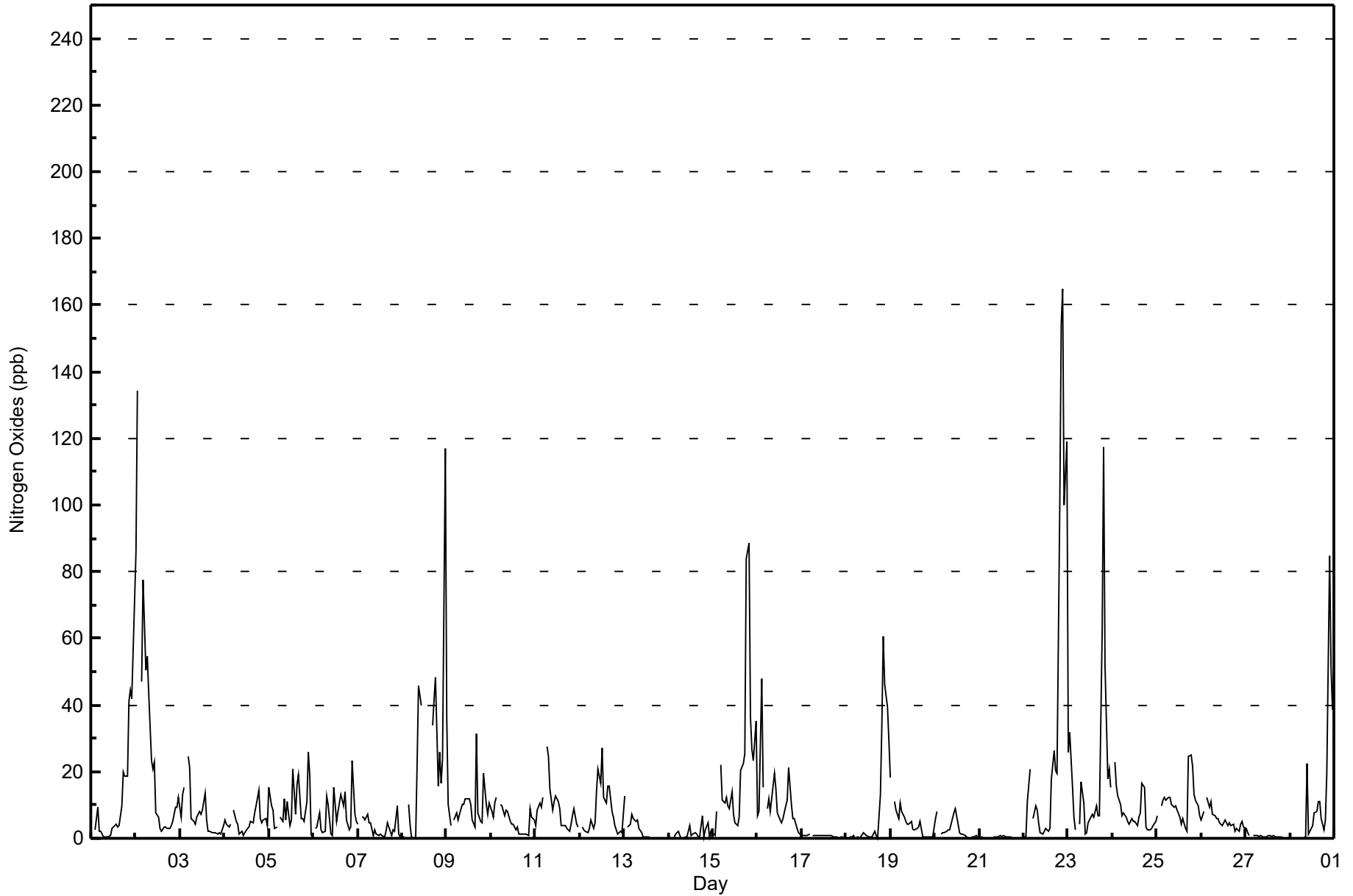
**Nitrogen Oxides (NO<sub>x</sub>) - ppb**  
**Firebag - February 2023**

| Maximum Value: 164.9 ppb on Feb 22 22:00      Maximum Daily Average: 34.7 ppb on Feb 22  |                               |       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Hours in Service: 672<br>Hours of Data: 639  |       |       |      |                 |               |               |
|--|-------------------------------|-------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|--|-------|-------|------|-----------------|---------------|---------------|
| Minimum Value: 0.1 ppb on Feb 14 00:00      Minimum Daily Average: 0.3 ppb on Feb 21<br>Maximum Diurnal Average: 19.1 ppb at hour 22      Minimum Diurnal Average: 4.1 ppb at hour 15<br>Monthly Average: 9.75 ppb      Percentiles: P <sub>1</sub> = 0.2 P <sub>10</sub> = 0.2 Q <sub>1</sub> = 1.1 Median = 4.6 Q <sub>3</sub> = 10.1 P <sub>90</sub> = 21.5 P <sub>99</sub> = 100.8 |                               |       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Hours of Missing Data: 33<br>Hours of Calibration: 33<br>Percent Operational Time: 100.0 |       |       |      |                 |               |               |
| Day  | Hourly Period Ending At (MST) |       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |       |       |      |                 | Daily Average | Daily Maximum |
|  | 1                             | 2     | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20   | 21    | 22    | 23   | 24              |               |               |
| 1-Feb  | 0.7                           | Z     | 2.6  | 9.2  | 2.0  | 2.0  | 0.2  | 0.3  | 0.2  | 0.3  | 0.8  | 2.8  | 3.5  | 4.2  | 3.3  | 3.7  | 9.9  | 19.8 | 18.5 | 18.5   | 40.9  | 44.5  | 41.8 | 71.2            | 13.1          | 71.2          |
| 2-Feb  | 85.9                          | 134.3 | Z    | 46.8 | 77.6 | 50.5 | 54.7 | 43.8 | 23.4 | 20.9 | 22.7 | 7.7  | 6.5  | 3.0  | 2.2  | 3.4  | 3.5  | 3.0  | 3.0  | 3.7  | 5.2   | 9.4   | 9.4  | 12.5            | 27.5          | 134.3         |
| 3-Feb  | 6.3                           | 13.2  | 15.4 | Z    | 24.8 | 21.4 | 5.7  | 5.1  | 4.2  | 6.3  | 7.9  | 7.2  | 8.4  | 13.8 | 5.4  | 2.1  | 2.0  | 1.9  | 1.8  | 1.7  | 1.4   | 1.6   | 1.4  | 3.8             | 7.1           | 24.8          |
| 4-Feb  | 5.4                           | 4.2   | 3.6  | 4.4  | Z    | 8.4  | 5.3  | 4.3  | 1.2  | 2.0  | 0.9  | 1.5  | 2.8  | 3.5  | 5.0  | 4.7  | 7.6  | 9.8  | 14.3 | 6.0  | 4.7   | 5.4   | 6.1  | 3.9             | 5.0           | 14.3          |
| 5-Feb  | 15.2                          | 9.8   | 8.6  | 3.0  | 3.4  | Z    | 6.5  | 5.0  | 12.0 | 5.4  | 11.2 | 3.8  | 5.3  | 20.9 | 7.1  | 15.9 | 19.2 | 5.8  | 5.9  | 5.1  | 10.9  | 26.0  | 19.1 | 0.9             | 9.8           | 26.0          |
| 6-Feb  | Z                             | 3.1   | 3.4  | 7.5  | 2.3  | 1.8  | 2.3  | 12.8 | 10.3 | 1.4  | 0.8  | 15.2 | 5.3  | 8.0  | 10.4 | 13.2 | 10.0 | 13.8 | 5.3  | 2.6  | 3.6   | 23.4  | 7.1  | 4.9             | 7.3           | 23.4          |
| 7-Feb  | 4.1                           | Z     | 6.5  | 6.6  | 5.4  | 7.4  | 4.6  | 4.6  | 1.0  | 2.6  | 1.1  | 0.9  | 1.1  | 0.9  | 0.6  | 2.2  | 4.7  | 3.2  | 1.0  | 2.5  | 2.0   | 9.8   | 1.3  | 0.3             | 3.2           | 9.8           |
| 8-Feb  | 0.2                           | 0.2   | Z    | 10.1 | 4.1  | 0.3  | 0.2  | 0.2  | 22.1 | 45.8 | 39.9 | C    | C    | C    | C    | C    | 33.7 | 41.4 | 48.2 | 15.5   | 25.8  | 16.6  | 23.7 | 116.8           | 24.7          | 116.8         |
| 9-Feb  | 36.2                          | 10.3  | 3.7  | Z    | 5.5  | 7.8  | 5.5  | 7.0  | 10.1 | 10.1 | 12.0 | 11.9 | 11.8 | 10.1 | 5.3  | 3.4  | 31.5 | 7.6  | 5.1  | 4.5  | 19.4  | 10.3  | 7.4  | 10.4            | 10.7          | 36.2          |
| 10-Feb   | 7.9                           | 6.2   | 10.5 | 12.2 | Z    | 10.3 | 9.7  | 6.9  | 8.4  | 8.2  | 5.2  | 4.3  | 4.0  | 2.6  | 3.5  | 1.3  | 1.1  | 1.1  | 1.1  | 1.3  | 1.0   | 8.9   | 6.2  | 5.5             | 5.5           | 12.2          |
| 11-Feb   | 3.6                           | 8.5   | 10.8 | 9.3  | 12.4 | Z    | 27.5 | 24.5 | 15.0 | 8.6  | 11.1 | 12.6 | 11.2 | 9.0  | 4.0  | 4.0  | 3.9  | 3.1  | 1.9  | 4.3  | 6.8   | 9.1   | 4.4  | 3.2             | 9.1           | 27.5          |
| 12-Feb   | Z                             | 3.4   | 2.5  | 2.2  | 1.7  | 2.9  | 5.6  | 2.8  | 4.6  | 14.2 | 21.0 | 16.3 | 27.1 | 12.2 | 10.6 | 15.6 | 15.8 | 7.9  | 6.2  | 3.7  | 1.5   | 1.6   | 2.0  | 1.6             | 8.0           | 27.1          |
| 13-Feb   | 12.9                          | Z     | 3.3  | 4.0  | 7.0  | 6.0  | 5.2  | 5.6  | 2.9  | 1.5  | 0.6  | 0.2  | 0.2  | 0.2  | 0.2  | 0.2  | 0.2  | 0.2  | 0.2  | 0.2  | 0.1   | 0.1   | 0.1  | 0.1             | 2.2           | 12.9          |
| 14-Feb   | 0.3                           | 0.2   | Z    | 0.6  | 1.3  | 2.0  | 1.0  | 0.2  | 0.2  | 0.5  | 0.6  | 3.6  | 1.0  | 1.5  | 1.5  | 1.4  | 0.6  | 0.2  | 6.6  | 0.3  | 2.5   | 4.7   | 0.4  | 2.1             | 1.4           | 6.6           |
| 15-Feb   | 1.3                           | 1.0   | 7.9  | Z    | 21.9 | 11.2 | 10.4 | 12.3 | 9.6  | 9.0  | 13.9 | 7.3  | 4.7  | 4.0  | 6.2  | 20.3 | 22.6 | 25.6 | 84.0 | 88.8   | 36.4  | 26.9  | 23.4 | 35.3            | 21.0          | 88.8          |
| 16-Feb   | 6.8                           | 7.8   | 47.7 | 15.0 | Z    | 8.9  | 11.9 | 8.1  | 15.8 | 19.4 | 14.6 | 7.5  | 5.4  | 4.7  | 6.1  | 9.8  | 11.6 | 21.1 | 10.1 | 6.1  | 5.8   | 2.9   | 1.8  | 1.3             | 10.9          | 47.7          |
| 17-Feb   | 1.0                           | 1.0   | 0.8  | 0.9  | 1.2  | Z    | 0.9  | 0.8  | 0.8  | 0.7  | 0.6  | 0.7  | 0.8  | 0.8  | 0.8  | 0.9  | 0.7  | 0.4  | 0.3  | 0.2  | 0.2   | 0.2   | 0.4  | 0.2             | 0.7           | 1.2           |
| 18-Feb   | Z                             | 0.2   | 0.5  | 0.5  | 0.8  | 0.2  | 0.4  | 0.2  | 0.2  | 1.7  | 1.4  | 0.8  | 0.5  | 0.3  | 0.5  | 2.3  | 0.7  | 0.2  | 13.3 | 33.7   | 60.6  | 46.2  | 39.4 | 29.1            | 10.2          | 60.6          |
| 19-Feb   | 18.1                          | Z     | 10.9 | 8.3  | 6.0  | 10.6 | 8.2  | 6.5  | 5.3  | 4.3  | 4.3  | 5.3  | 2.7  | 2.6  | 3.1  | 3.4  | 5.2  | 0.4  | 0.3  | 0.3  | 0.3   | 0.2   | 0.2  | 0.3             | 4.6           | 18.1          |
| 20-Feb   | 6.1                           | 7.9   | Z    | 1.1  | 1.6  | 1.5  | 2.2  | 2.7  | 2.7  | 5.9  | 7.7  | 8.8  | 4.0  | 1.7  | 1.2  | 1.2  | 0.7  | 0.3  | 0.2  | 0.2  | 0.3   | 0.2   | 0.8  | 0.2             | 2.6           | 8.8           |
| 21-Feb   | 0.2                           | 0.2   | 0.2  | Z    | 0.2  | 0.2  | 0.2  | 0.2  | 0.2  | 0.2  | 0.2  | 0.7  | 0.6  | 0.7  | 0.6  | 0.4  | 0.5  | 0.5  | 0.2  | 0.2  | 0.2   | 0.1   | 0.1  | 0.2             | 0.3           | 0.7           |
| 22-Feb   | 0.4                           | 0.6   | 11.1 | 20.6 | Z    | 5.7  | 9.8  | 8.6  | 4.8  | 1.8  | 1.2  | 2.2  | 3.0  | 2.2  | 2.8  | 17.7 | 26.1 | 20.4 | 19.4 | 101.4  | 154.4 | 164.9 | 99.9 | 118.9           | 34.7          | 164.9         |
| 23-Feb   | 25.8                          | 31.7  | 15.4 | 6.2  | 2.6  | Z    | 4.0  | 17.0 | 10.8 | 1.5  | 1.6  | 4.6  | 6.2  | 7.4  | 6.5  | 9.7  | 6.6  | 6.7  | 62.8 | 117.6  | 51.8  | 17.9  | 20.8 | 15.4            | 19.6          | 117.6         |
| 24-Feb   | Z                             | 22.8  | 15.8 | 12.9 | 10.1 | 6.9  | 7.6  | 6.3  | 5.1  | 4.2  | 5.8  | 5.0  | 4.9  | 3.7  | 6.2  | 7.5  | 16.5 | 15.2 | 3.5  | 2.7  | 2.6   | 2.8   | 4.0  | 5.2             | 7.7           | 22.8          |
| 25-Feb   | 6.8                           | Z     | 9.9  | 11.5 | 12.2 | 11.6 | 12.3 | 12.1 | 10.2 | 9.3  | 9.7  | 8.6  | 6.3  | 4.4  | 6.0  | 3.1  | 2.3  | 24.7 | 24.9 | 21.8   | 13.2  | 11.3  | 9.9  | 6.9             | 10.8          | 24.9          |
| 26-Feb   | 5.6                           | 8.1   | Z    | 12.2 | 9.2  | 10.9 | 7.4  | 6.7  | 6.0  | 6.0  | 4.6  | 3.7  | 4.5  | 5.5  | 4.0  | 4.8  | 4.0  | 4.0  | 2.1  | 2.8  | 2.2   | 4.4   | 5.2  | 3.5             | 5.5           | 12.2          |
| 27-Feb   | 2.9                           | 1.5   | 0.8  | Z    | 0.7  | 0.7  | 0.9  | 0.4  | 1.0  | 0.4  | 0.4  | 0.6  | 1.0  | 0.9  | 0.6  | 0.7  | 0.3  | 0.3  | 0.3  | 0.2  | 0.2   | 0.2   | 0.2  | 0.2             | 0.7           | 2.9           |
| 28-Feb   | 0.2                           | 0.2   | 0.2  | 0.2  | Z    | 0.2  | 0.2  | 0.2  | 0.4  | 22.4 | 1.1  | 3.1  | 3.8  | 7.8  | 7.9  | 11.1 | 11.0 | 5.9  | 2.3  | 5.5  | 19.5  | 84.8  | 51.1 | 38.7            | 12.1          | 84.8          |
| 10.6 12.0 8.3 8.9 9.3 7.9 7.5 7.3 6.7 7.7 7.2 5.5 5.1 5.1 4.1 6.1 9.0 8.7 12.2 16.1 16.9 19.1 13.8 17.6  |                               |       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |       |       |      | Diurnal Average |               |               |
| 85.9 134.3 47.7 46.8 77.6 50.5 54.7 43.8 23.4 45.8 39.9 16.3 27.1 20.9 10.6 20.3 33.7 41.4 84.0 117.6 154.4 164.9 99.9 118.9   |                               |       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |       |       |      | Diurnal Maximum |               |               |
| Z - zerospan      C - Calibration  |                               |       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |       |       |      |                 |               |               |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Nitrogen Oxides (NO<sub>x</sub>) - ppb**  
**Firebag - February 2023**





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Nitrogen Oxides (NO<sub>x</sub>) - ppb  
Firebag - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 20                            | 568                    | 88.89    | 88.89               |
| 21 - 40                           | 41                     | 6.42     | 95.31               |
| 41 - 80                           | 18                     | 2.82     | 98.12               |
| 81 - 159                          | 11                     | 1.72     | 99.84               |
| > 159                             | 1                      | 0.16     | 100.00              |

Total Number of Valid Hours: 639

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Nitrogen Oxides (NO<sub>x</sub>) - ppb  
Firebag - February 2023**

| <b>Concentration<br/>Ranges (ppb)</b> | <b>Wind Direction</b> |     |    |     |    |     |    |     |    |     |    |     |    |     |    |     | <b>Totals</b> |
|---------------------------------------|-----------------------|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|---------------|
|                                       | N                     | NNE | NE | ENE | E  | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |               |
| 0 - 20                                | 34                    | 19  | 12 | 5   | 9  | 19  | 33 | 46  | 46 | 37  | 31 | 22  | 17 | 12  | 61 | 95  | 498           |
| 21 - 40                               | 0                     | 0   | 1  | 1   | 0  | 0   | 7  | 8   | 9  | 2   | 0  | 2   | 0  | 1   | 2  | 3   | 36            |
| 11 - 80                               | 0                     | 0   | 0  | 0   | 1  | 2   | 0  | 6   | 4  | 0   | 0  | 0   | 0  | 1   | 0  | 0   | 14            |
| 81 - 159                              | 0                     | 1   | 0  | 0   | 0  | 0   | 0  | 5   | 0  | 0   | 1  | 0   | 0  | 0   | 1  | 1   | 9             |
| > 159                                 | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| <b>Totals</b>                         | 34                    | 20  | 13 | 6   | 10 | 21  | 40 | 65  | 59 | 39  | 32 | 24  | 17 | 14  | 64 | 99  | 557           |

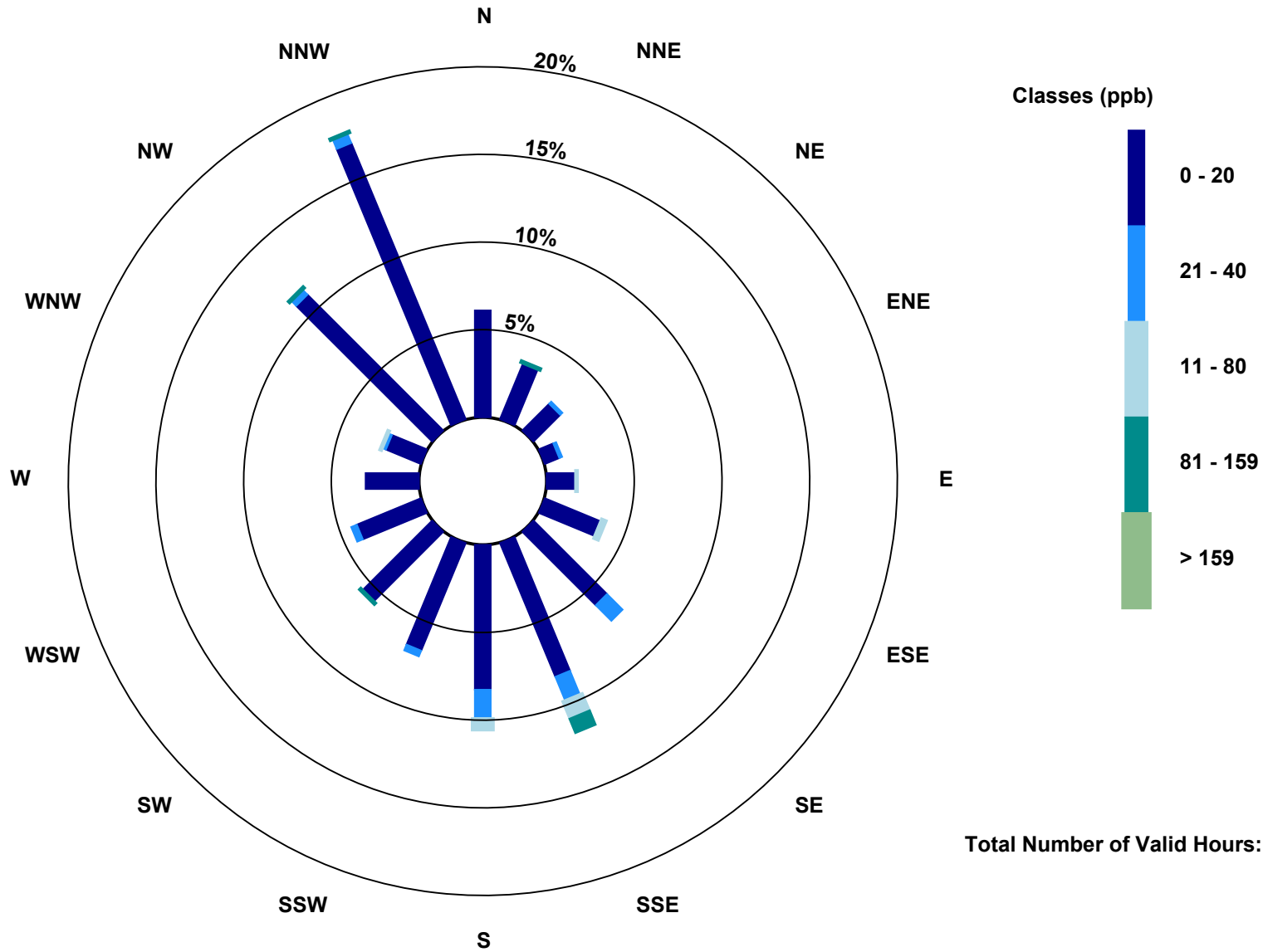
Total Number of Valid Hours: 557

Total Number of Hours: 672

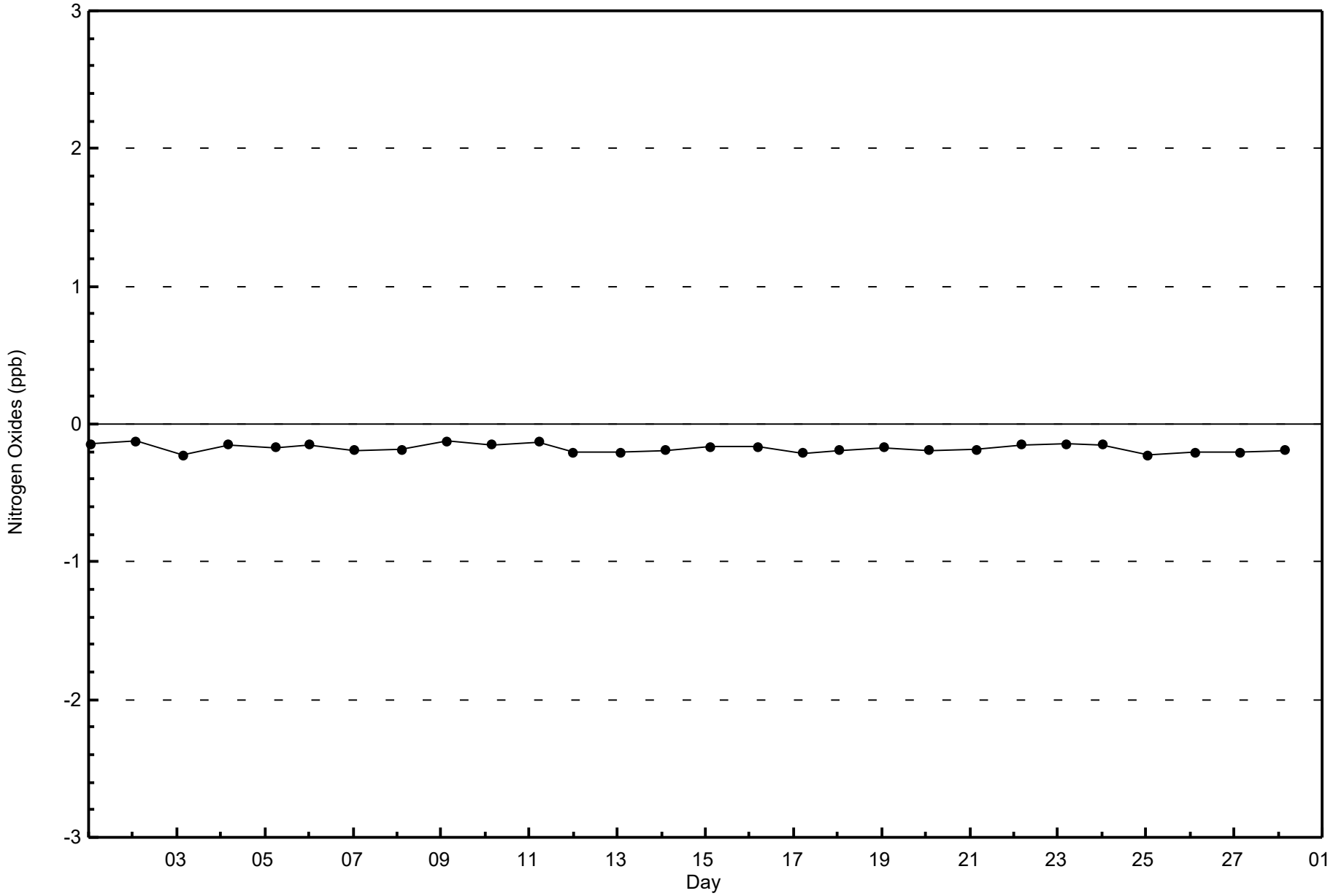


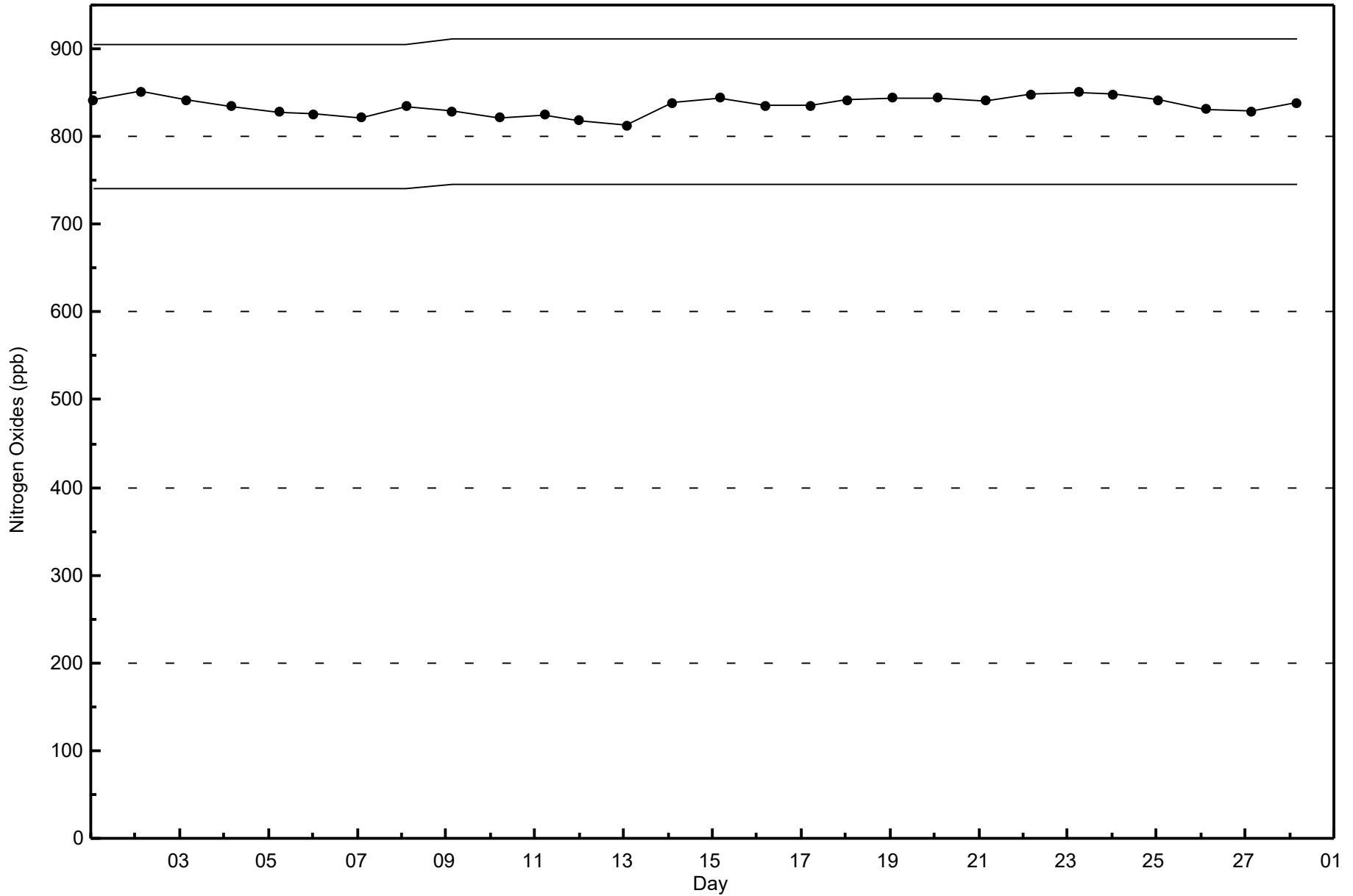
Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Nitrogen Oxides (NO<sub>x</sub>) - ppb  
Firebag



Total Number of Valid Hours: 557







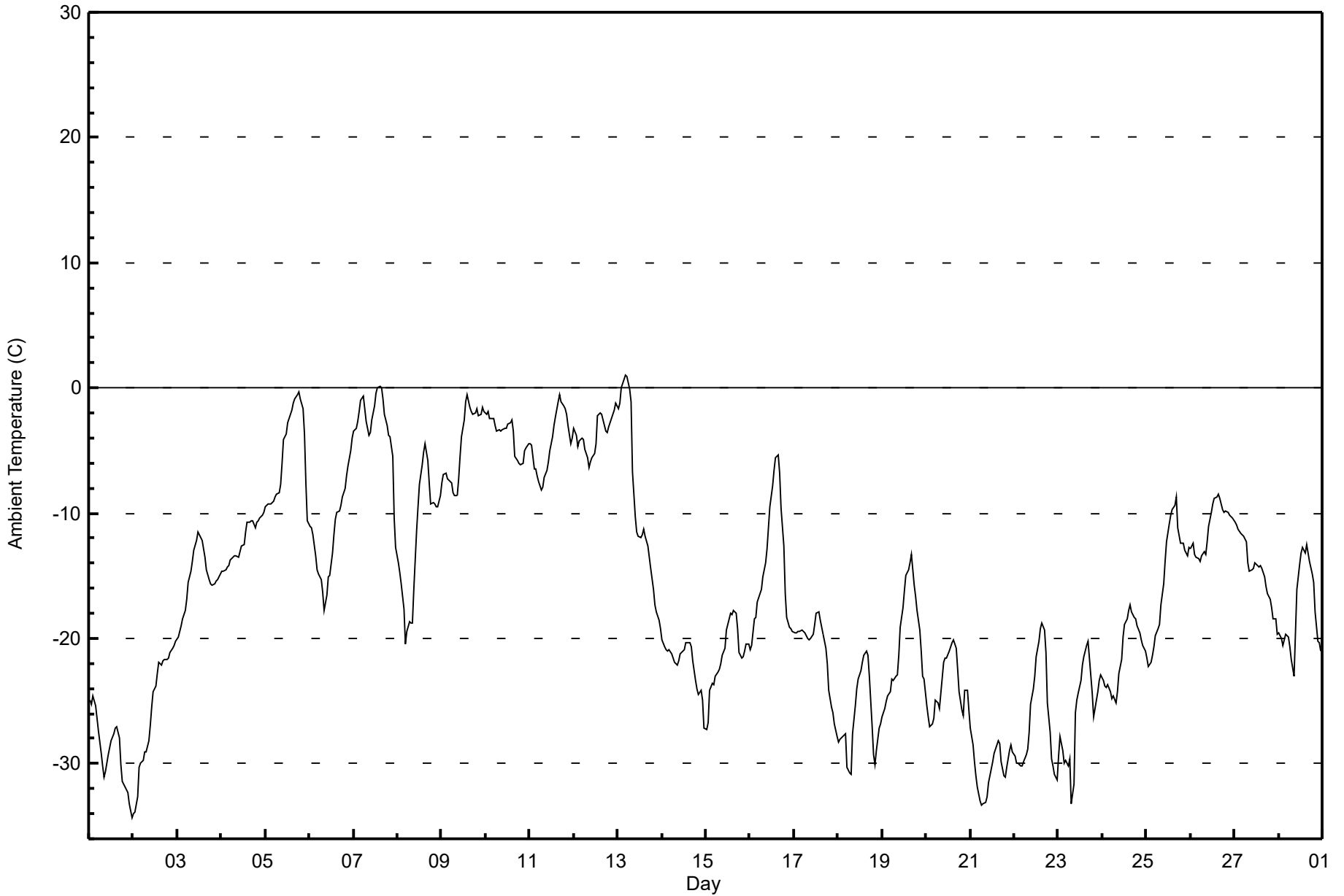


| Maximum Value: 1.1 C on Feb 13 05:00      Maximum Daily Average: -3.0 C on Feb 7   |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Hours in Service:         | 672   |       |               |               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |  |
|--|-------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------------------------|-------|-------|---------------|---------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-----------------|--|
| Minimum Value: -34.3 C on Feb 2 00:00      Minimum Daily Average: -30.3 C on Feb 21  |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Hours of Data:            | 672   |       |               |               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |  |
| Maximum Diurnal Average: -12.7 C at hour 16      Minimum Diurnal Average: -18.1 C at hour 8  |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Hours of Missing Data:    | 0     |       |               |               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |  |
| Monthly Average: -16.07 C      Percentiles: P <sub>1</sub> = -33.1 P <sub>10</sub> = -28.5 Q <sub>1</sub> = -22.9 Median = -16.6 Q <sub>3</sub> = -9.0 P <sub>90</sub> = -3.0 P <sub>99</sub> = -0.1 |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Hours of Calibration:     | 0     |       |               |               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |  |
|  |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Percent Operational Time: | 100.0 |       |               |               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |  |
| Day  | Hourly Period Ending At (MST) |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                           |       |       | Daily Average | Daily Maximum |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |  |
|  | 1                             | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     | 10    | 11    | 12    | 13    | 14    | 15    | 16    | 17    | 18    | 19    | 20    | 21    | 22                        | 23    | 24    |               |               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |  |
| 1-Feb  | -25.0                         | -25.3 | -24.6 | -25.3 | -26.4 | -27.4 | -29.2 | -30.2 | -31.0 | -30.6 | -29.2 | -28.7 | -28.2 | -27.6 | -27.2 | -27.1 | -27.9 | -30.1 | -31.4 | -31.9 | -32.0 | -32.3                     | -33.2 | -34.3 | -29.0         | -24.6         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |  |
| 2-Feb  | -34.0                         | -33.8 | -32.6 | -30.3 | -30.0 | -29.7 | -29.1 | -29.1 | -28.2 | -27.0 | -25.5 | -24.3 | -23.8 | -22.8 | -22.0 | -22.1 | -21.8 | -21.7 | -21.7 | -21.6 | -21.2 | -20.8                     | -20.6 | -20.2 | -25.6         | -20.2         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |  |
| 3-Feb  | -19.9                         | -19.5 | -19.1 | -18.4 | -17.8 | -16.8 | -15.5 | -14.6 | -13.8 | -12.9 | -12.1 | -11.5 | -11.7 | -12.1 | -12.8 | -13.5 | -14.5 | -15.3 | -15.6 | -15.8 | -15.6 | -15.4                     | -15.3 | -14.9 | -15.2         | -11.5         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |  |
| 4-Feb  | -14.7                         | -14.6 | -14.5 | -14.3 | -14.2 | -13.7 | -13.6 | -13.4 | -13.4 | -13.5 | -13.1 | -12.6 | -11.5 | -10.7 | -10.8 | -10.6 | -10.6 | -11.1 | -10.7 | -10.6 | -10.4 | -10.2                     | -9.9  | -12.3 | -9.9          |               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |  |
| 5-Feb  | -9.4                          | -9.3  | -9.2  | -9.2  | -9.1  | -8.7  | -8.5  | -8.4  | -7.7  | -6.0  | -4.1  | -3.7  | -2.8  | -2.4  | -1.8  | -1.2  | -0.9  | -0.6  | -0.3  | -0.8  | -1.7  | -3.7                      | -7.5  | -10.6 | -5.3          | -0.3          |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |  |
| 6-Feb  | -11.0                         | -11.2 | -11.7 | -13.4 | -14.5 | -14.9 | -15.3 | -16.3 | -17.8 | -16.6 | -15.0 | -15.0 | -13.2 | -11.7 | -10.5 | -10.0 | -9.8  | -9.4  | -8.7  | -8.0  | -7.0  | -6.2                      | -5.0  | -4.0  | -11.5         | -4.0          |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |  |
| 7-Feb  | -3.5                          | -3.2  | -2.7  | -1.9  | -1.0  | -0.7  | -1.7  | -2.7  | -3.8  | -3.6  | -2.6  | -1.5  | -0.5  | 0.1   | 0.2   | 0.0   | -0.9  | -2.1  | -3.0  | -3.7  | -3.9  | -5.4                      | -10.4 | -12.7 | -3.0          | 0.2           |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |  |
| 8-Feb  | -14.0                         | -14.8 | -15.7 | -17.7 | -20.5 | -19.4 | -18.6 | -18.8 | -18.8 | -16.1 | -11.4 | -9.4  | -7.7  | -6.1  | -5.2  | -4.5  | -5.8  | -7.6  | -9.2  | -9.2  | -9.3  | -9.4                      | -9.5  | -8.5  | -12.0         | -4.5          |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |  |
| 9-Feb  | -7.6                          | -6.9  | -6.8  | -7.3  | -7.4  | -7.6  | -8.4  | -8.6  | -8.6  | -7.3  | -5.5  | -3.9  | -2.6  | -1.1  | -0.6  | -1.5  | -1.9  | -2.2  | -2.0  | -1.7  | -2.2  | -2.1                      | -1.5  | -1.9  | -4.5          | -0.6          |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |  |
| 10-Feb   | -2.1                          | -1.8  | -2.4  | -2.4  | -2.5  | -3.0  | -3.4  | -3.4  | -3.4  | -3.3  | -3.2  | -3.2  | -2.9  | -2.8  | -2.6  | -3.5  | -5.5  | -5.8  | -6.0  | -6.1  | -6.0  | -5.0                      | -4.8  | -4.4  | -3.7          | -1.8          |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |  |
| 11-Feb   | -4.4                          | -4.6  | -6.4  | -6.5  | -7.0  | -7.5  | -8.1  | -8.0  | -7.2  | -6.6  | -5.9  | -5.0  | -3.9  | -3.0  | -2.3  | -1.1  | -0.6  | -1.1  | -1.5  | -1.7  | -2.1  | -3.0                      | -4.4  | -4.1  | -4.4          | -0.6          |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |  |
| 12-Feb   | -3.3                          | -3.8  | -4.7  | -4.2  | -4.0  | -4.1  | -4.9  | -5.5  | -6.3  | -5.9  | -5.6  | -5.3  | -4.5  | -2.2  | -2.0  | -2.2  | -2.5  | -3.4  | -3.6  | -3.1  | -2.4  | -2.1                      | -1.8  | -1.2  | -3.7          | -1.2          |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |  |
| 13-Feb   | -1.6                          | -1.2  | 0.0   | 0.7   | 1.1   | 0.9   | -0.1  | -1.2  | -6.7  | -10.3 | -11.5 | -11.8 | -12.0 | -11.7 | -11.2 | -11.9 | -12.6 | -13.6 | -14.4 | -16.0 | -17.3 | -17.9                     | -18.6 | -19.2 | -9.1          | 1.1           |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |  |
| 14-Feb   | -20.1                         | -20.7 | -20.9 | -21.0 | -20.8 | -21.2 | -21.6 | -21.9 | -22.1 | -21.8 | -21.3 | -21.0 | -20.9 | -20.4 | -20.4 | -20.4 | -20.7 | -21.8 | -23.3 | -24.1 | -24.4 | -24.2                     | -25.0 | -27.1 | -22.0         | -20.1         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |  |
| 15-Feb   | -27.3                         | -26.8 | -24.2 | -23.6 | -23.7 | -23.0 | -22.7 | -22.5 | -22.1 | -21.4 | -20.8 | -19.4 | -18.9 | -18.0 | -18.1 | -17.8 | -18.0 | -19.2 | -21.2 | -21.6 | -21.4 | -21.0                     | -20.5 | -20.4 | -21.4         | -17.8         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |  |
| 16-Feb   | -20.9                         | -20.6 | -18.5 | -18.4 | -17.1 | -16.4 | -16.0 | -15.1 | -14.0 | -12.9 | -11.1 | -9.5  | -7.8  | -6.6  | -5.6  | -5.4  | -6.8  | -9.6  | -12.7 | -16.5 | -18.4 | -19.1                     | -19.2 | -19.4 | -14.1         | -5.4          |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |  |
| 17-Feb   | -19.5                         | -19.5 | -19.5 | -19.4 | -19.3 | -19.4 | -19.6 | -20.0 | -20.1 | -20.0 | -19.6 | -18.9 | -18.0 | -17.8 | -18.5 | -19.1 | -19.7 | -20.8 | -22.0 | -24.1 | -25.5 | -25.9                     | -26.8 | -27.9 | -20.9         | -17.8         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |  |
| 18-Feb   | -28.3                         | -28.0 | -27.9 | -27.7 | -27.7 | -30.3 | -30.8 | -30.8 | -27.6 | -25.3 | -24.1 | -23.2 | -22.5 | -21.9 | -21.3 | -21.0 | -21.4 | -23.0 | -27.0 | -29.2 | -30.0 | -29.0                     | -27.2 | -26.8 | -26.3         | -21.0         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |  |
| 19-Feb   | -26.3                         | -25.6 | -25.1 | -24.6 | -24.3 | -23.3 | -23.3 | -23.1 | -22.9 | -21.3 | -19.2 | -17.6 | -16.1 | -14.9 | -14.5 | -14.0 | -13.2 | -15.8 | -16.7 | -17.7 | -19.3 | -21.0                     | -23.1 | -23.3 | -20.2         | -13.2         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |  |
| 20-Feb   | -25.4                         | -26.2 | -27.0 | -26.9 | -26.3 | -24.9 | -25.1 | -25.6 | -24.4 | -21.9 | -21.5 | -21.6 | -21.0 | -20.6 | -20.4 | -20.1 | -20.8 | -22.4 | -24.3 | -25.7 | -26.2 | -24.2                     | -24.1 | -25.7 | -23.9         | -20.1         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |  |
| 21-Feb   | -27.2                         | -28.5 | -29.8 | -30.9 | -31.9 | -32.9 | -33.3 | -33.2 | -33.0 | -32.6 | -31.5 | -30.4 | -29.8 | -29.2 | -28.5 | -28.1 | -28.4 | -29.8 | -30.9 | -31.1 | -30.2 | -29.0                     | -28.5 | -29.1 | -30.3         | -27.2         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |  |
| 22-Feb   | -29.4                         | -29.9 | -30.0 | -30.2 | -30.1 | -29.8 | -29.3 | -28.8 | -27.5 | -25.2 | -24.0 | -23.0 | -21.5 | -20.2 | -19.2 | -18.8 | -19.3 | -21.1 | -25.1 | -27.5 | -29.6 | -30.2                     | -30.8 | -31.3 | -26.3         | -18.8         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |  |
| 23-Feb   | -29.4                         | -27.8 | -29.0 | -30.0 | -29.8 | -30.1 | -29.7 | -33.2 | -31.6 | -25.9 | -25.0 | -24.4 | -23.3 | -22.2 | -21.5 | -20.6 | -20.2 | -21.6 | -24.3 | -26.3 | -25.6 | -24.3                     | -23.3 | -22.9 | -25.9         | -20.2         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |  |
| 24-Feb   | -23.4                         | -23.8 | -23.9 | -23.7 | -24.2 | -24.8 | -24.6 | -25.1 | -24.2 | -22.8 | -21.7 | -19.9 | -18.9 | -18.4 | -17.8 | -17.4 | -17.8 | -18.3 | -18.5 | -19.0 | -19.6 | -20.1                     | -20.6 | -21.0 | -21.2         | -17.4         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |  |
| 25-Feb   | -21.6                         | -22.2 | -22.0 | -21.3 | -20.7 | -19.8 | -19.3 | -18.9 | -17.4 | -15.7 | -13.8 | -12.3 | -10.9 | -10.2 | -9.7  | -9.3  | -8.7  | -11.2 | -12.4 | -12.4 | -12.4 | -12.9                     | -13.3 | -12.7 | -15.0         | -8.7          |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |  |
| 26-Feb   | -12.8                         | -12.4 | -13.3 | -13.5 | -13.7 | -13.9 | -13.4 | -13.1 | -13.2 | -12.3 | -11.0 | -9.9  | -9.2  | -8.9  | -8.7  | -8.5  | -8.8  | -9.7  | -10.0 | -9.8  | -10.0 | -10.1                     | -10.3 | -10.4 | -11.1         | -8.5          |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |  |
| 27-Feb   | -10.7                         | -11.0 | -11.3 | -11.6 | -11.7 | -11.8 | -12.3 | -13.9 | -14.7 | -14.6 | -14.4 | -14.0 | -14.2 | -14.2 | -14.2 | -14.4 | -15.0 | -15.8 | -16.4 | -16.9 | -17.6 | -18.5                     | -18.5 | -19.6 | -14.5         | -10.7         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |  |
| 28-Feb   | -19.6                         | -20.0 | -20.5 | -20.1 | -19.7 | -19.9 | -20.6 | -21.6 | -23.0 | -19.6 | -16.1 | -14.1 | -13.2 | -12.7 | -13.1 | -12.5 | -13.2 | -13.9 | -14.9 | -15.5 | -17.8 | -20.2                     | -20.3 | -21.0 | -17.6         | -12.5         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |  |
|  |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | -17.6                     | -17.6 | -17.6 | -17.6         | -17.6         | -17.7 | -17.8 | -18.1 | -18.0 | -16.9 | -15.7 | -14.8 | -14.0 | -13.3 | -12.9 | -12.7 | -13.1 | -14.2 | -15.3 | -16.0 | -16.4 | -16.6 | -16.9 | -17.3 | Diurnal Average |  |
|  |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | -1.6                      | -1.2  | 0.0   | 0.7           | 1.1           | 0.9   | -0.1  | -1.2  | -3.4  | -3.3  | -2.6  | -1.5  | -0.5  | 0.1   | 0.2   | 0.0   | -0.6  | -0.6  | -0.3  | -0.8  | -1.7  | -2.1  | -1.5  | -1.2  | Diurnal Maximum |  |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Ambient Temperature (AT) - C**  
**Firebag - February 2023**





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Ambient Temperature (AT) - C  
Firebag - February 2023**

| <b>Concentration Ranges (C)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---------------------------------|------------------------|----------|---------------------|
| -50 - -20                       | 258                    | 38.39    | 38.39               |
| -20 - 0                         | 408                    | 60.71    | 99.11               |
| 0 - 10                          | 6                      | 0.89     | 100.00              |
| 10 - 20                         | 0                      | 0.00     | 100.00              |
| > 20                            | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 672

Total Number of Hours: 672



**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

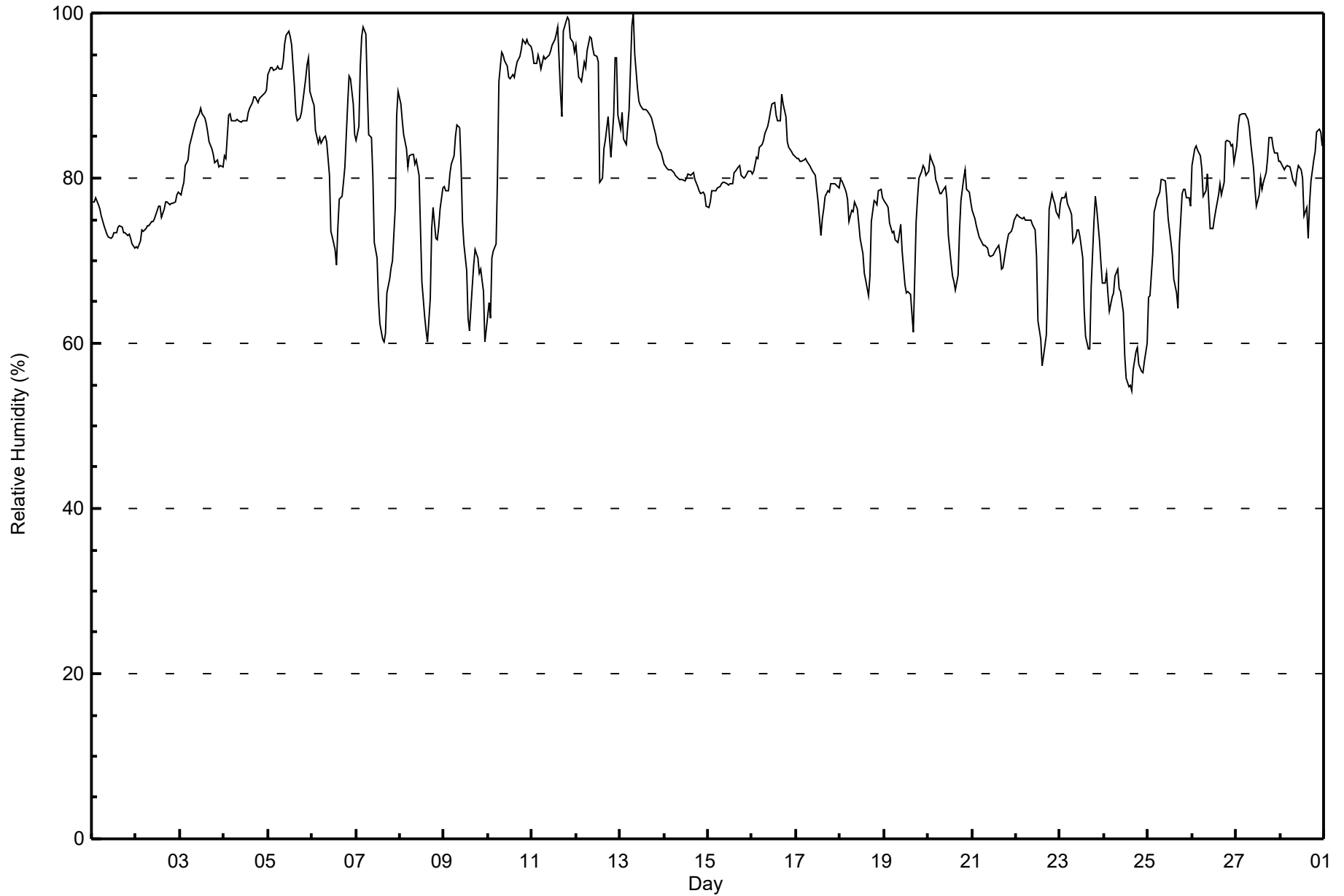
**Relative Humidity (RH) - %**  
**Firebag - February 2023**

| Maximum Value: 100.0 % on Feb 13 08:00      Maximum Daily Average: 95.4 % on Feb 11   |                               |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |      |      |      |      |      | Hours in Service:         | 672   |      |               |               |
|---|-------------------------------|------|------|------|------|------|------|-------|------|------|------|------|------|------|------|------|------|------|------|------|------|---------------------------|-------|------|---------------|---------------|
| Minimum Value: 54.3 % on Feb 24 16:00      Minimum Daily Average: 61.4 % on Feb 24  |                               |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |      |      |      |      |      | Hours of Data:            | 672   |      |               |               |
| Maximum Diurnal Average: 82.4 % at hour 8      Minimum Diurnal Average: 74.8 % at hour 16   |                               |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |      |      |      |      |      | Hours of Missing Data:    | 0     |      |               |               |
| Monthly Average: 79.72 %      Percentiles: P <sub>1</sub> = 57.2 P <sub>10</sub> = 68.0 Q <sub>1</sub> = 74.1 Median = 79.6 Q <sub>3</sub> = 85.8 P <sub>90</sub> = 93.1 P <sub>99</sub> = 98.0 |                               |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |      |      |      |      |      | Hours of Calibration:     | 0     |      |               |               |
|   |                               |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |      |      |      |      |      | Percent Operational Time: | 100.0 |      |               |               |
| Day   | Hourly Period Ending At (MST) |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |      |      |      |      |      |                           |       |      | Daily Average | Daily Maximum |
|   | 1                             | 2    | 3    | 4    | 5    | 6    | 7    | 8     | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20   | 21   | 22                        | 23    | 24   |               |               |
| 1-Feb   | 77.1                          | 77.1 | 77.7 | 76.8 | 76.2 | 75.5 | 74.2 | 73.8  | 73.1 | 72.9 | 72.7 | 73.0 | 73.3 | 73.4 | 74.1 | 74.2 | 74.1 | 73.4 | 73.3 | 73.1 | 73.1 | 72.8                      | 72.1  | 71.6 | 74.1          | 77.7          |
| 2-Feb   | 71.7                          | 71.6 | 72.5 | 73.8 | 73.6 | 73.9 | 74.2 | 74.2  | 74.7 | 74.7 | 75.2 | 75.7 | 76.7 | 76.6 | 75.3 | 76.3 | 77.1 | 77.2 | 76.9 | 77.0 | 76.9 | 77.1                      | 77.9  | 78.4 | 75.4          | 78.4          |
| 3-Feb   | 78.0                          | 78.9 | 79.4 | 81.5 | 82.2 | 83.8 | 84.6 | 86.0  | 86.6 | 87.1 | 87.8 | 88.5 | 87.8 | 87.4 | 86.6 | 85.5 | 84.5 | 83.5 | 82.9 | 81.9 | 82.2 | 81.3                      | 81.6  | 81.4 | 83.8          | 88.5          |
| 4-Feb   | 82.7                          | 82.4 | 87.6 | 87.8 | 86.9 | 86.9 | 87.0 | 87.1  | 86.9 | 86.8 | 87.0 | 87.0 | 88.0 | 88.5 | 89.2 | 89.9 | 89.9 | 89.2 | 89.7 | 89.8 | 90.0 | 90.3                      | 90.6  | 90.6 | 87.8          | 90.6          |
| 5-Feb   | 92.5                          | 93.4 | 93.4 | 93.0 | 93.3 | 93.6 | 93.3 | 93.3  | 94.3 | 96.3 | 97.4 | 97.9 | 97.1 | 96.0 | 91.0 | 87.8 | 87.0 | 87.3 | 88.0 | 89.4 | 92.1 | 93.7                      | 94.5  | 90.4 | 92.7          | 97.9          |
| 6-Feb   | 89.3                          | 88.8 | 85.8 | 84.2 | 85.0 | 84.3 | 84.9 | 85.0  | 84.4 | 80.4 | 73.6 | 72.9 | 71.4 | 69.6 | 74.1 | 77.5 | 77.8 | 79.5 | 81.4 | 89.0 | 92.3 | 92.0                      | 89.0  | 85.3 | 82.4          | 92.3          |
| 7-Feb   | 84.5                          | 86.3 | 93.5 | 97.1 | 98.3 | 97.4 | 90.9 | 85.3  | 85.0 | 80.2 | 72.2 | 70.4 | 65.2 | 62.3 | 60.6 | 60.1 | 61.2 | 66.2 | 67.9 | 69.1 | 70.0 | 76.5                      | 87.7  | 90.5 | 78.3          | 98.3          |
| 8-Feb   | 88.9                          | 86.9 | 85.3 | 83.6 | 81.4 | 82.7 | 82.9 | 82.9  | 81.7 | 82.3 | 80.4 | 73.9 | 67.4 | 63.2 | 61.5 | 60.2 | 65.4 | 73.9 | 76.4 | 72.7 | 72.6 | 74.1                      | 76.3  | 78.8 | 76.5          | 88.9          |
| 9-Feb   | 78.9                          | 78.6 | 78.5 | 80.6 | 81.7 | 82.7 | 85.1 | 86.5  | 86.2 | 81.5 | 74.8 | 72.1 | 68.9 | 63.0 | 61.6 | 66.9 | 69.5 | 71.4 | 70.3 | 68.5 | 68.9 | 66.2                      | 60.2  | 61.7 | 73.5          | 86.5          |
| 10-Feb  | 64.9                          | 63.0 | 70.4 | 71.1 | 72.0 | 80.1 | 91.7 | 95.3  | 95.0 | 94.2 | 93.5 | 92.2 | 92.0 | 92.5 | 92.2 | 93.2 | 94.0 | 94.8 | 95.6 | 96.8 | 96.2 | 96.8                      | 96.3  | 95.9 | 88.3          | 96.8          |
| 11-Feb  | 95.3                          | 93.9 | 93.9 | 94.9 | 94.3 | 93.2 | 94.7 | 94.5  | 94.7 | 95.0 | 95.4 | 96.1 | 96.7 | 97.4 | 98.3 | 90.4 | 87.5 | 97.7 | 99.0 | 99.5 | 99.2 | 97.0                      | 96.5  | 95.2 | 95.4          | 99.5          |
| 12-Feb  | 96.1                          | 92.3 | 92.0 | 91.8 | 94.0 | 93.4 | 95.4 | 97.1  | 97.0 | 95.7 | 94.9 | 94.7 | 94.0 | 79.6 | 80.0 | 83.6 | 84.6 | 87.5 | 85.0 | 82.5 | 87.7 | 94.6                      | 94.6  | 87.6 | 90.7          | 97.1          |
| 13-Feb  | 85.9                          | 88.0 | 84.7 | 84.1 | 86.2 | 88.3 | 98.6 | 100.0 | 95.2 | 90.9 | 89.3 | 88.8 | 88.4 | 88.3 | 88.3 | 88.2 | 87.6 | 87.3 | 86.7 | 85.3 | 84.2 | 83.7                      | 83.0  | 82.4 | 88.1          | 100.0         |
| 14-Feb  | 81.7                          | 81.2 | 81.0 | 81.0 | 81.0 | 80.7 | 80.3 | 80.1  | 79.9 | 79.8 | 79.8 | 79.7 | 80.0 | 80.4 | 80.4 | 80.5 | 80.7 | 79.9 | 78.9 | 78.4 | 78.2 | 78.4                      | 78.0  | 76.5 | 79.9          | 81.7          |
| 15-Feb  | 76.4                          | 77.1 | 78.5 | 78.5 | 78.4 | 78.9 | 79.1 | 79.2  | 79.5 | 79.6 | 79.4 | 79.1 | 79.3 | 79.4 | 80.7 | 80.8 | 81.3 | 81.5 | 80.3 | 80.1 | 80.2 | 80.5                      | 80.9  | 80.8 | 79.6          | 81.5          |
| 16-Feb  | 80.5                          | 80.8 | 82.5 | 82.4 | 83.7 | 84.1 | 84.6 | 85.4  | 86.3 | 87.1 | 88.1 | 89.0 | 89.1 | 87.6 | 87.0 | 87.0 | 90.2 | 88.9 | 87.4 | 84.4 | 83.7 | 83.2                      | 82.8  | 82.7 | 85.3          | 90.2          |
| 17-Feb  | 82.4                          | 82.3 | 82.0 | 82.1 | 82.3 | 82.3 | 82.0 | 81.6  | 81.2 | 80.9 | 80.4 | 78.7 | 77.2 | 73.0 | 75.2 | 76.3 | 77.8 | 78.5 | 78.2 | 79.3 | 79.3 | 79.3                      | 79.1  | 78.8 | 79.6          | 82.4          |
| 18-Feb  | 79.9                          | 79.7 | 78.9 | 78.3 | 77.5 | 74.8 | 76.1 | 76.0  | 77.1 | 76.3 | 74.6 | 72.8 | 70.9 | 68.4 | 67.7 | 65.8 | 68.2 | 74.7 | 77.3 | 77.1 | 76.7 | 78.5                      | 78.7  | 77.7 | 75.1          | 79.9          |
| 19-Feb  | 77.3                          | 76.8 | 76.4 | 74.5 | 73.4 | 73.5 | 72.5 | 72.3  | 73.3 | 74.4 | 71.1 | 67.2 | 66.1 | 66.3 | 65.9 | 63.6 | 61.4 | 74.7 | 77.6 | 79.9 | 80.8 | 81.5                      | 81.2  | 80.4 | 73.4          | 81.5          |
| 20-Feb  | 80.9                          | 82.7 | 82.2 | 81.4 | 79.9 | 79.2 | 78.1 | 78.2  | 78.5 | 79.0 | 77.5 | 73.0 | 69.6 | 68.1 | 67.4 | 66.4 | 68.4 | 73.8 | 77.3 | 80.1 | 81.0 | 78.7                      | 78.4  | 77.0 | 76.5          | 82.7          |
| 21-Feb  | 76.1                          | 75.1 | 74.2 | 73.5 | 72.9 | 72.1 | 71.9 | 71.8  | 71.5 | 70.7 | 70.6 | 70.7 | 70.9 | 71.3 | 71.8 | 70.9 | 68.9 | 69.2 | 71.4 | 72.3 | 73.2 | 73.6                      | 74.0  | 74.9 | 72.2          | 76.1          |
| 22-Feb  | 75.6                          | 75.4 | 75.2 | 75.1 | 75.2 | 74.9 | 75.0 | 75.0  | 74.8 | 74.4 | 73.7 | 70.6 | 62.6 | 60.4 | 57.3 | 58.5 | 61.1 | 68.0 | 76.3 | 78.2 | 77.5 | 76.9                      | 75.9  | 75.2 | 71.8          | 78.2          |
| 23-Feb  | 76.9                          | 77.7 | 77.7 | 78.2 | 76.9 | 76.0 | 75.5 | 72.2  | 72.8 | 73.8 | 73.8 | 72.9 | 70.3 | 64.0 | 60.8 | 59.3 | 59.4 | 66.8 | 74.8 | 77.8 | 76.2 | 72.4                      | 69.7  | 67.3 | 71.8          | 78.2          |
| 24-Feb  | 67.3                          | 68.5 | 65.9 | 63.9 | 65.7 | 66.0 | 68.1 | 68.9  | 66.6 | 66.3 | 63.7 | 58.5 | 55.7 | 54.7 | 54.9 | 54.3 | 56.8 | 58.9 | 59.5 | 57.4 | 56.6 | 56.4                      | 57.8  | 60.0 | 61.4          | 68.9          |
| 25-Feb  | 65.6                          | 65.7 | 70.8 | 75.9 | 76.7 | 77.5 | 78.4 | 79.8  | 79.9 | 79.6 | 77.7 | 75.1 | 72.3 | 70.7 | 67.8 | 66.2 | 64.3 | 72.1 | 78.1 | 78.6 | 78.6 | 77.6                      | 77.6  | 76.6 | 74.3          | 79.9          |
| 26-Feb  | 81.5                          | 83.5 | 83.9 | 83.4 | 82.8 | 81.2 | 77.7 | 78.4  | 80.5 | 77.2 | 73.8 | 73.9 | 75.1 | 76.1 | 77.9 | 79.4 | 78.0 | 79.5 | 84.4 | 84.6 | 84.4 | 84.0                      | 84.1  | 81.9 | 80.3          | 84.6          |
| 27-Feb  | 83.9                          | 86.2 | 87.7 | 87.8 | 87.8 | 87.7 | 87.2 | 86.1  | 84.2 | 81.1 | 78.7 | 76.7 | 78.0 | 80.0 | 78.7 | 79.5 | 80.6 | 82.4 | 84.9 | 84.8 | 83.8 | 83.1                      | 83.0  | 82.0 | 83.2          | 87.8          |
| 28-Feb  | 82.0                          | 81.4 | 81.0 | 81.3 | 81.6 | 81.3 | 80.8 | 79.9  | 79.1 | 80.7 | 81.6 | 81.0 | 80.0 | 75.4 | 76.5 | 72.7 | 76.9 | 79.6 | 82.2 | 83.2 | 85.7 | 86.0                      | 85.5  | 84.0 | 80.8          | 86.0          |
|   |                               |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |      |      |      |      |      | Diurnal Average           |       |      |               |               |
|   |                               |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |      |      |      |      |      | Diurnal Maximum           |       |      |               |               |
|   |                               |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |      |      |      |      |      |                           |       |      |               |               |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Relative Humidity (RH) - %**  
**Firebag - February 2023**





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Relative Humidity (RH) - %**  
**Firebag - February 2023**

| <b>Concentration Ranges (%)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---------------------------------|------------------------|----------|---------------------|
| 0 - 20                          | 0                      | 0.00     | 0.00                |
| 20 - 40                         | 0                      | 0.00     | 0.00                |
| 40 - 60                         | 16                     | 2.38     | 2.38                |
| 60 - 80                         | 336                    | 50.00    | 52.38               |
| 80 - 100                        | 319                    | 47.47    | 99.85               |

Total Number of Valid Hours: 672

Total Number of Hours: 672



# Wood Buffalo Environmental Association

## Summary of Hour Averages

# Wind Speed (WS) - km/h

## Firebag - February 2023

|  |  |                                |
|--|--|--------------------------------|
| Maximum Speed: 29 km/h on Feb 24 14:00             | Maximum Daily Speed Average: 21.6 km/h on Feb 24   | Hours in Service: 672          |
| Minimum Speed Value: 0 km/h on Feb 4 19:00         | Minimum Daily Speed Average: 2.0 km/h on Feb 4   | Hours of Data: 585             |
| Maximum Diurnal Speed Average: 4.2 km/h at hour 12 | Minimum Diurnal Speed Average: 0.7 km/h at hour 19   | Hours of Missing Data: 87      |
| Monthly Average Velocity: 2.4 km/h 231.0 deg       | Percentiles: P <sub>1</sub> = 1 P <sub>10</sub> = 3 Q <sub>1</sub> = 7 Median = 10 Q <sub>3</sub> = 16 P <sub>90</sub> = 20 P <sub>99</sub> = 28 | Percent Operational Time: 87.1 |

| Day    | Hourly Period Ending At (MST) |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Daily Average | Daily Maximum |
|--------|-------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------------|---------------|
|        | 1                             | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     | 10    | 11    | 12    | 13    | 14    | 15    | 16    | 17    | 18    | 19    | 20    | 21    | 22    | 23    | 24    |               |               |
| 1-Feb  | N5                            | N2    | NNW6  | NW9   | NNW10 | NNW9  | NNW9  | NNW9  | NNW10 | NNW10 | NNW10 | NW9   | NW9   | NW8   | NW7   | NW7   | WNW4  | WNW3  | WNW2  | WNW2  | WNW2  | UO    | UO    | UO    | NNW6.5        | NNW10         |
| 2-Feb  | UO                            | SSE2  | S3    | S4    | SSE4  | SSE6  | S7    | SSE7  | SSE7  | SSE8  | SSE10 | SSE12 | SSE12 | SSE15 | SSE19 | SSE21 | SE23  | SE25  | SSE26 | SSE25 | SSE23 | SSE24 | SSE23 | SSE24 | SSE14.2       | SSE26         |
| 3-Feb  | SSE24                         | SSE22 | SSE21 | SSE20 | S17   | S17   | SSW17 | SSW14 | SSW11 | SW9   | WSW9  | W8    | NW10  | NNW10 | N9    | NNW9  | N10   | N9    | N9    | NE5   | NNE6  | NE5   | NE4   | ESE3  | S3.7          | SSE24         |
| 4-Feb  | S2                            | E4    | SE6   | E4    | E3    | E3    | ESE4  | SE2   | NNE3  | NNE2  | NNE3  | NE2   | NE3   | NE2   | UO    | ESE2  | SSE2  | SSE1  | W0    | ESE3  | SE3   | ESE4  | SSE2  | SSE2  | ESE2.0        | SE6           |
| 5-Feb  | SSE3                          | S1    | SSE2  | SSE3  | SSE3  | SSE3  | ESE3  | SE3   | SSE2  | SSE5  | SSW4  | SSW4  | SSW4  | S4    | SSW6  | SSE10 | S9    | SSW13 | SSW14 | SW13  | WSW13 | WNW12 | NNW18 | NNW16 | SSW3.3        | NNW18         |
| 6-Feb  | NW12                          | WNW14 | WNW14 | W15   | W13   | W11   | W12   | WNW8  | N7    | N7    | NNE2  | SE3   | SSW8  | S8    | S9    | SSE11 | SSE13 | SE12  | SSE16 | SSE19 | SSE17 | S16   | S18   | S18   | SSW5.2        | SSE19         |
| 7-Feb  | SSW16                         | SSW19 | SW18  | WSW16 | WSW16 | WSW21 | W20   | W23   | WSW20 | WSW19 | WSW23 | WSW25 | WSW26 | WSW26 | W26   | W22   | W18   | WSW16 | WSW15 | WSW14 | WSW15 | WNW10 | N11   | N12   | WSW16.6       | WSW26         |
| 8-Feb  | NNE9                          | NNE6  | NE3   | E1    | NW2   | N4    | NNW3  | NNE3  | ENE2  | ESE1  | SSW3  | SW12  | SSW9  | SW8   | M     | M     | SSE8  | SSE9  | SSE11 | SE13  | SSE12 | SE12  | SE12  | SSE11 | SSE3.8        | SE13          |
| 9-Feb  | SSE15                         | S15   | S15   | S18   | SSW17 | SSW15 | SSW16 | SSW17 | SSW16 | SSW17 | S14   | SSW15 | SSW13 | S14   | S17   | S16   | SSE12 | SE12  | SE12  | SE13  | SSE12 | S11   | S11   | S11   | S13.4         | S18           |
| 10-Feb | S7                            | SSW2  | NNE7  | NE6   | E5    | ENE7  | E10   | E12   | ENE12 | ENE13 | E12   | E13   | ENE11 | ENE13 | NE10  | NNE9  | N9    | NNE8  | NNE9  | NNE8  | N5    | E7    | ESE6  | ESE8  | ENE7.0        | ENE13         |
| 11-Feb | SE9                           | SSE10 | SSW7  | S10   | S9    | SSW10 | SSW11 | S11   | SSW11 | SW12  | SSW13 | SSW14 | S14   | S16   | S18   | SSW18 | SW19  | SW19  | WSW18 | W15   | W16   | WSW11 | SW12  | SW14  | SSW11.4       | SW19          |
| 12-Feb | SW15                          | SW16  | SW13  | WSW11 | WSW10 | SW10  | SW9   | WSW9  | W6    | W5    | WSW4  | SSE2  | SE4   | S5    | SSE10 | SSE13 | SE13  | ESE12 | ESE14 | SE17  | SE22  | SE22  | SE27  | SE27  | SSE8.2        | SE27          |
| 13-Feb | SSE24                         | SSE19 | S20   | SSW17 | SSW13 | SW18  | SW17  | WNW14 | NW21  | NW22  | NW25  | NW26  | NNW27 | NNW27 | NNW26 | NNW28 | NNW28 | NW24  | NW24  | NNW23 | NNW20 | NNW21 | NNW23 | NNW21 | NW13.2        | NNW28         |
| 14-Feb | NNW20                         | NNW18 | NNW13 | NNW12 | NW10  | NW10  | NNW10 | NNW10 | NNW10 | NNW8  | NW8   | NW8   | NW9   | NNW7  | NNW9  | NNW8  | NW10  | NNW8  | NW8   | NNW8  | NW7   | NNW6  | N3    | N5    | NNW9.1        | NNW20         |
| 15-Feb | N4                            | NW2   | NW1   | S2    | WSW3  | SW5   | SW4   | WSW4  | SW5   | SW5   | WSW4  | SW5   | S5    | S4    | SSE5  | S7    | S7    | SSE7  | SSE8  | SE11  | SE12  | SE14  | SSE12 | S4.2  | SE14          |               |
| 16-Feb | SE13                          | SE12  | SSE15 | SE15  | SE13  | SE15  | SE16  | SE18  | SE17  | SSE17 | SSE17 | S17   | S19   | SSW19 | SW16  | SW16  | W13   | NW17  | NNW18 | NNW19 | NNW18 | NNW15 | NNW13 | NNW14 | S4.4          | S19           |
| 17-Feb | NNW12                         | NNW12 | NNW12 | NNW10 | NNW12 | NNW12 | NNW9  | NNW8  | NNW6  | N8    | N7    | NNW7  | N7    | N8    | N9    | N10   | N12   | N11   | N9    | N9    | N5    | NNE6  | N7    | N8.8  | NNW12         |               |
| 18-Feb | N9                            | NNE8  | NE7   | NE6   | NE4   | N4    | NNW3  | NNW5  | NW3   | NNW9  | NNW10 | NNW10 | NNW8  | NNW9  | NNW8  | NW7   | NNW6  | N4    | NNW2  | NE3   | E4    | ESE5  | SE7   | SE9   | N4.2          | NNW10         |
| 19-Feb | SE9                           | SE10  | SE11  | SE13  | SE14  | SE15  | SE16  | ESE14 | ESE12 | ESE12 | ESE10 | ESE8  | ESE10 | ESE8  | ESE6  | ESE5  | SE1   | N8    | N7    | N4    | NNW7  | NNW5  | NNW7  | NNW7  | ESE6.0        | SE16          |
| 20-Feb | NW4                           | NW3   | NNW4  | N4    | NNW7  | NW12  | NNW10 | NNW9  | NNW7  | WNW9  | NW16  | NW19  | NW18  | NNW14 | NW12  | NW12  | NNW13 | N10   | NNW8  | NNW8  | NW6   | NW9   | NW16  | NW15  | NW10.0        | NW19          |
| 21-Feb | NNW16                         | NNW18 | NW14  | NW16  | NW18  | NW17  | NNW21 | NNW21 | NW22  | NW19  | NW17  | NW18  | NW20  | NW21  | NW20  | NW17  | NW18  | NW16  | NNW14 | NNW10 | NNW12 | NNW17 | NNW18 | NNW16 | NW17.2        | NW22          |
| 22-Feb | NNW13                         | NW10  | NW7   | NW7   | NW9   | NW9   | NW11  | NW9   | NNW11 | NNW14 | N16   | NNW14 | NNW9  | NNW9  | NW6   | NW7   | NNW6  | NNW5  | NNE4  | SW2   | NNE1  | UO    | NW4   | NNW3  | NNW7.6        | N16           |
| 23-Feb | NNW6                          | NNW5  | NNW6  | N7    | NNE7  | NNE7  | NE5   | NNE2  | NW4   | NW9   | NW14  | NW12  | NW8   | W9    | W8    | WNW6  | SW5   | SW5   | S6    | SSE8  | S10   | S11   | S14   | S14   | WNW2.5        | NW14          |
| 24-Feb | S13                           | S13   | S15   | S14   | S14   | S15   | S18   | S18   | S21   | S24   | S25   | S29   | S28   | S29   | SSE27 | SSE29 | SSE28 | SSE26 | SSE24 | S24   | S25   | S24   | S22   | S20   | S21.6         | S29           |
| 25-Feb | S20                           | S20   | SSW18 | SSW16 | SSW14 | SSW15 | SSW14 | SW12  | SSW14 | SW13  | SW12  | SSW13 | SSW17 | SW12  | SW8   | SW5   | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | ---           | S20           |
| 26-Feb | UO                            | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | ---           | ---           |
| 27-Feb | UO                            | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | ---           | ---           |
| 28-Feb | UO                            | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | ---           | ---           |

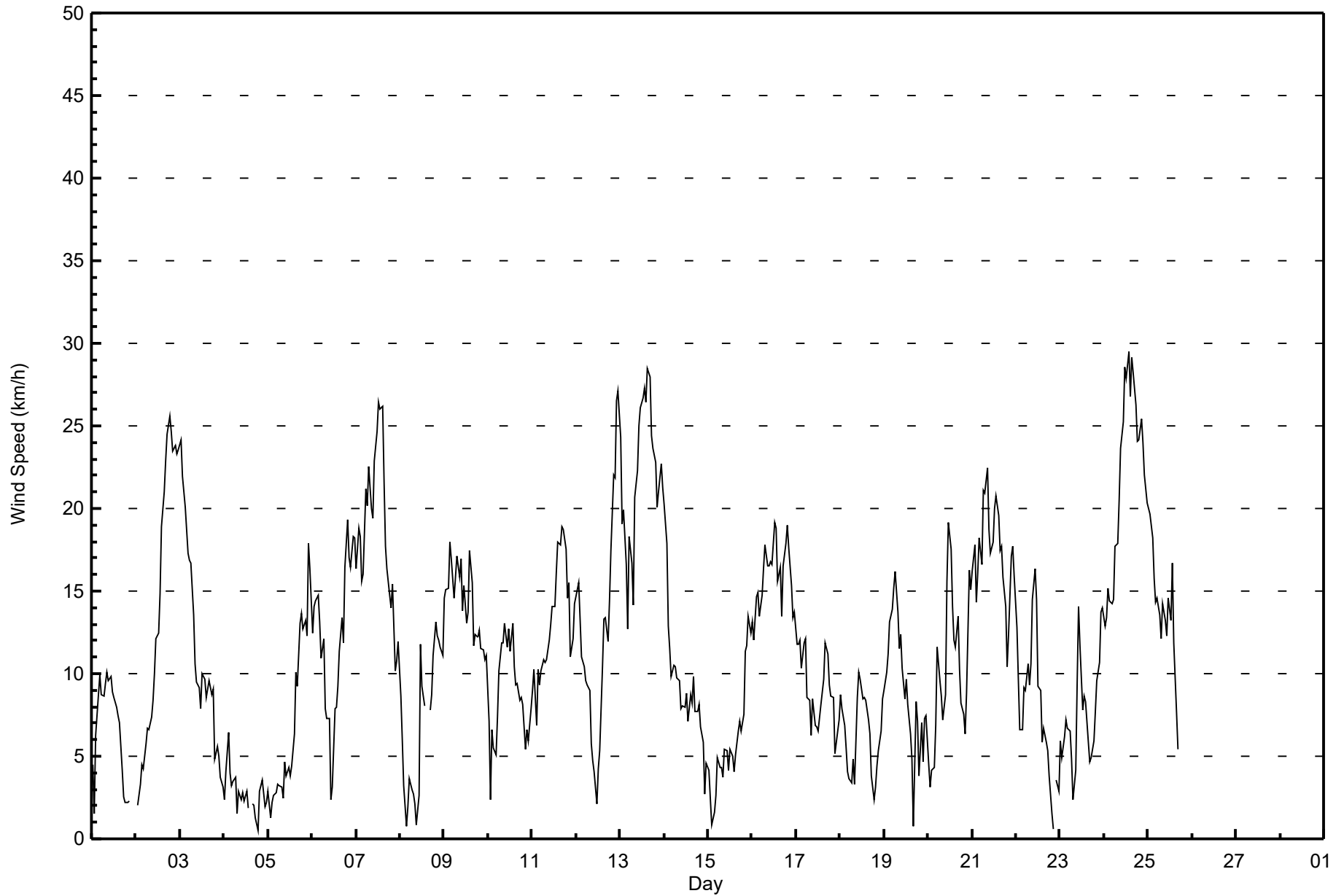
|       |        |        |       |       |       |       |        |      |      |      |        |        |        |        |        |        |        |        |       |      |      |      |      |                 |
|-------|--------|--------|-------|-------|-------|-------|--------|------|------|------|--------|--------|--------|--------|--------|--------|--------|--------|-------|------|------|------|------|-----------------|
| S2.2  | SSW2.7 | SSW3.3 | SW3.5 | SW3.2 | SW3.6 | SW3.3 | WSW2.8 | W2.8 | W2.9 | W3.6 | WSW4.2 | WSW3.8 | WSW3.7 | WSW3.7 | WSW2.8 | WSW2.0 | WSW1.0 | SSW0.7 | S1.6  | S2.1 | S2.1 | S1.5 | S1.8 | Diurnal Average |
| SSE24 | SSE22  | SSE21  | SSE20 | NW18  | WSW21 | NNW21 | W23    | NW22 | S24  | S25  | S29    | S28    | S29    | SSE27  | SSE29  | SSE28  | SSE26  | SSE26  | SSE25 | S25  | S24  | SE27 | SE27 | Diurnal Maximum |

M - Maintenance      UO - Unstable Operation  
 All monthly, daily, and diurnal averages have been calculated using vector methods



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Wind Speed (WS) - km/h**  
**Firebag - February 2023**







**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Wind Speed (WS) - km/h  
Firebag - February 2023**

| <b>Wind Speed Ranges (km/h)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---------------------------------|------------------------|----------|---------------------|
| 0 - 5                           | 120                    | 20.51    | 20.51               |
| 6 - 11                          | 195                    | 33.33    | 53.85               |
| 12 - 19                         | 200                    | 34.19    | 88.03               |
| 20 - 28                         | 67                     | 11.45    | 99.49               |
| 29 - 38                         | 3                      | 0.51     | 100.00              |
| > 38                            | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 585

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Wind Speed (WS) - km/h  
Firebag - February 2023**

| Wind Speed<br>Ranges (km/h) | Wind Direction |     |    |     |    |     |    |     |    |     |    |     |    |     |    |     | Totals |
|-----------------------------|----------------|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|--------|
|                             | N              | NNE | NE | ENE | E  | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |        |
| 0 - 5                       | 11             | 9   | 10 | 1   | 7  | 9   | 6  | 15  | 9  | 5   | 10 | 4   | 1  | 6   | 8  | 9   | 120    |
| 6 - 11                      | 22             | 12  | 4  | 2   | 2  | 7   | 8  | 16  | 16 | 8   | 5  | 5   | 5  | 4   | 27 | 52  | 195    |
| 12 - 19                     | 3              | 0   | 0  | 3   | 3  | 5   | 23 | 19  | 25 | 29  | 20 | 9   | 7  | 4   | 22 | 28  | 200    |
| 20 - 28                     | 0              | 0   | 0  | 0   | 0  | 0   | 5  | 17  | 12 | 0   | 0  | 6   | 4  | 0   | 10 | 13  | 67     |
| 29 - 38                     | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 1   | 2  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 3      |
| > 38                        | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| <b>Totals</b>               | 36             | 21  | 14 | 6   | 12 | 21  | 42 | 68  | 64 | 42  | 35 | 24  | 17 | 14  | 67 | 102 | 585    |

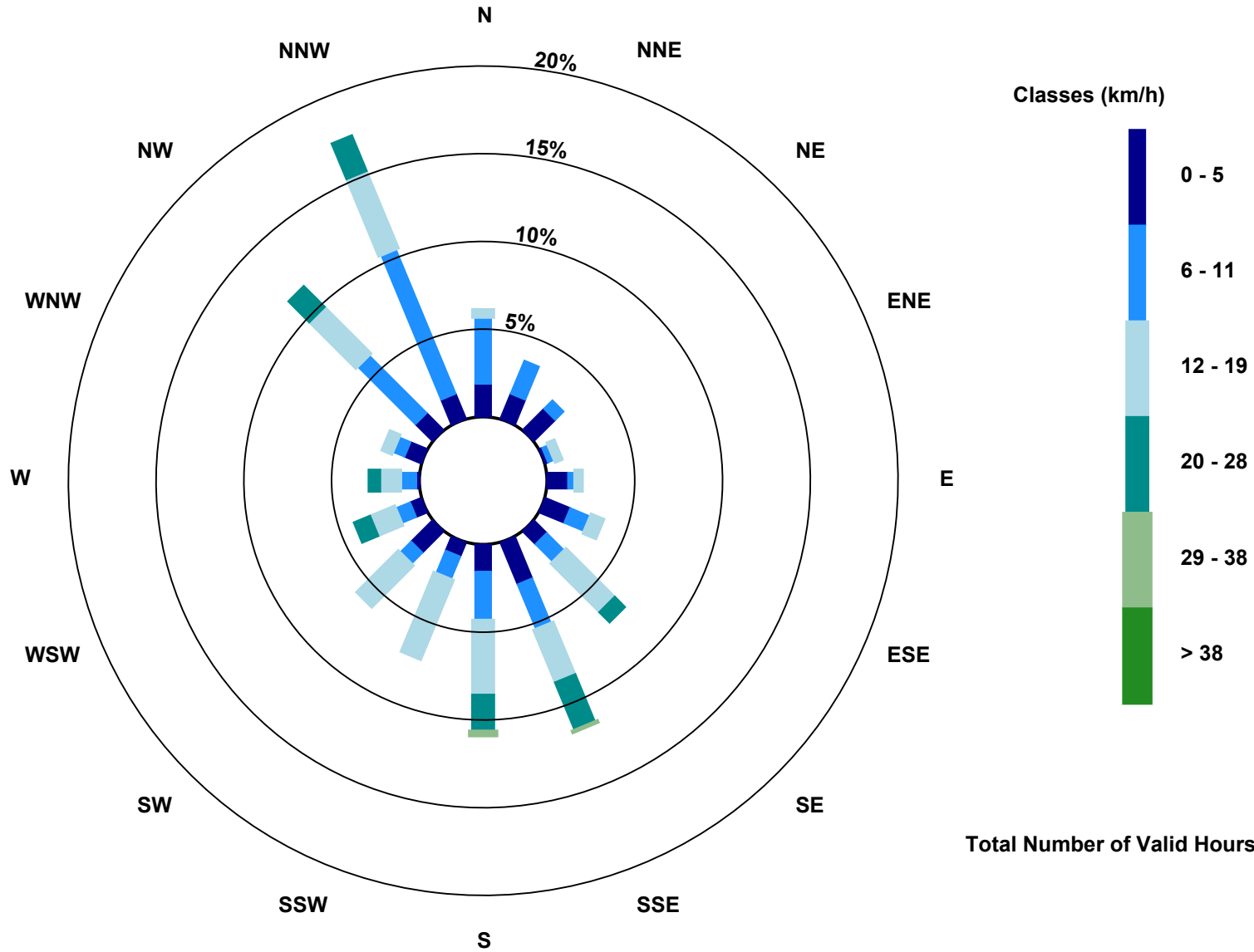
Total Number of Valid Hours: 585

Total Number of Hours: 672



Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Wind Speed (WS) - km/h  
Firebag





**Wood Buffalo Environmental Association**  
**Summary of Hour Standard Deviations**

**Wind Speed (WS) - km/h**  
**Firebag - February 2023**

|  |   |
|--|---|
| Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0<br>Maximum Value: 7 km/h on Feb 7 14:00  | Hours in Service: 672<br>Hours of Data: 585<br>Hours of Missing Data: 87<br>Hours of Calibration: 0<br>Percent Operational Time: 87.1 |
| Minimum Value: 0 km/h on Feb 1 20:00   |   |
| Percentiles: P <sub>1</sub> = 0 P <sub>10</sub> = 1 Q <sub>1</sub> = 1 Median = 2 Q <sub>3</sub> = 3 P <sub>90</sub> = 4 P <sub>99</sub> = 6 |   |

| Day             | Hourly Period Ending At (MST) |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    | Daily Maximum |  |
|-----------------|-------------------------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|---------------|--|
|                 | 1                             | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |               |  |
| 1-Feb           | 1                             | 1  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 1  | 2  | 1  | 1  | 1  | 0  | 0  | 0  | UO | UO | UO | 2             |  |
| 2-Feb           | UO                            | 0  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 2  | 2  | 2  | 2  | 3  | 3  | 4  | 4  | 4  | 4  | 4  | 4  | 4  | 4  | 4             |  |
| 3-Feb           | 4                             | 3  | 3  | 3  | 2  | 3  | 2  | 4  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 1  | 1  | 1  | 1  | 1  | 4             |  |
| 4-Feb           | 1                             | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 0  | 0  | 0  | 0  | 1  | UO | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1             |  |
| 5-Feb           | 0                             | 1  | 0  | 0  | 0  | 0  | 1  | 1  | 1  | 1  | 1  | 1  | 0  | 1  | 2  | 1  | 2  | 2  | 2  | 2  | 3  | 3  | 5  | 3  | 5             |  |
| 6-Feb           | 3                             | 3  | 4  | 3  | 3  | 3  | 3  | 1  | 1  | 1  | 2  | 1  | 2  | 1  | 2  | 2  | 2  | 2  | 3  | 3  | 3  | 3  | 2  | 2  | 4             |  |
| 7-Feb           | 2                             | 3  | 3  | 3  | 4  | 6  | 5  | 5  | 4  | 4  | 6  | 6  | 6  | 7  | 7  | 6  | 5  | 3  | 2  | 2  | 3  | 2  | 2  | 2  | 7             |  |
| 8-Feb           | 2                             | 1  | 1  | 1  | 1  | 1  | 0  | 0  | 1  | 1  | 2  | 2  | 2  | 2  | M  | M  | 1  | 1  | 1  | 1  | 2  | 1  | 2  | 1  | 2             |  |
| 9-Feb           | 2                             | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 3  | 3  | 2  | 4  | 3  | 2  | 1  | 1  | 2  | 2  | 1  | 2  | 1  | 4             |  |
| 10-Feb          | 3                             | 2  | 1  | 1  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 1  | 1  | 1  | 1  | 3             |  |
| 11-Feb          | 1                             | 2  | 1  | 2  | 2  | 2  | 2  | 2  | 2  | 3  | 3  | 3  | 2  | 3  | 3  | 3  | 3  | 4  | 5  | 3  | 3  | 3  | 3  | 3  | 5             |  |
| 12-Feb          | 3                             | 3  | 3  | 3  | 2  | 2  | 1  | 2  | 1  | 1  | 1  | 2  | 1  | 2  | 2  | 2  | 2  | 2  | 2  | 3  | 3  | 3  | 4  | 5  | 5             |  |
| 13-Feb          | 4                             | 3  | 3  | 4  | 2  | 4  | 3  | 5  | 5  | 4  | 5  | 6  | 6  | 6  | 6  | 6  | 6  | 5  | 5  | 4  | 4  | 5  | 4  | 5  | 6             |  |
| 14-Feb          | 5                             | 4  | 4  | 3  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 1  | 2  | 2  | 2  | 2  | 1  | 1  | 1  | 1  | 1  | 2  | 5             |  |
| 15-Feb          | 0                             | 1  | 1  | 1  | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 2  | 2  | 1  | 1  | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 2  | 1  | 2             |  |
| 16-Feb          | 1                             | 1  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 3  | 2  | 3  | 3  | 3  | 3  | 3  | 3  | 4  | 4  | 3  | 4  | 2  | 3  | 4             |  |
| 17-Feb          | 3                             | 2  | 2  | 2  | 3  | 3  | 2  | 2  | 1  | 2  | 2  | 1  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 1  | 1  | 1  | 1  | 1  | 3             |  |
| 18-Feb          | 1                             | 1  | 1  | 1  | 1  | 1  | 0  | 1  | 1  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 1  | 1  | 2  | 1  | 1  | 1  | 1  | 1  | 2             |  |
| 19-Feb          | 1                             | 1  | 1  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 1  | 2  | 2  | 2  | 2  | 1  | 1  | 1  | 1  | 2             |  |
| 20-Feb          | 1                             | 1  | 1  | 1  | 2  | 2  | 2  | 1  | 2  | 3  | 3  | 4  | 4  | 3  | 3  | 3  | 3  | 2  | 1  | 1  | 2  | 2  | 3  | 3  | 4             |  |
| 21-Feb          | 3                             | 4  | 2  | 3  | 4  | 3  | 4  | 3  | 4  | 4  | 4  | 4  | 4  | 4  | 4  | 3  | 3  | 3  | 2  | 2  | 2  | 3  | 4  | 3  | 4             |  |
| 22-Feb          | 3                             | 2  | 2  | 2  | 1  | 1  | 3  | 2  | 2  | 3  | 3  | 4  | 3  | 2  | 2  | 2  | 1  | 2  | 2  | 1  | 1  | UO | 1  | 4  | 4             |  |
| 23-Feb          | 2                             | 1  | 1  | 1  | 1  | 1  | 2  | 1  | 1  | 4  | 3  | 3  | 2  | 2  | 2  | 2  | 1  | 1  | 0  | 1  | 1  | 1  | 2  | 4  | 4             |  |
| 24-Feb          | 1                             | 1  | 2  | 2  | 1  | 2  | 2  | 2  | 4  | 4  | 4  | 5  | 4  | 4  | 5  | 4  | 5  | 3  | 4  | 4  | 4  | 4  | 4  | 3  | 5             |  |
| 25-Feb          | 3                             | 3  | 3  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 3  | 4  | 3  | 2  | UO | UO | UO | UO | UO | UO | UO | 4             |  |
| 26-Feb          | UO                            | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | --            |  |
| 27-Feb          | UO                            | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | --            |  |
| 28-Feb          | UO                            | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | --            |  |
|                 | 5                             | 4  | 4  | 4  | 4  | 6  | 5  | 5  | 5  | 4  | 6  | 6  | 6  | 7  | 7  | 6  | 6  | 5  | 5  | 4  | 4  | 5  | 5  | 5  |               |  |
| Diurnal Maximum |                               |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |               |  |

M - Maintenance UO - Unstable Operation



**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

**Wind Direction (WD) - deg**  
**Firebag - February 2023**

|   |                                |
|---|--------------------------------|
| Direction of Maximum Speed: 172 deg on Feb 24 14:00           | Hours in Service: 672          |
| Direction of Maximum Daily Speed Average: 175.8 deg on Feb 24 | Hours of Data: 585             |
| Direction of Minimum Speed: 279 deg on Feb 4 19:00            | Hours of Missing Data: 87      |
| Direction of Minimum Daily Speed Average: 2.0 deg on Feb 4    | Percent Operational Time: 87.1 |
| Monthly Average Direction: 231.0 deg                          |                                |

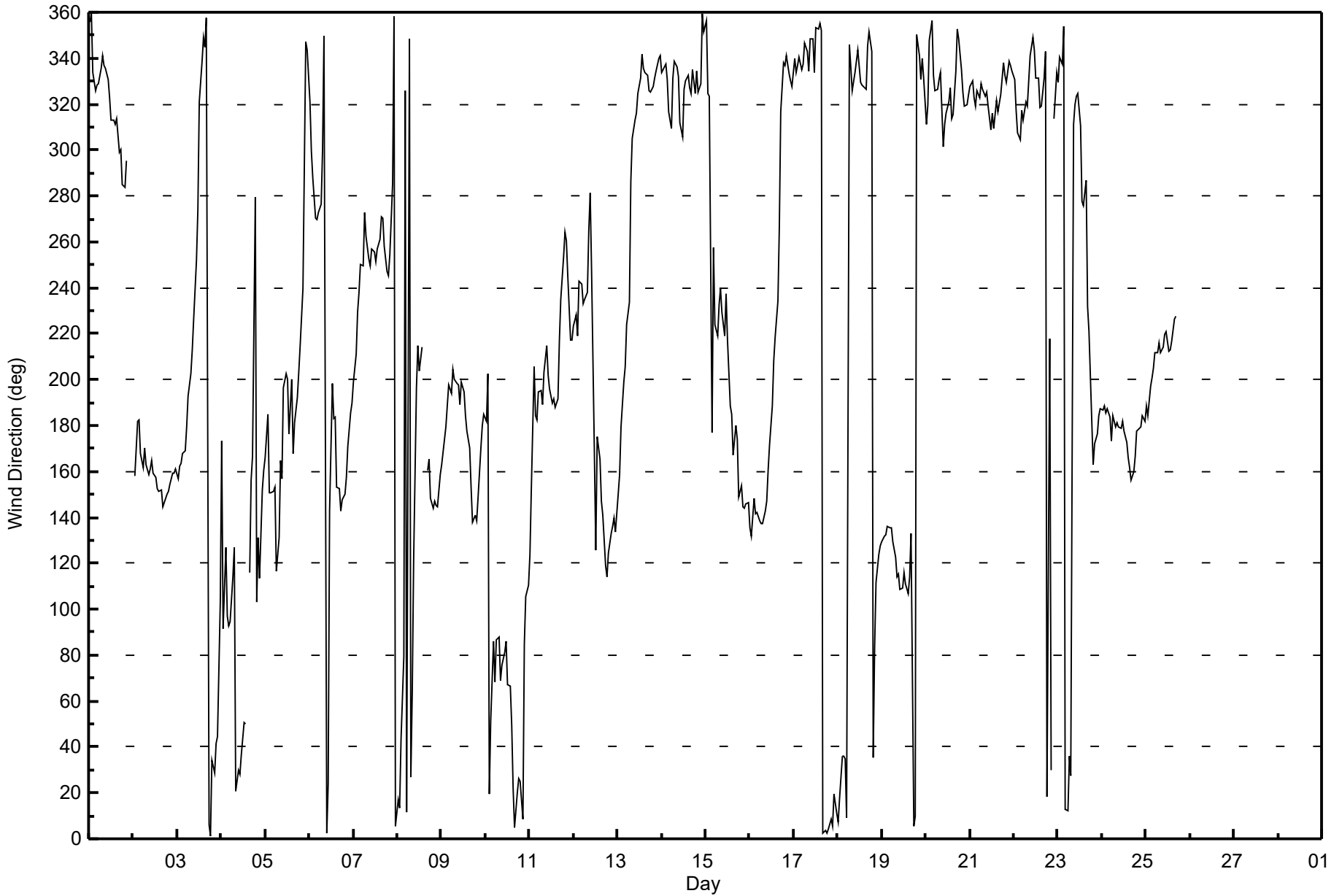
| Day             | Hourly Period Ending At (MST) |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |     | Daily Average |
|-----------------|-------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-----|---------------|
|                 | 1                             | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     | 10    | 11    | 12    | 13    | 14    | 15    | 16    | 17    | 18    | 19    | 20    | 21    | 22    | 23    | 24  |               |
| 1-Feb           | 355                           | 359   | 334   | 326   | 328   | 329   | 336   | 341   | 337   | 336   | 331   | 323   | 313   | 313   | 311   | 314   | 299   | 300   | 285   | 284   | 295   | UO    | UO    | UO  | 325.2         |
| 2-Feb           | UO                            | 158   | 182   | 182   | 168   | 161   | 170   | 163   | 159   | 161   | 165   | 159   | 157   | 153   | 151   | 152   | 144   | 146   | 150   | 152   | 155   | 159   | 159   | 161 | 155.6         |
| 3-Feb           | 157                           | 162   | 163   | 168   | 169   | 179   | 193   | 203   | 213   | 226   | 252   | 274   | 321   | 339   | 349   | 345   | 358   | 6     | 1     | 34    | 29    | 42    | 44    | 103 | 184.4         |
| 4-Feb           | 173                           | 91    | 127   | 97    | 93    | 95    | 114   | 127   | 21    | 30    | 28    | 36    | 51    | 50    | UO    | 116   | 156   | 167   | 279   | 103   | 131   | 114   | 152   | 160 | 101.6         |
| 5-Feb           | 166                           | 185   | 151   | 151   | 152   | 153   | 117   | 131   | 165   | 157   | 197   | 203   | 200   | 176   | 200   | 168   | 181   | 192   | 203   | 215   | 140   | 293   | 347   | 344 | 208.3         |
| 6-Feb           | 321                           | 300   | 288   | 270   | 270   | 273   | 277   | 300   | 349   | 3     | 24    | 143   | 198   | 183   | 184   | 153   | 153   | 143   | 148   | 150   | 158   | 171   | 186   | 190 | 204.4         |
| 7-Feb           | 199                           | 211   | 229   | 238   | 250   | 249   | 273   | 263   | 252   | 250   | 257   | 256   | 251   | 257   | 261   | 271   | 271   | 258   | 247   | 246   | 254   | 285   | 358   | 6   | 255.1         |
| 8-Feb           | 17                            | 13    | 43    | 80    | 326   | 11    | 348   | 27    | 64    | 122   | 197   | 215   | 204   | 214   | M     | M     | 160   | 165   | 148   | 144   | 147   | 145   | 145   | 159 | 154.0         |
| 9-Feb           | 163                           | 169   | 179   | 189   | 198   | 194   | 205   | 200   | 198   | 198   | 189   | 199   | 195   | 184   | 178   | 170   | 153   | 138   | 141   | 138   | 149   | 170   | 180   | 185 | 179.6         |
| 10-Feb          | 182                           | 202   | 19    | 51    | 86    | 69    | 87    | 88    | 69    | 76    | 81    | 86    | 67    | 67    | 49    | 22    | 5     | 20    | 26    | 25    | 8     | 85    | 106   | 111 | 64.2          |
| 11-Feb          | 124                           | 152   | 206   | 184   | 182   | 195   | 195   | 189   | 203   | 215   | 202   | 196   | 190   | 191   | 188   | 192   | 217   | 235   | 253   | 264   | 260   | 245   | 217   | 217 | 208.3         |
| 12-Feb          | 223                           | 228   | 219   | 243   | 242   | 233   | 235   | 238   | 265   | 281   | 247   | 168   | 126   | 175   | 166   | 147   | 141   | 119   | 114   | 125   | 133   | 136   | 140   | 133 | 167.4         |
| 13-Feb          | 150                           | 158   | 180   | 199   | 206   | 224   | 234   | 286   | 305   | 313   | 316   | 324   | 331   | 342   | 335   | 334   | 333   | 326   | 325   | 328   | 331   | 334   | 340   | 341 | 314.3         |
| 14-Feb          | 334                           | 336   | 338   | 331   | 317   | 309   | 332   | 339   | 336   | 332   | 312   | 305   | 326   | 330   | 333   | 327   | 325   | 335   | 325   | 334   | 325   | 329   | 359   | 351 | 329.4         |
| 15-Feb          | 356                           | 324   | 324   | 177   | 258   | 224   | 219   | 233   | 240   | 229   | 219   | 237   | 217   | 189   | 185   | 167   | 180   | 174   | 149   | 154   | 145   | 144   | 146   | 147 | 178.0         |
| 16-Feb          | 135                           | 132   | 148   | 141   | 142   | 138   | 137   | 137   | 143   | 147   | 161   | 172   | 189   | 208   | 219   | 234   | 267   | 317   | 338   | 337   | 341   | 333   | 330   | 328 | 178.2         |
| 17-Feb          | 340                           | 334   | 337   | 340   | 335   | 337   | 346   | 343   | 335   | 349   | 349   | 334   | 353   | 353   | 355   | 352   | 3     | 4     | 2     | 4     | 9     | 6     | 20    | 11  | 349.9         |
| 18-Feb          | 8                             | 18    | 36    | 36    | 35    | 9     | 346   | 336   | 326   | 334   | 338   | 344   | 329   | 328   | 328   | 326   | 346   | 352   | 343   | 35    | 83    | 112   | 124   | 128 | 1.1           |
| 19-Feb          | 129                           | 132   | 132   | 136   | 136   | 136   | 129   | 122   | 114   | 115   | 108   | 109   | 116   | 111   | 107   | 114   | 133   | 6     | 10    | 350   | 341   | 331   | 340   | 332 | 111.3         |
| 20-Feb          | 311                           | 320   | 348   | 356   | 333   | 326   | 327   | 331   | 334   | 301   | 311   | 316   | 321   | 327   | 314   | 316   | 334   | 353   | 348   | 335   | 325   | 319   | 320   | 324 | 324.9         |
| 21-Feb          | 327                           | 330   | 323   | 319   | 326   | 323   | 329   | 327   | 323   | 325   | 319   | 309   | 316   | 309   | 321   | 317   | 320   | 324   | 338   | 332   | 330   | 339   | 337   | 334 | 324.4         |
| 22-Feb          | 331                           | 317   | 308   | 305   | 317   | 313   | 321   | 319   | 330   | 341   | 349   | 344   | 332   | 331   | 319   | 319   | 331   | 343   | 19    | 218   | 30    | UO    | 314   | 334 | 328.9         |
| 23-Feb          | 330                           | 341   | 338   | 354   | 13    | 12    | 36    | 27    | 311   | 320   | 323   | 325   | 311   | 277   | 276   | 287   | 232   | 221   | 182   | 163   | 172   | 176   | 184   | 187 | 282.8         |
| 24-Feb          | 187                           | 188   | 185   | 188   | 184   | 173   | 184   | 179   | 181   | 180   | 179   | 182   | 178   | 172   | 166   | 162   | 156   | 160   | 167   | 178   | 179   | 179   | 184   | 182 | 175.8         |
| 25-Feb          | 189                           | 185   | 197   | 201   | 205   | 212   | 212   | 216   | 212   | 214   | 220   | 221   | 212   | 213   | 217   | 226   | 227   | UO    | UO    | UO    | UO    | UO    | UO    | UO  | --            |
| 26-Feb          | UO                            | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO  | --            |
| 27-Feb          | UO                            | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO  | --            |
| 28-Feb          | UO                            | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO  | --            |
| 189.6           | 201.6                         | 208.5 | 213.9 | 228.5 | 230.7 | 234.9 | 243.4 | 259.7 | 263.5 | 267.6 | 256.4 | 252.1 | 245.5 | 243.4 | 238.8 | 243.4 | 250.4 | 203.2 | 179.2 | 191.0 | 183.5 | 174.7 | 175.3 |     |               |
| Diurnal Average |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |     |               |

M - Maintenance      UO - Unstable Operation  
 All monthly, daily, and diurnal averages have been calculated using vector methods



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Wind Direction (WD) - deg**  
**Firebag - February 2023**





**Wood Buffalo Environmental Association**  
**Summary of Hour Standard Deviations**

**Wind Direction (WD) - deg**  
**Firebag - February 2023**

|  |                                |
|--|--------------------------------|
| Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0  | Hours in Service: 672          |
| Maximum Value: 81 deg on Feb 4 19:00   | Hours of Data: 585             |
| Minimum Value: 3 deg on Feb 18 00:00   | Hours of Missing Data: 87      |
| Percentiles: P <sub>1</sub> = 5 P <sub>10</sub> = 7 Q <sub>1</sub> = 9 Median = 12 Q <sub>3</sub> = 15 P <sub>90</sub> = 22 P <sub>99</sub> = 61 | Hours of Calibration: 0        |
|  | Percent Operational Time: 87.1 |

| Day    | Hourly Period Ending At (MST) |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    | Daily Maximum |
|--------|-------------------------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|---------------|
|        | 1                             | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |               |
| 1-Feb  | 13                            | 19 | 13 | 13 | 11 | 11 | 13 | 12 | 12 | 12 | 12 | 13 | 14 | 14 | 15 | 13 | 11 | 18 | 18 | 18 | 14 | UO | UO | UO | 19            |
| 2-Feb  | UO                            | 22 | 10 | 8  | 9  | 9  | 8  | 7  | 8  | 8  | 8  | 8  | 8  | 9  | 9  | 10 | 10 | 9  | 9  | 9  | 10 | 8  | 8  | 8  | 22            |
| 3-Feb  | 8                             | 8  | 8  | 9  | 9  | 8  | 8  | 14 | 10 | 15 | 15 | 26 | 16 | 13 | 14 | 15 | 14 | 14 | 13 | 24 | 14 | 24 | 31 | 44 | 44            |
| 4-Feb  | 43                            | 16 | 16 | 25 | 33 | 25 | 20 | 53 | 16 | 24 | 16 | 12 | 14 | 32 | UO | 27 | 14 | 19 | 81 | 16 | 17 | 20 | 51 | 45 | 81            |
| 5-Feb  | 12                            | 25 | 18 | 11 | 10 | 10 | 18 | 20 | 27 | 8  | 24 | 11 | 13 | 11 | 22 | 14 | 17 | 9  | 8  | 9  | 17 | 18 | 16 | 14 | 27            |
| 6-Feb  | 12                            | 14 | 15 | 15 | 14 | 15 | 14 | 17 | 15 | 13 | 55 | 25 | 15 | 15 | 14 | 14 | 8  | 9  | 8  | 8  | 7  | 9  | 6  | 7  | 55            |
| 7-Feb  | 9                             | 12 | 11 | 10 | 12 | 14 | 14 | 13 | 11 | 11 | 12 | 13 | 13 | 14 | 14 | 15 | 15 | 12 | 10 | 10 | 11 | 22 | 11 | 13 | 22            |
| 8-Feb  | 11                            | 14 | 15 | 33 | 25 | 7  | 23 | 22 | 6  | 18 | 39 | 16 | 11 | 21 | M  | M  | 5  | 10 | 8  | 7  | 6  | 6  | 7  | 5  | 39            |
| 9-Feb  | 5                             | 6  | 7  | 8  | 8  | 8  | 8  | 7  | 8  | 8  | 7  | 10 | 10 | 8  | 10 | 8  | 10 | 6  | 6  | 6  | 8  | 8  | 7  | 6  | 10            |
| 10-Feb | 11                            | 58 | 28 | 15 | 21 | 16 | 10 | 12 | 9  | 12 | 13 | 9  | 11 | 11 | 14 | 26 | 11 | 10 | 10 | 12 | 22 | 11 | 15 | 13 | 58            |
| 11-Feb | 10                            | 15 | 21 | 11 | 13 | 10 | 9  | 9  | 11 | 11 | 11 | 11 | 9  | 9  | 9  | 9  | 12 | 12 | 15 | 13 | 13 | 15 | 10 | 11 | 21            |
| 12-Feb | 10                            | 10 | 9  | 18 | 12 | 12 | 9  | 11 | 24 | 26 | 34 | 70 | 17 | 21 | 12 | 8  | 11 | 11 | 11 | 9  | 8  | 9  | 8  | 9  | 70            |
| 13-Feb | 9                             | 9  | 10 | 13 | 11 | 13 | 12 | 25 | 11 | 11 | 10 | 11 | 12 | 15 | 14 | 11 | 13 | 11 | 11 | 10 | 12 | 13 | 13 | 11 | 25            |
| 14-Feb | 12                            | 12 | 13 | 12 | 13 | 14 | 13 | 13 | 13 | 17 | 17 | 17 | 14 | 17 | 14 | 16 | 16 | 10 | 9  | 6  | 11 | 8  | 20 | 12 | 20            |
| 15-Feb | 8                             | 33 | 64 | 61 | 57 | 13 | 13 | 14 | 21 | 15 | 20 | 39 | 31 | 21 | 24 | 17 | 10 | 10 | 6  | 7  | 6  | 6  | 7  | 9  | 64            |
| 16-Feb | 7                             | 7  | 7  | 7  | 8  | 7  | 7  | 8  | 7  | 9  | 9  | 9  | 11 | 11 | 13 | 13 | 18 | 17 | 11 | 12 | 12 | 11 | 11 | 10 | 18            |
| 17-Feb | 12                            | 12 | 13 | 12 | 12 | 12 | 14 | 14 | 17 | 16 | 14 | 20 | 28 | 22 | 14 | 14 | 14 | 13 | 13 | 10 | 9  | 12 | 11 | 3  | 28            |
| 18-Feb | 6                             | 9  | 8  | 10 | 17 | 11 | 13 | 12 | 12 | 10 | 13 | 15 | 17 | 18 | 19 | 15 | 17 | 12 | 23 | 36 | 15 | 17 | 14 | 8  | 36            |
| 19-Feb | 7                             | 5  | 7  | 6  | 7  | 8  | 8  | 9  | 10 | 11 | 12 | 14 | 11 | 18 | 22 | 27 | 80 | 12 | 10 | 34 | 10 | 10 | 7  | 14 | 80            |
| 20-Feb | 12                            | 35 | 16 | 15 | 11 | 9  | 9  | 6  | 14 | 13 | 14 | 13 | 14 | 14 | 15 | 18 | 10 | 10 | 8  | 9  | 14 | 11 | 11 | 10 | 35            |
| 21-Feb | 10                            | 10 | 10 | 10 | 9  | 10 | 9  | 10 | 11 | 12 | 13 | 14 | 12 | 12 | 14 | 13 | 10 | 11 | 7  | 7  | 9  | 10 | 10 | 9  | 14            |
| 22-Feb | 9                             | 7  | 11 | 15 | 7  | 8  | 9  | 9  | 11 | 12 | 14 | 13 | 18 | 17 | 23 | 25 | 14 | 10 | 52 | 73 | 74 | UO | 18 | 22 | 74            |
| 23-Feb | 23                            | 12 | 17 | 16 | 10 | 9  | 12 | 39 | 11 | 10 | 11 | 15 | 25 | 22 | 17 | 29 | 28 | 7  | 15 | 3  | 6  | 5  | 5  | 7  | 39            |
| 24-Feb | 6                             | 5  | 6  | 6  | 6  | 8  | 8  | 9  | 9  | 9  | 10 | 10 | 10 | 10 | 10 | 8  | 7  | 7  | 10 | 8  | 9  | 9  | 9  | 9  | 10            |
| 25-Feb | 9                             | 10 | 9  | 8  | 9  | 9  | 10 | 10 | 9  | 11 | 11 | 10 | 12 | 13 | 19 | 19 | 28 | UO | UO | UO | UO | UO | UO | UO | 28            |
| 26-Feb | UO                            | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | --            |
| 27-Feb | UO                            | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | --            |
| 28-Feb | UO                            | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | --            |
|        | 43                            | 58 | 64 | 61 | 57 | 25 | 23 | 53 | 27 | 26 | 55 | 70 | 31 | 32 | 24 | 29 | 80 | 19 | 81 | 73 | 74 | 24 | 51 | 45 |               |

Diurnal Maximum

M - Maintenance UO - Unstable Operation



## WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY  
MONITORING PROGRAM  
MONTHLY REPORT

### **AMS20 MACKAY RIVER FEBRUARY 2023**

Operations, Data Collection,  
QA/QC, Data Validation and Reporting by:  
Wood Buffalo Environmental Association  
Fort McMurray, Alberta

March 31, 2023



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - MACKAY RIVER (AMS20)

FEBRUARY 2023

MONTHLY SUMMARY

| Parameter                         | Hours of Data | Hours of Calibration | Hours without Data | Operational Time | Maximum 1-Hour Value | 1-Hour Exceedances | Maximum 24-Hour Value | 24-Hour Exceedances |
|-----------------------------------|---------------|----------------------|--------------------|------------------|----------------------|--------------------|-----------------------|---------------------|
| SO2 (ppb) Average                 | 637           | 32                   | 35                 | 99.55            | 18.3                 | 0                  | 4.9                   | 0                   |
| H2S (ppb) Average                 | 636           | 33                   | 36                 | 99.55            | 2.2                  | 0                  | 0.9                   | 0                   |
| THC (ppm) Average                 | 637           | 32                   | 35                 | 99.55            | 3.8                  | -                  | 2.7                   | -                   |
| NO2 (ppb) Average                 | 638           | 34                   | 34                 | 100              | 34.3                 | 0                  | 22.9                  | -                   |
| NO (ppb) Average                  | 638           | 34                   | 34                 | 100              | 46.9                 | -                  | 6.2                   | -                   |
| NOX (ppb) Average                 | 638           | 34                   | 34                 | 100              | 81.2                 | -                  | 29.1                  | -                   |
| Temperature 2 m (C) Average       | 670           | 0                    | 2                  | 99.7             | 3.2                  | -                  | -0.6                  | -                   |
| Relative Humidity (%) Average     | 670           | 0                    | 2                  | 99.7             | 97                   | -                  | 91.3                  | -                   |
| Wind Speed 10 m (km/h) Average    | 639           | 0                    | 33                 | 95.09            | 18                   | -                  | 11                    | -                   |
| Wind Direction 10 m (deg) Average | 639           | 0                    | 33                 | 95.09            | -                    | -                  | -                     | -                   |
| Precipitation (mm) Total          | 672           | 0                    | 0                  | 100              | 2.1                  | -                  | 8                     | -                   |

Note : Operational time includes periods of data collection and instrument calibration

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - MACKAY RIVER (AMS20)  
FEBRUARY 2023

MONTHLY SUMMARY FOR AIR QUALITY/ METEOROLOGICAL MONITORING MEASUREMENTS

| Parameter                         | Number | Mean   | StnDev | Total | Percentile |       |      |        |      |      |      |
|-----------------------------------|--------|--------|--------|-------|------------|-------|------|--------|------|------|------|
|                                   |        |        |        |       | Min        | P10   | Q1   | Median | Q3   | P90  | Max  |
| SO2 (ppb) Average                 | 637    | 1.18   | 2.3    | -     | 0          | 0     | 0.1  | 0.4    | 1.2  | 2.9  | 18.3 |
| H2S (ppb) Average                 | 636    | 0.36   | 0.3    | -     | 0          | 0.1   | 0.2  | 0.3    | 0.4  | 0.7  | 2.2  |
| THC (ppm) Average                 | 637    | 2.43   | 0.1    | -     | 2.2        | 2.3   | 2.3  | 2.4    | 2.5  | 2.6  | 3.8  |
| NO2 (ppb) Average                 | 638    | 5.62   | 7.2    | -     | 0.2        | 0.5   | 0.8  | 2.5    | 7.8  | 15.7 | 34.3 |
| NO (ppb) Average                  | 638    | 0.93   | 3.1    | -     | 0          | 0     | 0    | 0      | 0.3  | 2.2  | 46.9 |
| NOX (ppb) Average                 | 638    | 6.55   | 9.4    | -     | 0.2        | 0.5   | 0.9  | 2.7    | 8.3  | 17.8 | 81.2 |
| Temperature 2 m (C) Average       | 670    | -14.56 | 9.8    | -     | -37.9      | -27.5 | -21  | -14.1  | -7.1 | -1.2 | 3.2  |
| Relative Humidity (%) Average     | 670    | 76.21  | 11.7   | -     | 36.8       | 59.2  | 70.1 | 79.1   | 84.3 | 89.4 | 97   |
| Wind Speed 10 m (km/h) Average    | 639    | 5.6    | 3      | -     | 0          | 2     | 3    | 5      | 7    | 10   | 18   |
| Wind Direction 10 m (deg) Average | 639    | -      | -      | -     | -          | -     | -    | -      | -    | -    | -    |
| Precipitation (mm) Total          | 672    | -      | -      | 28.23 | -          | -     | -    | -      | -    | -    | -    |

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION -MACKAY RIVER (AMS20)  
FEBRUARY 2023

OPERATIONAL NOTES

| Parameter                         | Period<br>Start   | Period<br>End     | Duration<br>(Hours) | Notes   |
|-----------------------------------|-------------------|-------------------|---------------------|---|
| SO2, H2S, THC                     | 02 Feb 2023 13:00 | 02 Feb 2023 13:00 | 1                   | Maintenance - sample manifold cleaned             |
| SO2, H2S, THC                     | 02 Feb 2023 15:00 | 02 Feb 2023 16:00 | 2                   | Maintenance - station logger/modem reset          |
| Temperature 2m, Relative Humidity | 02 Feb 2023 15:00 | 02 Feb 2023 16:00 | 2                   | Maintenance - station logger/modem reset          |
| Wind Speed, Wind Direction        | 02 Feb 2023 15:00 | 02 Feb 2023 16:00 | 2                   | Maintenance - station logger/modem reset          |
| Wind Speed, Wind Direction        | 13 Feb 2023 10:00 | 14 Feb 2023 13:00 | 28                  | Flat line in sensor output signal - Sensor frozen |
| Wind Speed, Wind Direction        | 14 Feb 2023 14:00 | 14 Feb 2023 14:00 | 1                   | Maintenance - tower brought down                  |
| Wind Speed, Wind Direction        | 21 Feb 2023 07:00 | 21 Feb 2023 07:00 | 1                   | Flat line in sensor output signal - Sensor frozen |
| Wind Speed, Wind Direction        | 28 Feb 2023 01:00 | 28 Feb 2023 01:00 | 1                   | Flat line in sensor output signal - Sensor frozen |



Wood Buffalo Environmental Association

Summary of Hour Averages

Sulphur Dioxide (SO<sub>2</sub>) - ppb

Mackay River - February 2023

|   |   |          |                           |      |
|---|---|----------|---------------------------|------|
| Number of Exceedences (AAAQO):              | 1-hr: 0   | 24-hr: 0 | Hours in Service:         | 672  |
| Maximum Value: 18.3 ppb on Feb 23 11:00     | Maximum Daily Average: 4.9 ppb on Feb 23  |          | Hours of Data:            | 637  |
| Minimum Value: 0.0 ppb on Feb 1 15:00       | Minimum Daily Average: 0.0 ppb on Feb 6   |          | Hours of Missing Data:    | 35   |
| Maximum Diurnal Average: 1.8 ppb at hour 14 | Minimum Diurnal Average: 0.6 ppb at hour 7  |          | Hours of Calibration:     | 32   |
| Monthly Average: 1.18 ppb                   | Percentiles: P <sub>1</sub> = 0.0 P <sub>10</sub> = 0.0 Q <sub>1</sub> = 0.1 Median = 0.4 Q <sub>3</sub> = 1.2 P <sub>90</sub> = 2.9 P <sub>99</sub> = 12.6 |          | Percent Operational Time: | 99.6 |

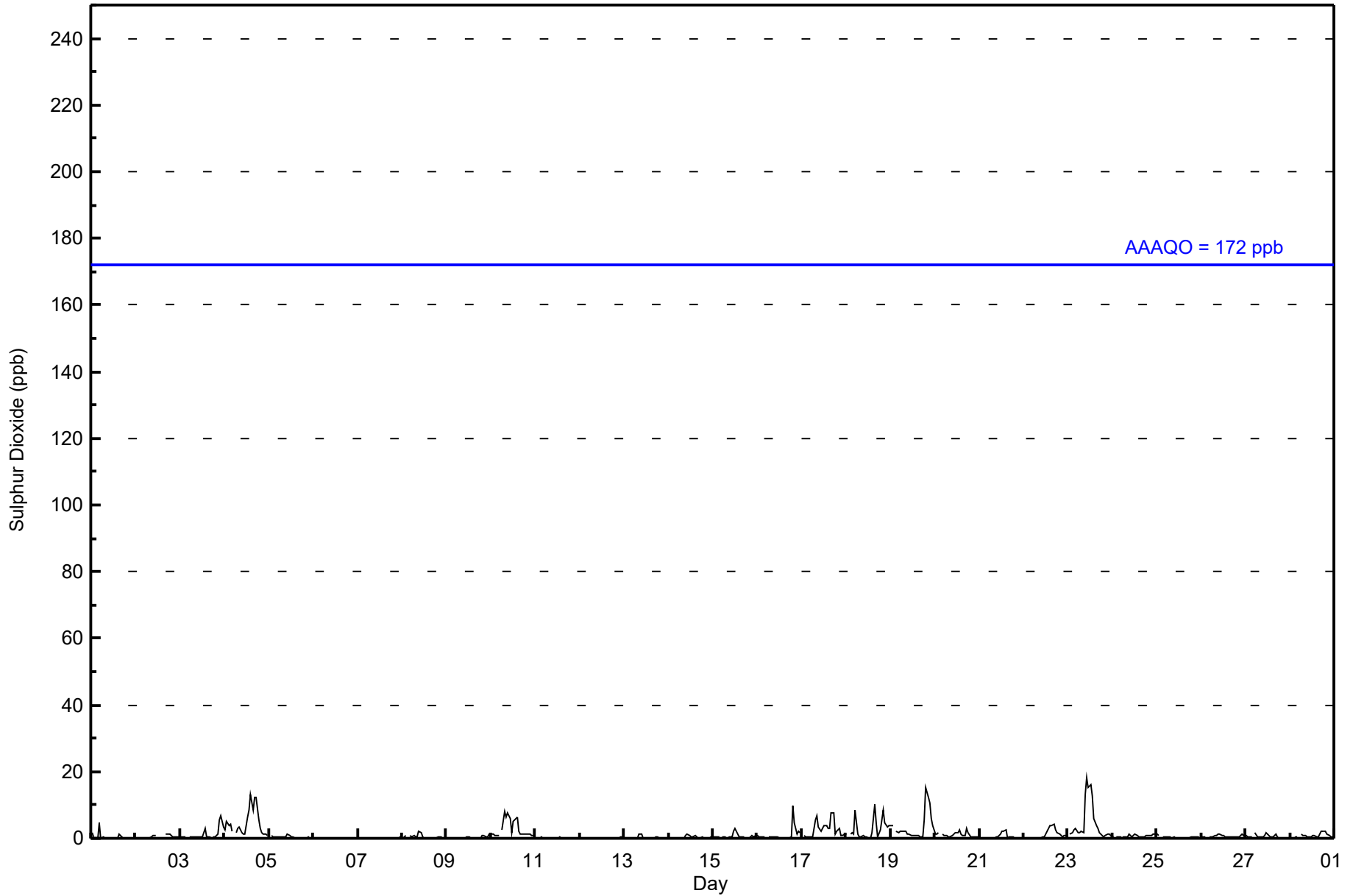
| Day    | Hourly Period Ending At (MST) |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |     |      |      |      |     |     | Daily Average | Daily Maximum |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |     |      |      |      |     |     |                 |
|--------|-------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|------|------|------|-----|------|------|------|-----|-----|---------------|---------------|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|------|------|------|-----|------|------|------|-----|-----|-----------------|
|        | 1                             | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19  | 20   | 21   | 22   | 23  | 24  |               |               |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |     |      |      |      |     |     |                 |
| 1-Feb  | 1.5                           | 0.6 | Z   | 0.1 | 4.7 | 0.1 | 0.3 | 0.1 | 0.1 | 0.2  | C    | C    | C    | C    | 0.0  | 1.4  | 0.6  | 0.2  | 0.1 | 0.1  | 0.1  | 0.1  | 0.0 | 0.0 | 0.5           | 4.7           |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |     |      |      |      |     |     |                 |
| 2-Feb  | 0.0                           | 0.0 | 0.0 | Z   | 0.0 | 0.0 | 0.0 | 0.2 | 0.5 | 0.8  | 0.7  | 0.9  | M    | 0.9  | M    | M    | 1.4  | 1.3  | 1.2 | 0.9  | 0.6  | 0.5  | 0.5 | 0.5 | 0.5           | 1.4           |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |     |      |      |      |     |     |                 |
| 3-Feb  | 0.6                           | 0.5 | 0.5 | 0.5 | Z   | 0.5 | 0.4 | 0.4 | 0.4 | 0.4  | 0.3  | 0.3  | 0.3  | 3.1  | 0.3  | 0.3  | 0.2  | 0.2  | 0.3 | 0.5  | 1.5  | 5.4  | 6.7 | 3.3 | 6.7           |               |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |     |      |      |      |     |     |                 |
| 4-Feb  | 2.6                           | 5.1 | 3.7 | 4.1 | 2.0 | Z   | 1.9 | 2.8 | 3.5 | 1.9  | 1.1  | 1.2  | 6.3  | 8.5  | 13.2 | 8.4  | 12.1 | 12.2 | 5.5 | 3.0  | 1.9  | 1.2  | 1.5 | 1.0 | 4.5           | 13.2          |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |     |      |      |      |     |     |                 |
| 5-Feb  | Z                             | 0.7 | 0.6 | 0.5 | 0.6 | 0.6 | 0.5 | 0.5 | 0.4 | 0.6  | 1.3  | 0.7  | 0.4  | 0.2  | 0.1  | 0.0  | 0.0  | 0.0  | 0.0 | 0.0  | 0.0  | 0.4  | 0.0 | 0.1 | 0.4           | 1.3           |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |     |      |      |      |     |     |                 |
| 6-Feb  | 0.0                           | Z   | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0 | 0.0  | 0.1  | 0.0  | 0.0 | 0.0 | 0.0           | 0.1           |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |     |      |      |      |     |     |                 |
| 7-Feb  | 0.0                           | 0.1 | Z   | 0.1 | 0.1 | 0.1 | 0.1 | 0.0 | 0.1 | 0.0  | 0.1  | 0.1  | 0.1  | 0.1  | 0.1  | 0.1  | 0.1  | 0.1  | 0.1 | 0.1  | 0.1  | 0.1  | 0.2 | 0.2 | 0.1           | 0.2           |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |     |      |      |      |     |     |                 |
| 8-Feb  | 0.2                           | 0.2 | 0.8 | Z   | 0.8 | 0.4 | 0.7 | 0.5 | 0.4 | 2.2  | 1.6  | 0.5  | 0.2  | 0.1  | 0.1  | 0.1  | 0.1  | 0.1  | 0.2 | 0.3  | 0.2  | 0.2  | 0.2 | 0.1 | 0.5           | 2.2           |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |     |      |      |      |     |     |                 |
| 9-Feb  | 0.1                           | 0.2 | 0.1 | 0.1 | Z   | 0.1 | 0.0 | 0.0 | 0.1 | 0.2  | 0.2  | 0.3  | 0.2  | 0.2  | 0.2  | 0.2  | 0.2  | 0.1  | 0.2 | 0.7  | 0.9  | 0.4  | 0.4 | 1.2 | 0.3           | 1.2           |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |     |      |      |      |     |     |                 |
| 10-Feb | 1.4                           | 1.5 | 0.8 | 1.0 | 1.0 | Z   | 2.6 | 7.8 | 6.3 | 7.5  | 5.8  | 1.8  | 5.0  | 6.0  | 6.2  | 2.3  | 1.3  | 1.2  | 1.1 | 1.4  | 1.2  | 1.3  | 1.0 | 1.0 | 2.9           | 7.8           |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |     |      |      |      |     |     |                 |
| 11-Feb | Z                             | 0.2 | 0.2 | 0.3 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1  | 0.1  | 0.2  | 0.2  | 0.2  | 0.2  | 0.1  | 0.2  | 0.1  | 0.1 | 0.1  | 0.1  | 0.1  | 0.1 | 0.1 | 0.1           | 0.3           |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |     |      |      |      |     |     |                 |
| 12-Feb | 0.1                           | Z   | 0.1 | 0.1 | 0.1 | 0.2 | 0.1 | 0.1 | 0.1 | 0.2  | 0.1  | 0.1  | 0.2  | 0.1  | 0.1  | 0.1  | 0.1  | 0.1  | 0.2 | 0.1  | 0.1  | 0.1  | 0.2 | 0.3 | 0.1           | 0.3           |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |     |      |      |      |     |     |                 |
| 13-Feb | 0.2                           | 0.2 | Z   | 0.1 | 0.1 | 0.1 | 0.0 | 0.1 | 1.2 | 1.1  | 0.2  | 0.1  | 0.1  | 0.1  | 0.1  | 0.1  | 0.1  | 0.3  | 0.5 | 0.1  | 0.1  | 0.0  | 0.0 | 0.0 | 0.2           | 1.2           |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |     |      |      |      |     |     |                 |
| 14-Feb | 0.0                           | 0.0 | 0.0 | Z   | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.7  | 1.2  | 0.7  | 0.5  | 0.4  | 0.8  | 0.3  | 0.2  | 0.2  | 0.2 | 0.1  | 0.1  | 0.1  | 0.1 | 0.4 | 0.3           | 1.2           |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |     |      |      |      |     |     |                 |
| 15-Feb | 0.5                           | 0.5 | 0.5 | 0.5 | Z   | 0.3 | 0.2 | 0.1 | 0.0 | 0.3  | 0.6  | 2.1  | 2.9  | 1.3  | 0.3  | 0.5  | 0.5  | 0.1  | 0.1 | 0.1  | 0.3  | 0.7  | 0.6 | 0.7 | 0.6           | 2.9           |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |     |      |      |      |     |     |                 |
| 16-Feb | 0.9                           | 0.6 | 0.5 | 0.5 | 0.2 | Z   | 0.5 | 0.4 | 0.3 | 0.4  | 0.3  | 0.2  | 0.1  | 0.1  | 0.1  | 0.0  | 0.0  | 0.1  | 0.3 | 9.9  | 4.5  | 1.2  | 2.1 | 1.8 | 1.1           | 9.9           |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |     |      |      |      |     |     |                 |
| 17-Feb | Z                             | 0.7 | 0.5 | 0.4 | 0.4 | 0.4 | 0.3 | 5.6 | 6.9 | 3.3  | 2.3  | 3.1  | 3.7  | 3.8  | 3.0  | 2.9  | 7.8  | 7.8  | 1.4 | 2.0  | 2.8  | 1.0  | 0.9 | 1.1 | 2.7           | 7.8           |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |     |      |      |      |     |     |                 |
| 18-Feb | 1.1                           | Z   | 1.4 | 1.8 | 1.1 | 8.3 | 1.1 | 0.4 | 0.4 | 0.7  | 0.5  | 0.2  | 0.2  | 0.2  | 1.5  | 10.1 | 4.6  | 0.6  | 2.5 | 5.3  | 8.6  | 4.8  | 3.5 | 3.8 | 2.7           | 10.1          |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |     |      |      |      |     |     |                 |
| 19-Feb | 3.9                           | 3.6 | Z   | 2.0 | 1.8 | 1.9 | 2.2 | 2.0 | 2.0 | 1.3  | 1.1  | 0.9  | 0.8  | 0.7  | 0.9  | 0.7  | 0.5  | 0.6  | 5.4 | 15.2 | 12.1 | 10.8 | 6.1 | 3.7 | 3.5           | 15.2          |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |     |      |      |      |     |     |                 |
| 20-Feb | 1.4                           | 1.3 | 1.7 | Z   | 1.3 | 0.8 | 0.7 | 0.6 | 0.5 | 0.8  | 1.2  | 1.7  | 1.8  | 2.5  | 1.2  | 0.9  | 0.6  | 3.0  | 1.7 | 0.5  | 0.3  | 0.2  | 0.2 | 0.3 | 1.1           | 3.0           |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |     |      |      |      |     |     |                 |
| 21-Feb | 0.2                           | 0.1 | 0.2 | 0.2 | Z   | 0.2 | 0.1 | 0.1 | 0.2 | 0.4  | 0.4  | 1.3  | 2.3  | 2.2  | 2.6  | 0.2  | 0.3  | 0.5  | 0.2 | 0.1  | 0.1  | 0.0  | 0.1 | 0.0 | 0.5           | 2.6           |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |     |      |      |      |     |     |                 |
| 22-Feb | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | Z   | 0.0 | 0.0 | 0.0 | 0.0  | 0.3  | 0.4  | 1.2  | 2.8  | 3.7  | 4.0  | 4.4  | 2.5  | 1.8 | 1.2  | 0.7  | 0.6  | 0.7 | 0.7 | 1.1           | 4.4           |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |     |      |      |      |     |     |                 |
| 23-Feb | Z                             | 1.4 | 1.9 | 2.5 | 2.8 | 1.7 | 1.9 | 1.9 | 1.7 | 13.0 | 18.3 | 15.3 | 16.3 | 12.7 | 6.1  | 3.8  | 2.9  | 1.9  | 1.0 | 0.6  | 1.0  | 1.2  | 1.4 | 0.9 | 4.9           | 18.3          |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |     |      |      |      |     |     |                 |
| 24-Feb | 0.6                           | Z   | 0.4 | 0.2 | 0.2 | 0.2 | 0.3 | 0.4 | 1.2 | 0.6  | 0.8  | 1.1  | 1.0  | 0.6  | 0.3  | 0.4  | 0.4  | 0.4  | 0.7 | 0.7  | 0.8  | 1.0  | 1.3 | 1.3 | 0.6           | 1.3           |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |     |      |      |      |     |     |                 |
| 25-Feb | 1.1                           | 0.8 | Z   | 0.5 | 0.4 | 0.3 | 0.3 | 0.3 | 0.2 | 0.2  | 0.2  | 0.2  | 0.2  | 0.2  | 0.2  | 0.2  | 0.2  | 0.2  | 0.2 | 0.3  | 0.4  | 0.3  | 0.3 | 0.2 | 0.3           | 1.1           |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |     |      |      |      |     |     |                 |
| 26-Feb | 0.3                           | 0.3 | 0.4 | Z   | 0.6 | 0.4 | 0.6 | 0.8 | 0.8 | 1.2  | 1.2  | 0.9  | 0.9  | 0.5  | 0.6  | 0.4  | 0.4  | 0.3  | 0.3 | 0.2  | 0.3  | 0.8  | 1.3 | 0.9 | 0.6           | 1.3           |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |     |      |      |      |     |     |                 |
| 27-Feb | 0.8                           | 0.6 | 0.4 | 0.4 | Z   | 1.5 | 0.5 | 0.3 | 0.3 | 0.3  | 1.0  | 1.5  | 0.9  | 0.5  | 0.4  | 0.5  | 1.4  | 0.4  | 0.2 | 0.1  | 0.2  | 0.1  | 0.1 | 0.1 | 0.5           | 1.5           |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |     |      |      |      |     |     |                 |
| 28-Feb | 0.1                           | 0.1 | 0.1 | 0.3 | 0.4 | Z   | 1.2 | 1.0 | 0.9 | 0.4  | 0.2  | 0.3  | 0.9  | 0.9  | 0.6  | 0.5  | 1.2  | 2.3  | 2.3 | 2.3  | 1.3  | 0.9  | 0.6 | 0.5 | 0.8           | 2.3           |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |     |      |      |      |     |     |                 |
|        |                               |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |     |      |      |      |     | 0.7 | 0.8           | 0.6           | 0.7 | 0.8 | 0.8 | 0.6 | 0.9 | 1.0 | 1.4  | 1.5  | 1.3  | 1.8  | 1.8  | 1.6  | 1.4  | 1.5  | 1.3  | 1.0 | 1.6  | 1.4  | 1.2  | 1.1 | 0.9 | Diurnal Average |
|        |                               |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |     |      |      |      |     | 3.9 | 5.1           | 3.7           | 4.1 | 4.7 | 8.3 | 2.6 | 7.8 | 6.9 | 13.0 | 18.3 | 15.3 | 16.3 | 12.7 | 13.2 | 10.1 | 12.1 | 12.2 | 5.5 | 15.2 | 12.1 | 10.8 | 6.7 | 3.8 | Diurnal Maximum |

Z - zerospan      C - Calibration      M - Maintenance  
 Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 172 ppb    24-hr 48 ppb



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Sulphur Dioxide (SO<sub>2</sub>) - ppb**  
**Mackay River - February 2023**





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Sulphur Dioxide (SO<sub>2</sub>) - ppb  
Mackay River - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 10                            | 626                    | 98.27    | 98.27               |
| 11 - 20                           | 11                     | 1.73     | 100.00              |
| 21 - 60                           | 0                      | 0.00     | 100.00              |
| 61 - 110                          | 0                      | 0.00     | 100.00              |
| 111 - 172                         | 0                      | 0.00     | 100.00              |
| > 172                             | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 637

Total Number of Hours: 672



**Wood Buffalo Environmental Association**  
**Frequency Distribution**

**Sulphur Dioxide (SO<sub>2</sub>) - ppb**  
**Mackay River - February 2023**

| Concentration<br>Ranges (ppb) | Wind Direction |     |    |     |    |     |    |     |    |     |    |     |    |     |    |     | Totals |
|-------------------------------|----------------|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|--------|
|                               | N              | NNE | NE | ENE | E  | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |        |
| 0 - 10                        | 40             | 67  | 26 | 8   | 12 | 30  | 84 | 34  | 68 | 36  | 19 | 49  | 37 | 14  | 24 | 48  | 596    |
| 11 - 20                       | 3              | 0   | 1  | 0   | 2  | 0   | 0  | 0   | 0  | 1   | 0  | 0   | 0  | 1   | 1  | 2   | 11     |
| 21 - 60                       | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| 61 - 110                      | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| 111 - 172                     | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| > 172                         | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| <b>Totals</b>                 | 43             | 67  | 27 | 8   | 14 | 30  | 84 | 34  | 68 | 37  | 19 | 49  | 37 | 15  | 25 | 50  | 607    |

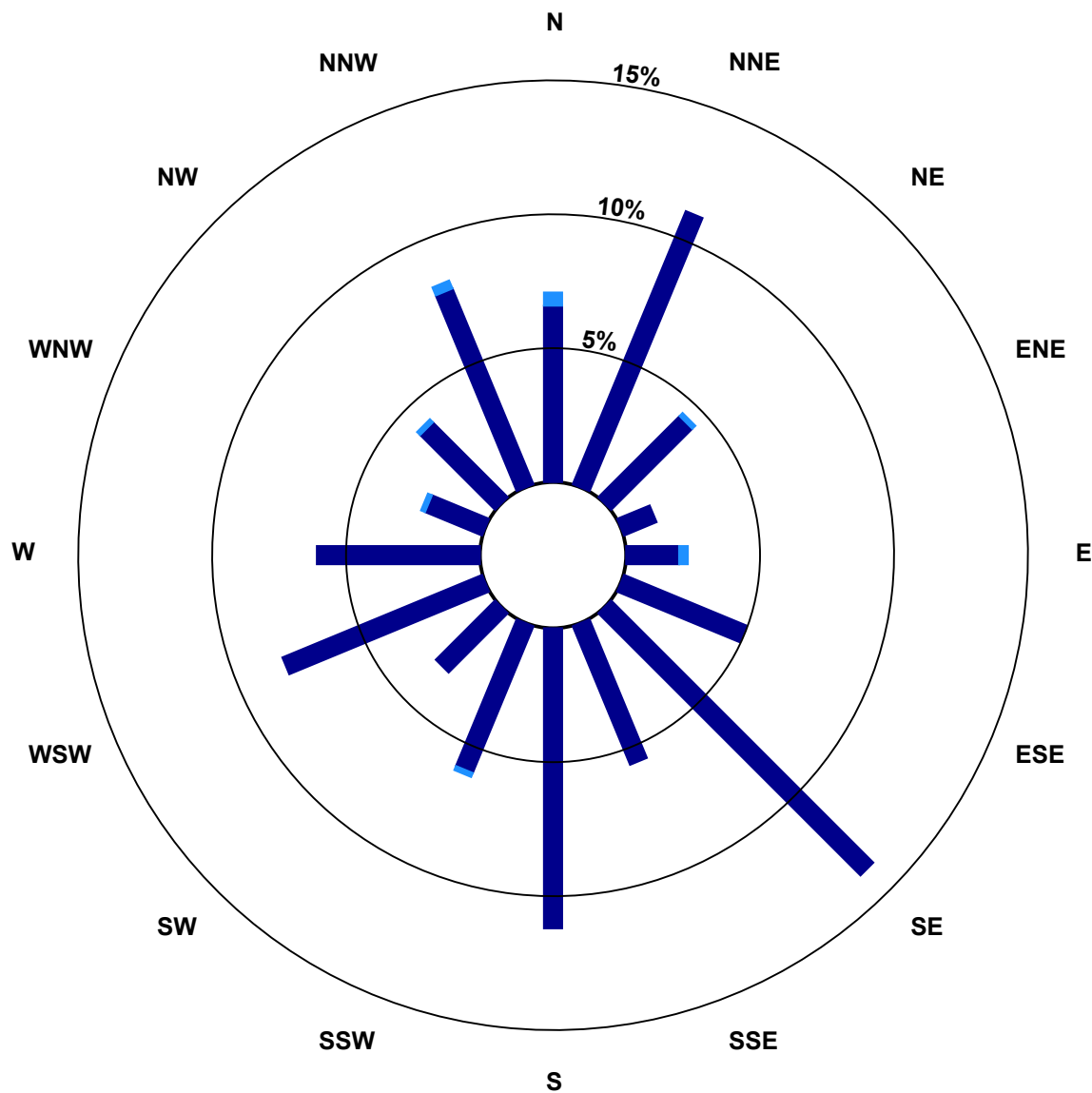
Total Number of Valid Hours: 607

Total Number of Hours: 672

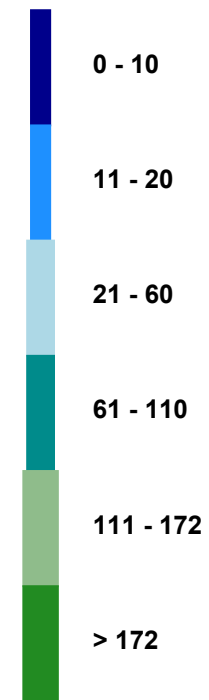


Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Sulphur Dioxide (SO<sub>2</sub>) - ppb  
Mackay River

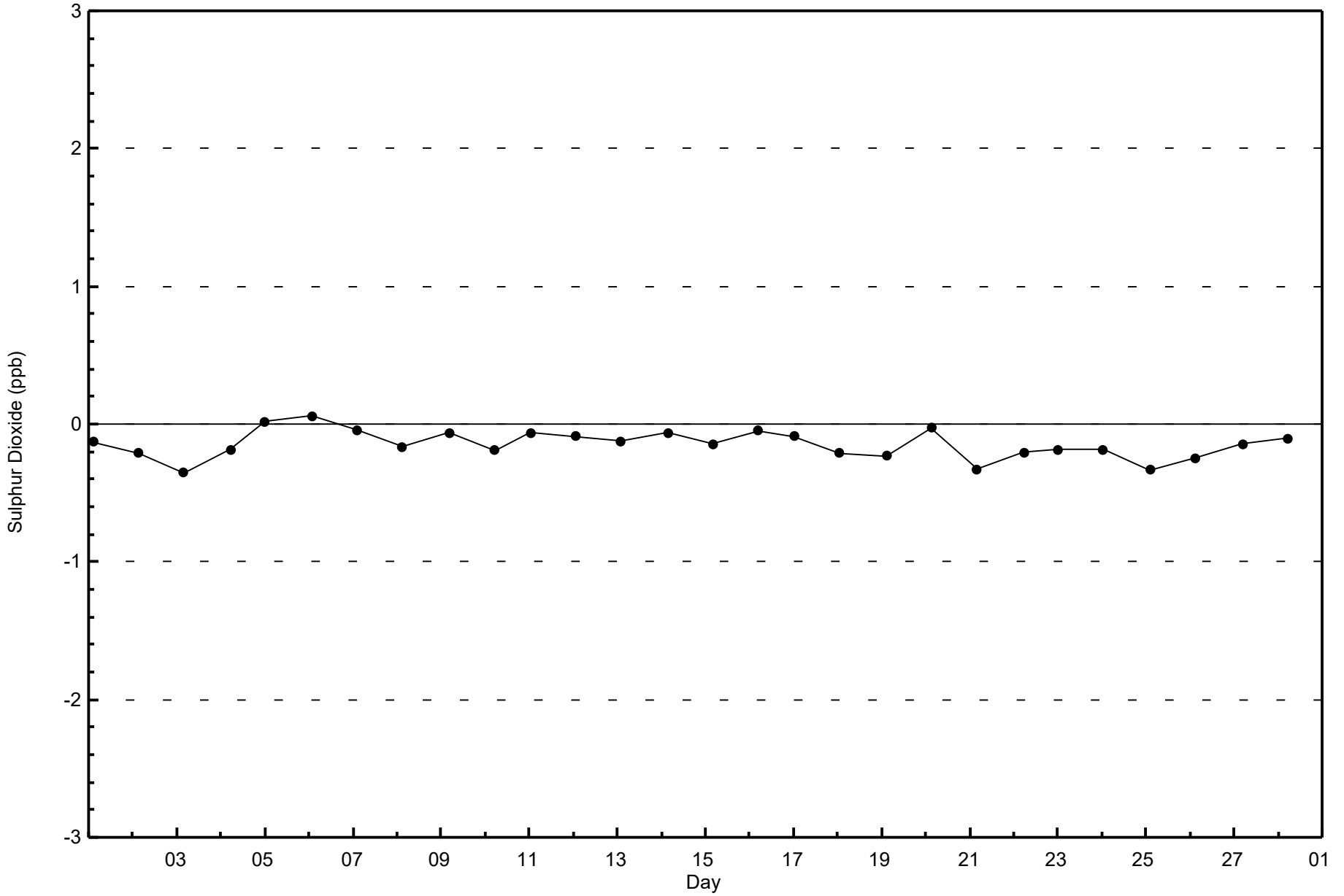


Classes (ppb)



Total Number of Valid Hours: 607

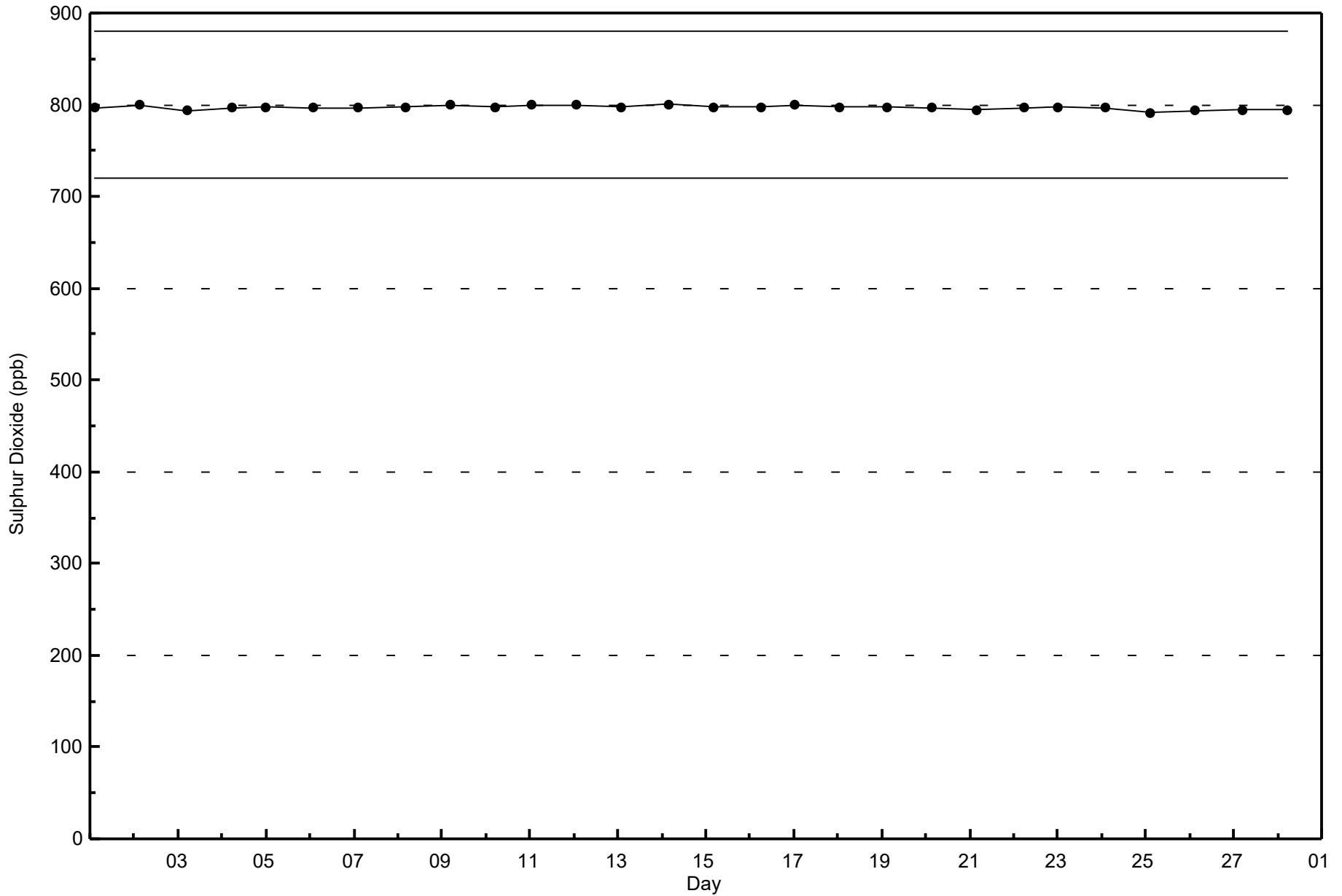






**Wood Buffalo Environmental Association**  
**Span Responses**

**Sulphur Dioxide (SO<sub>2</sub>) - ppb**  
**Mackay River - February 2023**





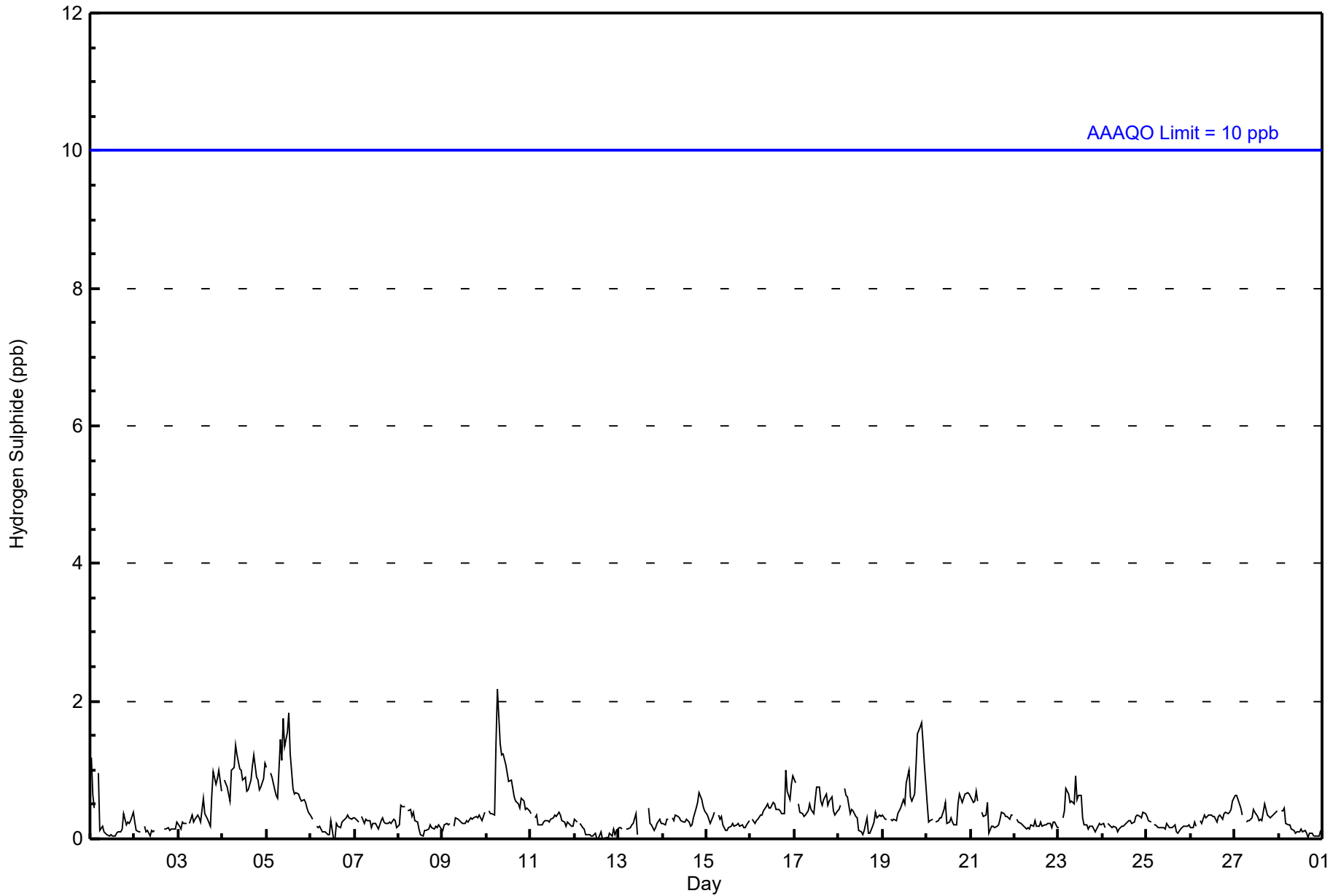
# Wood Buffalo Environmental Association

## Summary of Hour Averages

# Hydrogen Sulphide (H<sub>2</sub>S) - ppb

## Mackay River - February 2023

| Number of Exceedences (AAAQO):   |                               | 1-hr: 0  | 24-hr: 0 | Hours in Service: 672 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                          |     | Daily Average                  |     | Daily Maximum |     |               |               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
|--|-------------------------------|--|----------|-----------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------------------------|-----|--------------------------------|-----|---------------|-----|---------------|---------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----------------|
| Maximum Value: 2.2 ppb on Feb 10 07:00                                     |                               | Maximum Daily Average: 0.9 ppb on Feb 4  |          |                       |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Hours of Data: 636       |     | Hours of Missing Data: 36      |     |               |     |               |               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| Minimum Value: 0.0 ppb on Feb 6 13:00                                      |                               | Minimum Daily Average: 0.1 ppb on Feb 12   |          |                       |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Hours of Calibration: 33 |     | Percent Operational Time: 99.6 |     |               |     |               |               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| Maximum Diurnal Average: 0.4 ppb at hour 23                                |                               | Minimum Diurnal Average: 0.3 ppb at hour 17  |          |                       |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                          |     |                                |     |               |     |               |               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| Monthly Average: 0.36 ppb  |                               | Percentiles: P <sub>1</sub> = 0.0 P <sub>10</sub> = 0.1 Q <sub>1</sub> = 0.2 Median = 0.3 Q <sub>3</sub> = 0.4 P <sub>90</sub> = 0.7 P <sub>99</sub> = 1.5 |          |                       |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                          |     |                                |     |               |     |               |               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| Day  | Hourly Period Ending At (MST) |  |          |                       |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                          |     |                                |     |               |     | Daily Average | Daily Maximum |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
|  | 1                             | 2  | 3        | 4                     | 5   | 6   | 7   | 8   | 9   | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19                       | 20  | 21                             | 22  | 23            | 24  |               |               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 1-Feb  | 1.2                           | 0.6  | 0.5      | Z                     | 1.0 | 0.1 | 0.2 | 0.1 | 0.1 | 0.1 | 0.0 | 0.1 | 0.0 | 0.0 | 0.1 | 0.1 | 0.1 | 0.1 | 0.4                      | 0.2 | 0.2                            | 0.2 | 0.3           | 0.4 | 0.3           | 1.2           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 2-Feb  | 0.2                           | 0.1  | 0.1      | 0.1                   | Z   | 0.2 | 0.1 | 0.1 | 0.0 | 0.1 | 0.1 | 0.1 | M   | 0.1 | M   | M   | 0.1 | 0.1 | 0.2                      | 0.1 | 0.2                            | 0.1 | 0.2           | 0.3 | 0.1           | 0.3           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 3-Feb  | 0.2                           | 0.2  | 0.2      | 0.2                   | 0.2 | Z   | 0.2 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.2 | 0.6 | 0.4 | 0.3 | 0.3 | 0.2 | 0.6                      | 1.0 | 0.8                            | 0.9 | 1.0           | 0.7 | 0.4           | 1.0           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 4-Feb  | Z                             | 0.8  | 0.8      | 0.6                   | 0.5 | 1.0 | 1.0 | 1.4 | 1.2 | 1.0 | 1.0 | 0.9 | 0.9 | 0.7 | 0.8 | 1.1 | 1.2 | 0.9 | 0.8                      | 0.7 | 0.7                            | 0.9 | 1.1           | 0.9 | 1.4           |               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 5-Feb  | 1.0                           | Z  | 1.0      | 0.9                   | 0.7 | 0.6 | 0.6 | 1.4 | 1.1 | 1.7 | 1.3 | 1.5 | 1.8 | 1.2 | 0.7 | 0.6 | 0.7 | 0.6 | 0.6                      | 0.5 | 0.6                            | 0.5 | 0.5           | 0.4 | 0.9           | 1.8           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 6-Feb  | 0.3                           | 0.3  | Z        | 0.2                   | 0.2 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.3 | 0.0 | 0.0 | 0.2 | 0.2 | 0.2 | 0.2 | 0.3                      | 0.3 | 0.3                            | 0.3 | 0.3           | 0.3 | 0.2           | 0.3           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 7-Feb  | 0.3                           | 0.3  | 0.3      | Z                     | 0.3 | 0.2 | 0.3 | 0.3 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 | 0.1 | 0.3 | 0.3 | 0.2 | 0.2 | 0.2                      | 0.2 | 0.2                            | 0.3 | 0.3           | 0.2 | 0.2           | 0.3           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 8-Feb  | 0.2                           | 0.5  | 0.5      | 0.5                   | Z   | 0.4 | 0.4 | 0.3 | 0.4 | 0.3 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2                      | 0.1 | 0.2                            | 0.2 | 0.2           | 0.2 | 0.2           | 0.5           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 9-Feb  | 0.1                           | 0.2  | 0.2      | 0.2                   | 0.2 | Z   | 0.2 | 0.3 | 0.3 | 0.3 | 0.2 | 0.2 | 0.2 | 0.3 | 0.2 | 0.3 | 0.3 | 0.3 | 0.3                      | 0.3 | 0.3                            | 0.4 | 0.3           | 0.3 | 0.4           | 0.4           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 10-Feb   | Z                             | 0.4  | 0.4      | 0.4                   | 0.3 | 1.4 | 2.2 | 1.4 | 1.2 | 1.2 | 1.1 | 1.0 | 0.8 | 0.9 | 0.7 | 0.6 | 0.5 | 0.5 | 0.4                      | 0.6 | 0.5                            | 0.4 | 0.4           | 0.4 | 0.8           | 2.2           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 11-Feb   | 0.4                           | Z  | 0.3      | 0.3                   | 0.2 | 0.2 | 0.2 | 0.2 | 0.3 | 0.3 | 0.2 | 0.3 | 0.3 | 0.3 | 0.3 | 0.4 | 0.4 | 0.3 | 0.2                      | 0.2 | 0.3                            | 0.2 | 0.2           | 0.2 | 0.3           | 0.4           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 12-Feb   | 0.3                           | 0.2  | Z        | 0.2                   | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0                      | 0.1 | 0.0                            | 0.1 | 0.1           | 0.1 | 0.1           | 0.1           | 0.3 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 13-Feb   | 0.2                           | 0.2  | 0.1      | Z                     | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.4 | 0.1 | C   | C   | C   | C   | C   | 0.4 | 0.2 | 0.2                      | 0.1 | 0.2                            | 0.2 | 0.3           | 0.2 | 0.2           | 0.4           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 14-Feb   | 0.2                           | 0.2  | 0.3      | 0.3                   | Z   | 0.3 | 0.3 | 0.4 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.2 | 0.2 | 0.3 | 0.5                      | 0.5 | 0.7                            | 0.6 | 0.5           | 0.4 | 0.3           | 0.7           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 15-Feb   | 0.3                           | 0.3  | 0.2      | 0.3                   | 0.4 | Z   | 0.4 | 0.3 | 0.3 | 0.2 | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2                      | 0.2 | 0.2                            | 0.2 | 0.2           | 0.3 | 0.2           | 0.4           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 16-Feb   | Z                             | 0.3  | 0.2      | 0.3                   | 0.3 | 0.3 | 0.3 | 0.4 | 0.5 | 0.5 | 0.5 | 0.4 | 0.5 | 0.5 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4                      | 1.0 | 0.7                            | 0.6 | 0.8           | 0.9 | 0.5           | 1.0           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 17-Feb   | 0.8                           | Z  | 0.5      | 0.4                   | 0.4 | 0.3 | 0.3 | 0.4 | 0.5 | 0.4 | 0.4 | 0.6 | 0.7 | 0.8 | 0.5 | 0.5 | 0.6 | 0.7 | 0.5                      | 0.5 | 0.6                            | 0.4 | 0.3           | 0.4 | 0.5           | 0.8           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 18-Feb   | 0.4                           | 0.5  | Z        | 0.7                   | 0.6 | 0.6 | 0.4 | 0.4 | 0.4 | 0.3 | 0.3 | 0.1 | 0.1 | 0.1 | 0.1 | 0.3 | 0.1 | 0.1 | 0.2                      | 0.3 | 0.4                            | 0.3 | 0.3           | 0.3 | 0.3           | 0.7           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 19-Feb   | 0.3                           | 0.3  | 0.3      | Z                     | 0.3 | 0.3 | 0.3 | 0.3 | 0.4 | 0.4 | 0.4 | 0.6 | 0.5 | 0.8 | 1.0 | 0.6 | 0.5 | 0.6 | 1.1                      | 1.5 | 1.6                            | 1.7 | 1.4           | 1.1 | 0.7           | 1.7           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 20-Feb   | 0.5                           | 0.3  | 0.3      | 0.3                   | Z   | 0.2 | 0.3 | 0.3 | 0.3 | 0.4 | 0.5 | 0.2 | 0.2 | 0.3 | 0.3 | 0.2 | 0.2 | 0.5 | 0.6                      | 0.5 | 0.6                            | 0.6 | 0.7           | 0.6 | 0.4           | 0.7           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 21-Feb   | 0.6                           | 0.5  | 0.6      | 0.7                   | 0.6 | Z   | 0.4 | 0.3 | 0.3 | 0.5 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.3 | 0.4 | 0.4                      | 0.3 | 0.3                            | 0.3 | 0.4           | 0.3 | 0.4           | 0.7           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 22-Feb   | Z                             | 0.3  | 0.2      | 0.2                   | 0.2 | 0.2 | 0.1 | 0.2 | 0.1 | 0.2 | 0.2 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2                      | 0.2 | 0.2                            | 0.2 | 0.2           | 0.2 | 0.2           | 0.3           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 23-Feb   | 0.2                           | Z  | 0.3      | 0.4                   | 0.7 | 0.6 | 0.5 | 0.6 | 0.5 | 0.9 | 0.6 | 0.6 | 0.6 | 0.3 | 0.2 | 0.2 | 0.1 | 0.2 | 0.2                      | 0.1 | 0.1                            | 0.2 | 0.2           | 0.2 | 0.4           | 0.9           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 24-Feb   | 0.2                           | 0.2  | Z        | 0.2                   | 0.2 | 0.2 | 0.2 | 0.2 | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.3 | 0.3 | 0.2 | 0.3 | 0.3                      | 0.3 | 0.3                            | 0.3 | 0.4           | 0.4 | 0.2           | 0.4           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 25-Feb   | 0.3                           | 0.3  | 0.2      | Z                     | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.1 | 0.1                      | 0.1 | 0.2                            | 0.2 | 0.2           | 0.2 | 0.2           | 0.3           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 26-Feb   | 0.2                           | 0.2  | 0.2      | 0.2                   | Z   | 0.3 | 0.2 | 0.4 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.2 | 0.3 | 0.3 | 0.3 | 0.4                      | 0.4 | 0.4                            | 0.4 | 0.4           | 0.6 | 0.3           | 0.6           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 27-Feb   | 0.6                           | 0.6  | 0.6      | 0.5                   | 0.3 | Z   | 0.2 | 0.3 | 0.3 | 0.3 | 0.4 | 0.4 | 0.3 | 0.3 | 0.3 | 0.3 | 0.5 | 0.4 | 0.4                      | 0.3 | 0.3                            | 0.3 | 0.4           | 0.4 | 0.4           | 0.6           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 28-Feb   | Z                             | 0.4  | 0.4      | 0.4                   | 0.2 | 0.2 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.0 | 0.1 | 0.1                      | 0.0 | 0.0                            | 0.0 | 0.0           | 0.1 | 0.1           | 0.4           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
|  |                               |  |          |                       |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                          |     |                                |     |               | 0.4 | 0.3           | 0.4           | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.3 | 0.4 | 0.4 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | Diurnal Average |
|  |                               |  |          |                       |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                          |     |                                |     |               | 1.2 | 0.8           | 1.0           | 0.9 | 1.0 | 1.4 | 2.2 | 1.4 | 1.2 | 1.7 | 1.3 | 1.5 | 1.8 | 1.2 | 1.0 | 0.8 | 1.1 | 1.2 | 1.1 | 1.5 | 1.6 | 1.7 | 1.4 | 1.1 | 0.4 | Diurnal Maximum |
| Z - zerospan      C - Calibration      M - Maintenance                     |                               |  |          |                       |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                          |     |                                |     |               |     |               |               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 10 ppb    24-hr 3 ppb |                               |  |          |                       |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                          |     |                                |     |               |     |               |               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Hydrogen Sulphide (H<sub>2</sub>S) - ppb  
Mackay River - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 2                             | 636                    | 100.00   | 100.00              |
| 3 - 4                             | 0                      | 0.00     | 100.00              |
| 5 - 7                             | 0                      | 0.00     | 100.00              |
| 8 - 11                            | 0                      | 0.00     | 100.00              |
| > 11                              | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 636

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Hydrogen Sulphide (H<sub>2</sub>S) - ppb  
Mackay River - February 2023**

| <b>Concentration<br/>Ranges (ppb)</b> | <b>Wind Direction</b> |     |    |     |    |     |    |     |    |     |    |     |    |     |    |     | <b>Totals</b> |
|---------------------------------------|-----------------------|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|---------------|
|                                       | N                     | NNE | NE | ENE | E  | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |               |
| 0 - 2                                 | 44                    | 68  | 28 | 8   | 14 | 29  | 83 | 35  | 66 | 39  | 19 | 49  | 36 | 14  | 29 | 51  | 612           |
| 3 - 4                                 | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| 5 - 7                                 | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| 8 - 11                                | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| > 11                                  | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| <b>Totals</b>                         | 44                    | 68  | 28 | 8   | 14 | 29  | 83 | 35  | 66 | 39  | 19 | 49  | 36 | 14  | 29 | 51  | 612           |

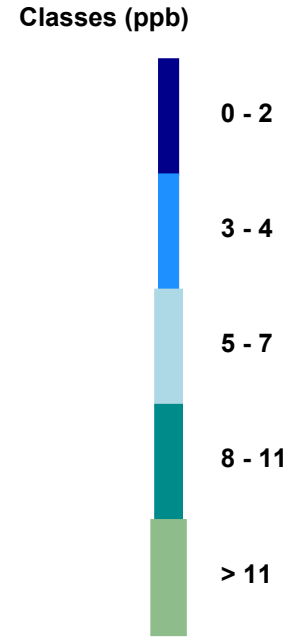
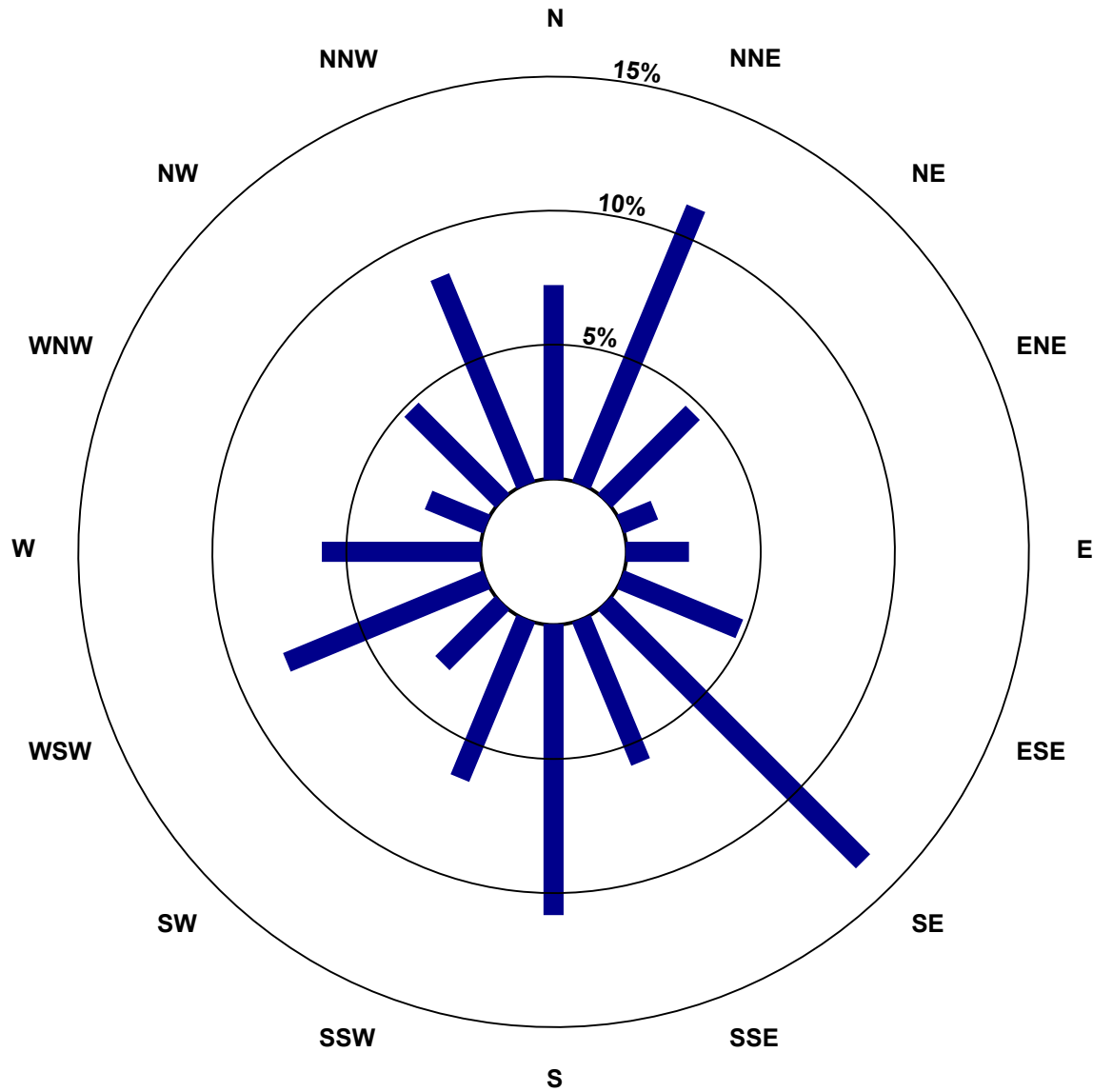
Total Number of Valid Hours: 612

Total Number of Hours: 672

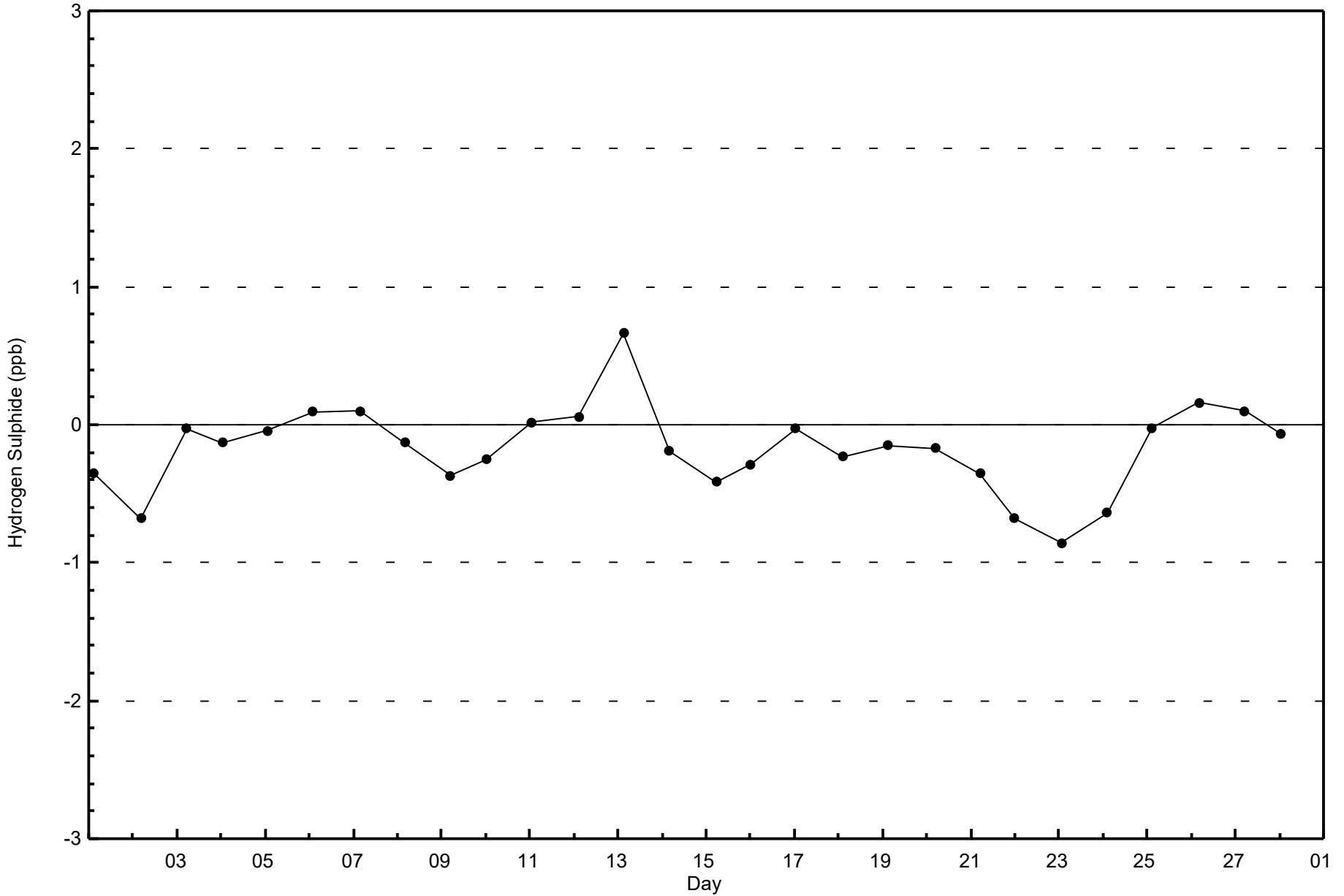


Wood Buffalo Environmental Association  
Wind Rose Feb 2023

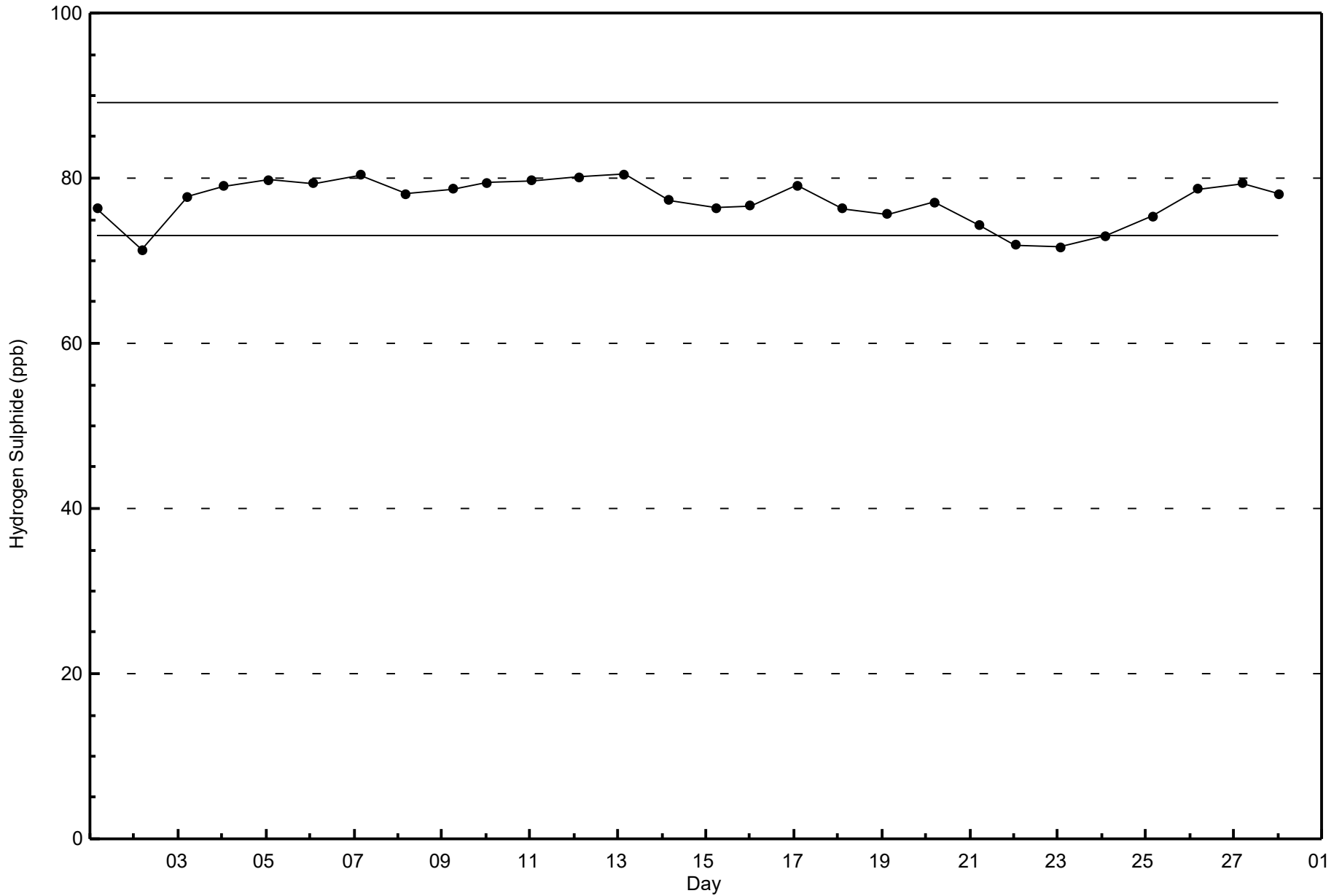
Hydrogen Sulphide (H<sub>2</sub>S) - ppb  
Mackay River



Total Number of Valid Hours: 612





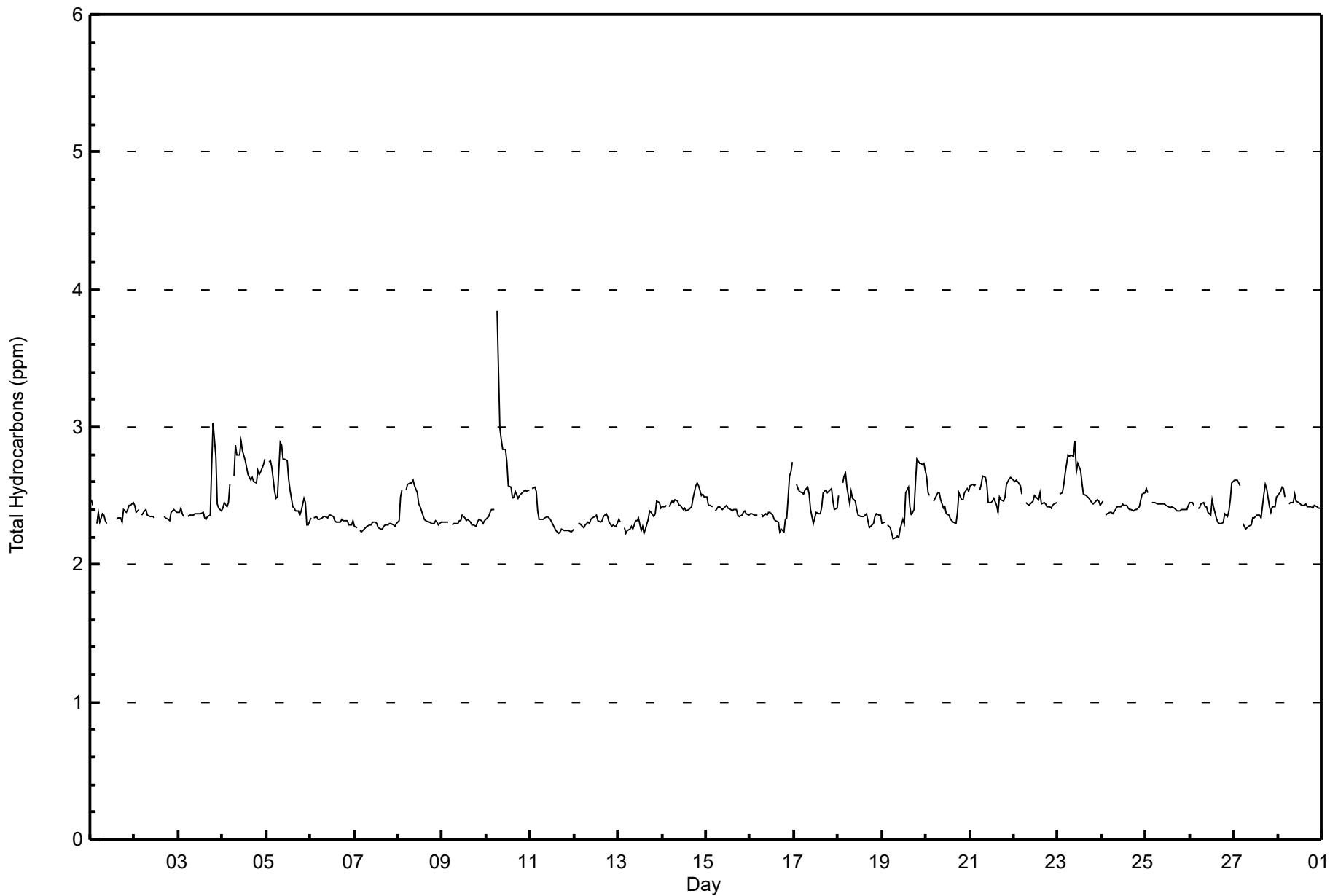






**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Total Hydrocarbons (THC) - ppm**  
**Mackay River - February 2023**





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Total Hydrocarbons (THC) - ppm**  
**Mackay River - February 2023**

| <b>Concentration Ranges (ppm)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 2.0                           | 0                      | 0.00     | 0.00                |
| 2.1 - 3.0                         | 636                    | 99.84    | 99.84               |
| 3.1 - 10.0                        | 1                      | 0.16     | 100.00              |
| > 10.0                            | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 637

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Total Hydrocarbons (THC) - ppm  
Mackay River - February 2023**

| <b>Concentration<br/>Ranges (ppm)</b> | <b>Wind Direction</b> |     |    |     |    |     |    |     |    |     |    |     |    |     |    |     | <b>Totals</b> |
|---------------------------------------|-----------------------|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|---------------|
|                                       | N                     | NNE | NE | ENE | E  | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |               |
| 0 - 2.0                               | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| 2.1 - 3.0                             | 43                    | 66  | 27 | 8   | 14 | 30  | 84 | 34  | 68 | 37  | 19 | 49  | 37 | 15  | 25 | 50  | 606           |
| 3.1 - 10.0                            | 0                     | 1   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 1             |
| > 10.0                                | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| <b>Totals</b>                         | 43                    | 67  | 27 | 8   | 14 | 30  | 84 | 34  | 68 | 37  | 19 | 49  | 37 | 15  | 25 | 50  | 607           |

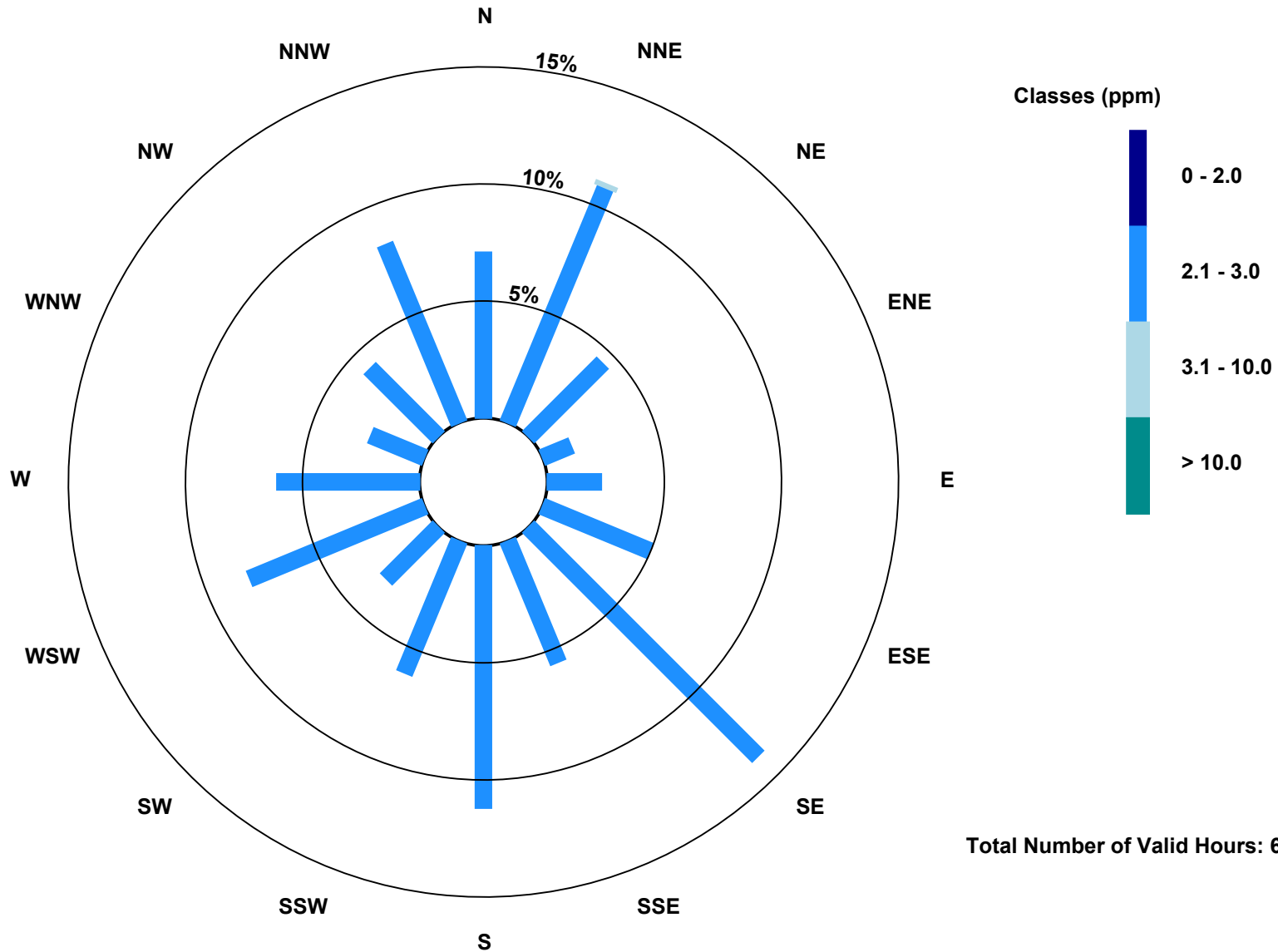
Total Number of Valid Hours: 607

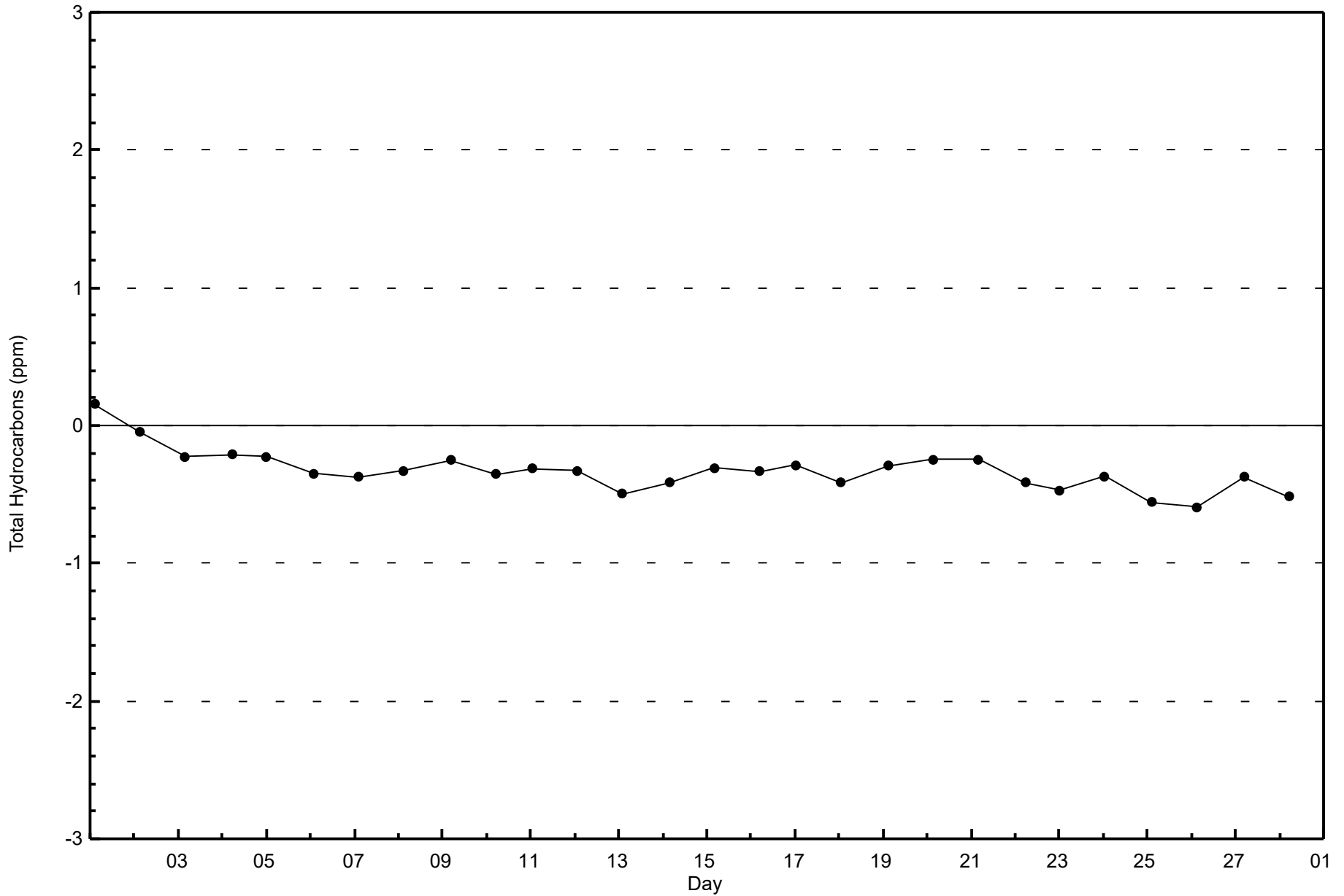
Total Number of Hours: 672

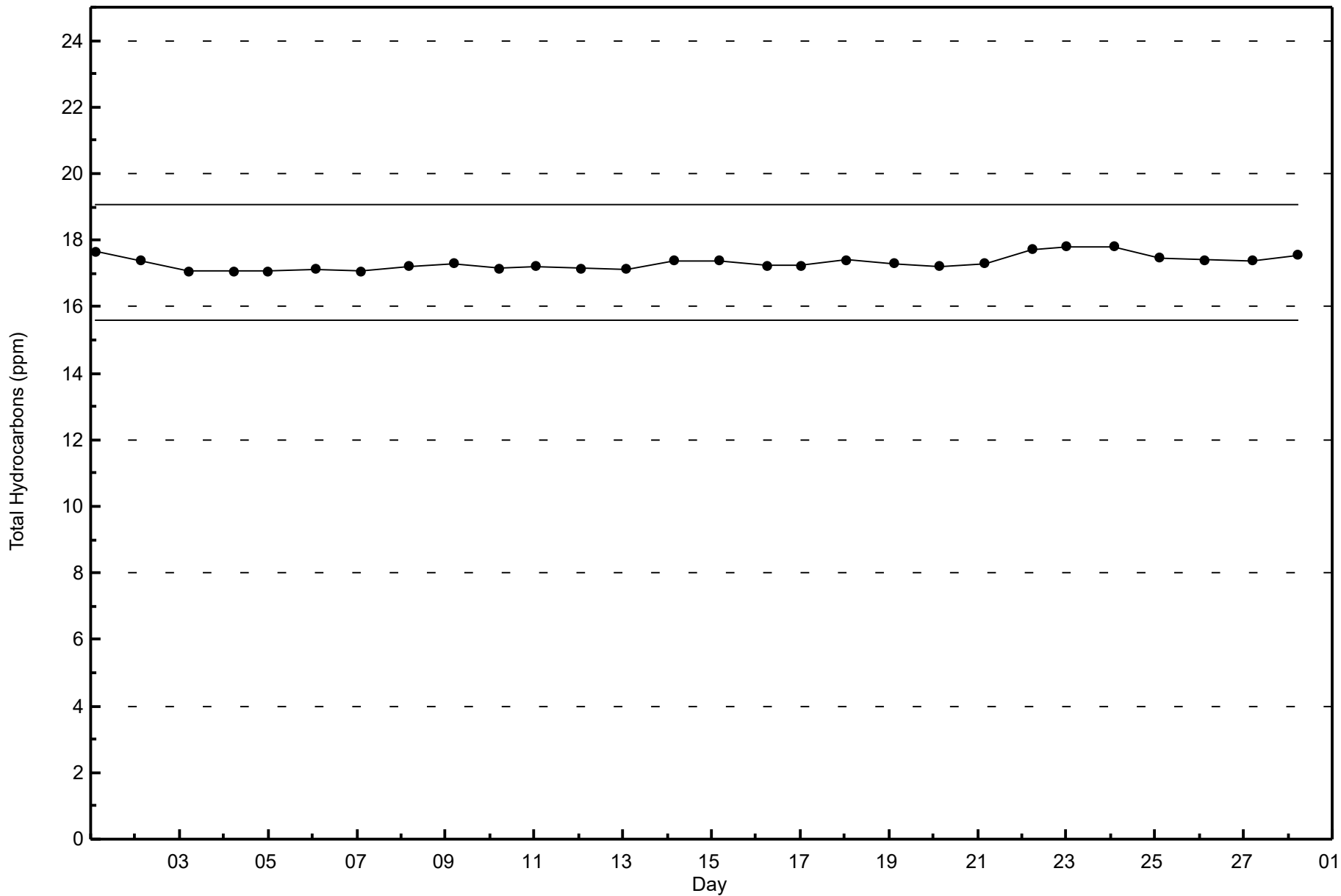


Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Total Hydrocarbons (THC) - ppm  
Mackay River









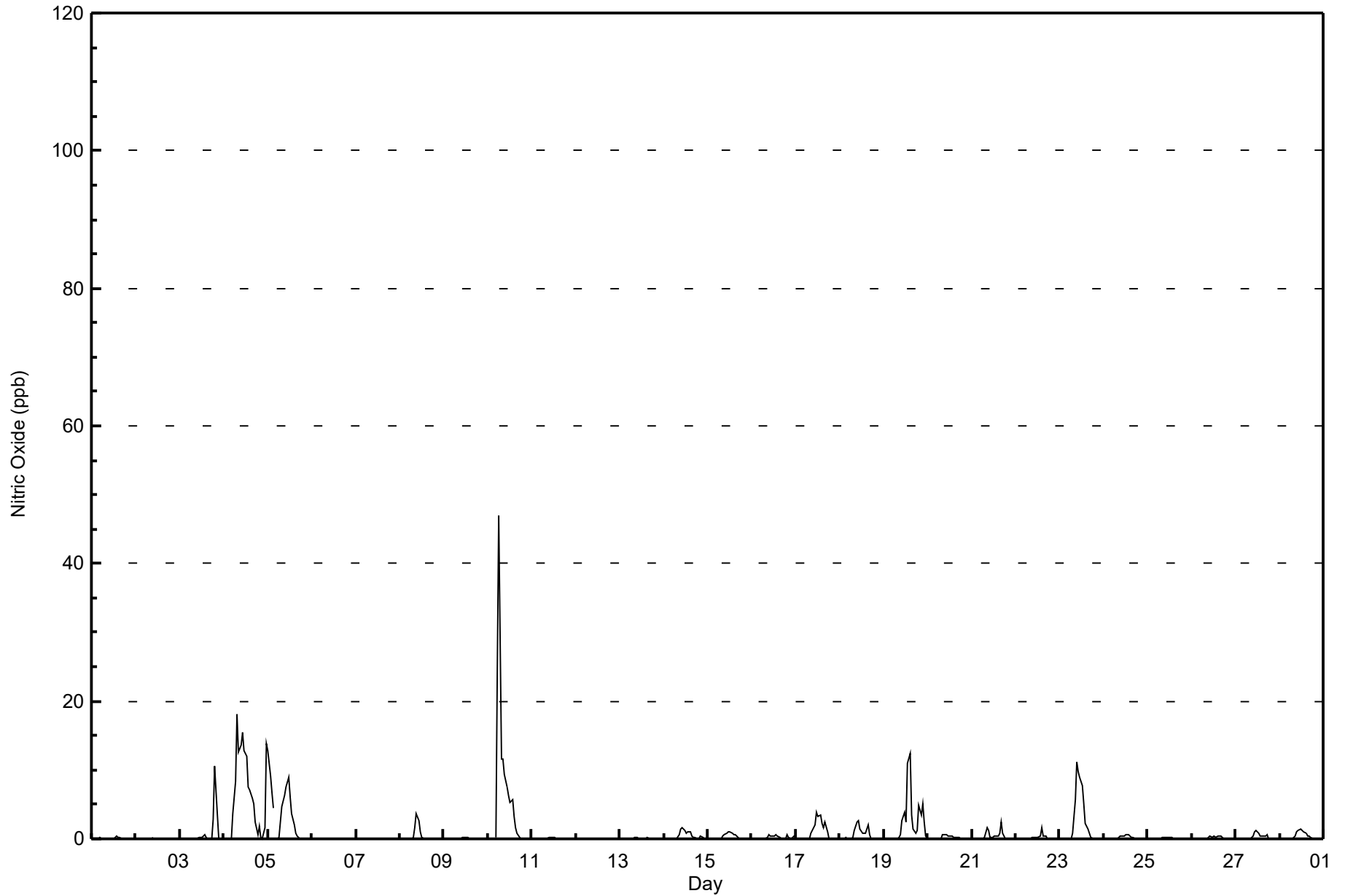


| Maximum Value: 46.9 ppb on Feb 10 07:00  |                               |     |     |     |     |      |      |      |      |      |      |      |      |      |      |     |     |     |      | Maximum Daily Average: 6.2 ppb on Feb 4   |     |     |     |                 | Hours in Service: 672           |               |
|--|-------------------------------|-----|-----|-----|-----|------|------|------|------|------|------|------|------|------|------|-----|-----|-----|------|---|-----|-----|-----|-----------------|---------------------------------|---------------|
| Minimum Value: 0.0 ppb on Feb 2 18:00  |                               |     |     |     |     |      |      |      |      |      |      |      |      |      |      |     |     |     |      | Minimum Daily Average: 0.0 ppb on Feb 7   |     |     |     |                 | Hours of Data: 638              |               |
| Maximum Diurnal Average: 2.1 ppb at hour 11  |                               |     |     |     |     |      |      |      |      |      |      |      |      |      |      |     |     |     |      | Minimum Diurnal Average: 0.0 ppb at hour 5  |     |     |     |                 | Hours of Missing Data: 34       |               |
| Monthly Average: 0.93 ppb  |                               |     |     |     |     |      |      |      |      |      |      |      |      |      |      |     |     |     |      | Percentiles: P <sub>1</sub> = 0.0 P <sub>10</sub> = 0.0 Q <sub>1</sub> = 0.0 Median = 0.0 Q <sub>3</sub> = 0.3 P <sub>90</sub> = 2.2 P <sub>99</sub> = 12.8 |     |     |     |                 | Hours of Calibration: 34        |               |
|  |                               |     |     |     |     |      |      |      |      |      |      |      |      |      |      |     |     |     |      |   |     |     |     |                 | Percent Operational Time: 100.0 |               |
| Day  | Hourly Period Ending At (MST) |     |     |     |     |      |      |      |      |      |      |      |      |      |      |     |     |     |      |   |     |     |     |                 | Daily Average                   | Daily Maximum |
|  | 1                             | 2   | 3   | 4   | 5   | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16  | 17  | 18  | 19   | 20  | 21  | 22  | 23  | 24              |                                 |               |
| 1-Feb  | Z                             | 0.0 | 0.0 | 0.0 | 0.3 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.1  | 0.3  | 0.1  | 0.2  | 0.0 | 0.0 | 0.0 | 0.0  | 0.0   | 0.0 | 0.0 | 0.0 | 0.0             | 0.1                             | 0.3           |
| 2-Feb  | 0.0                           | Z   | 0.0 | 0.0 | 0.0 | 0.0  | 0.0  | 0.1  | 0.2  | C    | C    | C    | C    | C    | C    | 0.1 | 0.0 | 0.0 | 0.0  | 0.0   | 0.0 | 0.0 | 0.0 | 0.0             | --                              | 0.2           |
| 3-Feb  | 0.0                           | 0.0 | Z   | 0.0 | 0.0 | 0.0  | 0.0  | 0.0  | 0.1  | 0.2  | 0.3  | 0.3  | 0.5  | 0.2  | 0.1  | 0.0 | 0.0 | 2.8 | 10.5 | 3.4   | 0.0 | 0.0 | 0.0 | 0.8             | 10.5                            |               |
| 4-Feb  | 0.0                           | 0.0 | 0.0 | Z   | 0.0 | 3.6  | 8.4  | 18.0 | 12.7 | 13.7 | 15.4 | 12.8 | 11.9 | 7.5  | 7.1  | 6.0 | 5.1 | 2.5 | 0.6  | 1.7   | 0.3 | 0.1 | 1.7 | 13.9            | 6.2                             | 18.0          |
| 5-Feb  | 12.9                          | 9.2 | 6.7 | 4.5 | Z   | 0.0  | 0.3  | 4.6  | 5.5  | 6.2  | 7.5  | 9.0  | 6.0  | 3.6  | 2.0  | 0.8 | 0.4 | 0.0 | 0.0  | 0.0   | 0.1 | 0.0 | 0.0 | 3.4             | 12.9                            |               |
| 6-Feb  | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | Z    | 0.0  | 0.0  | 0.0  | 0.1  | 0.1  | 0.1  | 0.0  | 0.0  | 0.0  | 0.0 | 0.0 | 0.0 | 0.0  | 0.0   | 0.0 | 0.0 | 0.0 | 0.0             | 0.0                             | 0.1           |
| 7-Feb  | Z                             | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0 | 0.0 | 0.0 | 0.0  | 0.0   | 0.0 | 0.0 | 0.0 | 0.0             | 0.0                             | 0.0           |
| 8-Feb  | 0.0                           | Z   | 0.1 | 0.1 | 0.1 | 0.1  | 0.1  | 1.6  | 3.6  | 2.6  | 0.9  | 0.2  | 0.1  | 0.0  | 0.0  | 0.0 | 0.0 | 0.0 | 0.0  | 0.0   | 0.0 | 0.0 | 0.0 | 0.4             | 3.6                             |               |
| 9-Feb  | 0.0                           | 0.0 | Z   | 0.0 | 0.0 | 0.0  | 0.0  | 0.0  | 0.1  | 0.1  | 0.1  | 0.1  | 0.1  | 0.1  | 0.0  | 0.0 | 0.0 | 0.0 | 0.0  | 0.0   | 0.0 | 0.0 | 0.0 | 0.0             | 0.1                             | 0.1           |
| 10-Feb   | 0.0                           | 0.0 | 0.0 | Z   | 0.1 | 24.9 | 46.9 | 11.6 | 11.5 | 9.4  | 7.6  | 6.3  | 5.4  | 5.8  | 3.3  | 1.7 | 0.8 | 0.2 | 0.0  | 0.0   | 0.0 | 0.0 | 0.0 | 5.9             | 46.9                            |               |
| 11-Feb   | 0.0                           | 0.1 | 0.0 | 0.0 | Z   | 0.0  | 0.0  | 0.0  | 0.0  | 0.1  | 0.2  | 0.2  | 0.1  | 0.1  | 0.0  | 0.0 | 0.0 | 0.0 | 0.0  | 0.0   | 0.0 | 0.0 | 0.0 | 0.0             | 0.2                             | 0.2           |
| 12-Feb   | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | Z    | 0.0  | 0.0  | 0.0  | 0.1  | 0.1  | 0.1  | 0.1  | 0.1  | 0.1  | 0.1 | 0.0 | 0.0 | 0.0  | 0.0   | 0.0 | 0.0 | 0.0 | 0.0             | 0.1                             | 0.1           |
| 13-Feb   | Z                             | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0  | 0.0  | 0.2  | 0.1  | 0.0  | 0.0  | 0.1  | 0.0  | 0.1  | 0.1 | 0.0 | 0.0 | 0.0  | 0.0   | 0.0 | 0.0 | 0.0 | 0.0             | 0.0                             | 0.2           |
| 14-Feb   | 0.0                           | Z   | 0.0 | 0.0 | 0.0 | 0.0  | 0.1  | 0.6  | 1.4  | 1.5  | 1.1  | 0.9  | 0.9  | 1.0  | 0.3  | 0.2 | 0.1 | 0.0 | 0.4  | 0.1   | 0.1 | 0.1 | 0.0 | 0.4             | 1.5                             |               |
| 15-Feb   | 0.0                           | 0.0 | Z   | 0.0 | 0.0 | 0.0  | 0.0  | 0.0  | 0.4  | 0.6  | 0.8  | 0.9  | 1.0  | 0.7  | 0.5  | 0.5 | 0.3 | 0.0 | 0.0  | 0.0   | 0.0 | 0.0 | 0.0 | 0.3             | 1.0                             |               |
| 16-Feb   | 0.0                           | 0.0 | 0.0 | Z   | 0.0 | 0.0  | 0.0  | 0.0  | 0.2  | 0.5  | 0.4  | 0.5  | 0.5  | 0.6  | 0.3  | 0.2 | 0.1 | 0.0 | 0.6  | 0.2   | 0.0 | 0.2 | 0.3 | 0.2             | 0.6                             |               |
| 17-Feb   | 0.1                           | 0.0 | 0.0 | 0.0 | Z   | 0.0  | 0.0  | 0.0  | 0.7  | 1.2  | 2.0  | 3.8  | 3.2  | 3.5  | 2.2  | 1.7 | 2.4 | 1.1 | 0.0  | 0.0   | 0.0 | 0.0 | 0.0 | 1.0             | 3.8                             |               |
| 18-Feb   | 0.0                           | 0.0 | 0.1 | 0.2 | 0.1 | Z    | 0.0  | 0.1  | 1.2  | 2.5  | 2.6  | 1.3  | 0.8  | 0.8  | 0.9  | 2.1 | 0.7 | 0.1 | 0.0  | 0.0   | 0.0 | 0.0 | 0.0 | 0.6             | 2.6                             |               |
| 19-Feb   | Z                             | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0  | 0.0  | 0.3  | 0.6  | 2.6  | 3.9  | 2.4  | 11.1 | 12.4 | 3.5 | 1.5 | 0.7 | 1.3  | 4.8   | 3.4 | 5.2 | 2.4 | 2.5             | 12.4                            |               |
| 20-Feb   | 0.1                           | Z   | 0.0 | 0.0 | 0.0 | 0.0  | 0.0  | 0.1  | 0.6  | 0.6  | 0.6  | 0.5  | 0.5  | 0.3  | 0.2  | 0.1 | 0.1 | 0.3 | 0.0  | 0.0   | 0.0 | 0.0 | 0.1 | 0.1             | 0.6                             |               |
| 21-Feb   | 0.1                           | 0.1 | Z   | 0.0 | 0.0 | 0.0  | 0.0  | 0.2  | 1.6  | 1.3  | 0.3  | 0.3  | 0.4  | 0.4  | 0.4  | 0.8 | 2.5 | 0.9 | 0.0  | 0.0   | 0.0 | 0.0 | 0.0 | 0.4             | 2.5                             |               |
| 22-Feb   | 0.0                           | 0.0 | 0.0 | Z   | 0.0 | 0.0  | 0.0  | 0.0  | 0.0  | 0.1  | 0.2  | 0.2  | 0.2  | 0.3  | 1.6  | 0.5 | 0.3 | 0.1 | 0.0  | 0.0   | 0.0 | 0.0 | 0.0 | 0.2             | 1.6                             |               |
| 23-Feb   | 0.0                           | 0.0 | 0.0 | 0.0 | Z   | 0.1  | 0.1  | 0.8  | 5.7  | 11.1 | 9.8  | 9.0  | 7.6  | 5.1  | 2.3  | 1.5 | 0.8 | 0.3 | 0.0  | 0.0   | 0.0 | 0.0 | 0.0 | 2.4             | 11.1                            |               |
| 24-Feb   | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | Z    | 0.0  | 0.0  | 0.2  | 0.4  | 0.4  | 0.4  | 0.6  | 0.5  | 0.3  | 0.2 | 0.2 | 0.1 | 0.0  | 0.0   | 0.0 | 0.0 | 0.0 | 0.1             | 0.6                             |               |
| 25-Feb   | Z                             | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0  | 0.0  | 0.1  | 0.2  | 0.2  | 0.1  | 0.1  | 0.1  | 0.1  | 0.0 | 0.0 | 0.0 | 0.0  | 0.0   | 0.0 | 0.0 | 0.0 | 0.0             | 0.2                             |               |
| 26-Feb   | 0.0                           | Z   | 0.0 | 0.0 | 0.0 | 0.0  | 0.0  | 0.0  | 0.1  | 0.3  | 0.3  | 0.3  | 0.5  | 0.2  | 0.3  | 0.4 | 0.3 | 0.1 | 0.0  | 0.0   | 0.0 | 0.0 | 0.0 | 0.1             | 0.5                             |               |
| 27-Feb   | 0.0                           | 0.0 | Z   | 0.0 | 0.0 | 0.0  | 0.0  | 0.0  | 0.1  | 0.4  | 0.9  | 1.2  | 0.8  | 0.3  | 0.4  | 0.4 | 0.5 | 0.6 | 0.0  | 0.0   | 0.0 | 0.0 | 0.0 | 0.2             | 1.2                             |               |
| 28-Feb   | 0.1                           | 0.1 | 0.0 | Z   | 0.0 | 0.0  | 0.0  | 0.1  | 0.5  | 1.1  | 1.2  | 1.4  | 1.2  | 1.0  | 0.7  | 0.5 | 0.4 | 0.2 | 0.0  | 0.0   | 0.0 | 0.0 | 0.0 | 0.4             | 1.4                             |               |
|  |                               |     |     |     |     |      |      |      |      |      |      |      |      |      |      |     |     |     |      |   |     |     |     | Diurnal Average |                                 |               |
|  |                               |     |     |     |     |      |      |      |      |      |      |      |      |      |      |     |     |     |      |   |     |     |     | Diurnal Maximum |                                 |               |
| 0.6 0.4 0.3 0.2 0.0 1.2 2.0 1.3 1.6 2.0 2.1 2.0 1.7 1.6 1.4 0.8 0.6 0.3 0.2 0.6 0.3 0.2 0.2 0.5              |                               |     |     |     |     |      |      |      |      |      |      |      |      |      |      |     |     |     |      |   |     |     |     |                 |                                 |               |
| 12.9 9.2 6.7 4.5 0.3 24.9 46.9 18.0 12.7 13.7 15.4 12.8 11.9 11.1 12.4 6.0 5.1 2.5 2.8 10.5 3.4 5.2 2.4 13.9 |                               |     |     |     |     |      |      |      |      |      |      |      |      |      |      |     |     |     |      |   |     |     |     |                 |                                 |               |
| Z - zerspan C - Calibration  |                               |     |     |     |     |      |      |      |      |      |      |      |      |      |      |     |     |     |      |   |     |     |     |                 |                                 |               |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Nitric Oxide (NO) - ppb**  
**Mackay River - February 2023**





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Nitric Oxide (NO) - ppb  
Mackay River - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 20                            | 636                    | 99.69    | 99.69               |
| 21 - 40                           | 1                      | 0.16     | 99.84               |
| 41 - 80                           | 1                      | 0.16     | 100.00              |
| 81 - 159                          | 0                      | 0.00     | 100.00              |
| > 159                             | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 638

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Nitric Oxide (NO) - ppb  
Mackay River - February 2023**

| <b>Concentration<br/>Ranges (ppb)</b> | <b>Wind Direction</b> |     |    |     |    |     |    |     |    |     |    |     |    |     |    |     | <b>Totals</b> |
|---------------------------------------|-----------------------|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|---------------|
|                                       | N                     | NNE | NE | ENE | E  | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |               |
| 0 - 20                                | 42                    | 65  | 26 | 8   | 13 | 29  | 82 | 36  | 64 | 41  | 20 | 48  | 37 | 15  | 27 | 53  | 606           |
| 21 - 40                               | 0                     | 0   | 1  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 1             |
| 11 - 80                               | 0                     | 1   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 1             |
| 81 - 159                              | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| > 159                                 | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| <b>Totals</b>                         | 42                    | 66  | 27 | 8   | 13 | 29  | 82 | 36  | 64 | 41  | 20 | 48  | 37 | 15  | 27 | 53  | 608           |

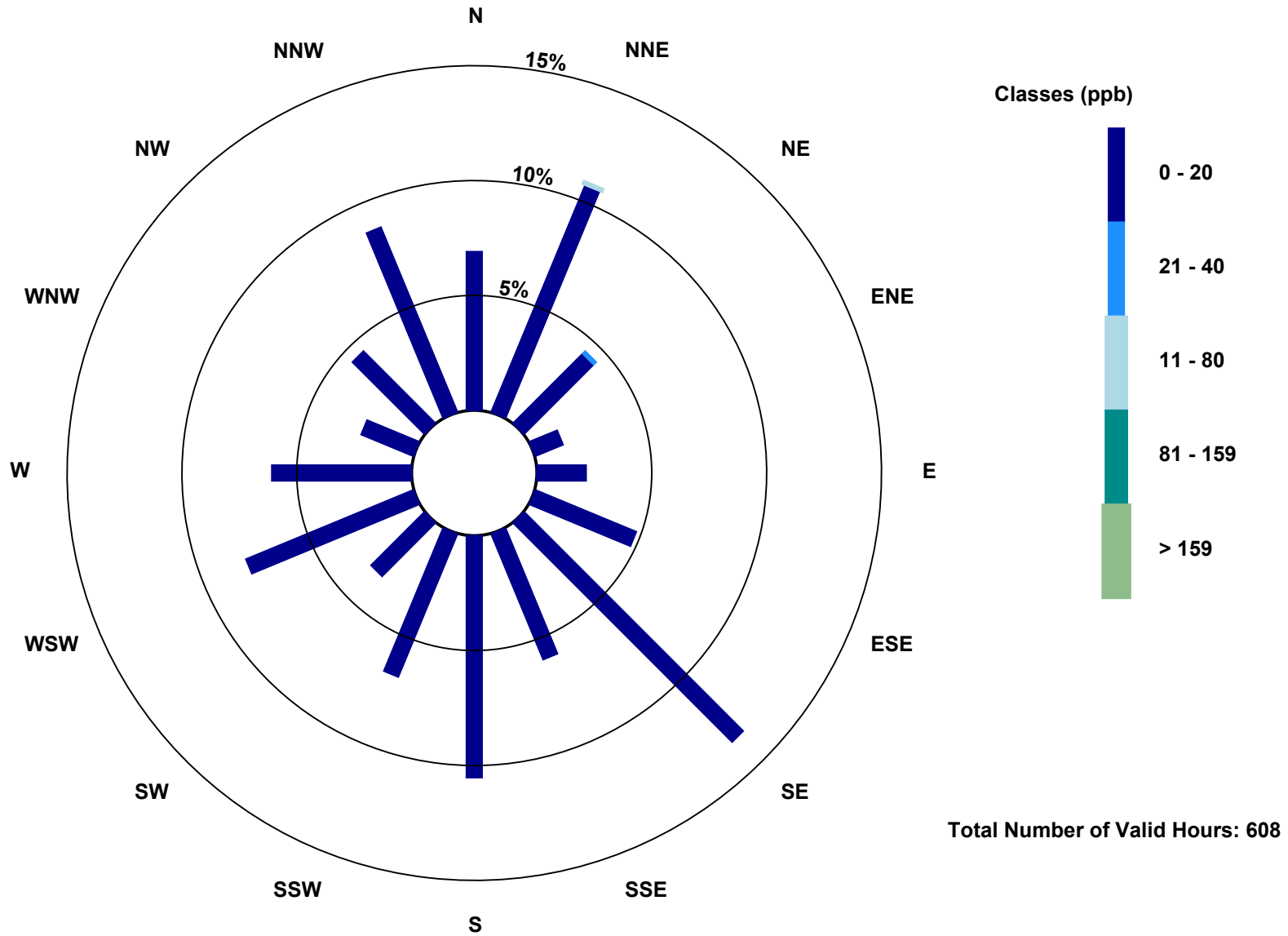
Total Number of Valid Hours: 608

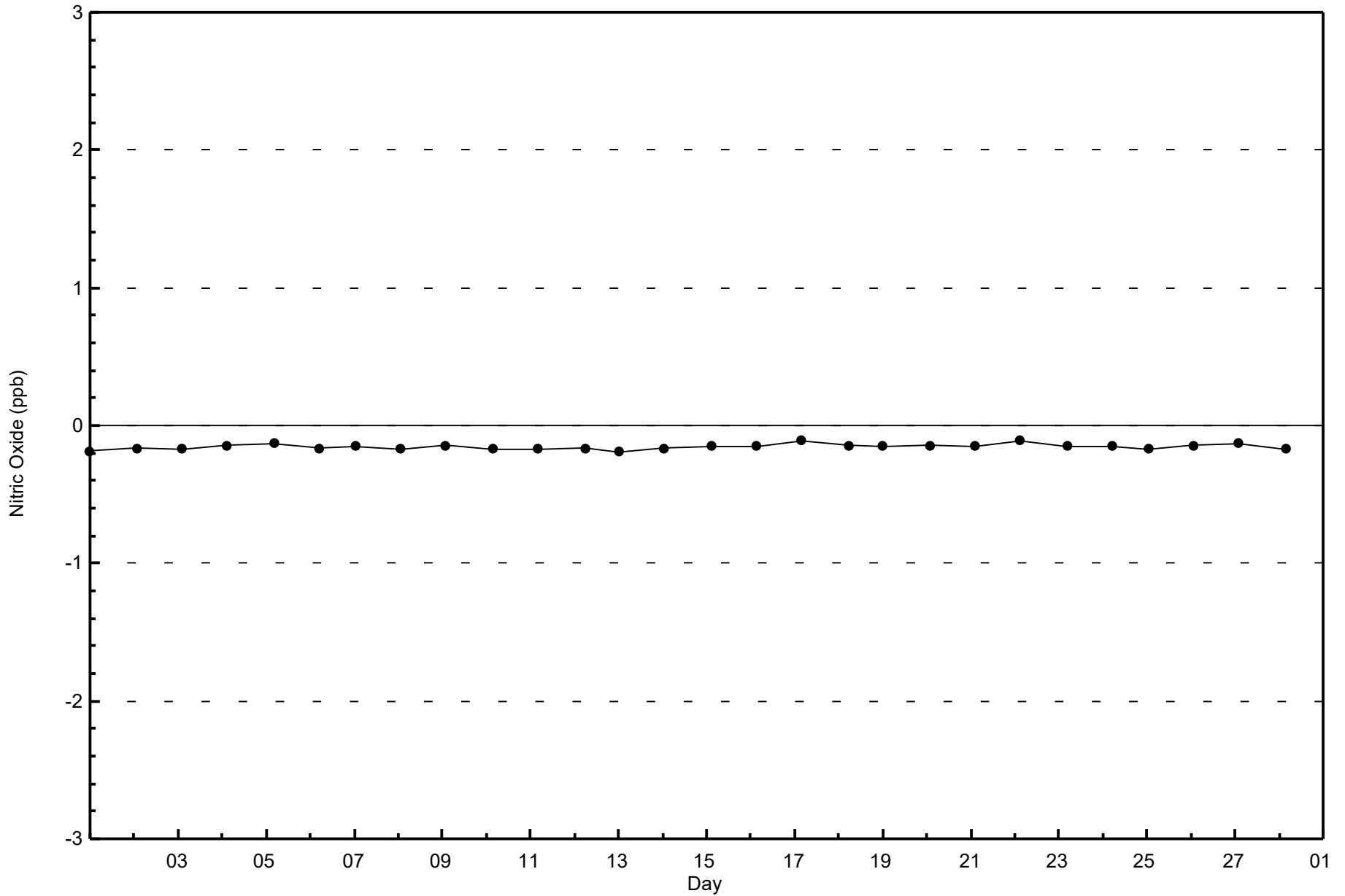
Total Number of Hours: 672

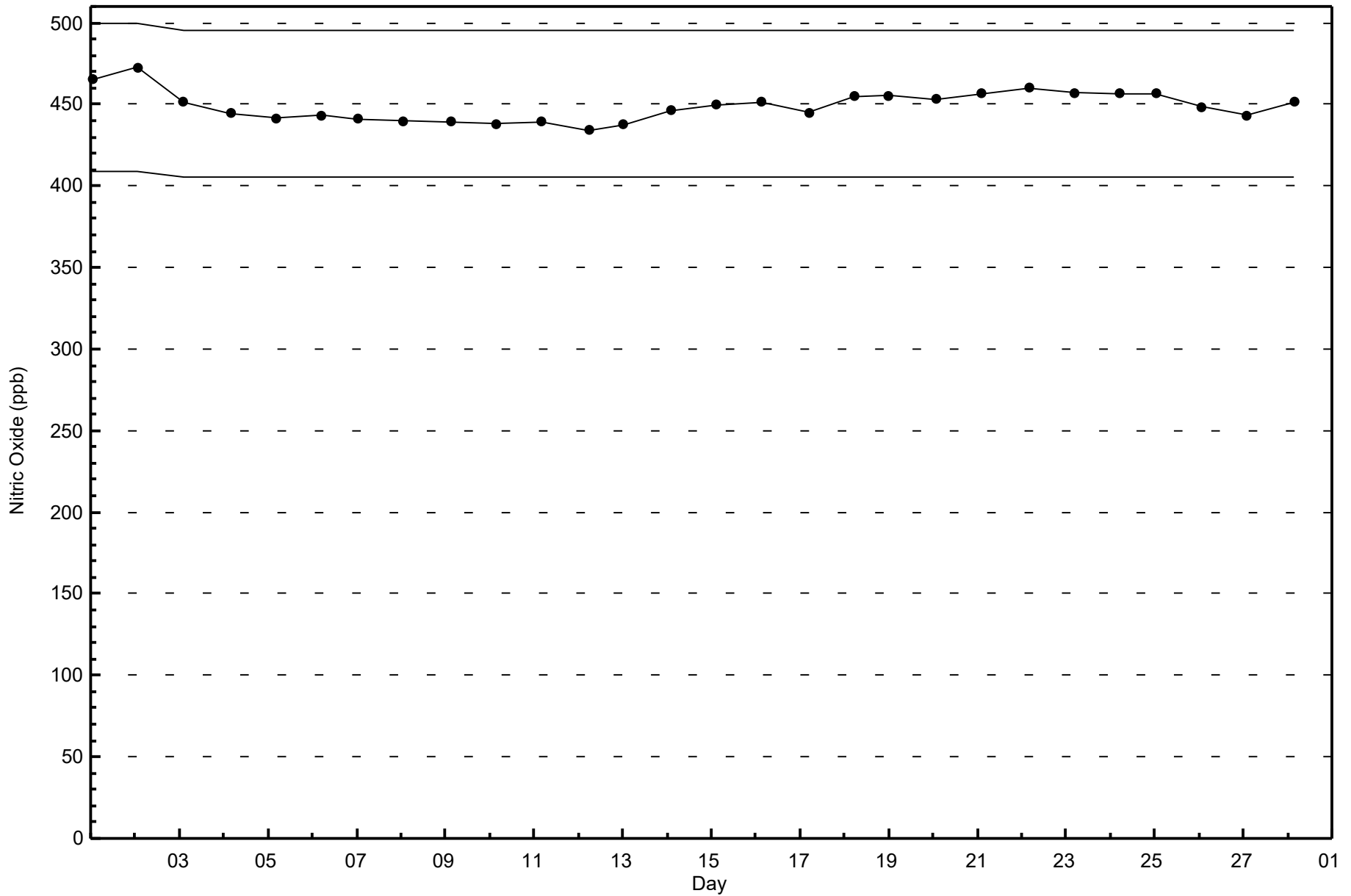


Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Nitric Oxide (NO) - ppb  
Mackay River









**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

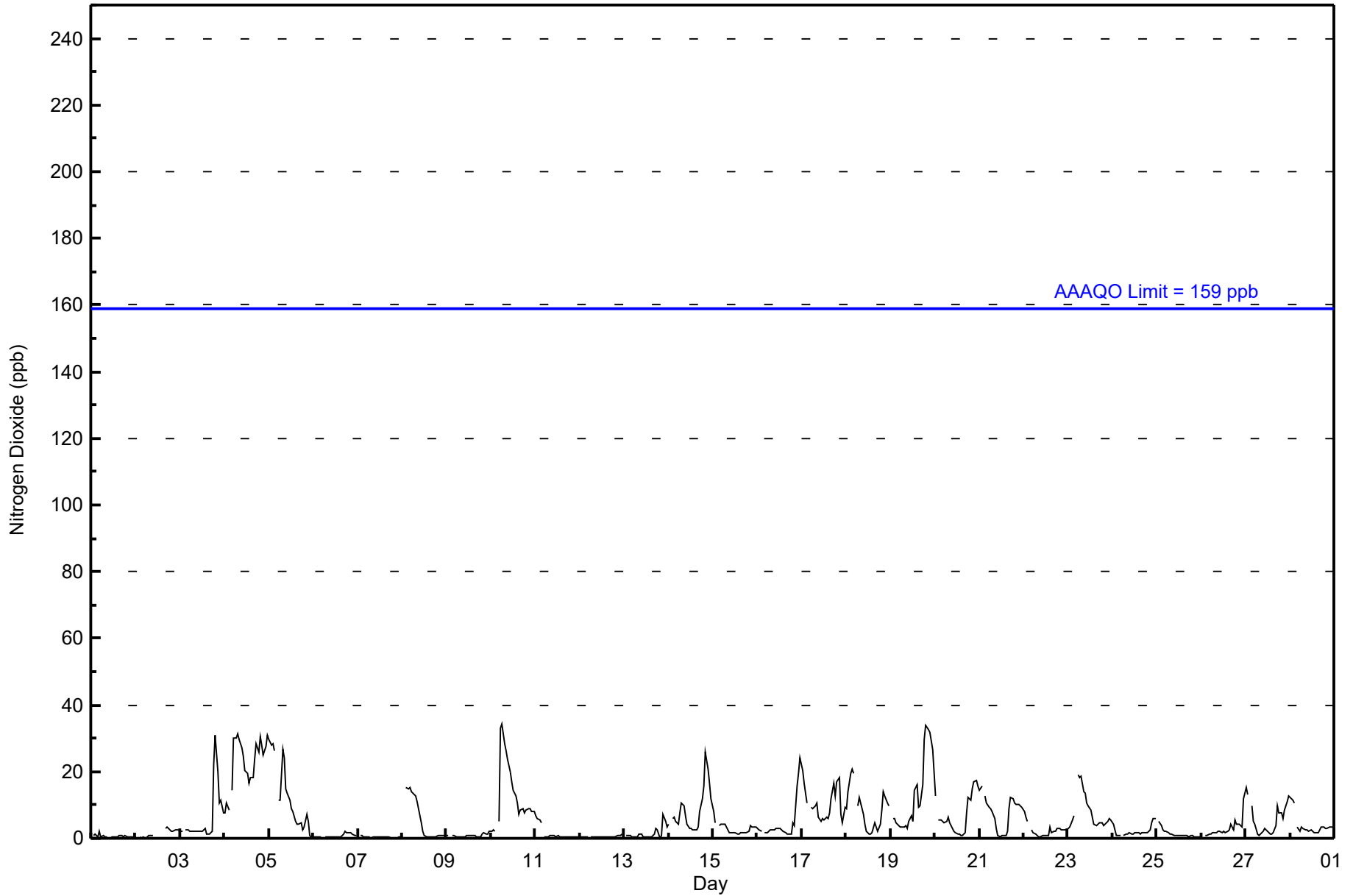
**Nitrogen Dioxide (NO<sub>2</sub>) - ppb**  
**Mackay River - February 2023**

|   |  |          |                           |       |
|---|--|----------|---------------------------|-------|
| Number of Exceedences (AAAQO):              | 1-hr: 0  | 24-hr: 0 | Hours in Service:         | 672   |
| Maximum Value: 34.3 ppb on Feb 10 07:00     | Maximum Daily Average: 22.9 ppb on Feb 4   |          | Hours of Data:            | 638   |
| Minimum Value: 0.2 ppb on Feb 1 10:00       | Minimum Daily Average: 0.4 ppb on Feb 7  |          | Hours of Missing Data:    | 34    |
| Maximum Diurnal Average: 7.8 ppb at hour 21 | Minimum Diurnal Average: 2.9 ppb at hour 16  |          | Hours of Calibration:     | 34    |
| Monthly Average: 5.62 ppb                   | Percentiles: P <sub>1</sub> = 0.2 P <sub>10</sub> = 0.5 Q <sub>1</sub> = 0.8 Median = 2.5 Q <sub>3</sub> = 7.8 P <sub>90</sub> = 15.7 P <sub>99</sub> = 30.9 |          | Percent Operational Time: | 100.0 |

| Day    | Hourly Period Ending At (MST) |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Daily Average | Daily Maximum |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
|--------|-------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|---------------|---------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----------------|--|
|        | 1                             | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20   | 21   | 22   | 23   | 24   |               |               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 1-Feb  | Z                             | 0.9  | 1.3  | 0.4  | 2.3  | 0.3  | 0.7  | 0.4  | 0.5  | 0.2  | 0.2  | 0.3  | 0.3  | 0.6  | 0.6  | 0.8  | 0.8  | 0.5  | 0.8  | 0.6  | 0.6  | 0.5  | 0.5  | 0.6  | 0.6           | 2.3           |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 2-Feb  | 0.5                           | Z    | 0.3  | 0.2  | 0.3  | 0.2  | 0.4  | 0.9  | 0.9  | 0.9  | C    | C    | C    | C    | C    | C    | 2.8  | 3.2  | 2.7  | 2.2  | 2.1  | 2.5  | 2.5  | 2.4  | --            | 3.2           |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 3-Feb  | 2.3                           | 2.3  | Z    | 2.4  | 2.4  | 2.3  | 2.2  | 2.1  | 2.0  | 2.1  | 2.1  | 2.0  | 2.1  | 3.1  | 1.4  | 1.3  | 1.4  | 2.3  | 21.9 | 30.9 | 19.8 | 10.6 | 11.4 | 7.8  | 6.0           | 30.9          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 4-Feb  | 7.7                           | 10.4 | 8.6  | Z    | 14.2 | 29.9 | 30.2 | 31.2 | 29.6 | 27.2 | 24.7 | 20.4 | 19.4 | 16.7 | 18.1 | 18.3 | 23.6 | 28.4 | 25.8 | 30.4 | 27.9 | 25.1 | 27.6 | 30.9 | 22.9          | 31.2          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 5-Feb  | 29.7                          | 28.1 | 28.2 | 26.1 | Z    | 11.3 | 11.5 | 26.5 | 24.0 | 14.9 | 13.6 | 11.5 | 9.1  | 7.9  | 5.0  | 4.3  | 4.3  | 4.5  | 2.7  | 3.5  | 7.1  | 5.1  | 0.8  | 0.5  | 12.2          | 29.7          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 6-Feb  | 0.4                           | 0.4  | 0.4  | 0.3  | 0.3  | Z    | 0.3  | 0.3  | 0.4  | 0.4  | 0.4  | 0.5  | 0.3  | 0.3  | 0.3  | 0.4  | 1.1  | 2.2  | 1.8  | 1.7  | 1.7  | 1.1  | 0.9  | 0.8  | 0.7           | 2.2           |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 7-Feb  | Z                             | 0.8  | 0.7  | 0.6  | 0.6  | 0.5  | 0.4  | 0.2  | 0.3  | 0.3  | 0.4  | 0.4  | 0.5  | 0.5  | 0.5  | 0.4  | 0.3  | 0.3  | 0.2  | 0.2  | 0.2  | 0.2  | 0.4  | 0.4  | 0.4           | 0.8           |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 8-Feb  | 0.4                           | Z    | 15.3 | 14.9 | 15.2 | 13.8 | 13.2 | 12.8 | 11.2 | 9.1  | 4.8  | 2.0  | 0.9  | 0.5  | 0.5  | 0.6  | 0.6  | 0.6  | 0.6  | 0.7  | 0.7  | 0.8  | 0.8  | 0.8  | 5.3           | 15.3          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 9-Feb  | 0.8                           | 0.8  | Z    | 0.8  | 0.7  | 0.6  | 0.6  | 0.5  | 0.5  | 0.5  | 0.6  | 0.7  | 0.7  | 0.8  | 0.7  | 0.7  | 0.6  | 0.5  | 0.5  | 1.2  | 1.5  | 1.3  | 1.3  | 2.0  | 0.8           | 2.0           |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 10-Feb | 2.3                           | 2.6  | 2.2  | Z    | 4.9  | 33.2 | 34.3 | 28.4 | 26.4 | 23.8 | 19.8 | 16.9 | 14.5 | 12.9 | 10.4 | 7.4  | 8.6  | 8.7  | 7.6  | 8.3  | 8.8  | 8.7  | 8.2  | 7.9  | 13.3          | 34.3          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 11-Feb | 6.9                           | 5.8  | 5.4  | 4.7  | Z    | 0.6  | 0.5  | 0.6  | 0.8  | 0.9  | 0.7  | 0.6  | 0.7  | 0.6  | 0.6  | 0.6  | 0.6  | 0.6  | 0.5  | 0.4  | 0.3  | 0.3  | 0.3  | 0.3  | 1.4           | 6.9           |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 12-Feb | 0.3                           | 0.3  | 0.4  | 0.4  | 0.4  | Z    | 0.4  | 0.4  | 0.5  | 0.5  | 0.5  | 0.5  | 0.5  | 0.4  | 0.4  | 0.4  | 0.5  | 0.5  | 0.5  | 0.6  | 0.7  | 1.0  | 1.0  | 1.1  | 0.5           | 1.1           |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 13-Feb | Z                             | 1.0  | 0.9  | 0.7  | 0.5  | 0.5  | 0.5  | 0.4  | 1.1  | 1.1  | 0.5  | 0.3  | 0.4  | 0.4  | 0.3  | 0.4  | 1.2  | 3.1  | 2.7  | 0.2  | 1.0  | 7.1  | 5.1  | 3.6  | 1.4           | 7.1           |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 14-Feb | 4.3                           | Z    | 6.0  | 6.2  | 5.1  | 4.2  | 7.5  | 10.7 | 9.9  | 6.8  | 4.4  | 3.0  | 2.8  | 2.7  | 2.6  | 2.4  | 3.2  | 8.0  | 11.7 | 15.8 | 25.8 | 20.7 | 16.7 | 11.7 | 8.4           | 25.8          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 15-Feb | 8.1                           | 4.6  | Z    | 3.9  | 4.3  | 4.3  | 4.1  | 3.5  | 2.6  | 1.6  | 1.6  | 1.7  | 1.7  | 1.4  | 1.2  | 1.6  | 1.8  | 1.6  | 1.5  | 2.2  | 3.8  | 3.5  | 3.2  | 3.2  | 2.9           | 8.1           |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 16-Feb | 2.9                           | 2.5  | 2.0  | Z    | 1.6  | 1.9  | 2.3  | 2.5  | 2.5  | 2.6  | 2.9  | 3.0  | 2.9  | 2.6  | 2.2  | 1.5  | 1.3  | 1.2  | 1.2  | 4.7  | 3.8  | 15.8 | 19.5 | 24.2 | 4.7           | 24.2          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 17-Feb | 20.4                          | 16.7 | 13.4 | 10.8 | Z    | 9.5  | 8.9  | 9.8  | 10.8 | 6.4  | 5.0  | 5.9  | 5.5  | 6.5  | 5.9  | 7.6  | 11.7 | 16.4 | 12.5 | 16.9 | 18.3 | 7.4  | 4.8  | 9.4  | 10.5          | 20.4          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 18-Feb | 9.1                           | 14.0 | 19.4 | 20.6 | 19.4 | Z    | 9.6  | 12.1 | 10.5 | 7.3  | 4.1  | 2.0  | 1.4  | 1.4  | 1.8  | 4.7  | 3.2  | 2.0  | 4.1  | 8.4  | 13.9 | 12.9 | 10.8 | 9.7  | 8.8           | 20.6          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 19-Feb | Z                             | 6.1  | 6.0  | 4.6  | 3.7  | 3.4  | 3.2  | 3.6  | 3.8  | 3.0  | 5.1  | 6.6  | 5.0  | 14.2 | 16.2 | 9.3  | 9.7  | 16.3 | 29.5 | 34.0 | 32.5 | 31.6 | 29.4 | 26.8 | 13.2          | 34.0          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 20-Feb | 12.6                          | Z    | 5.4  | 5.7  | 5.1  | 4.5  | 5.1  | 6.2  | 4.8  | 2.9  | 2.3  | 1.5  | 1.3  | 1.3  | 0.8  | 0.8  | 1.8  | 7.8  | 12.1 | 11.4 | 14.7 | 16.8 | 17.2 | 15.7 | 6.9           | 17.2          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 21-Feb | 14.3                          | 15.8 | Z    | 12.7 | 10.6 | 9.4  | 8.9  | 8.0  | 5.8  | 2.8  | 0.7  | 0.6  | 0.8  | 0.8  | 0.9  | 2.1  | 8.9  | 12.2 | 11.7 | 10.5 | 10.0 | 10.1 | 9.7  | 9.2  | 7.7           | 15.8          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 22-Feb | 8.0                           | 6.3  | 4.9  | Z    | 2.5  | 1.8  | 1.2  | 0.8  | 0.5  | 0.6  | 0.7  | 0.7  | 0.7  | 0.9  | 3.5  | 1.7  | 2.2  | 2.2  | 2.8  | 3.0  | 2.6  | 2.4  | 2.5  | 2.7  | 2.4           | 8.0           |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 23-Feb | 2.8                           | 3.6  | 5.6  | 6.7  | Z    | 19.1 | 18.4 | 18.7 | 14.0 | 13.6 | 10.6 | 9.7  | 8.4  | 6.5  | 4.1  | 3.8  | 4.2  | 4.7  | 4.5  | 4.0  | 4.2  | 5.1  | 6.0  | 5.5  | 8.0           | 19.1          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 24-Feb | 4.1                           | 2.5  | 1.0  | 0.7  | 0.8  | Z    | 1.0  | 1.2  | 1.3  | 1.5  | 1.2  | 1.3  | 1.6  | 1.7  | 1.6  | 1.2  | 1.6  | 1.7  | 1.7  | 1.7  | 2.6  | 4.6  | 5.9  | 6.1  | 2.1           | 6.1           |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 25-Feb | Z                             | 5.1  | 4.0  | 2.7  | 2.3  | 2.0  | 1.6  | 1.4  | 1.2  | 0.9  | 0.7  | 0.8  | 0.8  | 0.8  | 0.7  | 0.7  | 0.7  | 0.6  | 0.7  | 0.7  | 0.6  | 0.6  | 0.5  | 0.5  | 1.3           | 5.1           |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 26-Feb | 0.6                           | Z    | 0.9  | 1.0  | 1.2  | 1.2  | 1.5  | 1.8  | 1.6  | 2.2  | 2.1  | 1.8  | 2.3  | 1.6  | 2.1  | 2.6  | 4.3  | 2.6  | 5.5  | 4.3  | 4.3  | 3.7  | 3.5  | 11.7 | 2.8           | 11.7          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 27-Feb | 15.3                          | 13.1 | Z    | 9.8  | 5.0  | 4.2  | 1.2  | 0.9  | 1.3  | 2.1  | 2.8  | 2.7  | 1.8  | 1.4  | 1.4  | 1.5  | 3.8  | 9.6  | 7.8  | 7.6  | 6.0  | 8.4  | 10.9 | 12.8 | 5.7           | 15.3          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 28-Feb | 12.2                          | 11.4 | 10.6 | Z    | 3.4  | 2.3  | 3.3  | 3.0  | 2.7  | 2.5  | 2.0  | 2.4  | 2.1  | 1.8  | 1.6  | 1.7  | 2.4  | 3.2  | 3.2  | 3.1  | 3.1  | 3.5  | 3.5  | 3.3  | 3.8           | 12.2          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
|        |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 7.2  | 6.7           | 6.2           | 6.0  | 4.5  | 6.7  | 6.2  | 6.7  | 6.1  | 5.0  | 4.2  | 3.7  | 3.3  | 3.3  | 3.2  | 2.9  | 3.8  | 5.2  | 6.4  | 7.5  | 7.8  | 7.6  | 7.3  | 7.6  | Diurnal Average |  |
|        |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 29.7 | 28.1          | 28.2          | 26.1 | 19.4 | 33.2 | 34.3 | 31.2 | 29.6 | 27.2 | 24.7 | 20.4 | 19.4 | 16.7 | 18.1 | 18.3 | 23.6 | 28.4 | 29.5 | 34.0 | 32.5 | 31.6 | 29.4 | 30.9 | Diurnal Maximum |  |

Z - zerospan      C - Calibration  
 Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 159 ppb







**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Nitrogen Dioxide (NO<sub>2</sub>) - ppb  
Mackay River - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 20                            | 601                    | 94.20    | 94.20               |
| 21 - 40                           | 37                     | 5.80     | 100.00              |
| 41 - 80                           | 0                      | 0.00     | 100.00              |
| 81 - 159                          | 0                      | 0.00     | 100.00              |
| > 159                             | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 638

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Nitrogen Dioxide (NO<sub>2</sub>) - ppb  
Mackay River - February 2023**

| <b>Concentration<br/>Ranges (ppb)</b> | <b>Wind Direction</b> |     |    |     |    |     |    |     |    |     |    |     |    |     |    |     | <b>Totals</b> |
|---------------------------------------|-----------------------|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|---------------|
|                                       | N                     | NNE | NE | ENE | E  | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |               |
| 0 - 20                                | 37                    | 47  | 24 | 7   | 10 | 29  | 82 | 36  | 64 | 41  | 20 | 48  | 37 | 15  | 25 | 49  | 571           |
| 21 - 40                               | 5                     | 19  | 3  | 1   | 3  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 2  | 4   | 37            |
| 11 - 80                               | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| 81 - 159                              | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| > 159                                 | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| <b>Totals</b>                         | 42                    | 66  | 27 | 8   | 13 | 29  | 82 | 36  | 64 | 41  | 20 | 48  | 37 | 15  | 27 | 53  | 608           |

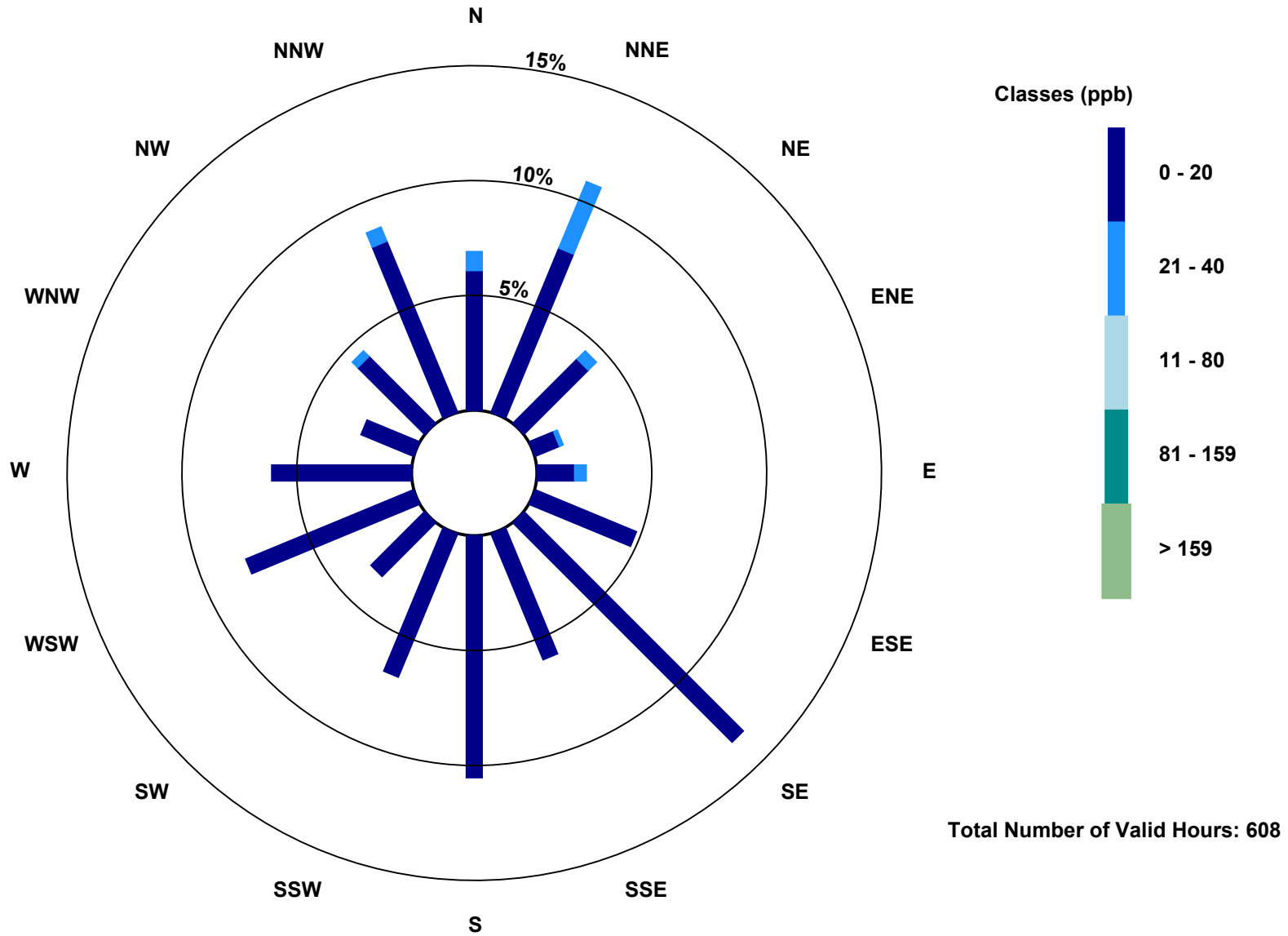
Total Number of Valid Hours: 608

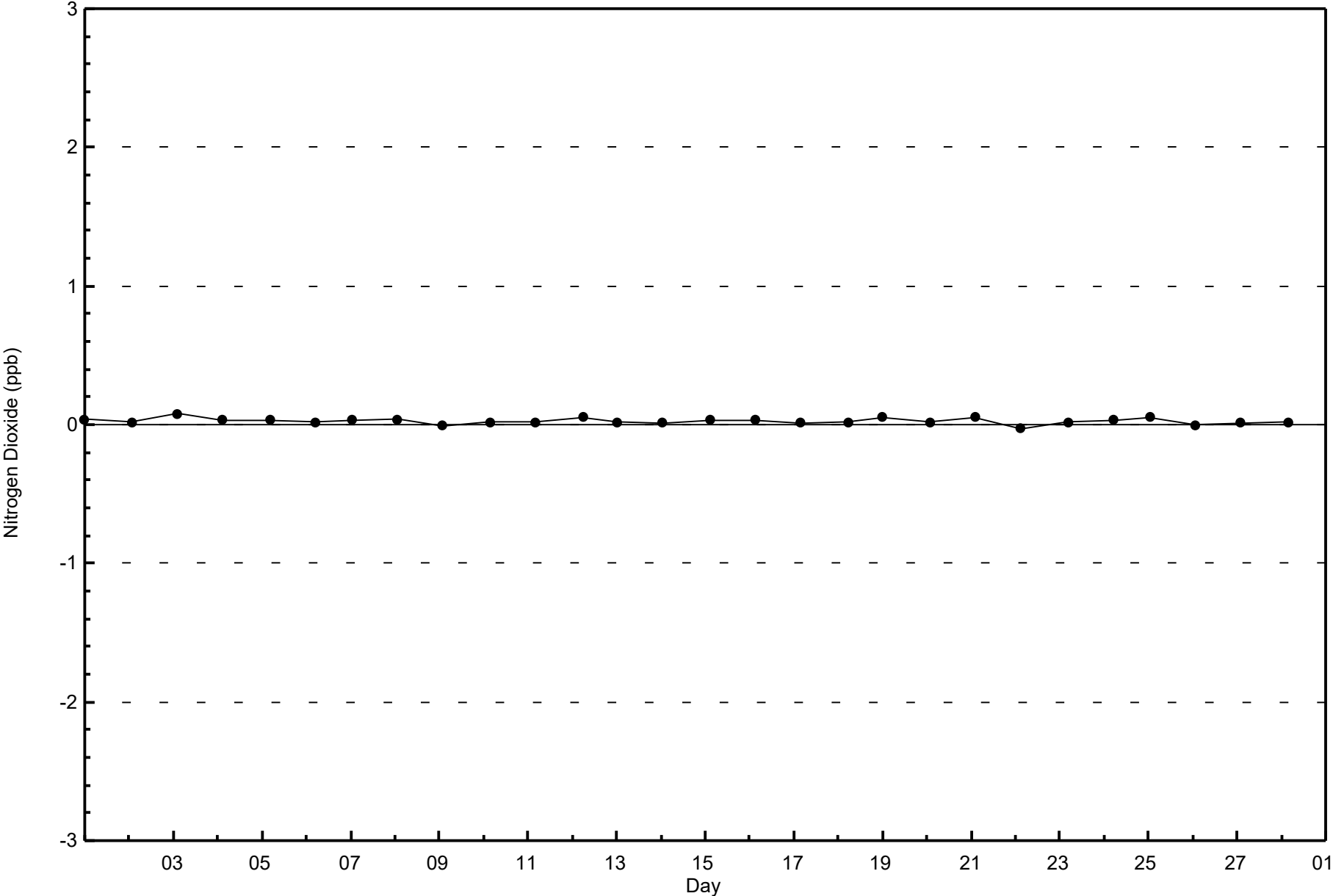
Total Number of Hours: 672

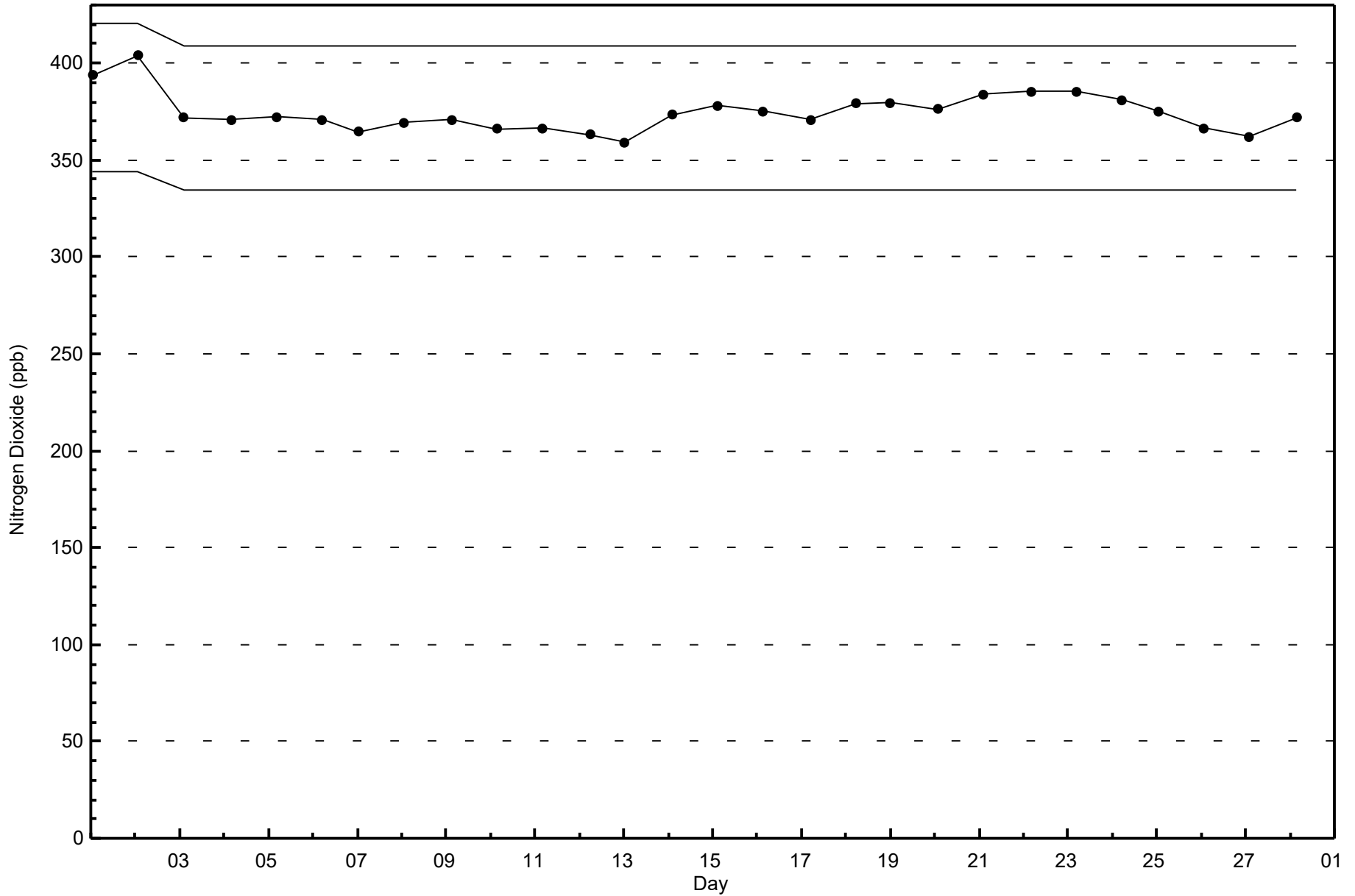


Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Nitrogen Dioxide (NO<sub>2</sub>) - ppb  
Mackay River









**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

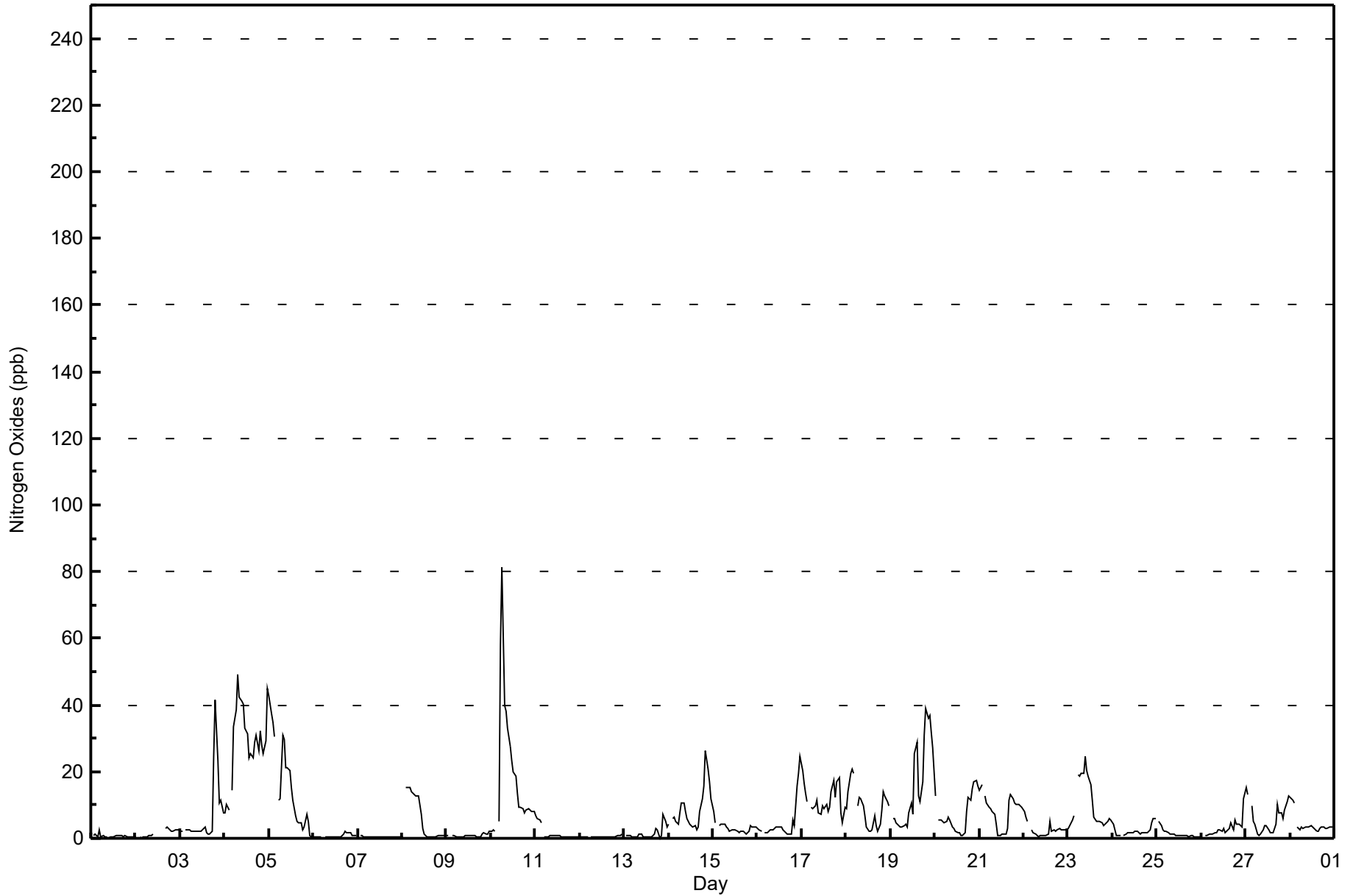
**Nitrogen Oxides (NO<sub>x</sub>) - ppb**  
**Mackay River - February 2023**

| Maximum Value: 81.2 ppb on Feb 10 07:00      Maximum Daily Average: 29.1 ppb on Feb 4  |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Hours in Service: 672<br>Hours of Data: 638  |      |      |               |               |
|--|-------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|--|------|------|---------------|---------------|
| Minimum Value: 0.2 ppb on Feb 2 04:00      Minimum Daily Average: 0.4 ppb on Feb 7<br>Maximum Diurnal Average: 8.2 ppb at hour 7      Minimum Diurnal Average: 3.7 ppb at hour 16<br>Monthly Average: 6.55 ppb      Percentiles: P <sub>1</sub> = 0.2 P <sub>10</sub> = 0.5 Q <sub>1</sub> = 0.9 Median = 2.7 Q <sub>3</sub> = 8.3 P <sub>90</sub> = 17.8 P <sub>99</sub> = 41.2 |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Hours of Missing Data: 34<br>Hours of Calibration: 34<br>Percent Operational Time: 100.0 |      |      |               |               |
| Day  | Hourly Period Ending At (MST) |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |      |      | Daily Average | Daily Maximum |
|  | 1                             | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20   | 21   | 22   | 23   | 24   |               |               |
| 1-Feb  | Z                             | 0.9  | 1.3  | 0.4  | 2.6  | 0.3  | 0.7  | 0.4  | 0.5  | 0.2  | 0.2  | 0.3  | 0.4  | 0.9  | 0.7  | 1.0  | 0.8  | 0.5  | 0.8  | 0.6  | 0.6  | 0.5  | 0.5  | 0.6  | 0.7           | 2.6           |
| 2-Feb  | 0.5                           | Z    | 0.3  | 0.2  | 0.3  | 0.2  | 0.4  | 0.9  | 1.0  | 1.1  | C    | C    | C    | C    | C    | C    | 2.9  | 3.2  | 2.7  | 2.2  | 2.1  | 2.5  | 2.5  | 2.4  | --            | 3.2           |
| 3-Feb  | 2.3                           | 2.3  | Z    | 2.4  | 2.4  | 2.3  | 2.2  | 2.1  | 2.0  | 2.2  | 2.3  | 2.3  | 2.4  | 3.6  | 1.6  | 1.4  | 1.4  | 2.3  | 24.7 | 41.4 | 23.2 | 10.6   | 11.4 | 7.8  | 6.8           | 41.4          |
| 4-Feb  | 7.7                           | 10.4 | 8.6  | Z    | 14.2 | 33.5 | 38.6 | 42.3 | 42.3 | 40.9 | 40.1 | 33.2 | 31.3 | 24.2 | 25.2 | 24.3 | 28.7 | 30.9 | 26.4 | 32.1 | 28.2 | 25.2   | 29.3 | 44.8 | 29.1          | 49.2          |
| 5-Feb  | 42.6                          | 37.3 | 34.9 | 30.6 | Z    | 11.3 | 11.8 | 31.1 | 29.5 | 21.1 | 21.1 | 20.5 | 15.1 | 11.5 | 7.0  | 5.1  | 4.7  | 4.5  | 2.7  | 3.5  | 7.1  | 5.2  | 0.8  | 0.5  | 15.6          | 42.6          |
| 6-Feb  | 0.4                           | 0.4  | 0.4  | 0.3  | 0.3  | Z    | 0.3  | 0.3  | 0.4  | 0.5  | 0.5  | 0.6  | 0.3  | 0.3  | 0.3  | 0.4  | 1.1  | 2.2  | 1.8  | 1.7  | 1.7  | 1.1  | 0.9  | 0.8  | 0.7           | 2.2           |
| 7-Feb  | Z                             | 0.8  | 0.7  | 0.6  | 0.6  | 0.5  | 0.4  | 0.2  | 0.3  | 0.3  | 0.4  | 0.4  | 0.5  | 0.5  | 0.5  | 0.4  | 0.3  | 0.3  | 0.2  | 0.2  | 0.2  | 0.2  | 0.4  | 0.4  | 0.4           | 0.8           |
| 8-Feb  | 0.4                           | Z    | 15.4 | 15.0 | 15.3 | 13.9 | 13.3 | 12.9 | 12.8 | 12.7 | 7.4  | 2.9  | 1.1  | 0.6  | 0.5  | 0.6  | 0.6  | 0.6  | 0.6  | 0.7  | 0.7  | 0.8  | 0.8  | 0.8  | 5.7           | 15.4          |
| 9-Feb  | 0.8                           | 0.8  | Z    | 0.8  | 0.7  | 0.6  | 0.6  | 0.5  | 0.5  | 0.6  | 0.7  | 0.8  | 0.8  | 0.9  | 0.8  | 0.7  | 0.6  | 0.5  | 0.5  | 1.2  | 1.5  | 1.3  | 1.3  | 2.0  | 0.8           | 2.0           |
| 10-Feb   | 2.3                           | 2.6  | 2.2  | Z    | 5.0  | 58.1 | 81.2 | 40.0 | 37.9 | 33.2 | 27.4 | 23.2 | 19.9 | 18.7 | 13.7 | 9.1  | 9.4  | 8.9  | 7.6  | 8.3  | 8.8  | 8.7  | 8.2  | 7.9  | 19.2          | 81.2          |
| 11-Feb   | 6.9                           | 5.9  | 5.4  | 4.7  | Z    | 0.6  | 0.5  | 0.6  | 0.8  | 1.0  | 0.9  | 0.8  | 0.8  | 0.7  | 0.6  | 0.6  | 0.6  | 0.6  | 0.5  | 0.4  | 0.3  | 0.3  | 0.3  | 0.3  | 1.5           | 6.9           |
| 12-Feb   | 0.3                           | 0.3  | 0.4  | 0.4  | 0.4  | Z    | 0.4  | 0.4  | 0.5  | 0.6  | 0.6  | 0.6  | 0.6  | 0.5  | 0.5  | 0.5  | 0.5  | 0.5  | 0.5  | 0.6  | 0.7  | 1.0  | 1.0  | 1.1  | 0.6           | 1.1           |
| 13-Feb   | Z                             | 1.0  | 0.9  | 0.7  | 0.5  | 0.5  | 0.5  | 0.4  | 1.3  | 1.2  | 0.5  | 0.3  | 0.4  | 0.5  | 0.3  | 0.5  | 1.3  | 3.1  | 2.7  | 0.2  | 1.0  | 7.1  | 5.1  | 3.6  | 1.5           | 7.1           |
| 14-Feb   | 4.3                           | Z    | 6.0  | 6.2  | 5.1  | 4.2  | 7.5  | 10.8 | 10.5 | 8.2  | 5.9  | 4.1  | 3.7  | 3.6  | 3.6  | 2.7  | 3.4  | 8.1  | 11.7 | 15.8 | 26.2 | 20.8   | 16.8 | 11.7 | 8.7           | 26.2          |
| 15-Feb   | 8.1                           | 4.6  | Z    | 3.9  | 4.3  | 4.3  | 4.1  | 3.5  | 3.0  | 2.2  | 2.4  | 2.6  | 2.7  | 2.1  | 1.7  | 2.1  | 2.1  | 1.6  | 1.5  | 2.2  | 3.8  | 3.5  | 3.2  | 3.2  | 3.2           | 8.1           |
| 16-Feb   | 2.9                           | 2.5  | 2.0  | Z    | 1.6  | 1.9  | 2.3  | 2.5  | 2.7  | 3.1  | 3.3  | 3.5  | 3.4  | 3.2  | 2.5  | 1.7  | 1.4  | 1.2  | 1.2  | 5.3  | 4.0  | 15.8   | 19.7 | 24.5 | 4.9           | 24.5          |
| 17-Feb   | 20.5                          | 16.7 | 13.4 | 10.8 | Z    | 9.5  | 8.9  | 9.8  | 11.5 | 7.6  | 7.0  | 9.7  | 8.7  | 10.0 | 8.1  | 9.3  | 14.1 | 17.5 | 12.5 | 16.9 | 18.3 | 7.4  | 4.8  | 9.4  | 11.4          | 20.5          |
| 18-Feb   | 9.1                           | 14.0 | 19.5 | 20.8 | 19.5 | Z    | 9.6  | 12.2 | 11.7 | 9.8  | 6.7  | 3.3  | 2.2  | 2.2  | 2.7  | 6.8  | 3.9  | 2.1  | 4.1  | 8.4  | 13.9 | 12.9   | 10.8 | 9.7  | 9.4           | 20.8          |
| 19-Feb   | Z                             | 6.1  | 6.0  | 4.6  | 3.7  | 3.4  | 3.2  | 3.6  | 4.1  | 3.6  | 7.7  | 10.5 | 7.4  | 25.3 | 28.6 | 12.8 | 11.2 | 17.0 | 30.8 | 38.8 | 35.9 | 36.8   | 31.8 | 27.3 | 15.7          | 38.8          |
| 20-Feb   | 12.7                          | Z    | 5.4  | 5.7  | 5.1  | 4.5  | 5.1  | 6.3  | 5.4  | 3.5  | 2.9  | 2.0  | 1.8  | 1.6  | 1.0  | 0.9  | 1.9  | 8.1  | 12.1 | 11.4 | 14.7 | 16.8   | 17.3 | 15.8 | 7.0           | 17.3          |
| 21-Feb   | 14.4                          | 15.9 | Z    | 12.7 | 10.6 | 9.4  | 8.9  | 8.2  | 7.4  | 4.1  | 1.0  | 0.9  | 1.2  | 1.2  | 1.3  | 2.9  | 11.4 | 13.1 | 11.7 | 10.5 | 10.0 | 10.1   | 9.7  | 9.2  | 8.1           | 15.9          |
| 22-Feb   | 8.0                           | 6.3  | 4.9  | Z    | 2.5  | 1.8  | 1.2  | 0.8  | 0.5  | 0.7  | 0.9  | 0.9  | 0.9  | 1.2  | 5.1  | 2.2  | 2.5  | 2.3  | 2.8  | 3.0  | 2.6  | 2.4  | 2.5  | 2.7  | 2.5           | 8.0           |
| 23-Feb   | 2.8                           | 3.6  | 5.6  | 6.7  | Z    | 19.2 | 18.5 | 19.5 | 19.7 | 24.7 | 20.4 | 18.7 | 16.0 | 11.6 | 6.4  | 5.3  | 5.0  | 5.0  | 4.5  | 4.0  | 4.2  | 5.1  | 6.0  | 5.5  | 10.3          | 24.7          |
| 24-Feb   | 4.1                           | 2.5  | 1.0  | 0.7  | 0.8  | Z    | 1.0  | 1.2  | 1.5  | 1.9  | 1.6  | 1.7  | 2.2  | 2.2  | 1.9  | 1.4  | 1.8  | 1.8  | 1.7  | 1.7  | 2.6  | 4.6  | 5.9  | 6.1  | 2.2           | 6.1           |
| 25-Feb   | Z                             | 5.1  | 4.0  | 2.7  | 2.3  | 2.0  | 1.6  | 1.4  | 1.3  | 1.1  | 0.9  | 0.9  | 0.9  | 0.9  | 0.9  | 0.9  | 0.7  | 0.7  | 0.6  | 0.7  | 0.7  | 0.6  | 0.5  | 0.5  | 1.4           | 5.1           |
| 26-Feb   | 0.6                           | Z    | 0.9  | 1.0  | 1.2  | 1.2  | 1.5  | 1.8  | 1.7  | 2.5  | 2.4  | 2.1  | 2.8  | 1.8  | 2.4  | 3.0  | 4.6  | 2.7  | 5.5  | 4.3  | 4.3  | 3.7  | 3.5  | 11.7 | 2.9           | 11.7          |
| 27-Feb   | 15.3                          | 13.1 | Z    | 9.8  | 5.0  | 4.2  | 1.2  | 0.9  | 1.4  | 2.5  | 3.7  | 3.9  | 2.6  | 1.7  | 1.8  | 1.9  | 4.3  | 10.2 | 7.8  | 7.6  | 6.0  | 8.4  | 10.9 | 12.8 | 6.0           | 15.3          |
| 28-Feb   | 12.3                          | 11.5 | 10.6 | Z    | 3.4  | 2.3  | 3.3  | 3.1  | 3.2  | 3.6  | 3.2  | 3.8  | 3.3  | 2.8  | 2.3  | 2.2  | 2.8  | 3.4  | 3.2  | 3.1  | 3.1  | 3.5  | 3.5  | 3.3  | 4.2           | 12.3          |
|  |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Diurnal Average  |      |      |               |               |
| 7.8   7.2   6.5   6.2   4.5   7.9   8.2   8.0   7.7   6.9   6.4   5.7   4.9   5.0   4.5   3.7   4.4   5.5   6.6   8.1   8.1   7.7   7.5   8.1  |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Diurnal Maximum  |      |      |               |               |
| 42.6   37.3   34.9   30.6   19.5   58.1   81.2   49.2   42.3   40.9   40.1   33.2   31.3   25.3   28.6   24.3   28.7   30.9   30.8   41.4   35.9   36.8   31.8   44.8  |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |      |      |               |               |
| Z - zerospan      C - Calibration  |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |      |      |               |               |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Nitrogen Oxides (NO<sub>x</sub>) - ppb**  
**Mackay River - February 2023**







**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Nitrogen Oxides (NO<sub>x</sub>) - ppb  
Mackay River - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 20                            | 588                    | 92.16    | 92.16               |
| 21 - 40                           | 42                     | 6.58     | 98.75               |
| 41 - 80                           | 7                      | 1.10     | 99.84               |
| 81 - 159                          | 0                      | 0.00     | 99.84               |
| > 159                             | 0                      | 0.00     | 99.84               |

Total Number of Valid Hours: 638

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Nitrogen Oxides (NO<sub>x</sub>) - ppb  
Mackay River - February 2023**

| <b>Concentration<br/>Ranges (ppb)</b> | <b>Wind Direction</b> |     |    |     |    |     |    |     |    |     |    |     |    |     |    |     | <b>Totals</b> |
|---------------------------------------|-----------------------|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|---------------|
|                                       | N                     | NNE | NE | ENE | E  | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |               |
| 0 - 20                                | 34                    | 43  | 21 | 7   | 9  | 29  | 82 | 36  | 64 | 41  | 20 | 48  | 37 | 15  | 25 | 47  | 558           |
| 21 - 40                               | 7                     | 18  | 4  | 1   | 4  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 2  | 6   | 42            |
| 11 - 80                               | 1                     | 4   | 2  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 7             |
| 81 - 159                              | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| > 159                                 | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| <b>Totals</b>                         | 42                    | 65  | 27 | 8   | 13 | 29  | 82 | 36  | 64 | 41  | 20 | 48  | 37 | 15  | 27 | 53  | 607           |

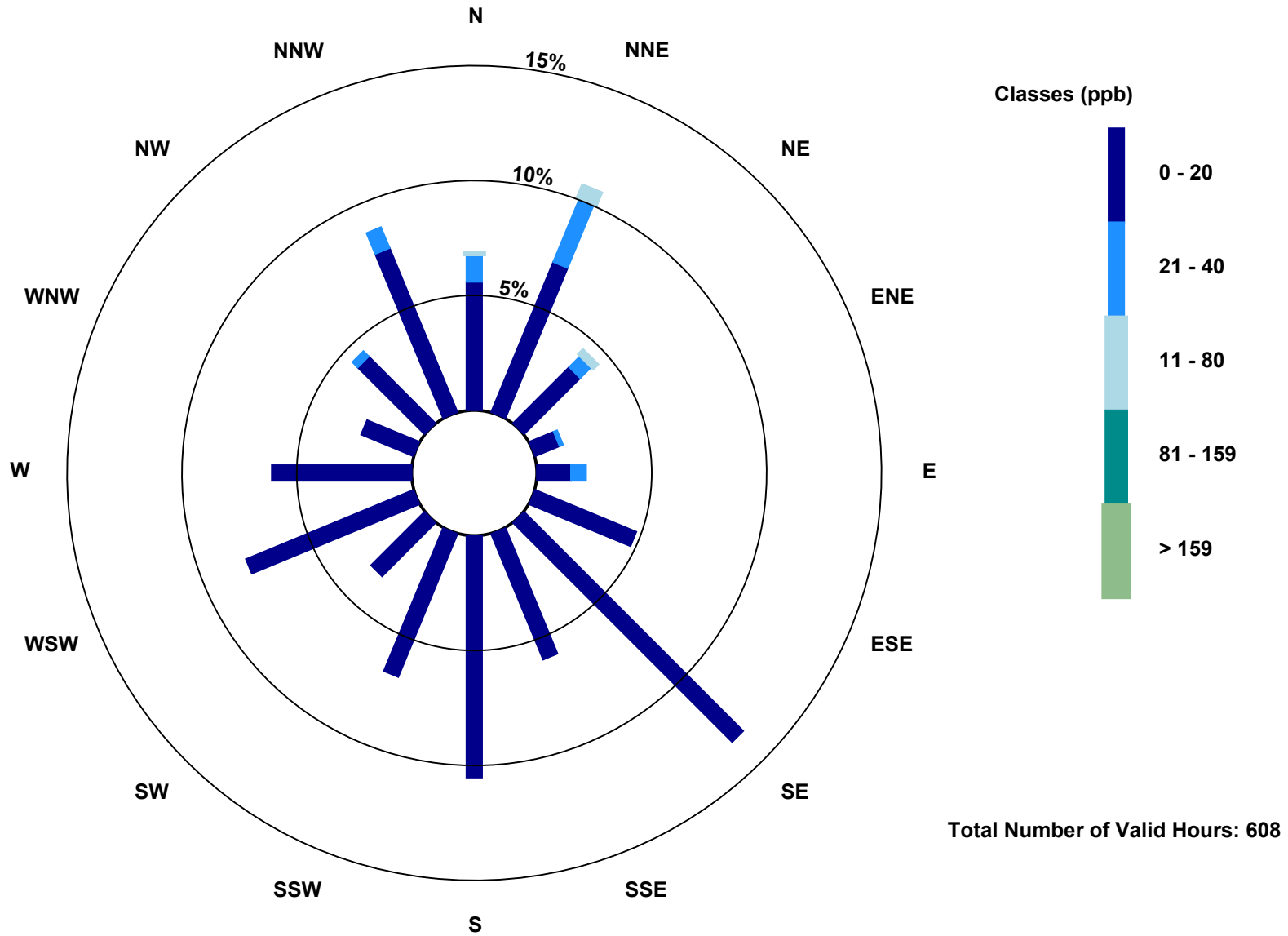
Total Number of Valid Hours: 608

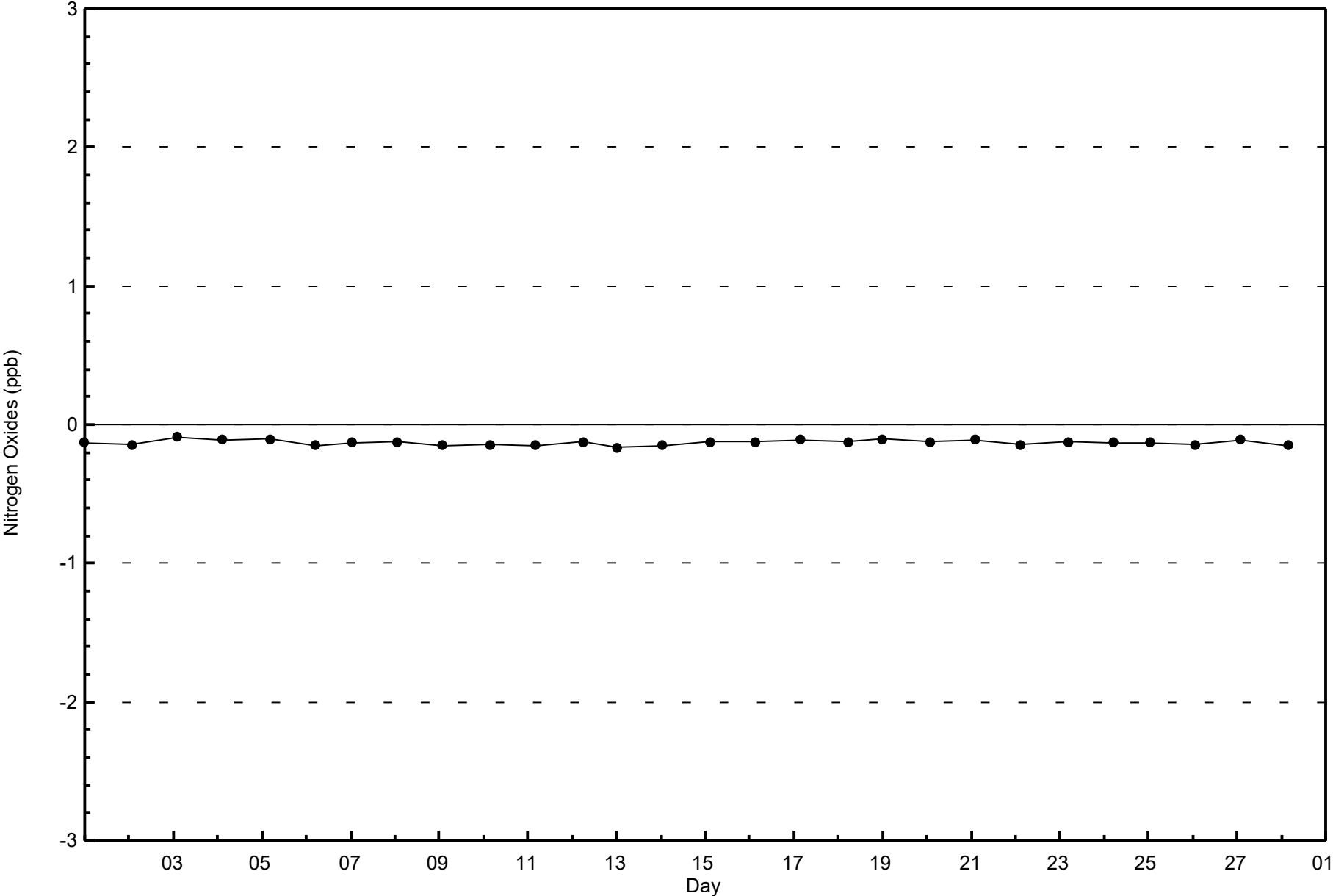
Total Number of Hours: 672

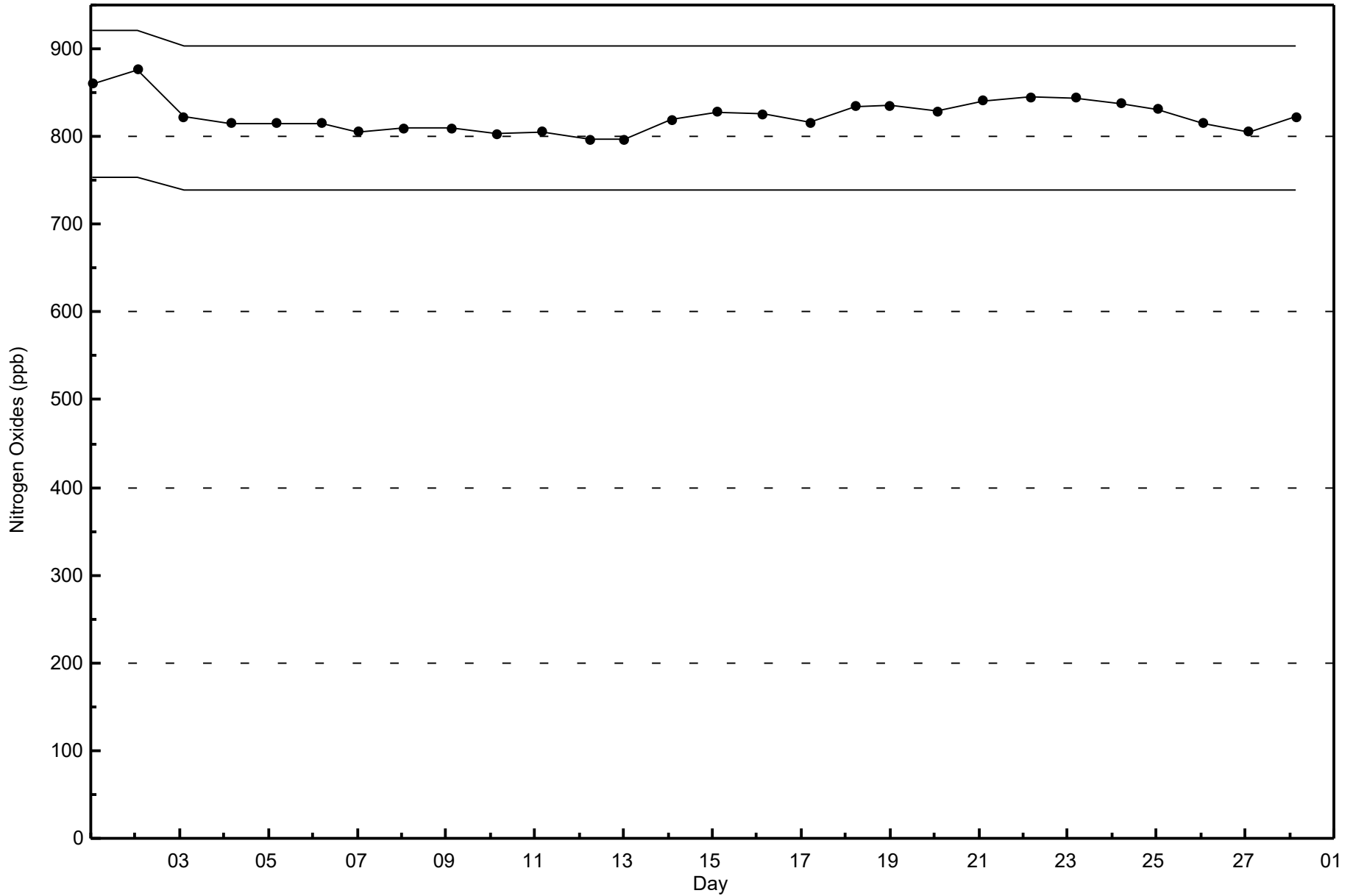


Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Nitrogen Oxides (NO<sub>x</sub>) - ppb  
Mackay River









**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

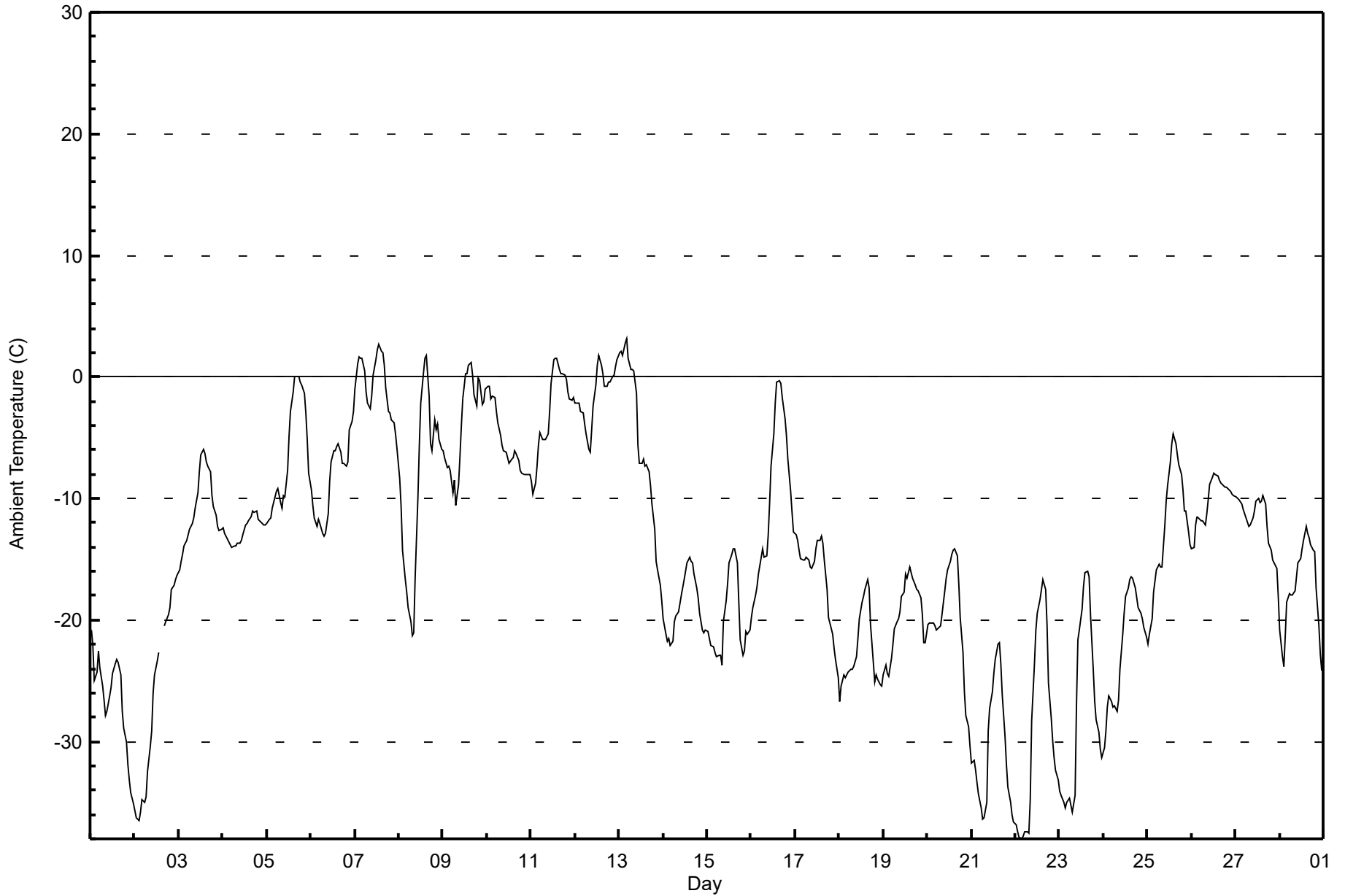
**Ambient Temperature (AT) - C**  
**Mackay River - February 2023**

| Maximum Value: 3.2 C on Feb 13 05:00       |                               | Maximum Daily Average: -0.6 C on Feb 7   |       | Hours in Service: 672          |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |               |                 |  |
|--|-------------------------------|--|-------|--------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------------|-----------------|--|
| Minimum Value: -37.9 C on Feb 22 04:00     |                               | Minimum Daily Average: -30.5 C on Feb 21   |       | Hours of Data: 670             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |               |                 |  |
| Maximum Diurnal Average: -9.3 C at hour 15 |                               | Minimum Diurnal Average: -17.5 C at hour 8   |       | Hours of Missing Data: 2       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |               |                 |  |
| Monthly Average: -14.56 C                  |                               | Percentiles: P <sub>1</sub> = -37.0 P <sub>10</sub> = -27.5 Q <sub>1</sub> = -21.0 Median = -14.1 Q <sub>3</sub> = -7.1 P <sub>90</sub> = -1.2 P <sub>99</sub> = 2.0 |       | Hours of Calibration: 0        |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |               |                 |  |
|  |                               |  |       | Percent Operational Time: 99.7 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |               |                 |  |
| Day  | Hourly Period Ending At (MST) |  |       |                                |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Daily Average | Daily Maximum   |  |
|  | 1                             | 2  | 3     | 4                              | 5     | 6     | 7     | 8     | 9     | 10    | 11    | 12    | 13    | 14    | 15    | 16    | 17    | 18    | 19    | 20    | 21    | 22    | 23    | 24    |               |                 |  |
| 1-Feb                                      | -20.8                         | -22.1  | -25.0 | -24.3                          | -22.5 | -23.9 | -25.5 | -26.5 | -27.9 | -27.5 | -26.2 | -25.5 | -24.4 | -23.5 | -23.2 | -23.4 | -24.5 | -27.5 | -28.9 | -30.0 | -31.8 | -33.2 | -34.2 | -35.1 | -26.6         | -20.8           |  |
| 2-Feb                                      | -35.7                         | -36.3  | -36.5 | -35.8                          | -34.8 | -35.0 | -34.5 | -32.5 | -30.4 | -29.1 | -26.0 | -24.5 | -23.4 | -22.7 | M     | M     | -20.5 | -20.2 | -19.6 | -18.9 | -17.5 | -17.1 | -16.7 | -16.4 | -26.5         | -16.4           |  |
| 3-Feb                                      | -15.8                         | -15.2  | -14.6 | -13.9                          | -13.5 | -13.0 | -12.5 | -12.1 | -11.6 | -10.8 | -9.5  | -7.8  | -6.4  | -6.0  | -6.3  | -6.9  | -7.3  | -7.8  | -9.8  | -10.7 | -11.3 | -12.3 | -12.6 | -12.5 | -10.9         | -6.0            |  |
| 4-Feb                                      | -12.4                         | -12.9  | -13.3 | -13.6                          | -13.8 | -14.0 | -13.9 | -13.9 | -13.7 | -13.7 | -13.5 | -13.0 | -12.2 | -12.1 | -11.8 | -11.4 | -11.1 | -11.1 | -11.0 | -11.7 | -11.8 | -11.9 | -12.2 | -12.2 | -12.6         | -11.0           |  |
| 5-Feb                                      | -12.0                         | -11.7  | -11.6 | -10.8                          | -9.9  | -9.5  | -9.2  | -10.4 | -10.7 | -9.7  | -9.9  | -9.9  | -7.9  | -4.9  | -2.9  | -1.2  | 0.0   | 0.0   | -0.4  | -0.7  | -1.4  | -3.0  | -5.2  | -7.9  | -6.3          | 0.0             |  |
| 6-Feb                                      | -9.3                          | -10.5  | -11.6 | -12.3                          | -11.7 | -12.1 | -12.9 | -13.1 | -12.9 | -11.3 | -8.6  | -7.0  | -6.1  | -6.1  | -5.7  | -5.5  | -6.2  | -7.1  | -7.1  | -7.3  | -7.0  | -4.4  | -3.7  | -2.8  | -8.4          | -2.8            |  |
| 7-Feb                                      | -1.0                          | 1.0  | 1.7   | 1.5                            | 1.5   | 0.5   | -1.2  | -2.2  | -2.7  | -1.6  | 0.2   | 1.4   | 2.2   | 2.7   | 2.2   | 2.0   | 0.9   | -0.9  | -2.9  | -3.0  | -3.6  | -3.7  | -4.7  | -5.9  | -0.6          | 2.7             |  |
| 8-Feb                                      | -8.4                          | -10.7  | -14.2 | -16.7                          | -17.7 | -19.0 | -20.2 | -21.3 | -21.1 | -16.5 | -9.9  | -5.6  | -2.1  | 0.4   | 1.6   | 1.8   | -1.6  | -5.4  | -6.1  | -3.5  | -4.3  | -3.9  | -5.1  | -5.9  | -9.0          | 1.8             |  |
| 9-Feb                                      | -6.1                          | -6.6   | -7.5  | -7.4                           | -7.7  | -9.6  | -8.5  | -10.6 | -8.9  | -6.6  | -4.0  | -1.8  | 0.2   | 0.2   | 1.0   | 1.2   | 0.2   | -1.5  | -2.4  | -0.1  | -0.3  | -2.2  | -2.0  | -1.1  | -3.8          | 1.2             |  |
| 10-Feb                                     | -0.8                          | -0.8   | -1.8  | -1.6                           | -1.7  | -2.9  | -3.7  | -4.8  | -5.6  | -6.1  | -6.2  | -6.6  | -7.1  | -6.7  | -6.6  | -6.1  | -6.4  | -6.9  | -7.7  | -7.9  | -8.0  | -8.1  | -8.0  | -8.0  | -5.4          | -0.8            |  |
| 11-Feb                                     | -8.6                          | -9.6   | -8.8  | -7.3                           | -5.6  | -4.6  | -5.1  | -5.1  | -5.1  | -4.7  | -2.9  | -0.6  | 1.4   | 1.5   | 1.6   | 0.7   | 0.3   | 0.2   | 0.1   | -0.2  | -1.2  | -1.8  | -1.9  | -1.7  | -2.9          | 1.6             |  |
| 12-Feb                                     | -2.1                          | -2.1   | -2.1  | -2.8                           | -3.0  | -3.9  | -4.7  | -6.0  | -6.2  | -4.3  | -2.4  | -0.7  | 0.9   | 1.7   | 1.0   | 0.3   | -0.8  | -0.8  | -0.4  | -0.4  | 0.0   | 0.2   | 0.9   | 1.4   | -1.5          | 1.7             |  |
| 13-Feb                                     | 2.0                           | 2.1  | 1.8   | 2.8                            | 3.2   | 1.6   | 0.7   | 0.6   | 0.5   | -1.3  | -5.6  | -7.1  | -7.2  | -6.8  | -7.4  | -7.2  | -7.8  | -8.9  | -10.5 | -12.6 | -15.2 | -15.9 | -17.2 | -18.4 | -5.6          | 3.2             |  |
| 14-Feb                                     | -19.9                         | -21.1  | -21.7 | -21.5                          | -22.1 | -21.7 | -20.1 | -19.7 | -19.3 | -18.7 | -17.9 | -16.6 | -16.0 | -15.3 | -14.8 | -15.1 | -15.3 | -16.2 | -17.3 | -18.2 | -19.5 | -20.9 | -21.1 | -20.8 | -18.8         | -14.8           |  |
| 15-Feb                                     | -20.9                         | -21.5  | -22.1 | -22.2                          | -22.7 | -23.1 | -22.9 | -22.9 | -23.7 | -20.2 | -18.4 | -17.0 | -15.3 | -14.5 | -14.2 | -14.2 | -15.3 | -18.5 | -21.7 | -22.9 | -22.6 | -20.9 | -21.2 | -20.9 | -20.0         | -14.2           |  |
| 16-Feb                                     | -19.7                         | -19.0  | -17.9 | -17.2                          | -16.2 | -14.9 | -14.1 | -14.8 | -14.7 | -13.0 | -10.4 | -7.4  | -4.7  | -2.2  | -0.5  | -0.3  | -0.6  | -1.7  | -3.4  | -4.9  | -6.8  | -9.4  | -11.1 | -12.7 | -9.9          | -0.3            |  |
| 17-Feb                                     | -13.0                         | -13.4  | -14.3 | -15.0                          | -15.0 | -15.0 | -14.8 | -15.1 | -15.7 | -15.7 | -15.2 | -14.1 | -13.4 | -13.5 | -13.1 | -13.7 | -15.1 | -17.5 | -19.8 | -20.2 | -21.2 | -22.4 | -23.3 | -24.8 | -16.4         | -13.0           |  |
| 18-Feb                                     | -26.7                         | -25.4  | -24.6 | -24.7                          | -24.5 | -24.3 | -24.1 | -24.0 | -23.9 | -23.1 | -21.5 | -19.9 | -18.5 | -18.0 | -17.4 | -16.7 | -17.4 | -20.4 | -23.5 | -25.1 | -24.5 | -24.9 | -25.3 | -25.4 | -22.7         | -16.7           |  |
| 19-Feb                                     | -24.5                         | -23.7  | -24.4 | -24.7                          | -23.2 | -22.0 | -20.7 | -20.2 | -19.9 | -19.3 | -18.1 | -17.7 | -16.2 | -16.5 | -15.7 | -16.1 | -16.6 | -17.2 | -17.5 | -17.6 | -18.2 | -19.6 | -21.9 | -21.9 | -19.7         | -15.7           |  |
| 20-Feb                                     | -20.3                         | -20.2  | -20.3 | -20.3                          | -20.5 | -20.9 | -20.6 | -20.5 | -19.5 | -17.6 | -16.5 | -15.9 | -15.2 | -14.6 | -14.2 | -14.1 | -14.7 | -17.0 | -19.8 | -22.6 | -25.9 | -27.9 | -28.8 | -30.3 | -19.9         | -14.1           |  |
| 21-Feb                                     | -31.8                         | -31.5  | -32.3 | -33.4                          | -34.3 | -35.5 | -36.4 | -36.3 | -35.0 | -29.1 | -27.3 | -25.9 | -24.4 | -23.3 | -22.0 | -21.8 | -23.5 | -26.2 | -29.5 | -31.9 | -33.8 | -35.0 | -36.0 | -36.6 | -30.5         | -21.8           |  |
| 22-Feb                                     | -36.9                         | -37.4  | -37.9 | -37.9                          | -37.8 | -37.4 | -37.4 | -37.5 | -34.7 | -28.3 | -23.5 | -20.9 | -19.4 | -18.3 | -17.4 | -16.7 | -17.4 | -20.5 | -25.2 | -28.1 | -30.0 | -31.3 | -32.3 | -33.2 | -29.1         | -16.7           |  |
| 23-Feb                                     | -34.0                         | -34.4  | -35.1 | -35.4                          | -35.0 | -34.7 | -35.2 | -35.9 | -34.4 | -26.9 | -21.6 | -20.9 | -19.0 | -17.2 | -16.0 | -16.0 | -16.5 | -19.6 | -24.2 | -26.7 | -28.2 | -29.3 | -30.6 | -31.3 | -27.4         | -16.0           |  |
| 24-Feb                                     | -30.5                         | -29.1  | -27.2 | -26.2                          | -26.7 | -27.2 | -27.1 | -27.5 | -26.5 | -24.1 | -21.2 | -19.4 | -18.0 | -17.3 | -16.7 | -16.4 | -16.6 | -17.4 | -18.2 | -19.0 | -19.5 | -19.9 | -20.6 | -21.4 | -22.2         | -16.4           |  |
| 25-Feb                                     | -22.0                         | -21.2  | -19.9 | -17.7                          | -16.7 | -15.9 | -15.4 | -15.7 | -15.7 | -12.3 | -10.2 | -9.0  | -7.0  | -5.5  | -4.7  | -5.5  | -6.4  | -7.2  | -8.0  | -9.3  | -11.0 | -11.0 | -12.8 | -13.9 | -12.2         | -4.7            |  |
| 26-Feb                                     | -14.2                         | -14.1  | -12.2 | -11.5                          | -11.7 | -11.8 | -11.8 | -12.2 | -11.3 | -10.1 | -8.9  | -8.2  | -7.9  | -8.0  | -8.2  | -8.5  | -8.7  | -9.0  | -9.1  | -9.1  | -9.3  | -9.4  | -9.6  | -9.8  | -10.2         | -7.9            |  |
| 27-Feb                                     | -9.9                          | -10.0  | -10.1 | -10.4                          | -11.0 | -11.3 | -11.9 | -12.3 | -12.1 | -11.6 | -11.0 | -10.2 | -10.0 | -10.4 | -10.2 | -9.8  | -10.4 | -12.3 | -13.7 | -14.3 | -15.1 | -15.3 | -15.7 | -18.1 | -12.0         | -9.8            |  |
| 28-Feb                                     | -20.8                         | -23.0  | -23.9 | -21.2                          | -18.5 | -17.8 | -17.9 | -18.0 | -17.6 | -16.5 | -15.3 | -14.9 | -14.1 | -13.4 | -12.2 | -12.9 | -13.2 | -13.8 | -14.2 | -14.4 | -17.4 | -20.5 | -22.8 | -24.2 | -17.4         | -12.2           |  |
|  |                               | -17.0  | -17.2 | -17.4                          | -17.2 | -16.9 | -17.1 | -17.2 | -17.5 | -17.1 | -15.3 | -13.6 | -12.3 | -11.0 | -10.3 | -9.3  | -9.4  | -10.4 | -11.9 | -13.3 | -14.0 | -14.9 | -15.5 | -16.3 | -16.8         | Diurnal Average |  |
|  |                               | 2.0  | 2.1   | 1.8                            | 2.8   | 3.2   | 1.6   | 0.7   | 0.6   | 0.5   | -1.3  | 0.2   | 1.4   | 2.2   | 2.7   | 2.2   | 2.0   | 0.9   | 0.2   | 0.1   | -0.1  | 0.0   | 0.2   | 0.9   | 1.4           | Diurnal Maximum |  |
| M - Maintenance                            |                               |  |       |                                |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |               |                 |  |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Ambient Temperature (AT) - C**  
**Mackay River - February 2023**





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Ambient Temperature (AT) - C  
Mackay River - February 2023**

| <b>Concentration Ranges (C)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---------------------------------|------------------------|----------|---------------------|
| -50 - -20                       | 197                    | 29.40    | 29.40               |
| -20 - 0                         | 428                    | 63.88    | 93.28               |
| 0 - 10                          | 45                     | 6.72     | 100.00              |
| 10 - 20                         | 0                      | 0.00     | 100.00              |
| > 20                            | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 670

Total Number of Hours: 672





**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

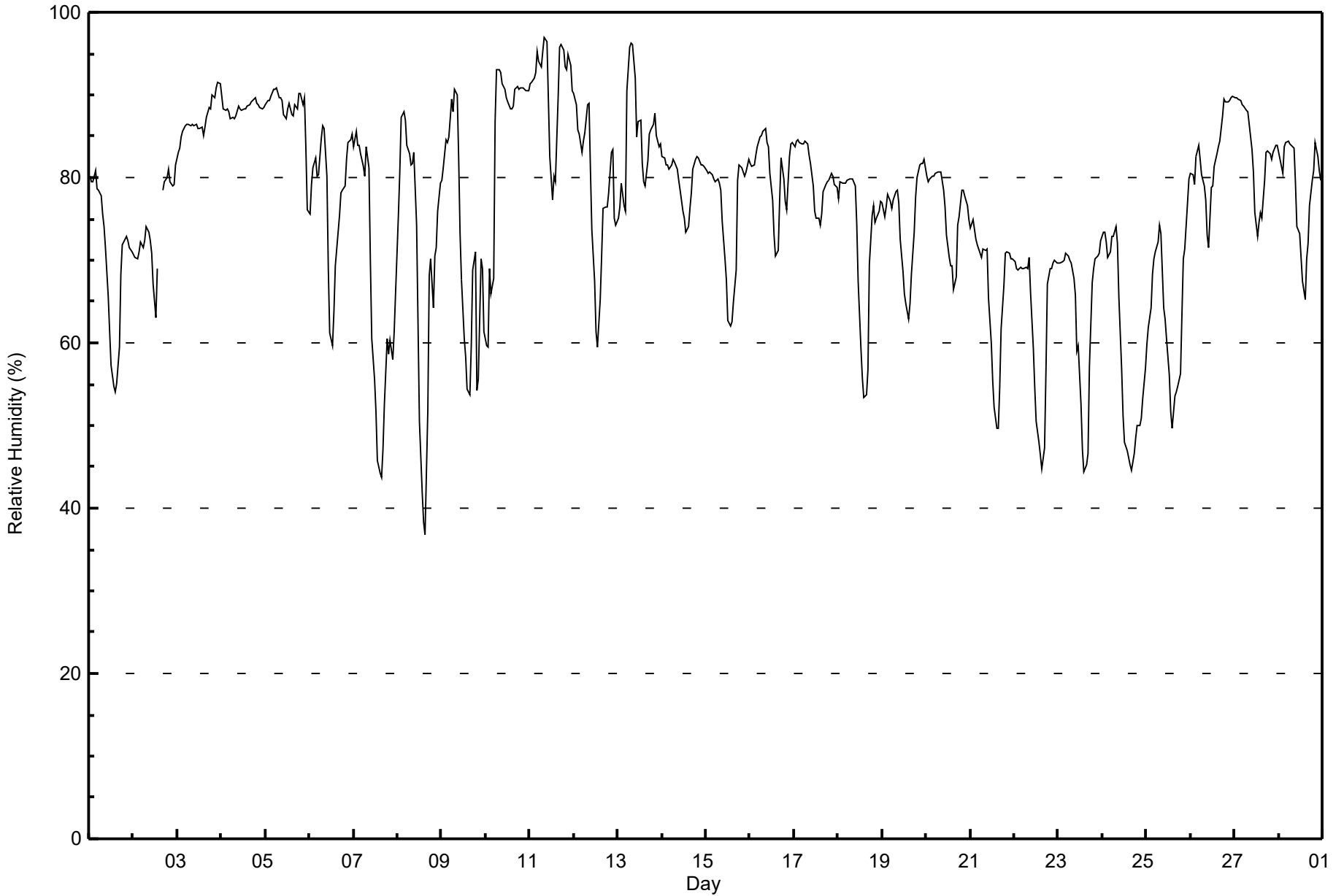
**Relative Humidity (RH) - %**  
**Mackay River - February 2023**

| Maximum Value: 97.0 % on Feb 11 09:00     |                               | Maximum Daily Average: 91.3 % on Feb 11   |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Hours in Service: 672    |      |      |               |                 |  |
|---|-------------------------------|---|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|--------------------------|------|------|---------------|-----------------|--|
| Minimum Value: 36.8 % on Feb 8 16:00      |                               | Minimum Daily Average: 58.8 % on Feb 24   |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Hours of Data: 670       |      |      |               |                 |  |
| Maximum Diurnal Average: 82.4 % at hour 8 |                               | Minimum Diurnal Average: 65.2 % at hour 15  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Hours of Missing Data: 2 |      |      |               |                 |  |
| Monthly Average: 76.21 %                  |                               | Percentiles: P <sub>1</sub> = 44.7 P <sub>10</sub> = 59.2 Q <sub>1</sub> = 70.1 Median = 79.1 Q <sub>3</sub> = 84.3 P <sub>90</sub> = 89.4 P <sub>99</sub> = 95.5 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Hours of Calibration: 0  |      |      |               |                 |  |
|   |                               | Percent Operational Time: 99.7  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                          |      |      |               |                 |  |
| Day                                       | Hourly Period Ending At (MST) |   |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                          |      |      | Daily Average | Daily Maximum   |  |
|   | 1                             | 2   | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20   | 21   | 22                       | 23   | 24   |               |                 |  |
| 1-Feb                                     | 80.1                          | 79.4  | 79.5 | 80.8 | 78.6 | 78.5 | 77.8 | 75.5 | 74.1 | 71.5 | 65.6 | 61.4 | 57.2 | 54.8 | 54.1 | 55.0 | 59.5 | 68.4 | 71.9 | 72.6 | 72.8 | 72.3                     | 71.6 | 71.1 | 70.2          | 80.8            |  |
| 2-Feb                                     | 70.7                          | 70.4  | 70.2 | 71.1 | 72.1 | 71.6 | 72.4 | 74.1 | 73.4 | 72.3 | 70.8 | 67.1 | 63.1 | 68.9 | M    | M    | 78.4 | 79.4 | 80.0 | 81.0 | 79.5 | 79.0                     | 79.2 | 81.6 | 73.9          | 81.6            |  |
| 3-Feb                                     | 83.1                          | 83.6  | 84.9 | 85.7 | 86.3 | 86.5 | 86.4 | 86.3 | 86.4 | 86.2 | 86.5 | 85.9 | 86.0 | 86.2 | 85.0 | 86.1 | 87.3 | 88.5 | 88.4 | 90.0 | 89.7 | 90.8                     | 91.5 | 91.4 | 87.0          | 91.5            |  |
| 4-Feb                                     | 89.9                          | 88.3  | 88.2 | 88.3 | 88.0 | 87.2 | 87.2 | 87.2 | 87.4 | 88.6 | 88.3 | 88.1 | 88.3 | 88.4 | 88.6 | 88.8 | 89.2 | 89.3 | 89.7 | 89.0 | 88.9 | 88.5                     | 88.3 | 88.5 | 88.4          | 89.9            |  |
| 5-Feb                                     | 88.9                          | 89.4  | 89.4 | 89.9 | 90.6 | 90.8 | 90.8 | 89.6 | 89.7 | 89.3 | 87.6 | 87.1 | 88.3 | 88.9 | 87.6 | 87.5 | 88.8 | 88.2 | 90.1 | 90.1 | 88.9 | 89.7                     | 83.5 | 76.1 | 88.4          | 90.8            |  |
| 6-Feb                                     | 75.5                          | 79.1  | 81.2 | 82.3 | 80.2 | 80.3 | 84.8 | 86.2 | 85.9 | 80.2 | 68.9 | 61.1 | 59.6 | 63.7 | 69.4 | 71.3 | 75.4 | 78.2 | 78.4 | 79.0 | 82.2 | 84.3                     | 84.6 | 85.2 | 77.4          | 86.2            |  |
| 7-Feb                                     | 83.7                          | 85.6  | 83.9 | 83.9 | 82.9 | 81.3 | 80.2 | 83.7 | 81.3 | 70.0 | 60.6 | 55.5 | 51.7 | 45.7 | 44.2 | 43.8 | 47.1 | 52.6 | 60.5 | 58.6 | 60.3 | 57.9                     | 61.4 | 66.0 | 65.9          | 85.6            |  |
| 8-Feb                                     | 75.4                          | 80.6  | 87.3 | 88.0 | 86.9 | 83.9 | 82.9 | 81.5 | 81.8 | 83.1 | 74.3 | 62.4 | 50.6 | 41.8 | 38.4 | 36.8 | 51.8 | 68.1 | 70.2 | 64.2 | 70.5 | 71.5                     | 75.9 | 79.4 | 70.3          | 88.0            |  |
| 9-Feb                                     | 79.6                          | 81.2  | 84.6 | 84.3 | 84.9 | 89.5 | 87.9 | 90.6 | 89.9 | 82.3 | 73.2 | 67.6 | 60.6 | 58.3 | 54.4 | 53.7 | 59.7 | 68.8 | 71.0 | 54.3 | 55.6 | 70.1                     | 69.0 | 61.4 | 72.2          | 90.6            |  |
| 10-Feb                                    | 59.7                          | 59.6  | 69.0 | 65.9 | 67.9 | 86.8 | 93.0 | 93.0 | 92.6 | 91.4 | 90.6 | 89.7 | 89.1 | 88.3 | 88.2 | 88.7 | 90.6 | 91.0 | 90.7 | 90.8 | 90.8 | 90.7                     | 90.6 | 90.5 | 85.0          | 93.0            |  |
| 11-Feb                                    | 91.3                          | 91.5  | 92.1 | 92.8 | 95.2 | 94.1 | 93.4 | 95.3 | 97.0 | 96.4 | 89.6 | 82.5 | 77.2 | 80.2 | 79.5 | 89.8 | 95.8 | 96.2 | 95.4 | 93.3 | 93.0 | 94.9                     | 93.6 | 90.5 | 91.3          | 97.0            |  |
| 12-Feb                                    | 90.1                          | 88.8  | 85.8 | 85.2 | 83.1 | 84.3 | 85.4 | 88.8 | 89.0 | 81.0 | 73.8 | 67.5 | 61.4 | 59.4 | 65.3 | 70.6 | 76.3 | 76.4 | 76.4 | 78.2 | 83.1 | 83.4                     | 75.1 | 74.2 | 78.4          | 90.1            |  |
| 13-Feb                                    | 75.1                          | 76.5  | 79.3 | 76.7 | 75.9 | 90.5 | 95.8 | 96.3 | 96.1 | 92.0 | 84.9 | 86.8 | 87.0 | 81.6 | 79.5 | 79.0 | 82.0 | 85.3 | 85.8 | 86.5 | 87.8 | 85.1                     | 83.8 | 84.0 | 84.7          | 96.3            |  |
| 14-Feb                                    | 82.6                          | 82.5  | 81.5 | 81.5 | 81.1 | 81.5 | 82.2 | 81.8 | 81.0 | 79.7 | 78.5 | 76.0 | 75.2 | 73.5 | 74.1 | 76.3 | 78.2 | 81.0 | 82.3 | 82.5 | 82.4 | 81.6                     | 81.5 | 81.3 | 80.0          | 82.6            |  |
| 15-Feb                                    | 80.8                          | 80.5  | 80.6 | 80.3 | 79.9 | 79.6 | 79.8 | 79.4 | 78.4 | 74.7 | 70.3 | 67.7 | 62.7 | 62.1 | 62.6 | 64.9 | 68.8 | 79.7 | 81.6 | 81.1 | 80.7 | 80.1                     | 80.7 | 82.1 | 75.8          | 82.1            |  |
| 16-Feb                                    | 81.7                          | 81.4  | 81.5 | 82.8 | 83.7 | 84.9 | 85.2 | 85.5 | 85.9 | 84.3 | 83.8 | 80.5 | 77.3 | 73.0 | 70.5 | 71.2 | 77.3 | 82.4 | 79.9 | 77.1 | 76.1 | 82.6                     | 84.1 | 84.3 | 80.7          | 85.9            |  |
| 17-Feb                                    | 83.8                          | 84.4  | 84.6 | 84.3 | 84.1 | 84.0 | 84.5 | 84.1 | 82.8 | 81.7 | 79.0 | 75.9 | 75.1 | 75.1 | 74.3 | 75.7 | 78.3 | 79.2 | 79.5 | 79.7 | 80.5 | 80.1                     | 79.1 | 78.8 | 80.3          | 84.6            |  |
| 18-Feb                                    | 77.4                          | 79.5  | 79.4 | 79.4 | 79.3 | 79.6 | 79.8 | 79.8 | 79.8 | 78.9 | 74.4 | 67.5 | 59.3 | 55.7 | 53.4 | 53.7 | 56.8 | 69.5 | 75.4 | 76.6 | 74.5 | 75.1                     | 76.0 | 77.0 | 72.4          | 79.8            |  |
| 19-Feb                                    | 76.9                          | 75.2  | 76.5 | 77.9 | 77.1 | 76.3 | 77.3 | 78.2 | 78.5 | 77.0 | 72.5 | 68.7 | 65.9 | 64.7 | 62.9 | 64.8 | 68.3 | 73.4 | 77.6 | 80.0 | 81.6 | 81.7                     | 81.7 | 82.2 | 74.9          | 82.2            |  |
| 20-Feb                                    | 80.1                          | 79.5  | 79.9 | 80.2 | 80.1 | 80.6 | 80.7 | 80.7 | 80.7 | 78.4 | 76.5 | 73.0 | 70.3 | 69.3 | 69.3 | 66.4 | 68.0 | 74.2 | 75.2 | 78.4 | 78.4 | 77.9                     | 76.6 | 74.9 | 76.2          | 80.7            |  |
| 21-Feb                                    | 74.0                          | 74.9  | 73.6 | 72.6 | 71.9 | 70.8 | 70.3 | 71.4 | 71.2 | 71.4 | 65.4 | 60.0 | 55.4 | 52.1 | 49.7 | 49.7 | 54.6 | 61.6 | 67.0 | 70.8 | 71.0 | 70.8                     | 70.1 | 70.2 | 66.3          | 74.9            |  |
| 22-Feb                                    | 69.9                          | 69.0  | 68.8 | 69.1 | 69.0 | 69.0 | 69.1 | 69.0 | 70.3 | 66.0 | 59.3 | 54.6 | 50.6 | 47.9 | 46.4 | 44.8 | 47.3 | 56.7 | 67.1 | 69.0 | 69.0 | 69.7                     | 70.0 | 69.7 | 63.0          | 70.3            |  |
| 23-Feb                                    | 69.6                          | 69.7  | 69.9 | 70.0 | 70.9 | 70.5 | 70.0 | 69.6 | 67.7 | 65.7 | 59.0 | 59.7 | 52.5 | 47.2 | 44.4 | 45.2 | 46.6 | 57.2 | 67.3 | 68.9 | 70.2 | 70.6                     | 70.8 | 72.3 | 63.6          | 72.3            |  |
| 24-Feb                                    | 73.4                          | 73.4  | 72.2 | 70.4 | 71.0 | 72.8 | 74.1 | 72.0 | 65.5 | 56.7 | 51.2 | 47.9 | 46.9 | 46.0 | 45.3 | 44.5 | 46.6 | 48.4 | 50.0 | 49.9 | 50.8 | 53.1                     | 57.0 | 58.8 | 74.1          |                 |  |
| 25-Feb                                    | 59.8                          | 61.9  | 64.3 | 68.4 | 70.1 | 70.9 | 72.2 | 74.2 | 73.2 | 64.3 | 62.9 | 60.5 | 56.2 | 51.7 | 49.7 | 53.5 | 54.1 | 54.7 | 56.2 | 63.4 | 70.1 | 71.3                     | 77.0 | 79.8 | 64.2          | 79.8            |  |
| 26-Feb                                    | 80.6                          | 80.4  | 79.1 | 82.5 | 83.9 | 82.1 | 80.4 | 79.0 | 77.2 | 73.1 | 71.5 | 78.8 | 79.0 | 81.3 | 82.9 | 83.7 | 84.4 | 87.5 | 89.5 | 89.2 | 89.2 | 89.3                     | 89.7 | 89.8 | 82.7          | 89.8            |  |
| 27-Feb                                    | 89.7                          | 89.6  | 89.6 | 89.4 | 88.9 | 88.6 | 88.2 | 87.9 | 86.5 | 83.4 | 80.6 | 75.8 | 72.9 | 74.6 | 75.8 | 75.1 | 79.6 | 83.0 | 83.2 | 82.9 | 82.3 | 83.1                     | 83.9 | 84.0 | 83.3          | 89.7            |  |
| 28-Feb                                    | 83.1                          | 81.4  | 80.5 | 83.8 | 84.3 | 84.5 | 84.1 | 83.9 | 83.5 | 79.3 | 74.1 | 73.3 | 70.3 | 67.5 | 65.2 | 70.2 | 72.1 | 76.7 | 79.6 | 80.8 | 84.2 | 82.5                     | 80.8 | 79.7 | 78.6          | 84.5            |  |
|   |                               | 78.8  | 79.2 | 79.9 | 80.3 | 80.3 | 81.5 | 82.0 | 82.4 | 81.9 | 78.9 | 74.3 | 70.9 | 67.5 | 66.0 | 65.2 | 66.3 | 70.0 | 74.8 | 77.1 | 77.1 | 78.0                     | 78.8 | 78.7 | 78.7          | Diurnal Average |  |
|   |                               | 91.3  | 91.5 | 92.1 | 92.8 | 95.2 | 94.1 | 95.8 | 96.3 | 97.0 | 96.4 | 90.6 | 89.7 | 89.1 | 88.9 | 88.6 | 89.8 | 95.8 | 96.2 | 95.4 | 93.3 | 93.0                     | 94.9 | 93.6 | 91.4          | Diurnal Maximum |  |
| M - Maintenance                           |                               |   |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                          |      |      |               |                 |  |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Relative Humidity (RH) - %**  
**Mackay River - February 2023**





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Relative Humidity (RH) - %**  
**Mackay River - February 2023**

| <b>Concentration Ranges (%)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---------------------------------|------------------------|----------|---------------------|
| 0 - 20                          | 0                      | 0.00     | 0.00                |
| 20 - 40                         | 2                      | 0.30     | 0.30                |
| 40 - 60                         | 75                     | 11.19    | 11.49               |
| 60 - 80                         | 295                    | 44.03    | 55.52               |
| 80 - 100                        | 298                    | 44.48    | 100.00              |

Total Number of Valid Hours: 670

Total Number of Hours: 672



**Wood Buffalo Environmental Association**

**Summary of Hour Averages**

**Precipitation (PC) - mm**

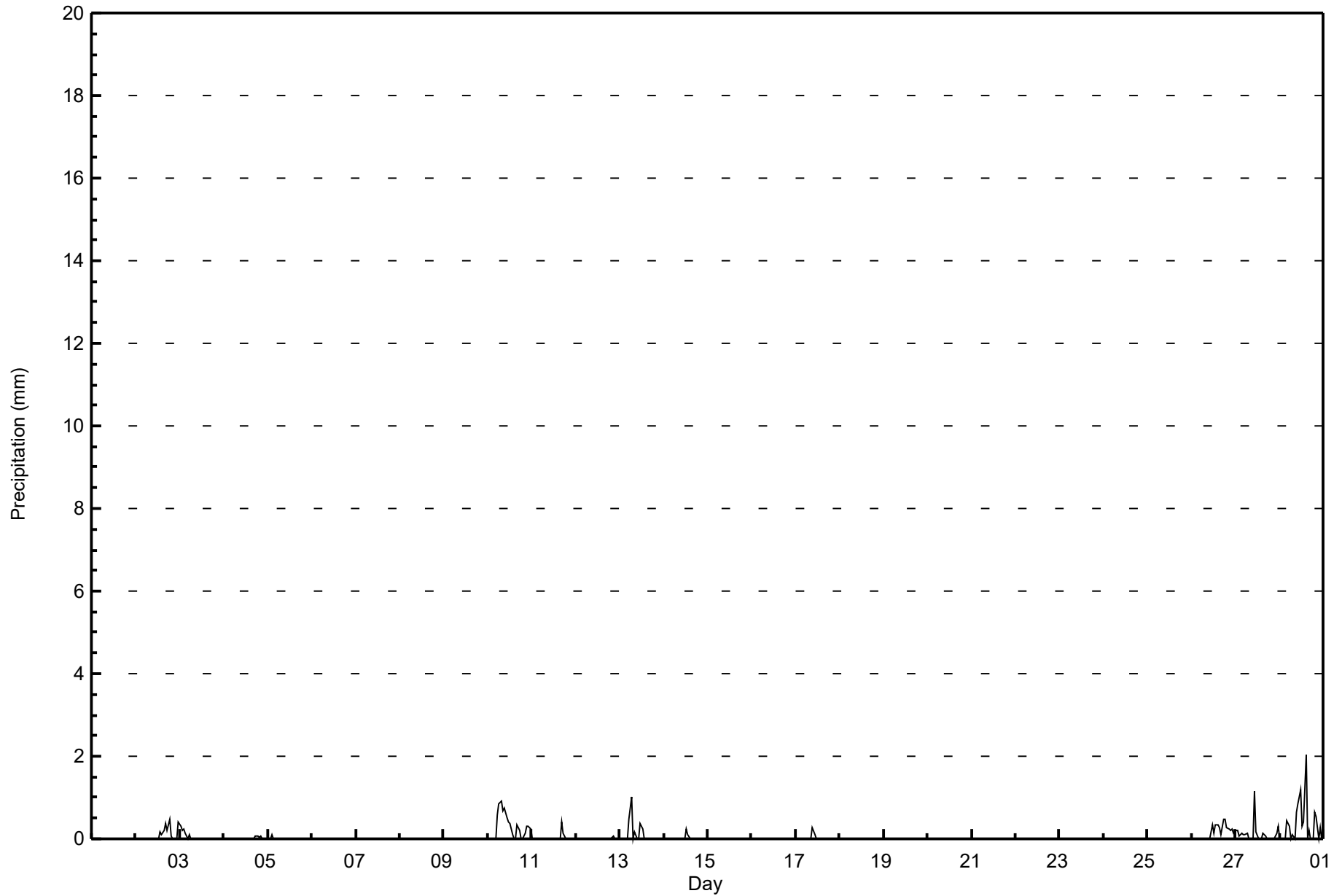
**Mackay River - February 2023**

| Maximum Value: 2.1 mm on Feb 28 15:00    |                               | Maximum Daily Total: 8.0 mm on Feb 28  |     | Hours in Service: 672           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |               |               |     |                 |     |     |     |     |     |     |     |
|--|-------------------------------|--|-----|---------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---------------|---------------|-----|-----------------|-----|-----|-----|-----|-----|-----|-----|
| Minimum Value: 0.0 mm on Feb 1 01:00     |                               | Minimum Daily Total: 0.0 mm on Feb 1   |     | Hours of Data: 672              |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |               |               |     |                 |     |     |     |     |     |     |     |
| Maximum Diurnal Total: 2.6 mm at hour 11 |                               | Minimum Diurnal Total: 0.3 mm at hour 4  |     | Hours of Missing Data: 0        |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |               |               |     |                 |     |     |     |     |     |     |     |
| Monthly Total: 28.23 mm                  |                               | Percentiles: P <sub>1</sub> = 0.0 P <sub>10</sub> = 0.0 Q <sub>1</sub> = 0.0 Median = 0.0 Q <sub>3</sub> = 0.0 P <sub>90</sub> = 0.1 P <sub>99</sub> = 0.8 |     | Hours of Calibration: 0         |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |               |               |     |                 |     |     |     |     |     |     |     |
|  |                               |  |     | Percent Operational Time: 100.0 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |               |               |     |                 |     |     |     |     |     |     |     |
| Day                                      | Hourly Period Ending At (MST) |  |     |                                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Daily Average | Daily Maximum |     |                 |     |     |     |     |     |     |     |
|  | 1                             | 2  | 3   | 4                               | 5   | 6   | 7   | 8   | 9   | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19  | 20  | 21  | 22  | 23  | 24  |               |               |     |                 |     |     |     |     |     |     |     |
| 1-Feb                                    | 0.0                           | 0.0  | 0.0 | 0.0                             | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0           | 0.0           | 0.0 | 0.0             | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |     |
| 2-Feb                                    | 0.0                           | 0.0  | 0.0 | 0.0                             | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 | 0.1 | 0.2 | 0.4 | 0.2 | 0.5 | 0.1 | 0.0 | 0.0 | 0.0 | 0.4 | 0.0 | 0.0           | 0.0           | 0.0 | 0.0             | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 0.5 |
| 3-Feb                                    | 0.3                           | 0.2  | 0.2 | 0.1                             | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0           | 0.0           | 0.0 | 0.0             | 0.0 | 0.0 | 0.0 | 0.0 | 1.0 | 0.3 |     |
| 4-Feb                                    | 0.0                           | 0.0  | 0.0 | 0.0                             | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0           | 0.0           | 0.0 | 0.0             | 0.0 | 0.0 | 0.0 | 0.3 | 0.1 |     |     |
| 5-Feb                                    | 0.0                           | 0.0  | 0.1 | 0.0                             | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0           | 0.0           | 0.0 | 0.0             | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 |     |     |
| 6-Feb                                    | 0.0                           | 0.0  | 0.0 | 0.0                             | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0           | 0.0           | 0.0 | 0.0             | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |     |
| 7-Feb                                    | 0.0                           | 0.0  | 0.0 | 0.0                             | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0           | 0.0           | 0.0 | 0.0             | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |     |
| 8-Feb                                    | 0.0                           | 0.0  | 0.0 | 0.0                             | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0           | 0.0           | 0.0 | 0.0             | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |     |
| 9-Feb                                    | 0.0                           | 0.0  | 0.0 | 0.0                             | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0           | 0.0           | 0.0 | 0.0             | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |     |
| 10-Feb                                   | 0.0                           | 0.0  | 0.0 | 0.0                             | 0.0 | 0.6 | 0.9 | 0.9 | 0.7 | 0.8 | 0.5 | 0.4 | 0.4 | 0.1 | 0.0 | 0.0 | 0.3 | 0.2 | 0.0 | 0.0 | 0.1 | 0.3 | 0.3 | 0.3 | 0.0           | 0.0           | 0.0 | 0.0             | 0.0 | 0.0 | 0.0 | 6.7 | 0.9 |     |     |
| 11-Feb                                   | 0.0                           | 0.0  | 0.0 | 0.0                             | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.4 | 0.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0           | 0.0           | 0.0 | 0.0             | 0.0 | 0.0 | 0.6 | 0.4 |     |     |     |
| 12-Feb                                   | 0.0                           | 0.0  | 0.0 | 0.0                             | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0           | 0.0           | 0.0 | 0.0             | 0.0 | 0.0 | 0.1 | 0.1 |     |     |     |
| 13-Feb                                   | 0.0                           | 0.0  | 0.0 | 0.0                             | 0.0 | 0.5 | 1.0 | 0.0 | 0.2 | 0.0 | 0.0 | 0.4 | 0.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0           | 0.0           | 0.0 | 0.0             | 0.0 | 0.0 | 2.3 | 1.0 |     |     |     |
| 14-Feb                                   | 0.0                           | 0.0  | 0.0 | 0.0                             | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0           | 0.0           | 0.0 | 0.0             | 0.0 | 0.0 | 0.3 | 0.2 |     |     |     |
| 15-Feb                                   | 0.0                           | 0.0  | 0.0 | 0.0                             | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0           | 0.0           | 0.0 | 0.0             | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |     |     |
| 16-Feb                                   | 0.0                           | 0.0  | 0.0 | 0.0                             | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0           | 0.0           | 0.0 | 0.0             | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |     |     |
| 17-Feb                                   | 0.0                           | 0.0  | 0.0 | 0.0                             | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.3 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0           | 0.0           | 0.0 | 0.0             | 0.0 | 0.0 | 0.4 | 0.3 |     |     |     |
| 18-Feb                                   | 0.0                           | 0.0  | 0.0 | 0.0                             | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0           | 0.0           | 0.0 | 0.0             | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |     |     |
| 19-Feb                                   | 0.0                           | 0.0  | 0.0 | 0.0                             | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0           | 0.0           | 0.0 | 0.0             | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |     |     |
| 20-Feb                                   | 0.0                           | 0.0  | 0.0 | 0.0                             | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0           | 0.0           | 0.0 | 0.0             | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |     |     |
| 21-Feb                                   | 0.0                           | 0.0  | 0.0 | 0.0                             | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0           | 0.0           | 0.0 | 0.0             | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |     |     |
| 22-Feb                                   | 0.0                           | 0.0  | 0.0 | 0.0                             | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0           | 0.0           | 0.0 | 0.0             | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |     |     |
| 23-Feb                                   | 0.0                           | 0.0  | 0.0 | 0.0                             | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0           | 0.0           | 0.0 | 0.0             | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |     |     |
| 24-Feb                                   | 0.0                           | 0.0  | 0.0 | 0.0                             | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0           | 0.0           | 0.0 | 0.0             | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |     |     |
| 25-Feb                                   | 0.0                           | 0.0  | 0.0 | 0.0                             | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0           | 0.0           | 0.0 | 0.0             | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |     |     |
| 26-Feb                                   | 0.0                           | 0.0  | 0.0 | 0.0                             | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.3 | 0.2 | 0.4 | 0.3 | 0.3 | 0.1 | 0.5 | 0.5 | 0.3 | 0.2 | 0.2 | 0.2 | 0.1 | 0.0           | 0.0           | 0.0 | 0.0             | 0.0 | 0.0 | 3.6 | 0.5 |     |     |     |
| 27-Feb                                   | 0.2                           | 0.2  | 0.1 | 0.1                             | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 1.1 | 0.2 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.3 | 0.0           | 0.0           | 0.0 | 0.0             | 0.0 | 2.9 | 1.1 |     |     |     |     |
| 28-Feb                                   | 0.0                           | 0.0  | 0.0 | 0.0                             | 0.5 | 0.3 | 0.0 | 0.1 | 0.0 | 0.6 | 0.9 | 1.2 | 0.3 | 0.4 | 2.1 | 0.0 | 0.2 | 0.0 | 0.0 | 0.7 | 0.6 | 0.0 | 0.3 | 0.0 | 0.0           | 0.0           | 0.0 | 0.0             | 0.0 | 8.0 | 2.1 |     |     |     |     |
|  |                               | 0.5  | 0.4 | 0.4                             | 0.3 | 0.5 | 1.6 | 2.0 | 1.0 | 0.8 | 1.7 | 2.6 | 2.5 | 1.3 | 1.1 | 2.5 | 0.6 | 1.5 | 1.1 | 1.0 | 1.1 | 1.0 | 0.5 | 1.0 | 1.1           |               |     | Diurnal Average |     |     |     |     |     |     |     |
|  |                               | 0.3  | 0.2 | 0.2                             | 0.1 | 0.5 | 0.6 | 1.0 | 0.9 | 0.7 | 0.8 | 1.1 | 1.2 | 0.4 | 0.4 | 2.1 | 0.3 | 0.4 | 0.5 | 0.5 | 0.7 | 0.6 | 0.3 | 0.3 | 0.4           |               |     | Diurnal Maximum |     |     |     |     |     |     |     |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Precipitation (PC) - mm**  
**Mackay River - February 2023**





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Precipitation (PC) - mm**  
**Mackay River - February 2023**

| <b>Concentration Ranges (mm)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|----------------------------------|------------------------|----------|---------------------|
| 0 - 0.3                          | 646                    | 96.13    | 96.13               |
| 0.4 - 0.5                        | 13                     | 1.93     | 98.07               |
| 0.6 - 0.7                        | 5                      | 0.74     | 98.81               |
| 0.8 - 1.4                        | 7                      | 1.04     | 99.85               |
| 1.5 - 10                         | 1                      | 0.15     | 100.00              |
| > 10                             | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 672

Total Number of Hours: 672



Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Speed (WS) - km/h

Mackay River - February 2023

|  |  |                                |
|--|--|--------------------------------|
| Maximum Speed: 18 km/h on Feb 6 00:00              | Maximum Daily Speed Average: 11.4 km/h on Feb 24   | Hours in Service: 672          |
| Minimum Speed Value: 0 km/h on Feb 23 11:00        | Minimum Daily Speed Average: 0.5 km/h on Feb 22  | Hours of Data: 639             |
| Maximum Diurnal Speed Average: 2.0 km/h at hour 24 | Minimum Diurnal Speed Average: 0.2 km/h at hour 17   | Hours of Missing Data: 33      |
| Monthly Average Velocity: 0.8 km/h 220.8 deg       | Percentiles: P <sub>1</sub> = 0 P <sub>10</sub> = 2 Q <sub>1</sub> = 3 Median = 5 Q <sub>3</sub> = 7 P <sub>90</sub> = 10 P <sub>99</sub> = 15 | Percent Operational Time: 95.1 |

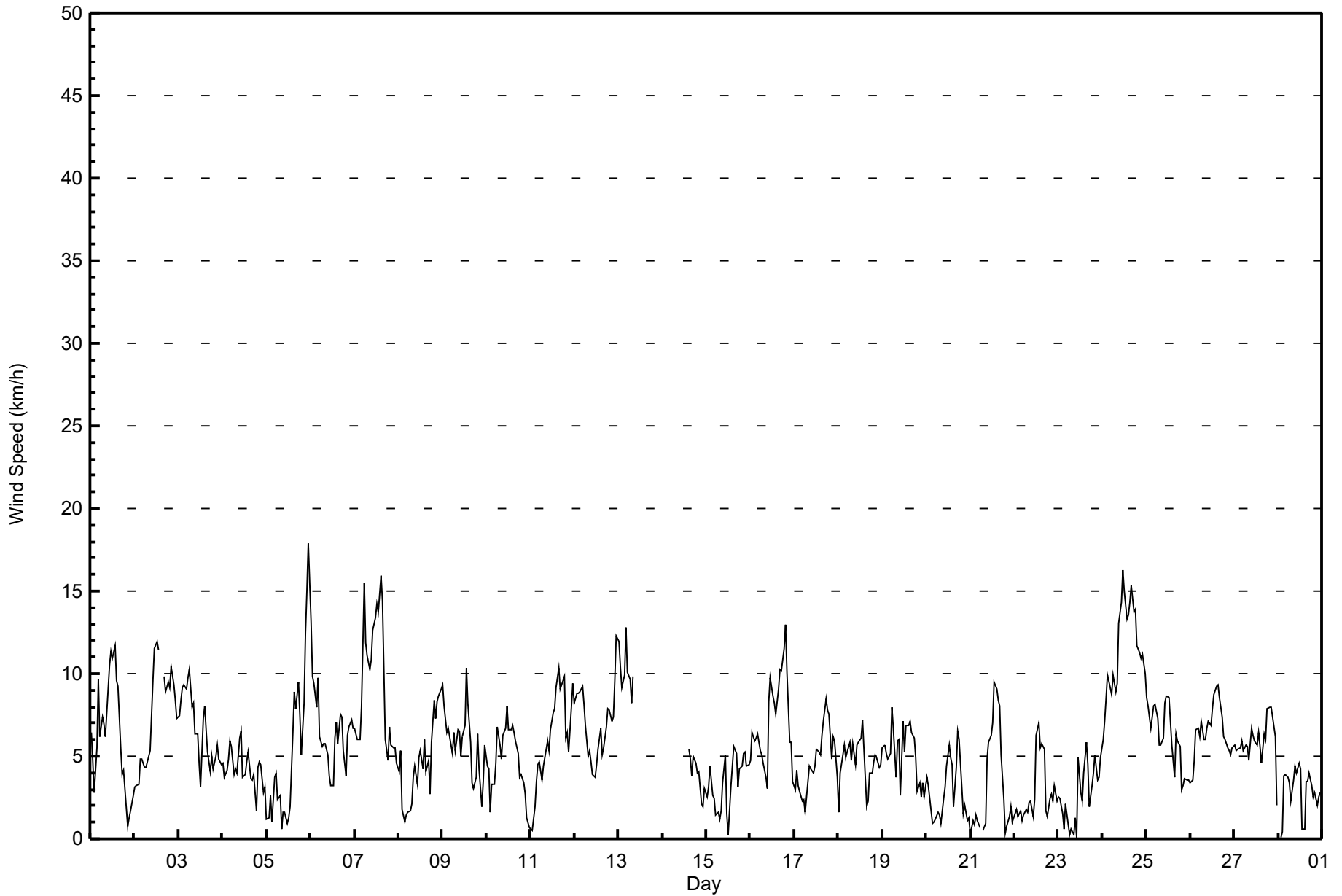
| Day   | Hourly Period Ending At (MST) |      |      |      |         |       |       |       |       |       |       |       |      |       |      |      |       |       |       |      |         |       |       |                 | Daily Average | Daily Maximum |    |
|---|-------------------------------|------|------|------|---------|-------|-------|-------|-------|-------|-------|-------|------|-------|------|------|-------|-------|-------|------|---------|-------|-------|-----------------|---------------|---------------|----|
|   | 1                             | 2    | 3    | 4    | 5       | 6     | 7     | 8     | 9     | 10    | 11    | 12    | 13   | 14    | 15   | 16   | 17    | 18    | 19    | 20   | 21      | 22    | 23    | 24              |               |               |    |
| 1-Feb   | NW6                           | NW5  | WSW3 | W5   | NW10    | NNW6  | NW7   | NW7   | NNW6  | NNW8  | NW11  | NW11  | NW11 | NW12  | NW10 | NW9  | NW6   | WNW4  | NW4   | WNW2 | SE1     | SSE1  | SSE2  | SE3             | NW5.5         | NW12          |    |
| 2-Feb   | SE3                           | SE3  | SE3  | SSE5 | SE5     | SE4   | SE4   | SSE5  | SE5   | SE7   | SE10  | SE12  | SE12 | ESE11 | M    | M    | ESE10 | ESE9  | SE10  | SE9  | SSE10   | SSE9  | SSE8  | SSE7            | SE7.2         | SE12          |    |
| 3-Feb   | SSE7                          | SSE8 | S9   | S9   | SSW9    | SSW10 | SSW10 | SSW8  | SSW8  | SSW6  | SSW6  | SW5   | W3   | NW7   | NNW8 | NNW7 | N5    | N4    | NNE5  | NE4  | NE5     | ENE6  | E5    | ESE4            | SSW2.3        | SSW10         |    |
| 4-Feb   | NNE5                          | NNE4 | NNE4 | NNE5 | NNE6    | NNE6  | NNE4  | NNE4  | NNE4  | NNE6  | NNE7  | NE4   | N4   | NNE5  | NE5  | E4   | E4    | E2    | N4    | NNE5 | NNE4    | N3    | NNE3  | NNE4.0          | NNE7          |               |    |
| 5-Feb   | N1                            | NNW1 | NNE3 | NNE1 | E4      | ESE4  | E2    | NW3   | ENE1  | NNW2  | NNE2  | WNW1  | SSE1 | S2    | S6   | S9   | S8    | S9    | SSW7  | WSW5 | W8WNW12 | WNW15 | WNW18 | WSW2.2          | WNW18         |               |    |
| 6-Feb   | WNW13                         | W10  | W9   | W8   | W10     | W6    | WSW6  | WSW6  | W6    | W5    | WNW4  | W3    | SE3  | SE6   | SE7  | ESE6 | ESE8  | SE7   | ESE5  | SE4  | SSE6    | S7    | SSW7  | SSW7            | SW3.0         | WNW13         |    |
| 7-Feb   | WSW7                          | WSW6 | W6   | W6   | W8WNW15 | W12   | W11   | WSW10 | WSW11 | WSW13 | WSW13 | W14   | W14  | W16   | W14  | W10  | WSW6  | WSW5  | W7    | WSW6 | WSW6    | WSW5  | WSW5  | W9.1            | W16           |               |    |
| 8-Feb   | W4                            | NNE5 | NNE2 | NNE1 | SSE1    | SE2   | SE2   | SE2   | SE4   | SSE4  | SSW3  | SW5   | SW5  | SW4   | SW6  | SW4  | SSW5  | SSE3  | SSW6  | SSW8 | SSW7    | S8    | S9    | S9              | SSW3.3        | S9            |    |
| 9-Feb   | S9                            | S8   | S6   | SSW7 | SSW6    | SSW5  | SSW6  | S5    | SSW7  | S7    | S5    | S6    | S7   | S10   | S8   | SSE6 | SE3   | SE3   | SSE4  | S6   | SSW4    | SE2   | SE3   | S6              | S5.6          | S10           |    |
| 10-Feb  | SSE4                          | SSE4 | ENE2 | NE3  | NE3     | NE5   | NNE7  | NNE6  | NNE5  | NNE6  | NNE7  | NNE8  | NNE7 | N7    | N7   | N6   | N6    | N5    | NNE4  | N4   | NNE3    | NNE3  | ENE1  | S1              | NNE3.8        | NNE8          |    |
| 11-Feb  | SW1                           | S0   | SSW2 | SW3  | WSW4    | WSW5  | WSW4  | SW4   | SW5   | SW6   | SSW5  | SW7   | SW8  | SSW8  | SW9  | SW10 | WSW9  | WSW9  | W10   | W6   | W6      | WSW5  | WSW8  | WSW9            | WSW5.6        | SW10          |    |
| 12-Feb  | WSW8                          | WSW9 | WSW9 | WSW9 | W9      | WSW8  | WSW7  | WSW5  | WSW5  | WSW5  | WSW4  | WSW4  | SW5  | S5    | S7   | SE5  | SE5   | SE7   | SE8   | SE8  | SSE7    | SE7   | SSE10 | S12             | SSW4.3        | S12           |    |
| 13-Feb  | S12                           | S10  | SSW9 | SW10 | WSW13   | WSW10 | WSW10 | WSW8  | WNW10 | UO    | UO    | UO    | UO   | UO    | UO   | UO   | UO    | UO    | UO    | UO   | UO      | UO    | UO    | UO              | ----          | WSW13         |    |
| 14-Feb  | UO                            | UO   | UO   | UO   | UO      | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO   | UO    | M    | N5   | N5    | NNE4  | NNE5  | N5   | N4      | NNE4  | NNE2  | ESE2            | SE3           | ----          | N5 |
| 15-Feb  | ESE3                          | SSE3 | SSE4 | SSE3 | SSE2    | S1    | S2    | S1    | ESE2  | SE3   | SSE5  | ESE1  | E0   | E3    | SSE4 | SE6  | SE5   | SE3   | SE4   | SE4  | SE5     | ESE5  | SE4   | SE4             | SE3.2         | SE6           |    |
| 16-Feb  | SE5                           | SE6  | SE6  | SE6  | SE6     | SE5   | SE5   | SE5   | SE4   | SE3   | S8    | SSW10 | SSW9 | SSW8  | WSW8 | W9   | W10   | WNW10 | WNW11 | NW13 | NW10    | NNE6  | NNW6  | NNW4            | SW1.8         | NW13          |    |
| 17-Feb  | NNW3                          | NNW4 | NNW3 | NNW3 | N2      | NE2   | ESE2  | E3    | E4    | E4    | NE4   | NE4   | N5   | NNE5  | NNE5 | N6   | NNE7  | NNE9  | NNE8  | NNE8 | NNE5    | NE6   | NNE6  | NE4             | NNE4.1        | NNE9          |    |
| 18-Feb  | NNE2                          | NNE4 | NNE5 | NNE6 | NNE5    | NNE5  | NNE6  | N5    | N6    | NNE5  | N6    | NNE6  | N6   | NNW7  | NW5  | NNE2 | SE2   | SE4   | SE4   | SE5  | SE5     | SE5   | SSE4  | SE4             | NNE2.5        | NNW7          |    |
| 19-Feb  | SE5                           | SE6  | SE5  | SE5  | ESE5    | ESE8  | ESE7  | E4    | ESE6  | ESE6  | NNW3  | N7    | N5   | NNW7  | N7   | NNW7 | N6    | N6    | NE5   | N3   | NW3     | N3    | NNW3  | NNW3            | NE2.3         | ESE8          |    |
| 20-Feb  | N4                            | NNW3 | N2   | NNW1 | WNW1    | SE1   | S2    | SSW1  | W1    | NNW2  | NNW3  | NNW4  | NNW6 | NNW5  | N5   | NW2  | N4    | NNE7  | NNE6  | NNE3 | NNE2    | N2    | WSW1  | SE1             | N2.2          | NNE7          |    |
| 21-Feb  | NE0                           | NNW1 | W1   | S1   | SSE1    | SE1   | UO    | SW0   | NW1   | NNW5  | NW6   | NNW6  | NNW7 | NNW10 | NW9  | NNW8 | NNE8  | NNE5  | NE2   | SSE0 | S1      | SSE1  | SSE2  | SSW1            | NNW2.4        | NNW10         |    |
| 22-Feb  | SSW2                          | SE2  | S1   | S2   | SW1     | SSW1  | SW2   | W2    | WSW2  | WSW2  | NNW1  | NW2   | NW6  | NNW7  | NW6  | N6   | NNE5  | NE2   | SE1   | SE2  | SE3     | SE2   | SE3   | SE2             | NW0.5         | NNW7          |    |
| 23-Feb  | SE3                           | SE2  | ESE2 | SE1  | NNE2    | NNW1  | S0    | S1    | NNE0  | N1    | SSW0  | NNW5  | N3   | WNW2  | WSW4 | WNW6 | W4    | SSW2  | SSE3  | SSE4 | SE5     | SE4   | SSE4  | S5              | SSW0.7        | WNW6          |    |
| 24-Feb  | S6                            | S7   | S8   | S10  | S9      | S9    | S10   | S9    | S9    | S13   | S14   | S16   | S15  | S13   | S14  | S14  | S15   | S14   | S14   | S12  | S11     | SSW11 | SSW11 | SSW10           | S11.4         | S16           |    |
| 25-Feb  | SSW9                          | SSW8 | SSW7 | WSW7 | W8      | W8    | W7    | WSW6  | WSW6  | WSW6  | WSW8  | W9    | WSW9 | W7    | W6   | WSW4 | SSW6  | S6    | S6    | SSE3 | SE3     | SE4   | SE4   | SE4             | SW4.8         | W9            |    |
| 26-Feb  | SE3                           | ESE4 | ESE5 | ESE7 | ESE7    | ESE6  | ESE7  | ESE6  | ESE6  | ESE7  | E7    | E7    | ENE8 | ENE9  | NE9  | ENE9 | NE9   | NE7   | NE6   | NE6  | NE6     | NE5   | NNE5  | NNE6            | ENE5.6        | ENE9          |    |
| 27-Feb  | NNE6                          | N5   | N5   | NNW5 | NNW6    | NNW5  | NNW6  | NNW6  | N5    | N7    | N6    | N6    | NNW6 | NNW6  | NNW6 | NNW5 | N6    | NNE6  | NE8   | NNE8 | NE8     | NE7   | NE6   | NE2             | N5.4          | NNE8          |    |
| 28-Feb  | UO                            | S0   | S0   | NW4  | NNW4    | NNW4  | NNW3  | NNW2  | NNW4  | NNW4  | NNE4  | NNW5  | NNW4 | NW1   | ESE1 | N3   | SE3   | S4    | SSW3  | S3   | SE3     | SE2   | SE3   | SSE3            | NNW0.8        | NNW5          |    |
| SSW1.8SSW1.5SSW1.6 SW1.7WSW1.5WSW1.2 SW1.4 SW1.4 SW1.1SSW0.6WSW0.8WNW1.2WNW1.4WNW1.6WNW1.9WNW1.5 E0.2 ESE0.8 SE0.8 SE0.6 SSE1.0 SE1.2 S1.5 S2.0 |                               |      |      |      |         |       |       |       |       |       |       |       |      |       |      |      |       |       |       |      |         |       |       | Diurnal Average |               |               |    |
| WNW13 S10 W9 S10 WSW13WNW15 W12 W11WSW10 S13 S14 S16 S15 W14 W16 W14 S15 S14 S14 NW13 S11WNW12WNW15WNW18  |                               |      |      |      |         |       |       |       |       |       |       |       |      |       |      |      |       |       |       |      |         |       |       | Diurnal Maximum |               |               |    |

M - Maintenance UO - Unstable Operation  
 All monthly, daily, and diurnal averages have been calculated using vector methods



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Wind Speed (WS) - km/h**  
**Mackay River - February 2023**







**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Wind Speed (WS) - km/h  
Mackay River - February 2023**

| <b>Wind Speed Ranges (km/h)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---------------------------------|------------------------|----------|---------------------|
| 0 - 5                           | 340                    | 53.21    | 53.21               |
| 6 - 11                          | 269                    | 42.10    | 95.31               |
| 12 - 19                         | 30                     | 4.69     | 100.00              |
| 20 - 28                         | 0                      | 0.00     | 100.00              |
| 29 - 38                         | 0                      | 0.00     | 100.00              |
| > 38                            | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 639

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Wind Speed (WS) - km/h  
Mackay River - February 2023**

| <b>Wind Speed<br/>Ranges (km/h)</b> | <b>Wind Direction</b> |     |    |     |    |     |    |     |    |     |    |     |    |     |    |     | <b>Totals</b> |
|-------------------------------------|-----------------------|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|---------------|
|                                     | N                     | NNE | NE | ENE | E  | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |               |
| 0 - 5                               | 27                    | 44  | 17 | 4   | 12 | 15  | 69 | 27  | 21 | 13  | 13 | 19  | 9  | 6   | 10 | 34  | 340           |
| 6 - 11                              | 17                    | 26  | 11 | 4   | 2  | 16  | 17 | 10  | 35 | 29  | 7  | 29  | 25 | 4   | 17 | 20  | 269           |
| 12 - 19                             | 0                     | 0   | 0  | 0   | 0  | 0   | 2  | 0   | 13 | 0   | 0  | 3   | 5  | 5   | 2  | 0   | 30            |
| 20 - 28                             | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| 29 - 38                             | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| > 38                                | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| <b>Totals</b>                       | 44                    | 70  | 28 | 8   | 14 | 31  | 88 | 37  | 69 | 42  | 20 | 51  | 39 | 15  | 29 | 54  | 639           |

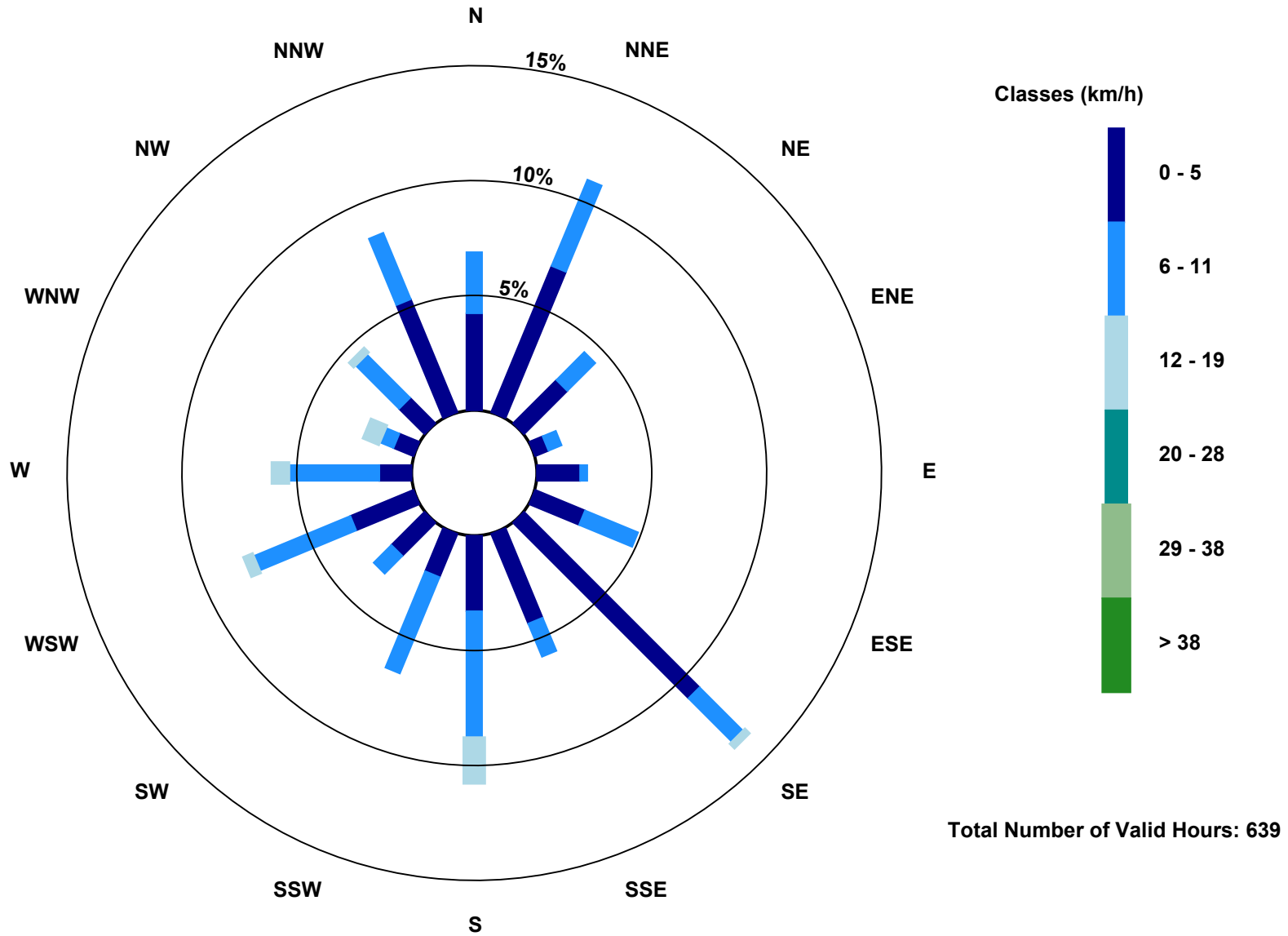
Total Number of Valid Hours: 639

Total Number of Hours: 672



Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Wind Speed (WS) - km/h  
Mackay River





**Wood Buffalo Environmental Association**  
**Summary of Hour Standard Deviations**

**Wind Speed (WS) - km/h**  
**Mackay River - February 2023**

| Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0<br>Maximum Value: 7 km/h on Feb 7 15:00<br>Minimum Value: 0 km/h on Feb 23 00:00<br>Percentiles: P <sub>1</sub> = 1 P <sub>10</sub> = 1 Q <sub>1</sub> = 1 Median = 2 Q <sub>3</sub> = 2 P <sub>90</sub> = 3 P <sub>99</sub> = 6 |                               |    |    |    |    |    |    |    |    |    |    |    |    | Hours in Service: 672<br>Hours of Data: 639<br>Hours of Missing Data: 33<br>Hours of Calibration: 0<br>Percent Operational Time: 95.1 |    |    |    |    |    |    |    |    |    |    |               |
|--|-------------------------------|----|----|----|----|----|----|----|----|----|----|----|----|---|----|----|----|----|----|----|----|----|----|----|---------------|
| Day  | Hourly Period Ending At (MST) |    |    |    |    |    |    |    |    |    |    |    |    |   |    |    |    |    |    |    |    |    |    |    | Daily Maximum |
|  | 1                             | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 | 14  | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |               |
| 1-Feb  | 2                             | 2  | 1  | 3  | 4  | 2  | 2  | 2  | 2  | 3  | 3  | 3  | 3  | 3   | 3  | 3  | 2  | 2  | 2  | 1  | 1  | 1  | 1  | 1  | 4             |
| 2-Feb  | 1                             | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 2  | 3  | 4  | 4  | 3   | M  | M  | 3  | 3  | 3  | 3  | 4  | 3  | 2  | 2  | 4             |
| 3-Feb  | 3                             | 3  | 3  | 3  | 3  | 3  | 3  | 2  | 3  | 2  | 2  | 2  | 2  | 3   | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 1  | 2  | 3             |
| 4-Feb  | 1                             | 1  | 1  | 1  | 2  | 2  | 1  | 1  | 1  | 2  | 2  | 2  | 2  | 1   | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 2  | 1  | 1  | 2             |
| 5-Feb  | 1                             | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 2  | 2  | 2  | 1  | 2   | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 4  | 4  | 6  | 6             |
| 6-Feb  | 5                             | 4  | 4  | 3  | 3  | 3  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2   | 2  | 2  | 2  | 2  | 2  | 1  | 2  | 2  | 2  | 2  | 5             |
| 7-Feb  | 3                             | 2  | 2  | 2  | 4  | 6  | 5  | 4  | 4  | 5  | 5  | 6  | 7  | 6   | 7  | 6  | 5  | 3  | 2  | 3  | 2  | 2  | 2  | 2  | 7             |
| 8-Feb  | 2                             | 2  | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 2  | 2  | 2   | 3  | 2  | 1  | 1  | 2  | 2  | 2  | 2  | 2  | 2  | 3             |
| 9-Feb  | 2                             | 2  | 1  | 2  | 1  | 1  | 2  | 2  | 1  | 2  | 1  | 2  | 3  | 3   | 2  | 2  | 1  | 1  | 1  | 1  | 2  | 1  | 1  | 1  | 3             |
| 10-Feb   | 1                             | 2  | 1  | 1  | 2  | 1  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2   | 1  | 2  | 2  | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 2             |
| 11-Feb   | 1                             | 1  | 1  | 1  | 2  | 2  | 1  | 2  | 2  | 2  | 2  | 2  | 3  | 2   | 3  | 4  | 4  | 4  | 4  | 6  | 4  | 3  | 4  | 4  | 6             |
| 12-Feb   | 4                             | 4  | 4  | 4  | 4  | 3  | 3  | 2  | 2  | 2  | 2  | 2  | 2  | 2   | 2  | 1  | 1  | 2  | 2  | 2  | 2  | 2  | 3  | 3  | 4             |
| 13-Feb   | 3                             | 3  | 3  | 4  | 6  | 5  | 4  | 3  | 5  | UO | UO | UO | UO | UO  | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | 6             |
| 14-Feb   | UO                            | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO  | M  | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 2  | 2             |
| 15-Feb   | 1                             | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 2  | 1  | 2   | 2  | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 2             |
| 16-Feb   | 1                             | 2  | 2  | 2  | 2  | 2  | 1  | 1  | 1  | 1  | 3  | 3  | 3  | 2   | 3  | 4  | 4  | 3  | 4  | 4  | 4  | 2  | 2  | 1  | 4             |
| 17-Feb   | 1                             | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 2  | 2   | 2  | 2  | 2  | 3  | 3  | 2  | 1  | 2  | 2  | 1  | 3             |
| 18-Feb   | 1                             | 2  | 2  | 2  | 2  | 2  | 2  | 1  | 1  | 1  | 2  | 2  | 2  | 2   | 2  | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 2             |
| 19-Feb   | 2                             | 2  | 2  | 2  | 1  | 2  | 2  | 1  | 2  | 2  | 2  | 2  | 2  | 2   | 2  | 2  | 2  | 1  | 2  | 1  | 1  | 1  | 1  | 1  | 2             |
| 20-Feb   | 1                             | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 2  | 2  | 2  | 2   | 2  | 1  | 3  | 2  | 2  | 1  | 2  | 1  | 1  | 1  | 3             |
| 21-Feb   | 1                             | 1  | 1  | 1  | 1  | 1  | UO | 1  | 1  | 2  | 2  | 2  | 3  | 3   | 3  | 3  | 2  | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 3             |
| 22-Feb   | 1                             | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 2  | 2   | 2  | 2  | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 0  | 2             |
| 23-Feb   | 1                             | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 2  | 2  | 2   | 2  | 3  | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 2  | 3             |
| 24-Feb   | 1                             | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 3  | 4  | 5  | 5  | 5  | 4   | 5  | 5  | 5  | 4  | 5  | 4  | 4  | 4  | 3  | 3  | 5             |
| 25-Feb   | 2                             | 2  | 2  | 3  | 3  | 3  | 3  | 2  | 2  | 2  | 3  | 4  | 3  | 3   | 2  | 2  | 2  | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 4             |
| 26-Feb   | 1                             | 1  | 1  | 2  | 2  | 1  | 2  | 1  | 2  | 2  | 3  | 2  | 3  | 3   | 3  | 3  | 3  | 2  | 2  | 2  | 2  | 2  | 1  | 2  | 3             |
| 27-Feb   | 2                             | 1  | 2  | 1  | 2  | 1  | 1  | 1  | 2  | 2  | 2  | 2  | 2  | 2   | 2  | 1  | 2  | 2  | 3  | 3  | 3  | 3  | 2  | 1  | 3             |
| 28-Feb   | UO                            | 1  | 1  | 1  | 1  | 2  | 1  | 1  | 1  | 1  | 2  | 2  | 1  | 1   | 2  | 2  | 2  | 1  | 1  | 2  | 1  | 1  | 0  | 0  | 2             |
|  |                               |    |    |    |    |    |    |    |    |    |    |    |    | Diurnal Maximum   |    |    |    |    |    |    |    |    |    |    |               |
| M - Maintenance  |                               |    |    |    |    |    |    |    |    |    |    |    |    | UO - Unstable Operation   |    |    |    |    |    |    |    |    |    |    |               |



# Wood Buffalo Environmental Association

## Summary of Hour Averages

# Wind Direction (WD) - deg

## Mackay River - February 2023

|   |                                |
|---|--------------------------------|
| Direction of Maximum Speed: 298 deg on Feb 6 00:00            | Hours in Service: 672          |
| Direction of Maximum Daily Speed Average: 185.2 deg on Feb 24 | Hours of Data: 639             |
| Direction of Minimum Speed: 199 deg on Feb 23 11:00           | Hours of Missing Data: 33      |
| Direction of Minimum Daily Speed Average: 0.5 deg on Feb 22   | Percent Operational Time: 95.1 |
| Monthly Average Direction: 220.8 deg                          |                                |

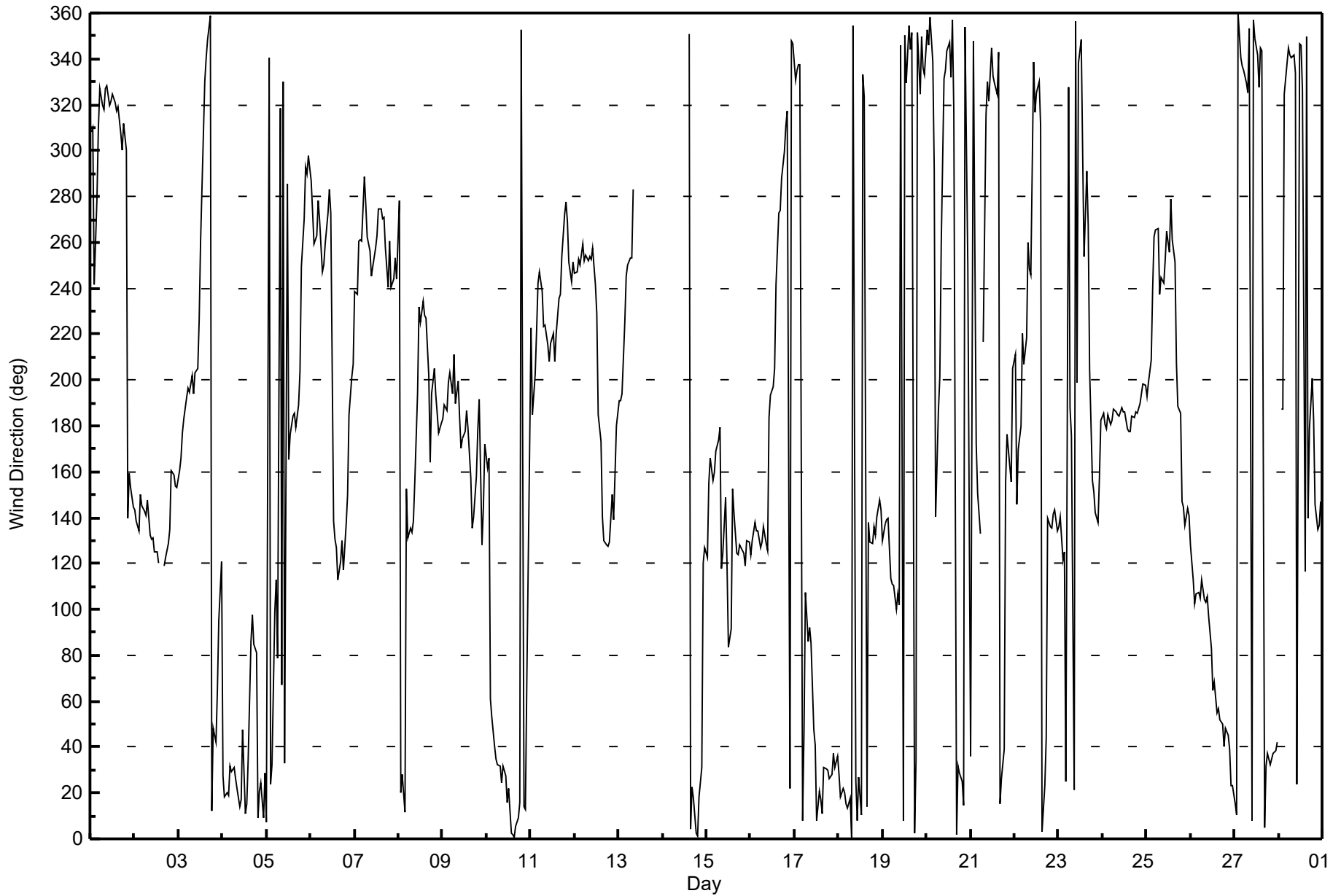
| Day  | Hourly Period Ending At (MST) |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Daily Average |    |
|--|-------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---------------|----|
|  | 1                             | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19  | 20  | 21  | 22  | 23  | 24  |               |    |
| 1-Feb  | 308                           | 310 | 242 | 279 | 310 | 327 | 320 | 318 | 327 | 328 | 320 | 321 | 325 | 321 | 318 | 319 | 307 | 300 | 312 | 300 | 140 | 160 | 153 | 145 | 314.9         |    |
| 2-Feb  | 144                           | 138 | 134 | 150 | 145 | 143 | 141 | 148 | 133 | 131 | 131 | 125 | 125 | 120 | M   | M   | 119 | 123 | 129 | 135 | 161 | 159 | 154 | 153 | 136.5         |    |
| 3-Feb  | 160                           | 166 | 177 | 183 | 192 | 197 | 195 | 202 | 194 | 203 | 205 | 227 | 260 | 307 | 330 | 341 | 349 | 359 | 12  | 48  | 42  | 65  | 95  | 121 | 191.4         |    |
| 4-Feb  | 27                            | 18  | 20  | 19  | 32  | 30  | 31  | 26  | 22  | 14  | 17  | 48  | 11  | 15  | 35  | 86  | 97  | 85  | 81  | 9   | 21  | 24  | 9   | 29  | 29.8          |    |
| 5-Feb  | 8                             | 341 | 24  | 33  | 99  | 113 | 79  | 319 | 67  | 330 | 33  | 286 | 166 | 176 | 184 | 186 | 180 | 189 | 204 | 250 | 270 | 293 | 290 | 298 | 251.6         |    |
| 6-Feb  | 287                           | 273 | 260 | 263 | 278 | 270 | 247 | 250 | 259 | 272 | 283 | 273 | 139 | 131 | 127 | 113 | 121 | 130 | 117 | 137 | 150 | 185 | 201 | 207 | 223.3         |    |
| 7-Feb  | 239                           | 237 | 260 | 261 | 260 | 289 | 277 | 262 | 256 | 245 | 249 | 257 | 263 | 275 | 275 | 270 | 271 | 258 | 241 | 261 | 240 | 244 | 253 | 244 | 261.5         |    |
| 8-Feb  | 278                           | 20  | 28  | 12  | 152 | 131 | 135 | 134 | 139 | 156 | 195 | 232 | 225 | 234 | 228 | 227 | 202 | 164 | 194 | 205 | 193 | 185 | 177 | 181 | 194.5         |    |
| 9-Feb  | 183                           | 189 | 187 | 199 | 203 | 194 | 211 | 190 | 199 | 184 | 170 | 175 | 178 | 187 | 179 | 158 | 136 | 140 | 158 | 178 | 192 | 128 | 145 | 172 | 181.2         |    |
| 10-Feb   | 162                           | 166 | 61  | 53  | 40  | 35  | 32  | 31  | 24  | 32  | 27  | 16  | 22  | 2   | 2   | 1   | 6   | 9   | 16  | 353 | 14  | 13  | 68  | 169 | 23.0          |    |
| 11-Feb   | 223                           | 185 | 203 | 222 | 242 | 247 | 239 | 223 | 224 | 215 | 208 | 216 | 220 | 208 | 221 | 235 | 237 | 254 | 272 | 278 | 269 | 252 | 243 | 251 | 237.4         |    |
| 12-Feb   | 247                           | 247 | 253 | 250 | 259 | 252 | 255 | 252 | 254 | 252 | 258 | 242 | 229 | 185 | 173 | 141 | 130 | 128 | 128 | 129 | 150 | 139 | 159 | 180 | 204.7         |    |
| 13-Feb   | 191                           | 191 | 194 | 225 | 245 | 250 | 253 | 253 | 283 | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO  | --            |    |
| 14-Feb   | UO                            | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO  | M   | 351 | 4   | 23  | 18  | 3   | 2   | 19  | 31  | 120 | 127           | -- |
| 15-Feb   | 123                           | 155 | 166 | 156 | 160 | 169 | 174 | 180 | 118 | 125 | 149 | 120 | 84  | 91  | 153 | 141 | 124 | 124 | 128 | 126 | 124 | 119 | 130 | 130 | 135.6         |    |
| 16-Feb   | 124                           | 130 | 138 | 134 | 134 | 127 | 129 | 136 | 129 | 126 | 184 | 193 | 197 | 205 | 242 | 273 | 274 | 288 | 300 | 311 | 317 | 22  | 348 | 347 | 227.0         |    |
| 17-Feb   | 331                           | 335 | 337 | 338 | 8   | 47  | 107 | 86  | 92  | 86  | 47  | 41  | 8   | 21  | 17  | 11  | 31  | 30  | 30  | 26  | 28  | 37  | 31  | 36  | 28.7          |    |
| 18-Feb   | 28                            | 18  | 22  | 20  | 15  | 14  | 18  | 1   | 355 | 26  | 8   | 27  | 10  | 333 | 323 | 14  | 138 | 130 | 129 | 136 | 133 | 141 | 148 | 143 | 33.3          |    |
| 19-Feb   | 130                           | 137 | 139 | 140 | 113 | 111 | 110 | 100 | 107 | 102 | 346 | 8   | 350 | 329 | 354 | 344 | 352 | 2   | 34  | 352 | 325 | 350 | 336 | 333 | 45.1          |    |
| 20-Feb   | 353                           | 346 | 358 | 339 | 292 | 140 | 187 | 201 | 259 | 332 | 335 | 343 | 347 | 332 | 357 | 317 | 2   | 31  | 28  | 25  | 15  | 354 | 250 | 141 | 354.8         |    |
| 21-Feb   | 36                            | 348 | 259 | 172 | 151 | 133 | UO  | 216 | 315 | 330 | 322 | 345 | 333 | 329 | 325 | 343 | 15  | 26  | 39  | 155 | 176 | 163 | 156 | 205 | 341.7         |    |
| 22-Feb   | 211                           | 146 | 170 | 180 | 220 | 207 | 218 | 260 | 249 | 246 | 339 | 317 | 325 | 330 | 311 | 3   | 23  | 44  | 140 | 136 | 135 | 142 | 143 | 134 | 314.0         |    |
| 23-Feb   | 136                           | 140 | 121 | 125 | 25  | 328 | 188 | 176 | 21  | 356 | 199 | 338 | 349 | 300 | 254 | 291 | 267 | 205 | 156 | 152 | 142 | 138 | 157 | 183 | 192.2         |    |
| 24-Feb   | 185                           | 180 | 179 | 185 | 181 | 182 | 187 | 186 | 185 | 188 | 186 | 186 | 186 | 179 | 177 | 178 | 184 | 183 | 186 | 185 | 190 | 194 | 198 | 198 | 185.2         |    |
| 25-Feb   | 193                           | 199 | 208 | 239 | 262 | 265 | 266 | 237 | 245 | 242 | 253 | 265 | 256 | 279 | 261 | 252 | 207 | 189 | 185 | 147 | 145 | 137 | 144 | 141 | 230.2         |    |
| 26-Feb   | 128                           | 113 | 102 | 107 | 107 | 105 | 113 | 105 | 103 | 106 | 97  | 83  | 65  | 69  | 55  | 57  | 52  | 50  | 40  | 48  | 45  | 39  | 23  | 23  | 74.6          |    |
| 27-Feb   | 15                            | 11  | 360 | 340 | 337 | 335 | 330 | 325 | 353 | 8   | 357 | 349 | 342 | 328 | 345 | 344 | 5   | 32  | 37  | 32  | 35  | 37  | 38  | 42  | 3.5           |    |
| 28-Feb   | UO                            | 187 | 188 | 325 | 331 | 345 | 342 | 340 | 342 | 334 | 24  | 346 | 346 | 326 | 116 | 350 | 140 | 179 | 201 | 183 | 146 | 135 | 137 | 147 | 348.5         |    |
| 203.4 193.0 194.7 216.2 240.7 241.6 231.5 233.0 231.0 209.4 247.0 282.2 286.2 291.4 287.0 303.7 96.3 109.7 124.2 137.3 152.1 134.4 173.1 186.5 |                               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |               |    |
| Diurnal Average  |                               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |               |    |

M - Maintenance      UO - Unstable Operation  
 All monthly, daily, and diurnal averages have been calculated using vector methods



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Wind Direction (WD) - deg**  
**Mackay River - February 2023**





**Wood Buffalo Environmental Association**  
**Summary of Hour Standard Deviations**

**Wind Direction (WD) - deg**  
**Mackay River - February 2023**

|   |                                |
|---|--------------------------------|
| Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0   | Hours in Service: 672          |
| Maximum Value: 105 deg on Feb 28 14:00  | Hours of Data: 639             |
| Minimum Value: 7 deg on Mar 1 00:00   | Hours of Missing Data: 33      |
|   | Hours of Calibration: 0        |
|   | Percent Operational Time: 95.1 |
| Percentiles: P <sub>1</sub> = 10 P <sub>10</sub> = 17 Q <sub>1</sub> = 22 Median = 26 Q <sub>3</sub> = 41 P <sub>90</sub> = 54 P <sub>99</sub> = 97 |                                |

| Day    | Hourly Period Ending At (MST) |    |    |    |    |    |    |    |    |    |     |    |     |     |     |    |    |    |    |    |    |    |    |     | Daily Maximum |
|--------|-------------------------------|----|----|----|----|----|----|----|----|----|-----|----|-----|-----|-----|----|----|----|----|----|----|----|----|-----|---------------|
|        | 1                             | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11  | 12 | 13  | 14  | 15  | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24  |               |
| 1-Feb  | 25                            | 26 | 16 | 21 | 22 | 17 | 16 | 18 | 23 | 22 | 22  | 20 | 22  | 21  | 28  | 22 | 25 | 26 | 27 | 58 | 66 | 32 | 16 | 19  | 66            |
| 2-Feb  | 15                            | 17 | 17 | 9  | 11 | 14 | 17 | 22 | 22 | 21 | 22  | 21 | 22  | 20  | M   | M  | 20 | 22 | 22 | 21 | 26 | 26 | 24 | 26  | 26            |
| 3-Feb  | 26                            | 27 | 24 | 24 | 26 | 24 | 23 | 25 | 23 | 25 | 44  | 68 | 29  | 23  | 25  | 26 | 34 | 26 | 34 | 28 | 26 | 26 | 32 | 68  |               |
| 4-Feb  | 23                            | 24 | 22 | 22 | 23 | 23 | 23 | 27 | 22 | 23 | 25  | 41 | 36  | 30  | 25  | 32 | 27 | 30 | 80 | 24 | 24 | 26 | 39 | 80  |               |
| 5-Feb  | 52                            | 63 | 41 | 77 | 27 | 27 | 46 | 51 | 90 | 87 | 80  | 97 | 84  | 82  | 30  | 21 | 17 | 16 | 20 | 42 | 41 | 26 | 28 | 97  |               |
| 6-Feb  | 29                            | 40 | 44 | 41 | 31 | 41 | 44 | 43 | 37 | 41 | 60  | 61 | 50  | 22  | 22  | 22 | 20 | 22 | 27 | 22 | 20 | 30 | 24 | 61  |               |
| 7-Feb  | 43                            | 41 | 43 | 49 | 48 | 27 | 37 | 42 | 47 | 47 | 46  | 51 | 44  | 41  | 38  | 41 | 43 | 42 | 39 | 45 | 46 | 45 | 45 | 51  |               |
| 8-Feb  | 35                            | 30 | 45 | 73 | 26 | 39 | 26 | 26 | 10 | 20 | 43  | 49 | 33  | 56  | 42  | 43 | 26 | 37 | 19 | 20 | 17 | 14 | 14 | 73  |               |
| 9-Feb  | 15                            | 16 | 15 | 19 | 18 | 18 | 19 | 18 | 19 | 20 | 23  | 21 | 26  | 23  | 21  | 24 | 26 | 20 | 18 | 18 | 33 | 47 | 18 | 47  |               |
| 10-Feb | 21                            | 30 | 39 | 26 | 40 | 21 | 21 | 23 | 22 | 23 | 23  | 23 | 25  | 24  | 24  | 24 | 23 | 24 | 26 | 24 | 31 | 24 | 54 | 79  |               |
| 11-Feb | 67                            | 76 | 41 | 29 | 50 | 49 | 48 | 36 | 40 | 31 | 29  | 31 | 33  | 27  | 33  | 41 | 41 | 49 | 39 | 40 | 34 | 44 | 47 | 76  |               |
| 12-Feb | 47                            | 49 | 45 | 48 | 45 | 49 | 47 | 47 | 45 | 50 | 64  | 62 | 48  | 33  | 28  | 25 | 18 | 16 | 17 | 19 | 28 | 24 | 25 | 64  |               |
| 13-Feb | 25                            | 20 | 22 | 34 | 47 | 45 | 44 | 50 | 35 | UO | UO  | UO | UO  | UO  | UO  | UO | UO | UO | UO | UO | UO | UO | UO | 50  |               |
| 14-Feb | UO                            | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO  | UO | UO  | M   | 30  | 28 | 24 | 22 | 19 | 22 | 14 | 32 | 28 | 34  |               |
| 15-Feb | 33                            | 25 | 13 | 25 | 26 | 39 | 64 | 78 | 15 | 26 | 29  | 96 | 102 | 69  | 66  | 33 | 21 | 14 | 9  | 11 | 11 | 12 | 14 | 102 |               |
| 16-Feb | 15                            | 22 | 23 | 20 | 21 | 25 | 24 | 21 | 26 | 36 | 20  | 21 | 24  | 24  | 45  | 37 | 39 | 27 | 23 | 22 | 34 | 23 | 26 | 45  |               |
| 17-Feb | 29                            | 20 | 18 | 30 | 24 | 31 | 40 | 43 | 31 | 32 | 35  | 34 | 36  | 36  | 33  | 25 | 22 | 22 | 22 | 23 | 20 | 21 | 21 | 43  |               |
| 18-Feb | 24                            | 19 | 29 | 25 | 25 | 27 | 24 | 24 | 25 | 33 | 29  | 35 | 41  | 30  | 47  | 80 | 78 | 13 | 15 | 13 | 16 | 19 | 19 | 80  |               |
| 19-Feb | 17                            | 19 | 22 | 25 | 17 | 17 | 16 | 29 | 17 | 22 | 75  | 28 | 36  | 24  | 27  | 29 | 25 | 22 | 27 | 41 | 16 | 18 | 16 | 75  |               |
| 20-Feb | 23                            | 23 | 18 | 72 | 77 | 33 | 31 | 36 | 68 | 38 | 53  | 33 | 30  | 37  | 40  | 78 | 71 | 21 | 23 | 19 | 70 | 22 | 35 | 78  |               |
| 21-Feb | 100                           | 62 | 48 | 36 | 28 | 74 | UO | 62 | 56 | 20 | 30  | 34 | 40  | 29  | 30  | 29 | 24 | 17 | 23 | 91 | 62 | 31 | 22 | 100 |               |
| 22-Feb | 37                            | 20 | 51 | 32 | 46 | 48 | 28 | 31 | 38 | 56 | 100 | 93 | 35  | 30  | 46  | 55 | 28 | 54 | 46 | 16 | 12 | 14 | 10 | 100 |               |
| 23-Feb | 15                            | 13 | 33 | 66 | 15 | 53 | 89 | 71 | 72 | 72 | 101 | 39 | 78  | 85  | 68  | 47 | 52 | 47 | 13 | 20 | 12 | 7  | 16 | 101 |               |
| 24-Feb | 14                            | 13 | 13 | 14 | 15 | 16 | 17 | 18 | 22 | 23 | 26  | 26 | 24  | 25  | 26  | 24 | 24 | 22 | 22 | 22 | 23 | 23 | 23 | 21  | 26            |
| 25-Feb | 20                            | 22 | 30 | 47 | 45 | 45 | 40 | 53 | 47 | 45 | 50  | 47 | 47  | 51  | 56  | 54 | 27 | 20 | 19 | 28 | 13 | 15 | 16 | 18  | 56            |
| 26-Feb | 14                            | 14 | 20 | 19 | 15 | 18 | 17 | 16 | 19 | 19 | 28  | 32 | 32  | 33  | 25  | 27 | 27 | 26 | 25 | 26 | 25 | 24 | 22 | 24  | 33            |
| 27-Feb | 24                            | 22 | 24 | 21 | 21 | 20 | 19 | 19 | 29 | 24 | 27  | 35 | 44  | 24  | 28  | 30 | 39 | 25 | 25 | 24 | 23 | 26 | 22 | 52  | 52            |
| 28-Feb | UO                            | 74 | 93 | 22 | 22 | 26 | 33 | 31 | 25 | 28 | 54  | 55 | 41  | 105 | 105 | 66 | 62 | 26 | 40 | 54 | 8  | 30 | 10 | 7   | 105           |
|        | 100                           | 76 | 93 | 77 | 77 | 74 | 89 | 78 | 90 | 87 | 101 | 97 | 102 | 105 | 105 | 80 | 78 | 54 | 80 | 91 | 70 | 47 | 54 | 79  |               |

Diurnal Maximum

M - Maintenance UO - Unstable Operation



## WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY  
MONITORING PROGRAM  
MONTHLY REPORT

**AMS21  
CONKLIN  
FEBRUARY 2023**

Operations, Data Collection,  
QA/QC, Data Validation and Reporting by:  
Wood Buffalo Environmental Association  
Fort McMurray, Alberta

March 31, 2023



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - CONKLIN (AMS21)  
 FEBRUARY 2023

MONTHLY SUMMARY

| Parameter                         | Hours of Data | Hours of Calibration | Hours without Data | Operational Time | Maximum 1-Hour Value | 1-Hour Exceedances | Maximum 24-Hour Value | 24-Hour Exceedances |
|-----------------------------------|---------------|----------------------|--------------------|------------------|----------------------|--------------------|-----------------------|---------------------|
| SO2(ppb) Average                  | 639           | 31                   | 33                 | 99.7             | 8                    | 0                  | 2.4                   | 0                   |
| TRS(ppb) Average                  | 637           | 33                   | 35                 | 99.7             | 0.6                  | 0                  | 0.5                   | 0                   |
| THC(ppm) Average                  | 636           | 34                   | 36                 | 99.7             | 2.3                  | -                  | 2.2                   | -                   |
| NMHC(ppm) Average                 | 636           | 34                   | 36                 | 99.7             | 0.116                | -                  | 0.018                 | -                   |
| CH4(ppm) Average                  | 636           | 34                   | 36                 | 99.7             | 2.3                  | -                  | 2.2                   | -                   |
| O3 (ppb) Average                  | 640           | 32                   | 32                 | 100              | 45.3                 | 0                  | 41                    | -                   |
| NO2 (ppb) Average                 | 637           | 33                   | 35                 | 99.7             | 21                   | 0                  | 5.1                   | -                   |
| NO (ppb) Average                  | 637           | 33                   | 35                 | 99.7             | 7.8                  | -                  | 0.9                   | -                   |
| NOX (ppb) Average                 | 637           | 33                   | 35                 | 99.7             | 28.1                 | -                  | 5.5                   | -                   |
| PM2.5 (ug/m3) Average             | 671           | 1                    | 1                  | 100              | 21.6                 | 0                  | 8.1                   | 0                   |
| Temperature 2 m (C) Average       | 672           | 0                    | 0                  | 100              | 5.3                  | -                  | 0.9                   | -                   |
| Relative Humidity (%) Average     | 672           | 0                    | 0                  | 100              | 96.4                 | -                  | 87.1                  | -                   |
| Wind Speed 10 m (km/h) Average    | 670           | 0                    | 2                  | 99.7             | 22                   | -                  | 14                    | -                   |
| Wind Direction 10 m (deg) Average | 670           | 0                    | 2                  | 99.7             | -                    | -                  | -                     | -                   |

Note : Operational time includes periods of data collection and instrument calibration

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - CONKLIN (AMS21)  
 FEBRUARY 2023

MONTHLY SUMMARY FOR AIR QUALITY/ METEOROLOGICAL MONITORING MEASUREMENTS

| Parameter                         | Number | Mean   | StnDev | Total | Percentile |       |      |        |      |      |       |
|-----------------------------------|--------|--------|--------|-------|------------|-------|------|--------|------|------|-------|
|                                   |        |        |        |       | Min        | P10   | Q1   | Median | Q3   | P90  | Max   |
| SO2 (ppb) Average                 | 639    | 0.77   | 1.1    | -     | 0          | 0     | 0.1  | 0.3    | 1    | 2    | 8     |
| TRS (ppb) Average                 | 637    | 0.39   | 0.1    | -     | 0.1        | 0.3   | 0.4  | 0.4    | 0.4  | 0.5  | 0.6   |
| THC (ppm) Average                 | 636    | 2.1    | 0      | -     | 2          | 2     | 2.1  | 2.1    | 2.1  | 2.2  | 2.3   |
| NMHC(ppm) Average                 | 636    | 0.003  | 0.009  | -     | 0          | 0     | 0    | 0      | 0    | 0    | 0.116 |
| CH4(ppm) Average                  | 636    | 2.1    | 0      | -     | 2          | 2     | 2.1  | 2.1    | 2.1  | 2.2  | 2.3   |
| O3 (ppb) Average                  | 640    | 32.05  | 7.8    | -     | 9.6        | 20.3  | 26.2 | 33.8   | 38.4 | 41.3 | 45.3  |
| NO2 (ppb) Average                 | 637    | 2.83   | 2.2    | -     | 0.3        | 0.7   | 1.2  | 2.4    | 3.8  | 5.5  | 21    |
| NO (ppb) Average                  | 637    | 0.43   | 0.9    | -     | 0          | 0     | 0    | 0.1    | 0.4  | 1.1  | 7.8   |
| NOX (ppb) Average                 | 637    | 3.26   | 2.6    | -     | 0.3        | 0.8   | 1.4  | 2.6    | 4.4  | 6.3  | 28.1  |
| PM2.5 (ug/m3) Average             | 671    | 3.75   | 2.6    | -     | 0.5        | 1.3   | 2    | 3.2    | 4.8  | 6.6  | 21.6  |
| Temperature 2 m (C) Average       | 672    | -12.36 | 11.1   | -     | -39.1      | -29.5 | -19  | -11.9  | -2.4 | 1.4  | 5.3   |
| Relative Humidity (%) Average     | 672    | 70.54  | 12.4   | -     | 33         | 51.7  | 63.6 | 72.3   | 78.8 | 85.1 | 96.4  |
| Wind Speed 10 m (km/h) Average    | 670    | 6.9    | 4      | -     | 0          | 2     | 3    | 6      | 10   | 13   | 22    |
| Wind Direction 10 m (deg) Average | 670    | -      | -      | -     | -          | -     | -    | -      | -    | -    | -     |

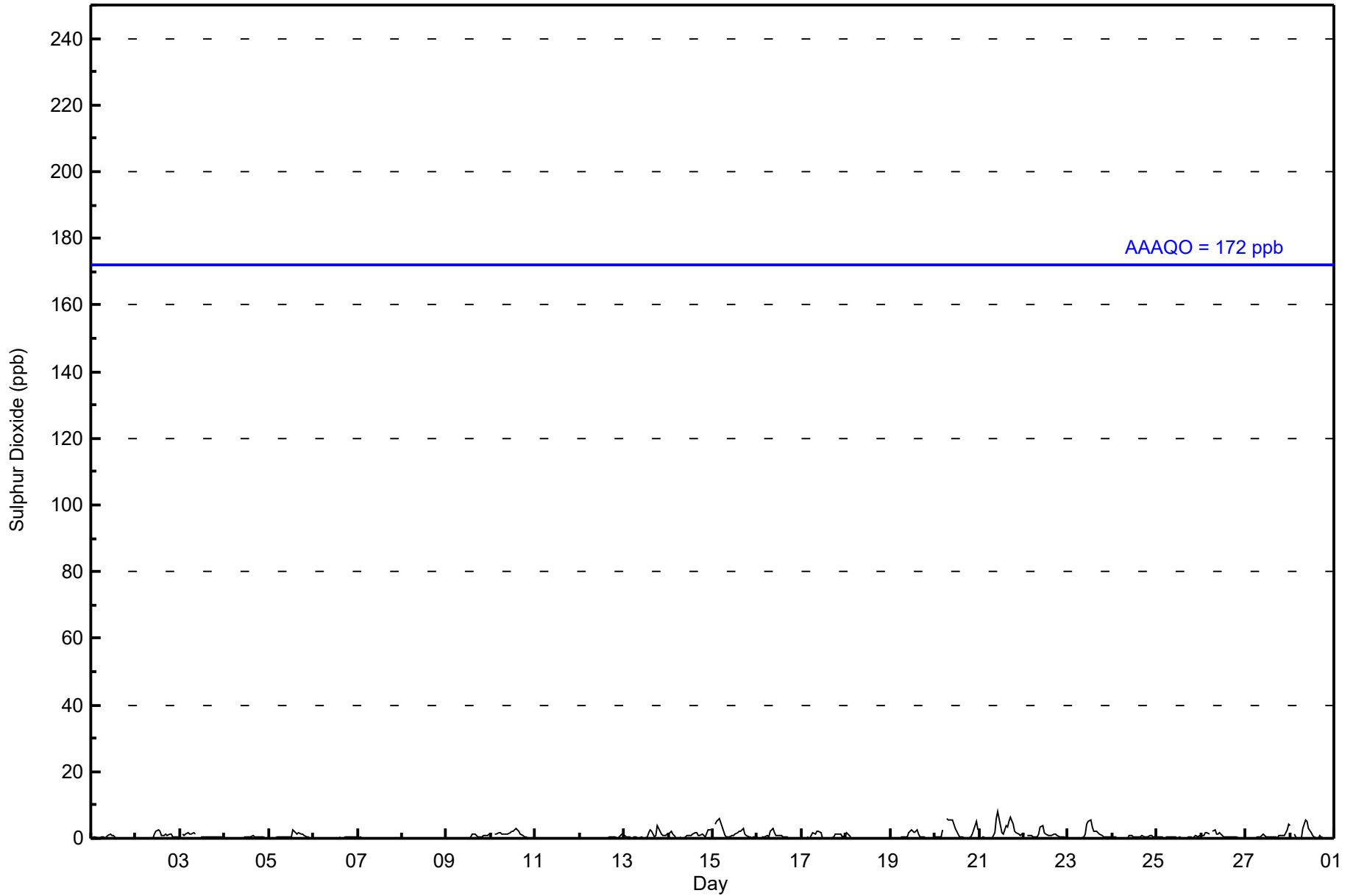
WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - CONKLIN (AMS 21)  
FEBRUARY 2023

OPERATIONAL NOTES

| Parameter                   | Period<br>Start   | Period<br>End     | Duration<br>(Hours) | Notes   |
|-----------------------------|-------------------|-------------------|---------------------|---|
| NO2, SO2, THC/NMHC/CH4, TRS | 03 Feb 2023 10:00 | 03 Feb 2023 11:00 | 2                   | Maintenance - sample manifold cleaned             |
| Wind Speed, Wind Direction  | 08 Feb 2023 10:00 | 08 Feb 2023 10:00 | 1                   | Maintenance - station operator activities         |
| Wind Speed, Wind Direction  | 14 Feb 2023 08:00 | 14 Feb 2023 08:00 | 1                   | Flat line in sensor output signal - Sensor frozen |



| Number of Exceedences (AAAQO):   |                               | 1-hr: 0  | 24-hr: 0 | Hours in Service: 672 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                                |     | 672 |     |     |     |               |               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
|--|-------------------------------|--|----------|-----------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------------------------------|-----|-----|-----|-----|-----|---------------|---------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----------------|--|
| Maximum Value: 8.0 ppb on Feb 21 11:00                                       |                               | Maximum Daily Average: 2.4 ppb on Feb 21   |          |                       |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Hours of Data: 639             |     |     |     |     |     |               |               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| Minimum Value: 0.0 ppb on Feb 1 21:00  |                               | Minimum Daily Average: 0.0 ppb on Feb 11   |          |                       |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Hours of Missing Data: 33      |     |     |     |     |     |               |               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| Maximum Diurnal Average: 1.5 ppb at hour 11                                  |                               | Minimum Diurnal Average: 0.5 ppb at hour 21  |          |                       |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Hours of Calibration: 31       |     |     |     |     |     |               |               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| Monthly Average: 0.77 ppb  |                               | Percentiles: P <sub>1</sub> = 0.0 P <sub>10</sub> = 0.0 Q <sub>1</sub> = 0.1 Median = 0.3 Q <sub>3</sub> = 1.0 P <sub>90</sub> = 2.0 P <sub>99</sub> = 5.6 |          |                       |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Percent Operational Time: 99.7 |     |     |     |     |     |               |               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| Day  | Hourly Period Ending At (MST) |  |          |                       |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                                |     |     |     |     |     | Daily Average | Daily Maximum |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
|  | 1                             | 2  | 3        | 4                     | 5   | 6   | 7   | 8   | 9   | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19                             | 20  | 21  | 22  | 23  | 24  |               |               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 1-Feb  | 0.2                           | 0.2  | 0.3      | 0.2                   | Z   | 0.6 | 0.4 | 0.1 | 0.3 | 1.0 | 1.5 | 0.8 | 0.7 | 0.1 | 0.1 | 0.2 | 0.1 | 0.1 | 0.1                            | 0.1 | 0.0 | 0.1 | 0.1 | 0.1 | 0.3           | 1.5           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 2-Feb  | 0.0                           | 0.1  | 0.1      | 0.1                   | 0.1 | Z   | 0.1 | 0.0 | 0.0 | 0.0 | 1.2 | 2.1 | 2.4 | 2.3 | 0.9 | 1.0 | 1.4 | 1.0 | 1.1                            | 1.2 | 0.5 | 0.5 | 0.5 | 0.6 | 0.7           | 2.4           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 3-Feb  | Z                             | 1.1  | 1.0      | 1.3                   | 1.6 | 1.1 | 1.4 | 1.7 | 1.3 | M   | M   | 0.5 | 0.5 | 0.6 | 0.4 | 0.3 | 0.2 | 0.2 | 0.2                            | 0.3 | 0.3 | 0.2 | 0.2 | 0.3 | 0.7           | 1.7           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 4-Feb  | 0.1                           | Z  | 0.2      | 0.1                   | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.3 | 0.3 | 0.6 | 0.9 | 0.5 | 0.2 | 0.5                            | 0.4 | 0.4 | 0.3 | 0.1 | 0.0 | 0.3           | 0.9           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 5-Feb  | 0.0                           | 0.0  | Z        | 0.0                   | 0.3 | 0.2 | 0.3 | 0.3 | 0.5 | 0.6 | 0.6 | 0.4 | 0.5 | 2.6 | 1.6 | 1.4 | 1.8 | 1.3 | 1.2                            | 0.9 | 0.5 | 0.4 | 0.2 | 0.2 | 0.7           | 2.6           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 6-Feb  | 0.1                           | 0.1  | 0.1      | Z                     | 0.1 | 0.1 | 0.1 | 0.0 | 0.1 | 0.1 | 0.2 | C   | C   | C   | 0.3 | 0.2 | 0.2 | 0.3 | 0.3                            | 0.2 | 0.3 | 0.3 | 0.2 | 0.3 | 0.2           | 0.3           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 7-Feb  | 0.2                           | 0.3  | 0.2      | 0.2                   | Z   | 0.1 | 0.1 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.1                            | 0.1 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1           | 0.3           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 8-Feb  | 0.1                           | 0.1  | 0.0      | 0.0                   | 0.0 | Z   | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0                            | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.0           | 0.1           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 9-Feb  | Z                             | 0.2  | 0.1      | 0.0                   | 0.0 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.5 | 1.2 | 1.5 | 0.9 | 0.6 | 0.5                            | 0.4 | 0.8 | 0.7 | 1.1 | 1.2 | 0.5           | 1.5           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 10-Feb   | 1.4                           | Z  | 1.1      | 1.4                   | 1.8 | 1.6 | 1.4 | 1.3 | 1.1 | 1.4 | 1.9 | 2.1 | 2.1 | 3.0 | 2.5 | 2.2 | 1.2 | 0.8 | 0.4                            | 0.3 | 0.2 | 0.1 | 0.0 | 0.0 | 1.3           | 3.0           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 11-Feb   | 0.0                           | 0.0  | Z        | 0.1                   | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0                            | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0           | 0.1           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 12-Feb   | 0.0                           | 0.0  | 0.0      | Z                     | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.4 | 0.6 | 0.3                            | 0.3 | 0.2 | 0.3 | 1.0 | 1.5 | 0.2           | 1.5           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 13-Feb   | 0.7                           | 0.4  | 0.4      | 0.4                   | Z   | 0.3 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 1.5 | 2.4 | 2.0 | 0.6 | 1.0 | 3.7 | 2.1                            | 1.3 | 0.6 | 1.0 | 1.4 | 0.9 | 3.7           |               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 14-Feb   | 1.5                           | 2.0  | 1.4      | 0.8                   | 0.6 | Z   | 0.2 | 0.1 | 0.2 | 0.3 | 1.0 | 0.8 | 0.8 | 1.1 | 1.5 | 0.9 | 1.0 | 1.2 | 0.7                            | 0.4 | 2.5 | 2.6 | 2.4 | 1.1 | 2.6           |               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 15-Feb   | Z                             | 4.1  | 5.2      | 5.7                   | 4.8 | 3.6 | 0.9 | 0.5 | 0.6 | 0.6 | 0.9 | 1.0 | 1.1 | 1.8 | 2.1 | 2.2 | 3.1 | 1.3 | 0.8                            | 0.3 | 0.3 | 0.2 | 0.2 | 0.3 | 1.8           | 5.7           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 16-Feb   | 0.4                           | Z  | 0.4      | 0.4                   | 0.5 | 0.8 | 0.6 | 2.2 | 2.8 | 1.8 | 0.8 | 0.8 | 0.7 | 0.6 | 0.5 | 0.3 | 0.2 | 0.1 | 0.1                            | 0.2 | 0.1 | 0.1 | 0.1 | 0.7 | 2.8           |               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 17-Feb   | 0.1                           | 0.1  | Z        | 0.4                   | 0.1 | 0.9 | 1.6 | 1.4 | 1.9 | 2.1 | 1.6 | 0.2 | 0.1 | 0.0 | 0.1 | 0.0 | 0.1 | 0.6 | 1.3                            | 1.3 | 1.4 | 1.1 | 0.6 | 1.0 | 0.8           | 2.1           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 18-Feb   | 1.5                           | 1.1  | 0.4      | Z                     | 0.2 | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 | 0.1 | 0.0 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1                            | 0.1 | 0.0 | 0.1 | 0.0 | 0.1 | 0.2           | 1.5           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 19-Feb   | 0.0                           | 0.0  | 0.1      | 0.1                   | Z   | 0.1 | 0.3 | 0.2 | 0.2 | 0.4 | 1.6 | 2.3 | 2.1 | 1.8 | 2.6 | 1.2 | 0.2 | 0.3 | 0.3                            | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.6           | 2.6           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 20-Feb   | 0.3                           | 0.2  | 0.3      | 0.6                   | 2.4 | Z   | 5.9 | 5.7 | 5.7 | 5.4 | 4.2 | 2.8 | 1.2 | 0.3 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2                            | 0.6 | 1.5 | 2.3 | 5.2 | 2.3 | 2.1           | 5.9           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 21-Feb   | Z                             | 0.4  | 0.2      | 0.1                   | 0.1 | 0.2 | 0.1 | 0.2 | 1.7 | 6.0 | 8.0 | 4.0 | 1.6 | 1.2 | 3.7 | 3.6 | 5.2 | 6.5 | 4.2                            | 2.3 | 1.5 | 1.1 | 1.0 | 1.2 | 2.4           | 8.0           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 22-Feb   | 1.3                           | Z  | 0.8      | 0.7                   | 0.7 | 0.6 | 0.6 | 0.6 | 1.4 | 3.3 | 3.8 | 1.9 | 1.4 | 1.0 | 1.1 | 1.0 | 1.1 | 1.3 | 0.7                            | 0.5 | 0.4 | 0.3 | 0.2 | 0.2 | 1.1           | 3.8           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 23-Feb   | 0.2                           | 0.2  | Z        | 0.1                   | 0.1 | 0.2 | 0.1 | 0.1 | 0.2 | 1.1 | 4.3 | 4.9 | 5.5 | 3.5 | 2.3 | 1.9 | 1.6 | 1.3 | 0.8                            | 0.5 | 0.3 | 0.2 | 0.3 | 0.4 | 1.3           | 5.5           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 24-Feb   | 0.4                           | 0.2  | 0.3      | Z                     | 0.2 | 0.2 | 0.1 | 0.1 | 0.1 | 0.8 | 0.8 | 0.4 | 0.3 | 0.3 | 0.3 | 0.6 | 0.7 | 0.6 | 0.5                            | 0.6 | 0.7 | 0.9 | 0.4 | 0.5 | 0.4           | 0.9           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 25-Feb   | 0.6                           | 0.5  | 0.5      | 0.4                   | Z   | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.3 | 0.2 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 | 0.3 | 0.3                            | 0.2 | 0.3 | 1.0 | 0.6 | 0.7 | 0.4           | 1.0           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 26-Feb   | 0.7                           | 1.0  | 1.7      | 1.7                   | 1.4 | Z   | 2.2 | 2.4 | 1.2 | 1.4 | 1.8 | 0.8 | 0.4 | 0.6 | 0.6 | 0.4 | 0.3 | 0.3 | 0.4                            | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 | 0.9           | 2.4           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 27-Feb   | Z                             | 0.2  | 0.1      | 0.1                   | 0.1 | 0.2 | 0.4 | 0.3 | 0.4 | 1.1 | 0.9 | 0.6 | 0.6 | 0.6 | 0.3 | 0.5 | 0.3 | 0.2 | 0.7                            | 0.7 | 1.0 | 0.9 | 2.6 | 4.2 | 0.7           | 4.2           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 28-Feb   | 3.7                           | Z  | 1.4      | 0.6                   | 0.1 | 0.0 | 0.0 | 3.1 | 5.5 | 4.9 | 2.9 | 1.9 | 0.9 | 0.4 | 0.2 | 0.1 | 0.7 | 0.5 | 0.2                            | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.2           | 5.5           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
|  |                               |  |          |                       |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                                |     |     |     |     | 0.6 | 0.5           | 0.7           | 0.7 | 0.7 | 0.5 | 0.6 | 0.8 | 0.9 | 1.2 | 1.5 | 1.1 | 0.9 | 0.9 | 0.9 | 0.8 | 0.8 | 0.7 | 0.7 | 0.5 | 0.5 | 0.5 | 0.7 | 0.7 | Diurnal Average |  |
|  |                               |  |          |                       |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                                |     |     |     |     | 3.7 | 4.1           | 5.2           | 5.7 | 4.8 | 3.6 | 5.9 | 5.7 | 5.7 | 6.0 | 8.0 | 4.9 | 5.5 | 3.5 | 3.7 | 3.6 | 5.2 | 6.5 | 4.2 | 2.3 | 1.5 | 2.5 | 5.2 | 4.2 | Diurnal Maximum |  |
| Z - zerospan      C - Calibration      M - Maintenance                       |                               |  |          |                       |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                                |     |     |     |     |     |               |               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 172 ppb    24-hr 48 ppb |                               |  |          |                       |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                                |     |     |     |     |     |               |               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Sulphur Dioxide (SO<sub>2</sub>) - ppb**  
**Conklin - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 10                            | 639                    | 100.00   | 100.00              |
| 11 - 20                           | 0                      | 0.00     | 100.00              |
| 21 - 60                           | 0                      | 0.00     | 100.00              |
| 61 - 110                          | 0                      | 0.00     | 100.00              |
| 111 - 172                         | 0                      | 0.00     | 100.00              |
| > 172                             | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 639

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Sulphur Dioxide (SO<sub>2</sub>) - ppb  
Conklin - February 2023**

| <b>Concentration<br/>Ranges (ppb)</b> | <b>Wind Direction</b> |            |           |            |           |            |           |            |           |            |           |            |           |            |           |            | <b>Totals</b> |
|---------------------------------------|-----------------------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|---------------|
|                                       | <b>N</b>              | <b>NNE</b> | <b>NE</b> | <b>ENE</b> | <b>E</b>  | <b>ESE</b> | <b>SE</b> | <b>SSE</b> | <b>S</b>  | <b>SSW</b> | <b>SW</b> | <b>WSW</b> | <b>W</b>  | <b>WNW</b> | <b>NW</b> | <b>NNW</b> |               |
| 0 - 10                                | 36                    | 30         | 15        | 12         | 14        | 18         | 34        | 55         | 64        | 63         | 66        | 33         | 35        | 34         | 57        | 71         | 637           |
| 11 - 20                               | 0                     | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0             |
| 21 - 60                               | 0                     | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0             |
| 61 - 110                              | 0                     | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0             |
| 111 - 172                             | 0                     | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0             |
| > 172                                 | 0                     | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0             |
| <b>Totals</b>                         | <b>36</b>             | <b>30</b>  | <b>15</b> | <b>12</b>  | <b>14</b> | <b>18</b>  | <b>34</b> | <b>55</b>  | <b>64</b> | <b>63</b>  | <b>66</b> | <b>33</b>  | <b>35</b> | <b>34</b>  | <b>57</b> | <b>71</b>  | <b>637</b>    |

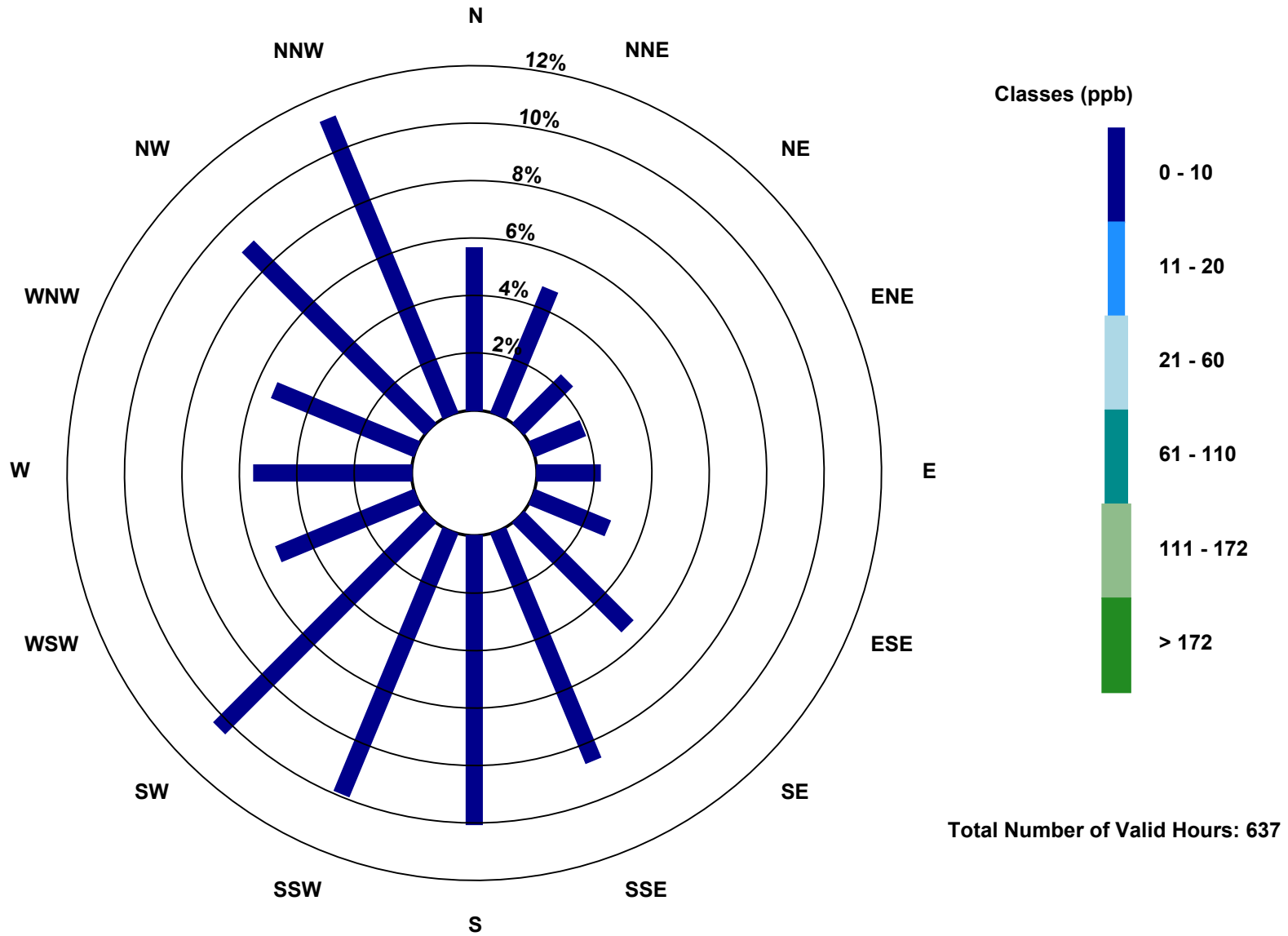
Total Number of Valid Hours: 637

Total Number of Hours: 672

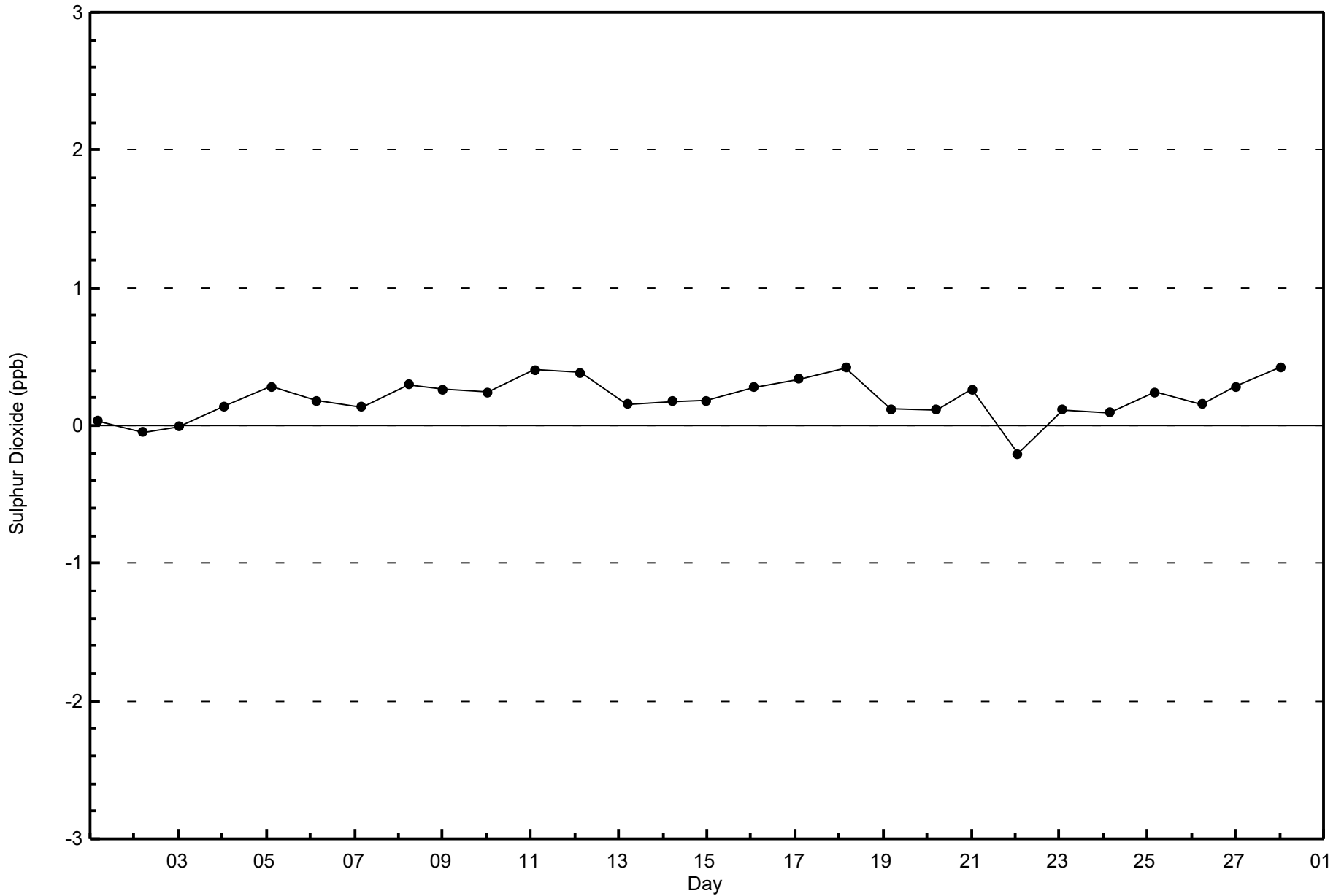


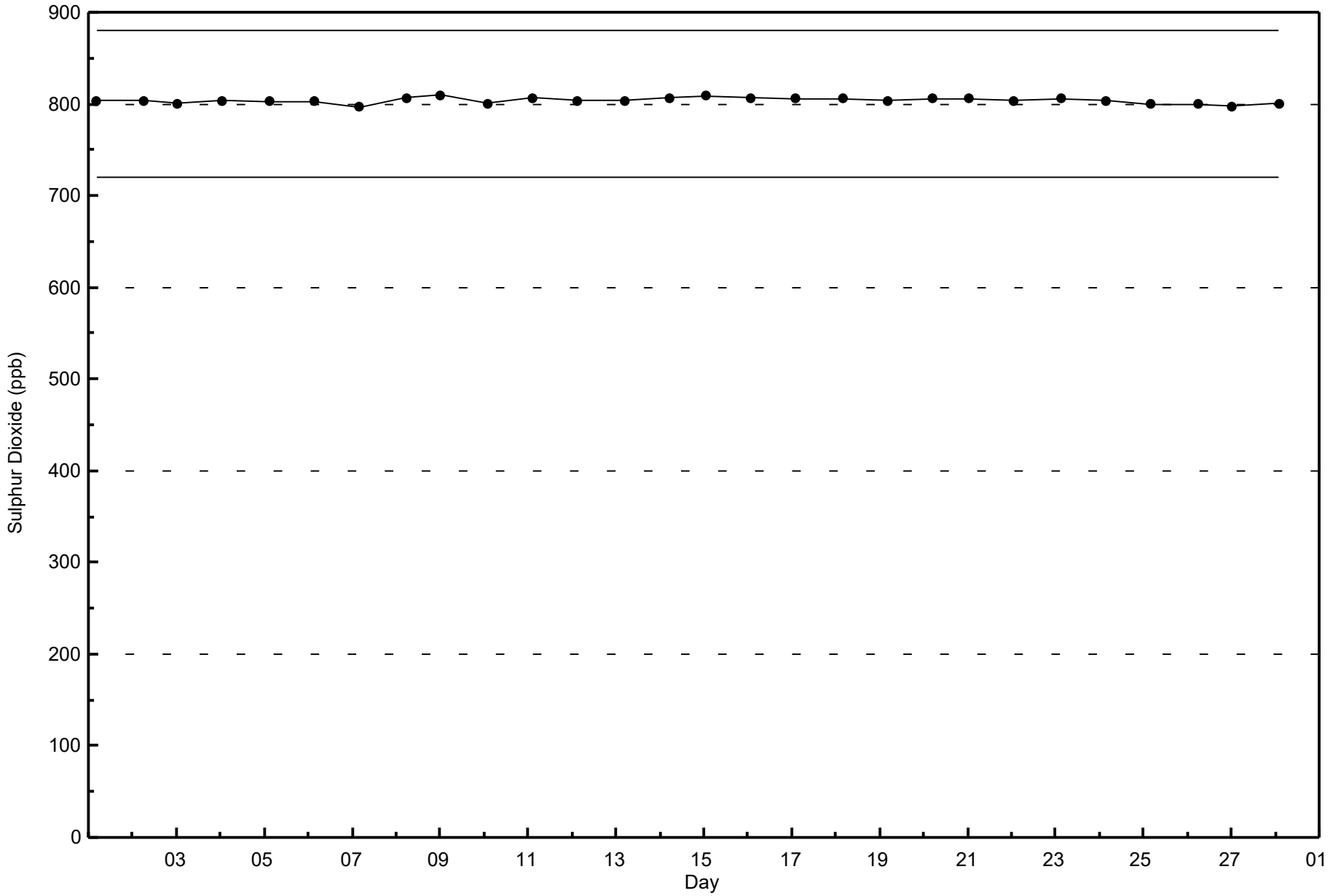
Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Sulphur Dioxide (SO<sub>2</sub>) - ppb  
Conklin











Wood Buffalo Environmental Association

Summary of Hour Averages

Total Reduced Sulphur (TRS) - ppb

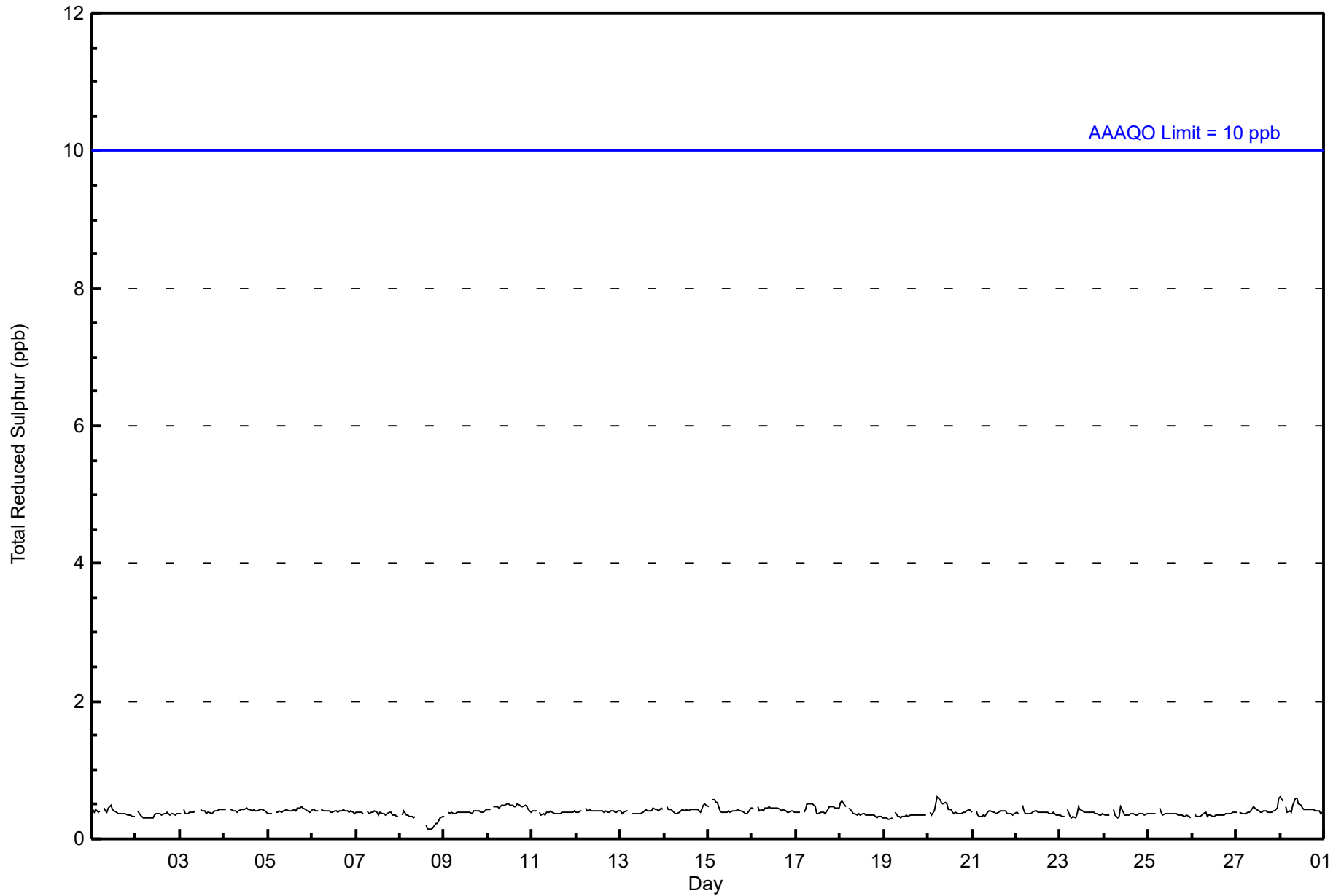
Conklin - February 2023

| Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0<br>Maximum Value: 0.6 ppb on Feb 20 06:00      Maximum Daily Average: 0.5 ppb on Feb 10 |                               | Hours in Service: 672<br>Hours of Data: 637<br>Hours of Missing Data: 35<br>Hours of Calibration: 33<br>Percent Operational Time: 99.7   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |               |               |     |
|---|-------------------------------|--|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----------------|---------------|---------------|-----|
| Minimum Value: 0.1 ppb on Feb 8 16:00<br>Maximum Diurnal Average: 0.4 ppb at hour 11<br>Monthly Average: 0.39 ppb                       |                               | Minimum Daily Average: 0.3 ppb on Feb 8<br>Minimum Diurnal Average: 0.4 ppb at hour 16<br>Percentiles: P <sub>1</sub> = 0.2 P <sub>10</sub> = 0.3 Q <sub>1</sub> = 0.4 Median = 0.4 Q <sub>3</sub> = 0.4 P <sub>90</sub> = 0.5 P <sub>99</sub> = 0.6 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |               |               |     |
| Day   | Hourly Period Ending At (MST) |  |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 | Daily Average | Daily Maximum |     |
|   | 1                             | 2  | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19  | 20  | 21  | 22  | 23  | 24              |               |               |     |
| 1-Feb   | 0.4                           | 0.4  | 0.4 | 0.4 | 0.4 | Z   | 0.5 | 0.4 | 0.4 | 0.4 | 0.5 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3             | 0.4           | 0.5           |     |
| 2-Feb   | Z                             | 0.4  | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.3 | 0.4 | 0.4             | 0.3           | 0.4           | 0.4 |
| 3-Feb   | 0.4                           | Z  | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | M   | M   | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4             | 0.4           | 0.4           | 0.4 |
| 4-Feb   | 0.4                           | 0.4  | Z   | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4             | 0.4           | 0.4           | 0.4 |
| 5-Feb   | 0.4                           | 0.4  | 0.4 | Z   | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.5 | 0.5 | 0.4 | 0.4 | 0.4             | 0.4           | 0.4           | 0.5 |
| 6-Feb   | 0.4                           | 0.4  | 0.4 | 0.4 | Z   | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4             | 0.4           | 0.4           | 0.4 |
| 7-Feb   | 0.4                           | 0.4  | 0.4 | 0.4 | 0.4 | Z   | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.3 | 0.4 | 0.3 | 0.3             | 0.4           | 0.4           | 0.4 |
| 8-Feb   | Z                             | 0.3  | 0.4 | 0.4 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | C   | C   | C   | C   | C   | 0.2 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.3 | 0.3             | 0.3           | 0.3           | 0.4 |
| 9-Feb   | 0.3                           | Z  | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4             | 0.4           | 0.4           | 0.4 |
| 10-Feb  | 0.4                           | 0.4  | Z   | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.4             | 0.4           | 0.4           | 0.5 |
| 11-Feb  | 0.4                           | 0.4  | 0.4 | Z   | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4             | 0.4           | 0.4           | 0.4 |
| 12-Feb  | 0.4                           | 0.4  | 0.4 | 0.4 | Z   | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4             | 0.4           | 0.4           | 0.4 |
| 13-Feb  | 0.4                           | 0.4  | 0.4 | 0.4 | 0.4 | Z   | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4             | 0.4           | 0.4           | 0.4 |
| 14-Feb  | Z                             | 0.5  | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.5 | 0.5             | 0.5           | 0.5           | 0.5 |
| 15-Feb  | 0.5                           | Z  | 0.6 | 0.6 | 0.5 | 0.5 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4             | 0.4           | 0.4           | 0.6 |
| 16-Feb  | 0.4                           | 0.4  | Z   | 0.5 | 0.4 | 0.4 | 0.4 | 0.4 | 0.5 | 0.5 | 0.4 | 0.5 | 0.4 | 0.4 | 0.5 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4             | 0.4           | 0.4           | 0.5 |
| 17-Feb  | 0.4                           | 0.4  | 0.4 | Z   | 0.4 | 0.4 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.5 | 0.5 | 0.5 | 0.5 | 0.4             | 0.5           | 0.5           | 0.5 |
| 18-Feb  | 0.5                           | 0.5  | 0.5 | 0.5 | Z   | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.3 | 0.4 | 0.4 | 0.3 | 0.4 | 0.3 | 0.4 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3             | 0.3           | 0.3           | 0.4 |
| 19-Feb  | 0.3                           | 0.3  | 0.3 | 0.3 | 0.3 | Z   | 0.4 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3             | 0.3           | 0.3           | 0.4 |
| 20-Feb  | Z                             | 0.4  | 0.4 | 0.4 | 0.5 | 0.6 | 0.6 | 0.5 | 0.5 | 0.5 | 0.5 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4             | 0.4           | 0.4           | 0.6 |
| 21-Feb  | 0.4                           | Z  | 0.4 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.3             | 0.4           | 0.4           | 0.4 |
| 22-Feb  | 0.4                           | 0.4  | Z   | 0.5 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4             | 0.4           | 0.4           | 0.5 |
| 23-Feb  | 0.3                           | 0.3  | 0.3 | Z   | 0.4 | 0.3 | 0.3 | 0.3 | 0.3 | 0.4 | 0.5 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.3 | 0.3             | 0.4           | 0.4           | 0.5 |
| 24-Feb  | 0.3                           | 0.4  | 0.4 | 0.3 | Z   | 0.4 | 0.3 | 0.3 | 0.3 | 0.5 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.3 | 0.4 | 0.4 | 0.4 | 0.3             | 0.4           | 0.4           | 0.5 |
| 25-Feb  | 0.4                           | 0.4  | 0.4 | 0.4 | 0.4 | Z   | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3             | 0.3           | 0.3           | 0.4 |
| 26-Feb  | Z                             | 0.4  | 0.3 | 0.3 | 0.3 | 0.3 | 0.4 | 0.4 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4             | 0.4           | 0.4           | 0.4 |
| 27-Feb  | 0.4                           | Z  | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.5 | 0.5 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4             | 0.4           | 0.6           | 0.6 |
| 28-Feb  | 0.6                           | 0.6  | Z   | 0.5 | 0.4 | 0.4 | 0.4 | 0.5 | 0.6 | 0.6 | 0.5 | 0.5 | 0.5 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4             | 0.4           | 0.4           | 0.6 |
|   |                               |  |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Diurnal Average |               |               |     |
|   |                               |  |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Diurnal Maximum |               |               |     |
| Z - zerospan      C - Calibration      M - Maintenance<br>Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 10 ppb    24-hr 3 ppb    |                               |  |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |               |               |     |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Total Reduced Sulphur (TRS) - ppb**  
**Conklin - February 2023**





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Total Reduced Sulphur (TRS) - ppb**  
**Conklin - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 2                             | 637                    | 100.00   | 100.00              |
| 3 - 4                             | 0                      | 0.00     | 100.00              |
| 5 - 7                             | 0                      | 0.00     | 100.00              |
| 8 - 11                            | 0                      | 0.00     | 100.00              |
| > 11                              | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 637

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Total Reduced Sulphur (TRS) - ppb  
Conklin - February 2023**

| <b>Concentration<br/>Ranges (ppb)</b> | <b>Wind Direction</b> |     |    |     |    |     |    |     |    |     |    |     |    |     |    |     | <b>Totals</b> |
|---------------------------------------|-----------------------|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|---------------|
|                                       | N                     | NNE | NE | ENE | E  | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |               |
| 0 - 2                                 | 40                    | 29  | 16 | 13  | 14 | 18  | 34 | 55  | 62 | 63  | 67 | 35  | 36 | 30  | 56 | 68  | 636           |
| 3 - 4                                 | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| 5 - 7                                 | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| 8 - 11                                | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| > 11                                  | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| <b>Totals</b>                         | 40                    | 29  | 16 | 13  | 14 | 18  | 34 | 55  | 62 | 63  | 67 | 35  | 36 | 30  | 56 | 68  | 636           |

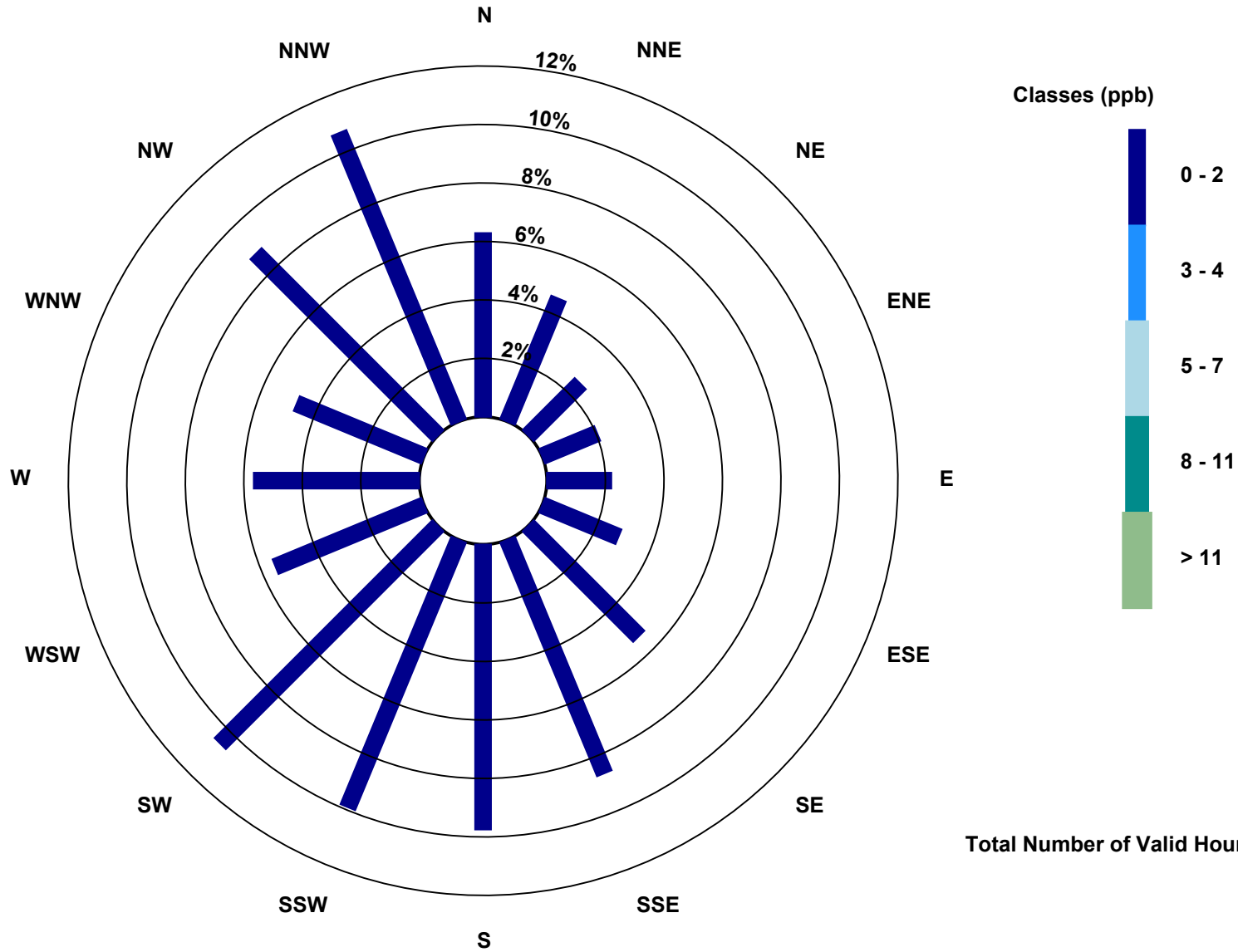
Total Number of Valid Hours: 636

Total Number of Hours: 672

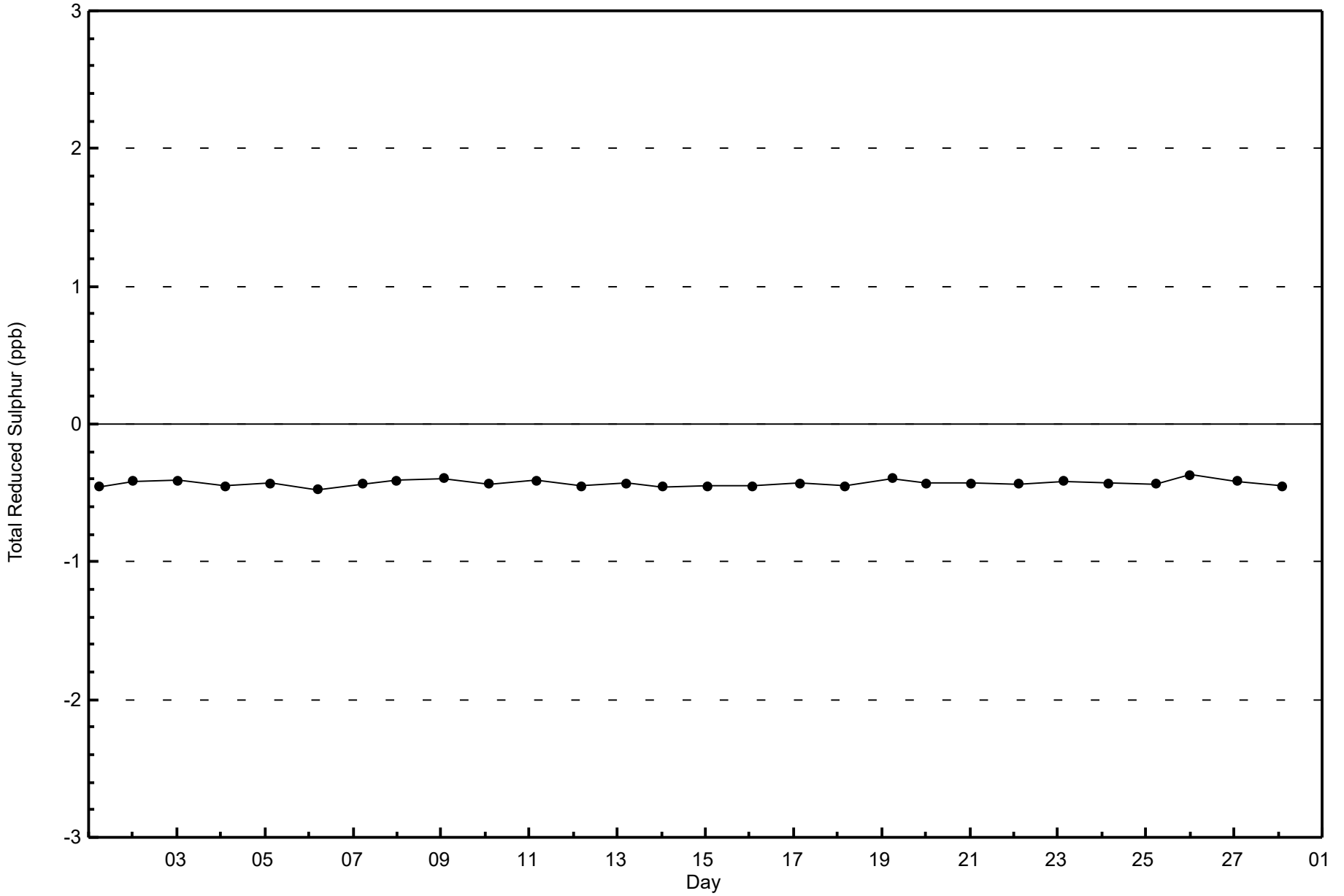


Wood Buffalo Environmental Association  
Wind Rose Feb 2023

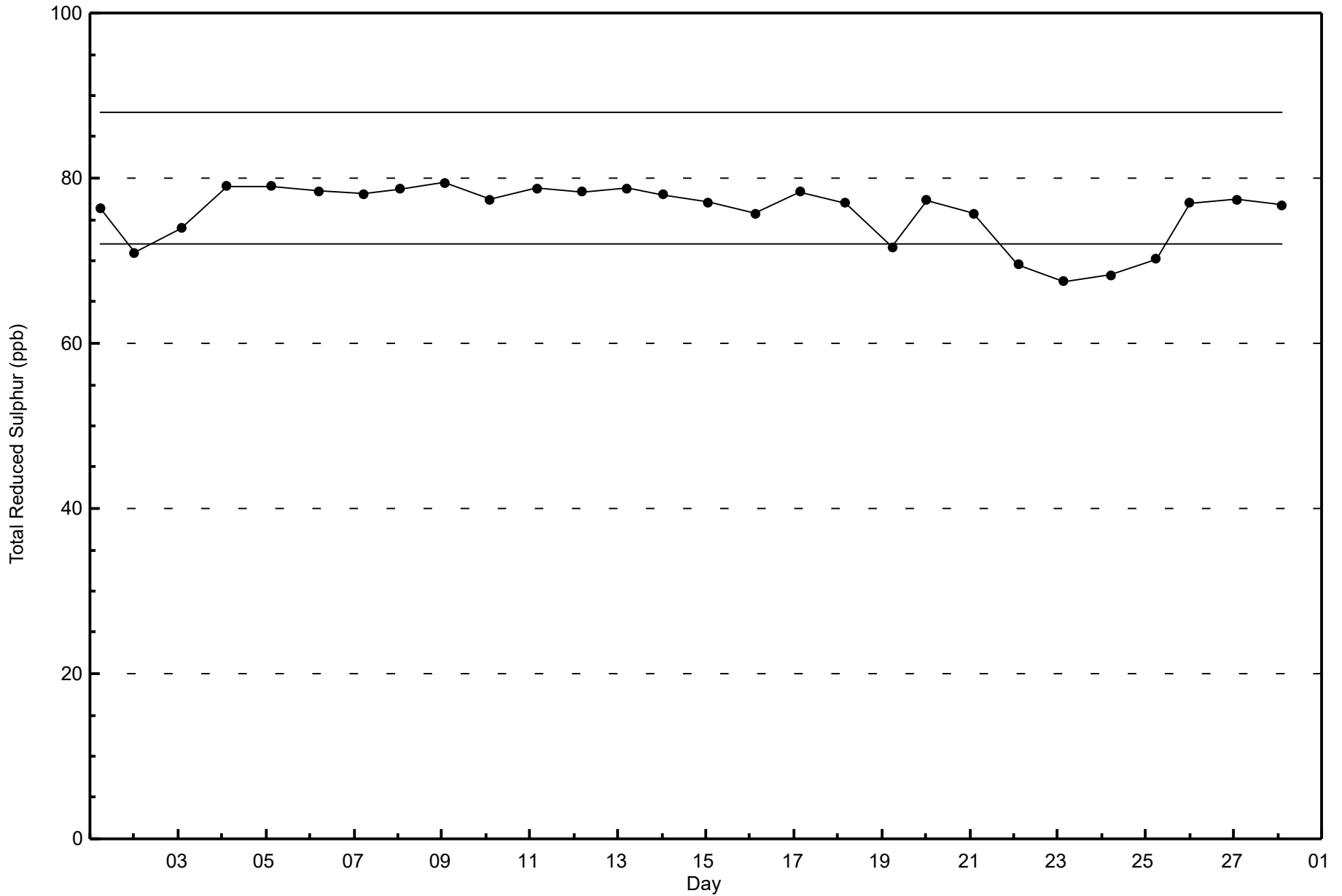
Total Reduced Sulphur (TRS) - ppb  
Conklin



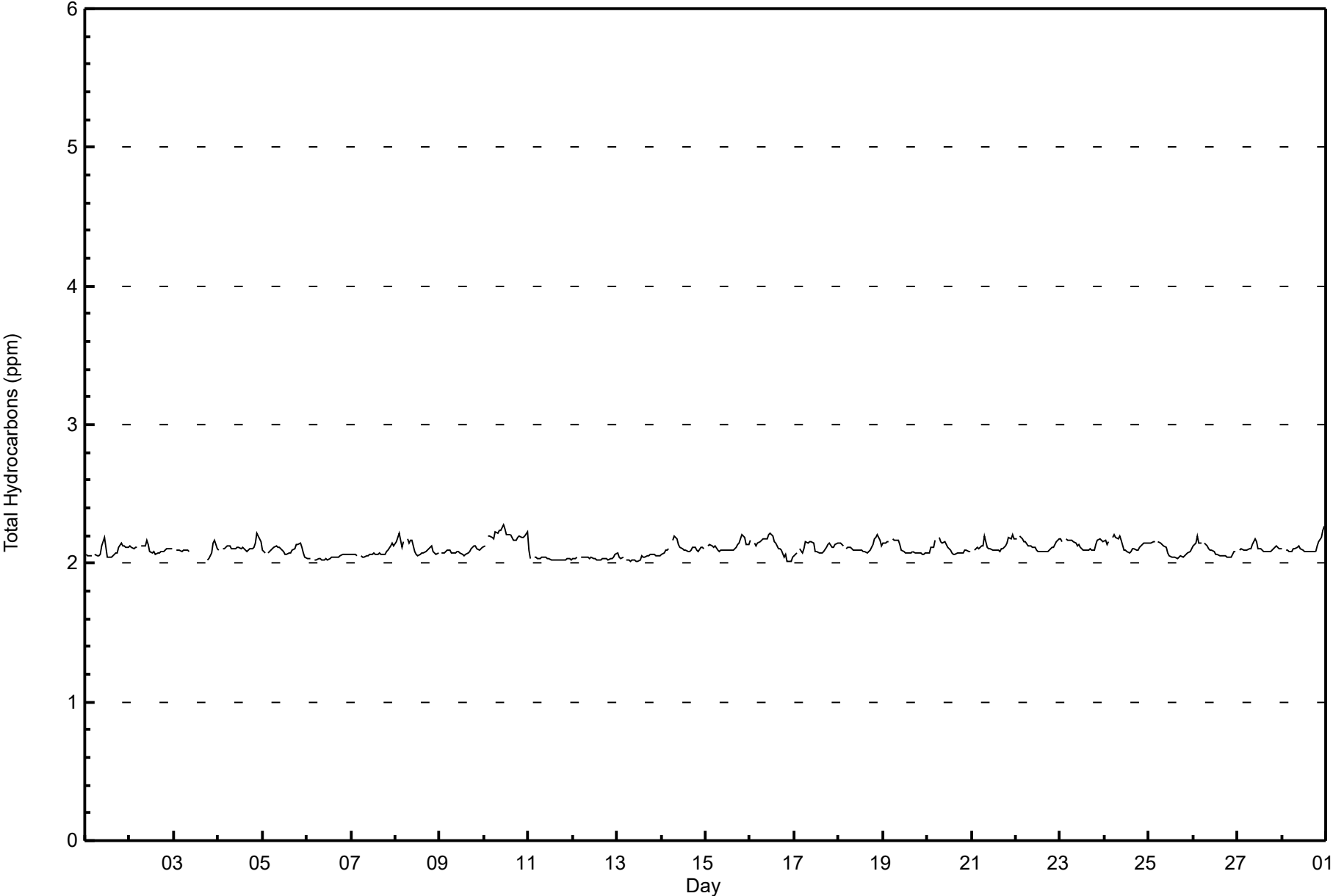
Total Number of Valid Hours: 636













**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Total Hydrocarbons (THC) - ppm**  
**Conklin - February 2023**

| <b>Concentration Ranges (ppm)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 2.0                           | 96                     | 15.09    | 15.09               |
| 2.1 - 3.0                         | 540                    | 84.91    | 100.00              |
| 3.1 - 10.0                        | 0                      | 0.00     | 100.00              |
| > 10.0                            | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 636

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Total Hydrocarbons (THC) - ppm  
Conklin - February 2023**

| <b>Concentration<br/>Ranges (ppm)</b> | <b>Wind Direction</b> |     |    |     |    |     |    |     |    |     |    |     |    |     |    |     | <b>Totals</b> |
|---------------------------------------|-----------------------|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|---------------|
|                                       | N                     | NNE | NE | ENE | E  | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |               |
| 0 - 2.0                               | 0                     | 0   | 1  | 2   | 0  | 0   | 0  | 1   | 4  | 7   | 18 | 22  | 20 | 6   | 7  | 8   | 96            |
| 2.1 - 3.0                             | 36                    | 30  | 14 | 10  | 14 | 18  | 34 | 54  | 60 | 56  | 48 | 11  | 17 | 28  | 46 | 62  | 538           |
| 3.1 - 10.0                            | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| > 10.0                                | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| <b>Totals</b>                         | 36                    | 30  | 15 | 12  | 14 | 18  | 34 | 55  | 64 | 63  | 66 | 33  | 37 | 34  | 53 | 70  | 634           |

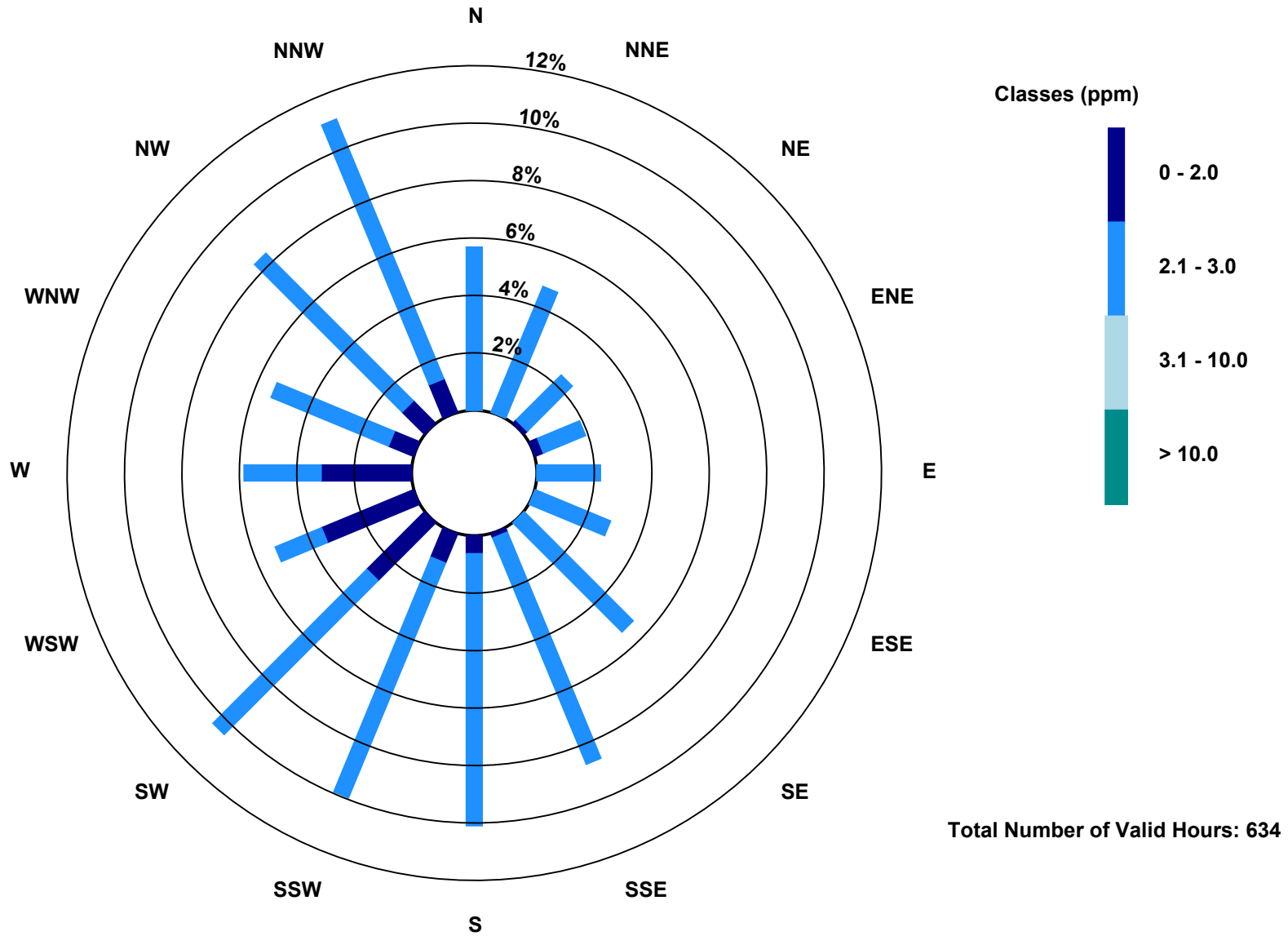
Total Number of Valid Hours: 634

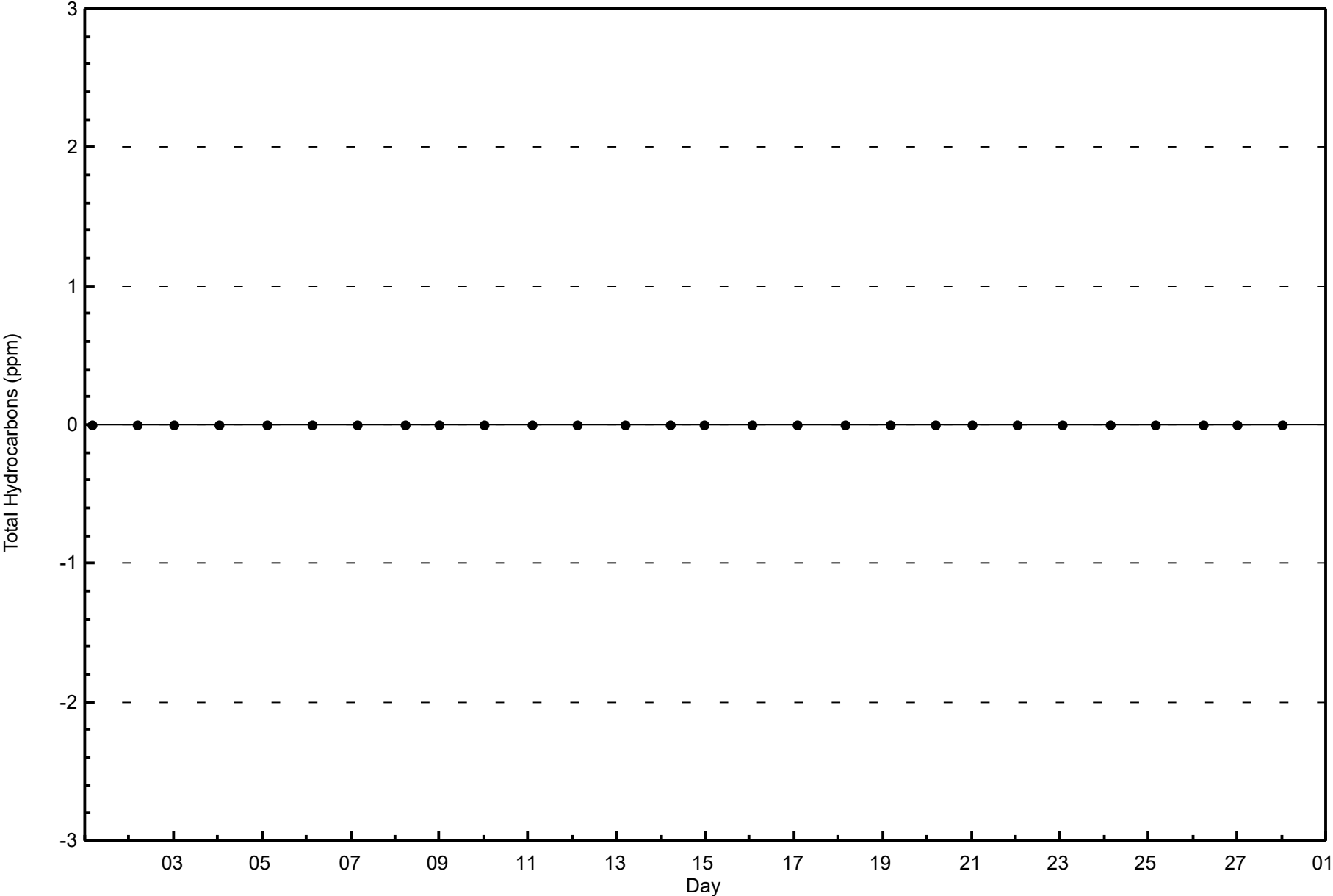
Total Number of Hours: 672

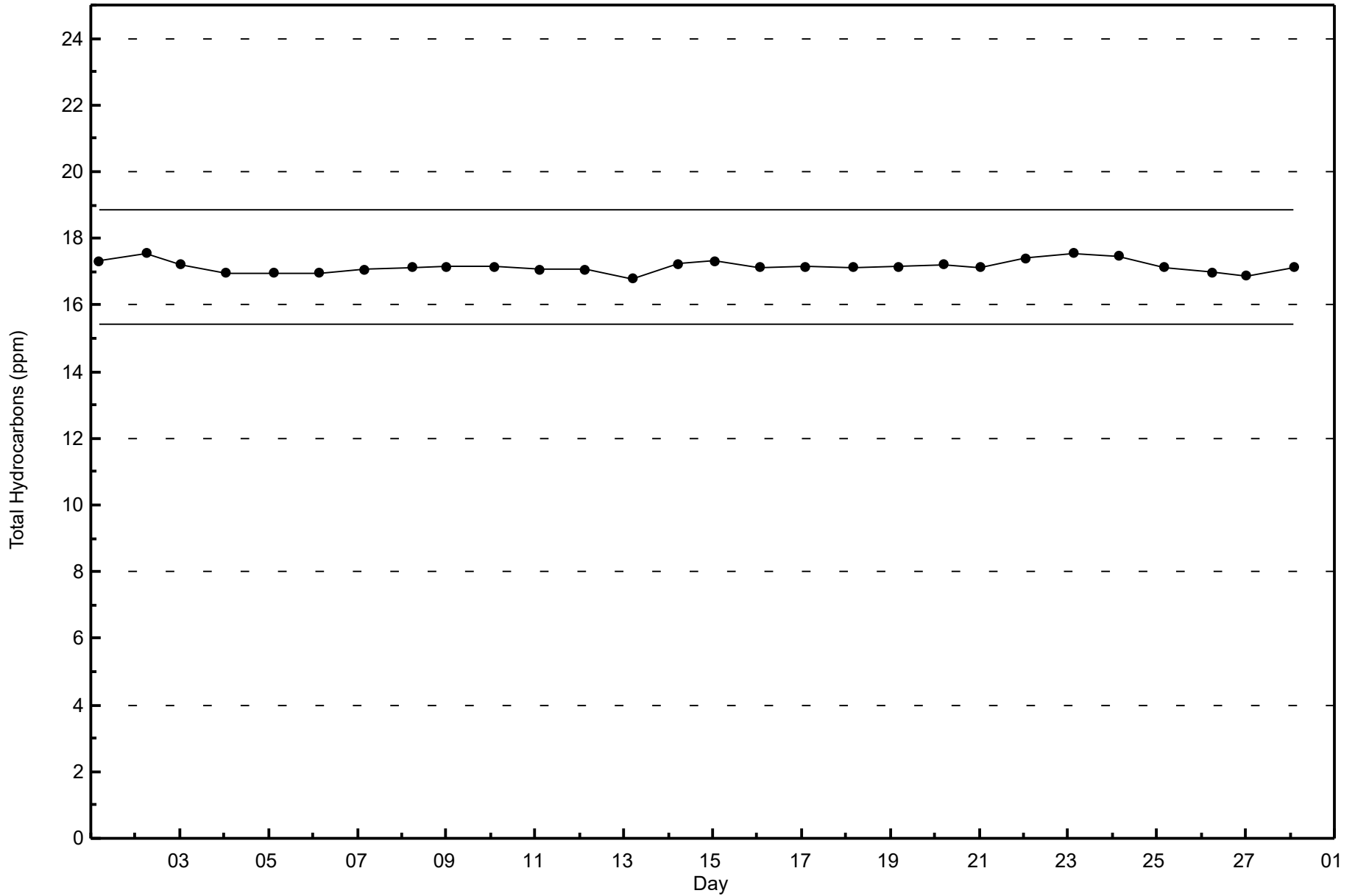


Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Total Hydrocarbons (THC) - ppm  
Conklin







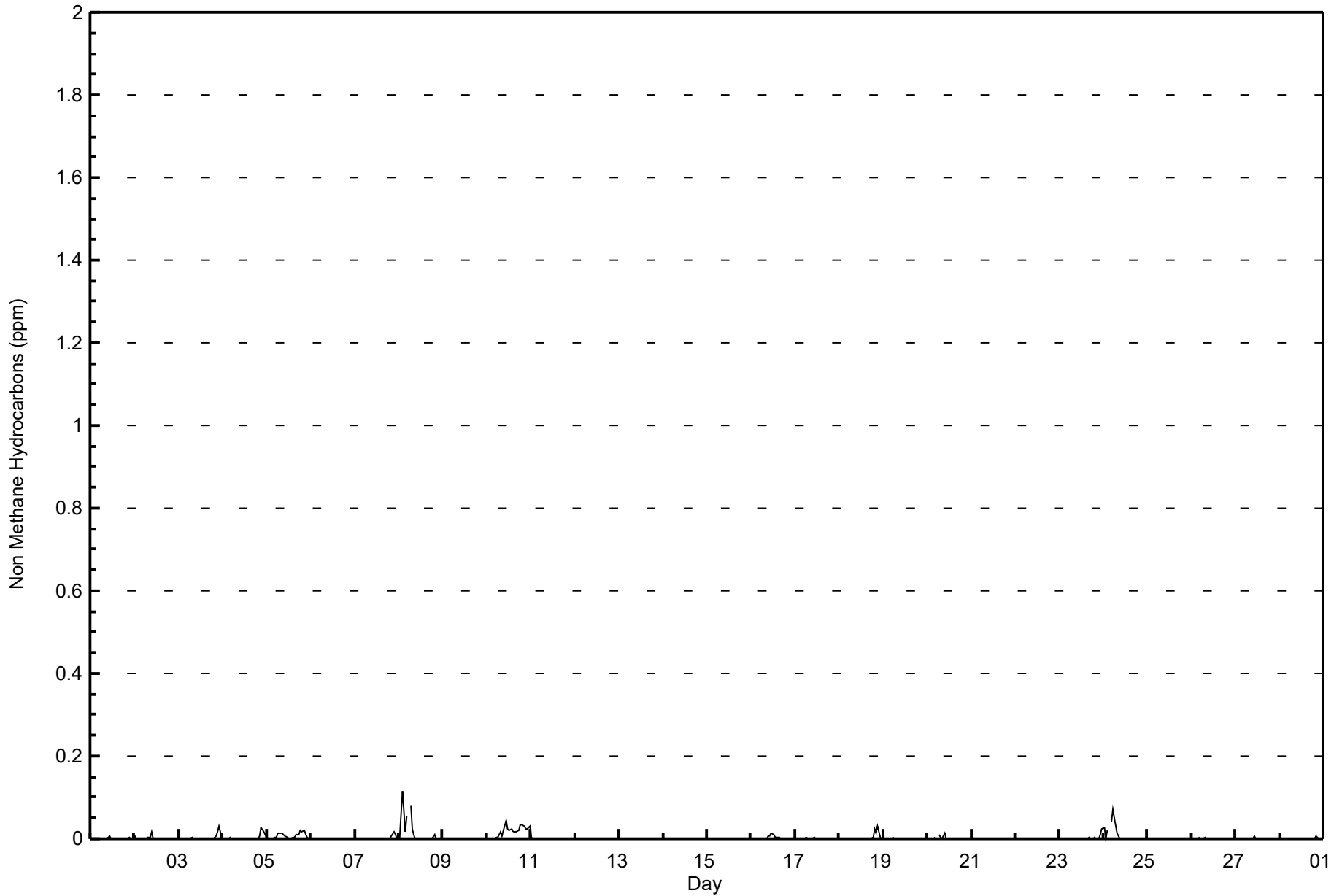




Summary of Hour Averages

Conklin - February 2023

| Maximum Value: 0.116 ppm on Feb 8 03:00  |                               | Maximum Daily Average: 0.018 ppm on Feb 10   |       | Hours in Service: 672          |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |               |               |       |
|--|-------------------------------|--|-------|--------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-----------------|---------------|---------------|-------|
| Minimum Value: 0.000 ppm on Feb 1 01:00  |                               | Minimum Daily Average: 0.000 ppm on Feb 25   |       | Hours of Data: 636             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |               |               |       |
| Maximum Diurnal Average: 0.006 ppm at hour 3   |                               | Minimum Diurnal Average: 0.001 ppm at hour 16  |       | Hours of Missing Data: 36      |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |               |               |       |
| Monthly Average: 0.003 ppm   |                               | Percentiles: P <sub>1</sub> = 0.0 P <sub>10</sub> = 0.0 Q <sub>1</sub> = 0.0 Median = 0.0 Q <sub>3</sub> = 0.0 P <sub>90</sub> = 0.0 P <sub>99</sub> = 0.0 |       | Hours of Calibration: 34       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |               |               |       |
|  |                               |  |       | Percent Operational Time: 99.7 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |               |               |       |
| Day  | Hourly Period Ending At (MST) |  |       |                                |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 | Daily Average | Daily Maximum |       |
|  | 1                             | 2  | 3     | 4                              | 5     | 6     | 7     | 8     | 9     | 10    | 11    | 12    | 13    | 14    | 15    | 16    | 17    | 18    | 19    | 20    | 21    | 22    | 23    | 24              |               |               |       |
| 1-Feb  | 0.000                         | 0.000  | 0.000 | 0.000                          | Z     | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.006 | 0.001 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.004 | 0.000 | 0.000           | 0.000         | 0.000         | 0.006 |
| 2-Feb  | 0.006                         | 0.000  | 0.000 | 0.002                          | 0.000 | Z     | 0.000 | 0.002 | 0.003 | 0.016 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000           | 0.000         | 0.000         | 0.016 |
| 3-Feb  | Z                             | 0.000  | 0.000 | 0.000                          | 0.000 | 0.000 | 0.000 | 0.002 | 0.000 | M     | M     | 0.000 | C     | C     | C     | C     | C     | C     | 0.000 | 0.000 | 0.007 | 0.016 | 0.031 | 0.002           | --            | 0.031         |       |
| 4-Feb  | 0.000                         | Z  | 0.001 | 0.001                          | 0.002 | 0.000 | 0.001 | 0.000 | 0.000 | 0.000 | 0.000 | 0.001 | 0.000 | 0.001 | 0.001 | 0.001 | 0.000 | 0.000 | 0.000 | 0.001 | 0.007 | 0.029 | 0.017 | 0.011           | 0.003         | 0.029         |       |
| 5-Feb  | 0.003                         | 0.001  | Z     | 0.000                          | 0.002 | 0.005 | 0.013 | 0.013 | 0.013 | 0.010 | 0.006 | 0.002 | 0.002 | 0.001 | 0.003 | 0.003 | 0.010 | 0.009 | 0.019 | 0.019 | 0.021 | 0.011 | 0.002 | 0.001           | 0.007         | 0.021         |       |
| 6-Feb  | 0.001                         | 0.000  | 0.000 | Z                              | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.001 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000           | 0.000         | 0.001         |       |
| 7-Feb  | 0.000                         | 0.000  | 0.000 | 0.000                          | Z     | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.005 | 0.016 | 0.009 | 0.001 | 0.001           | 0.016         |               |       |
| 8-Feb  | 0.004                         | 0.059  | 0.116 | 0.015                          | 0.053 | Z     | 0.083 | 0.023 | 0.009 | 0.001 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.009 | 0.000 | 0.000 | 0.000 | 0.000           | 0.016         |               |       |
| 9-Feb  | Z                             | 0.000  | 0.000 | 0.000                          | 0.002 | 0.001 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000           | 0.000         |               |       |
| 10-Feb   | 0.000                         | Z  | 0.000 | 0.001                          | 0.002 | 0.002 | 0.003 | 0.016 | 0.008 | 0.019 | 0.044 | 0.023 | 0.020 | 0.023 | 0.018 | 0.016 | 0.018 | 0.019 | 0.033 | 0.035 | 0.029 | 0.025 | 0.025 | 0.029           | 0.018         |               |       |
| 11-Feb   | 0.005                         | 0.000  | Z     | 0.000                          | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.001 | 0.000 | 0.000 | 0.000           | 0.005         |               |       |
| 12-Feb   | 0.000                         | 0.000  | 0.000 | Z                              | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.001           | 0.001         |               |       |
| 13-Feb   | 0.000                         | 0.000  | 0.000 | 0.000                          | Z     | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000           | 0.000         |               |       |
| 14-Feb   | 0.000                         | 0.000  | 0.000 | 0.000                          | 0.000 | Z     | 0.000 | 0.000 | 0.000 | 0.001 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000           | 0.001         |               |       |
| 15-Feb   | Z                             | 0.000  | 0.000 | 0.000                          | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.001 | 0.000 | 0.000 | 0.002 | 0.000 | 0.000 | 0.000 | 0.000           | 0.002         |               |       |
| 16-Feb   | 0.001                         | Z  | 0.000 | 0.000                          | 0.000 | 0.000 | 0.000 | 0.001 | 0.001 | 0.005 | 0.007 | 0.013 | 0.012 | 0.002 | 0.003 | 0.003 | 0.001 | 0.001 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000           | 0.002         |               |       |
| 17-Feb   | 0.000                         | 0.000  | Z     | 0.000                          | 0.000 | 0.000 | 0.002 | 0.002 | 0.001 | 0.002 | 0.003 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000           | 0.000         |               |       |
| 18-Feb   | 0.000                         | 0.001  | 0.000 | Z                              | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.003 | 0.022 | 0.012 | 0.029 | 0.005 | 0.002           | 0.003         |               |       |
| 19-Feb   | 0.000                         | 0.000  | 0.000 | 0.000                          | Z     | 0.002 | 0.001 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000           | 0.000         |               |       |
| 20-Feb   | 0.000                         | 0.000  | 0.000 | 0.000                          | 0.004 | Z     | 0.009 | 0.003 | 0.002 | 0.012 | 0.002 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000           | 0.001         |               |       |
| 21-Feb   | Z                             | 0.000  | 0.001 | 0.000                          | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000           | 0.000         |               |       |
| 22-Feb   | 0.000                         | Z  | 0.000 | 0.000                          | 0.000 | 0.001 | 0.000 | 0.000 | 0.001 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000           | 0.000         |               |       |
| 23-Feb   | 0.000                         | 0.000  | Z     | 0.000                          | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.001 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.002 | 0.000 | 0.000 | 0.005 | 0.000 | 0.000 | 0.009 | 0.022           | 0.002         |               |       |
| 24-Feb   | 0.028                         | 0.000  | 0.022 | Z                              | 0.041 | 0.072 | 0.050 | 0.012 | 0.006 | 0.001 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000           | 0.010         |               |       |
| 25-Feb   | 0.000                         | 0.000  | 0.000 | 0.000                          | Z     | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000           | 0.000         |               |       |
| 26-Feb   | 0.000                         | 0.001  | 0.001 | 0.001                          | 0.002 | Z     | 0.001 | 0.003 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000           | 0.000         |               |       |
| 27-Feb   | Z                             | 0.000  | 0.000 | 0.000                          | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.005 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000           | 0.000         |               |       |
| 28-Feb   | 0.000                         | Z  | 0.000 | 0.000                          | 0.000 | 0.000 | 0.001 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.005 | 0.001 | 0.000 | 0.000           | 0.000         |               |       |
|  |                               |  |       |                                |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Diurnal Average |               |               |       |
|  |                               |  |       |                                |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Diurnal Maximum |               |               |       |
| Z - zerospan                      C - Calibration                      M - Maintenance |                               |  |       |                                |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |               |               |       |





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Non Methane Hydrocarbons (NMHC) - ppm**  
**Conklin - February 2023**

| <b>Concentration Ranges (ppm)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 0.005                         | 571                    | 89.78    | 89.78               |
| 0.006 - 0.05                      | 61                     | 9.59     | 99.37               |
| 0.06 - 0.1                        | 4                      | 0.63     | 100.00              |
| > 0.1                             | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 636

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Non Methane Hydrocarbons (NMHC) - ppm  
Conklin - February 2023**

| <b>Concentration<br/>Ranges (ppm)</b> | <b>Wind Direction</b> |     |    |     |    |     |    |     |    |     |    |     |    |     |    |     | <b>Totals</b> |
|---------------------------------------|-----------------------|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|---------------|
|                                       | N                     | NNE | NE | ENE | E  | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |               |
| 0 - 0.005                             | 32                    | 29  | 15 | 10  | 14 | 17  | 29 | 45  | 50 | 56  | 59 | 30  | 36 | 30  | 49 | 68  | 569           |
| 0.006 - 0.05                          | 4                     | 1   | 0  | 2   | 0  | 1   | 5  | 8   | 12 | 7   | 7  | 3   | 1  | 4   | 4  | 2   | 61            |
| 0.06 - 0.1                            | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 2   | 2  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 4             |
| > 0.1                                 | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| <b>Totals</b>                         | 36                    | 30  | 15 | 12  | 14 | 18  | 34 | 55  | 64 | 63  | 66 | 33  | 37 | 34  | 53 | 70  | 634           |

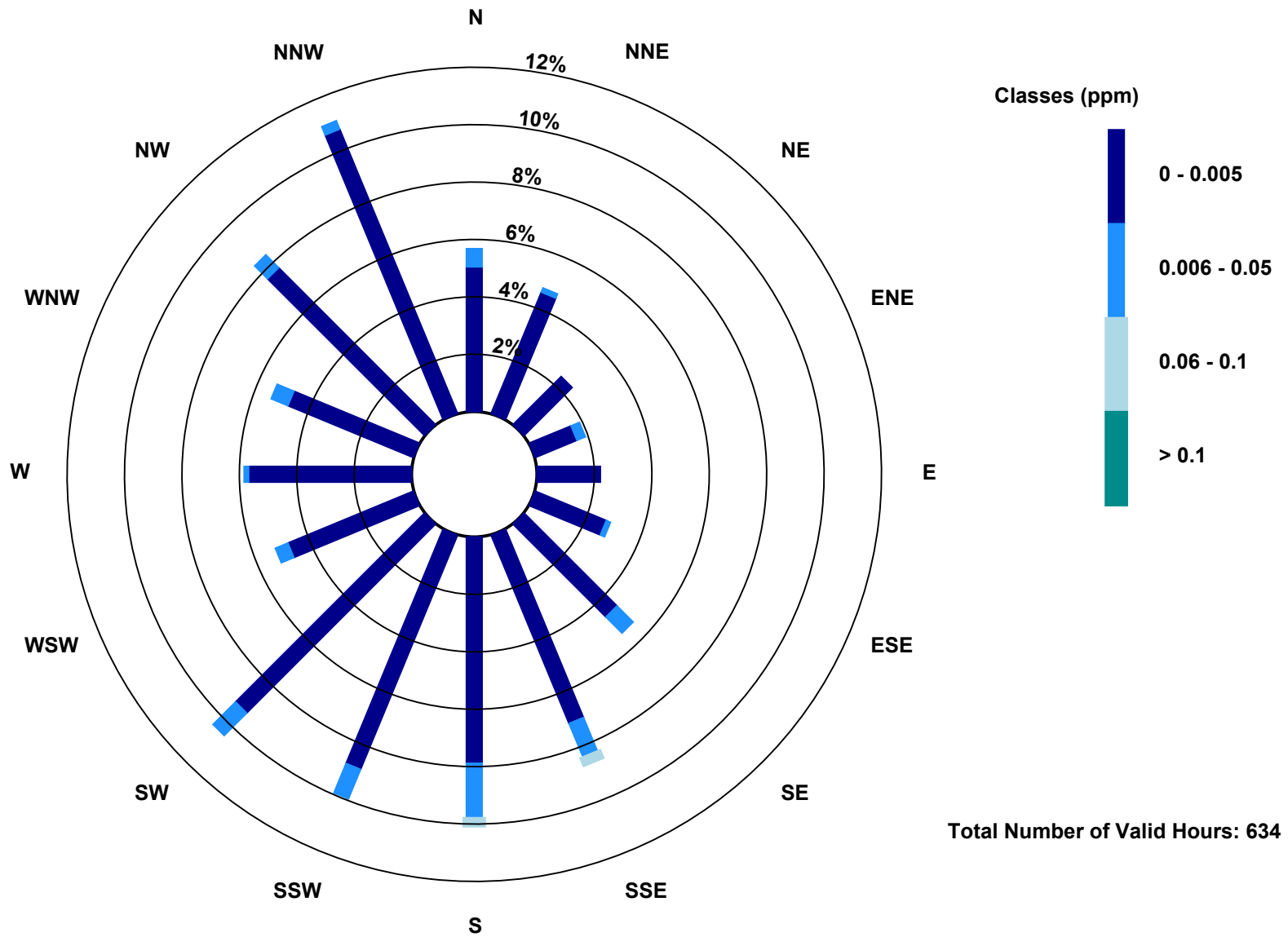
Total Number of Valid Hours: 634

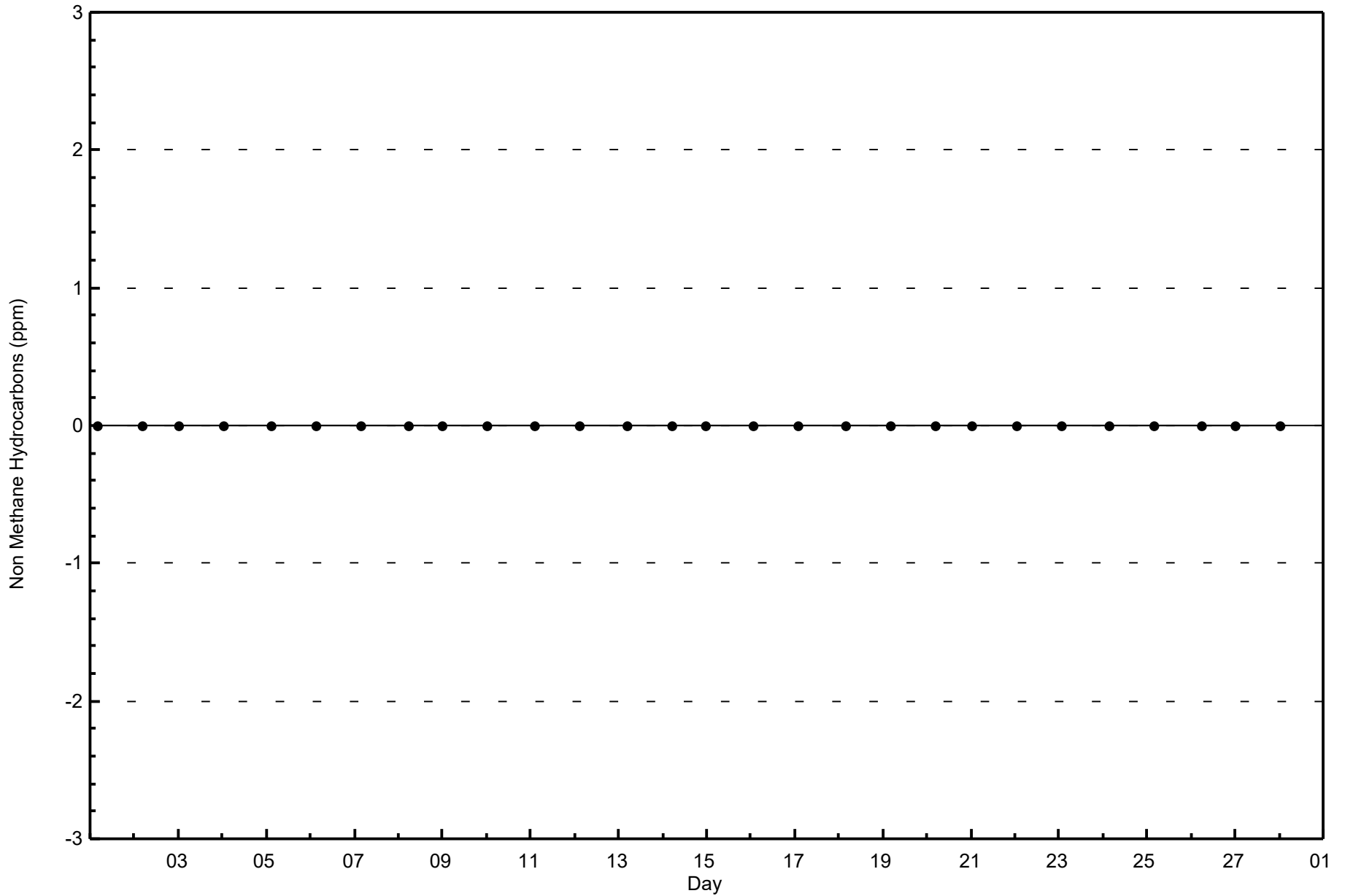
Total Number of Hours: 672

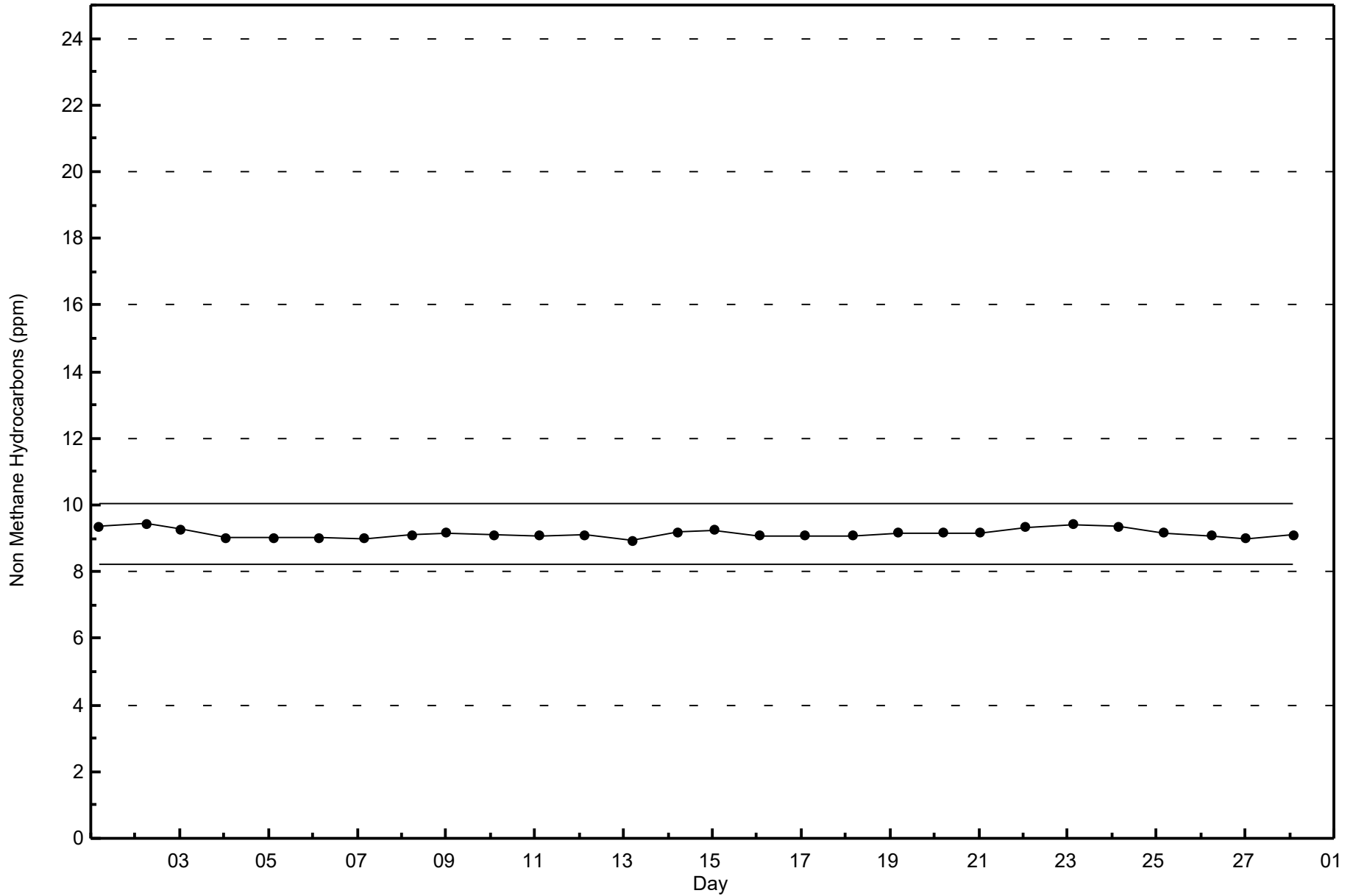


Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Non Methane Hydrocarbons (NMHC) - ppm  
Conklin







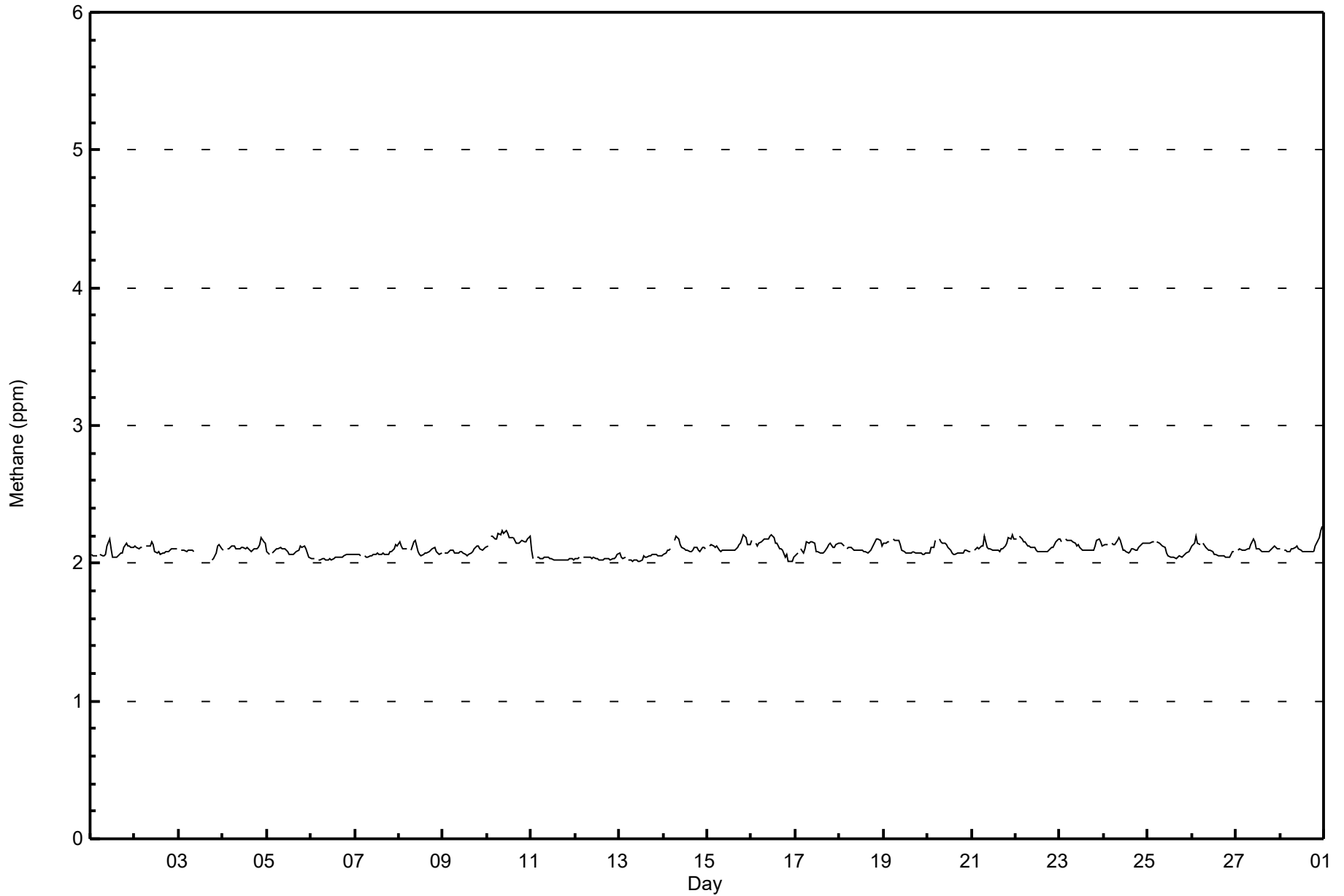






**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Methane (CH<sub>4</sub>) - ppm**  
**Conklin - February 2023**





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Methane (CH<sub>4</sub>) - ppm  
Conklin - February 2023**

| <b>Concentration Ranges (ppm)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 2.0                           | 96                     | 15.09    | 15.09               |
| 2.1 - 3.0                         | 540                    | 84.91    | 100.00              |
| 3.1 - 10.0                        | 0                      | 0.00     | 100.00              |
| > 10.0                            | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 636

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Methane (CH<sub>4</sub>) - ppm  
Conklin - February 2023**

| Concentration<br>Ranges (ppm) | Wind Direction |     |    |     |    |     |    |     |    |     |    |     |    |     |    |     | Totals |
|-------------------------------|----------------|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|--------|
|                               | N              | NNE | NE | ENE | E  | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |        |
| 0 - 2.0                       | 0              | 0   | 1  | 2   | 0  | 0   | 0  | 1   | 4  | 7   | 18 | 22  | 20 | 6   | 7  | 8   | 96     |
| 2.1 - 3.0                     | 36             | 30  | 14 | 10  | 14 | 18  | 34 | 54  | 60 | 56  | 48 | 11  | 17 | 28  | 46 | 62  | 538    |
| 3.1 - 10.0                    | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| > 10.0                        | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| <b>Totals</b>                 | 36             | 30  | 15 | 12  | 14 | 18  | 34 | 55  | 64 | 63  | 66 | 33  | 37 | 34  | 53 | 70  | 634    |

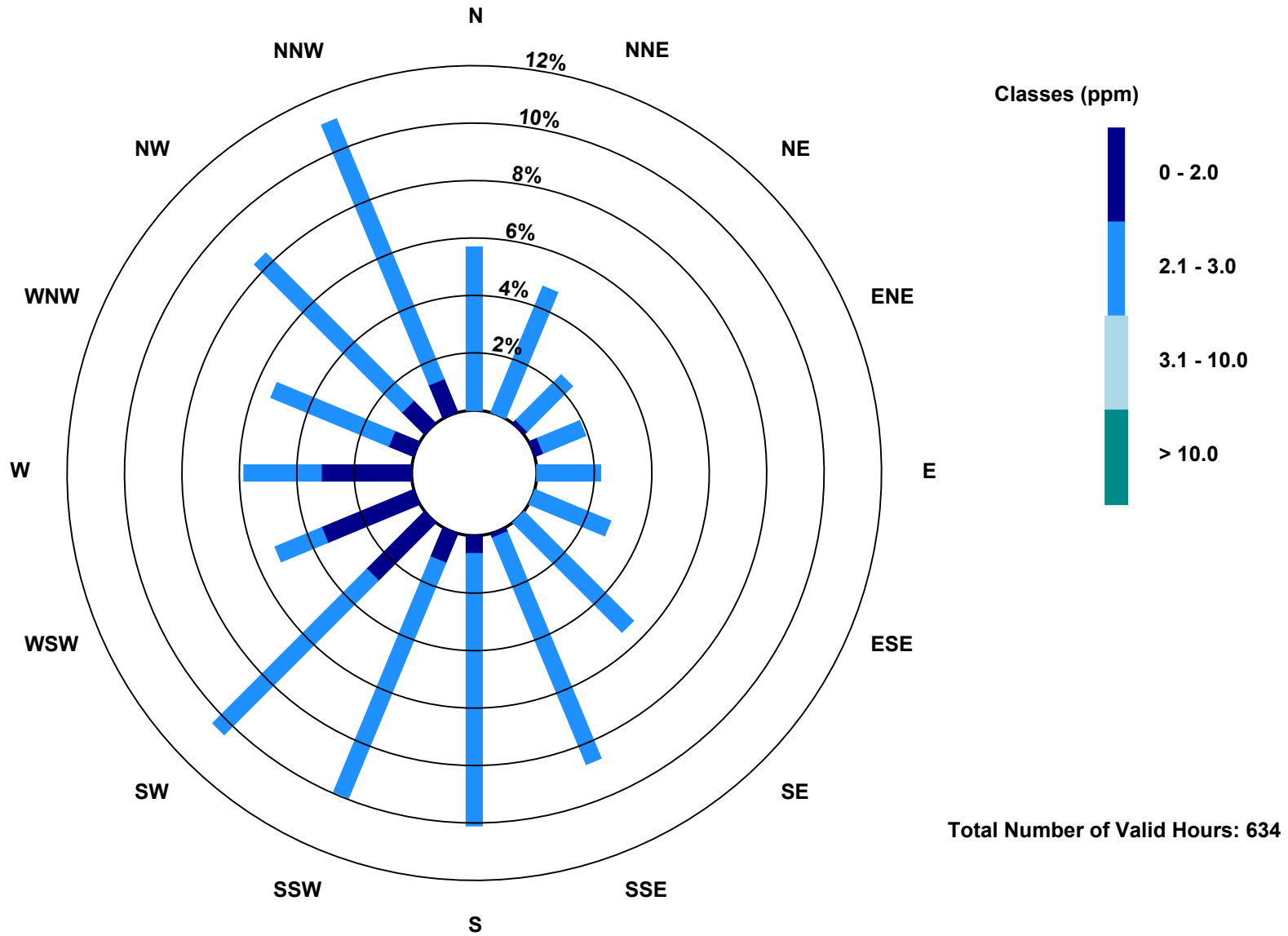
Total Number of Valid Hours: 634

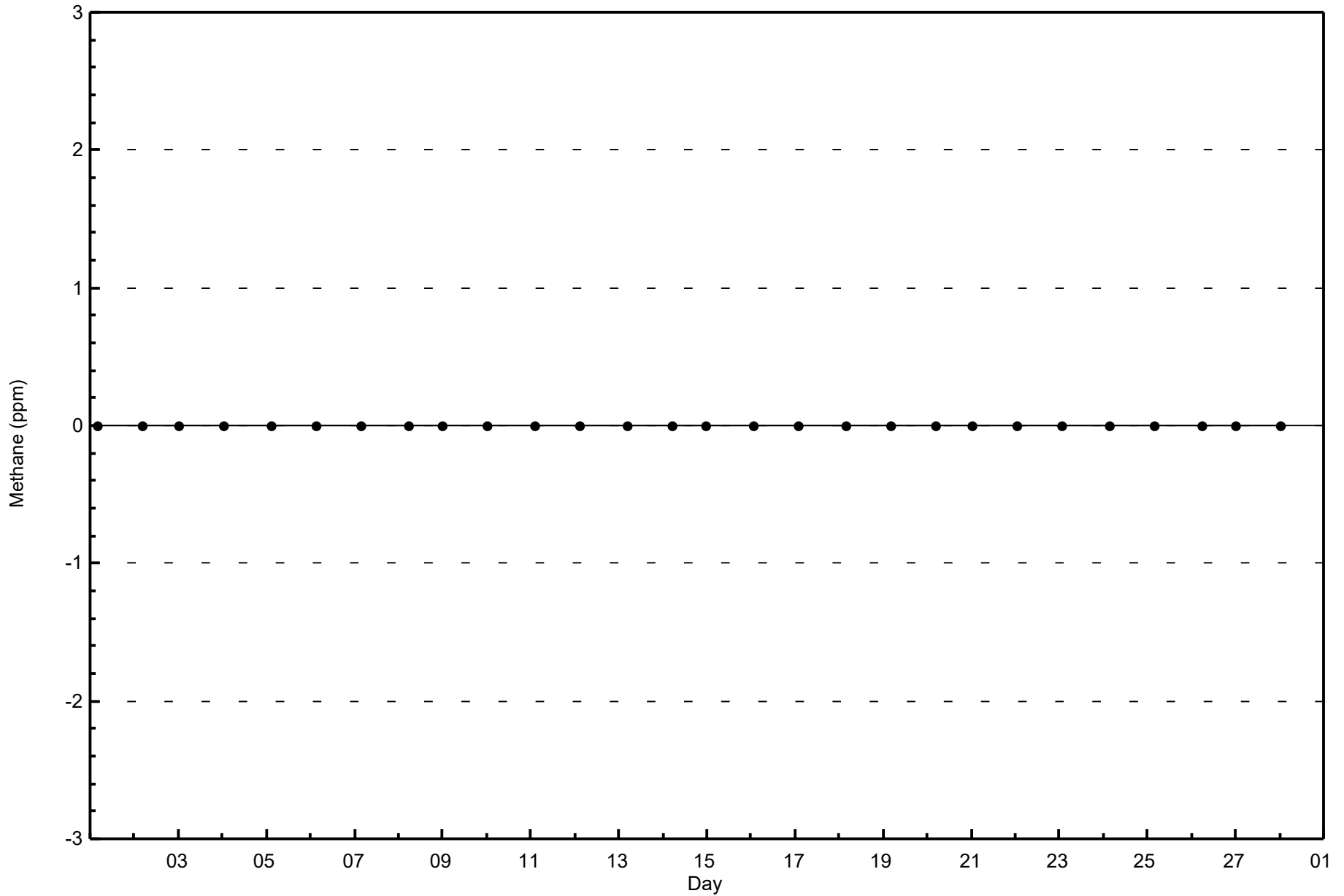
Total Number of Hours: 672

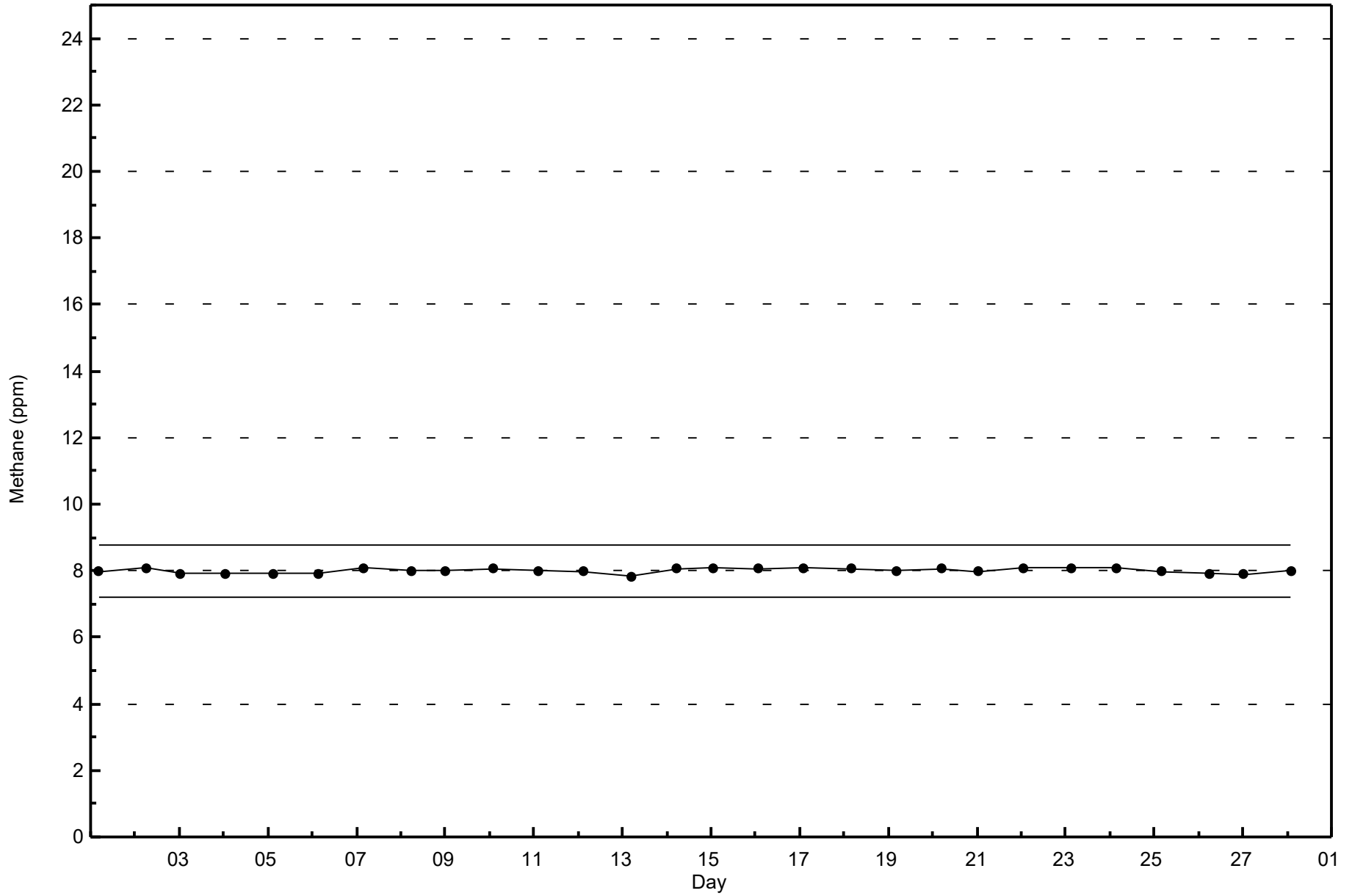


Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Methane (CH<sub>4</sub>) - ppm  
Conklin









**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

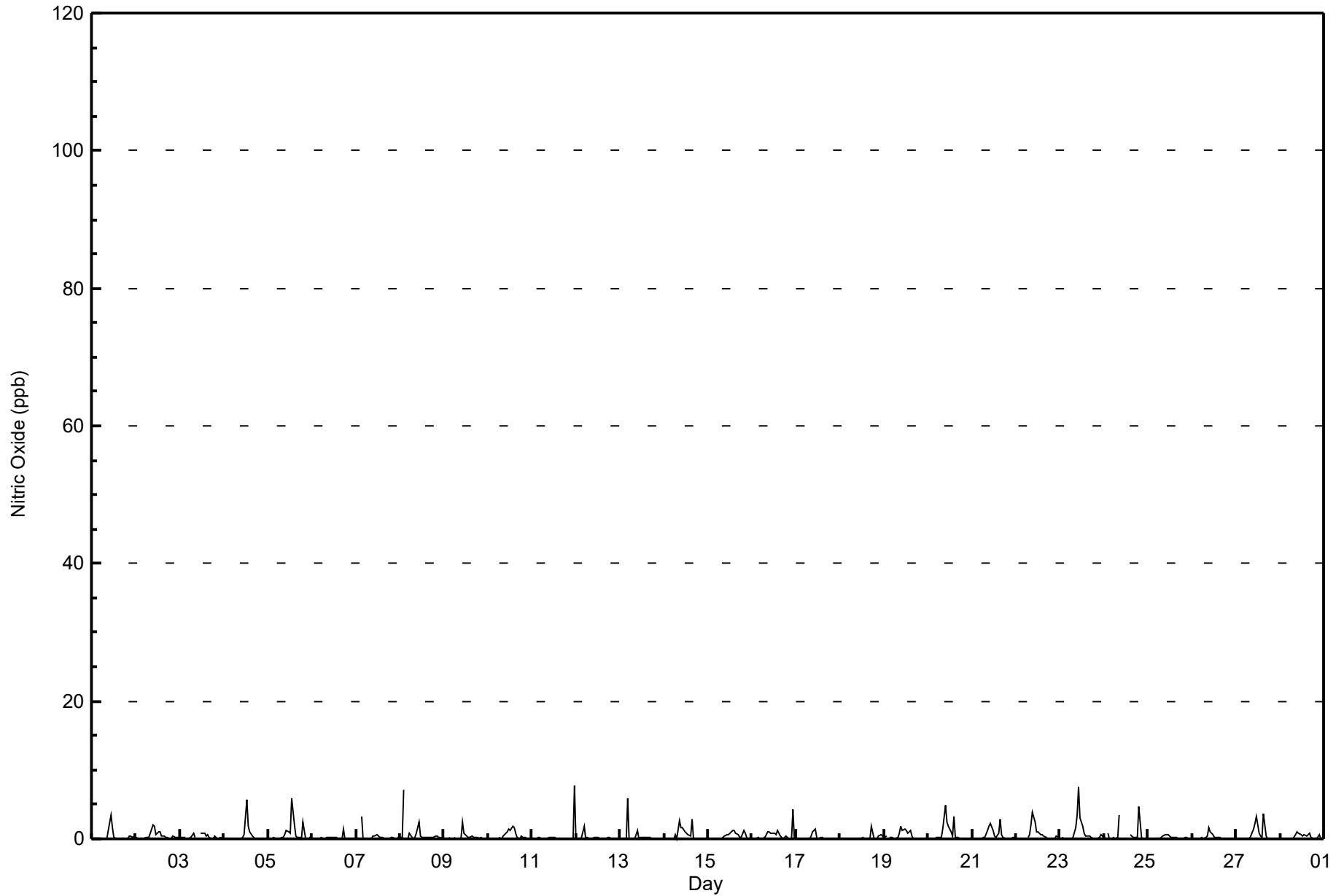
**Nitric Oxide (NO) - ppb**  
**Conklin - February 2023**

| Maximum Value: 7.8 ppb on Feb 12 00:00      |                               | Maximum Daily Average: 0.9 ppb on Feb 23   |     | Hours in Service: 672          |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |  |
|---|-------------------------------|--|-----|--------------------------------|-----|-----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----------------|-----------------|--|
| Minimum Value: 0.0 ppb on Feb 1 01:00       |                               | Minimum Daily Average: 0.1 ppb on Feb 6  |     | Hours of Data: 637             |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |  |
| Maximum Diurnal Average: 1.5 ppb at hour 11 |                               | Minimum Diurnal Average: 0.1 ppb at hour 2   |     | Hours of Missing Data: 35      |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |  |
| Monthly Average: 0.43 ppb                   |                               | Percentiles: P <sub>1</sub> = 0.0 P <sub>10</sub> = 0.0 Q <sub>1</sub> = 0.0 Median = 0.1 Q <sub>3</sub> = 0.4 P <sub>90</sub> = 1.1 P <sub>99</sub> = 4.8 |     | Hours of Calibration: 33       |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |  |
|   |                               |  |     | Percent Operational Time: 99.7 |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |  |
| Day   | Hourly Period Ending At (MST) |  |     |                                |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Daily Average   | Daily Maximum   |  |
|   | 1                             | 2  | 3   | 4                              | 5   | 6               | 7   | 8   | 9   | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19  | 20  | 21  | 22  | 23  | 24  |                 |                 |  |
| 1-Feb                                       | 0.0                           | 0.1  | Z   | 0.0                            | 0.0 | 0.0             | 0.0 | 0.0 | 0.1 | 1.2 | 3.5 | 1.7 | 0.2 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.4 | 0.3 | 0.2 | 0.4 | 0.4 | 3.5             |                 |  |
| 2-Feb                                       | 0.1                           | 0.1  | 0.0 | Z                              | 0.0 | 0.3             | 0.3 | 0.2 | 1.4 | 2.0 | 1.8 | 0.5 | 1.0 | 0.9 | 0.4 | 0.4 | 0.2 | 0.1 | 0.1 | 0.1 | 0.3 | 0.2 | 0.2 | 0.2 | 0.5             | 2.0             |  |
| 3-Feb                                       | 0.2                           | 0.2  | 0.3 | 0.1                            | Z   | 0.2             | 0.2 | 0.8 | 0.2 | M   | M   | 0.8 | 0.9 | 0.9 | 0.5 | 0.7 | 0.2 | 0.0 | 0.0 | 0.4 | 0.1 | 0.1 | 0.2 | 0.0 | 0.3             | 0.9             |  |
| 4-Feb                                       | 0.0                           | 0.0  | 0.0 | 0.0                            | 0.0 | Z               | 0.0 | 0.0 | 0.0 | 0.1 | 0.3 | 0.6 | 5.7 | 1.7 | 0.9 | 0.4 | 0.1 | 0.0 | 0.1 | 0.0 | 0.1 | 0.1 | 0.0 | 0.0 | 0.4             | 5.7             |  |
| 5-Feb                                       | Z                             | 0.0  | 0.1 | 0.2                            | 0.0 | 0.0             | 0.0 | 0.2 | 0.2 | 0.6 | 1.2 | 1.0 | 0.8 | 5.9 | 2.1 | 0.5 | 0.2 | 0.1 | 0.0 | 2.4 | 0.1 | 0.0 | 0.1 | 0.2 | 0.7             | 5.9             |  |
| 6-Feb                                       | 0.1                           | Z  | 0.0 | 0.0                            | 0.1 | 0.1             | 0.1 | 0.1 | 0.1 | 0.2 | 0.1 | 0.2 | 0.2 | 0.2 | 0.0 | 0.0 | 0.1 | 1.3 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1             | 1.3             |  |
| 7-Feb                                       | 0.0                           | 0.0  | Z   | 3.3                            | 0.0 | 0.1             | 0.0 | 0.0 | 0.1 | 0.4 | 0.4 | 0.7 | 0.4 | 0.3 | 0.1 | 0.1 | 0.0 | 0.0 | 0.2 | 0.1 | 0.0 | 0.0 | 0.2 | 0.3 | 0.3             | 3.3             |  |
| 8-Feb                                       | 0.2                           | 0.2  | 7.1 | Z                              | 0.1 | 0.7             | 0.3 | 0.0 | 0.3 | 0.7 | 2.5 | 0.4 | 0.3 | 0.2 | 0.2 | 0.2 | 0.1 | 0.2 | 0.1 | 0.3 | 0.4 | 0.2 | 0.2 | 0.1 | 0.7             | 7.1             |  |
| 9-Feb                                       | 0.1                           | 0.0  | 0.0 | 0.2                            | Z   | 0.2             | 0.1 | 0.1 | 0.1 | 0.3 | 2.4 | 0.9 | 0.4 | 0.2 | 0.2 | 0.3 | 0.2 | 0.1 | 0.3 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.3             | 2.4             |  |
| 10-Feb                                      | 0.0                           | 0.0  | 0.0 | 0.0                            | 0.1 | Z               | 0.1 | 0.1 | 0.4 | 0.6 | 1.0 | 1.4 | 1.3 | 1.8 | 1.6 | 0.8 | 0.2 | 0.0 | 0.4 | 0.2 | 0.2 | 0.0 | 0.0 | 0.0 | 0.4             | 1.8             |  |
| 11-Feb                                      | Z                             | 0.0  | 0.0 | 0.1                            | 0.2 | 0.1             | 0.0 | 0.0 | 0.1 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.1 | 7.8 | 0.4             | 7.8             |  |
| 12-Feb                                      | 0.0                           | Z  | 0.1 | 0.1                            | 1.9 | 0.0             | 0.1 | 0.0 | 0.1 | 0.1 | 0.1 | 0.3 | 0.1 | 0.1 | 0.0 | 0.0 | 0.1 | 0.1 | 0.2 | 0.0 | 0.1 | 0.0 | 0.1 | 0.0 | 0.2             | 1.9             |  |
| 13-Feb                                      | 0.0                           | 0.0  | Z   | 0.0                            | 5.8 | 0.0             | 0.1 | 0.0 | 0.0 | 1.2 | 0.1 | 0.2 | 0.3 | 0.2 | 0.3 | 0.2 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.4             | 5.8             |  |
| 14-Feb                                      | 0.0                           | 0.0  | 0.0 | Z                              | 0.0 | 0.0             | 0.6 | 0.0 | 2.6 | 1.7 | 1.6 | 1.1 | 0.8 | 0.7 | 0.4 | 2.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.5             | 2.8             |  |
| 15-Feb                                      | 0.0                           | 0.0  | 0.0 | 0.0                            | Z   | 0.0             | 0.0 | 0.0 | 0.1 | 0.3 | 0.6 | 0.7 | 0.7 | 1.1 | 1.1 | 0.8 | 0.6 | 0.1 | 0.2 | 1.2 | 0.7 | 0.3 | 0.0 | 0.0 | 0.4             | 1.2             |  |
| 16-Feb                                      | 0.0                           | 0.0  | 0.1 | 0.1                            | 0.2 | Z               | 0.2 | 0.1 | 1.0 | 1.0 | 0.7 | 0.8 | 0.9 | 0.7 | 1.1 | 0.5 | 0.2 | 0.1 | 0.4 | 0.1 | 0.0 | 0.0 | 4.3 | 0.0 | 0.6             | 4.3             |  |
| 17-Feb                                      | Z                             | 0.0  | 0.0 | 0.0                            | 0.0 | 0.0             | 0.1 | 0.1 | 0.5 | 1.1 | 1.4 | 0.2 | 0.1 | 0.3 | 0.2 | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.2             | 1.4             |  |
| 18-Feb                                      | 0.1                           | Z  | 0.1 | 0.0                            | 0.0 | 0.0             | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 | 0.1 | 1.8 | 0.0 | 0.0 | 0.1 | 0.3 | 0.6 | 0.3 | 0.2             | 1.8             |  |
| 19-Feb                                      | 0.3                           | 0.3  | Z   | 0.2                            | 0.1 | 0.0             | 0.1 | 0.3 | 0.9 | 1.8 | 1.3 | 1.5 | 1.1 | 0.9 | 1.2 | 0.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.5             | 1.8             |  |
| 20-Feb                                      | 0.0                           | 0.0  | 0.0 | Z                              | 0.1 | 0.1             | 0.2 | 0.2 | 1.4 | 4.8 | 2.4 | 1.8 | 1.0 | 0.5 | 3.2 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.7             | 4.8             |  |
| 21-Feb                                      | 0.0                           | 0.0  | 0.0 | 0.0                            | Z   | 0.1             | 0.2 | 0.2 | 1.3 | 1.8 | 2.2 | 1.3 | 0.5 | 0.2 | 0.9 | 2.8 | 0.7 | 0.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.6             | 2.8             |  |
| 22-Feb                                      | 0.0                           | 0.0  | 0.0 | 0.1                            | 0.0 | Z               | 0.2 | 0.6 | 2.0 | 3.8 | 2.5 | 1.0 | 0.9 | 0.6 | 0.5 | 0.3 | 0.2 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.4 | 0.2 | 0.6             | 3.8             |  |
| 23-Feb                                      | Z                             | 0.1  | 0.1 | 0.1                            | 0.1 | 0.1             | 0.1 | 0.2 | 1.6 | 3.4 | 7.5 | 3.0 | 1.8 | 0.9 | 0.5 | 0.4 | 0.4 | 0.1 | 0.1 | 0.0 | 0.0 | 0.1 | 0.6 | 0.4 | 0.9             | 7.5             |  |
| 24-Feb                                      | 0.2                           | Z  | 0.9 | 0.1                            | 0.1 | 0.2             | 0.1 | 0.3 | 3.5 | C   | C   | C   | C   | C   | 0.7 | 0.4 | 0.2 | 0.2 | 0.2 | 4.7 | 0.2 | 0.1 | 0.0 | 0.0 | 0.7             | 4.7             |  |
| 25-Feb                                      | 0.0                           | 0.0  | Z   | 0.0                            | 0.0 | 0.1             | 0.1 | 0.2 | 0.4 | 0.6 | 0.6 | 0.7 | 0.3 | 0.3 | 0.3 | 0.1 | 0.1 | 0.1 | 0.0 | 0.1 | 0.3 | 0.2 | 0.1 | 0.0 | 0.2             | 0.7             |  |
| 26-Feb                                      | 0.1                           | 0.0  | 0.1 | Z                              | 0.0 | 0.1             | 0.0 | 0.1 | 0.4 | 1.5 | 1.0 | 0.6 | 0.3 | 0.2 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.2             | 1.5             |  |
| 27-Feb                                      | 0.0                           | 0.0  | 0.0 | 0.0                            | Z   | 0.0             | 0.0 | 0.1 | 0.5 | 1.5 | 2.2 | 3.2 | 0.8 | 0.3 | 0.2 | 3.6 | 0.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.6             | 3.6             |  |
| 28-Feb                                      | 0.0                           | 0.0  | 0.0 | 0.0                            | 0.0 | Z               | 0.0 | 0.1 | 0.5 | 1.0 | 0.8 | 0.6 | 0.5 | 0.6 | 0.4 | 0.7 | 0.8 | 0.3 | 0.0 | 0.0 | 0.0 | 0.6 | 0.1 | 0.0 | 0.3             | 1.0             |  |
|   |                               | 0.1  | 0.1 | 0.4                            | 0.2 | 0.4             | 0.1 | 0.1 | 0.7 | 1.2 | 1.5 | 0.9 | 0.8 | 0.7 | 0.6 | 0.6 | 0.2 | 0.2 | 0.1 | 0.4 | 0.1 | 0.1 | 0.3 | 0.4 | Diurnal Average |                 |  |
|   |                               | 0.3  | 0.3 | 7.1                            | 3.3 | 5.8             | 0.7 | 0.6 | 0.8 | 3.5 | 4.8 | 7.5 | 3.2 | 5.7 | 5.9 | 3.2 | 3.6 | 0.8 | 1.8 | 0.4 | 4.7 | 0.7 | 0.6 | 4.3 | 7.8             | Diurnal Maximum |  |
| Z - zerospan                                |                               | C - Calibration  |     |                                |     | M - Maintenance |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |                 |  |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Nitric Oxide (NO) - ppb**  
**Conklin - February 2023**







**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Nitric Oxide (NO) - ppb  
Conklin - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 20                            | 637                    | 100.00   | 100.00              |
| 21 - 40                           | 0                      | 0.00     | 100.00              |
| 41 - 80                           | 0                      | 0.00     | 100.00              |
| 81 - 159                          | 0                      | 0.00     | 100.00              |
| > 159                             | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 637

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Nitric Oxide (NO) - ppb  
Conklin - February 2023**

| <b>Concentration<br/>Ranges (ppb)</b> | <b>Wind Direction</b> |     |    |     |    |     |    |     |    |     |    |     |    |     |    |     | <b>Totals</b> |
|---------------------------------------|-----------------------|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|---------------|
|                                       | N                     | NNE | NE | ENE | E  | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |               |
| 0 - 20                                | 40                    | 29  | 14 | 14  | 14 | 18  | 35 | 55  | 62 | 60  | 66 | 33  | 37 | 34  | 55 | 69  | 635           |
| 21 - 40                               | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| 11 - 80                               | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| 81 - 159                              | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| > 159                                 | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| <b>Totals</b>                         | 40                    | 29  | 14 | 14  | 14 | 18  | 35 | 55  | 62 | 60  | 66 | 33  | 37 | 34  | 55 | 69  | 635           |

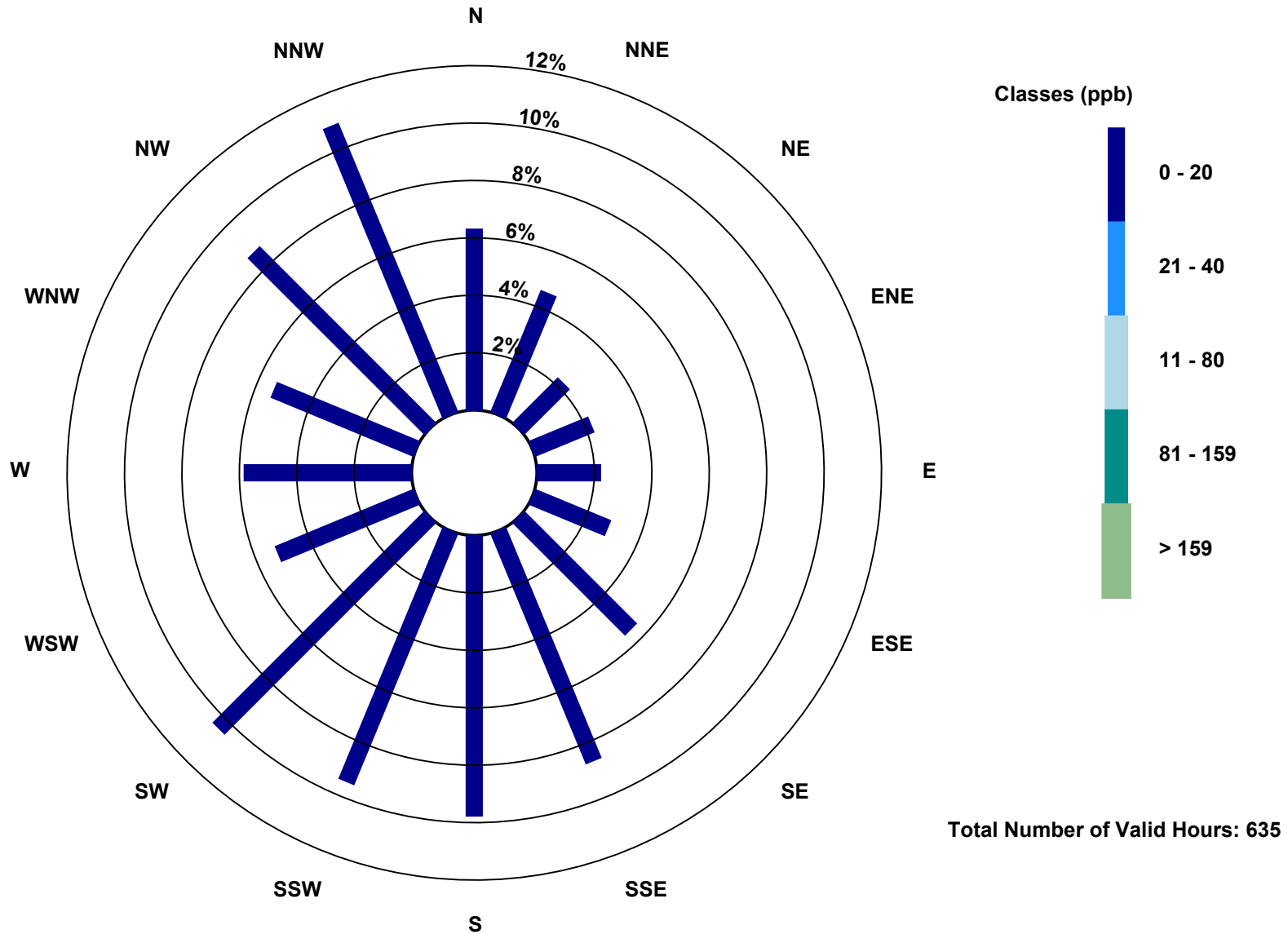
Total Number of Valid Hours: 635

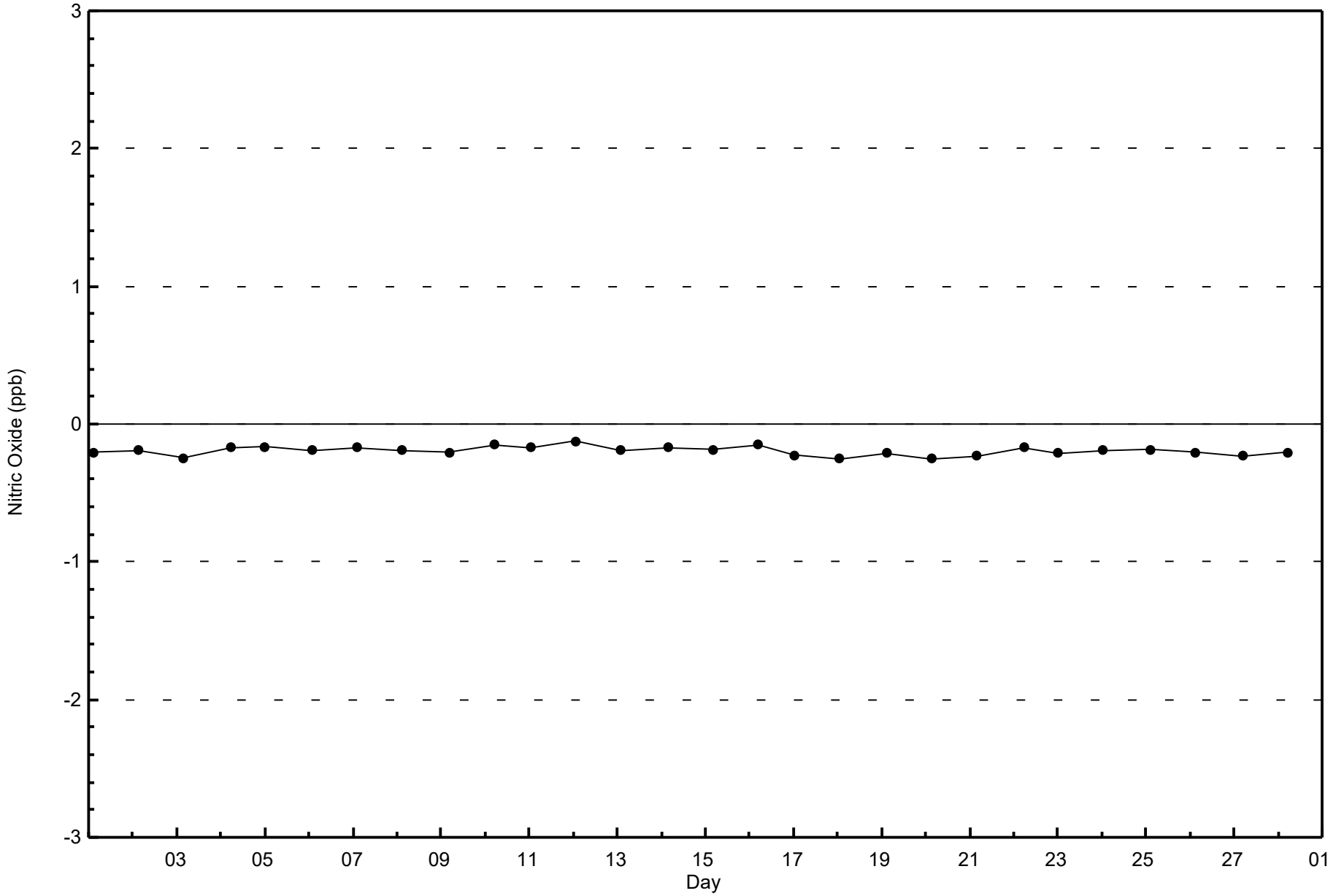
Total Number of Hours: 672

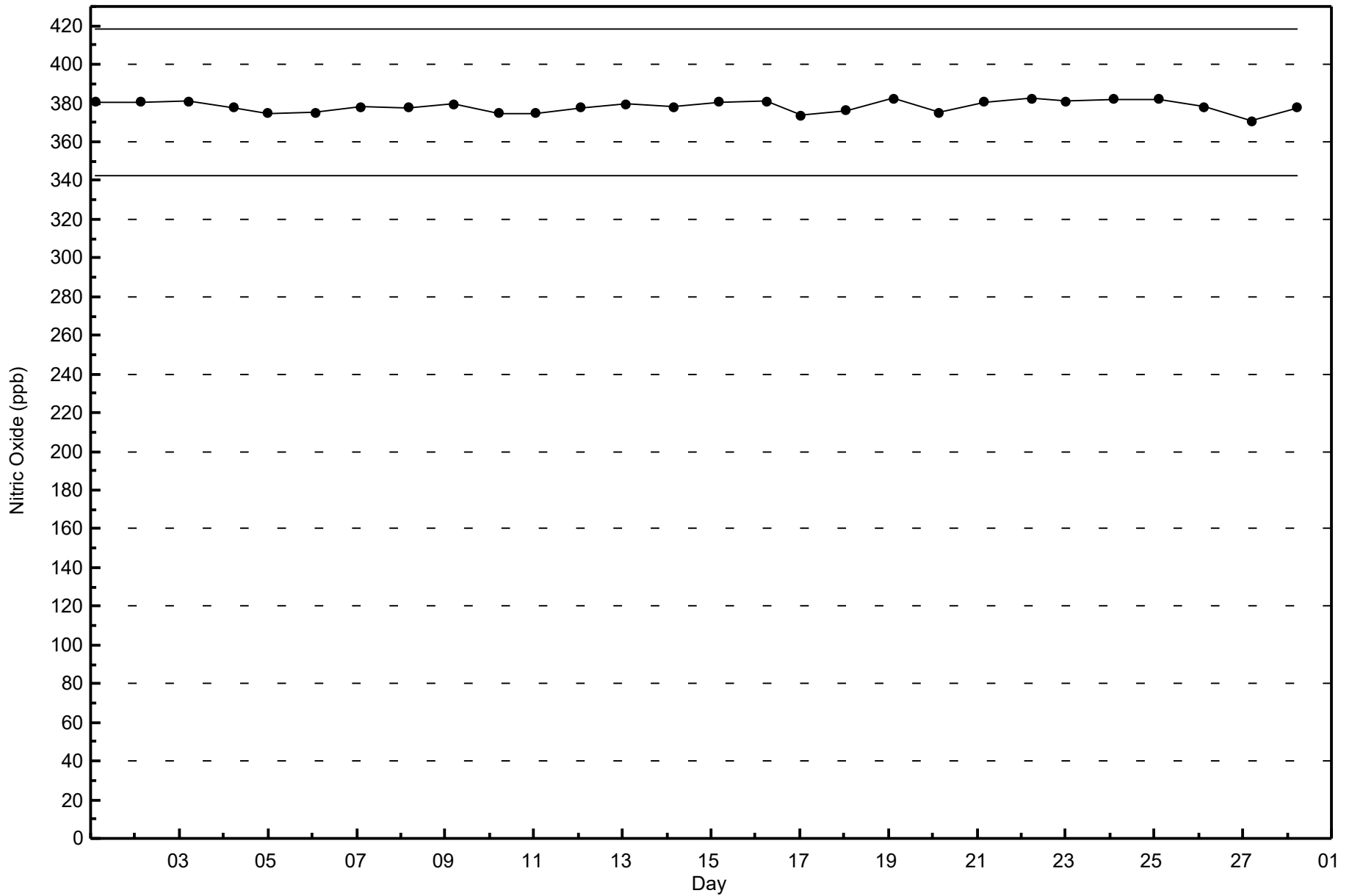


Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Nitric Oxide (NO) - ppb  
Conklin









Wood Buffalo Environmental Association

Summary of Hour Averages

Nitrogen Dioxide (NO<sub>2</sub>) - ppb

Conklin - February 2023

|  |   |          |                           |      |
|--|---|----------|---------------------------|------|
| Number of Exceedences (AAAQO):             | 1-hr: 0   | 24-hr: 0 | Hours in Service:         | 672  |
| Maximum Value: 21.0 ppb on Feb 8 03:00     | Maximum Daily Average: 5.1 ppb on Feb 10  |          | Hours of Data:            | 637  |
| Minimum Value: 0.3 ppb on Feb 1 08:00      | Minimum Daily Average: 1.0 ppb on Feb 11  |          | Hours of Missing Data:    | 35   |
| Maximum Diurnal Average: 3.7 ppb at hour 3 | Minimum Diurnal Average: 1.7 ppb at hour 15   |          | Hours of Calibration:     | 33   |
| Monthly Average: 2.83 ppb                  | Percentiles: P <sub>1</sub> = 0.3 P <sub>10</sub> = 0.7 Q <sub>1</sub> = 1.2 Median = 2.4 Q <sub>3</sub> = 3.8 P <sub>90</sub> = 5.5 P <sub>99</sub> = 10.5 |          | Percent Operational Time: | 99.7 |

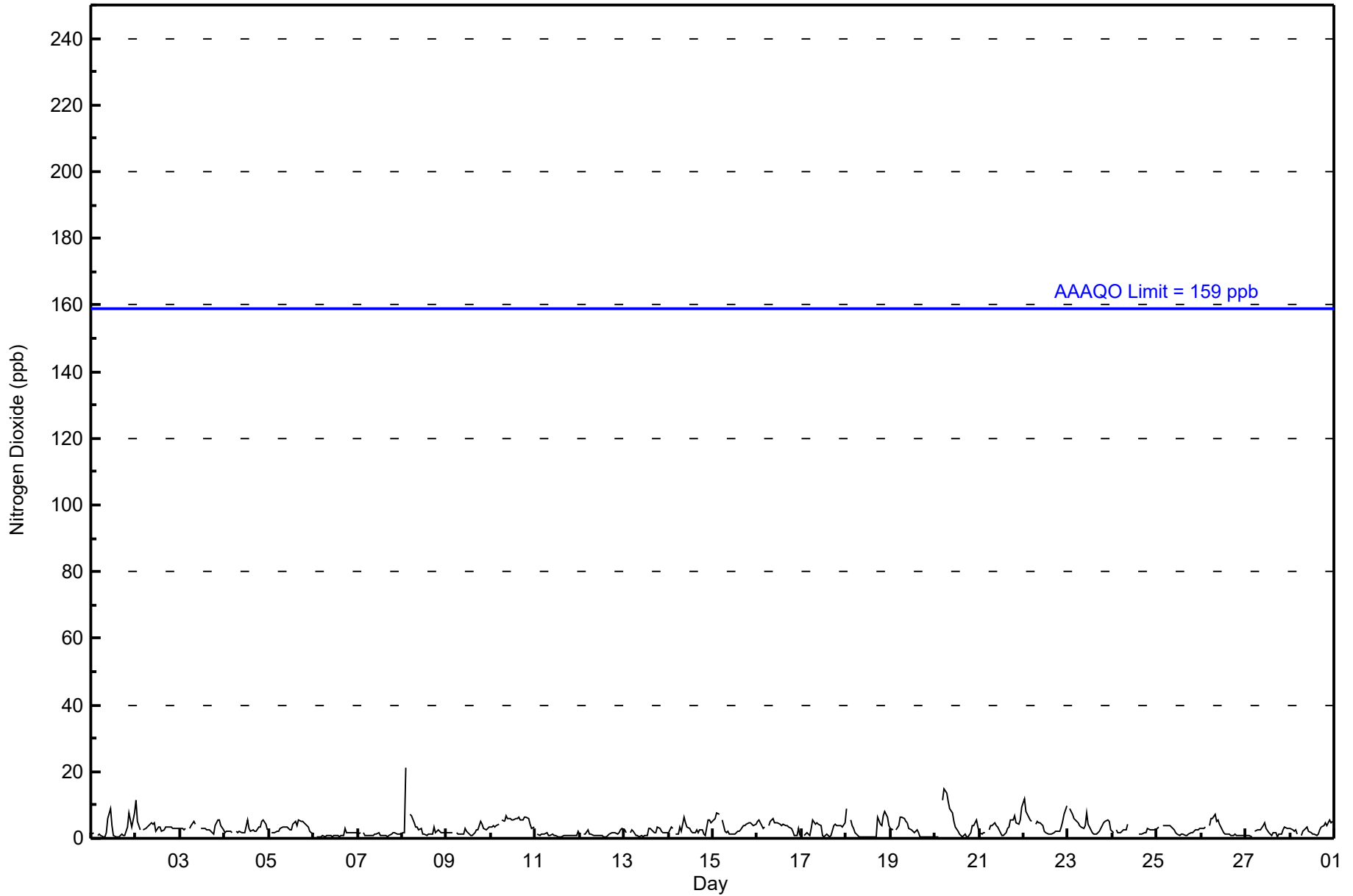
| Day    | Hourly Period Ending At (MST) |     |      |     |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Daily Average | Daily Maximum   |
|--------|-------------------------------|-----|------|-----|------|------|------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---------------|-----------------|
|        | 1                             | 2   | 3    | 4   | 5    | 6    | 7    | 8    | 9   | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19  | 20  | 21  | 22  | 23  | 24  |               |                 |
| 1-Feb  | 1.4                           | 1.6 | Z    | 0.8 | 1.2  | 0.9  | 0.6  | 0.3  | 1.6 | 6.1 | 8.9 | 3.7 | 0.8 | 0.4 | 0.3 | 0.4 | 1.2 | 1.0 | 0.9 | 3.2 | 7.5 | 5.3 | 3.5 | 7.8 | 2.6           | 8.9             |
| 2-Feb  | 11.3                          | 4.9 | 2.4  | Z   | 2.4  | 2.8  | 3.2  | 3.8  | 4.8 | 4.2 | 4.6 | 2.0 | 3.2 | 3.5 | 2.1 | 2.4 | 3.4 | 3.5 | 3.6 | 3.5 | 3.0 | 2.9 | 3.0 | 3.0 | 3.6           | 11.3            |
| 3-Feb  | 2.8                           | 2.8 | 2.7  | 3.0 | Z    | 3.1  | 4.0  | 5.1  | 4.2 | M   | M   | 2.9 | 2.9 | 3.1 | 2.5 | 2.5 | 2.7 | 1.5 | 1.2 | 3.7 | 5.5 | 5.5 | 3.7 | 2.6 | 3.2           | 5.5             |
| 4-Feb  | 1.7                           | 2.0 | 2.1  | 2.1 | 1.8  | Z    | 2.2  | 1.6  | 2.3 | 1.7 | 1.7 | 1.7 | 5.3 | 2.8 | 2.1 | 2.5 | 2.1 | 2.1 | 3.2 | 3.4 | 5.2 | 5.6 | 4.2 | 2.7 | 2.7           | 5.6             |
| 5-Feb  | Z                             | 1.6 | 1.7  | 1.9 | 2.2  | 2.2  | 2.9  | 3.3  | 3.4 | 3.6 | 3.4 | 2.7 | 2.5 | 4.4 | 5.2 | 4.0 | 5.6 | 4.9 | 5.0 | 4.7 | 4.0 | 3.5 | 2.3 | 1.5 | 3.3           | 5.6             |
| 6-Feb  | 1.1                           | Z   | 0.5  | 0.6 | 0.6  | 0.8  | 0.5  | 0.9  | 0.9 | 0.9 | 0.6 | 0.8 | 0.7 | 0.8 | 0.6 | 0.7 | 0.8 | 3.0 | 1.9 | 1.6 | 1.7 | 1.8 | 1.6 | 1.5 | 1.1           | 3.0             |
| 7-Feb  | 1.4                           | 1.5 | Z    | 1.9 | 0.9  | 0.8  | 0.8  | 0.8  | 0.9 | 1.2 | 1.2 | 1.5 | 1.0 | 0.7 | 0.7 | 0.7 | 0.6 | 0.9 | 1.2 | 1.5 | 1.6 | 1.4 | 1.3 | 1.3 | 1.1           | 1.9             |
| 8-Feb  | 1.5                           | 1.6 | 21.0 | Z   | 7.4  | 6.9  | 4.6  | 3.4  | 3.3 | 2.4 | 3.0 | 1.3 | 1.1 | 0.9 | 1.1 | 1.2 | 1.4 | 3.5 | 1.9 | 2.6 | 2.0 | 1.9 | 1.8 | 1.6 | 3.4           | 21.0            |
| 9-Feb  | 1.6                           | 1.6 | 1.6  | 1.8 | Z    | 1.6  | 1.2  | 1.3  | 1.4 | 1.3 | 2.8 | 2.3 | 1.2 | 0.9 | 1.0 | 1.9 | 2.4 | 2.5 | 4.9 | 4.2 | 3.1 | 2.6 | 3.0 | 3.3 | 2.2           | 4.9             |
| 10-Feb | 3.6                           | 3.7 | 3.4  | 3.7 | 4.1  | Z    | 5.3  | 5.0  | 6.8 | 6.0 | 5.8 | 5.6 | 5.6 | 6.0 | 6.0 | 6.2 | 5.7 | 5.4 | 6.3 | 6.2 | 6.0 | 4.3 | 3.1 | 3.3 | 5.1           | 6.8             |
| 11-Feb | Z                             | 1.1 | 1.0  | 1.4 | 1.3  | 1.3  | 1.7  | 1.0  | 1.0 | 1.1 | 0.8 | 0.7 | 0.6 | 0.6 | 0.5 | 0.7 | 0.8 | 1.0 | 0.9 | 0.9 | 0.8 | 0.9 | 1.0 | 2.3 | 1.0           | 2.3             |
| 12-Feb | 1.2                           | Z   | 1.1  | 1.2 | 2.6  | 1.2  | 1.3  | 1.0  | 0.8 | 0.7 | 0.8 | 0.7 | 0.7 | 0.5 | 0.6 | 0.7 | 1.2 | 1.8 | 1.9 | 1.6 | 1.2 | 1.7 | 2.7 | 3.0 | 1.3           | 3.0             |
| 13-Feb | 2.4                           | 1.5 | Z    | 1.6 | 2.5  | 2.3  | 0.7  | 0.7  | 0.6 | 0.9 | 0.6 | 0.8 | 0.8 | 3.1 | 3.1 | 2.6 | 1.9 | 1.8 | 3.3 | 2.8 | 2.2 | 1.5 | 1.5 | 1.7 | 1.8           | 3.3             |
| 14-Feb | 1.8                           | 3.6 | 2.8  | Z   | 1.4  | 1.2  | 3.3  | 2.1  | 6.3 | 4.7 | 3.4 | 3.0 | 2.2 | 1.7 | 1.5 | 2.5 | 1.8 | 2.6 | 2.4 | 1.3 | 0.7 | 5.6 | 5.3 | 4.7 | 2.9           | 6.3             |
| 15-Feb | 5.4                           | 5.8 | 7.5  | 7.1 | Z    | 5.6  | 2.1  | 1.6  | 2.0 | 1.3 | 1.4 | 1.2 | 1.3 | 2.0 | 2.3 | 2.5 | 4.0 | 3.8 | 4.3 | 4.5 | 4.8 | 4.2 | 3.8 | 4.4 | 3.6           | 7.5             |
| 16-Feb | 4.9                           | 5.4 | 3.8  | 3.0 | 3.3  | Z    | 3.9  | 5.0  | 6.0 | 4.8 | 4.7 | 4.5 | 4.4 | 4.0 | 4.3 | 4.0 | 3.8 | 3.5 | 3.1 | 2.3 | 1.0 | 0.7 | 2.8 | 0.7 | 3.6           | 6.0             |
| 17-Feb | Z                             | 0.7 | 1.3  | 1.7 | 0.7  | 2.8  | 5.3  | 4.2  | 4.6 | 4.1 | 3.7 | 0.7 | 0.6 | 1.1 | 0.9 | 0.5 | 0.7 | 3.9 | 4.2 | 3.9 | 3.7 | 4.0 | 3.6 | 4.6 | 2.7           | 5.3             |
| 18-Feb | 8.7                           | Z   | 5.3  | 3.9 | 2.8  | 1.8  | 0.9  | 0.5  | 0.4 | 0.4 | 0.3 | 0.3 | 0.4 | 0.3 | 0.4 | 0.4 | 0.5 | 6.3 | 4.1 | 4.0 | 6.8 | 7.9 | 6.5 | 3.7 | 2.9           | 8.7             |
| 19-Feb | 3.0                           | 2.7 | Z    | 2.4 | 3.7  | 6.2  | 6.2  | 6.1  | 5.0 | 4.6 | 3.1 | 2.7 | 2.2 | 1.6 | 2.4 | 1.5 | 0.6 | 0.5 | 0.4 | 0.5 | 0.4 | 0.3 | 0.3 | 0.4 | 2.5           | 6.2             |
| 20-Feb | 0.6                           | 0.5 | 0.6  | Z   | 11.6 | 15.0 | 13.6 | 11.0 | 9.0 | 7.8 | 5.0 | 3.4 | 2.3 | 1.1 | 1.0 | 0.6 | 1.2 | 0.6 | 0.5 | 1.9 | 3.7 | 3.8 | 5.5 | 3.5 | 4.5           | 15.0            |
| 21-Feb | 1.5                           | 1.3 | 1.8  | 1.7 | Z    | 2.4  | 3.9  | 3.7  | 4.8 | 3.7 | 3.3 | 1.9 | 0.9 | 0.7 | 1.7 | 2.9 | 3.2 | 5.5 | 5.6 | 6.6 | 4.8 | 4.2 | 5.3 | 9.4 | 3.5           | 9.4             |
| 22-Feb | 11.9                          | 8.1 | 7.2  | 5.7 | 4.9  | Z    | 4.4  | 4.9  | 4.7 | 4.8 | 3.8 | 2.0 | 1.7 | 1.2 | 1.2 | 1.2 | 1.5 | 2.1 | 2.0 | 2.2 | 3.4 | 4.9 | 7.0 | 9.6 | 4.4           | 11.9            |
| 23-Feb | Z                             | 9.1 | 7.2  | 5.9 | 5.5  | 4.5  | 3.8  | 3.4  | 2.9 | 3.9 | 7.5 | 4.3 | 2.7 | 1.7 | 1.2 | 1.4 | 1.9 | 2.2 | 3.8 | 4.6 | 4.9 | 5.5 | 4.9 | 2.7 | 4.2           | 9.1             |
| 24-Feb | 1.9                           | Z   | 2.5  | 1.5 | 1.9  | 2.1  | 2.5  | 2.4  | 4.1 | C   | C   | C   | C   | C   | 1.1 | 1.2 | 1.3 | 1.5 | 1.7 | 2.9 | 2.5 | 2.5 | 2.4 | 2.6 | 2.1           | 4.1             |
| 25-Feb | 3.1                           | 3.3 | Z    | 3.7 | 3.9  | 3.9  | 4.0  | 3.9  | 3.2 | 2.7 | 1.9 | 1.3 | 1.0 | 1.1 | 1.2 | 0.9 | 0.9 | 1.4 | 1.5 | 1.7 | 2.2 | 2.7 | 2.5 | 2.9 | 2.4           | 4.0             |
| 26-Feb | 2.9                           | 2.8 | 3.5  | Z   | 3.7  | 5.8  | 6.0  | 7.4  | 4.9 | 5.7 | 4.3 | 2.5 | 1.5 | 1.4 | 1.4 | 1.1 | 1.0 | 0.9 | 1.3 | 0.7 | 0.8 | 0.7 | 0.9 | 1.0 | 2.7           | 7.4             |
| 27-Feb | 1.0                           | 1.0 | 0.9  | 0.6 | Z    | 2.2  | 2.5  | 2.5  | 2.7 | 3.8 | 4.6 | 3.1 | 1.8 | 1.2 | 0.8 | 1.9 | 1.8 | 0.6 | 1.1 | 1.3 | 2.6 | 3.6 | 3.1 | 3.1 | 2.1           | 4.6             |
| 28-Feb | 2.9                           | 2.4 | 2.2  | 2.4 | 1.4  | Z    | 0.9  | 2.2  | 3.1 | 3.3 | 2.1 | 1.5 | 1.1 | 1.3 | 1.0 | 1.4 | 2.4 | 3.6 | 3.7 | 4.6 | 4.0 | 5.3 | 4.6 | 4.9 | 2.7           | 5.3             |
|        | 3.3                           | 2.9 | 3.7  | 2.6 | 3.1  | 3.4  | 3.3  | 3.2  | 3.4 | 3.3 | 3.2 | 2.2 | 1.9 | 1.8 | 1.7 | 1.8 | 2.0 | 2.6 | 2.7 | 3.0 | 3.2 | 3.4 | 3.3 | 3.4 |               | Diurnal Average |
|        | 11.9                          | 9.1 | 21.0 | 7.1 | 11.6 | 15.0 | 13.6 | 11.0 | 9.0 | 7.8 | 8.9 | 5.6 | 5.6 | 6.0 | 6.0 | 6.2 | 5.7 | 6.3 | 6.3 | 6.6 | 7.5 | 7.9 | 7.0 | 9.6 |               | Diurnal Maximum |

Z - zerospan      C - Calibration      M - Maintenance  
 Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 159 ppb



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Nitrogen Dioxide (NO<sub>2</sub>) - ppb**  
**Conklin - February 2023**





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Nitrogen Dioxide (NO<sub>2</sub>) - ppb  
Conklin - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 20                            | 636                    | 99.84    | 99.84               |
| 21 - 40                           | 1                      | 0.16     | 100.00              |
| 41 - 80                           | 0                      | 0.00     | 100.00              |
| 81 - 159                          | 0                      | 0.00     | 100.00              |
| > 159                             | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 637

Total Number of Hours: 672





**Wood Buffalo Environmental Association  
Frequency Distribution**

**Nitrogen Dioxide (NO<sub>2</sub>) - ppb  
Conklin - February 2023**

| <b>Concentration<br/>Ranges (ppb)</b> | <b>Wind Direction</b> |     |    |     |    |     |    |     |    |     |    |     |    |     |    |     | <b>Totals</b> |
|---------------------------------------|-----------------------|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|---------------|
|                                       | N                     | NNE | NE | ENE | E  | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |               |
| 0 - 20                                | 40                    | 29  | 14 | 14  | 14 | 18  | 35 | 55  | 61 | 60  | 66 | 33  | 37 | 34  | 55 | 69  | 634           |
| 21 - 40                               | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 1  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 1             |
| 11 - 80                               | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| 81 - 159                              | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| > 159                                 | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| <b>Totals</b>                         | 40                    | 29  | 14 | 14  | 14 | 18  | 35 | 55  | 62 | 60  | 66 | 33  | 37 | 34  | 55 | 69  | 635           |

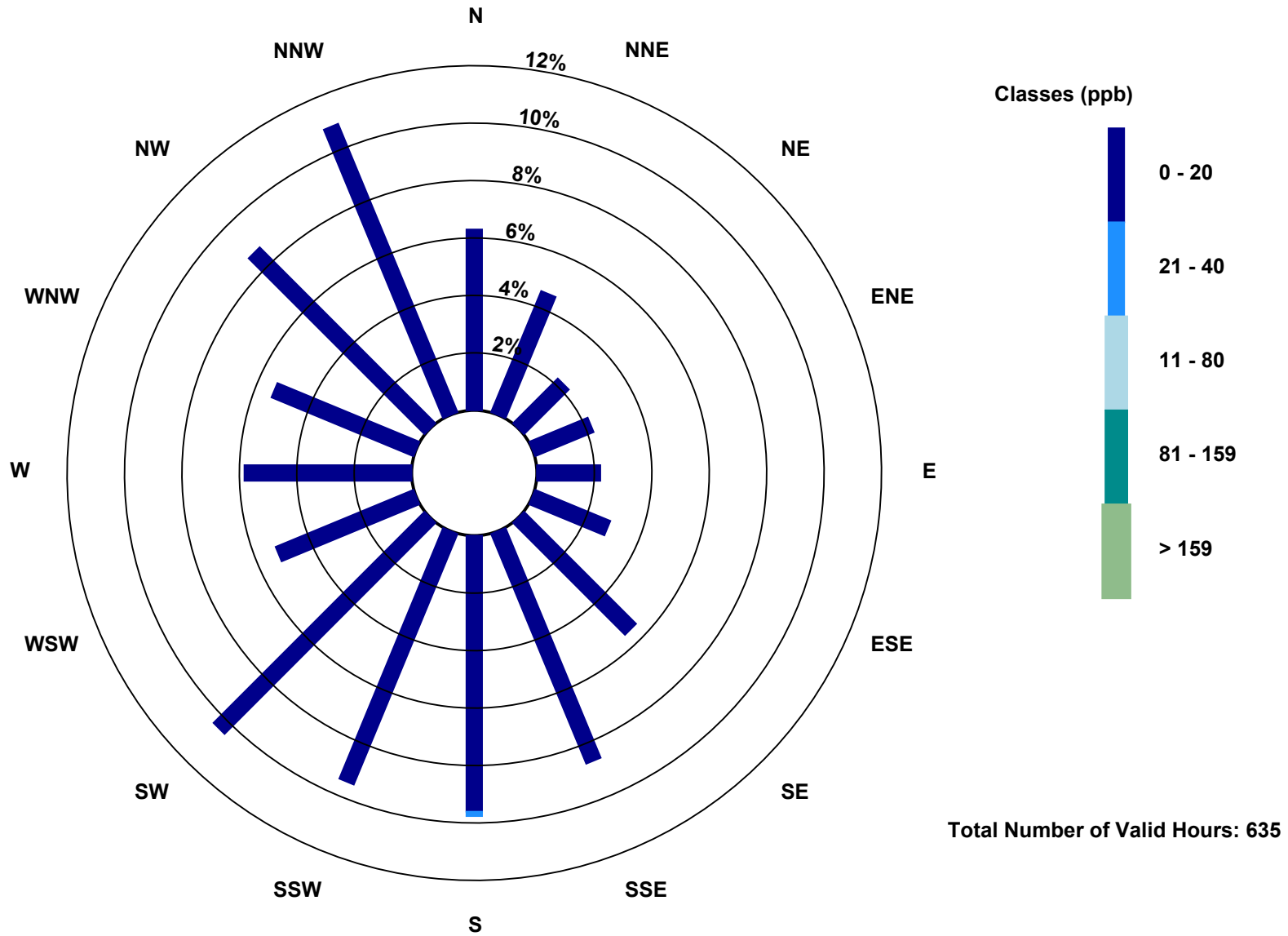
Total Number of Valid Hours: 635

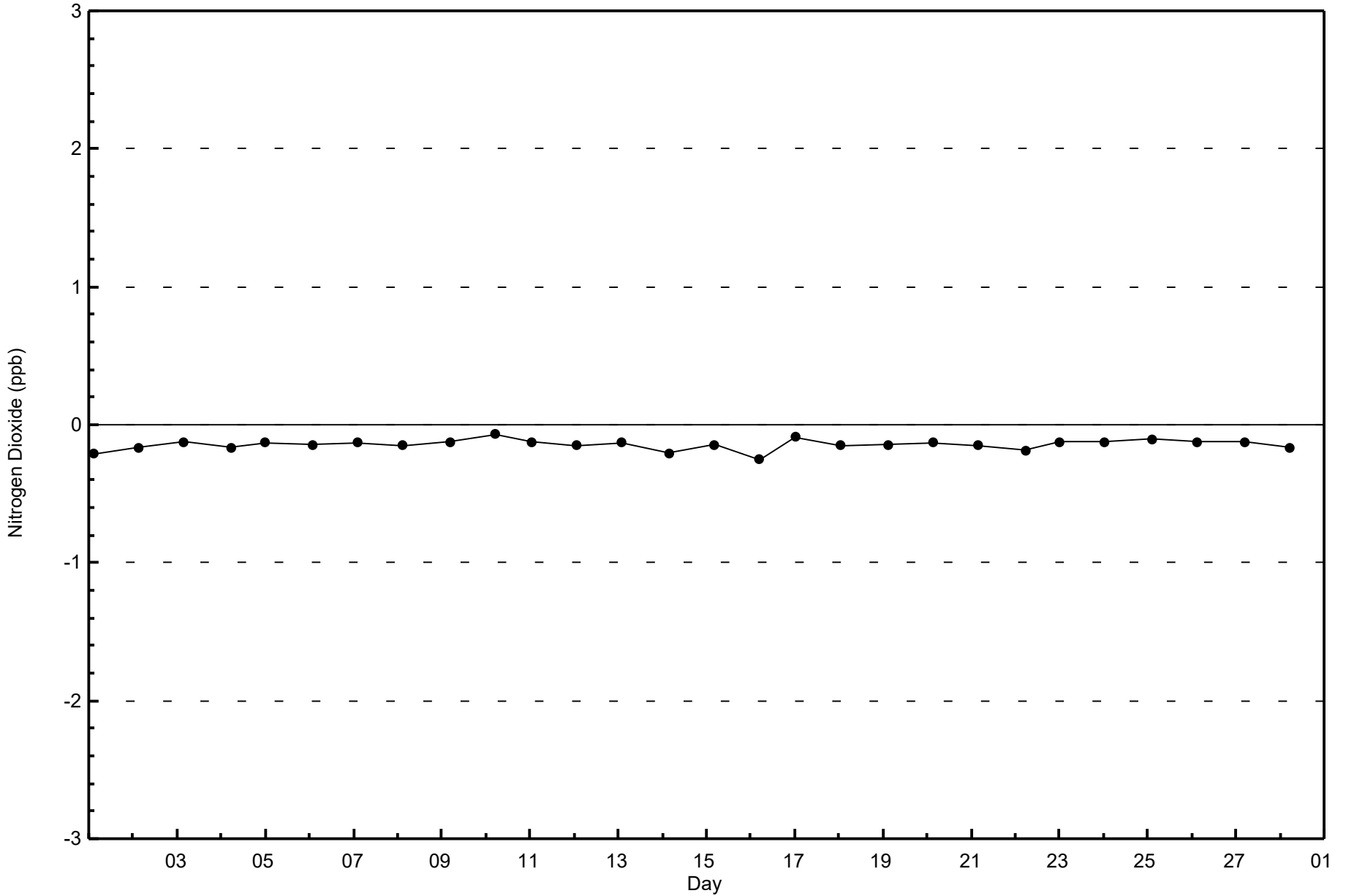
Total Number of Hours: 672

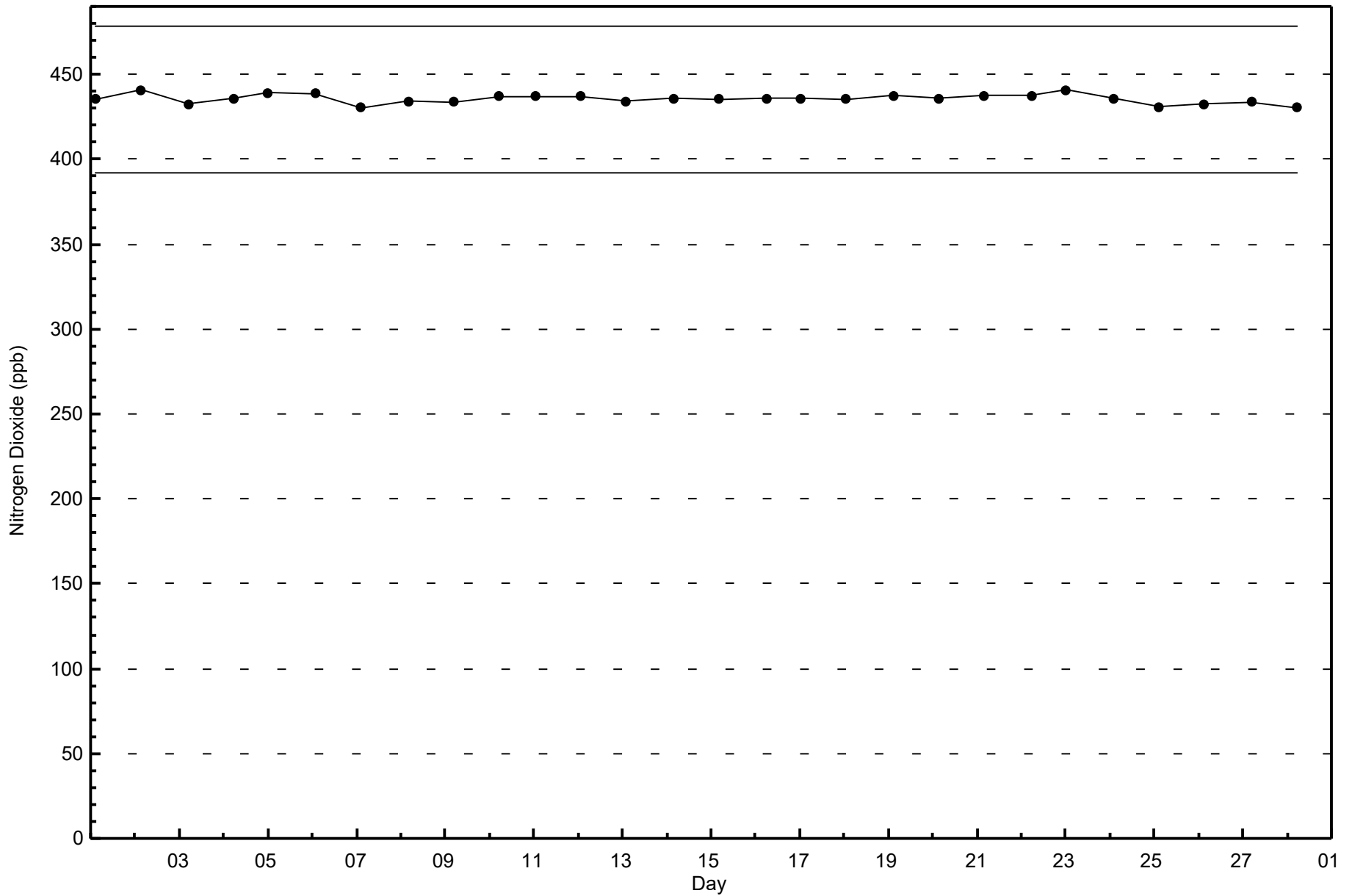


Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Nitrogen Dioxide (NO<sub>2</sub>) - ppb  
Conklin









**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

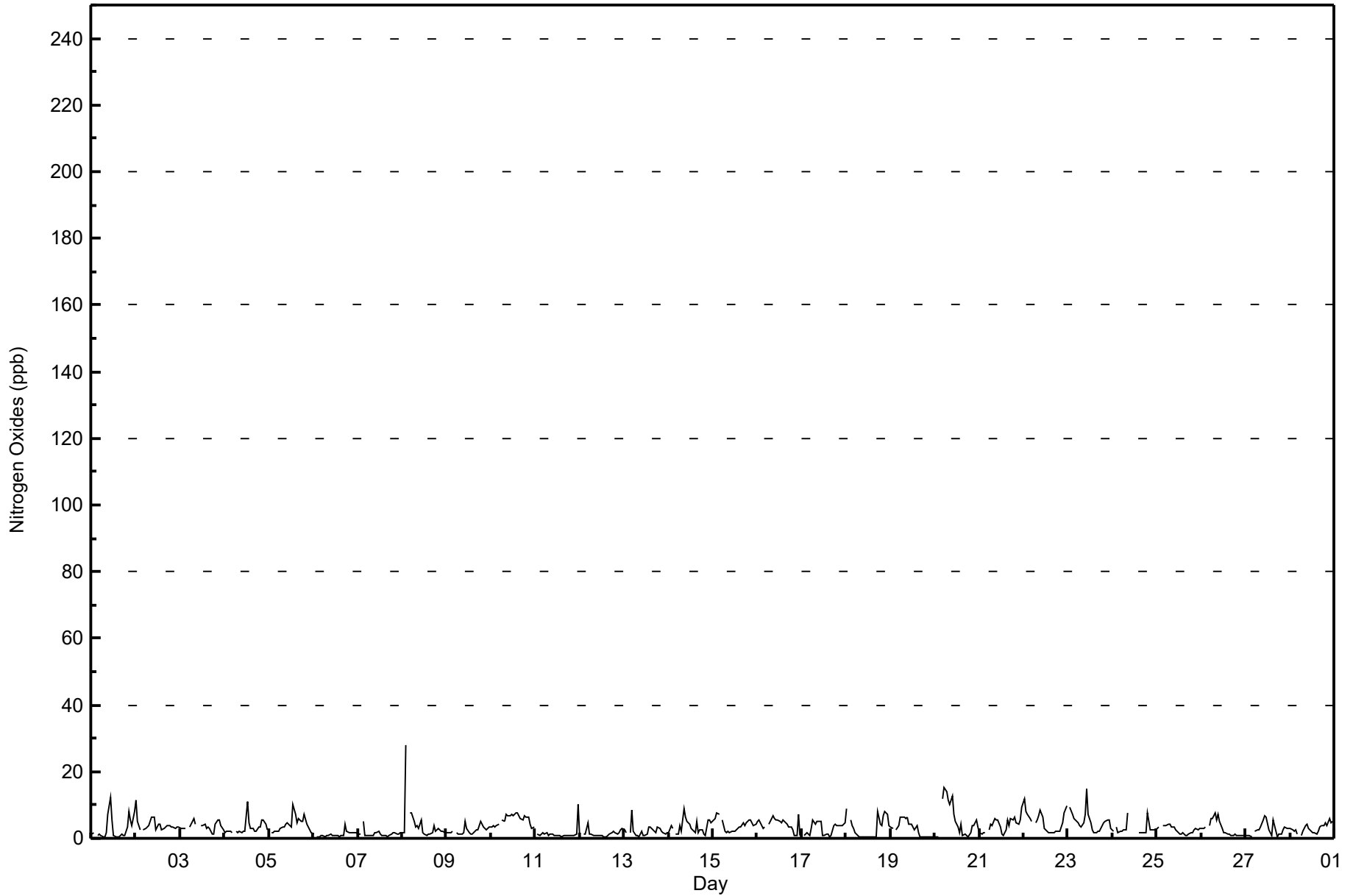
**Nitrogen Oxides (NO<sub>x</sub>) - ppb**  
**Conklin - February 2023**

| Maximum Value: 28.1 ppb on Feb 8 03:00      |                               | Maximum Daily Average: 5.5 ppb on Feb 10  |      | Hours in Service: 672          |      |      |      |      |      |      |      |     |      |      |     |     |     |     |     |     |     |     |     |                 |               |               |     |                 |      |      |      |      |      |      |     |      |      |     |     |     |     |     |     |     |     |     |      |                 |  |
|---|-------------------------------|---|------|--------------------------------|------|------|------|------|------|------|------|-----|------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----------------|---------------|---------------|-----|-----------------|------|------|------|------|------|------|-----|------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|-----------------|--|
| Minimum Value: 0.3 ppb on Feb 1 08:00       |                               | Minimum Daily Average: 1.2 ppb on Feb 6   |      | Hours of Data: 637             |      |      |      |      |      |      |      |     |      |      |     |     |     |     |     |     |     |     |     |                 |               |               |     |                 |      |      |      |      |      |      |     |      |      |     |     |     |     |     |     |     |     |     |      |                 |  |
| Maximum Diurnal Average: 4.7 ppb at hour 11 |                               | Minimum Diurnal Average: 2.2 ppb at hour 17   |      | Hours of Missing Data: 35      |      |      |      |      |      |      |      |     |      |      |     |     |     |     |     |     |     |     |     |                 |               |               |     |                 |      |      |      |      |      |      |     |      |      |     |     |     |     |     |     |     |     |     |      |                 |  |
| Monthly Average: 3.26 ppb                   |                               | Percentiles: P <sub>1</sub> = 0.4 P <sub>10</sub> = 0.8 Q <sub>1</sub> = 1.4 Median = 2.6 Q <sub>3</sub> = 4.4 P <sub>90</sub> = 6.3 P <sub>99</sub> = 11.8 |      | Hours of Calibration: 33       |      |      |      |      |      |      |      |     |      |      |     |     |     |     |     |     |     |     |     |                 |               |               |     |                 |      |      |      |      |      |      |     |      |      |     |     |     |     |     |     |     |     |     |      |                 |  |
|   |                               |   |      | Percent Operational Time: 99.7 |      |      |      |      |      |      |      |     |      |      |     |     |     |     |     |     |     |     |     |                 |               |               |     |                 |      |      |      |      |      |      |     |      |      |     |     |     |     |     |     |     |     |     |      |                 |  |
| Day   | Hourly Period Ending At (MST) |   |      |                                |      |      |      |      |      |      |      |     |      |      |     |     |     |     |     |     |     |     |     |                 | Daily Average | Daily Maximum |     |                 |      |      |      |      |      |      |     |      |      |     |     |     |     |     |     |     |     |     |      |                 |  |
|   | 1                             | 2   | 3    | 4                              | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12  | 13   | 14   | 15  | 16  | 17  | 18  | 19  | 20  | 21  | 22  | 23  | 24              |               |               |     |                 |      |      |      |      |      |      |     |      |      |     |     |     |     |     |     |     |     |     |      |                 |  |
| 1-Feb                                       | 1.4                           | 1.7   | Z    | 0.8                            | 1.2  | 0.9  | 0.6  | 0.3  | 1.7  | 7.3  | 12.4 | 5.4 | 1.0  | 0.5  | 0.3 | 0.4 | 1.2 | 1.0 | 0.9 | 3.3 | 7.9 | 5.6 | 3.7 | 8.2             | 2.9           | 12.4          |     |                 |      |      |      |      |      |      |     |      |      |     |     |     |     |     |     |     |     |     |      |                 |  |
| 2-Feb                                       | 11.4                          | 5.0   | 2.4  | Z                              | 2.4  | 3.1  | 3.5  | 4.0  | 6.2  | 6.2  | 6.4  | 2.5 | 4.2  | 4.4  | 2.5 | 2.8 | 3.6 | 3.6 | 3.7 | 3.6 | 3.3 | 3.1 | 3.2 | 3.2             | 4.1           | 11.4          |     |                 |      |      |      |      |      |      |     |      |      |     |     |     |     |     |     |     |     |     |      |                 |  |
| 3-Feb                                       | 3.0                           | 3.0   | 3.0  | 3.1                            | Z    | 3.3  | 4.2  | 5.9  | 4.4  | M    | M    | 3.7 | 3.8  | 4.0  | 3.0 | 3.2 | 2.9 | 1.5 | 1.2 | 4.1 | 5.6 | 5.6 | 3.9 | 2.6             | 3.6           | 5.9           |     |                 |      |      |      |      |      |      |     |      |      |     |     |     |     |     |     |     |     |     |      |                 |  |
| 4-Feb                                       | 1.7                           | 2.0   | 2.1  | 2.1                            | 1.8  | Z    | 2.2  | 1.6  | 2.3  | 1.8  | 2.0  | 2.3 | 11.0 | 4.5  | 3.0 | 2.9 | 2.2 | 2.1 | 3.3 | 3.4 | 5.3 | 5.7 | 4.2 | 2.7             | 3.1           | 11.0          |     |                 |      |      |      |      |      |      |     |      |      |     |     |     |     |     |     |     |     |     |      |                 |  |
| 5-Feb                                       | Z                             | 1.6   | 1.8  | 2.1                            | 2.2  | 2.2  | 2.9  | 3.5  | 3.6  | 4.2  | 4.6  | 3.7 | 3.3  | 10.3 | 7.3 | 4.5 | 5.8 | 5.0 | 5.0 | 7.1 | 4.1 | 3.5 | 2.4 | 1.7             | 4.0           | 10.3          |     |                 |      |      |      |      |      |      |     |      |      |     |     |     |     |     |     |     |     |     |      |                 |  |
| 6-Feb                                       | 1.2                           | Z   | 0.5  | 0.6                            | 0.7  | 0.9  | 0.6  | 1.0  | 1.0  | 1.1  | 0.7  | 1.0 | 0.9  | 1.0  | 0.6 | 0.7 | 0.9 | 4.3 | 2.0 | 1.6 | 1.7 | 1.8 | 1.6 | 1.5             | 1.2           | 4.3           |     |                 |      |      |      |      |      |      |     |      |      |     |     |     |     |     |     |     |     |     |      |                 |  |
| 7-Feb                                       | 1.4                           | 1.5   | Z    | 5.2                            | 0.9  | 0.9  | 0.8  | 0.8  | 1.0  | 1.6  | 1.6  | 2.2 | 1.4  | 1.0  | 0.8 | 0.8 | 0.6 | 0.9 | 1.2 | 1.7 | 1.7 | 1.4 | 1.3 | 1.5             | 1.4           | 5.2           |     |                 |      |      |      |      |      |      |     |      |      |     |     |     |     |     |     |     |     |     |      |                 |  |
| 8-Feb                                       | 1.7                           | 1.8   | 28.1 | Z                              | 7.5  | 7.6  | 4.9  | 3.4  | 3.6  | 3.1  | 5.5  | 1.7 | 1.4  | 1.1  | 1.3 | 1.4 | 1.5 | 3.7 | 2.0 | 2.9 | 2.4 | 2.1 | 2.0 | 1.7             | 4.0           | 28.1          |     |                 |      |      |      |      |      |      |     |      |      |     |     |     |     |     |     |     |     |     |      |                 |  |
| 9-Feb                                       | 1.7                           | 1.6   | 1.6  | 2.0                            | Z    | 1.8  | 1.3  | 1.4  | 1.5  | 1.6  | 5.2  | 3.2 | 1.6  | 1.1  | 1.2 | 2.2 | 2.6 | 2.6 | 5.2 | 4.3 | 3.2 | 2.6 | 3.0 | 3.3             | 2.4           | 5.2           |     |                 |      |      |      |      |      |      |     |      |      |     |     |     |     |     |     |     |     |     |      |                 |  |
| 10-Feb                                      | 3.6                           | 3.7   | 3.4  | 3.7                            | 4.2  | Z    | 5.4  | 5.1  | 7.2  | 6.6  | 6.8  | 7.0 | 6.9  | 7.8  | 7.6 | 7.0 | 5.9 | 5.4 | 6.7 | 6.4 | 6.2 | 4.3 | 3.1 | 3.3             | 5.5           | 7.8           |     |                 |      |      |      |      |      |      |     |      |      |     |     |     |     |     |     |     |     |     |      |                 |  |
| 11-Feb                                      | Z                             | 1.1   | 1.0  | 1.5                            | 1.5  | 1.4  | 1.7  | 1.0  | 1.1  | 1.3  | 0.9  | 0.8 | 0.7  | 0.7  | 0.5 | 0.7 | 0.8 | 1.0 | 0.9 | 0.9 | 0.9 | 1.0 | 1.1 | 10.1            | 1.4           | 10.1          |     |                 |      |      |      |      |      |      |     |      |      |     |     |     |     |     |     |     |     |     |      |                 |  |
| 12-Feb                                      | 1.2                           | Z   | 1.2  | 1.3                            | 4.5  | 1.2  | 1.4  | 1.0  | 0.9  | 0.8  | 0.9  | 1.0 | 0.8  | 0.6  | 0.6 | 0.7 | 1.3 | 1.9 | 2.1 | 1.6 | 1.3 | 1.7 | 2.8 | 3.0             | 1.5           | 4.5           |     |                 |      |      |      |      |      |      |     |      |      |     |     |     |     |     |     |     |     |     |      |                 |  |
| 13-Feb                                      | 2.4                           | 1.5   | Z    | 1.6                            | 8.3  | 2.3  | 0.8  | 0.7  | 0.6  | 2.1  | 0.7  | 1.0 | 1.1  | 3.3  | 3.4 | 2.8 | 2.0 | 1.8 | 3.3 | 2.8 | 2.2 | 1.5 | 1.5 | 1.7             | 2.2           | 8.3           |     |                 |      |      |      |      |      |      |     |      |      |     |     |     |     |     |     |     |     |     |      |                 |  |
| 14-Feb                                      | 1.8                           | 3.6   | 2.8  | Z                              | 1.4  | 1.2  | 3.9  | 2.1  | 8.9  | 6.4  | 5.0  | 4.1 | 3.0  | 2.4  | 1.9 | 5.3 | 1.8 | 2.6 | 2.4 | 1.3 | 0.7 | 5.6 | 5.3 | 4.7             | 3.4           | 8.9           |     |                 |      |      |      |      |      |      |     |      |      |     |     |     |     |     |     |     |     |     |      |                 |  |
| 15-Feb                                      | 5.4                           | 5.8   | 7.5  | 7.1                            | Z    | 5.6  | 2.1  | 1.6  | 2.1  | 1.6  | 2.0  | 1.9 | 2.0  | 3.1  | 3.4 | 3.3 | 4.6 | 3.9 | 4.5 | 5.7 | 5.5 | 4.5 | 3.8 | 4.4             | 4.0           | 7.5           |     |                 |      |      |      |      |      |      |     |      |      |     |     |     |     |     |     |     |     |     |      |                 |  |
| 16-Feb                                      | 4.9                           | 5.4   | 3.9  | 3.1                            | 3.5  | Z    | 4.1  | 5.1  | 7.0  | 5.8  | 5.4  | 5.3 | 5.3  | 4.7  | 5.4 | 4.5 | 4.0 | 3.6 | 3.5 | 2.4 | 1.0 | 0.7 | 7.1 | 0.7             | 4.2           | 7.1           |     |                 |      |      |      |      |      |      |     |      |      |     |     |     |     |     |     |     |     |     |      |                 |  |
| 17-Feb                                      | Z                             | 0.7   | 1.3  | 1.7                            | 0.7  | 2.8  | 5.4  | 4.3  | 5.1  | 5.2  | 5.1  | 0.9 | 0.7  | 1.4  | 1.1 | 0.6 | 0.8 | 4.0 | 4.2 | 3.9 | 3.7 | 4.0 | 3.7 | 4.7             | 2.9           | 5.4           |     |                 |      |      |      |      |      |      |     |      |      |     |     |     |     |     |     |     |     |     |      |                 |  |
| 18-Feb                                      | 8.8                           | Z   | 5.4  | 3.9                            | 2.8  | 1.8  | 0.9  | 0.5  | 0.4  | 0.4  | 0.3  | 0.4 | 0.5  | 0.4  | 0.4 | 0.4 | 0.6 | 8.1 | 4.1 | 4.0 | 6.9 | 8.2 | 7.1 | 4.0             | 3.0           | 8.8           |     |                 |      |      |      |      |      |      |     |      |      |     |     |     |     |     |     |     |     |     |      |                 |  |
| 19-Feb                                      | 3.3                           | 3.0   | Z    | 2.6                            | 3.8  | 6.2  | 6.3  | 6.4  | 5.9  | 6.4  | 4.4  | 4.2 | 3.3  | 2.5  | 3.6 | 1.9 | 0.6 | 0.5 | 0.4 | 0.5 | 0.4 | 0.3 | 0.3 | 0.4             | 2.9           | 6.4           |     |                 |      |      |      |      |      |      |     |      |      |     |     |     |     |     |     |     |     |     |      |                 |  |
| 20-Feb                                      | 0.6                           | 0.5   | 0.6  | Z                              | 11.7 | 15.1 | 13.8 | 11.2 | 10.4 | 12.6 | 7.4  | 5.2 | 3.3  | 1.6  | 4.2 | 0.7 | 1.3 | 0.6 | 0.5 | 1.9 | 3.7 | 3.8 | 5.5 | 3.5             | 5.2           | 15.1          |     |                 |      |      |      |      |      |      |     |      |      |     |     |     |     |     |     |     |     |     |      |                 |  |
| 21-Feb                                      | 1.5                           | 1.3   | 1.8  | 1.7                            | Z    | 2.5  | 4.1  | 3.9  | 6.1  | 5.5  | 5.5  | 3.2 | 1.4  | 0.9  | 2.6 | 5.7 | 3.9 | 5.8 | 5.6 | 6.6 | 4.8 | 4.2 | 5.4 | 9.5             | 4.1           | 9.5           |     |                 |      |      |      |      |      |      |     |      |      |     |     |     |     |     |     |     |     |     |      |                 |  |
| 22-Feb                                      | 11.9                          | 8.1   | 7.2  | 5.8                            | 4.9  | Z    | 4.6  | 5.5  | 6.7  | 8.6  | 6.3  | 3.0 | 2.6  | 1.8  | 1.7 | 1.5 | 1.7 | 2.2 | 2.0 | 2.2 | 3.4 | 4.9 | 7.4 | 9.8             | 4.9           | 11.9          |     |                 |      |      |      |      |      |      |     |      |      |     |     |     |     |     |     |     |     |     |      |                 |  |
| 23-Feb                                      | Z                             | 9.2   | 7.3  | 6.0                            | 5.6  | 4.6  | 3.9  | 3.6  | 4.5  | 7.3  | 15.0 | 7.3 | 4.5  | 2.6  | 1.7 | 1.8 | 2.3 | 2.3 | 3.9 | 4.6 | 4.9 | 5.6 | 5.5 | 3.1             | 5.1           | 15.0          |     |                 |      |      |      |      |      |      |     |      |      |     |     |     |     |     |     |     |     |     |      |                 |  |
| 24-Feb                                      | 2.1                           | Z   | 3.4  | 1.6                            | 2.0  | 2.3  | 2.6  | 2.7  | 7.6  | C    | C    | C   | C    | C    | 1.8 | 1.6 | 1.5 | 1.7 | 1.9 | 7.6 | 2.7 | 2.6 | 2.4 | 2.6             | 2.8           | 7.6           |     |                 |      |      |      |      |      |      |     |      |      |     |     |     |     |     |     |     |     |     |      |                 |  |
| 25-Feb                                      | 3.1                           | 3.3   | Z    | 3.7                            | 3.9  | 4.0  | 4.1  | 4.1  | 3.6  | 3.3  | 2.5  | 2.0 | 1.3  | 1.4  | 1.5 | 1.0 | 1.0 | 1.5 | 1.5 | 1.8 | 2.5 | 2.9 | 2.6 | 2.9             | 2.6           | 4.1           |     |                 |      |      |      |      |      |      |     |      |      |     |     |     |     |     |     |     |     |     |      |                 |  |
| 26-Feb                                      | 3.0                           | 2.8   | 3.6  | Z                              | 3.7  | 5.9  | 6.0  | 7.5  | 5.3  | 7.2  | 5.3  | 3.1 | 1.8  | 1.6  | 1.5 | 1.2 | 1.0 | 0.9 | 1.3 | 0.7 | 0.8 | 0.7 | 0.9 | 1.0             | 2.9           | 7.5           |     |                 |      |      |      |      |      |      |     |      |      |     |     |     |     |     |     |     |     |     |      |                 |  |
| 27-Feb                                      | 1.0                           | 1.0   | 0.9  | 0.6                            | Z    | 2.2  | 2.5  | 2.6  | 3.2  | 5.3  | 6.8  | 6.3 | 2.6  | 1.5  | 1.0 | 5.5 | 2.2 | 0.6 | 1.1 | 1.3 | 2.6 | 3.6 | 3.1 | 3.1             | 2.6           | 6.8           |     |                 |      |      |      |      |      |      |     |      |      |     |     |     |     |     |     |     |     |     |      |                 |  |
| 28-Feb                                      | 2.9                           | 2.4   | 2.2  | 2.4                            | 1.4  | Z    | 0.9  | 2.3  | 3.6  | 4.3  | 2.9  | 2.1 | 1.6  | 1.9  | 1.4 | 2.1 | 3.2 | 3.9 | 3.7 | 4.6 | 4.0 | 5.9 | 4.7 | 4.9             | 3.0           | 5.9           |     |                 |      |      |      |      |      |      |     |      |      |     |     |     |     |     |     |     |     |     |      |                 |  |
|   |                               |   |      |                                |      |      |      |      |      |      |      |     |      |      |     |     |     |     |     |     |     |     |     | 3.4             | 3.0           | 4.0           | 2.8 | 3.5             | 3.5  | 3.4  | 3.3  | 4.1  | 4.5  | 4.7  | 3.1 | 2.7  | 2.5  | 2.3 | 2.4 | 2.2 | 2.7 | 2.8 | 3.3 | 3.3 | 3.5 | 3.5 | 3.7  | Diurnal Average |  |
|   |                               |   |      |                                |      |      |      |      |      |      |      |     |      |      |     |     |     |     |     |     |     |     |     | 11.9            | 9.2           | 28.1          | 7.1 | 11.7            | 15.1 | 13.8 | 11.2 | 10.4 | 12.6 | 15.0 | 7.3 | 11.0 | 10.3 | 7.6 | 7.0 | 5.9 | 8.1 | 6.7 | 7.6 | 7.9 | 8.2 | 7.4 | 10.1 | Diurnal Maximum |  |
| Z - zerospan                                |                               |   |      |                                |      |      |      |      |      |      |      |     |      |      |     |     |     |     |     |     |     |     |     | C - Calibration |               |               |     | M - Maintenance |      |      |      |      |      |      |     |      |      |     |     |     |     |     |     |     |     |     |      |                 |  |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Nitrogen Oxides (NO<sub>x</sub>) - ppb**  
**Conklin - February 2023**





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Nitrogen Oxides (NO<sub>x</sub>) - ppb  
Conklin - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 20                            | 636                    | 99.84    | 99.84               |
| 21 - 40                           | 1                      | 0.16     | 100.00              |
| 41 - 80                           | 0                      | 0.00     | 100.00              |
| 81 - 159                          | 0                      | 0.00     | 100.00              |
| > 159                             | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 637

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Nitrogen Oxides (NO<sub>x</sub>) - ppb  
Conklin - February 2023**

| <b>Concentration<br/>Ranges (ppb)</b> | <b>Wind Direction</b> |     |    |     |    |     |    |     |    |     |    |     |    |     |    |     | <b>Totals</b> |
|---------------------------------------|-----------------------|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|---------------|
|                                       | N                     | NNE | NE | ENE | E  | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |               |
| 0 - 20                                | 40                    | 29  | 14 | 14  | 14 | 18  | 35 | 55  | 61 | 60  | 66 | 33  | 37 | 34  | 55 | 69  | 634           |
| 21 - 40                               | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 1  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 1             |
| 11 - 80                               | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| 81 - 159                              | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| > 159                                 | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| <b>Totals</b>                         | 40                    | 29  | 14 | 14  | 14 | 18  | 35 | 55  | 62 | 60  | 66 | 33  | 37 | 34  | 55 | 69  | 635           |

Total Number of Valid Hours: 635

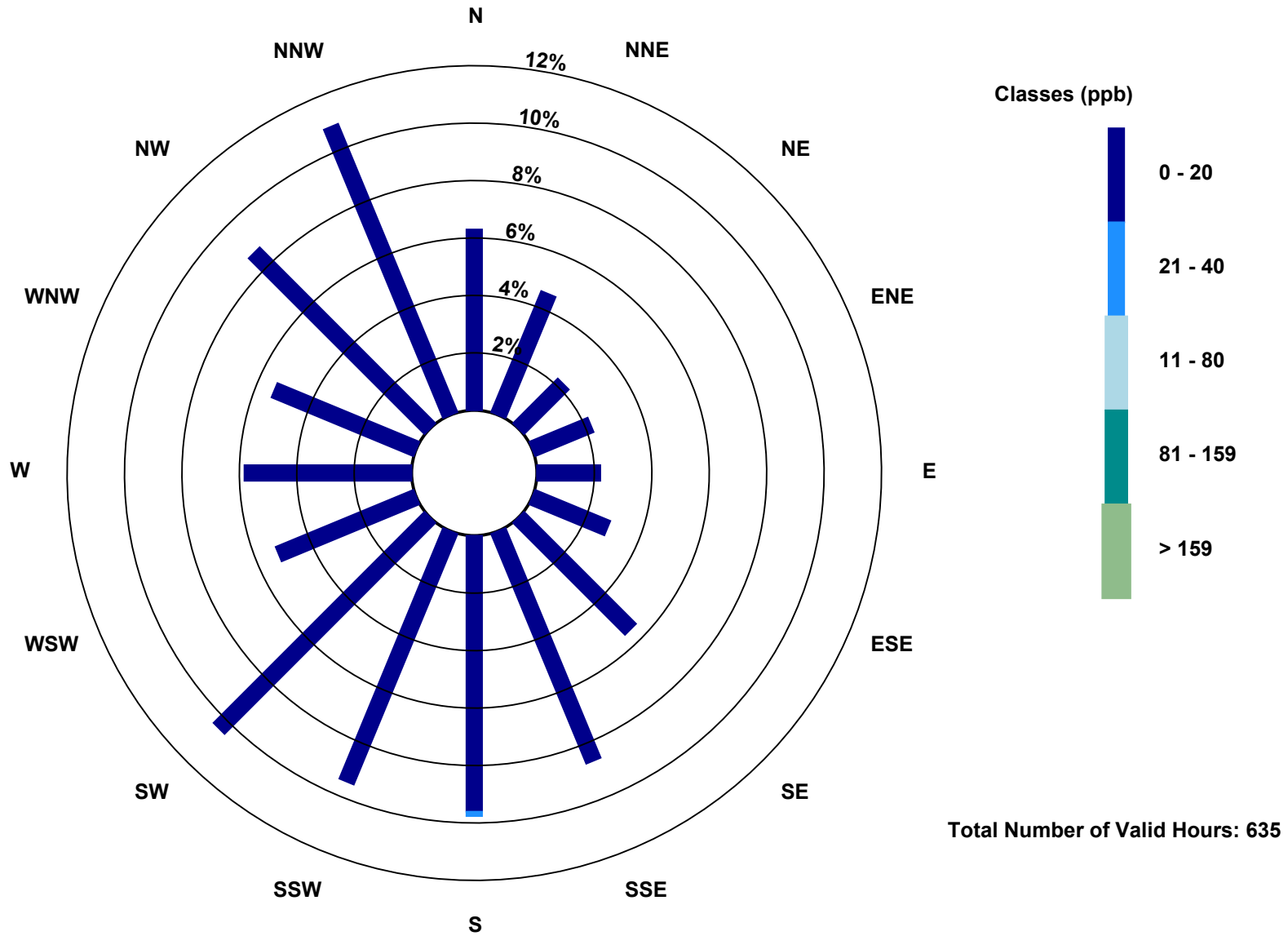
Total Number of Hours: 672

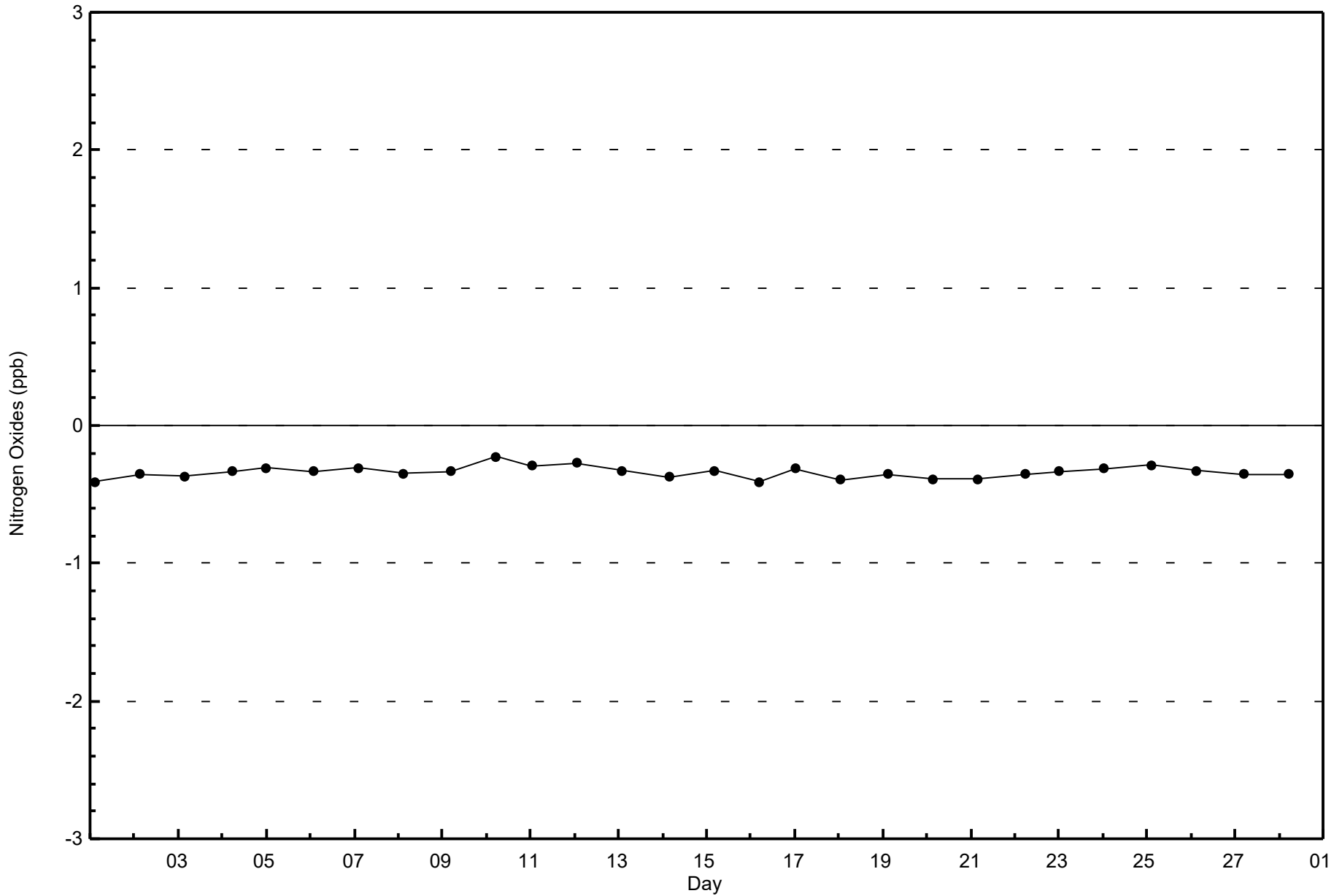


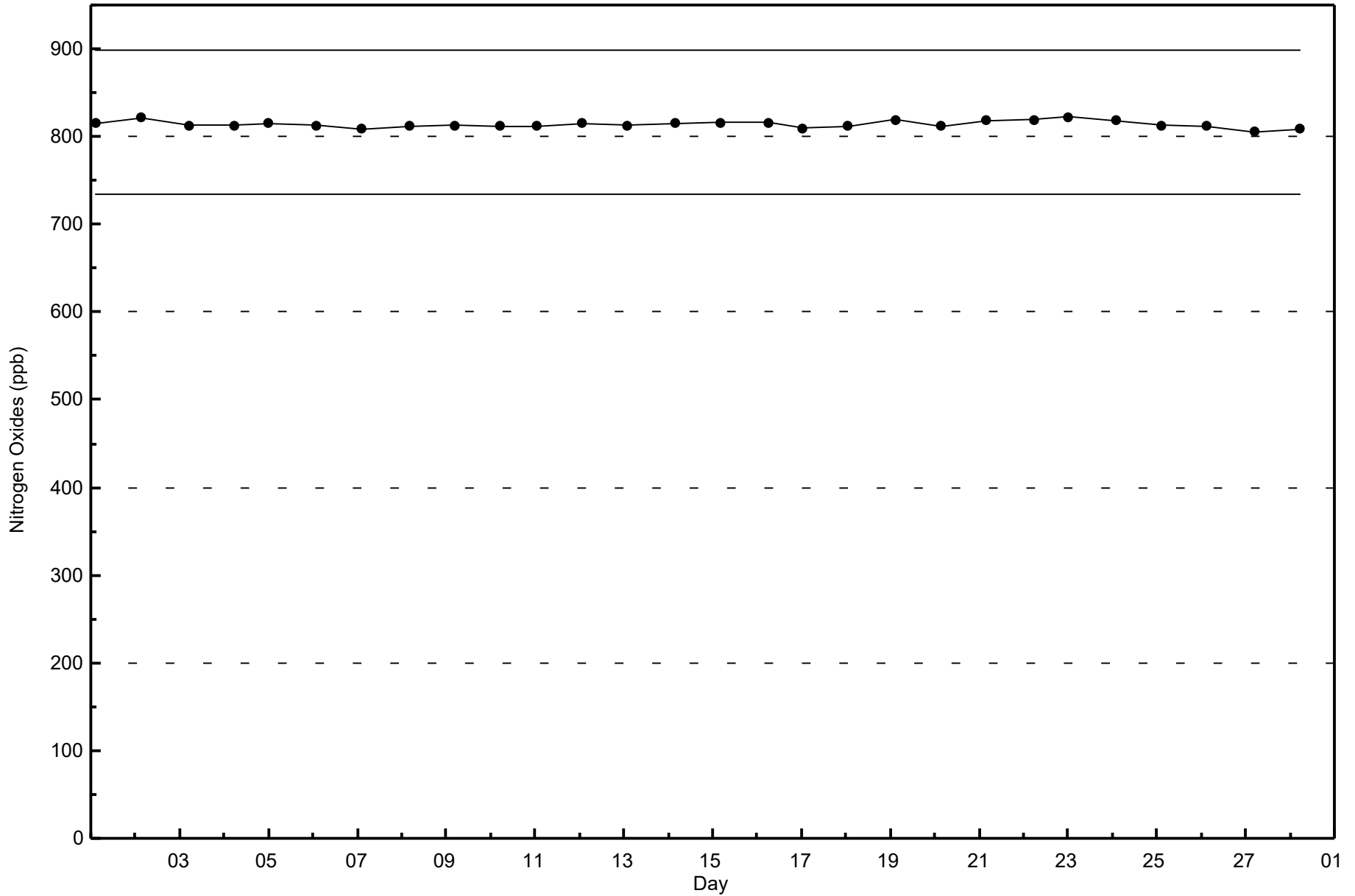


Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Nitrogen Oxides (NO<sub>x</sub>) - ppb  
Conklin









Wood Buffalo Environmental Association

Summary of Hour Averages

Ozone (O<sub>3</sub>) - ppb

Conklin - February 2023

|  |   |          |                           |       |
|--|---|----------|---------------------------|-------|
| Number of Exceedences (AAAQO):               | 1-hr: 0   | 24-hr: 0 | Hours in Service:         | 672   |
| Maximum Value: 45.3 ppb on Feb 25 16:00      | Maximum Daily Average: 41.0 ppb on Feb 12   |          | Hours of Data:            | 640   |
| Minimum Value: 9.6 ppb on Feb 4 23:00        | Minimum Daily Average: 19.3 ppb on Feb 4  |          | Hours of Missing Data:    | 32    |
| Maximum Diurnal Average: 37.5 ppb at hour 16 | Minimum Diurnal Average: 27.7 ppb at hour 6   |          | Hours of Calibration:     | 32    |
| Monthly Average: 32.05 ppb                   | Percentiles: P <sub>1</sub> = 14.2 P <sub>10</sub> = 20.3 Q <sub>1</sub> = 26.2 Median = 33.8 Q <sub>3</sub> = 38.4 P <sub>90</sub> = 41.3 P <sub>99</sub> = 44.2 |          | Percent Operational Time: | 100.0 |

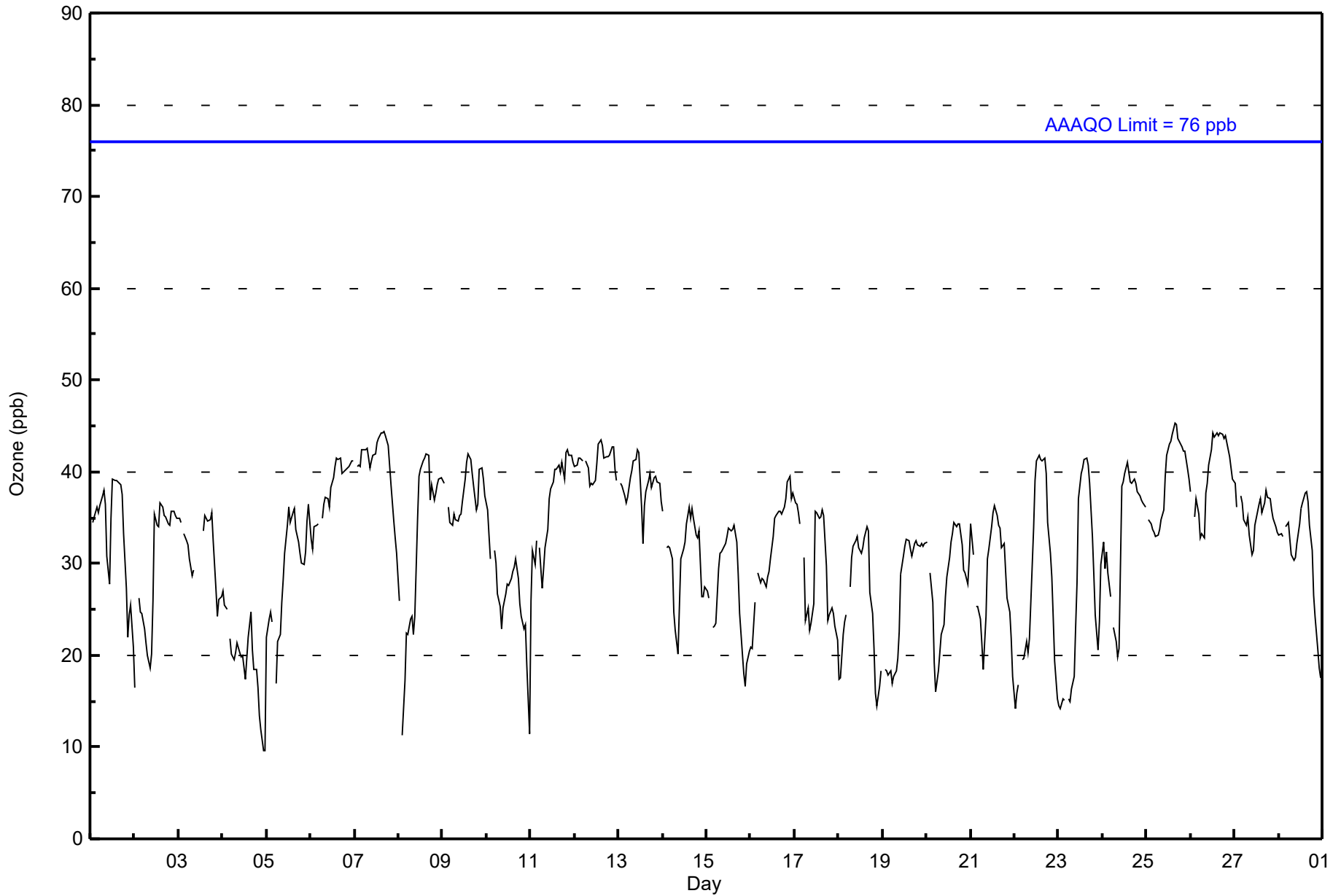
| Day   | Hourly Period Ending At (MST) |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 | Daily Average | Daily Maximum |
|---|-------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----------------|---------------|---------------|
|   | 1                             | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20   | 21   | 22   | 23   | 24              |               |               |
| 1-Feb   | Z                             | 34.4 | 35.1 | 36.2 | 35.6 | 36.2 | 37.3 | 38.0 | 36.4 | 30.8 | 27.8 | 34.9 | 39.1 | 39.0 | 39.0 | 38.9 | 38.7 | 37.6 | 33.3 | 27.3 | 22.0 | 24.4 | 25.5 | 20.9            | 33.4          | 39.1          |
| 2-Feb   | 16.5                          | Z    | 26.2 | 24.7 | 24.6 | 22.8 | 21.4 | 19.9 | 18.7 | 20.1 | 26.0 | 35.3 | 34.2 | 33.9 | 36.6 | 36.1 | 35.2 | 35.0 | 34.3 | 34.1 | 35.7 | 35.7 | 35.3 | 35.0            | 29.5          | 36.6          |
| 3-Feb   | 34.9                          | 34.4 | Z    | 33.2 | 32.5 | 32.0 | 30.5 | 28.6 | 29.3 | C    | C    | C    | C    | 33.5 | 35.3 | 34.9 | 34.6 | 34.8 | 35.5 | 32.5 | 27.1 | 24.3 | 26.1 | 26.4            | 31.6          | 35.5          |
| 4-Feb   | 27.0                          | 25.4 | 25.1 | Z    | 21.8 | 20.1 | 19.6 | 20.3 | 21.3 | 20.3 | 19.8 | 20.0 | 17.4 | 19.7 | 21.9 | 24.7 | 20.5 | 18.5 | 18.4 | 16.5 | 13.5 | 11.9 | 9.6  | 9.7             | 19.3          | 27.0          |
| 5-Feb   | 22.0                          | 24.0 | 24.7 | 23.6 | Z    | 17.0 | 21.5 | 22.3 | 25.8 | 28.2 | 31.1 | 34.1 | 36.1 | 34.5 | 35.6 | 35.9 | 33.8 | 32.3 | 31.0 | 30.0 | 29.9 | 31.3 | 34.6 | 36.4            | 29.4          | 36.4          |
| 6-Feb   | 32.7                          | 31.6 | 34.0 | 34.1 | 34.4 | Z    | 34.9 | 36.5 | 37.3 | 37.1 | 36.1 | 38.3 | 39.3 | 40.5 | 41.5 | 41.3 | 41.4 | 39.8 | 40.0 | 40.3 | 40.5 | 40.5 | 41.2 | 41.1            | 38.0          | 41.5          |
| 7-Feb   | Z                             | 40.6 | 40.7 | 40.6 | 42.4 | 42.4 | 42.5 | 42.6 | 40.4 | 41.2 | 41.8 | 42.0 | 43.2 | 43.6 | 44.3 | 44.3 | 44.3 | 43.9 | 42.9 | 40.8 | 38.7 | 34.6 | 32.9 | 31.1            | 40.9          | 44.3          |
| 8-Feb   | 26.0                          | Z    | 11.2 | 17.2 | 22.4 | 22.3 | 24.0 | 24.2 | 22.3 | 24.2 | 35.0 | 39.5 | 40.3 | 41.2 | 41.6 | 42.0 | 41.8 | 36.9 | 38.6 | 36.9 | 37.6 | 38.6 | 39.3 | 39.4            | 32.3          | 42.0          |
| 9-Feb   | 39.0                          | 38.7 | Z    | 36.2 | 34.5 | 34.2 | 35.4 | 34.7 | 34.6 | 35.3 | 35.4 | 36.7 | 39.2 | 41.1 | 42.0 | 41.4 | 39.8 | 38.5 | 35.8 | 36.5 | 40.3 | 40.5 | 39.1 | 37.4            | 37.7          | 42.0          |
| 10-Feb  | 35.8                          | 33.1 | 30.5 | Z    | 31.4 | 30.1 | 26.7 | 25.3 | 22.9 | 25.1 | 26.7 | 27.7 | 27.6 | 28.3 | 29.1 | 29.6 | 30.6 | 28.3 | 25.6 | 24.3 | 22.8 | 23.3 | 18.9 | 11.4            | 26.7          | 35.8          |
| 11-Feb  | 26.0                          | 31.5 | 29.9 | 32.5 | Z    | 31.7 | 27.3 | 29.4 | 31.7 | 33.8 | 37.0 | 38.2 | 38.9 | 40.3 | 40.2 | 40.8 | 40.0 | 41.0 | 39.2 | 42.1 | 42.4 | 41.8 | 41.8 | 41.1            | 36.5          | 42.4          |
| 12-Feb  | 40.5                          | 40.7 | 41.4 | 41.5 | 41.1 | Z    | 41.2 | 40.5 | 38.4 | 38.7 | 38.6 | 39.1 | 40.9 | 43.0 | 43.4 | 42.8 | 41.4 | 41.7 | 41.6 | 41.9 | 42.7 | 42.7 | 40.3 | 39.0            | 41.0          | 43.4          |
| 13-Feb  | Z                             | 38.8 | 38.5 | 37.3 | 36.7 | 37.2 | 39.4 | 40.2 | 41.2 | 41.4 | 42.3 | 42.1 | 36.1 | 32.2 | 36.3 | 37.8 | 39.1 | 39.8 | 38.3 | 39.3 | 39.4 | 38.9 | 38.8 | 36.8            | 38.6          | 42.3          |
| 14-Feb  | 35.7                          | Z    | 31.8 | 31.9 | 31.7 | 30.6 | 24.6 | 22.8 | 20.1 | 25.3 | 30.6 | 31.5 | 32.4 | 34.4 | 36.2 | 35.0 | 36.0 | 34.9 | 33.0 | 32.9 | 33.6 | 26.4 | 26.4 | 27.5            | 30.7          | 36.2          |
| 15-Feb  | 27.0                          | 26.3 | Z    | 23.1 | 23.2 | 23.5 | 29.4 | 31.2 | 31.2 | 31.5 | 32.2 | 33.0 | 33.9 | 33.6 | 33.8 | 34.2 | 32.3 | 28.9 | 24.6 | 20.2 | 17.9 | 16.7 | 19.1 | 20.4            | 27.3          | 34.2          |
| 16-Feb  | 20.9                          | 20.8 | 25.8 | Z    | 28.9 | 27.9 | 28.4 | 28.2 | 27.4 | 28.5 | 29.2 | 30.5 | 32.9 | 34.9 | 35.2 | 35.7 | 35.7 | 35.4 | 36.1 | 37.0 | 38.9 | 39.5 | 37.1 | 37.7            | 31.8          | 39.5          |
| 17-Feb  | 36.6                          | 36.4 | 35.6 | 34.3 | Z    | 30.7 | 23.8 | 25.2 | 22.7 | 23.5 | 25.6 | 35.7 | 35.6 | 34.9 | 35.1 | 35.9 | 35.3 | 29.8 | 23.9 | 24.3 | 25.1 | 24.5 | 23.2 | 21.6            | 29.5          | 36.6          |
| 18-Feb  | 17.4                          | 17.6 | 22.3 | 23.7 | 24.4 | Z    | 27.5 | 30.7 | 31.9 | 32.4 | 32.9 | 31.8 | 31.2 | 31.8 | 32.9 | 34.0 | 33.6 | 26.9 | 24.6 | 20.8 | 15.9 | 14.5 | 16.6 | 18.2            | 25.8          | 34.0          |
| 19-Feb  | Z                             | 18.5 | 18.3 | 17.9 | 18.3 | 17.0 | 17.7 | 18.3 | 19.7 | 22.5 | 28.8 | 30.8 | 31.9 | 32.7 | 32.6 | 31.5 | 30.8 | 32.1 | 32.6 | 32.0 | 31.9 | 32.2 | 31.8 | 32.3            | 26.6          | 32.7          |
| 20-Feb  | 32.4                          | Z    | 28.9 | 25.8 | 19.2 | 16.0 | 18.3 | 20.3 | 22.2 | 23.3 | 26.4 | 28.5 | 30.7 | 32.4 | 33.3 | 34.5 | 34.0 | 34.3 | 34.3 | 32.1 | 29.3 | 28.9 | 27.8 | 30.5            | 28.0          | 34.5          |
| 21-Feb  | 34.3                          | 31.0 | Z    | 25.3 | 25.3 | 24.0 | 21.4 | 18.4 | 24.2 | 30.6 | 31.6 | 34.0 | 35.6 | 36.3 | 35.2 | 34.2 | 33.8 | 31.7 | 32.2 | 29.2 | 26.2 | 24.7 | 21.8 | 17.7            | 28.6          | 36.3          |
| 22-Feb  | 14.2                          | 15.8 | 16.8 | Z    | 19.5 | 19.7 | 21.5 | 20.4 | 21.8 | 25.8 | 33.9 | 39.0 | 41.1 | 41.9 | 41.4 | 41.2 | 41.5 | 39.8 | 34.4 | 31.1 | 28.5 | 24.1 | 19.3 | 15.3            | 28.2          | 41.9          |
| 23-Feb  | 14.6                          | 14.2 | 15.3 | 15.1 | Z    | 15.2 | 15.0 | 16.3 | 17.7 | 23.0 | 27.9 | 37.0 | 39.9 | 40.5 | 41.3 | 41.5 | 40.8 | 38.8 | 33.0 | 28.9 | 24.5 | 20.6 | 23.6 | 29.8            | 26.7          | 41.5          |
| 24-Feb  | 32.4                          | 29.4 | 31.3 | 29.0 | 26.4 | Z    | 23.1 | 21.6 | 19.9 | 20.7 | 38.4 | 39.0 | 39.9 | 41.0 | 40.0 | 38.8 | 38.8 | 39.2 | 38.7 | 37.9 | 37.3 | 36.9 | 36.6 | 36.1            | 33.6          | 41.0          |
| 25-Feb  | Z                             | 34.8 | 34.3 | 33.7 | 33.4 | 32.9 | 33.0 | 33.8 | 34.7 | 35.8 | 39.5 | 41.8 | 43.0 | 43.4 | 44.1 | 45.3 | 45.1 | 43.7 | 43.1 | 42.7 | 42.2 | 42.2 | 40.2 | 39.1            | 39.2          | 45.3          |
| 26-Feb  | 37.9                          | Z    | 35.1 | 37.1 | 35.3 | 32.8 | 33.3 | 32.8 | 37.7 | 38.8 | 40.7 | 42.4 | 44.3 | 43.8 | 44.2 | 43.9 | 44.3 | 44.1 | 43.6 | 43.9 | 42.4 | 41.7 | 40.5 | 39.3            | 40.0          | 44.3          |
| 27-Feb  | 38.8                          | 36.2 | Z    | 37.3 | 36.6 | 34.8 | 34.2 | 35.1 | 33.1 | 31.0 | 31.4 | 34.2 | 35.7 | 36.5 | 37.1 | 35.5 | 36.6 | 37.9 | 37.2 | 37.1 | 35.9 | 34.9 | 34.1 | 33.4            | 35.4          | 38.8          |
| 28-Feb  | 33.1                          | 33.2 | 32.9 | Z    | 34.0 | 34.4 | 32.7 | 31.0 | 30.3 | 30.6 | 32.2 | 34.3 | 36.0 | 36.6 | 37.7 | 37.8 | 36.8 | 34.2 | 31.5 | 26.5 | 24.3 | 20.5 | 18.6 | 17.6            | 31.2          | 37.8          |
| 29.4 29.9 28.9 30.1 29.7 27.7 28.1 28.2 28.4 29.6 32.6 35.2 36.2 36.6 37.4 37.5 37.0 35.7 34.2 32.8 31.7 30.6 30.0 29.4 |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Diurnal Average |               |               |
| 40.5 40.7 41.4 41.5 42.4 42.4 42.5 42.6 41.2 41.4 42.3 42.4 44.3 43.8 44.3 45.3 45.1 44.1 43.6 43.9 42.7 42.7 41.8 41.1 |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Diurnal Maximum |               |               |

Z - zerospan C - Calibration  
 Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 76 ppb



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Ozone (O<sub>3</sub>) - ppb**  
**Conklin - February 2023**





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Ozone (O<sub>3</sub>) - ppb  
Conklin - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 20                            | 69                     | 10.78    | 10.78               |
| 21 - 50                           | 571                    | 89.22    | 100.00              |
| 51 - 82                           | 0                      | 0.00     | 100.00              |
| > 83                              | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 640

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Ozone (O<sub>3</sub>) - ppb  
Conklin - February 2023**

| <b>Concentration<br/>Ranges (ppb)</b> | <b>Wind Direction</b> |            |           |            |           |            |           |            |           |            |           |            |           |            |           |            | <b>Totals</b> |
|---------------------------------------|-----------------------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|---------------|
|                                       | <b>N</b>              | <b>NNE</b> | <b>NE</b> | <b>ENE</b> | <b>E</b>  | <b>ESE</b> | <b>SE</b> | <b>SSE</b> | <b>S</b>  | <b>SSW</b> | <b>SW</b> | <b>WSW</b> | <b>W</b>  | <b>WNW</b> | <b>NW</b> | <b>NNW</b> |               |
| 0 - 20                                | 6                     | 2          | 1         | 2          | 1         | 1          | 13        | 16         | 12        | 4          | 2         | 0          | 1         | 1          | 7         | 0          | 69            |
| 21 - 50                               | 35                    | 26         | 15        | 12         | 11        | 18         | 22        | 34         | 52        | 60         | 64        | 35         | 35        | 32         | 49        | 69         | 569           |
| 51 - 82                               | 0                     | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0             |
| > 83                                  | 0                     | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0             |
| <b>Totals</b>                         | <b>41</b>             | <b>28</b>  | <b>16</b> | <b>14</b>  | <b>12</b> | <b>19</b>  | <b>35</b> | <b>50</b>  | <b>64</b> | <b>64</b>  | <b>66</b> | <b>35</b>  | <b>36</b> | <b>33</b>  | <b>56</b> | <b>69</b>  | <b>638</b>    |

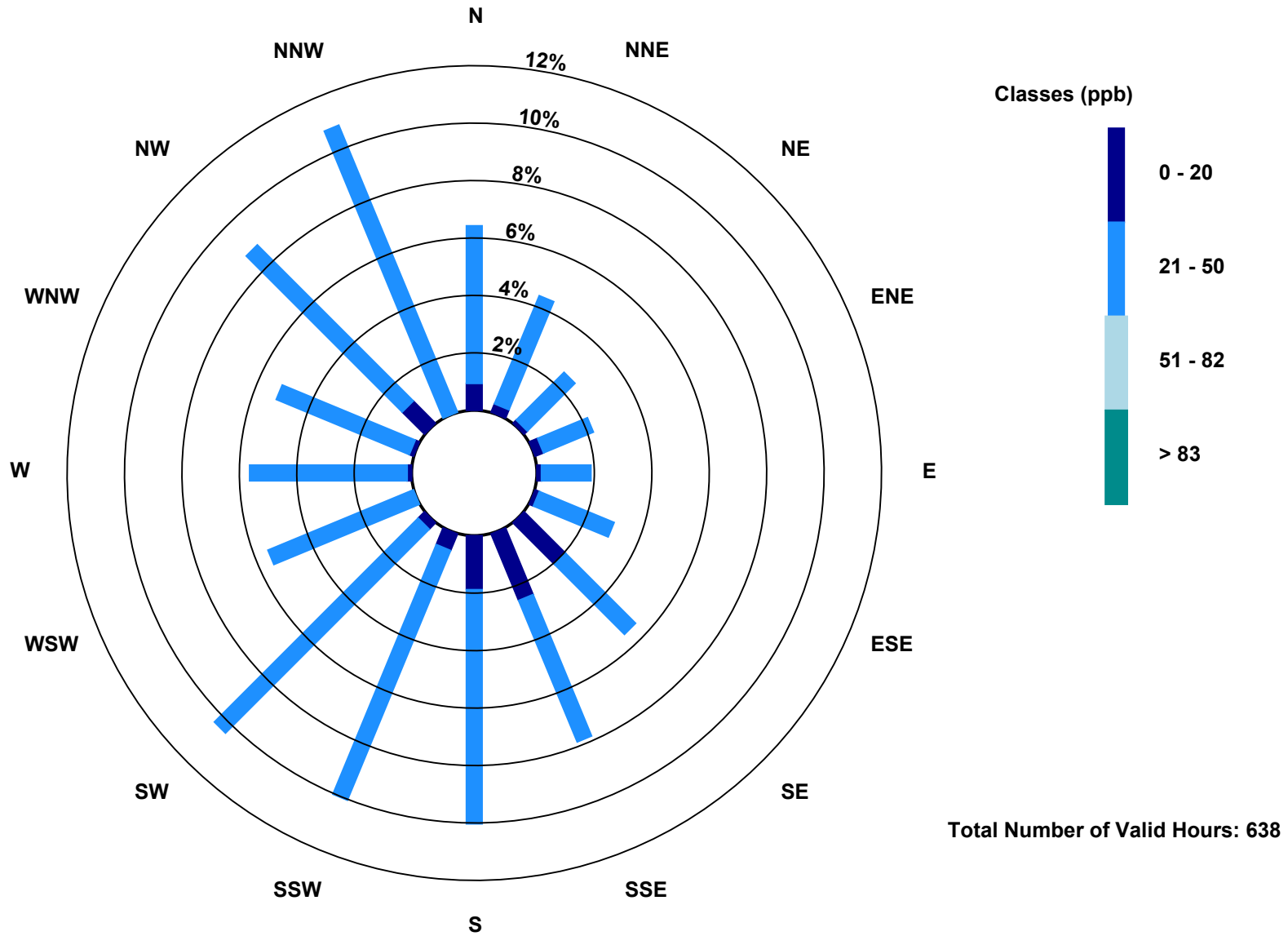
Total Number of Valid Hours: 638

Total Number of Hours: 672

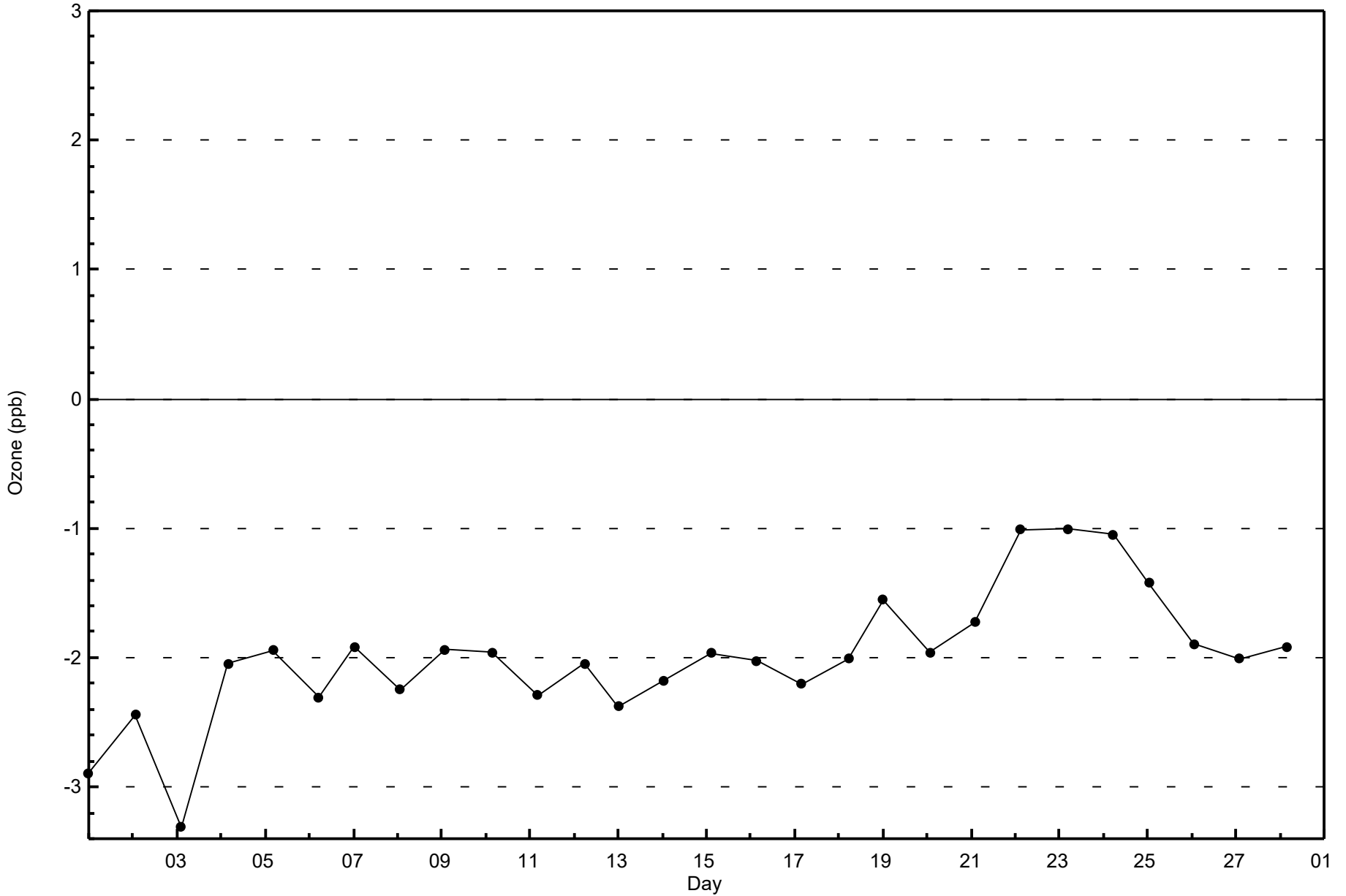


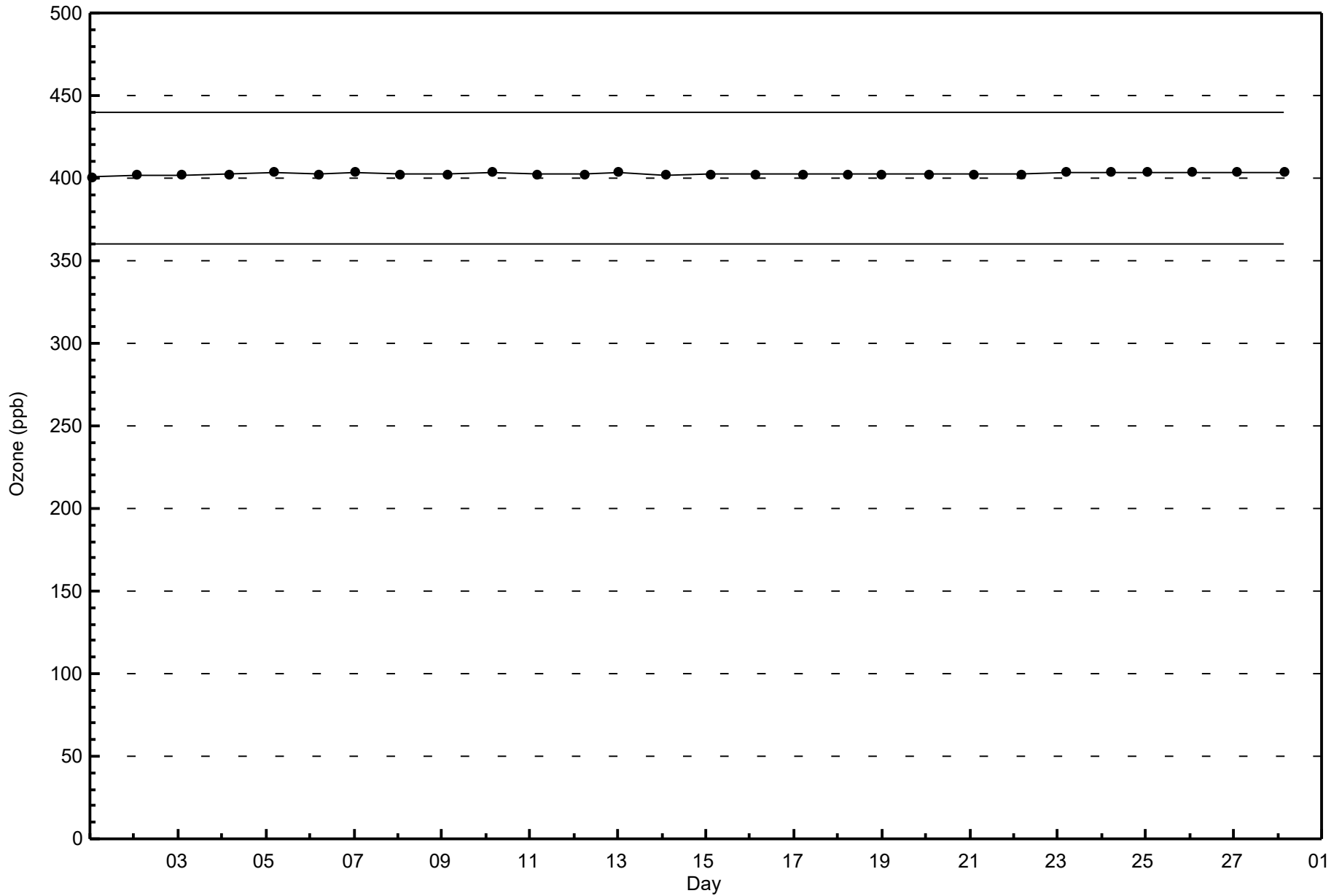
Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Ozone (O<sub>3</sub>) - ppb  
Conklin











Summary of Hour Averages

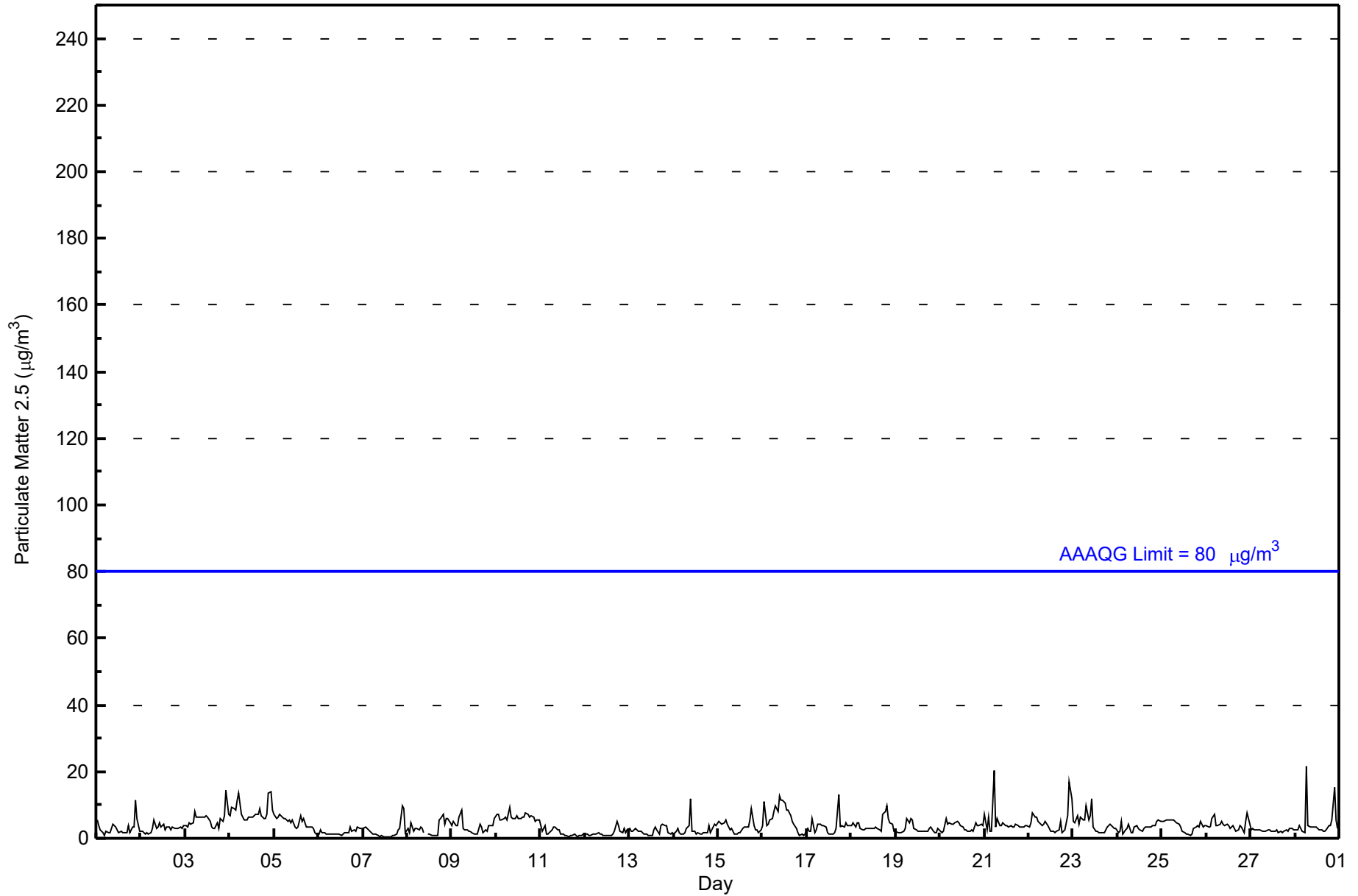
Conklin - February 2023

| Number of Exceedences (AAAQO):   |                               | 1-hr: 0 |     | 24-hr: 0  |      | Hours in Service: 672           |      |     |     |      |      |      |      |     |     |     |     |      |     | 672   |     |      |      |      |               |               |     |      |      |      |     |     |      |      |      |      |     |     |     |     |      |     |     |     |      |      |      |                 |  |
|--|-------------------------------|---------|-----|---|------|---------------------------------|------|-----|-----|------|------|------|------|-----|-----|-----|-----|------|-----|-------|-----|------|------|------|---------------|---------------|-----|------|------|------|-----|-----|------|------|------|------|-----|-----|-----|-----|------|-----|-----|-----|------|------|------|-----------------|--|
| Maximum Value: 21.6 µg/m <sup>3</sup> on Feb 28 07:00  |                               |         |     | Maximum Daily Average: 8.1 µg/m <sup>3</sup> on Feb 4   |      | Hours of Data: 671              |      |     |     |      |      |      |      |     |     |     |     |      |     | 671   |     |      |      |      |               |               |     |      |      |      |     |     |      |      |      |      |     |     |     |     |      |     |     |     |      |      |      |                 |  |
| Minimum Value: 0.5 µg/m <sup>3</sup> on Feb 7 15:00  |                               |         |     | Minimum Daily Average: 1.6 µg/m <sup>3</sup> on Feb 12  |      | Hours of Missing Data: 1        |      |     |     |      |      |      |      |     |     |     |     |      |     | 1     |     |      |      |      |               |               |     |      |      |      |     |     |      |      |      |      |     |     |     |     |      |     |     |     |      |      |      |                 |  |
| Maximum Diurnal Average: 5.1 µg/m <sup>3</sup> at hour 22  |                               |         |     | Minimum Diurnal Average: 2.7 µg/m <sup>3</sup> at hour 14   |      | Hours of Calibration: 1         |      |     |     |      |      |      |      |     |     |     |     |      |     | 1     |     |      |      |      |               |               |     |      |      |      |     |     |      |      |      |      |     |     |     |     |      |     |     |     |      |      |      |                 |  |
| Monthly Average: 3.75 µg/m <sup>3</sup>  |                               |         |     | Percentiles: P <sub>1</sub> = 0.6 P <sub>10</sub> = 1.3 Q <sub>1</sub> = 2.0 Median = 3.2 Q <sub>3</sub> = 4.8 P <sub>90</sub> = 6.6 P <sub>99</sub> = 13.5 |      | Percent Operational Time: 100.0 |      |     |     |      |      |      |      |     |     |     |     |      |     | 100.0 |     |      |      |      |               |               |     |      |      |      |     |     |      |      |      |      |     |     |     |     |      |     |     |     |      |      |      |                 |  |
| Day  | Hourly Period Ending At (MST) |         |     |   |      |                                 |      |     |     |      |      |      |      |     |     |     |     |      |     |       |     |      |      |      | Daily Average | Daily Maximum |     |      |      |      |     |     |      |      |      |      |     |     |     |     |      |     |     |     |      |      |      |                 |  |
|  | 1                             | 2       | 3   | 4   | 5    | 6                               | 7    | 8   | 9   | 10   | 11   | 12   | 13   | 14  | 15  | 16  | 17  | 18   | 19  | 20    | 21  | 22   | 23   | 24   |               |               |     |      |      |      |     |     |      |      |      |      |     |     |     |     |      |     |     |     |      |      |      |                 |  |
| 1-Feb  | 5.3                           | 3.9     | 2.4 | 1.8   | 1.0  | 2.2                             | 1.6  | 1.5 | 2.9 | 4.2  | 3.5  | 2.6  | 1.7  | 2.0 | 1.9 | 1.6 | 1.7 | 3.7  | 1.9 | 3.4   | 3.5 | 11.5 | 5.9  | 2.0  | 3.1           | 11.5          |     |      |      |      |     |     |      |      |      |      |     |     |     |     |      |     |     |     |      |      |      |                 |  |
| 2-Feb  | 2.0                           | 1.9     | 1.1 | 1.7   | 1.4  | 1.7                             | 3.0  | 5.6 | 3.1 | 3.4  | 4.5  | 3.4  | 4.1  | 2.7 | 3.6 | 3.3 | 2.7 | 3.3  | 3.1 | 2.9   | 3.1 | 3.2  | 3.1  | 3.6  | 3.0           | 5.6           |     |      |      |      |     |     |      |      |      |      |     |     |     |     |      |     |     |     |      |      |      |                 |  |
| 3-Feb  | 3.6                           | 3.5     | 4.6 | 4.3   | 4.6  | 8.1                             | 6.6  | 6.1 | 6.3 | 6.3  | 6.5  | 6.7  | 6.3  | 5.0 | 3.5 | 3.0 | 3.0 | 4.8  | 2.8 | 6.1   | 5.1 | 6.7  | 14.5 | 7.4  | 5.6           | 14.5          |     |      |      |      |     |     |      |      |      |      |     |     |     |     |      |     |     |     |      |      |      |                 |  |
| 4-Feb  | 6.8                           | 9.4     | 8.8 | 8.6   | 11.4 | 13.4                            | 7.2  | 6.2 | 5.6 | 5.4  | 6.5  | 6.4  | 6.2  | 7.0 | 7.1 | 7.3 | 8.9 | 6.8  | 6.0 | 5.9   | 7.4 | 13.5 | 14.0 | 8.3  | 8.1           | 14.0          |     |      |      |      |     |     |      |      |      |      |     |     |     |     |      |     |     |     |      |      |      |                 |  |
| 5-Feb  | 7.3                           | 5.8     | 6.3 | 7.1   | 6.4  | 5.9                             | 6.0  | 5.0 | 5.7 | 4.6  | 5.4  | 3.4  | 3.1  | 3.4 | 7.0 | 5.1 | 5.9 | 3.3  | 3.4 | 3.3   | 3.2 | 3.2  | 1.9  | 1.1  | 4.7           | 7.3           |     |      |      |      |     |     |      |      |      |      |     |     |     |     |      |     |     |     |      |      |      |                 |  |
| 6-Feb  | 1.3                           | 2.5     | 1.8 | 1.7   | 1.5  | 1.2                             | 1.5  | 1.3 | 1.4 | 1.2  | 1.3  | 1.1  | 1.0  | 1.1 | 1.5 | 1.6 | 1.8 | 3.4  | 2.1 | 2.5   | 2.2 | 3.3  | 3.0  | 3.2  | 1.8           | 3.4           |     |      |      |      |     |     |      |      |      |      |     |     |     |     |      |     |     |     |      |      |      |                 |  |
| 7-Feb  | 3.1                           | 3.2     | 2.8 | 2.5   | 2.2  | 1.4                             | 1.2  | 1.1 | 1.0 | 0.6  | 0.7  | 0.6  | 0.6  | 0.6 | 0.5 | 0.6 | 0.8 | 1.0  | 1.1 | 2.6   | 3.0 | 9.9  | 8.8  | 1.8  | 2.2           | 9.9           |     |      |      |      |     |     |      |      |      |      |     |     |     |     |      |     |     |     |      |      |      |                 |  |
| 8-Feb  | 3.1                           | 1.6     | 4.6 | 2.0   | 3.0  | 3.0                             | 2.6  | 3.6 | 2.8 | 1.8  | C    | 1.4  | 1.2  | 1.0 | 0.9 | 0.9 | 1.0 | 5.6  | 5.8 | 7.4   | 4.1 | 5.8  | 5.9  | 4.8  | 3.2           | 7.4           |     |      |      |      |     |     |      |      |      |      |     |     |     |     |      |     |     |     |      |      |      |                 |  |
| 9-Feb  | 4.0                           | 5.3     | 3.7 | 3.9   | 6.2  | 8.3                             | 3.0  | 2.7 | 2.5 | 2.3  | 2.2  | 1.7  | 1.3  | 1.2 | 1.4 | 4.3 | 3.4 | 1.9  | 2.5 | 2.3   | 3.9 | 3.6  | 3.9  | 5.9  | 3.4           | 8.3           |     |      |      |      |     |     |      |      |      |      |     |     |     |     |      |     |     |     |      |      |      |                 |  |
| 10-Feb   | 7.0                           | 7.4     | 5.6 | 5.4   | 5.8  | 6.3                             | 5.6  | 9.5 | 6.4 | 5.9  | 6.0  | 6.8  | 5.7  | 5.8 | 6.4 | 6.4 | 7.7 | 7.3  | 6.5 | 7.0   | 6.5 | 5.2  | 5.6  | 5.6  | 6.4           | 9.5           |     |      |      |      |     |     |      |      |      |      |     |     |     |     |      |     |     |     |      |      |      |                 |  |
| 11-Feb   | 3.9                           | 2.3     | 3.8 | 1.2   | 1.4  | 1.5                             | 2.4  | 3.4 | 3.3 | 2.4  | 2.6  | 1.2  | 1.2  | 0.9 | 0.7 | 0.6 | 0.7 | 1.0  | 1.1 | 0.8   | 0.6 | 0.7  | 0.8  | 1.3  | 1.7           | 3.9           |     |      |      |      |     |     |      |      |      |      |     |     |     |     |      |     |     |     |      |      |      |                 |  |
| 12-Feb   | 1.1                           | 1.2     | 0.7 | 0.8   | 1.1  | 1.2                             | 1.3  | 1.5 | 1.4 | 1.2  | 0.9  | 0.9  | 1.0  | 1.0 | 1.0 | 1.2 | 2.0 | 5.1  | 3.6 | 2.0   | 1.5 | 3.1  | 1.6  | 2.6  | 1.6           | 5.1           |     |      |      |      |     |     |      |      |      |      |     |     |     |     |      |     |     |     |      |      |      |                 |  |
| 13-Feb   | 3.1                           | 2.2     | 1.9 | 2.8   | 2.6  | 2.0                             | 1.9  | 1.6 | 1.4 | 1.2  | 1.0  | 0.8  | 0.8  | 2.7 | 3.2 | 2.6 | 1.3 | 4.0  | 4.2 | 3.8   | 4.0 | 1.9  | 1.1  | 1.7  | 2.2           | 4.2           |     |      |      |      |     |     |      |      |      |      |     |     |     |     |      |     |     |     |      |      |      |                 |  |
| 14-Feb   | 1.5                           | 1.9     | 3.2 | 1.5   | 1.1  | 1.2                             | 1.8  | 3.0 | 3.8 | 11.7 | 1.9  | 2.0  | 1.4  | 1.7 | 1.3 | 1.4 | 1.7 | 1.8  | 1.9 | 3.8   | 1.6 | 3.5  | 4.1  | 3.8  | 2.6           | 11.7          |     |      |      |      |     |     |      |      |      |      |     |     |     |     |      |     |     |     |      |      |      |                 |  |
| 15-Feb   | 5.0                           | 4.7     | 4.3 | 4.7   | 5.6  | 4.1                             | 2.6  | 2.8 | 2.1 | 1.5  | 1.4  | 1.8  | 1.5  | 2.8 | 3.3 | 3.4 | 3.5 | 5.5  | 8.9 | 3.9   | 2.3 | 2.7  | 1.9  | 2.6  | 3.5           | 8.9           |     |      |      |      |     |     |      |      |      |      |     |     |     |     |      |     |     |     |      |      |      |                 |  |
| 16-Feb   | 3.9                           | 10.9    | 3.7 | 4.3   | 5.5  | 6.1                             | 7.9  | 9.6 | 8.2 | 12.6 | 11.5 | 11.6 | 10.8 | 8.5 | 8.4 | 6.8 | 5.1 | 4.3  | 3.0 | 1.8   | 0.9 | 1.5  | 0.9  | 1.2  | 6.2           | 12.6          |     |      |      |      |     |     |      |      |      |      |     |     |     |     |      |     |     |     |      |      |      |                 |  |
| 17-Feb   | 3.0                           | 2.0     | 2.2 | 6.1   | 1.7  | 2.5                             | 4.3  | 4.2 | 3.9 | 3.6  | 3.3  | 1.5  | 1.2  | 1.3 | 1.4 | 1.6 | 2.8 | 13.2 | 3.4 | 3.6   | 3.5 | 4.5  | 3.7  | 3.7  | 3.4           | 13.2          |     |      |      |      |     |     |      |      |      |      |     |     |     |     |      |     |     |     |      |      |      |                 |  |
| 18-Feb   | 4.0                           | 4.8     | 3.4 | 4.7   | 4.7  | 3.0                             | 2.5  | 2.6 | 2.8 | 2.9  | 2.9  | 2.8  | 3.1  | 3.2 | 2.9 | 2.4 | 2.2 | 7.3  | 8.3 | 9.7   | 5.7 | 4.9  | 4.1  | 2.3  | 4.1           | 9.7           |     |      |      |      |     |     |      |      |      |      |     |     |     |     |      |     |     |     |      |      |      |                 |  |
| 19-Feb   | 1.9                           | 1.8     | 1.8 | 1.6   | 1.9  | 2.8                             | 6.0  | 4.8 | 5.8 | 5.6  | 3.0  | 2.6  | 2.3  | 2.3 | 2.3 | 2.2 | 2.1 | 2.1  | 2.9 | 3.4   | 2.1 | 1.8  | 1.7  | 2.9  | 2.8           | 6.0           |     |      |      |      |     |     |      |      |      |      |     |     |     |     |      |     |     |     |      |      |      |                 |  |
| 20-Feb   | 2.0                           | 1.9     | 2.3 | 6.1   | 4.3  | 4.6                             | 4.4  | 4.3 | 4.5 | 5.0  | 4.6  | 3.9  | 3.2  | 2.5 | 2.4 | 2.1 | 1.9 | 2.4  | 2.0 | 4.8   | 3.8 | 3.7  | 4.1  | 3.8  | 3.5           | 6.1           |     |      |      |      |     |     |      |      |      |      |     |     |     |     |      |     |     |     |      |      |      |                 |  |
| 21-Feb   | 7.1                           | 2.5     | 6.2 | 2.2   | 2.1  | 20.4                            | 3.3  | 5.8 | 3.6 | 4.0  | 4.5  | 4.0  | 3.7  | 3.5 | 3.7 | 3.6 | 3.5 | 4.2  | 3.8 | 3.5   | 3.6 | 3.6  | 3.9  | 4.0  | 4.6           | 20.4          |     |      |      |      |     |     |      |      |      |      |     |     |     |     |      |     |     |     |      |      |      |                 |  |
| 22-Feb   | 3.6                           | 4.6     | 7.4 | 6.3   | 6.3  | 5.2                             | 4.1  | 3.8 | 4.4 | 4.9  | 3.7  | 2.9  | 2.3  | 1.9 | 1.9 | 2.0 | 2.4 | 4.9  | 1.7 | 2.4   | 4.5 | 6.9  | 16.9 | 11.7 | 4.9           | 16.9          |     |      |      |      |     |     |      |      |      |      |     |     |     |     |      |     |     |     |      |      |      |                 |  |
| 23-Feb   | 5.3                           | 4.5     | 6.8 | 4.4   | 6.3  | 5.6                             | 5.5  | 9.6 | 5.4 | 6.7  | 11.7 | 3.2  | 2.3  | 2.1 | 1.7 | 1.5 | 1.6 | 1.6  | 3.5 | 3.7   | 4.0 | 3.4  | 3.0  | 3.2  | 4.4           | 11.7          |     |      |      |      |     |     |      |      |      |      |     |     |     |     |      |     |     |     |      |      |      |                 |  |
| 24-Feb   | 1.8                           | 1.9     | 5.3 | 1.3   | 2.7  | 2.8                             | 4.1  | 1.5 | 1.8 | 3.6  | 3.8  | 3.1  | 2.7  | 2.3 | 3.0 | 3.3 | 3.5 | 3.4  | 3.6 | 3.9   | 3.9 | 5.0  | 5.4  | 4.9  | 3.3           | 5.4           |     |      |      |      |     |     |      |      |      |      |     |     |     |     |      |     |     |     |      |      |      |                 |  |
| 25-Feb   | 5.0                           | 5.3     | 5.4 | 5.5   | 5.5  | 5.5                             | 5.5  | 5.1 | 4.8 | 4.4  | 3.2  | 2.2  | 1.6  | 1.3 | 1.2 | 1.1 | 1.2 | 2.8  | 3.2 | 3.7   | 3.3 | 5.2  | 3.5  | 3.6  | 3.7           | 5.5           |     |      |      |      |     |     |      |      |      |      |     |     |     |     |      |     |     |     |      |      |      |                 |  |
| 26-Feb   | 3.7                           | 3.2     | 3.4 | 5.8   | 7.3  | 3.9                             | 3.8  | 4.2 | 5.3 | 4.0  | 3.7  | 4.1  | 3.8  | 2.9 | 3.7 | 2.8 | 2.1 | 2.7  | 4.0 | 3.3   | 1.7 | 5.2  | 7.8  | 5.9  | 4.1           | 7.8           |     |      |      |      |     |     |      |      |      |      |     |     |     |     |      |     |     |     |      |      |      |                 |  |
| 27-Feb   | 2.6                           | 3.0     | 2.4 | 2.4   | 2.5  | 2.4                             | 2.3  | 2.3 | 2.2 | 2.6  | 2.5  | 2.1  | 2.2  | 2.0 | 2.6 | 1.8 | 2.0 | 1.5  | 2.0 | 2.4   | 2.0 | 2.9  | 2.9  | 2.7  | 2.4           | 3.0           |     |      |      |      |     |     |      |      |      |      |     |     |     |     |      |     |     |     |      |      |      |                 |  |
| 28-Feb   | 2.7                           | 2.4     | 4.0 | 2.9   | 2.0  | 1.8                             | 21.6 | 3.7 | 3.5 | 3.6  | 3.2  | 3.2  | 2.9  | 2.7 | 2.4 | 2.2 | 2.2 | 2.6  | 3.7 | 3.6   | 5.7 | 15.3 | 5.5  | 3.0  | 4.4           | 21.6          |     |      |      |      |     |     |      |      |      |      |     |     |     |     |      |     |     |     |      |      |      |                 |  |
|  |                               |         |     |   |      |                                 |      |     |     |      |      |      |      |     |     |     |     |      |     |       |     |      |      | 3.7  | 3.8           | 3.9           | 3.7 | 3.9  | 4.6  | 4.4  | 4.2 | 3.8 | 4.2  | 3.9  | 3.1  | 2.8  | 2.7 | 2.9 | 2.7 | 2.8 | 4.0  | 3.6 | 3.8 | 3.5 | 5.1  | 5.0  | 3.9  | Diurnal Average |  |
|  |                               |         |     |   |      |                                 |      |     |     |      |      |      |      |     |     |     |     |      |     |       |     |      |      | 7.3  | 10.9          | 8.8           | 8.6 | 11.4 | 20.4 | 21.6 | 9.6 | 8.2 | 12.6 | 11.7 | 11.6 | 10.8 | 8.5 | 8.4 | 7.3 | 8.9 | 13.2 | 8.9 | 9.7 | 7.4 | 15.3 | 16.9 | 11.7 | Diurnal Maximum |  |
| C - Calibration  |                               |         |     |   |      |                                 |      |     |     |      |      |      |      |     |     |     |     |      |     |       |     |      |      |      |               |               |     |      |      |      |     |     |      |      |      |      |     |     |     |     |      |     |     |     |      |      |      |                 |  |
| Alberta Ambient Air Quality Guideline/Objectives: 1-hr 80 µg/m <sup>3</sup> 24-hr 29 µg/m <sup>3</sup> |                               |         |     |   |      |                                 |      |     |     |      |      |      |      |     |     |     |     |      |     |       |     |      |      |      |               |               |     |      |      |      |     |     |      |      |      |      |     |     |     |     |      |     |     |     |      |      |      |                 |  |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Particulate Matter 2.5 (PM<sub>2.5</sub>) -  $\mu\text{g}/\text{m}^3$**   
**Conklin - February 2023**





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Particulate Matter 2.5 (PM<sub>2.5</sub>) -  $\mu\text{g}/\text{m}^3$   
Conklin - February 2023**

| <b>Concentration Ranges (<math>\mu\text{g}/\text{m}^3</math>)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---|------------------------|----------|---------------------|
| 0 - 5   | 541                    | 80.63    | 80.63               |
| 6 - 15  | 127                    | 18.93    | 99.55               |
| 16 - 25   | 3                      | 0.45     | 100.00              |
| 26 - 80   | 0                      | 0.00     | 100.00              |
| > 81.0  | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 671

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Particulate Matter 2.5 (PM<sub>2.5</sub>) - μg/m<sup>3</sup>  
Conklin - February 2023**

| Concentration<br>Ranges (μg/m <sup>3</sup> ) | Wind Direction |     |    |     |    |     |    |     |    |     |    |     |    |     |    |     | Totals |
|--|----------------|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|--------|
|  | N              | NNE | NE | ENE | E  | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |        |
| 0 - 5  | 35             | 27  | 11 | 10  | 10 | 10  | 26 | 41  | 52 | 46  | 53 | 34  | 36 | 29  | 53 | 66  | 539    |
| 6 - 15                                       | 6              | 3   | 5  | 4   | 4  | 9   | 10 | 16  | 14 | 20  | 16 | 4   | 2  | 4   | 5  | 5   | 127    |
| 16 - 25                                      | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 1   | 0  | 0   | 0  | 0   | 0  | 0   | 1  | 1   | 3      |
| 26 - 80                                      | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| > 81.0                                       | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| <b>Totals</b>                                | 41             | 30  | 16 | 14  | 14 | 19  | 36 | 58  | 66 | 66  | 69 | 38  | 38 | 33  | 59 | 72  | 669    |

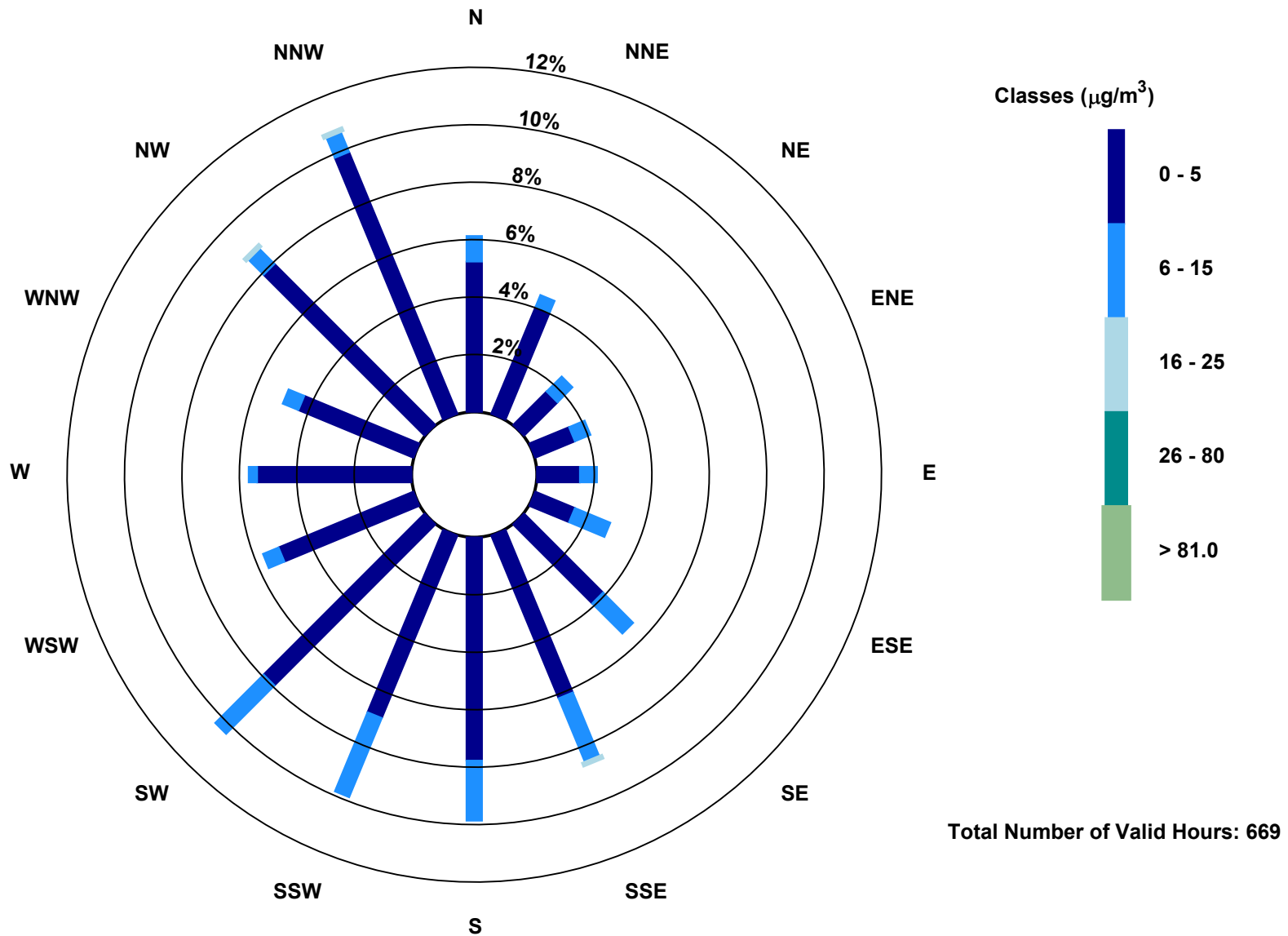
Total Number of Valid Hours: 669

Total Number of Hours: 672



Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Particulate Matter 2.5 (PM<sub>2.5</sub>) - μg/m<sup>3</sup>  
Conklin





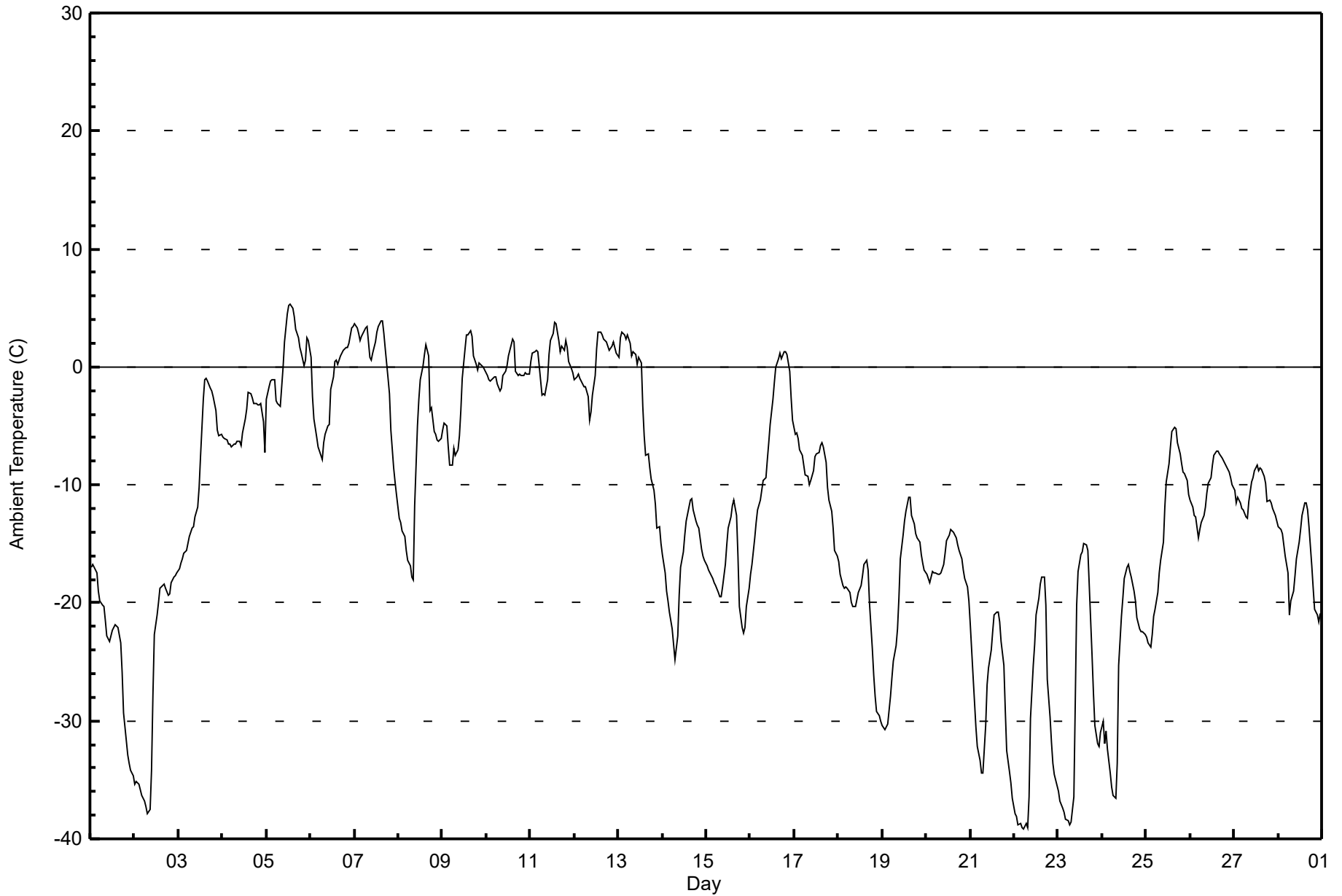
| Maximum Value: 5.3 C on Feb 5 14:00        |                               | Maximum Daily Average: 0.9 C on Feb 5   |       | Hours in Service: 672           |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |               |                 |  |
|--|-------------------------------|---|-------|---------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------------|-----------------|--|
| Minimum Value: -39.1 C on Feb 22 06:00     |                               | Minimum Daily Average: -30.4 C on Feb 22  |       | Hours of Data: 672              |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |               |                 |  |
| Maximum Diurnal Average: -7.3 C at hour 15 |                               | Minimum Diurnal Average: -16.1 C at hour 8  |       | Hours of Missing Data: 0        |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |               |                 |  |
| Monthly Average: -12.36 C                  |                               | Percentiles: P <sub>1</sub> = -38.6 P <sub>10</sub> = -29.5 Q <sub>1</sub> = -19.0 Median = -11.9 Q <sub>3</sub> = -2.4 P <sub>90</sub> = 1.4 P <sub>99</sub> = 3.8 |       | Hours of Calibration: 0         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |               |                 |  |
|  |                               |   |       | Percent Operational Time: 100.0 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |               |                 |  |
| Day  | Hourly Period Ending At (MST) |   |       |                                 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Daily Average | Daily Maximum   |  |
|  | 1                             | 2   | 3     | 4                               | 5     | 6     | 7     | 8     | 9     | 10    | 11    | 12    | 13    | 14    | 15    | 16    | 17    | 18    | 19    | 20    | 21    | 22    | 23    | 24    |               |                 |  |
| 1-Feb                                      | -16.9                         | -16.8   | -16.9 | -17.5                           | -19.0 | -19.8 | -20.2 | -20.4 | -21.5 | -22.8 | -23.3 | -22.9 | -22.4 | -21.9 | -21.9 | -22.1 | -23.4 | -25.8 | -29.4 | -31.7 | -32.9 | -33.6 | -34.2 | -34.7 | -23.8         | -16.8           |  |
| 2-Feb                                      | -35.4                         | -35.1   | -35.3 | -35.9                           | -36.3 | -36.8 | -37.3 | -37.8 | -37.5 | -34.2 | -27.8 | -22.6 | -21.0 | -20.0 | -18.8 | -18.5 | -18.4 | -18.8 | -19.3 | -19.2 | -18.2 | -17.8 | -17.6 | -17.4 | -26.5         | -17.4           |  |
| 3-Feb                                      | -17.1                         | -16.7   | -16.3 | -15.8                           | -15.6 | -15.0 | -14.3 | -13.6 | -13.5 | -12.7 | -11.9 | -10.2 | -7.6  | -2.7  | -1.1  | -1.0  | -1.2  | -1.8  | -2.1  | -2.5  | -3.7  | -5.4  | -5.8  | -5.7  | -8.9          | -1.0            |  |
| 4-Feb                                      | -6.0                          | -6.0  | -6.2  | -6.5                            | -6.5  | -6.8  | -6.5  | -6.5  | -6.4  | -6.3  | -6.7  | -5.6  | -4.4  | -3.5  | -2.2  | -2.3  | -2.6  | -3.1  | -3.1  | -3.2  | -3.2  | -3.1  | -4.7  | -7.3  | -4.9          | -2.2            |  |
| 5-Feb                                      | -2.8                          | -1.7  | -1.2  | -1.1                            | -1.1  | -2.8  | -3.1  | -3.4  | -1.6  | 0.0   | 2.1   | 4.5   | 5.3   | 5.3   | 4.9   | 4.3   | 3.2   | 2.5   | 1.7   | 1.2   | 0.1   | 0.5   | 2.5   | 2.2   | 0.9           | 5.3             |  |
| 6-Feb                                      | 0.8                           | -2.5  | -4.5  | -6.0                            | -6.8  | -7.2  | -7.9  | -6.4  | -5.7  | -5.0  | -4.9  | -1.9  | -0.8  | 0.4   | 0.5   | 0.2   | 0.9   | 1.1   | 1.4   | 1.6   | 1.6   | 2.0   | 3.4   | 3.5   | -1.8          | 3.5             |  |
| 7-Feb                                      | 3.6                           | 3.3   | 2.8   | 2.3                             | 2.6   | 3.1   | 3.3   | 3.4   | 0.8   | 0.6   | 1.2   | 2.2   | 2.9   | 3.5   | 3.9   | 3.9   | 2.8   | 1.5   | -1.0  | -2.3  | -5.4  | -8.6  | -9.7  | -10.8 | 0.4           | 3.9             |  |
| 8-Feb                                      | -12.8                         | -13.2   | -13.9 | -14.4                           | -15.5 | -16.4 | -16.9 | -17.8 | -18.0 | -11.8 | -5.0  | -2.8  | -1.1  | 0.1   | 1.0   | 1.9   | 1.0   | -3.7  | -3.5  | -5.4  | -5.7  | -6.1  | -6.4  | -6.1  | -8.0          | 1.9             |  |
| 9-Feb                                      | -5.3                          | -4.8  | -4.9  | -6.8                            | -8.3  | -8.3  | -6.9  | -7.5  | -7.1  | -5.9  | -3.6  | -1.0  | 1.5   | 2.7   | 2.7   | 3.1   | 2.6   | 1.0   | 0.3   | -0.2  | 0.4   | 0.1   | 0.0   | -0.3  | -2.4          | 3.1             |  |
| 10-Feb                                     | -0.7                          | -1.0  | -1.2  | -1.0                            | -0.8  | -0.9  | -1.5  | -2.0  | -1.8  | -0.7  | -0.4  | 0.1   | 0.9   | 1.9   | 2.3   | 2.1   | -0.4  | -0.7  | -0.6  | -0.7  | -0.7  | -0.5  | -0.6  | -0.6  | -0.4          | 2.3             |  |
| 11-Feb                                     | 0.4                           | 1.1   | 1.3   | 1.4                             | 1.3   | 0.1   | -2.4  | -2.3  | -2.4  | -1.1  | 1.1   | 2.2   | 2.9   | 3.8   | 3.7   | 2.3   | 1.3   | 1.7   | 1.4   | 2.2   | 1.6   | 0.5   | -0.1  | -0.5  | 0.9           | 3.8             |  |
| 12-Feb                                     | -1.1                          | -0.9  | -0.6  | -1.0                            | -1.4  | -1.7  | -1.7  | -2.5  | -4.6  | -3.8  | -2.4  | -0.7  | 1.5   | 3.0   | 2.9   | 2.8   | 2.4   | 2.1   | 1.7   | 1.4   | 1.7   | 2.1   | 1.7   | 1.2   | 0.1           | 3.0             |  |
| 13-Feb                                     | 0.8                           | 2.5   | 3.0   | 2.7                             | 2.4   | 2.7   | 2.0   | 0.9   | 1.3   | 1.1   | 0.2   | 0.9   | 0.4   | -3.3  | -5.8  | -7.5  | -7.4  | -8.6  | -9.5  | -10.4 | -11.6 | -13.7 | -13.5 | -14.9 | -3.6          | 3.0             |  |
| 14-Feb                                     | -15.9                         | -17.4   | -19.0 | -19.9                           | -20.8 | -22.2 | -23.5 | -24.8 | -22.8 | -19.3 | -17.0 | -15.7 | -14.3 | -13.1 | -11.9 | -11.3 | -11.1 | -12.2 | -13.1 | -13.4 | -13.7 | -15.5 | -16.0 | -16.4 | -16.7         | -11.1           |  |
| 15-Feb                                     | -16.8                         | -17.2   | -17.4 | -17.9                           | -18.3 | -18.5 | -19.1 | -19.4 | -19.5 | -18.6 | -16.7 | -15.1 | -13.7 | -12.7 | -11.8 | -11.3 | -12.5 | -16.0 | -20.3 | -22.1 | -22.6 | -22.1 | -20.3 | -18.7 | -17.4         | -11.3           |  |
| 16-Feb                                     | -17.6                         | -16.8   | -14.5 | -13.2                           | -12.2 | -11.3 | -10.4 | -9.7  | -9.4  | -7.9  | -6.5  | -4.9  | -2.7  | -1.4  | -0.1  | 0.7   | 1.1   | 0.6   | 1.3   | 1.3   | 1.0   | -0.4  | -2.6  | -4.5  | -5.8          | 1.3             |  |
| 17-Feb                                     | -5.7                          | -5.6  | -6.0  | -7.0                            | -7.5  | -8.3  | -9.1  | -9.2  | -9.9  | -9.7  | -8.8  | -7.6  | -7.4  | -7.2  | -6.7  | -6.4  | -6.8  | -8.1  | -10.2 | -11.3 | -12.2 | -13.6 | -15.5 | -16.0 | -9.0          | -5.6            |  |
| 18-Feb                                     | -16.5                         | -17.6   | -18.5 | -18.7                           | -18.7 | -18.7 | -19.1 | -19.9 | -20.3 | -20.3 | -19.7 | -19.2 | -18.5 | -17.7 | -16.8 | -16.4 | -17.3 | -20.0 | -23.9 | -26.1 | -27.9 | -29.2 | -29.5 | -30.1 | -20.9         | -16.4           |  |
| 19-Feb                                     | -30.4                         | -30.8   | -30.5 | -30.2                           | -27.9 | -26.4 | -24.9 | -23.6 | -22.2 | -19.5 | -16.3 | -14.3 | -13.1 | -12.3 | -11.1 | -11.1 | -12.6 | -13.3 | -14.1 | -14.4 | -14.8 | -15.9 | -16.6 | -17.2 | -19.3         | -11.1           |  |
| 20-Feb                                     | -17.6                         | -17.9   | -18.2 | -17.4                           | -17.5 | -17.4 | -17.5 | -17.5 | -17.4 | -16.7 | -15.8 | -14.8 | -14.2 | -13.8 | -13.9 | -14.1 | -14.5 | -15.1 | -15.6 | -16.3 | -17.3 | -18.0 | -18.6 | -19.8 | -16.5         | -13.8           |  |
| 21-Feb                                     | -21.9                         | -26.2   | -28.4 | -30.5                           | -32.2 | -33.4 | -34.4 | -34.4 | -30.4 | -27.0 | -25.5 | -24.0 | -22.4 | -21.0 | -20.7 | -20.8 | -21.6 | -23.2 | -25.2 | -29.1 | -32.5 | -34.3 | -35.3 | -36.6 | -28.0         | -20.7           |  |
| 22-Feb                                     | -37.8                         | -38.1   | -38.8 | -38.7                           | -39.1 | -39.1 | -38.7 | -39.0 | -36.4 | -29.8 | -25.3 | -23.5 | -21.0 | -19.6 | -18.4 | -17.9 | -17.8 | -20.2 | -26.4 | -29.6 | -31.8 | -33.6 | -34.5 | -35.5 | -30.4         | -17.8           |  |
| 23-Feb                                     | -36.0                         | -36.8   | -37.4 | -37.8                           | -38.3 | -38.5 | -38.8 | -38.5 | -36.4 | -28.5 | -20.2 | -17.3 | -15.9 | -15.7 | -14.9 | -15.1 | -15.5 | -18.5 | -24.4 | -27.7 | -30.4 | -31.9 | -32.2 | -30.9 | -28.2         | -14.9           |  |
| 24-Feb                                     | -30.0                         | -32.0   | -30.9 | -32.5                           | -34.5 | -35.6 | -36.3 | -36.6 | -33.6 | -25.2 | -21.2 | -19.6 | -17.9 | -17.0 | -16.8 | -17.3 | -17.8 | -18.9 | -19.8 | -21.2 | -22.3 | -22.4 | -22.5 | -22.6 | -25.2         | -16.8           |  |
| 25-Feb                                     | -23.0                         | -23.4   | -23.7 | -22.7                           | -21.1 | -20.5 | -19.1 | -17.4 | -16.3 | -14.8 | -11.9 | -9.7  | -8.2  | -6.8  | -5.5  | -5.2  | -5.2  | -6.4  | -7.3  | -8.2  | -9.0  | -9.1  | -9.7  | -10.8 | -13.1         | -5.2            |  |
| 26-Feb                                     | -11.3                         | -11.9   | -12.6 | -12.7                           | -14.4 | -13.8 | -13.2 | -12.6 | -11.9 | -10.7 | -9.9  | -9.4  | -8.4  | -7.5  | -7.1  | -7.2  | -7.3  | -7.7  | -8.0  | -8.2  | -8.7  | -8.9  | -9.4  | -9.9  | -10.1         | -7.1            |  |
| 27-Feb                                     | -10.4                         | -11.5   | -11.1 | -11.5                           | -12.0 | -12.1 | -12.8 | -12.8 | -11.4 | -9.7  | -9.4  | -8.8  | -8.3  | -8.8  | -8.5  | -8.7  | -9.3  | -9.9  | -11.4 | -11.3 | -11.6 | -12.0 | -12.6 | -13.1 | -10.8         | -8.3            |  |
| 28-Feb                                     | -13.5                         | -13.8   | -14.1 | -15.0                           | -16.1 | -17.4 | -21.0 | -19.8 | -19.0 | -17.7 | -16.3 | -14.9 | -13.8 | -12.6 | -11.6 | -11.5 | -12.1 | -13.5 | -16.9 | -18.8 | -20.5 | -21.1 | -21.6 | -20.9 | -16.4         | -11.5           |  |
|  |                               | -14.2   | -14.6 | -14.8                           | -15.2 | -15.6 | -15.8 | -16.1 | -16.1 | -15.5 | -13.5 | -11.5 | -9.9  | -8.6  | -7.8  | -7.3  | -7.3  | -7.8  | -9.1  | -10.6 | -11.6 | -12.5 | -13.3 | -13.6 | -14.1         | Diurnal Average |  |
|  |                               | 3.6   | 3.3   | 3.0                             | 2.7   | 2.6   | 3.1   | 3.3   | 3.4   | 1.3   | 1.1   | 2.1   | 4.5   | 5.3   | 5.3   | 4.9   | 4.3   | 3.2   | 2.5   | 1.7   | 2.2   | 1.7   | 2.1   | 3.4   | 3.5           | Diurnal Maximum |  |





**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Ambient Temperature (AT) - C**  
**Conklin - February 2023**





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Ambient Temperature (AT) - C  
Conklin - February 2023**

| <b>Concentration Ranges (C)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---------------------------------|------------------------|----------|---------------------|
| -50 - -20                       | 147                    | 21.88    | 21.88               |
| -20 - 0                         | 413                    | 61.46    | 83.33               |
| 0 - 10                          | 112                    | 16.67    | 100.00              |
| 10 - 20                         | 0                      | 0.00     | 100.00              |
| > 20                            | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 672

Total Number of Hours: 672



**Wood Buffalo Environmental Association**

**Summary of Hour Averages**

**Relative Humidity (RH) - %**

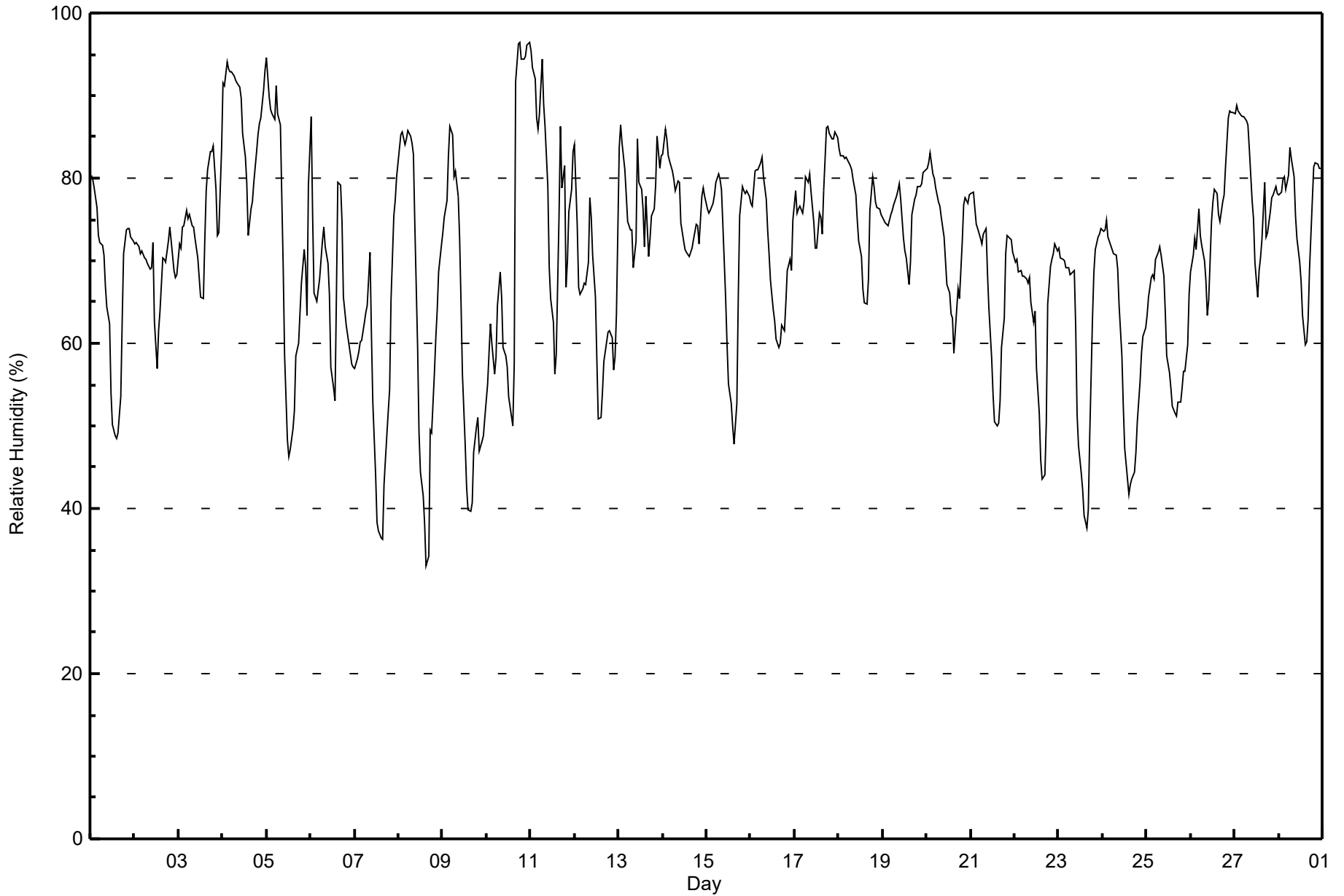
**Conklin - February 2023**

| <b>Maximum Value: 96.4 % on Feb 11 00:00</b> <b>Maximum Daily Average: 87.1 % on Feb 4</b>   |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | <b>Hours in Service: 672</b>           |      |                 |               |               |
|--|-------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|--|------|-----------------|---------------|---------------|
| <b>Minimum Value: 33.0 % on Feb 8 16:00</b> <b>Minimum Daily Average: 56.5 % on Feb 7</b>  |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | <b>Hours of Data: 672</b>              |      |                 |               |               |
| <b>Maximum Diurnal Average: 77.7 % at hour 1</b> <b>Minimum Diurnal Average: 57.4 % at hour 15</b>   |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | <b>Hours of Missing Data: 0</b>        |      |                 |               |               |
| <b>Monthly Average: 70.54 %</b> <b>Percentiles: P<sub>1</sub> = 38.2 P<sub>10</sub> = 51.7 Q<sub>1</sub> = 63.6 Median = 72.3 Q<sub>3</sub> = 78.8 P<sub>90</sub> = 85.1 P<sub>99</sub> = 94.5</b> |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | <b>Hours of Calibration: 0</b>         |      |                 |               |               |
|  |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | <b>Percent Operational Time: 100.0</b> |      |                 |               |               |
| Day  | Hourly Period Ending At (MST) |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |      |                 | Daily Average | Daily Maximum |
|  | 1                             | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20   | 21   | 22                                     | 23   | 24              |               |               |
| 1-Feb  | 80.3                          | 79.9 | 78.8 | 76.4 | 73.1 | 72.3 | 71.9 | 70.6 | 66.9 | 64.5 | 62.4 | 54.0 | 50.1 | 48.8 | 48.5 | 49.1 | 53.6 | 62.7 | 70.8 | 73.7 | 73.9 | 73.9                                   | 72.9 | 72.4            | 66.7          | 80.3          |
| 2-Feb  | 72.0                          | 72.3 | 71.6 | 70.8 | 71.2 | 70.4 | 70.2 | 69.6 | 69.0 | 69.1 | 72.3 | 62.8 | 56.9 | 61.5 | 63.9 | 70.4 | 70.2 | 69.9 | 72.4 | 74.1 | 72.3 | 68.8                                   | 67.9 | 68.2            | 69.1          | 74.1          |
| 3-Feb  | 72.1                          | 71.6 | 74.0 | 74.3 | 76.1 | 75.1 | 75.5 | 74.3 | 74.1 | 72.8 | 70.4 | 68.0 | 65.6 | 65.4 | 72.6 | 78.5 | 81.0 | 83.2 | 83.2 | 83.9 | 78.7 | 73.1                                   | 73.4 | 83.6            | 75.0          | 83.9          |
| 4-Feb  | 91.5                          | 91.2 | 94.0 | 93.2 | 92.9 | 92.8 | 92.3 | 91.9 | 91.5 | 91.0 | 89.7 | 85.5 | 82.5 | 79.3 | 73.1 | 76.3 | 77.1 | 79.5 | 83.2 | 85.3 | 86.7 | 87.2                                   | 90.6 | 93.1            | 87.1          | 94.0          |
| 5-Feb  | 94.5                          | 89.9 | 88.4 | 87.9 | 87.1 | 91.3 | 87.8 | 86.4 | 77.6 | 69.1 | 58.5 | 48.4 | 46.2 | 47.1 | 49.7 | 51.8 | 58.4 | 60.1 | 63.8 | 67.3 | 71.3 | 69.4                                   | 63.4 | 79.1            | 70.6          | 94.5          |
| 6-Feb  | 87.4                          | 75.6 | 66.0 | 65.1 | 66.4 | 67.8 | 72.4 | 74.0 | 71.7 | 69.6 | 66.0 | 57.0 | 54.5 | 53.1 | 65.8 | 79.6 | 79.2 | 74.8 | 65.6 | 62.2 | 61.1 | 59.9                                   | 57.5 | 57.1            | 67.1          | 87.4          |
| 7-Feb  | 57.0                          | 58.1 | 58.9 | 60.1 | 60.3 | 62.5 | 63.7 | 64.5 | 71.1 | 61.2 | 52.8 | 44.1 | 38.3 | 37.3 | 36.5 | 36.3 | 42.8 | 46.0 | 51.7 | 54.4 | 65.3 | 75.4                                   | 77.2 | 80.2            | 56.5          | 80.2          |
| 8-Feb  | 83.5                          | 85.2 | 85.5 | 84.1 | 84.7 | 85.8 | 85.1 | 84.3 | 82.9 | 74.5 | 59.5 | 49.2 | 44.5 | 41.5 | 38.1 | 33.0 | 34.3 | 49.5 | 49.1 | 56.5 | 60.7 | 64.0                                   | 68.6 | 71.8            | 64.8          | 85.8          |
| 9-Feb  | 73.3                          | 75.3 | 77.3 | 82.8 | 86.2 | 85.3 | 80.1 | 80.8 | 77.8 | 72.8 | 65.0 | 56.3 | 47.6 | 42.5 | 39.9 | 39.7 | 40.7 | 46.7 | 49.9 | 51.0 | 47.0 | 48.2                                   | 48.9 | 51.0            | 61.1          | 86.2          |
| 10-Feb   | 55.1                          | 58.8 | 62.4 | 60.0 | 56.3 | 58.4 | 64.6 | 68.6 | 65.7 | 59.4 | 58.5 | 57.1 | 53.6 | 51.1 | 50.0 | 57.4 | 91.7 | 96.2 | 96.4 | 94.4 | 94.3 | 94.7                                   | 96.2 | 96.4            | 70.7          | 96.4          |
| 11-Feb   | 95.5                          | 93.5 | 92.0 | 87.3 | 86.0 | 87.8 | 94.5 | 89.1 | 86.2 | 78.9 | 69.1 | 65.4 | 62.6 | 56.2 | 58.6 | 75.4 | 86.3 | 78.8 | 81.6 | 66.8 | 70.0 | 76.0                                   | 78.7 | 83.2            | 79.1          | 95.5          |
| 12-Feb   | 84.0                          | 74.3 | 66.8 | 65.9 | 66.5 | 67.3 | 67.1 | 69.8 | 77.7 | 75.2 | 70.7 | 65.5 | 58.1 | 50.9 | 51.0 | 54.0 | 57.9 | 60.1 | 61.4 | 61.6 | 60.7 | 56.8                                   | 58.3 | 63.6            | 64.4          | 84.0          |
| 13-Feb   | 83.7                          | 86.4 | 84.3 | 81.0 | 78.0 | 74.7 | 73.8 | 73.8 | 69.1 | 72.5 | 84.8 | 79.5 | 78.7 | 76.2 | 71.7 | 77.8 | 70.5 | 72.7 | 75.5 | 76.3 | 79.1 | 85.0                                   | 81.1 | 82.7            | 77.9          | 86.4          |
| 14-Feb   | 83.0                          | 85.9 | 84.7 | 82.7 | 82.0 | 80.9 | 79.9 | 78.4 | 79.6 | 79.4 | 74.6 | 72.4 | 71.4 | 71.0 | 70.5 | 71.0 | 71.5 | 72.6 | 74.4 | 74.2 | 72.0 | 77.8                                   | 78.9 | 77.7            | 76.9          | 85.9          |
| 15-Feb   | 76.2                          | 75.8 | 76.2 | 77.0 | 78.0 | 79.5 | 80.5 | 79.8 | 78.7 | 74.4 | 65.3 | 59.8 | 55.1 | 52.7 | 50.1 | 47.8 | 52.7 | 65.4 | 75.5 | 79.0 | 78.5 | 78.1                                   | 78.4 | 77.7            | 70.5          | 80.5          |
| 16-Feb   | 76.9                          | 76.6 | 80.8 | 81.1 | 81.1 | 81.9 | 82.5 | 80.1 | 77.4 | 73.7 | 70.8 | 67.6 | 64.1 | 62.8 | 60.4 | 59.5 | 59.9 | 62.3 | 61.6 | 64.9 | 68.8 | 70.2                                   | 68.8 | 74.9            | 71.2          | 82.5          |
| 17-Feb   | 78.4                          | 75.8 | 76.3 | 76.7 | 75.7 | 77.1 | 80.1 | 79.5 | 80.5 | 78.2 | 74.7 | 71.6 | 71.6 | 75.8 | 75.2 | 73.2 | 78.5 | 86.1 | 86.3 | 85.5 | 84.7 | 84.7                                   | 85.5 | 85.0            | 79.0          | 86.3          |
| 18-Feb   | 83.5                          | 82.8 | 82.7 | 82.4 | 82.5 | 82.2 | 81.5 | 81.0 | 79.7 | 78.0 | 74.9 | 72.4 | 70.5 | 66.7 | 64.9 | 64.7 | 67.8 | 76.1 | 80.2 | 79.0 | 77.1 | 76.4                                   | 76.2 | 75.6            | 76.6          | 83.5          |
| 19-Feb   | 75.2                          | 74.5 | 74.4 | 74.3 | 75.7 | 76.2 | 76.7 | 77.8 | 78.5 | 79.4 | 77.4 | 72.7 | 71.2 | 70.4 | 67.1 | 69.9 | 75.7 | 77.4 | 78.0 | 79.0 | 79.0 | 79.3                                   | 80.7 | 80.8            | 75.9          | 80.8          |
| 20-Feb   | 81.1                          | 81.9 | 83.1 | 80.6 | 80.0 | 78.8 | 77.2 | 76.7 | 75.3 | 72.9 | 70.0 | 67.1 | 66.1 | 63.6 | 63.0 | 58.8 | 64.1 | 66.6 | 65.4 | 72.3 | 76.8 | 77.6                                   | 77.0 | 78.0            | 73.1          | 83.1          |
| 21-Feb   | 78.1                          | 78.4 | 76.3 | 74.4 | 73.9 | 72.7 | 72.0 | 73.2 | 73.8 | 68.5 | 64.2 | 58.1 | 53.8 | 50.5 | 49.9 | 50.3 | 53.0 | 59.6 | 63.0 | 70.9 | 73.0 | 72.6                                   | 72.5 | 71.0            | 66.8          | 78.4          |
| 22-Feb   | 69.9                          | 70.2 | 68.7 | 68.9 | 68.1 | 68.1 | 67.8 | 67.4 | 68.0 | 64.9 | 62.6 | 63.9 | 56.9 | 51.5 | 46.0 | 43.5 | 44.0 | 50.4 | 64.8 | 69.3 | 70.2 | 70.9                                   | 72.0 | 71.2            | 63.3          | 72.0          |
| 23-Feb   | 71.5                          | 70.3 | 70.1 | 70.1 | 69.1 | 69.1 | 68.4 | 68.5 | 68.9 | 62.1 | 51.3 | 47.6 | 44.3 | 42.2 | 39.2 | 37.7 | 39.8 | 48.6 | 63.1 | 68.6 | 71.3 | 72.9                                   | 73.3 | 73.8            | 60.9          | 73.8          |
| 24-Feb   | 73.6                          | 73.7 | 74.9 | 72.9 | 71.8 | 71.4 | 70.8 | 70.6 | 69.0 | 64.5 | 58.4 | 52.3 | 47.2 | 43.5 | 41.6 | 42.8 | 43.5 | 44.3 | 46.8 | 50.6 | 55.4 | 58.9                                   | 60.8 | 61.9            | 59.2          | 74.9          |
| 25-Feb   | 63.4                          | 65.6 | 68.0 | 68.3 | 67.8 | 70.1 | 71.1 | 71.7 | 70.6 | 68.1 | 63.7 | 58.4 | 56.5 | 54.6 | 52.3 | 51.6 | 51.2 | 53.0 | 52.9 | 54.5 | 56.6 | 56.7                                   | 59.9 | 66.0            | 61.3          | 71.7          |
| 26-Feb   | 68.6                          | 70.7 | 72.7 | 71.3 | 76.3 | 73.1 | 71.8 | 70.0 | 67.6 | 63.5 | 65.3 | 74.7 | 77.0 | 78.6 | 78.2 | 75.7 | 74.8 | 77.1 | 78.0 | 81.4 | 87.3 | 88.2                                   | 87.9 | 87.9            | 75.7          | 88.2          |
| 27-Feb   | 87.8                          | 88.8 | 88.2 | 87.7 | 87.5 | 87.5 | 86.9 | 86.5 | 83.5 | 77.3 | 75.1 | 69.7 | 65.6 | 68.8 | 70.3 | 72.6 | 79.4 | 72.8 | 73.4 | 75.9 | 77.7 | 78.0                                   | 79.0 | 78.1            | 79.1          | 88.8          |
| 28-Feb   | 77.9                          | 78.3 | 79.9 | 80.2 | 78.6 | 80.4 | 83.7 | 82.4 | 80.2 | 75.5 | 72.7 | 69.8 | 67.5 | 63.5 | 59.8 | 60.2 | 62.9 | 68.9 | 77.3 | 81.3 | 81.9 | 81.7                                   | 81.3 | 81.2            | 75.3          | 83.7          |
|  |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |      | Diurnal Average |               |               |
|  |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |      | Diurnal Maximum |               |               |
|  |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |      |                 |               |               |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Relative Humidity (RH) - %**  
**Conklin - February 2023**





**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

**Wind Speed (WS) - km/h**  
**Conklin - February 2023**

|  |   |                                |
|--|---|--------------------------------|
| Maximum Speed: 22 km/h on Feb 13 15:00             | Maximum Daily Speed Average: 9.6 km/h on Feb 7  | Hours in Service: 672          |
| Minimum Speed Value: 0 km/h on Feb 1 19:00         | Minimum Daily Speed Average: 0.5 km/h on Feb 10   | Hours of Data: 670             |
| Maximum Diurnal Speed Average: 3.9 km/h at hour 15 | Minimum Diurnal Speed Average: 2.0 km/h at hour 24  | Hours of Missing Data: 2       |
| Monthly Average Velocity: 2.6 km/h 253.1 deg       | Percentiles: P <sub>1</sub> = 1 P <sub>10</sub> = 2 Q <sub>1</sub> = 3 Median = 6 Q <sub>3</sub> = 10 P <sub>90</sub> = 13 P <sub>99</sub> = 18 | Percent Operational Time: 99.7 |

| Day    | Hourly Period Ending At (MST) |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Daily Average | Daily Maximum |
|--------|-------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------------|---------------|
|        | 1                             | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     | 10    | 11    | 12    | 13    | 14    | 15    | 16    | 17    | 18    | 19    | 20    | 21    | 22    | 23    | 24    |               |               |
| 1-Feb  | NW3                           | WNW4  | NW5   | N11   | N12   | NNW11 | NNW10 | NNW12 | NNW16 | NNW15 | NNW15 | NNW16 | NNW15 | NNW14 | NNW14 | NNW13 | N11   | NNW4  | S0    | S2    | SSW3  | S3    | S3    | S3    | NNW7.8        | NNW16         |
| 2-Feb  | S3                            | SSE4  | SSE4  | SSE3  | SSE4  | SSE4  | SSE3  | SSE3  | SSE3  | S1    | SE3   | SSE9  | SSE10 | SE10  | SSE16 | SSE15 | SSE15 | S15   | SSE12 | SSE11 | S12   | S13   | S12   | SSW11 | SSE7.8        | SSE16         |
| 3-Feb  | SSW13                         | SSW13 | S11   | SSW12 | SSW12 | SSW9  | SSW7  | SW10  | SW8   | WSW10 | WSW10 | SW11  | WSW7  | NW5   | NW9   | NW7   | NW5   | NNW5  | NNW6  | NNW4  | SW4   | SSW3  | S2    | E4    | SW5.2         | SSW13         |
| 4-Feb  | ESE4                          | ENE3  | ESE3  | E2    | ESE3  | NE2   | ESE3  | NNE3  | E3    | N5    | N7    | NW2   | SW2   | NW1   | ESE1  | SE3   | NE4   | E2    | SE4   | SE3   | N1    | SE1   | N3    | ENE2  | ENE1.4        | N7            |
| 5-Feb  | SW9                           | SW10  | SW7   | SSW6  | SSE2  | SE2   | SE3   | S4    | SSW7  | SW5   | SW6   | SW6   | SSW10 | SW11  | SW8   | SW6   | SW5   | WSW9  | WSW12 | SW12  | SW11  | WSW11 | W13   | WNW13 | SW6.9         | W13           |
| 6-Feb  | NW15                          | NW16  | NW13  | NW11  | NW10  | WNW9  | WSW8  | W11   | W11   | W8    | SW7   | W9    | W8    | WSW9  | WSW12 | SW7   | SSW6  | SSW10 | SSW14 | SW14  | SW13  | SW13  | WSW12 | SW12  | W8.5          | NW16          |
| 7-Feb  | SW9                           | SW11  | WSW12 | WSW13 | WSW14 | WSW15 | W15   | W14   | NW12  | WNW11 | WNW10 | W12   | W14   | W16   | W15   | W14   | W15   | W10   | WNW5  | WSW6  | SSW5  | S3    | WNW1  | S5    | W9.6          | W16           |
| 8-Feb  | S4                            | SSE4  | S3    | SSW3  | S3    | S3    | S3    | S3    | S2    | M     | WNW4  | WNW5  | WNW5  | WNW6  | WNW5  | W6    | W6    | SSW6  | SW7   | SSW7  | SSW8  | SSW8  | SSW10 | SSW12 | SW4.0         | SSW12         |
| 9-Feb  | SSW11                         | SSW11 | SSW9  | SSW8  | SSW7  | SSW9  | SW13  | SW11  | SW14  | SW16  | SW12  | SW9   | SW11  | SSW13 | SW8   | S8    | S8    | S7    | S8    | SSE7  | SSW12 | SSW14 | SSW8  | NNW1  | SSW9.3        | SW16          |
| 10-Feb | W2                            | SSE1  | S1    | SSE3  | SSE5  | WSW1  | SE3   | SSE2  | SSE2  | ENE3  | SE5   | SW2   | ESE3  | NNE3  | N4    | NW5   | NW7   | NNW3  | WNW4  | WNW5  | W4    | WNW3  | N1    | SE1   | WNW0.5        | NW7           |
| 11-Feb | W5                            | WSW5  | WSW8  | W10   | W9    | WSW6  | SSW5  | SW8   | SW9   | SW10  | SW10  | SW11  | SW12  | WSW14 | SW12  | WSW17 | WSW12 | WSW10 | SW9   | W14   | W15   | WNW11 | W10   | W10   | WSW9.3        | WSW17         |
| 12-Feb | WSW8                          | WSW11 | W12   | W12   | W9    | W9    | W12   | WSW9  | WSW13 | SW13  | SW11  | SW9   | SW9   | WSW9  | WSW8  | SSW7  | S8    | SSW9  | S8    | S6    | SSE8  | S11   | SSW14 | SSW16 | SW8.3         | SSW16         |
| 13-Feb | SSW16                         | SSW14 | SW14  | SW10  | SW12  | SW14  | WSW14 | SW12  | WSW12 | WSW14 | WSW13 | W12   | WNW13 | NNW20 | NNW22 | NNW21 | NNW18 | NNW17 | NNW18 | NNW14 | NNW10 | NNW6  | NW9   | NW7   | WNW8.7        | NNW22         |
| 14-Feb | NW6                           | NW4   | NW5   | NNW5  | NNW4  | N2    | SE1   | UO    | SSE2  | SSW1  | S3    | S3    | SSE3  | SSW6  | WSW5  | W4    | NW8   | NNW9  | NNW7  | NW8   | NNW10 | NNE5  | NE4   | NE4   | NW2.6         | NNW10         |
| 15-Feb | ENE4                          | ENE3  | E3    | E4    | NE2   | NNE2  | NNE4  | NE3   | E2    | ESE4  | SE5   | SSE3  | S1    | SE4   | SE4   | SE3   | SE4   | S2    | SSE2  | SSE3  | SSE4  | SSE4  | SE5   | SE3   | ESE2.5        | SE5           |
| 16-Feb | SE3                           | ESE1  | SSE7  | SSE8  | S8    | SSE8  | S9    | SSW14 | SSW15 | SSW18 | SSW19 | SSW19 | SSW19 | SW12  | SW14  | SW14  | SW13  | SW12  | WSW11 | WNW8  | NW10  | NW15  | NNW13 | NW9   | SW7.8         | SSW19         |
| 17-Feb | NNW8                          | NNW12 | NNW9  | NNW10 | NW9   | NNW5  | NNW1  | NE3   | ESE5  | ESE4  | SE4   | WNW4  | WNW6  | WNW5  | WNW5  | NW6   | NNW6  | N7    | N6    | NNE5  | NE6   | NNE4  | N3    | N5    | NNW4.2        | NNW12         |
| 18-Feb | NNE5                          | N5    | N6    | N4    | N4    | N4    | NNE7  | N6    | NNE7  | N7    | NNE6  | NNE5  | N8    | N7    | NNE5  | ENE3  | ESE3  | S1    | S1    | S2    | SSE2  | SSE1  | S3    | SSE2  | NNE3.1        | N8            |
| 19-Feb | SE3                           | SE3   | SE4   | SSE3  | SE3   | SE2   | SSW1  | SW1   | WNW1  | ESE0  | ESE5  | E5    | ESE6  | ESE8  | E6    | NNE6  | N7    | N6    | N4    | N4    | N6    | N6    | NNE4  | N5    | ENE2.1        | ESE8          |
| 20-Feb | NNW3                          | NNW2  | NNW2  | NW5   | NW4   | NW4   | NW4   | NW6   | NW5   | NW6   | WNW5  | WNW7  | WNW6  | WNW8  | NW9   | NNW10 | N9    | N5    | N5    | NNE5  | NE4   | NNE5  | NNE9  | NNE6  | NNW4.8        | NNW10         |
| 21-Feb | NE4                           | NNW3  | NNW2  | NNW3  | NNW3  | NNW2  | N2    | ENE1  | NW4   | NNW8  | NNW11 | NNW11 | NNW11 | NNW9  | NNW11 | NW10  | NNW12 | NNW11 | N8    | NNW4  | NNW4  | NNW2  | NNE0  | W1    | NNW5.5        | NNW12         |
| 22-Feb | NW1                           | SSW1  | S1    | S2    | SSW1  | S2    | S3    | S2    | S2    | S2    | NW5   | N6    | NNW2  | NNW5  | N4    | N7    | NNE6  | NE4   | NNW2  | SW1   | SSW1  | SSE1  | SSE1  | S1    | N0.8          | N7            |
| 23-Feb | S2                            | S1    | S2    | SSE2  | SSE1  | SSE1  | SSE1  | SSE1  | S1    | SSE2  | SSE1  | NNE1  | WNW3  | NNW7  | NW5   | NW4   | NW4   | WNW1  | WSW1  | SSW1  | S3    | S3    | SSE3  | S5    | SW0.7         | NNW7          |
| 24-Feb | S5                            | S5    | S6    | SSE4  | SSE2  | SSE2  | SSE1  | SSE2  | SE2   | SSE3  | SSW15 | S16   | SSW14 | SSW16 | SSW17 | SSW16 | SSW14 | SSW13 | S12   | SSW14 | S15   | SSW14 | SSW13 | SSW12 | SSW9.5        | SSW17         |
| 25-Feb | SW12                          | SW13  | SW12  | SW8   | SW8   | SW8   | SW9   | SW7   | SW7   | SW7   | W7    | W8    | W9    | W7    | W7    | W9    | SW8   | SSW7  | SW8   | SSW4  | S5    | S5    | SE4   | SE5   | SW6.7         | SW13          |
| 26-Feb | SE4                           | SSE5  | SE5   | ESE4  | SE3   | SE4   | ESE3  | E3    | ENE3  | E5    | E6    | E6    | E7    | NE9   | NE10  | ENE10 | ENE9  | NE7   | ENE6  | ENE4  | NE3   | ENE3  | NE3   | NNE3  | E4.5          | NE10          |
| 27-Feb | N4                            | NW3   | NNW5  | NW5   | NW4   | NW5   | NW4   | NW5   | NW6   | NW9   | WNW7  | WNW7  | WNW8  | NW9   | NW9   | NW9   | NNW9  | NW8   | NW7   | NNW6  | NNW5  | NNW4  | N5    | NNW6  | NW6.0         | NNW9          |
| 28-Feb | N5                            | N4    | NNE4  | NNE5  | NNE5  | NNE3  | NW3   | NNW5  | NNW4  | NW3   | NW4   | N5    | NNE4  | ENE5  | ESE2  | SE8   | SE7   | ESE4  | NNE1  | SSE1  | SSE1  | S2    | SSE2  | SE3   | NE1.6         | SE8           |

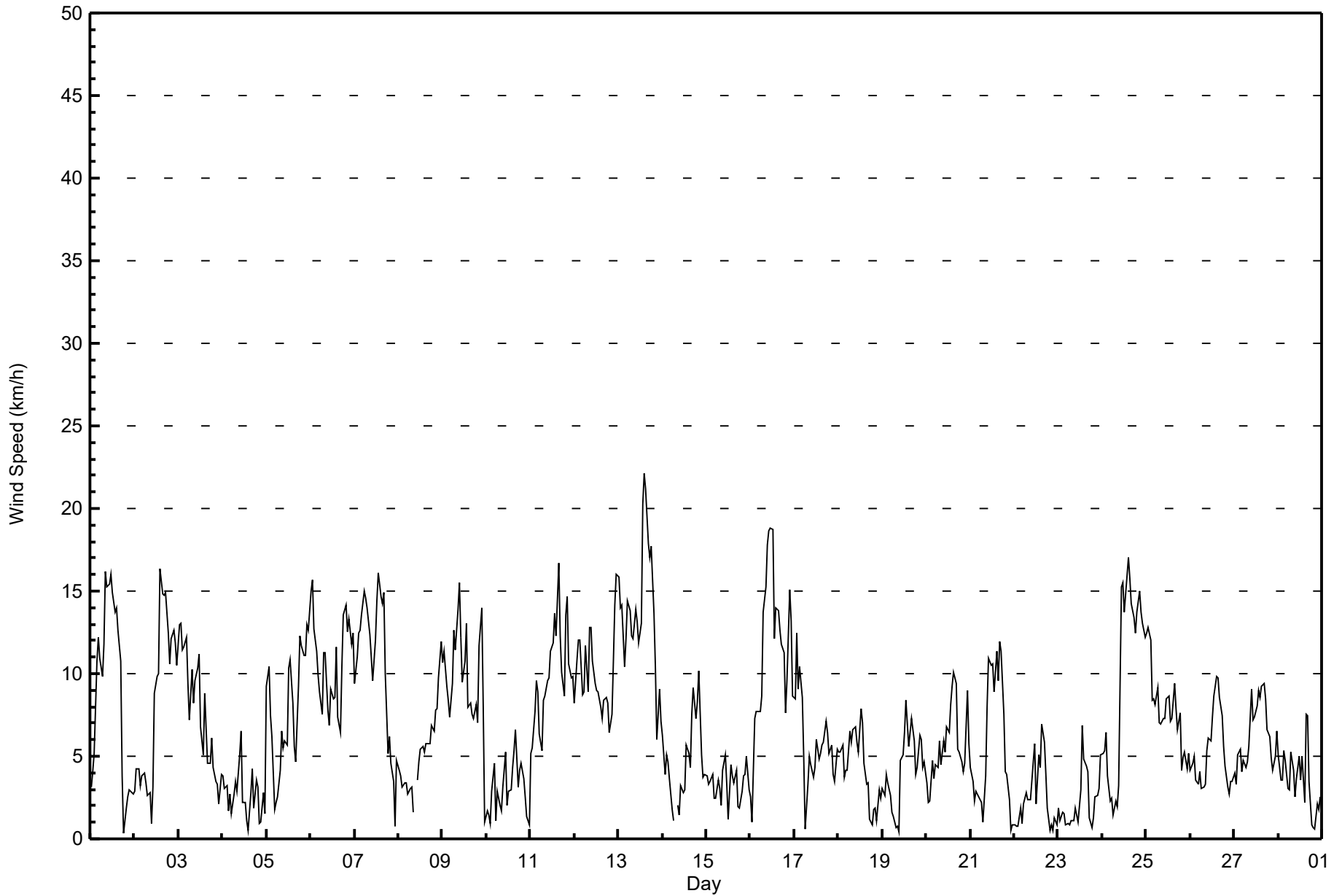
|       |        |        |        |        |        |        |        |        |        |        |        |        |       |       |       |        |       |        |        |        |       |        |       |                 |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-------|-------|-------|--------|-------|--------|--------|--------|-------|--------|-------|-----------------|
| SW2.4 | WSW2.8 | WSW2.7 | WSW2.2 | WSW2.1 | WSW2.4 | WSW2.5 | WSW2.8 | WSW2.9 | WSW3.3 | WSW3.3 | WSW3.8 | WSW3.7 | W3.6  | W3.9  | W3.3  | WNW2.2 | W2.1  | WSW2.3 | WSW2.1 | WSW2.5 | SW2.6 | WSW2.0 | SW2.0 | Diurnal Average |
| SSW16 | NW16   | SW14   | WSW13  | WSW14  | WSW15  | W15    | W14    | NNW16  | SSW18  | SSW19  | SSW19  | SSW19  | NNW20 | NNW22 | NNW21 | NNW18  | NNW17 | NNW18  | SW14   | S15    | NW15  | SSW14  | SSW16 | Diurnal Maximum |

M - Maintenance      UO - Unstable Operation  
 All monthly, daily, and diurnal averages have been calculated using vector methods



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Wind Speed (WS) - km/h**  
**Conklin - February 2023**





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Wind Speed (WS) - km/h  
Conklin - February 2023**

| <b>Wind Speed Ranges (km/h)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---------------------------------|------------------------|----------|---------------------|
| 0 - 5                           | 324                    | 48.36    | 48.36               |
| 6 - 11                          | 224                    | 33.43    | 81.79               |
| 12 - 19                         | 119                    | 17.76    | 99.55               |
| 20 - 28                         | 3                      | 0.45     | 100.00              |
| 29 - 38                         | 0                      | 0.00     | 100.00              |
| > 38                            | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 670

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Wind Speed (WS) - km/h  
Conklin - February 2023**

| <b>Wind Speed<br/>Ranges (km/h)</b> | <b>Wind Direction</b> |     |    |     |    |     |    |     |    |     |    |     |    |     |    |     | <b>Totals</b> |
|-------------------------------------|-----------------------|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|---------------|
|                                     | N                     | NNE | NE | ENE | E  | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |               |
| 0 - 5                               | 23                    | 23  | 12 | 11  | 10 | 17  | 33 | 46  | 47 | 12  | 7  | 4   | 5  | 17  | 29 | 28  | 324           |
| 6 - 11                              | 17                    | 7   | 4  | 3   | 4  | 2   | 3  | 8   | 12 | 24  | 40 | 17  | 19 | 14  | 25 | 25  | 224           |
| 12 - 19                             | 1                     | 0   | 0  | 0   | 0  | 0   | 0  | 4   | 7  | 30  | 22 | 17  | 14 | 3   | 5  | 16  | 119           |
| 20 - 28                             | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 3   | 3             |
| 29 - 38                             | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| > 38                                | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| <b>Totals</b>                       | 41                    | 30  | 16 | 14  | 14 | 19  | 36 | 58  | 66 | 66  | 69 | 38  | 38 | 34  | 59 | 72  | 670           |

Total Number of Valid Hours: 670

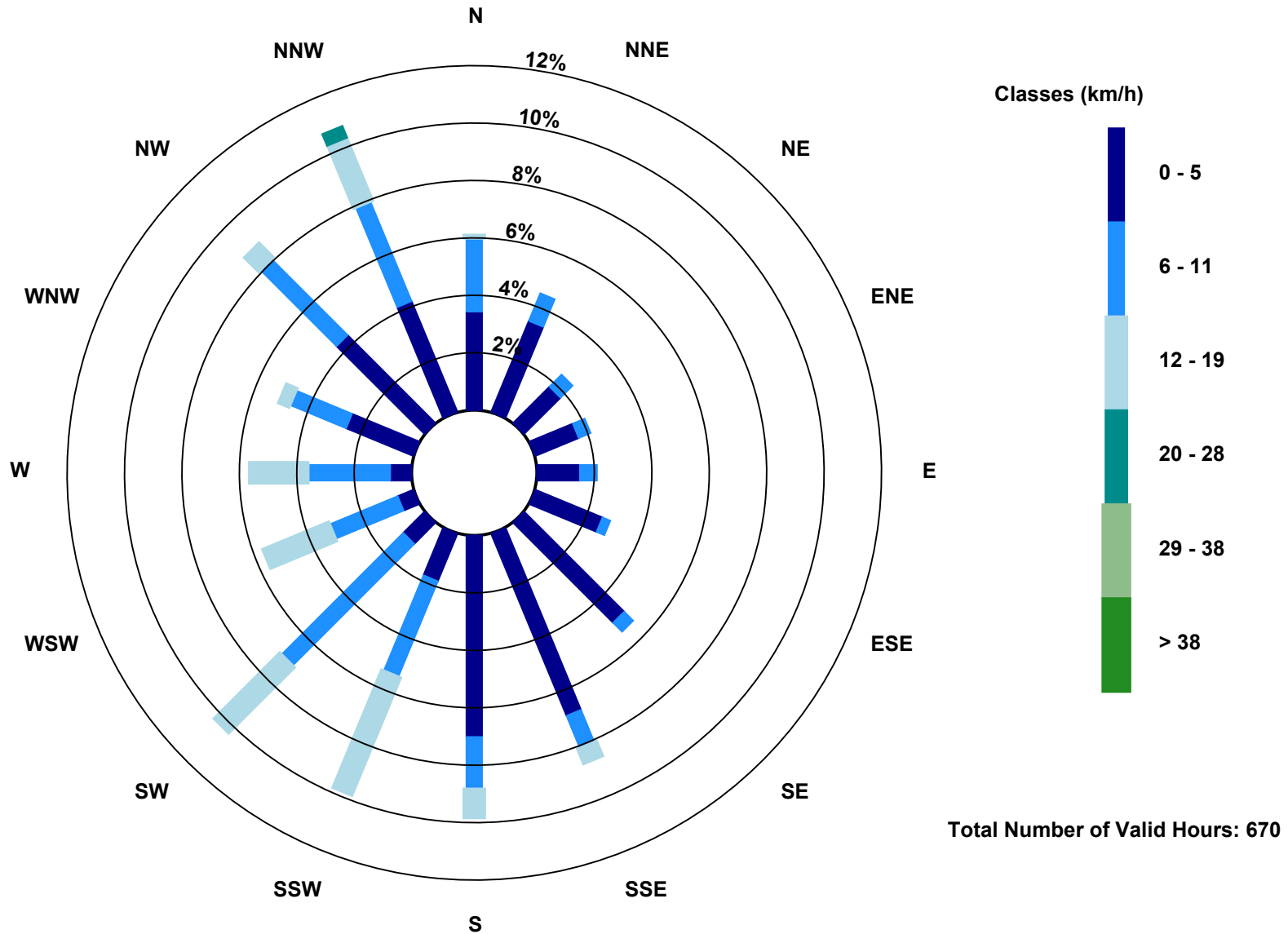
Total Number of Hours: 672





Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Wind Speed (WS) - km/h  
Conklin





**Wood Buffalo Environmental Association**  
**Summary of Hour Standard Deviations**

**Wind Speed (WS) - km/h**  
**Conklin - February 2023**

| Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0<br>Maximum Value: 8 km/h on Feb 13 14:00<br>Minimum Value: 0 km/h on Mar 1 00:00<br>Percentiles: P <sub>1</sub> = 1 P <sub>10</sub> = 1 Q <sub>1</sub> = 1 Median = 2 Q <sub>3</sub> = 3 P <sub>90</sub> = 4 P <sub>99</sub> = 6 |                               |   |   |   |   |   |   |    |   |    |    |    |    | Hours in Service: 672<br>Hours of Data: 670<br>Hours of Missing Data: 2<br>Hours of Calibration: 0<br>Percent Operational Time: 99.7 |    |    |    |    |    |    |    |    |    |    |               |
|--|-------------------------------|---|---|---|---|---|---|----|---|----|----|----|----|--|----|----|----|----|----|----|----|----|----|----|---------------|
| Day  | Hourly Period Ending At (MST) |   |   |   |   |   |   |    |   |    |    |    |    |  |    |    |    |    |    |    |    |    |    |    | Daily Maximum |
|  | 1                             | 2 | 3 | 4 | 5 | 6 | 7 | 8  | 9 | 10 | 11 | 12 | 13 | 14   | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |               |
| 1-Feb  | 1                             | 2 | 2 | 5 | 3 | 4 | 4 | 3  | 5 | 5  | 4  | 5  | 5  | 4  | 4  | 4  | 3  | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 5             |
| 2-Feb  | 1                             | 1 | 1 | 1 | 1 | 1 | 1 | 1  | 1 | 1  | 2  | 3  | 3  | 4  | 5  | 4  | 4  | 5  | 4  | 2  | 4  | 4  | 3  | 3  | 5             |
| 3-Feb  | 4                             | 4 | 3 | 4 | 4 | 3 | 2 | 4  | 3 | 3  | 4  | 3  | 3  | 4  | 3  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 4  |               |
| 4-Feb  | 1                             | 1 | 1 | 1 | 1 | 1 | 1 | 1  | 2 | 2  | 2  | 1  | 1  | 2  | 2  | 1  | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 2  |               |
| 5-Feb  | 3                             | 3 | 3 | 2 | 1 | 1 | 2 | 2  | 2 | 3  | 4  | 2  | 3  | 4  | 3  | 2  | 1  | 3  | 4  | 3  | 3  | 3  | 5  | 5  |               |
| 6-Feb  | 7                             | 6 | 6 | 5 | 4 | 3 | 3 | 4  | 4 | 3  | 2  | 3  | 3  | 3  | 4  | 3  | 3  | 3  | 3  | 4  | 3  | 4  | 4  | 3  |               |
| 7-Feb  | 3                             | 3 | 3 | 3 | 4 | 5 | 5 | 5  | 6 | 5  | 4  | 5  | 6  | 6  | 6  | 6  | 6  | 3  | 2  | 2  | 1  | 1  | 1  | 1  |               |
| 8-Feb  | 1                             | 1 | 1 | 1 | 1 | 1 | 1 | 1  | 1 | M  | 2  | 2  | 2  | 2  | 2  | 3  | 2  | 2  | 2  | 1  | 2  | 2  | 2  | 2  |               |
| 9-Feb  | 2                             | 2 | 3 | 2 | 1 | 3 | 3 | 3  | 3 | 4  | 4  | 3  | 4  | 4  | 3  | 3  | 2  | 2  | 2  | 2  | 4  | 4  | 5  | 2  |               |
| 10-Feb   | 2                             | 1 | 1 | 2 | 1 | 1 | 1 | 1  | 1 | 1  | 1  | 2  | 1  | 2  | 2  | 3  | 2  | 1  | 2  | 2  | 1  | 1  | 1  | 1  |               |
| 11-Feb   | 3                             | 2 | 4 | 3 | 3 | 2 | 2 | 2  | 2 | 3  | 3  | 3  | 4  | 5  | 4  | 7  | 4  | 4  | 3  | 6  | 6  | 4  | 3  | 3  |               |
| 12-Feb   | 3                             | 4 | 4 | 5 | 4 | 3 | 4 | 3  | 3 | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 2  | 2  | 2  | 2  | 3  | 4  | 4  | 5  |               |
| 13-Feb   | 4                             | 4 | 4 | 3 | 3 | 4 | 4 | 3  | 4 | 5  | 4  | 4  | 6  | 8  | 6  | 6  | 5  | 5  | 6  | 4  | 3  | 1  | 2  | 2  |               |
| 14-Feb   | 2                             | 1 | 1 | 1 | 1 | 2 | 1 | UO | 0 | 1  | 1  | 2  | 1  | 2  | 2  | 2  | 4  | 3  | 2  | 3  | 3  | 2  | 1  | 1  |               |
| 15-Feb   | 1                             | 1 | 1 | 1 | 1 | 1 | 1 | 1  | 1 | 2  | 1  | 1  | 2  | 2  | 2  | 2  | 2  | 2  | 1  | 1  | 1  | 1  | 1  | 1  |               |
| 16-Feb   | 1                             | 1 | 2 | 2 | 2 | 2 | 3 | 4  | 4 | 5  | 6  | 5  | 5  | 5  | 4  | 4  | 3  | 3  | 4  | 3  | 4  | 5  | 5  | 3  |               |
| 17-Feb   | 3                             | 4 | 3 | 3 | 3 | 2 | 2 | 2  | 1 | 1  | 1  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 1  | 1  | 1  | 1  |               |
| 18-Feb   | 1                             | 2 | 1 | 1 | 1 | 1 | 2 | 2  | 2 | 2  | 2  | 2  | 2  | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  |               |
| 19-Feb   | 1                             | 1 | 1 | 1 | 1 | 1 | 1 | 1  | 1 | 1  | 1  | 2  | 2  | 2  | 2  | 3  | 2  | 2  | 1  | 1  | 2  | 2  | 1  | 1  |               |
| 20-Feb   | 1                             | 1 | 1 | 1 | 2 | 1 | 2 | 2  | 2 | 2  | 2  | 2  | 3  | 3  | 4  | 3  | 3  | 2  | 2  | 1  | 1  | 2  | 3  | 2  |               |
| 21-Feb   | 2                             | 1 | 2 | 1 | 1 | 0 | 1 | 1  | 2 | 3  | 3  | 3  | 3  | 3  | 4  | 4  | 4  | 3  | 2  | 1  | 1  | 1  | 1  | 1  |               |
| 22-Feb   | 1                             | 1 | 1 | 1 | 1 | 1 | 1 | 1  | 1 | 1  | 3  | 2  | 2  | 2  | 2  | 3  | 2  | 2  | 1  | 1  | 1  | 1  | 1  | 1  |               |
| 23-Feb   | 1                             | 1 | 1 | 1 | 1 | 1 | 1 | 1  | 1 | 1  | 1  | 1  | 3  | 3  | 3  | 2  | 2  | 1  | 2  | 1  | 1  | 1  | 1  | 1  |               |
| 24-Feb   | 1                             | 1 | 1 | 1 | 1 | 1 | 1 | 1  | 1 | 4  | 4  | 5  | 5  | 5  | 5  | 4  | 4  | 4  | 4  | 6  | 5  | 4  | 4  | 6  |               |
| 25-Feb   | 4                             | 4 | 4 | 3 | 2 | 2 | 3 | 2  | 2 | 2  | 3  | 4  | 4  | 3  | 3  | 3  | 2  | 3  | 3  | 2  | 2  | 1  | 1  | 1  |               |
| 26-Feb   | 1                             | 1 | 1 | 1 | 2 | 2 | 1 | 1  | 1 | 2  | 2  | 2  | 3  | 3  | 3  | 3  | 3  | 3  | 2  | 2  | 1  | 1  | 1  | 1  |               |
| 27-Feb   | 1                             | 1 | 1 | 1 | 1 | 1 | 1 | 1  | 2 | 4  | 3  | 3  | 3  | 4  | 3  | 4  | 3  | 3  | 2  | 2  | 1  | 1  | 1  | 2  |               |
| 28-Feb   | 2                             | 1 | 1 | 2 | 2 | 1 | 1 | 1  | 1 | 1  | 1  | 2  | 2  | 2  | 3  | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 0  |               |
|  |                               |   |   |   |   |   |   |    |   |    |    |    |    | Diurnal Maximum  |    |    |    |    |    |    |    |    |    |    |               |
| M - Maintenance  |                               |   |   |   |   |   |   |    |   |    |    |    |    | UO - Unstable Operation  |    |    |    |    |    |    |    |    |    |    |               |



**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

**Wind Direction (WD) - deg**  
**Conklin - February 2023**

|  |   |
|--|---|
| Direction of Maximum Speed: 334 deg on Feb 13 15:00          | Hours in Service: 672                                       |
| Direction of Maximum Daily Speed Average: 263.7 deg on Feb 7 | Hours of Data: 670  |
| Direction of Minimum Speed: 184 deg on Feb 1 19:00           | Direction of Minimum Daily Speed Average: 0.5 deg on Feb 10 |
| Direction of Minimum Speed: 184 deg on Feb 1 19:00           | Hours of Missing Data: 2                                    |
| Monthly Average Direction: 253.1 deg                         | Percent Operational Time: 99.7                              |

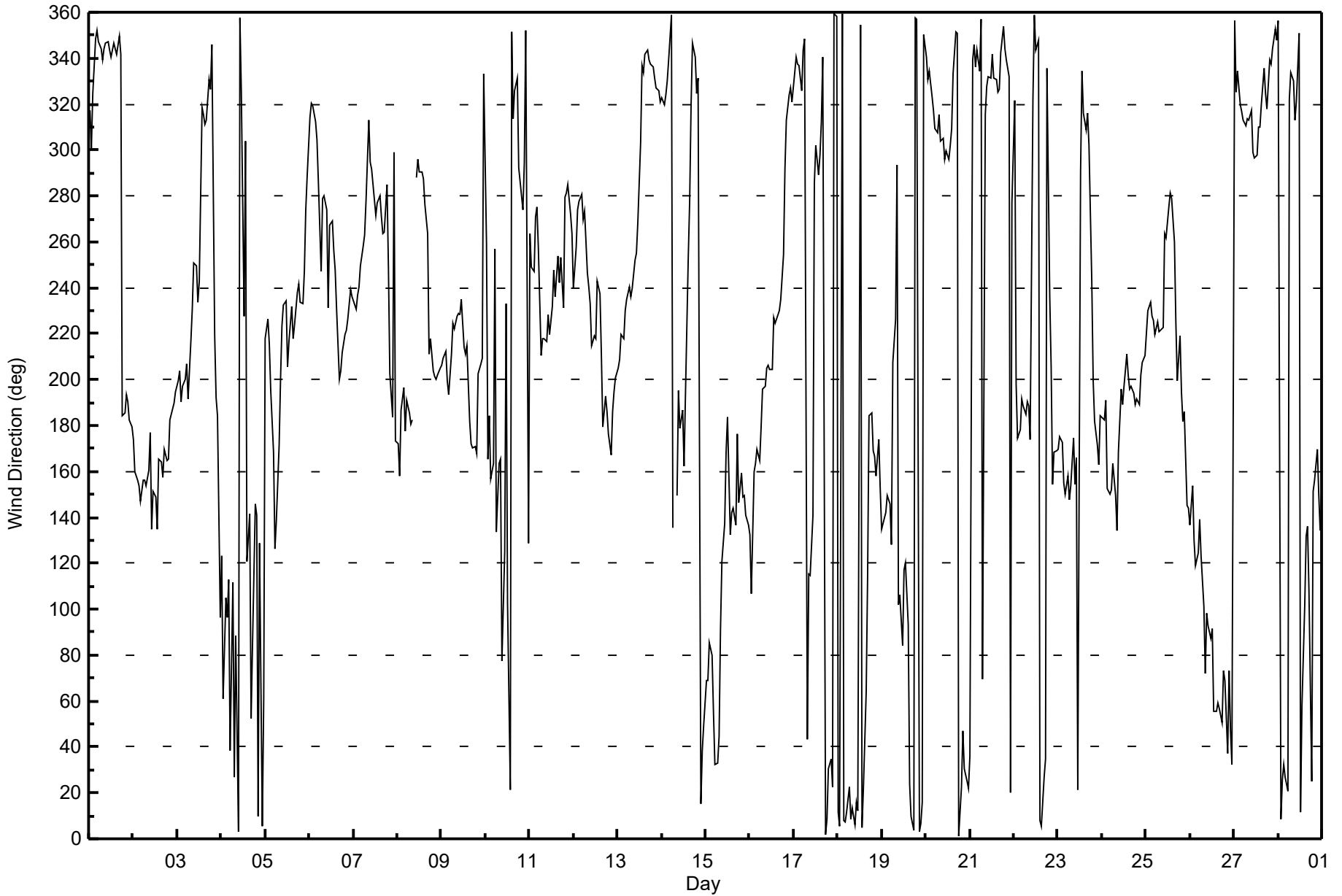
| Day    | Hourly Period Ending At (MST) |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Daily Average |
|--------|-------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------------|
|        | 1                             | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     | 10    | 11    | 12    | 13    | 14    | 15    | 16    | 17    | 18    | 19    | 20    | 21    | 22    | 23    | 24    |               |
| 1-Feb  | 317                           | 301   | 325   | 349   | 352   | 347   | 344   | 339   | 344   | 346   | 347   | 343   | 340   | 347   | 344   | 341   | 350   | 342   | 184   | 186   | 193   | 191   | 183   | 179   | 341.8         |
| 2-Feb  | 174                           | 160   | 156   | 154   | 147   | 156   | 156   | 154   | 160   | 177   | 135   | 151   | 149   | 135   | 165   | 164   | 158   | 170   | 165   | 165   | 182   | 188   | 190   | 195   | 165.7         |
| 3-Feb  | 200                           | 204   | 191   | 197   | 200   | 207   | 192   | 217   | 231   | 251   | 250   | 234   | 243   | 318   | 315   | 311   | 313   | 331   | 327   | 346   | 219   | 192   | 184   | 97    | 229.6         |
| 4-Feb  | 123                           | 61    | 105   | 96    | 113   | 39    | 112   | 27    | 88    | 3     | 357   | 326   | 227   | 304   | 121   | 141   | 53    | 85    | 146   | 141   | 10    | 129   | 6     | 61    | 69.2          |
| 5-Feb  | 218                           | 226   | 216   | 195   | 168   | 126   | 139   | 171   | 200   | 223   | 232   | 234   | 205   | 216   | 232   | 218   | 224   | 238   | 242   | 234   | 233   | 247   | 274   | 288   | 229.7         |
| 6-Feb  | 315                           | 321   | 319   | 312   | 305   | 286   | 247   | 279   | 280   | 274   | 231   | 267   | 269   | 256   | 248   | 231   | 200   | 204   | 212   | 219   | 222   | 226   | 239   | 236   | 259.7         |
| 7-Feb  | 235                           | 231   | 237   | 240   | 250   | 258   | 263   | 278   | 313   | 295   | 292   | 278   | 272   | 277   | 280   | 271   | 264   | 264   | 285   | 249   | 202   | 184   | 299   | 174   | 263.7         |
| 8-Feb  | 172                           | 158   | 186   | 197   | 178   | 191   | 185   | 181   | 182   | M     | 288   | 296   | 291   | 290   | 288   | 277   | 264   | 211   | 218   | 204   | 202   | 200   | 202   | 205   | 219.8         |
| 9-Feb  | 206                           | 210   | 212   | 200   | 193   | 211   | 225   | 222   | 227   | 229   | 228   | 235   | 214   | 211   | 215   | 182   | 172   | 170   | 171   | 168   | 202   | 207   | 209   | 333   | 208.9         |
| 10-Feb | 259                           | 165   | 184   | 157   | 163   | 257   | 134   | 164   | 165   | 78    | 125   | 233   | 103   | 21    | 351   | 313   | 326   | 331   | 292   | 286   | 274   | 295   | 352   | 129   | 291.9         |
| 11-Feb | 263                           | 249   | 247   | 271   | 275   | 257   | 210   | 218   | 218   | 216   | 229   | 219   | 232   | 248   | 236   | 254   | 242   | 253   | 231   | 279   | 281   | 285   | 272   | 263   | 249.5         |
| 12-Feb | 240                           | 257   | 274   | 278   | 281   | 269   | 273   | 247   | 240   | 233   | 215   | 219   | 218   | 243   | 237   | 210   | 179   | 193   | 186   | 176   | 167   | 186   | 195   | 201   | 227.4         |
| 13-Feb | 205                           | 209   | 220   | 218   | 230   | 235   | 241   | 236   | 240   | 252   | 255   | 269   | 303   | 337   | 334   | 342   | 344   | 339   | 337   | 336   | 331   | 327   | 326   | 321   | 288.3         |
| 14-Feb | 323                           | 320   | 324   | 330   | 340   | 359   | 136   | UO    | 150   | 195   | 179   | 187   | 162   | 193   | 253   | 277   | 319   | 346   | 340   | 325   | 332   | 15    | 38    | 49    | 325.5         |
| 15-Feb | 69                            | 69    | 85    | 80    | 55    | 33    | 33    | 44    | 91    | 121   | 137   | 168   | 184   | 132   | 142   | 144   | 136   | 176   | 147   | 159   | 149   | 149   | 141   | 137   | 118.6         |
| 16-Feb | 133                           | 107   | 160   | 163   | 170   | 165   | 179   | 196   | 197   | 205   | 206   | 204   | 204   | 227   | 224   | 228   | 230   | 235   | 255   | 292   | 313   | 324   | 327   | 321   | 221.2         |
| 17-Feb | 334                           | 341   | 337   | 337   | 326   | 344   | 348   | 43    | 115   | 115   | 141   | 286   | 302   | 289   | 298   | 313   | 340   | 2     | 9     | 31    | 35    | 23    | 360   | 358   | 345.8         |
| 18-Feb | 12                            | 5     | 360   | 8     | 7     | 11    | 23    | 9     | 13    | 6     | 16    | 12    | 354   | 5     | 22    | 64    | 114   | 184   | 185   | 169   | 167   | 158   | 174   | 153   | 17.0          |
| 19-Feb | 135                           | 140   | 142   | 149   | 146   | 128   | 208   | 227   | 293   | 102   | 106   | 84    | 117   | 120   | 94    | 24    | 10    | 3     | 358   | 357   | 3     | 7     | 16    | 350   | 59.7          |
| 20-Feb | 340                           | 331   | 334   | 323   | 317   | 309   | 308   | 315   | 304   | 305   | 296   | 299   | 296   | 302   | 310   | 333   | 352   | 351   | 1     | 22    | 47    | 30    | 25    | 22    | 332.7         |
| 21-Feb | 36                            | 339   | 346   | 336   | 343   | 334   | 357   | 70    | 315   | 328   | 332   | 331   | 341   | 331   | 331   | 326   | 327   | 343   | 354   | 344   | 339   | 332   | 20    | 277   | 336.7         |
| 22-Feb | 322                           | 198   | 175   | 178   | 192   | 188   | 185   | 190   | 189   | 174   | 322   | 359   | 343   | 348   | 8     | 6     | 27    | 34    | 335   | 236   | 206   | 154   | 168   | 169   | 355.9         |
| 23-Feb | 169                           | 175   | 173   | 155   | 150   | 158   | 148   | 154   | 174   | 154   | 166   | 21    | 291   | 334   | 316   | 309   | 316   | 302   | 243   | 199   | 182   | 171   | 163   | 184   | 230.2         |
| 24-Feb | 183                           | 183   | 191   | 153   | 150   | 152   | 163   | 150   | 134   | 168   | 189   | 197   | 211   | 202   | 196   | 197   | 194   | 189   | 192   | 189   | 192   | 202   | 207   | 210   | 194.1         |
| 25-Feb | 221                           | 230   | 234   | 227   | 226   | 220   | 225   | 221   | 222   | 223   | 264   | 262   | 275   | 281   | 279   | 260   | 225   | 200   | 219   | 195   | 182   | 186   | 145   | 144   | 229.4         |
| 26-Feb | 136                           | 154   | 130   | 119   | 125   | 139   | 123   | 101   | 72    | 98    | 93    | 87    | 91    | 56    | 55    | 59    | 57    | 51    | 73    | 69    | 37    | 73    | 47    | 32    | 80.7          |
| 27-Feb | 356                           | 325   | 335   | 320   | 317   | 313   | 310   | 313   | 313   | 317   | 299   | 297   | 298   | 310   | 310   | 320   | 336   | 324   | 318   | 340   | 337   | 344   | 353   | 348   | 321.2         |
| 28-Feb | 356                           | 9     | 25    | 32    | 27    | 21    | 322   | 334   | 330   | 313   | 321   | 351   | 12    | 58    | 102   | 132   | 136   | 108   | 25    | 151   | 156   | 169   | 150   | 134   | 34.5          |
|        | 235.7                         | 243.1 | 239.1 | 250.8 | 252.4 | 250.9 | 238.8 | 247.3 | 249.7 | 255.5 | 248.2 | 256.3 | 256.0 | 279.5 | 278.4 | 278.0 | 283.5 | 266.5 | 251.4 | 246.4 | 236.4 | 227.9 | 238.7 | 232.2 |               |

Diurnal Average

M - Maintenance

UO - Unstable Operation

All monthly, daily, and diurnal averages have been calculated using vector methods





**Wood Buffalo Environmental Association**  
**Summary of Hour Standard Deviations**

**Wind Direction (WD) - deg**  
**Conklin - February 2023**

| Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0<br>Maximum Value: 109 deg on Feb 4 15:00<br>Minimum Value: 8 deg on Feb 28 23:00<br>Percentiles: P <sub>1</sub> = 11 P <sub>10</sub> = 16 Q <sub>1</sub> = 19 Median = 23 Q <sub>3</sub> = 33 P <sub>90</sub> = 57 P <sub>99</sub> = 90 |                               |    |    |    |    |     |    |    |    |    |    |    |    |    |     |    |    |    | Hours in Service: 672<br>Hours of Data: 670<br>Hours of Missing Data: 2<br>Hours of Calibration: 0<br>Percent Operational Time: 99.7 |    |    |    |     |    |               |    |    |    |     |    |    |    |    |    |    |    |    |     |    |    |    |    |    |    |    |     |    |
|---|-------------------------------|----|----|----|----|-----|----|----|----|----|----|----|----|----|-----|----|----|----|--|----|----|----|-----|----|---------------|----|----|----|-----|----|----|----|----|----|----|----|----|-----|----|----|----|----|----|----|----|-----|----|
| Day   | Hourly Period Ending At (MST) |    |    |    |    |     |    |    |    |    |    |    |    |    |     |    |    |    |  |    |    |    |     |    | Daily Maximum |    |    |    |     |    |    |    |    |    |    |    |    |     |    |    |    |    |    |    |    |     |    |
|   | 1                             | 2  | 3  | 4  | 5  | 6   | 7  | 8  | 9  | 10 | 11 | 12 | 13 | 14 | 15  | 16 | 17 | 18 | 19   | 20 | 21 | 22 | 23  | 24 |               |    |    |    |     |    |    |    |    |    |    |    |    |     |    |    |    |    |    |    |    |     |    |
| 1-Feb   | 30                            | 30 | 20 | 20 | 19 | 19  | 21 | 19 | 18 | 19 | 21 | 22 | 22 | 25 | 22  | 20 | 18 | 19 | 66   | 23 | 20 | 20 | 22  | 21 | 66            |    |    |    |     |    |    |    |    |    |    |    |    |     |    |    |    |    |    |    |    |     |    |
| 2-Feb   | 19                            | 16 | 19 | 20 | 10 | 13  | 14 | 21 | 17 | 85 | 86 | 20 | 23 | 22 | 17  | 17 | 15 | 17 | 16   | 16 | 20 | 20 | 19  | 20 | 86            |    |    |    |     |    |    |    |    |    |    |    |    |     |    |    |    |    |    |    |    |     |    |
| 3-Feb   | 21                            | 20 | 21 | 24 | 21 | 26  | 25 | 24 | 28 | 28 | 23 | 21 | 45 | 66 | 30  | 29 | 33 | 21 | 25   | 22 | 63 | 38 | 66  | 41 | 66            |    |    |    |     |    |    |    |    |    |    |    |    |     |    |    |    |    |    |    |    |     |    |
| 4-Feb   | 29                            | 30 | 36 | 47 | 35 | 56  | 41 | 25 | 45 | 18 | 16 | 55 | 23 | 77 | 109 | 29 | 37 | 54 | 28   | 48 | 77 | 57 | 22  | 70 | 109           |    |    |    |     |    |    |    |    |    |    |    |    |     |    |    |    |    |    |    |    |     |    |
| 5-Feb   | 20                            | 21 | 25 | 20 | 74 | 56  | 68 | 50 | 30 | 66 | 58 | 28 | 19 | 22 | 25  | 27 | 35 | 22 | 20   | 18 | 18 | 27 | 31  | 28 | 74            |    |    |    |     |    |    |    |    |    |    |    |    |     |    |    |    |    |    |    |    |     |    |
| 6-Feb   | 30                            | 25 | 27 | 28 | 32 | 29  | 32 | 27 | 25 | 40 | 19 | 29 | 30 | 27 | 23  | 24 | 30 | 19 | 16   | 16 | 15 | 17 | 23  | 19 | 40            |    |    |    |     |    |    |    |    |    |    |    |    |     |    |    |    |    |    |    |    |     |    |
| 7-Feb   | 19                            | 20 | 19 | 18 | 18 | 19  | 21 | 29 | 30 | 31 | 32 | 28 | 28 | 28 | 30  | 26 | 21 | 20 | 29   | 29 | 14 | 22 | 105 | 24 | 105           |    |    |    |     |    |    |    |    |    |    |    |    |     |    |    |    |    |    |    |    |     |    |
| 8-Feb   | 21                            | 16 | 32 | 25 | 24 | 26  | 19 | 26 | 41 | M  | 62 | 33 | 32 | 34 | 35  | 33 | 17 | 17 | 19   | 18 | 17 | 17 | 16  | 15 | 62            |    |    |    |     |    |    |    |    |    |    |    |    |     |    |    |    |    |    |    |    |     |    |
| 9-Feb   | 15                            | 17 | 20 | 13 | 14 | 24  | 19 | 20 | 18 | 18 | 19 | 20 | 22 | 19 | 25  | 20 | 19 | 15 | 12   | 16 | 21 | 16 | 41  | 81 | 81            |    |    |    |     |    |    |    |    |    |    |    |    |     |    |    |    |    |    |    |    |     |    |
| 10-Feb  | 66                            | 63 | 78 | 43 | 19 | 100 | 51 | 22 | 77 | 42 | 16 | 74 | 49 | 59 | 43  | 24 | 16 | 20 | 34   | 32 | 30 | 35 | 71  | 49 | 100           |    |    |    |     |    |    |    |    |    |    |    |    |     |    |    |    |    |    |    |    |     |    |
| 11-Feb  | 38                            | 24 | 26 | 25 | 26 | 25  | 18 | 21 | 21 | 22 | 27 | 21 | 25 | 23 | 20  | 25 | 19 | 25 | 23   | 30 | 29 | 31 | 25  | 23 | 38            |    |    |    |     |    |    |    |    |    |    |    |    |     |    |    |    |    |    |    |    |     |    |
| 12-Feb  | 21                            | 25 | 26 | 28 | 29 | 27  | 26 | 27 | 15 | 18 | 19 | 20 | 22 | 23 | 23  | 28 | 15 | 18 | 16   | 19 | 19 | 18 | 18  | 16 | 29            |    |    |    |     |    |    |    |    |    |    |    |    |     |    |    |    |    |    |    |    |     |    |
| 13-Feb  | 15                            | 17 | 21 | 24 | 19 | 18  | 15 | 18 | 18 | 26 | 22 | 25 | 31 | 25 | 20  | 19 | 19 | 18 | 19   | 18 | 18 | 12 | 16  | 15 | 31            |    |    |    |     |    |    |    |    |    |    |    |    |     |    |    |    |    |    |    |    |     |    |
| 14-Feb  | 15                            | 15 | 16 | 14 | 18 | 10  | 59 | UO | 23 | 52 | 42 | 55 | 44 | 30 | 43  | 34 | 26 | 20 | 19   | 23 | 29 | 26 | 25  | 59 |               |    |    |    |     |    |    |    |    |    |    |    |    |     |    |    |    |    |    |    |    |     |    |
| 15-Feb  | 28                            | 38 | 34 | 34 | 44 | 51  | 21 | 48 | 78 | 28 | 26 | 37 | 92 | 60 | 64  | 37 | 36 | 70 | 43   | 16 | 11 | 13 | 10  | 22 | 92            |    |    |    |     |    |    |    |    |    |    |    |    |     |    |    |    |    |    |    |    |     |    |
| 16-Feb  | 40                            | 70 | 15 | 16 | 17 | 16  | 22 | 20 | 19 | 17 | 17 | 16 | 15 | 25 | 24  | 20 | 19 | 17 | 23   | 32 | 23 | 19 | 19  | 17 | 70            |    |    |    |     |    |    |    |    |    |    |    |    |     |    |    |    |    |    |    |    |     |    |
| 17-Feb  | 19                            | 17 | 22 | 20 | 20 | 38  | 84 | 40 | 19 | 22 | 36 | 42 | 29 | 33 | 28  | 26 | 24 | 26 | 20   | 27 | 23 | 24 | 26  | 19 | 84            |    |    |    |     |    |    |    |    |    |    |    |    |     |    |    |    |    |    |    |    |     |    |
| 18-Feb  | 24                            | 21 | 21 | 26 | 25 | 26  | 23 | 21 | 23 | 25 | 32 | 45 | 28 | 35 | 54  | 58 | 35 | 58 | 70   | 19 | 27 | 79 | 19  | 22 | 79            |    |    |    |     |    |    |    |    |    |    |    |    |     |    |    |    |    |    |    |    |     |    |
| 19-Feb  | 15                            | 17 | 12 | 15 | 22 | 49  | 44 | 57 | 69 | 98 | 25 | 39 | 25 | 22 | 44  | 37 | 23 | 21 | 25   | 23 | 18 | 19 | 17  | 16 | 98            |    |    |    |     |    |    |    |    |    |    |    |    |     |    |    |    |    |    |    |    |     |    |
| 20-Feb  | 19                            | 27 | 18 | 17 | 23 | 23  | 30 | 21 | 31 | 28 | 34 | 30 | 34 | 31 | 26  | 24 | 21 | 19 | 18   | 21 | 26 | 27 | 22  | 31 | 34            |    |    |    |     |    |    |    |    |    |    |    |    |     |    |    |    |    |    |    |    |     |    |
| 21-Feb  | 24                            | 13 | 22 | 36 | 22 | 22  | 37 | 74 | 24 | 24 | 22 | 25 | 23 | 31 | 23  | 25 | 20 | 18 | 15   | 34 | 16 | 34 | 92  | 60 | 92            |    |    |    |     |    |    |    |    |    |    |    |    |     |    |    |    |    |    |    |    |     |    |
| 22-Feb  | 67                            | 76 | 77 | 22 | 73 | 23  | 31 | 17 | 65 | 31 | 48 | 48 | 89 | 48 | 70  | 38 | 37 | 17 | 36   | 75 | 63 | 78 | 22  | 50 | 89            |    |    |    |     |    |    |    |    |    |    |    |    |     |    |    |    |    |    |    |    |     |    |
| 23-Feb  | 19                            | 74 | 20 | 23 | 34 | 45  | 57 | 62 | 64 | 22 | 67 | 85 | 75 | 36 | 49  | 32 | 29 | 43 | 57   | 70 | 18 | 17 | 25  | 18 | 85            |    |    |    |     |    |    |    |    |    |    |    |    |     |    |    |    |    |    |    |    |     |    |
| 24-Feb  | 11                            | 12 | 10 | 20 | 12 | 13  | 15 | 12 | 18 | 65 | 20 | 22 | 26 | 22 | 18  | 20 | 19 | 18 | 20   | 20 | 21 | 21 | 21  | 22 | 65            |    |    |    |     |    |    |    |    |    |    |    |    |     |    |    |    |    |    |    |    |     |    |
| 25-Feb  | 23                            | 23 | 23 | 24 | 21 | 22  | 25 | 27 | 23 | 20 | 34 | 32 | 33 | 34 | 32  | 23 | 24 | 18 | 21   | 37 | 29 | 22 | 21  | 17 | 37            |    |    |    |     |    |    |    |    |    |    |    |    |     |    |    |    |    |    |    |    |     |    |
| 26-Feb  | 15                            | 16 | 13 | 28 | 34 | 17  | 20 | 37 | 39 | 27 | 28 | 33 | 30 | 33 | 30  | 33 | 30 | 29 | 34   | 34 | 33 | 37 | 34  | 33 | 39            |    |    |    |     |    |    |    |    |    |    |    |    |     |    |    |    |    |    |    |    |     |    |
| 27-Feb  | 18                            | 12 | 20 | 15 | 15 | 20  | 22 | 20 | 22 | 25 | 30 | 31 | 32 | 27 | 26  | 26 | 20 | 20 | 18   | 16 | 20 | 21 | 20  | 16 | 32            |    |    |    |     |    |    |    |    |    |    |    |    |     |    |    |    |    |    |    |    |     |    |
| 28-Feb  | 20                            | 21 | 20 | 23 | 21 | 30  | 28 | 17 | 23 | 43 | 43 | 41 | 77 | 56 | 100 | 20 | 18 | 21 | 71   | 54 | 80 | 23 | 8   | 18 | 100           |    |    |    |     |    |    |    |    |    |    |    |    |     |    |    |    |    |    |    |    |     |    |
|   |                               |    |    |    |    |     |    |    |    |    |    |    |    |    |     |    |    |    | Diurnal Maximum  |    |    |    |     | 67 | 76            | 78 | 47 | 74 | 100 | 84 | 74 | 78 | 98 | 86 | 85 | 92 | 77 | 109 | 58 | 37 | 70 | 71 | 75 | 80 | 79 | 105 | 81 |
| M - Maintenance   |                               |    |    |    |    |     |    |    |    |    |    |    |    |    |     |    |    |    | UO - Unstable Operation  |    |    |    |     |    |               |    |    |    |     |    |    |    |    |    |    |    |    |     |    |    |    |    |    |    |    |     |    |



## WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY  
MONITORING PROGRAM  
MONTHLY REPORT

**AMS22  
JANVIER  
FEBRUARY 2023**

Operations, Data Collection,  
QA/QC, Data Validation and Reporting by:  
Wood Buffalo Environmental Association  
Fort McMurray, Alberta

March 31, 2023

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - JANVIER (AMS22)  
 FEBRUARY 2023

MONTHLY SUMMARY

| Parameter                         | Hours of Data | Hours of Calibration | Hours without Data | Operational Time | Maximum 1-Hour Value | 1-Hour Exceedances | Maximum 24-Hour Value | 24-Hour Exceedances |
|-----------------------------------|---------------|----------------------|--------------------|------------------|----------------------|--------------------|-----------------------|---------------------|
| SO2(ppb) Average                  | 638           | 33                   | 34                 | 99.85            | 7.9                  | 0                  | 3.1                   | 0                   |
| TRS(ppb) Average                  | 638           | 34                   | 34                 | 100              | 0.5                  | 0                  | 0.2                   | 0                   |
| THC(ppm) Average                  | 638           | 33                   | 34                 | 99.85            | 2.2                  | -                  | 2.1                   | -                   |
| NMHC(ppm) Average                 | 638           | 33                   | 34                 | 99.85            | 0.09                 | -                  | 0.006                 | -                   |
| CH4(ppm) Average                  | 638           | 33                   | 34                 | 99.85            | 2.2                  | -                  | 2.1                   | -                   |
| O3 (ppb) Average                  | 639           | 32                   | 33                 | 99.85            | 46.5                 | 0                  | 43.9                  | -                   |
| NO2 (ppb) Average                 | 637           | 34                   | 35                 | 99.85            | 13                   | 0                  | 5.3                   | -                   |
| NO (ppb) Average                  | 637           | 34                   | 35                 | 99.85            | 4.7                  | -                  | 1                     | -                   |
| NOX (ppb) Average                 | 637           | 34                   | 35                 | 99.85            | 15                   | -                  | 5.9                   | -                   |
| PM2.5 (ug/m3) Average             | 669           | 3                    | 3                  | 100              | 32.9                 | 0                  | 8                     | 0                   |
| Temperature 2 m (C) Average       | 672           | 0                    | 0                  | 100              | 6.1                  | -                  | 1.8                   | -                   |
| Relative Humidity (%) Average     | 672           | 0                    | 0                  | 100              | 94.1                 | -                  | 85.9                  | -                   |
| Wind Speed 20 m (km/h) Average    | 670           | 0                    | 2                  | 99.7             | 25                   | -                  | 15                    | -                   |
| Wind Direction 20 m (deg) Average | 670           | 0                    | 2                  | 99.7             | -                    | -                  | -                     | -                   |

Note : Operational time includes periods of data collection and instrument calibration

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - JANVIER (AMS22)  
 FEBRUARY 2023

MONTHLY SUMMARY FOR AIR QUALITY/ METEOROLOGICAL MONITORING MEASUREMENTS

| Parameter                         | Number | Mean   | StnDev | Total | Percentile |       |       |        |      |      |      |
|-----------------------------------|--------|--------|--------|-------|------------|-------|-------|--------|------|------|------|
|                                   |        |        |        |       | Min        | P10   | Q1    | Median | Q3   | P90  | Max  |
| SO2 (ppb) Average                 | 638    | 0.73   | 1.2    | -     | 0          | 0     | 0.1   | 0.3    | 0.8  | 1.7  | 7.9  |
| TRS (ppb) Average                 | 638    | 0.12   | 0.1    | -     | 0          | 0.1   | 0.1   | 0.1    | 0.1  | 0.2  | 0.5  |
| THC (ppm) Average                 | 638    | 2.03   | 0.1    | -     | 1.9        | 2     | 2     | 2      | 2.1  | 2.1  | 2.2  |
| NMHC(ppm) Average                 | 638    | 0      | 0.004  | -     | 0          | 0     | 0     | 0      | 0    | 0    | 0.09 |
| CH4(ppm) Average                  | 638    | 2.03   | 0      | -     | 1.9        | 2     | 2     | 2      | 2.1  | 2.1  | 2.2  |
| O3 (ppb) Average                  | 639    | 33.91  | 6.7    | -     | 10.5       | 25.4  | 29    | 34.6   | 39.1 | 42.3 | 46.5 |
| NO2 (ppb) Average                 | 637    | 2.18   | 2.1    | -     | 0          | 0.1   | 0.6   | 1.8    | 2.9  | 4.8  | 13   |
| NO (ppb) Average                  | 637    | 0.36   | 0.6    | -     | 0          | 0     | 0     | 0.1    | 0.4  | 1    | 4.7  |
| NOX (ppb) Average                 | 637    | 2.54   | 2.4    | -     | 0          | 0.2   | 0.7   | 2      | 3.5  | 5.9  | 15   |
| PM2.5 (ug/m3) Average             | 669    | 3.28   | 2.4    | -     | 0.4        | 1.1   | 1.8   | 3      | 3.9  | 5.8  | 32.9 |
| Temperature 2 m (C) Average       | 672    | -12.18 | 10.3   | -     | -35.4      | -26.8 | -19.2 | -12.2  | -3.4 | 1.4  | 6.1  |
| Relative Humidity (%) Average     | 672    | 67.62  | 12.9   | -     | 30.7       | 48.9  | 59.6  | 68.7   | 75.5 | 84.7 | 94.1 |
| Wind Speed 20 m (km/h) Average    | 670    | 8.2    | 5      | -     | 1          | 3     | 5     | 8      | 11   | 14   | 25   |
| Wind Direction 20 m (deg) Average | 670    | -      | -      | -     | -          | -     | -     | -      | -    | -    | -    |



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - JANVIER (AMS22)  
FEBRUARY 2023

OPERATIONAL NOTES

| Parameter                  | Period<br>Start   | Period<br>End     | Duration<br>(Hours) | Notes   |
|----------------------------|-------------------|-------------------|---------------------|---|
| NO2, O3, SO2, THC/NMHC/CH4 | 24 Feb 2023 17:00 | 24 Feb 2023 17:00 | 1                   | Maintenance - sample manifold cleaned             |
| Wind Speed, Wind Direction | 11 Feb 2023 00:00 | 11 Feb 2023 00:00 | 1                   | Flat line in sensor output signal - Sensor frozen |
| Wind Speed, Wind Direction | 23 Feb 2023 21:00 | 23 Feb 2023 21:00 | 1                   | Flat line in sensor output signal - Sensor frozen |



# Wood Buffalo Environmental Association

## Summary of Hour Averages

# Sulphur Dioxide (SO<sub>2</sub>) - ppb

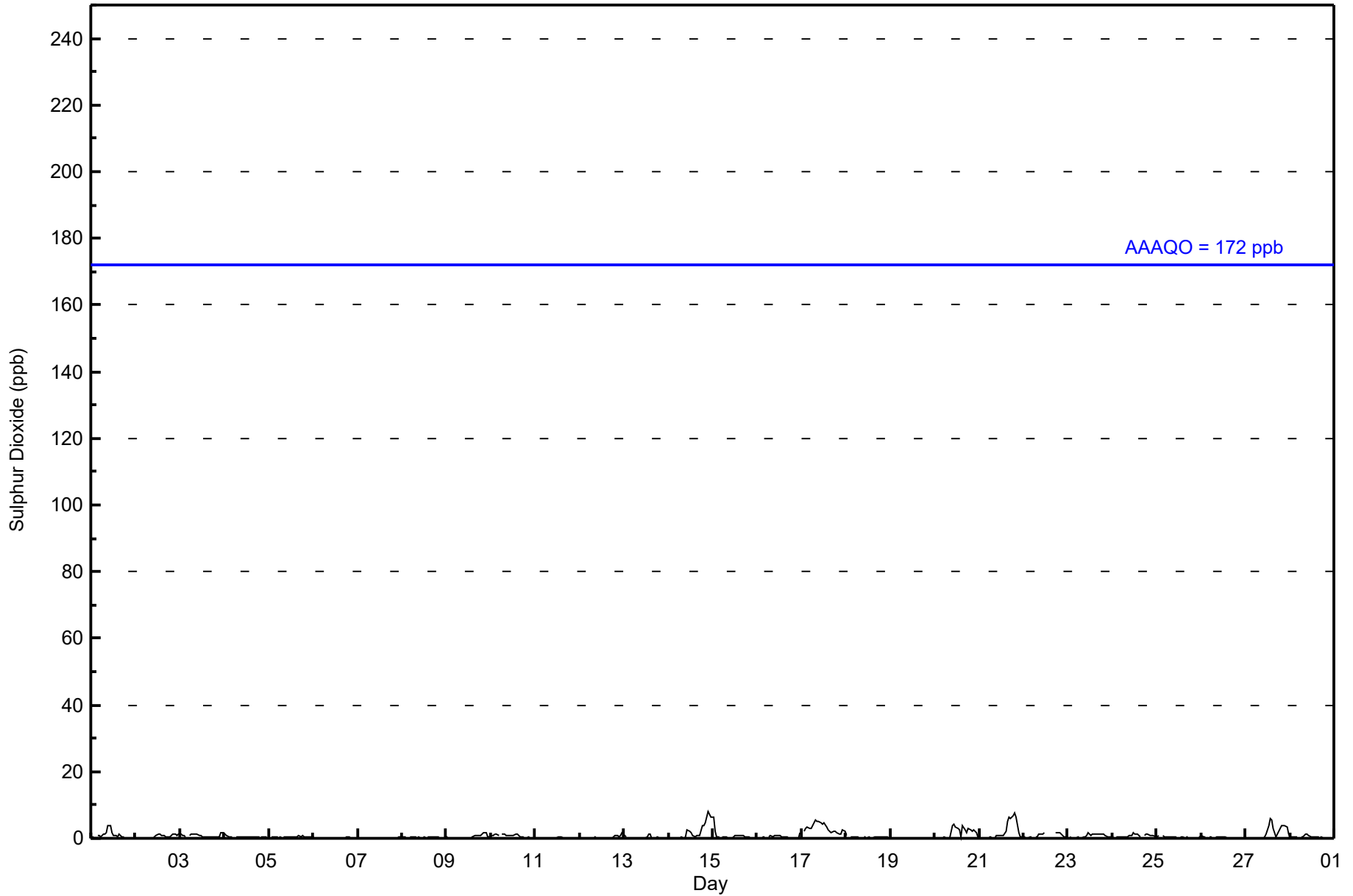
## Janvier - February 2023

| Number of Exceedences (AAAQO):   |                               | 1-hr: 0  |     | 24-hr: 0                              |     | Hours in Service:                        |     | 672                            |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |               |               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
|--|-------------------------------|--|-----|---------------------------------------|-----|--|-----|--------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---------------|---------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----------------|
| Maximum Value: 7.9 ppb on Feb 14 22:00   |                               | Maximum Daily Average: 3.1 ppb on Feb 17   |     | Minimum Value: 0.0 ppb on Feb 1 20:00 |     | Minimum Daily Average: 0.1 ppb on Feb 19 |     | Hours of Data: 638             |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |               |               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| Maximum Diurnal Average: 1.1 ppb at hour 20                                    |                               | Minimum Diurnal Average: 0.4 ppb at hour 6   |     | Hours of Missing Data: 34             |     | Hours of Calibration: 33                 |     | Percent Operational Time: 99.9 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |               |               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| Monthly Average: 0.73 ppb  |                               | Percentiles: P <sub>1</sub> = 0.0 P <sub>10</sub> = 0.0 Q <sub>1</sub> = 0.1 Median = 0.3 Q <sub>3</sub> = 0.8 P <sub>90</sub> = 1.7 P <sub>99</sub> = 6.2 |     |                                       |     |  |     |                                |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |               |               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| Day  | Hourly Period Ending At (MST) |  |     |                                       |     |  |     |                                |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Daily Average | Daily Maximum |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
|  | 1                             | 2  | 3   | 4                                     | 5   | 6  | 7   | 8                              | 9   | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19  | 20  | 21  | 22  | 23  | 24  |               |               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 1-Feb  | 0.3                           | 0.2  | Z   | 0.8                                   | 0.8 | 0.5                                      | 1.3 | 1.2                            | 1.6 | 3.8 | 3.6 | 1.8 | 1.0 | 1.0 | 0.5 | 1.1 | 0.5 | 0.2 | 0.1 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.9           | 3.8           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 2-Feb  | 0.0                           | 0.0  | 0.0 | Z                                     | 0.0 | 0.0                                      | 0.0 | 0.0                            | 0.0 | 0.0 | 0.3 | 0.8 | 1.3 | 1.3 | 0.9 | 0.7 | 0.6 | 0.6 | 0.5 | 0.8 | 1.1 | 1.1 | 0.9 | 1.2 | 0.5           | 1.3           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 3-Feb  | 1.1                           | 0.9  | 0.7 | 0.6                                   | Z   | 1.0                                      | 1.1 | 1.4                            | 1.4 | 1.1 | 0.7 | 0.7 | 0.6 | 0.6 | 0.6 | 0.3 | 0.3 | 0.2 | 0.3 | 0.2 | 0.3 | 0.5 | 1.7 | 1.6 | 0.8           | 1.7           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 4-Feb  | 1.1                           | 0.9  | 0.5 | 0.5                                   | 0.3 | Z  | 0.5 | 0.3                            | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 | 0.3 | 0.2 | 0.2 | 0.4           | 1.1           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 5-Feb  | Z                             | 0.2  | 0.3 | 0.2                                   | 0.2 | 0.2                                      | 0.2 | 0.2                            | 0.3 | 0.4 | 0.5 | 0.5 | 0.6 | 0.6 | 0.6 | 0.6 | 0.7 | 0.6 | 0.7 | 0.6 | 0.4 | 0.3 | 0.3 | 0.4 | 0.4           | 0.7           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 6-Feb  | 0.2                           | Z  | 0.0 | 0.0                                   | 0.1 | 0.1                                      | 0.0 | 0.0                            | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.2 | 0.3 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1           | 0.3           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 7-Feb  | 0.1                           | 0.1  | Z   | 0.1                                   | 0.1 | 0.1                                      | 0.1 | 0.0                            | 0.1 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.0 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.1           | 0.2           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 8-Feb  | 0.4                           | 0.4  | 0.3 | Z                                     | 0.3 | 0.3                                      | 0.2 | 0.2                            | 0.1 | 0.3 | 0.2 | 0.1 | 0.2 | 0.2 | 0.3 | 0.3 | 0.3 | 0.3 | 0.2 | 0.2 | 0.2 | 0.1 | 0.2 | 0.2 | 0.2           | 0.4           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 9-Feb  | 0.3                           | 0.2  | 0.2 | 0.1                                   | Z   | 0.1                                      | 0.1 | 0.1                            | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.3 | 0.7 | 1.0 | 0.8 | 0.8 | 1.3 | 1.7 | 1.6 | 0.6 | 0.6 | 0.5           | 1.7           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 10-Feb   | 0.8                           | 0.9  | 1.1 | 1.5                                   | 0.7 | Z  | 1.1 | 1.1                            | 1.0 | 0.9 | 0.9 | 0.7 | 0.8 | 1.1 | 1.1 | 0.7 | 0.4 | 0.2 | 0.2 | 0.1 | 0.2 | 0.1 | 0.1 | 0.2 | 0.7           | 1.5           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 11-Feb   | Z                             | 0.1  | 0.0 | 0.1                                   | 0.0 | 0.0                                      | 0.0 | 0.0                            | 0.0 | 0.0 | 0.0 | 0.1 | 0.2 | 0.3 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.0 | 0.1           | 0.3           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 12-Feb   | 0.1                           | Z  | 0.2 | 0.1                                   | 0.1 | 0.1                                      | 0.1 | 0.0                            | 0.2 | 0.2 | 0.1 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.4 | 0.7 | 0.9 | 0.5 | 0.6 | 1.5 | 0.3           | 1.5           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 13-Feb   | 0.9                           | 0.4  | Z   | 0.0                                   | 0.0 | 0.0                                      | 0.0 | 0.0                            | 0.0 | 0.0 | 0.0 | 0.0 | 0.3 | 1.5 | 1.2 | 0.1 | 0.0 | 0.1 | 0.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.2           | 1.5           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 14-Feb   | 0.1                           | 0.1  | 0.2 | Z                                     | 0.2 | 0.2                                      | 0.1 | 0.3                            | 0.1 | 0.2 | 2.6 | 2.2 | 1.7 | 1.0 | 0.6 | 0.7 | 0.7 | 0.8 | 3.8 | 3.8 | 4.5 | 7.9 | 7.2 | 6.2 | 2.0           | 7.9           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 15-Feb   | 6.5                           | 2.3  | 0.5 | 0.4                                   | Z   | 0.3                                      | 0.3 | 0.2                            | 0.2 | 0.1 | 0.1 | 0.5 | 0.9 | 0.9 | 0.9 | 0.8 | 0.8 | 0.6 | 0.3 | 0.3 | 0.2 | 0.1 | 0.0 | 0.0 | 0.7           | 6.5           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 16-Feb   | 0.1                           | 0.1  | 0.1 | 0.3                                   | 0.5 | Z  | 0.5 | 0.9                            | 0.6 | 0.8 | 0.9 | 0.8 | 0.7 | 0.6 | 0.4 | 0.3 | 0.3 | 0.2 | 0.2 | 0.1 | 0.1 | 0.0 | 0.0 | 1.6 | 0.4           | 1.6           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 17-Feb   | Z                             | 2.2  | 3.0 | 3.4                                   | 3.1 | 3.0                                      | 3.7 | 5.6                            | 5.2 | 4.9 | 4.8 | 4.3 | 4.7 | 3.6 | 2.5 | 2.1 | 1.8 | 2.1 | 2.0 | 1.6 | 1.3 | 1.4 | 2.6 | 2.1 | 3.1           | 5.6           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 18-Feb   | 1.0                           | Z  | 0.5 | 0.4                                   | 0.3 | 0.2                                      | 0.2 | 0.2                            | 0.2 | 0.2 | 0.3 | 0.2 | 0.2 | 0.2 | 0.1 | 0.3 | 0.4 | 0.2 | 0.5 | 0.5 | 0.4 | 0.3 | 0.3 | 0.1 | 0.3           | 1.0           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 19-Feb   | 0.1                           | 0.1  | Z   | 0.1                                   | 0.1 | 0.1                                      | 0.1 | 0.1                            | 0.1 | 0.0 | 0.1 | 0.1 | 0.1 | 0.0 | 0.1 | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1           | 0.1           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 20-Feb   | 0.0                           | 0.0  | 0.0 | Z                                     | 0.1 | 0.3                                      | 0.1 | 0.2                            | 0.1 | 3.7 | 4.1 | 3.5 | 3.1 | 2.3 | 0.3 | 3.7 | 2.4 | 1.9 | 2.9 | 2.8 | 2.2 | 2.7 | 1.5 | 0.5 | 1.7           | 4.1           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 21-Feb   | 0.2                           | 0.0  | 0.1 | 0.1                                   | Z   | 0.5                                      | 0.3 | 0.1                            | 0.1 | 0.7 | 0.7 | 0.9 | 0.8 | 1.0 | 2.0 | 5.0 | 6.3 | 6.1 | 6.9 | 7.8 | 6.2 | 1.8 | 0.5 | 0.4 | 2.1           | 7.8           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 22-Feb   | 0.3                           | 0.2  | 0.2 | 0.2                                   | 0.3 | Z  | 0.3 | 0.3                            | 1.1 | 1.3 | 1.3 | 1.7 | C   | C   | C   | C   | C   | 1.6 | 1.8 | 1.8 | 1.4 | 0.7 | 0.6 | 0.3 | 0.9           | 1.8           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 23-Feb   | Z                             | 0.2  | 0.1 | 0.1                                   | 0.1 | 0.3                                      | 0.1 | 0.2                            | 0.2 | 0.6 | 0.7 | 1.6 | 1.0 | 1.4 | 1.2 | 1.3 | 1.2 | 1.4 | 1.2 | 1.3 | 0.9 | 0.6 | 0.4 | 0.3 | 0.7           | 1.6           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 24-Feb   | 0.5                           | Z  | 0.4 | 0.3                                   | 0.3 | 0.2                                      | 0.2 | 0.3                            | 0.6 | 0.8 | 0.7 | 1.5 | 1.4 | 1.3 | 0.8 | 0.6 | M   | 1.0 | 1.4 | 1.1 | 0.9 | 0.7 | 0.7 | 0.6 | 0.7           | 1.5           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 25-Feb   | 0.6                           | 0.7  | Z   | 0.7                                   | 0.6 | 0.6                                      | 0.6 | 0.5                            | 0.4 | 0.4 | 0.3 | 0.2 | 0.2 | 0.2 | 0.3 | 0.2 | 0.2 | 0.1 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.4 | 0.3           | 0.7           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 26-Feb   | 0.7                           | 0.5  | 0.4 | Z                                     | 0.4 | 0.3                                      | 0.1 | 0.2                            | 0.3 | 0.4 | 0.5 | 0.4 | 0.3 | 0.3 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.0 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2           | 0.7           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 27-Feb   | 0.1                           | 0.0  | 0.1 | 0.0                                   | Z   | 0.1                                      | 0.1 | 0.0                            | 0.1 | 0.1 | 0.4 | 1.5 | 4.0 | 5.8 | 5.5 | 2.8 | 0.6 | 1.2 | 2.0 | 4.0 | 3.8 | 3.7 | 3.6 | 1.4 | 1.8           | 5.8           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 28-Feb   | 0.6                           | 0.4  | 0.3 | 0.3                                   | 0.2 | Z  | 0.3 | 0.4                            | 1.2 | 1.4 | 0.7 | 0.6 | 0.4 | 0.3 | 0.3 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 | 0.1 | 0.1 | 0.1 | 0.2 | 0.4           | 1.4           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
|  |                               |  |     |                                       |     |  |     |                                |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | 0.7 | 0.5           | 0.4           | 0.4 | 0.4 | 0.4 | 0.4 | 0.5 | 0.6 | 0.8 | 0.9 | 0.9 | 0.9 | 1.0 | 0.8 | 0.9 | 0.7 | 0.8 | 1.0 | 1.1 | 1.0 | 0.9 | 0.8 | 0.7 | Diurnal Average |
|  |                               |  |     |                                       |     |  |     |                                |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | 6.5 | 2.3           | 3.0           | 3.4 | 3.1 | 3.0 | 3.7 | 5.6 | 5.2 | 4.9 | 4.8 | 4.3 | 4.7 | 5.8 | 5.5 | 5.0 | 6.3 | 6.1 | 6.9 | 7.8 | 6.2 | 7.9 | 7.2 | 6.2 | Diurnal Maximum |
| Z - zerospan      C - Calibration      M - Maintenance                         |                               |  |     |                                       |     |  |     |                                |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |               |               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 172 ppb      24-hr 48 ppb |                               |  |     |                                       |     |  |     |                                |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |               |               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Sulphur Dioxide (SO<sub>2</sub>) - ppb**  
**Janvier - February 2023**





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Sulphur Dioxide (SO<sub>2</sub>) - ppb**  
**Janvier - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 10                            | 638                    | 100.00   | 100.00              |
| 11 - 20                           | 0                      | 0.00     | 100.00              |
| 21 - 60                           | 0                      | 0.00     | 100.00              |
| 61 - 110                          | 0                      | 0.00     | 100.00              |
| 111 - 172                         | 0                      | 0.00     | 100.00              |
| > 172                             | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 638

Total Number of Hours: 672



**Wood Buffalo Environmental Association**  
**Frequency Distribution**

**Sulphur Dioxide (SO<sub>2</sub>) - ppb**  
**Janvier - February 2023**

| Concentration<br>Ranges (ppb) | Wind Direction |     |    |     |   |     |    |     |    |     |    |     |    |     |    |     | Totals |
|-------------------------------|----------------|-----|----|-----|---|-----|----|-----|----|-----|----|-----|----|-----|----|-----|--------|
|                               | N              | NNE | NE | ENE | E | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |        |
| 0 - 10                        | 57             | 116 | 44 | 18  | 9 | 6   | 7  | 20  | 40 | 110 | 96 | 36  | 22 | 20  | 17 | 18  | 636    |
| 11 - 20                       | 0              | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| 21 - 60                       | 0              | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| 61 - 110                      | 0              | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| 111 - 172                     | 0              | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| > 172                         | 0              | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| <b>Totals</b>                 | 57             | 116 | 44 | 18  | 9 | 6   | 7  | 20  | 40 | 110 | 96 | 36  | 22 | 20  | 17 | 18  | 636    |

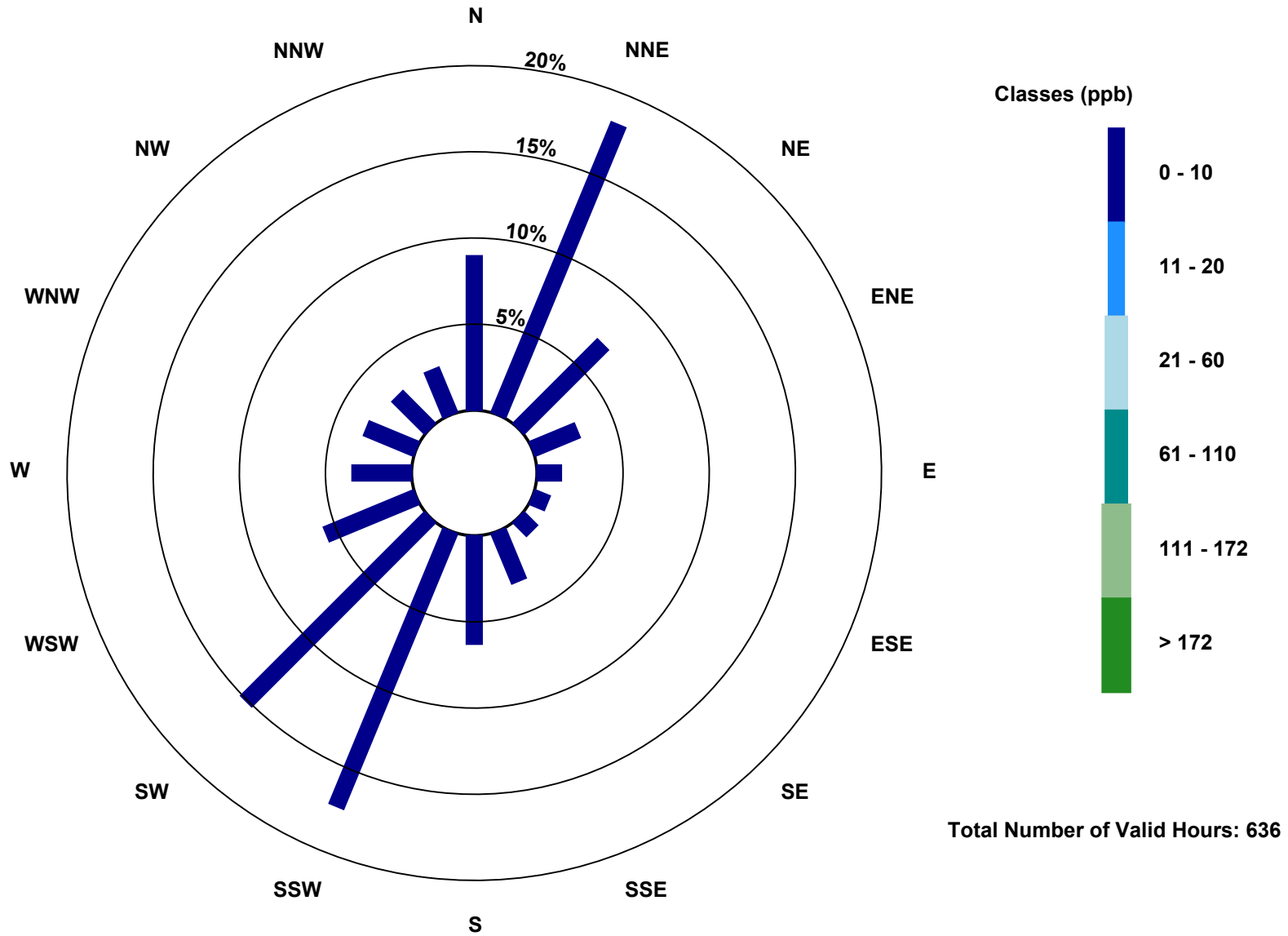
Total Number of Valid Hours: 636

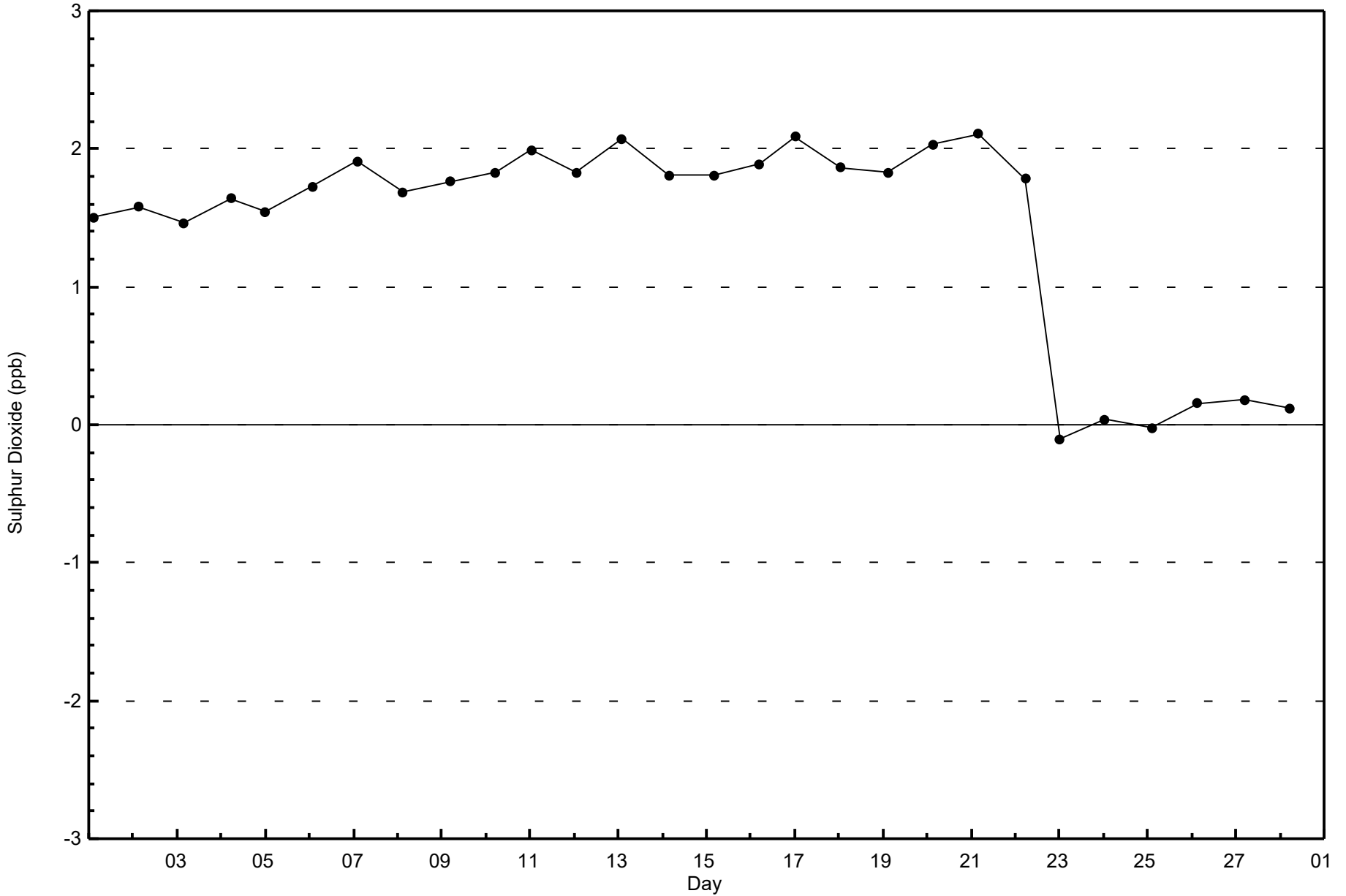
Total Number of Hours: 672

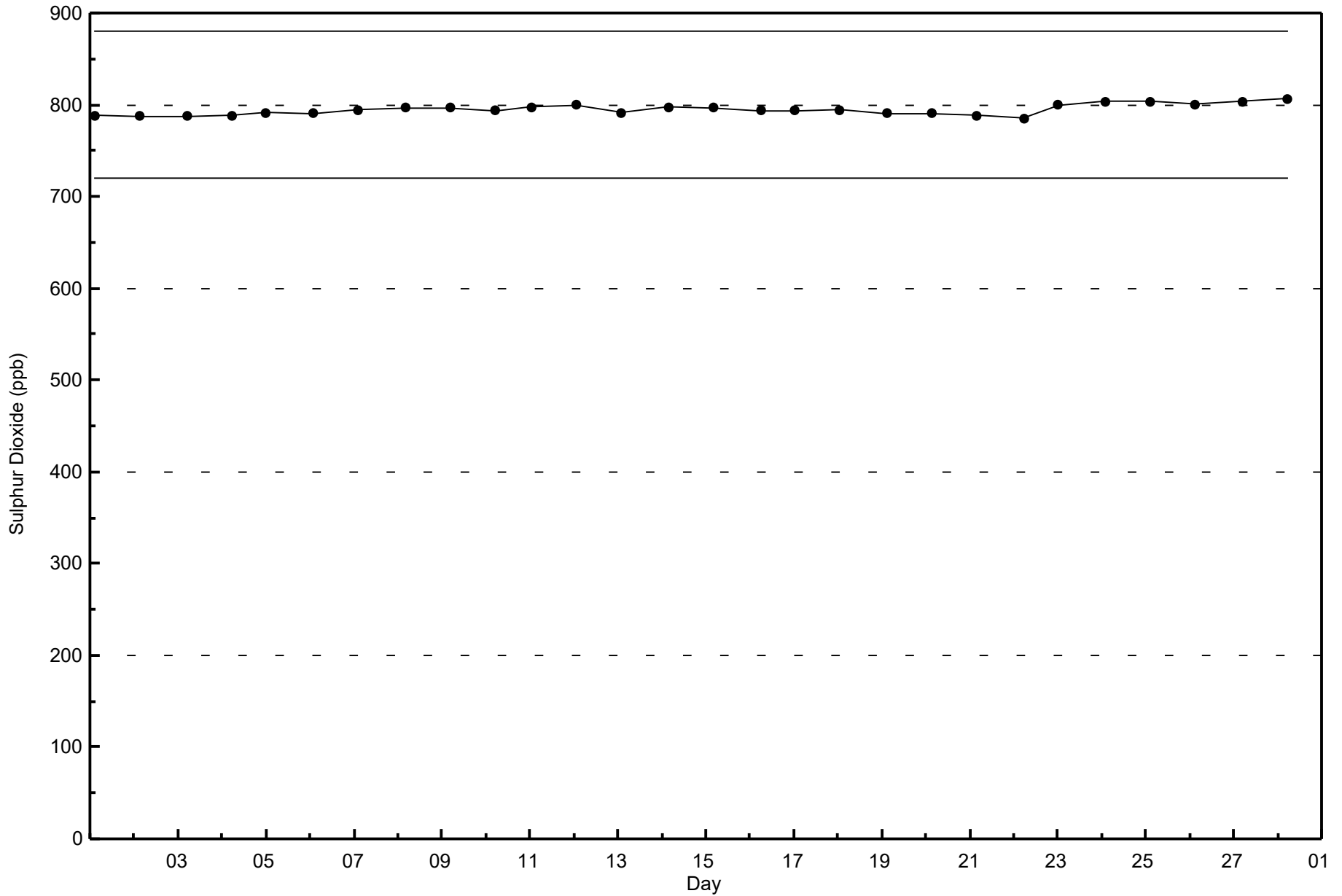


Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Sulphur Dioxide (SO<sub>2</sub>) - ppb  
Janvier







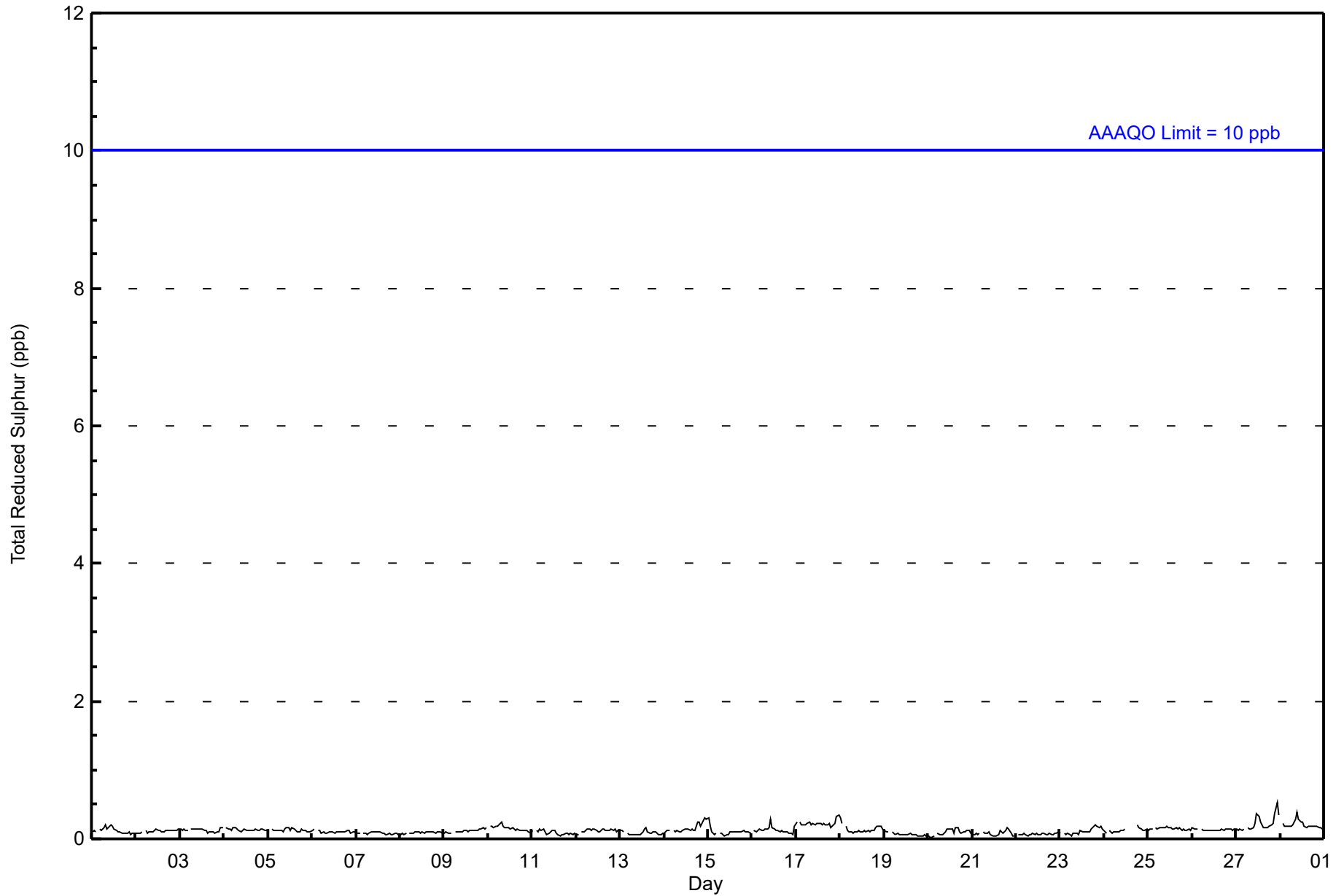






**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Total Reduced Sulphur (TRS) - ppb**  
**Janvier - February 2023**





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Total Reduced Sulphur (TRS) - ppb**  
**Janvier - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 2                             | 638                    | 100.00   | 100.00              |
| 3 - 4                             | 0                      | 0.00     | 100.00              |
| 5 - 7                             | 0                      | 0.00     | 100.00              |
| 8 - 11                            | 0                      | 0.00     | 100.00              |
| > 11                              | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 638

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Total Reduced Sulphur (TRS) - ppb  
Janvier - February 2023**

| <b>Concentration<br/>Ranges (ppb)</b> | <b>Wind Direction</b> |            |           |            |          |            |           |            |           |            |           |            |           |            |           |            | <b>Totals</b> |
|---------------------------------------|-----------------------|------------|-----------|------------|----------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|---------------|
|                                       | <b>N</b>              | <b>NNE</b> | <b>NE</b> | <b>ENE</b> | <b>E</b> | <b>ESE</b> | <b>SE</b> | <b>SSE</b> | <b>S</b>  | <b>SSW</b> | <b>SW</b> | <b>WSW</b> | <b>W</b>  | <b>WNW</b> | <b>NW</b> | <b>NNW</b> |               |
| 0 - 2                                 | 58                    | 118        | 43        | 20         | 9        | 6          | 7         | 19         | 40        | 109        | 94        | 36         | 23        | 18         | 17        | 19         | 636           |
| 3 - 4                                 | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0             |
| 5 - 7                                 | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0             |
| 8 - 11                                | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0             |
| > 11                                  | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0             |
| <b>Totals</b>                         | <b>58</b>             | <b>118</b> | <b>43</b> | <b>20</b>  | <b>9</b> | <b>6</b>   | <b>7</b>  | <b>19</b>  | <b>40</b> | <b>109</b> | <b>94</b> | <b>36</b>  | <b>23</b> | <b>18</b>  | <b>17</b> | <b>19</b>  | <b>636</b>    |

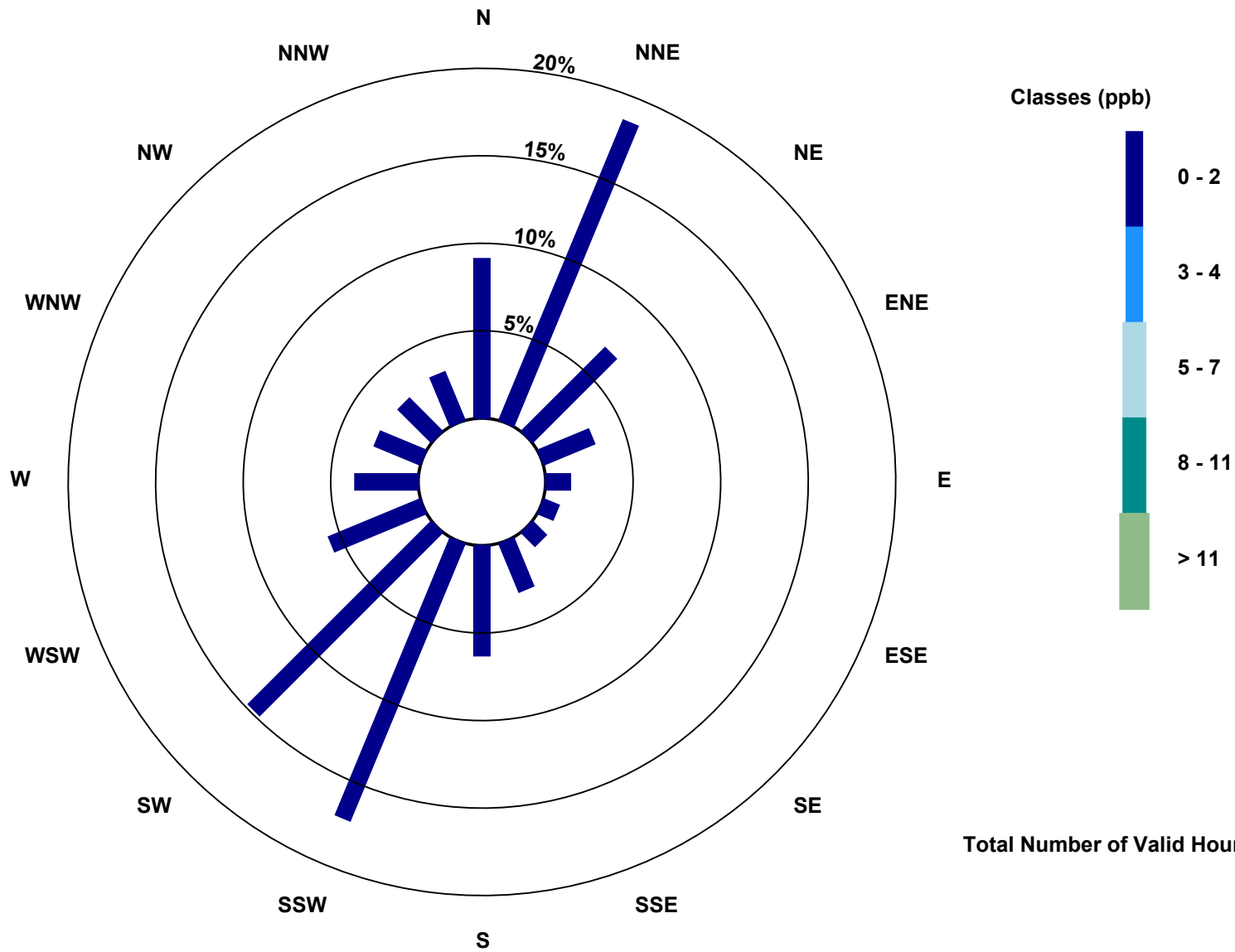
Total Number of Valid Hours: 636

Total Number of Hours: 672

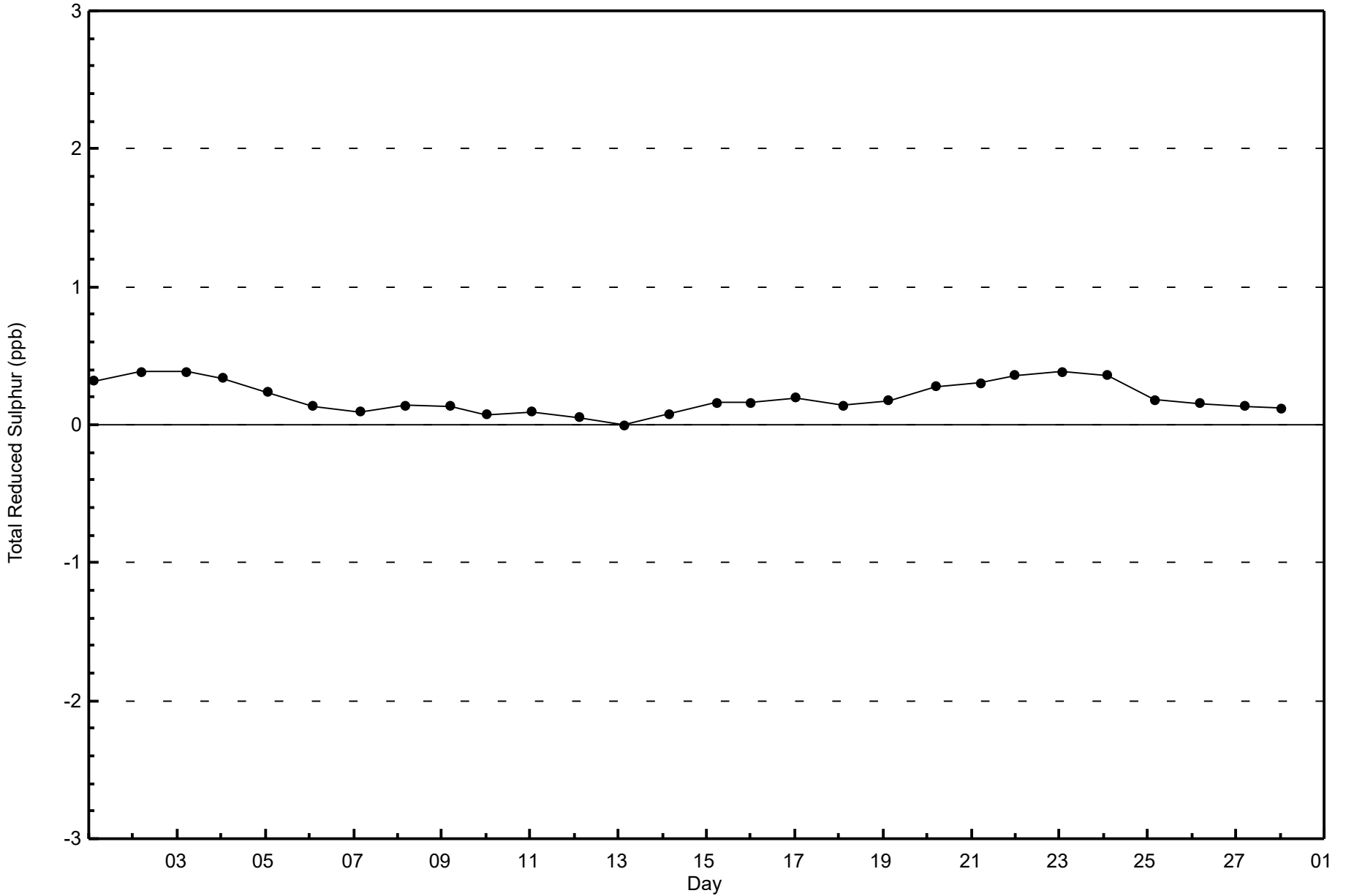


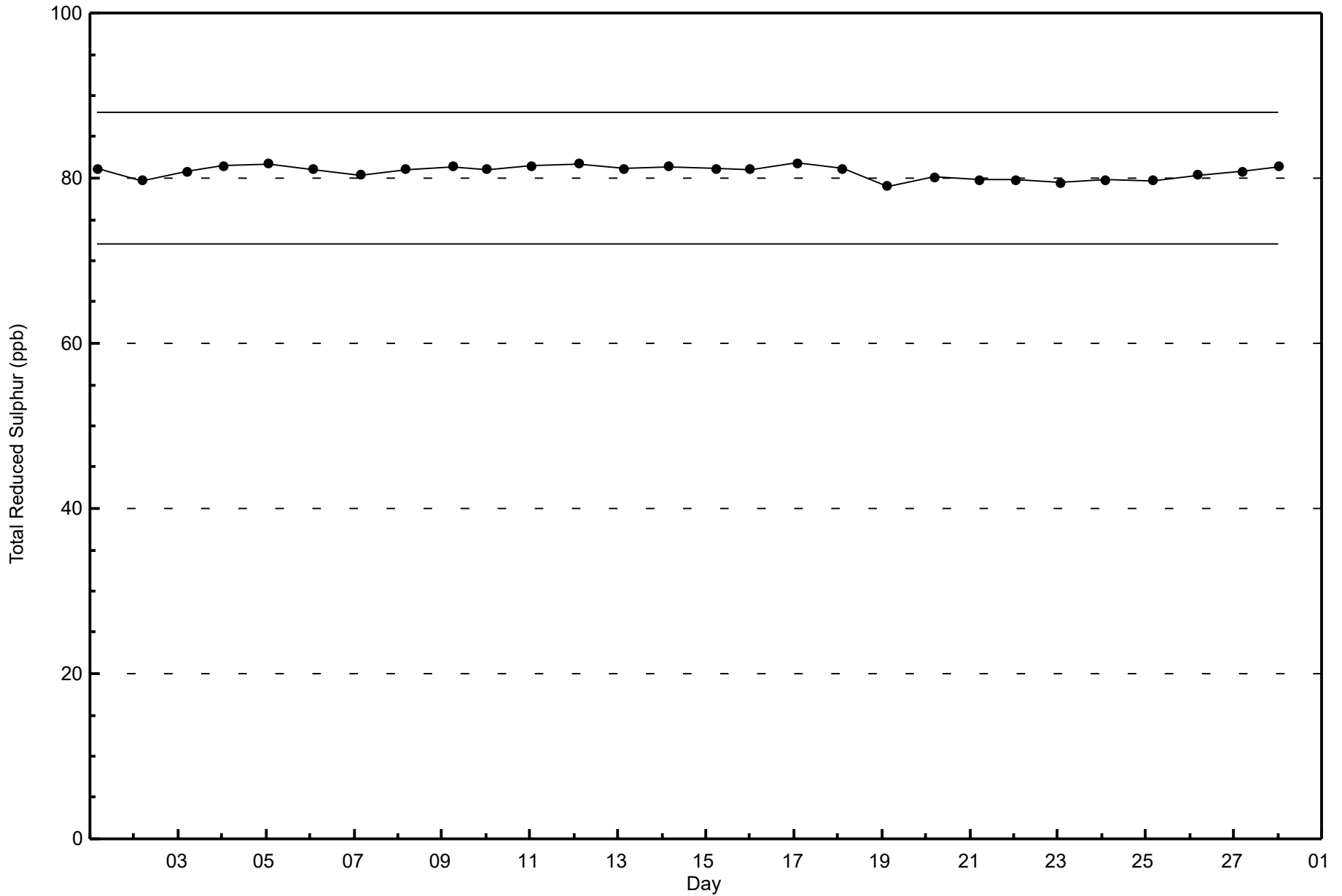
Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Total Reduced Sulphur (TRS) - ppb  
Janvier



Total Number of Valid Hours: 636







Wood Buffalo Environmental Association

Summary of Hour Averages

Total Hydrocarbons (THC) - ppm

Janvier - February 2023

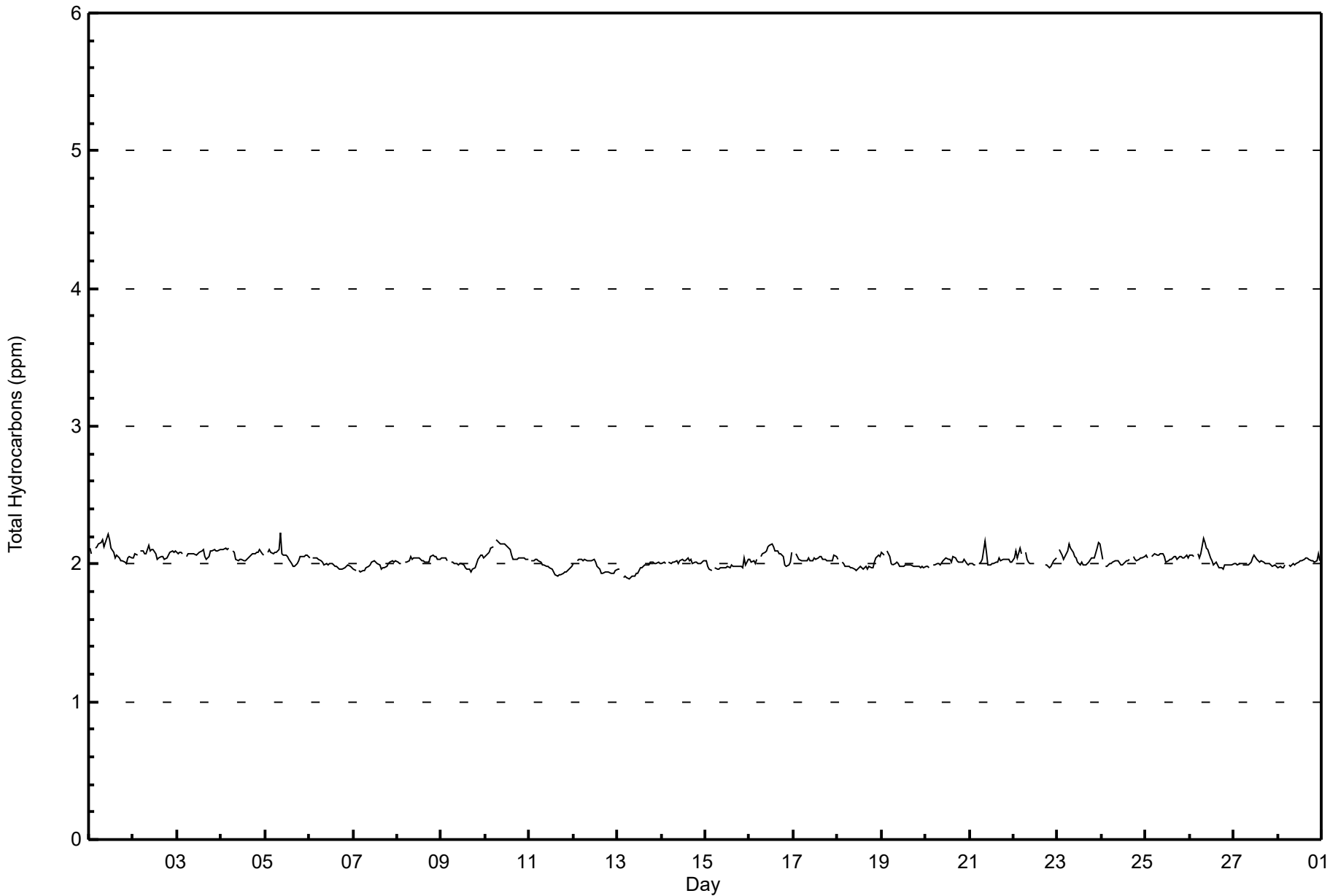
| Maximum Value: 2.2 ppm on Feb 5 09:00  |                               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Maximum Daily Average: 2.1 ppm on Feb 1  |     |     |     |                 | Hours in Service: 672          |               |     |     |
|--|-------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|-----|-----|-----|-----------------|--------------------------------|---------------|-----|-----|
| Minimum Value: 1.9 ppm on Feb 13 07:00   |                               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Minimum Daily Average: 2.0 ppm on Feb 13   |     |     |     |                 | Hours of Data: 638             |               |     |     |
| Maximum Diurnal Average: 2.0 ppm at hour 9   |                               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Minimum Diurnal Average: 2.0 ppm at hour 18  |     |     |     |                 | Hours of Missing Data: 34      |               |     |     |
| Monthly Average: 2.03 ppm  |                               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Percentiles: P <sub>1</sub> = 1.9 P <sub>10</sub> = 2.0 Q <sub>1</sub> = 2.0 Median = 2.0 Q <sub>3</sub> = 2.1 P <sub>90</sub> = 2.1 P <sub>99</sub> = 2.2 |     |     |     |                 | Hours of Calibration: 33       |               |     |     |
|  |                               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |  |     |     |     |                 | Percent Operational Time: 99.9 |               |     |     |
| Day  | Hourly Period Ending At (MST) |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |  |     |     |     |                 | Daily Average                  | Daily Maximum |     |     |
|  | 1                             | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19  | 20   | 21  | 22  | 23  | 24              |                                |               |     |     |
| 1-Feb  | 2.1                           | 2.1 | Z   | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | 2.1 | 2.2 | 2.2 | 2.2 | 2.1 | 2.1 | 2.0 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0  | 2.0 | 2.1 | 2.0 | 2.0             | 2.1                            | 2.0           | 2.1 | 2.2 |
| 2-Feb  | 2.0                           | 2.1 | 2.1 | Z   | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.0 | 2.0 | 2.1 | 2.0 | 2.0 | 2.0 | 2.1  | 2.1 | 2.1 | 2.1 | 2.1             | 2.1                            | 2.1           | 2.1 | 2.1 |
| 3-Feb  | 2.1                           | 2.1 | 2.1 | 2.1 | Z   | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.0 | 2.1 | 2.1 | 2.1  | 2.1 | 2.1 | 2.1 | 2.1             | 2.1                            | 2.1           | 2.1 | 2.1 |
| 4-Feb  | 2.1                           | 2.1 | 2.1 | 2.1 | 2.1 | Z   | 2.1 | 2.1 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1  | 2.1 | 2.1 | 2.1 | 2.1             | 2.1                            | 2.1           | 2.1 | 2.1 |
| 5-Feb  | Z                             | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1  | 2.1 | 2.1 | 2.1 | 2.1             | 2.1                            | 2.1           | 2.1 | 2.2 |
| 6-Feb  | 2.0                           | Z   | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0  | 2.0 | 2.0 | 2.0 | 2.0             | 2.0                            | 2.0           | 2.0 | 2.0 |
| 7-Feb  | 2.0                           | 2.0 | Z   | 2.0 | 1.9 | 1.9 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0  | 2.0 | 2.0 | 2.0 | 2.0             | 2.0                            | 2.0           | 2.0 | 2.0 |
| 8-Feb  | 2.0                           | 2.0 | 2.0 | Z   | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1 | 2.1  | 2.0 | 2.1 | 2.0 | 2.0             | 2.0                            | 2.0           | 2.1 | 2.1 |
| 9-Feb  | 2.0                           | 2.0 | 2.0 | 2.0 | Z   | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 1.9 | 2.0 | 2.0 | 2.0  | 2.0 | 2.1 | 2.1 | 2.0             | 2.0                            | 2.0           | 2.1 | 2.1 |
| 10-Feb   | 2.1                           | 2.1 | 2.1 | 2.1 | 2.1 | Z   | 2.2 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0  | 2.0 | 2.0 | 2.0 | 2.0             | 2.0                            | 2.0           | 2.0 | 2.2 |
| 11-Feb   | Z                             | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9  | 1.9 | 1.9 | 2.0 | 2.0             | 2.0                            | 2.0           | 2.0 | 2.0 |
| 12-Feb   | 2.0                           | Z   | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9  | 1.9 | 1.9 | 1.9 | 1.9             | 1.9                            | 2.0           | 2.0 | 2.0 |
| 13-Feb   | 2.0                           | 2.0 | Z   | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0  | 2.0 | 2.0 | 2.0 | 2.0             | 2.0                            | 2.0           | 2.0 | 2.0 |
| 14-Feb   | 2.0                           | 2.0 | 2.0 | Z   | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0  | 2.0 | 2.0 | 2.0 | 2.0             | 2.0                            | 2.0           | 2.0 | 2.0 |
| 15-Feb   | 2.0                           | 2.0 | 2.0 | 2.0 | Z   | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0  | 2.0 | 2.0 | 2.0 | 2.0             | 2.0                            | 2.0           | 2.0 | 2.0 |
| 16-Feb   | 2.0                           | 2.0 | 2.0 | 2.0 | 2.0 | Z   | 2.0 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1  | 2.0 | 2.0 | 2.0 | 2.0             | 2.1                            | 2.1           | 2.1 | 2.1 |
| 17-Feb   | Z                             | 2.1 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0  | 2.0 | 2.0 | 2.1 | 2.1             | 2.1                            | 2.1           | 2.1 | 2.1 |
| 18-Feb   | 2.0                           | Z   | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0  | 2.0 | 2.0 | 2.0 | 2.1             | 2.1                            | 2.1           | 2.1 | 2.1 |
| 19-Feb   | 2.1                           | 2.1 | Z   | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0  | 2.0 | 2.0 | 2.0 | 2.0             | 2.0                            | 2.0           | 2.0 | 2.1 |
| 20-Feb   | 2.0                           | 2.0 | 2.0 | Z   | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0  | 2.0 | 2.0 | 2.0 | 2.0             | 2.0                            | 2.0           | 2.0 | 2.1 |
| 21-Feb   | 2.0                           | 2.0 | 2.0 | 2.0 | Z   | 2.0 | 2.0 | 2.0 | 2.2 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0  | 2.0 | 2.0 | 2.0 | 2.0             | 2.0                            | 2.0           | 2.0 | 2.2 |
| 22-Feb   | 2.0                           | 2.1 | 2.0 | 2.1 | 2.1 | Z   | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | C   | C   | C   | C   | C   | C   | 2.0 | 2.0  | 2.0 | 2.0 | 2.0 | 2.0             | 2.0                            | 2.0           | 2.1 |     |
| 23-Feb   | Z                             | 2.1 | 2.1 | 2.0 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0  | 2.0 | 2.1 | 2.2 | 2.1             | 2.1                            | 2.1           | 2.2 | 2.2 |
| 24-Feb   | 2.0                           | Z   | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0  | 2.0 | 2.0 | 2.0 | 2.1             | 2.0                            | 2.0           | 2.1 | 2.1 |
| 25-Feb   | 2.1                           | 2.0 | Z   | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1 | 2.0 | 2.0 | 2.1 | 2.0  | 2.1 | 2.1 | 2.0 | 2.1             | 2.0                            | 2.1           | 2.1 | 2.1 |
| 26-Feb   | 2.1                           | 2.1 | 2.1 | Z   | 2.1 | 2.0 | 2.1 | 2.2 | 2.2 | 2.1 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0  | 2.0 | 2.0 | 2.0 | 2.0             | 2.0                            | 2.0           | 2.0 | 2.2 |
| 27-Feb   | 2.0                           | 2.0 | 2.0 | 2.0 | Z   | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0  | 2.0 | 2.0 | 2.0 | 2.0             | 2.0                            | 2.0           | 2.0 | 2.1 |
| 28-Feb   | 2.0                           | 2.0 | 2.0 | 2.0 | 2.0 | Z   | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0  | 2.0 | 2.0 | 2.0 | 2.0             | 2.0                            | 2.0           | 2.0 | 2.1 |
|  |                               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |  |     |     |     | Diurnal Average |                                |               |     |     |
|  |                               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |  |     |     |     | Diurnal Maximum |                                |               |     |     |
| Z - zerospan                      C - Calibration                      M - Maintenance |                               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |  |     |     |     |                 |                                |               |     |     |





**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Total Hydrocarbons (THC) - ppm**  
**Janvier - February 2023**





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Total Hydrocarbons (THC) - ppm**  
**Janvier - February 2023**

| <b>Concentration Ranges (ppm)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 2.0                           | 464                    | 72.73    | 72.73               |
| 2.1 - 3.0                         | 174                    | 27.27    | 100.00              |
| 3.1 - 10.0                        | 0                      | 0.00     | 100.00              |
| > 10.0                            | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 638

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Total Hydrocarbons (THC) - ppm  
Janvier - February 2023**

| <b>Concentration<br/>Ranges (ppm)</b> | <b>Wind Direction</b> |     |    |     |   |     |    |     |    |     |    |     |    |     |    |     | <b>Totals</b> |
|---------------------------------------|-----------------------|-----|----|-----|---|-----|----|-----|----|-----|----|-----|----|-----|----|-----|---------------|
|                                       | N                     | NNE | NE | ENE | E | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |               |
| 0 - 2.0                               | 44                    | 91  | 35 | 18  | 7 | 3   | 5  | 11  | 25 | 61  | 62 | 32  | 21 | 19  | 16 | 12  | 462           |
| 2.1 - 3.0                             | 13                    | 25  | 9  | 0   | 2 | 3   | 2  | 9   | 15 | 49  | 34 | 4   | 1  | 1   | 1  | 6   | 174           |
| 3.1 - 10.0                            | 0                     | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| > 10.0                                | 0                     | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| <b>Totals</b>                         | 57                    | 116 | 44 | 18  | 9 | 6   | 7  | 20  | 40 | 110 | 96 | 36  | 22 | 20  | 17 | 18  | 636           |

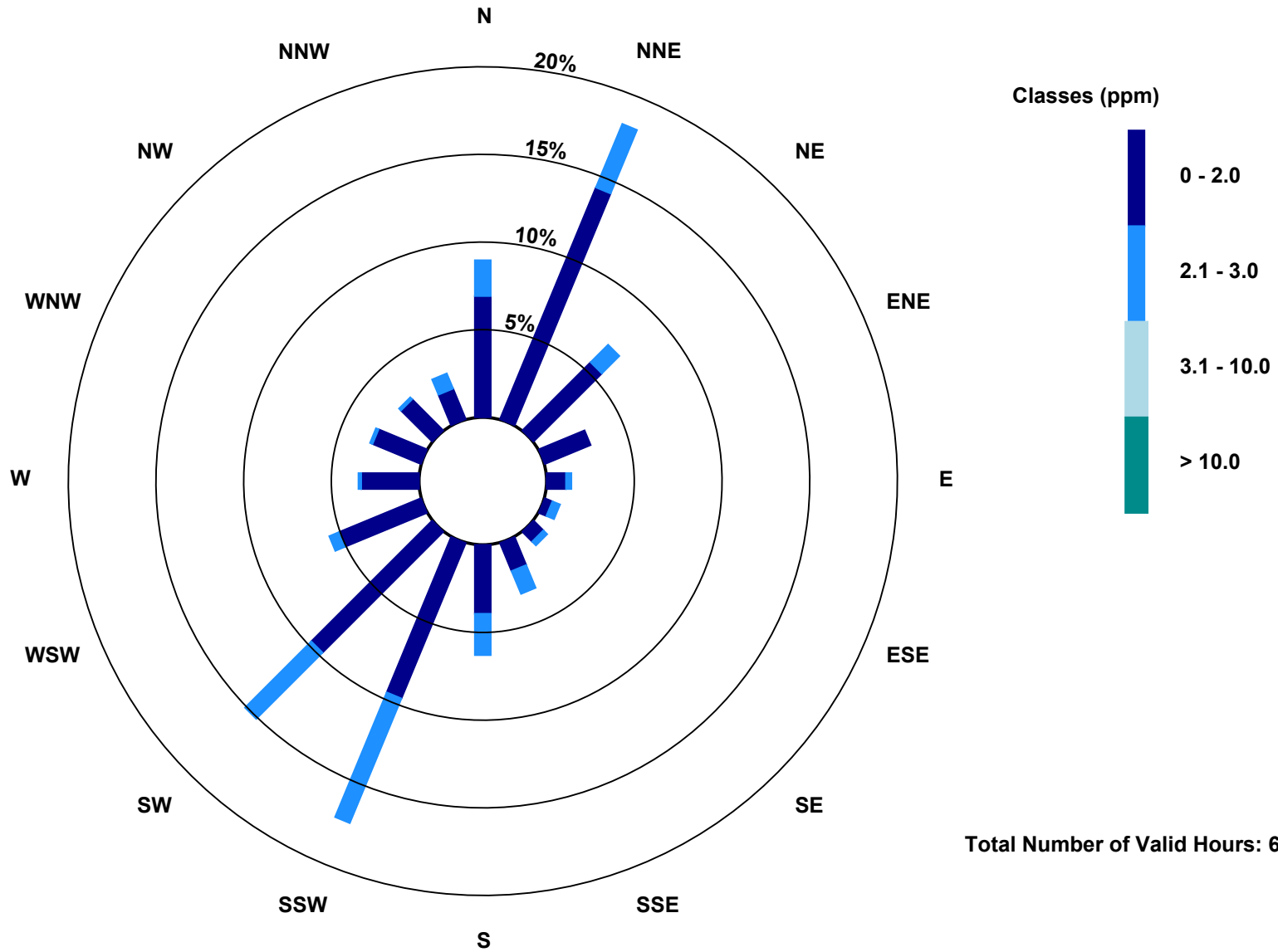
Total Number of Valid Hours: 636

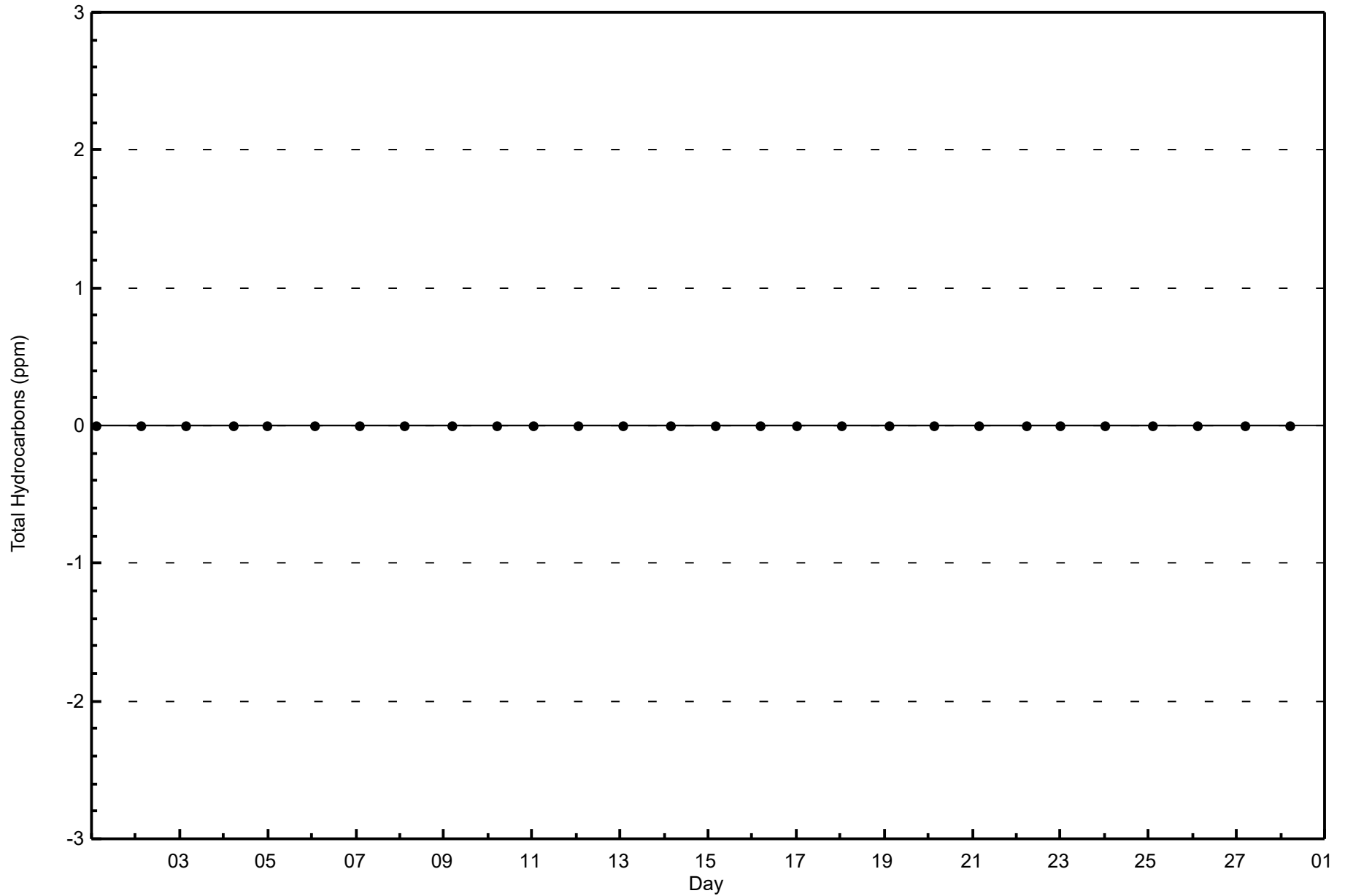
Total Number of Hours: 672

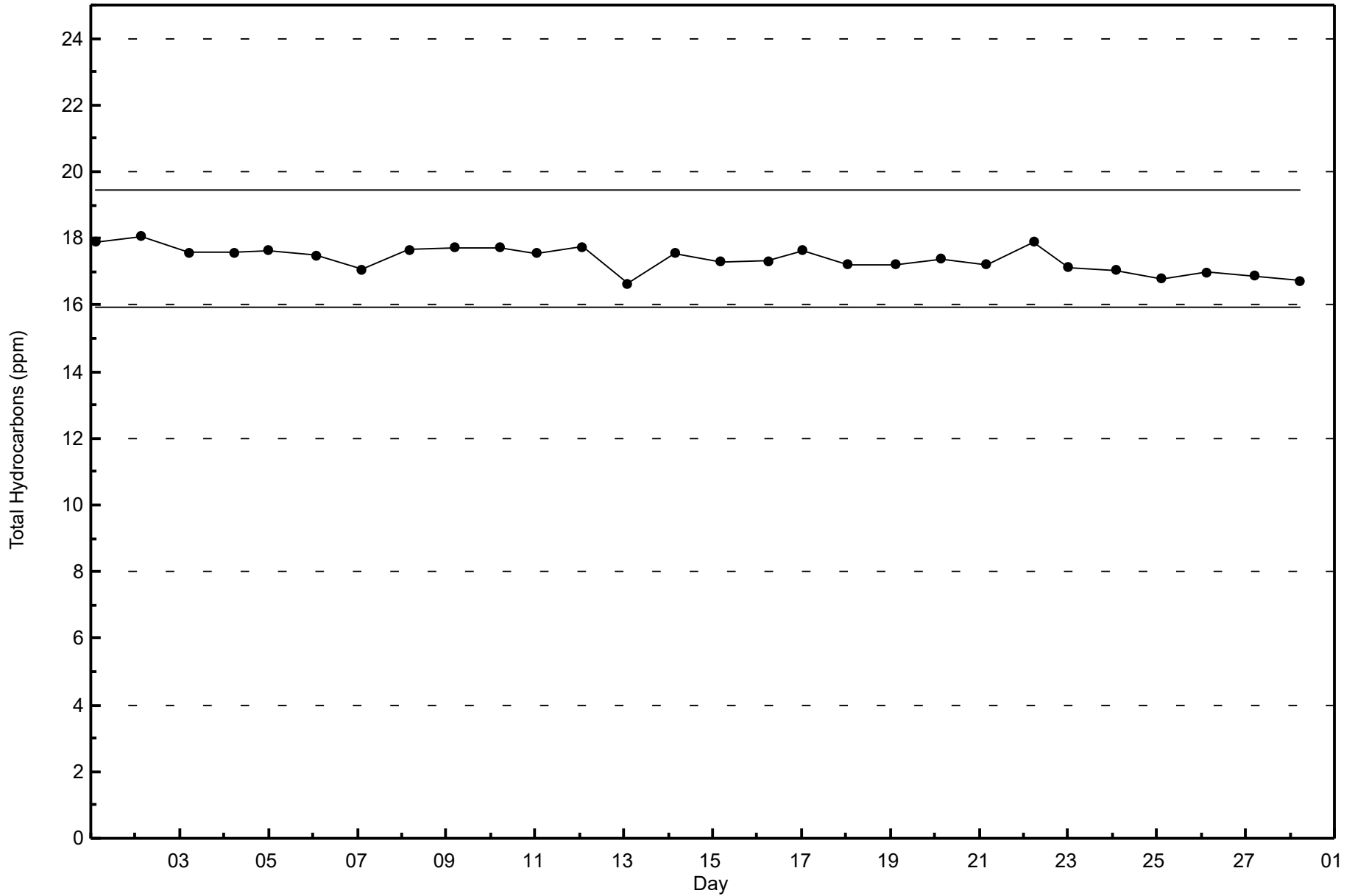


Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Total Hydrocarbons (THC) - ppm  
Janvier

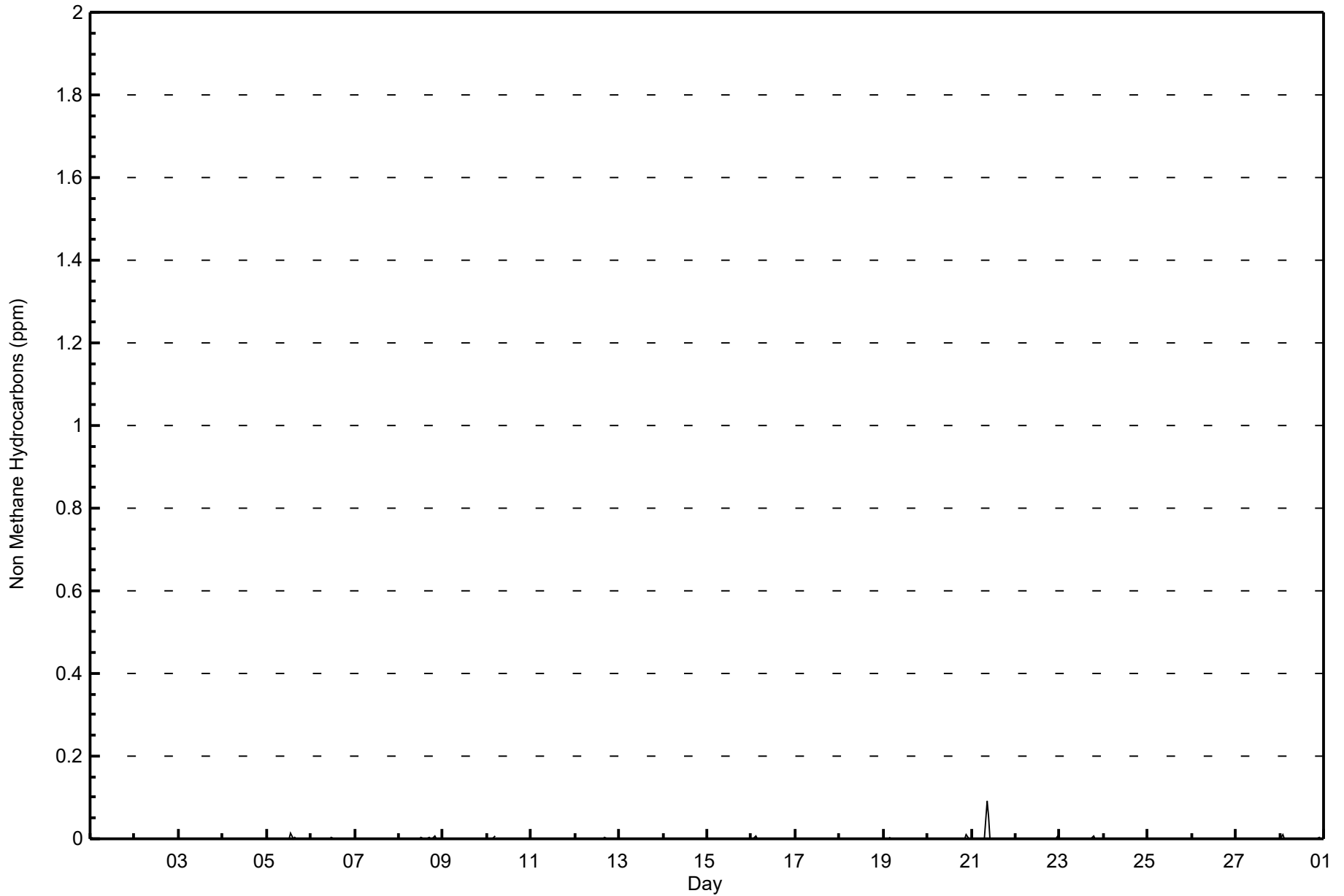








| Maximum Value: 0.090 ppm on Feb 21 09:00     |                               | Maximum Daily Average: 0.006 ppm on Feb 21   |       | Hours in Service:         | 672   |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |               |                 |       |       |       |       |       |       |       |       |
|--|-------------------------------|--|-------|---------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-----------------|---------------|-----------------|-------|-------|-------|-------|-------|-------|-------|-------|
| Minimum Value: 0.000 ppm on Feb 1 02:00      |                               | Minimum Daily Average: 0.000 ppm on Feb 3  |       | Hours of Data:            | 638   |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |               |                 |       |       |       |       |       |       |       |       |
| Maximum Diurnal Average: 0.003 ppm at hour 9 |                               | Minimum Diurnal Average: 0.000 ppm at hour 6   |       | Hours of Missing Data:    | 34    |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |               |                 |       |       |       |       |       |       |       |       |
| Monthly Average: 0.000 ppm                   |                               | Percentiles: P <sub>1</sub> = 0.0 P <sub>10</sub> = 0.0 Q <sub>1</sub> = 0.0 Median = 0.0 Q <sub>3</sub> = 0.0 P <sub>90</sub> = 0.0 P <sub>99</sub> = 0.0 |       | Hours of Calibration:     | 33    |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |               |                 |       |       |       |       |       |       |       |       |
|  |                               |  |       | Percent Operational Time: | 99.9  |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |               |                 |       |       |       |       |       |       |       |       |
| Day  | Hourly Period Ending At (MST) |  |       |                           |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 | Daily Average | Daily Maximum   |       |       |       |       |       |       |       |       |
|  | 1                             | 2  | 3     | 4                         | 5     | 6     | 7     | 8     | 9     | 10    | 11    | 12    | 13    | 14    | 15    | 16    | 17    | 18    | 19    | 20    | 21    | 22    | 23    | 24              |               |                 |       |       |       |       |       |       |       |       |
| 1-Feb  | 0.002                         | 0.000  | Z     | 0.000                     | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000           | 0.000         | 0.000           | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.002 |
| 2-Feb  | 0.001                         | 0.000  | 0.000 | Z                         | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000           | 0.000         | 0.000           | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.001 |       |
| 3-Feb  | 0.000                         | 0.000  | 0.000 | 0.000                     | Z     | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000           | 0.000         | 0.000           | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |       |       |
| 4-Feb  | 0.000                         | 0.000  | 0.000 | 0.000                     | 0.000 | Z     | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000           | 0.000         | 0.000           | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |       |       |
| 5-Feb  | Z                             | 0.000  | 0.000 | 0.000                     | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.015 | 0.000 | 0.002 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000           | 0.000         | 0.000           | 0.000 | 0.000 | 0.000 | 0.000 | 0.001 | 0.015 |       |       |
| 6-Feb  | 0.000                         | Z  | 0.000 | 0.000                     | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.005 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000           | 0.000         | 0.000           | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.005 |       |       |
| 7-Feb  | 0.000                         | 0.000  | Z     | 0.000                     | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000           | 0.000         | 0.000           | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |       |       |
| 8-Feb  | 0.000                         | 0.000  | 0.000 | Z                         | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.005 | 0.000 | 0.000 | 0.000 | 0.000 | 0.003 | 0.000 | 0.000 | 0.008 | 0.000 | 0.000 | 0.000           | 0.000         | 0.000           | 0.000 | 0.000 | 0.000 | 0.000 | 0.001 | 0.008 |       |       |
| 9-Feb  | 0.000                         | 0.000  | 0.000 | 0.000                     | Z     | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000           | 0.000         | 0.000           | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |       |       |
| 10-Feb                                       | 0.000                         | 0.000  | 0.000 | 0.000                     | 0.005 | Z     | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000           | 0.000         | 0.000           | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.005 |       |       |
| 11-Feb                                       | Z                             | 0.000  | 0.000 | 0.000                     | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000           | 0.000         | 0.000           | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |       |       |
| 12-Feb                                       | 0.000                         | Z  | 0.000 | 0.000                     | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.002 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000           | 0.000         | 0.000           | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.002 |       |       |
| 13-Feb                                       | 0.000                         | 0.000  | Z     | 0.000                     | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000           | 0.000         | 0.000           | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |       |       |
| 14-Feb                                       | 0.000                         | 0.000  | 0.000 | Z                         | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000           | 0.000         | 0.000           | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |       |       |
| 15-Feb                                       | 0.000                         | 0.000  | 0.000 | 0.000                     | Z     | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000           | 0.000         | 0.000           | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |       |       |
| 16-Feb                                       | 0.000                         | 0.000  | 0.006 | 0.000                     | 0.000 | Z     | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000           | 0.000         | 0.000           | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.006 |       |       |
| 17-Feb                                       | Z                             | 0.000  | 0.000 | 0.000                     | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000           | 0.000         | 0.000           | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |       |       |
| 18-Feb                                       | 0.000                         | Z  | 0.000 | 0.000                     | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000           | 0.000         | 0.000           | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |       |       |
| 19-Feb                                       | 0.000                         | 0.000  | Z     | 0.005                     | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000           | 0.000         | 0.000           | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.005 |       |       |
| 20-Feb                                       | 0.000                         | 0.000  | 0.000 | Z                         | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000           | 0.000         | 0.000           | 0.000 | 0.010 | 0.000 | 0.000 | 0.000 | 0.010 |       |       |
| 21-Feb                                       | 0.000                         | 0.000  | 0.000 | 0.000                     | Z     | 0.000 | 0.000 | 0.000 | 0.090 | 0.055 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000           | 0.000         | 0.000           | 0.000 | 0.000 | 0.000 | 0.000 | 0.006 | 0.090 |       |       |
| 22-Feb                                       | 0.000                         | 0.000  | 0.000 | 0.000                     | 0.000 | Z     | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | C     | C     | C     | C     | C     | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000           | 0.000         | 0.000           | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |       |       |
| 23-Feb                                       | Z                             | 0.000  | 0.000 | 0.000                     | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.006 | 0.000 | 0.000 | 0.000 | 0.000           | 0.000         | 0.000           | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.006 |       |       |
| 24-Feb                                       | 0.000                         | Z  | 0.000 | 0.000                     | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | M     | 0.000 | 0.000 | 0.000 | 0.000           | 0.000         | 0.000           | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |       |       |
| 25-Feb                                       | 0.000                         | 0.000  | Z     | 0.000                     | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000           | 0.000         | 0.000           | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |       |       |
| 26-Feb                                       | 0.000                         | 0.000  | 0.000 | Z                         | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000           | 0.000         | 0.000           | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |       |       |
| 27-Feb                                       | 0.000                         | 0.000  | 0.000 | 0.000                     | Z     | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000           | 0.000         | 0.000           | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |       |       |
| 28-Feb                                       | 0.000                         | 0.010  | 0.000 | 0.000                     | 0.000 | Z     | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000           | 0.000         | 0.000           | 0.001 | 0.000 | 0.000 | 0.003 | 0.000 | 0.010 |       |       |
|  |                               |  |       |                           |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Diurnal Average |               |                 |       |       |       |       |       |       |       |       |
|  |                               |  |       |                           |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Diurnal Maximum |               |                 |       |       |       |       |       |       |       |       |
|  |                               |  |       |                           |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |               |                 |       |       |       |       |       |       |       |       |
| Z - zerospan                                 |                               |  |       |                           |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | C - Calibration |               | M - Maintenance |       |       |       |       |       |       |       |       |







**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Non Methane Hydrocarbons (NMHC) - ppm**  
**Janvier - February 2023**

| <b>Concentration Ranges (ppm)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 0.005                         | 629                    | 98.59    | 98.59               |
| 0.006 - 0.05                      | 7                      | 1.10     | 99.69               |
| 0.06 - 0.1                        | 2                      | 0.31     | 100.00              |
| > 0.1                             | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 638

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Non Methane Hydrocarbons (NMHC) - ppm  
Janvier - February 2023**

| <b>Concentration<br/>Ranges (ppm)</b> | <b>Wind Direction</b> |            |           |            |          |            |           |            |          |            |           |            |          |            |           |            | <b>Totals</b> |
|---------------------------------------|-----------------------|------------|-----------|------------|----------|------------|-----------|------------|----------|------------|-----------|------------|----------|------------|-----------|------------|---------------|
|                                       | <b>N</b>              | <b>NNE</b> | <b>NE</b> | <b>ENE</b> | <b>E</b> | <b>ESE</b> | <b>SE</b> | <b>SSE</b> | <b>S</b> | <b>SSW</b> | <b>SW</b> | <b>WSW</b> | <b>W</b> | <b>WNW</b> | <b>NW</b> | <b>NNW</b> |               |
| 0 - 0.005                             | 57                    | 113        | 44        | 18         | 9        | 6          | 7         | 20         | 39       | 108        | 96        | 35         | 22       | 20         | 17        | 16         | 627           |
| 0.006 - 0.05                          | 0                     | 3          | 0         | 0          | 0        | 0          | 0         | 0          | 1        | 2          | 0         | 1          | 0        | 0          | 0         | 0          | 7             |
| 0.06 - 0.1                            | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 2          | 2             |
| > 0.1                                 | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0             |
| <b>Totals</b>                         | 57                    | 116        | 44        | 18         | 9        | 6          | 7         | 20         | 40       | 110        | 96        | 36         | 22       | 20         | 17        | 18         | 636           |

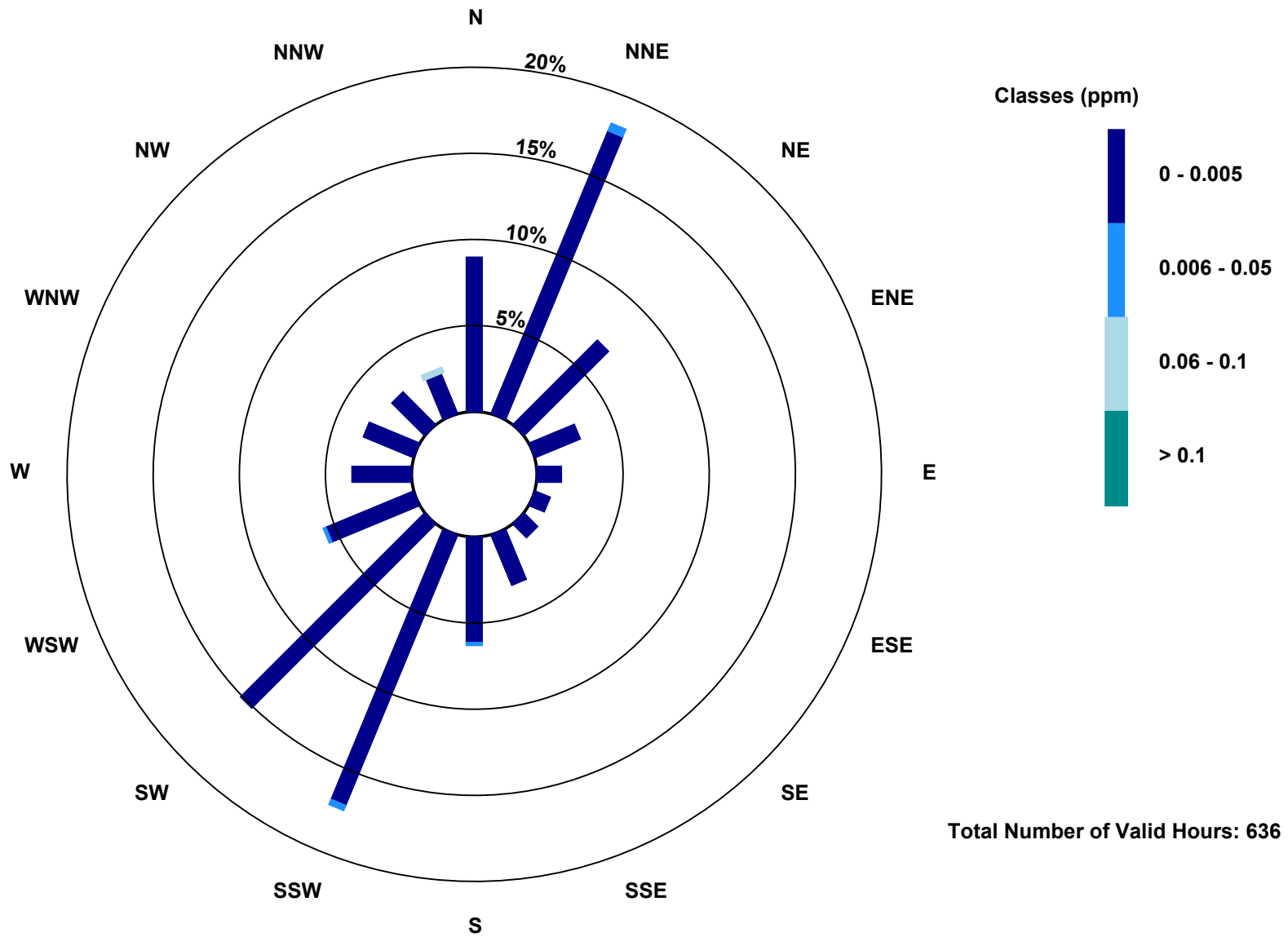
Total Number of Valid Hours: 636

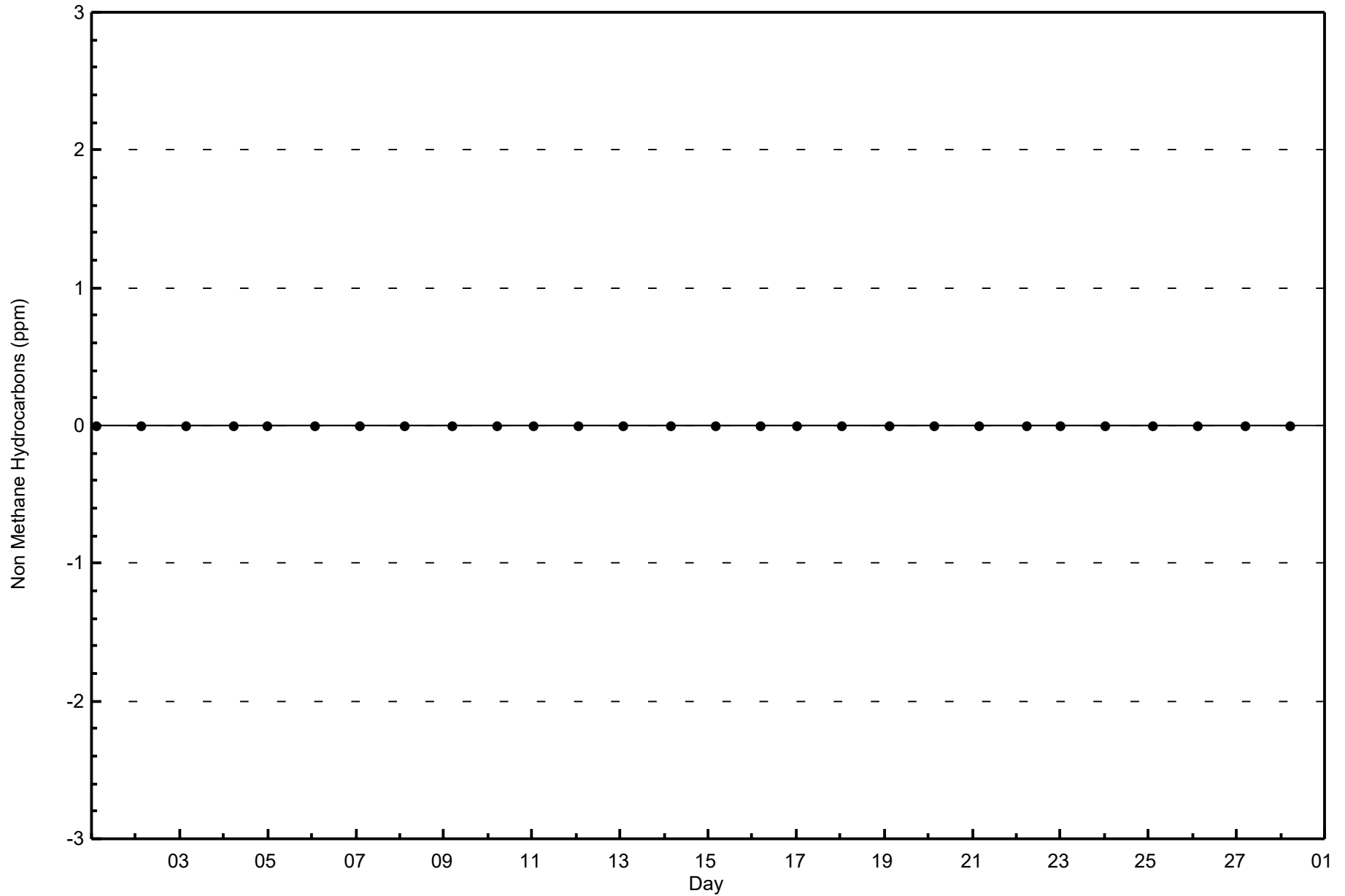
Total Number of Hours: 672

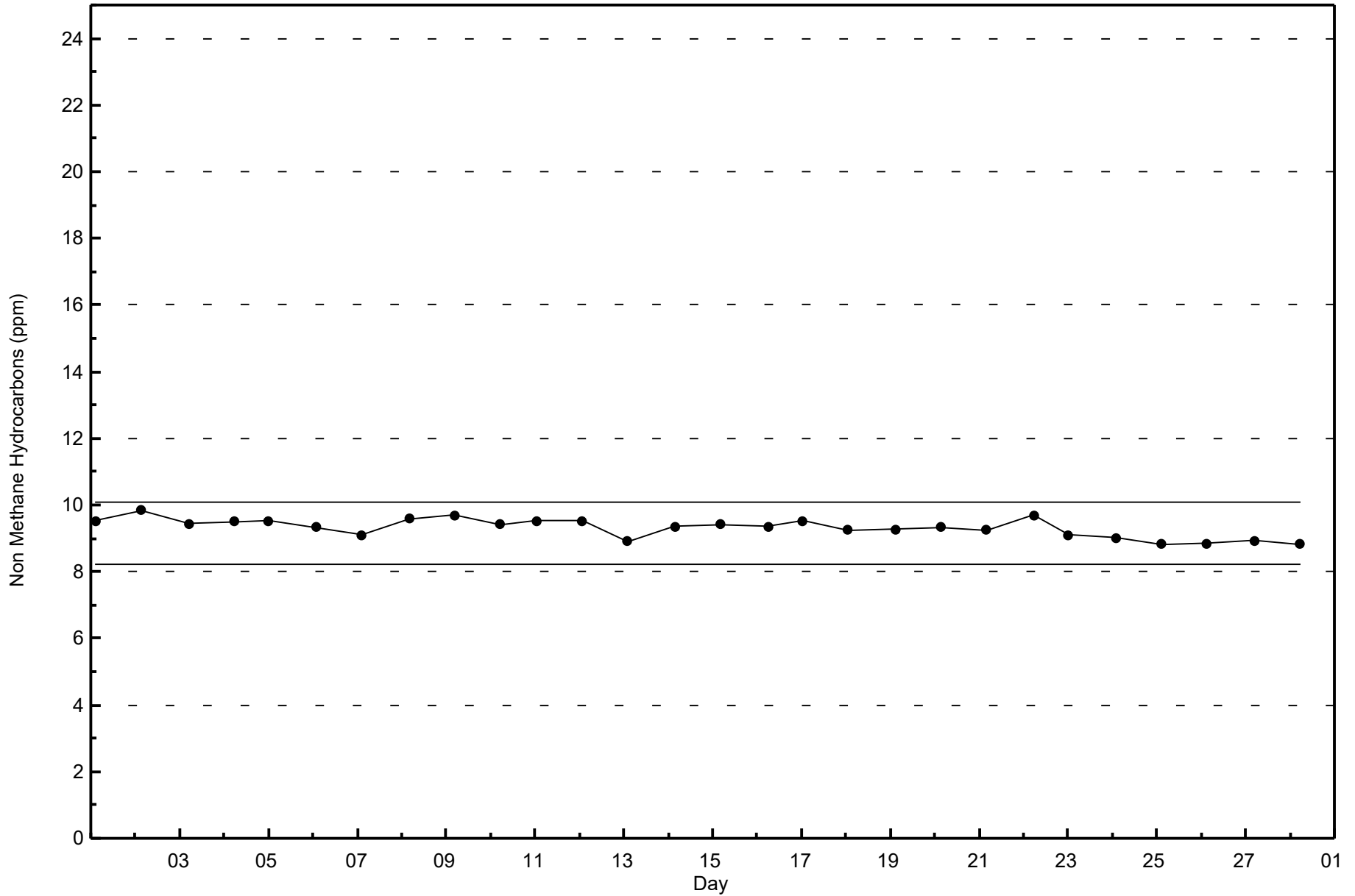


Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Non Methane Hydrocarbons (NMHC) - ppm  
Janvier









Wood Buffalo Environmental Association

Summary of Hour Averages

Methane (CH<sub>4</sub>) - ppm

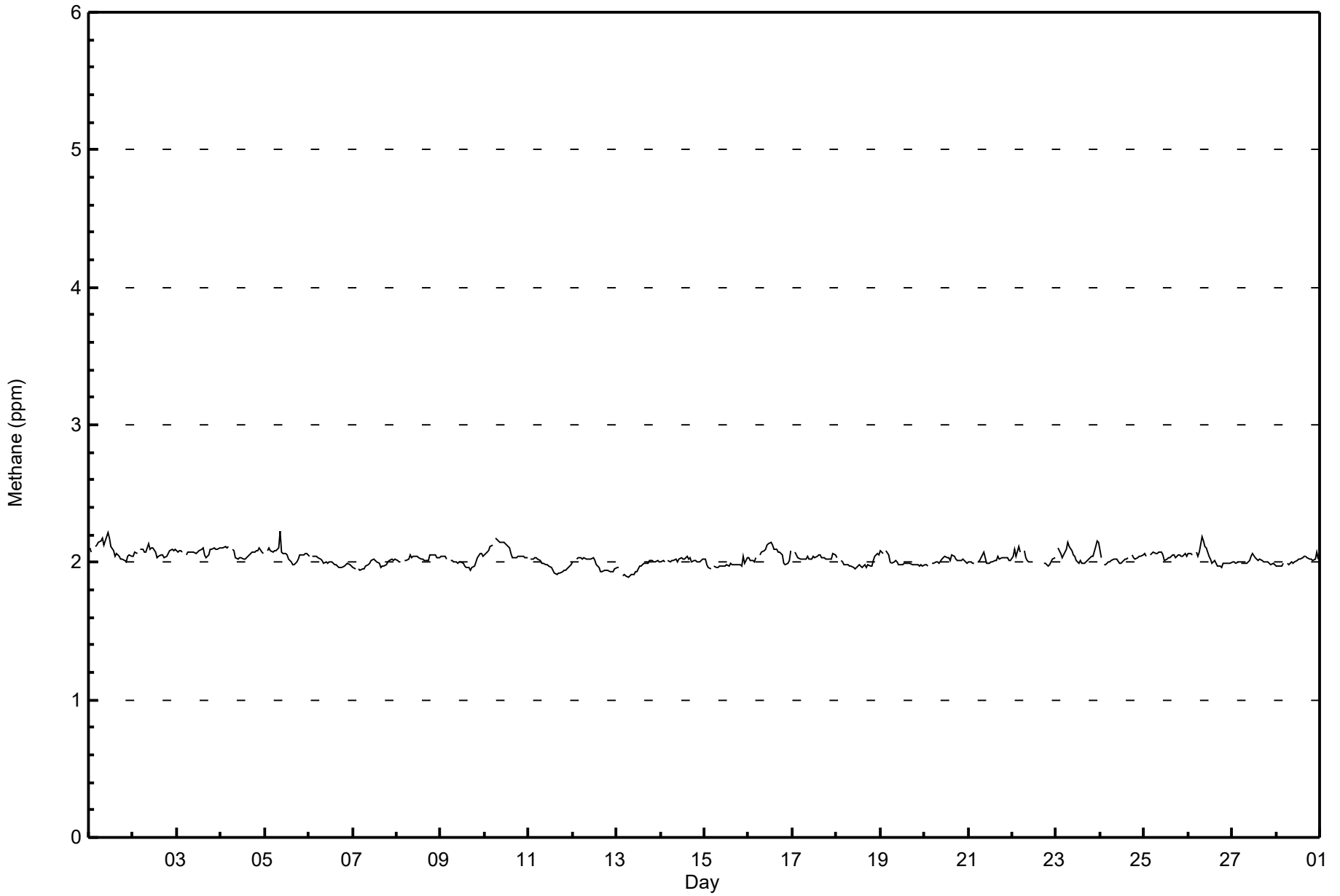
Janvier - February 2023

| Number of Exceedences (AAAQO):  |                               | 1-hr: 0  | 24-hr: 0 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                           |      | Hours in Service: | 672 |     |                 |               |               |     |     |
|---|-------------------------------|--|----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---------------------------|------|-------------------|-----|-----|-----------------|---------------|---------------|-----|-----|
| Maximum Value: 2.2 ppm on Feb 5 09:00   |                               | Maximum Daily Average: 2.1 ppm on Feb 1  |          |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Hours of Data:            | 638  |                   |     |     |                 |               |               |     |     |
| Minimum Value: 1.9 ppm on Feb 13 07:00  |                               | Minimum Daily Average: 2.0 ppm on Feb 13   |          |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Hours of Missing Data:    | 34   |                   |     |     |                 |               |               |     |     |
| Maximum Diurnal Average: 2.0 ppm at hour 9  |                               | Minimum Diurnal Average: 2.0 ppm at hour 18  |          |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Hours of Calibration:     | 33   |                   |     |     |                 |               |               |     |     |
| Monthly Average: 2.03 ppm   |                               | Percentiles: P <sub>1</sub> = 1.9 P <sub>10</sub> = 2.0 Q <sub>1</sub> = 2.0 Median = 2.0 Q <sub>3</sub> = 2.1 P <sub>90</sub> = 2.1 P <sub>99</sub> = 2.2 |          |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Percent Operational Time: | 99.9 |                   |     |     |                 |               |               |     |     |
| Day   | Hourly Period Ending At (MST) |  |          |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                           |      |                   |     |     |                 | Daily Average | Daily Maximum |     |     |
|   | 1                             | 2  | 3        | 4   | 5   | 6   | 7   | 8   | 9   | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19                        | 20   | 21                | 22  | 23  | 24              |               |               |     |     |
| 1-Feb   | 2.1                           | 2.1  | Z        | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | 2.1 | 2.2 | 2.2 | 2.2 | 2.1 | 2.1 | 2.0 | 2.1 | 2.0 | 2.0 | 2.0                       | 2.0  | 2.0               | 2.1 | 2.0 | 2.0             | 2.1           | 2.2           | 2.1 | 2.2 |
| 2-Feb   | 2.0                           | 2.1  | 2.1      | Z   | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.0 | 2.0 | 2.1 | 2.0 | 2.0 | 2.0                       | 2.1  | 2.1               | 2.1 | 2.1 | 2.1             | 2.1           | 2.1           | 2.1 | 2.1 |
| 3-Feb   | 2.1                           | 2.1  | 2.1      | 2.1 | Z   | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.0 | 2.1 | 2.1                       | 2.1  | 2.1               | 2.1 | 2.1 | 2.1             | 2.1           | 2.1           | 2.1 | 2.1 |
| 4-Feb   | 2.1                           | 2.1  | 2.1      | 2.1 | 2.1 | Z   | 2.1 | 2.1 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1 | 2.1 | 2.1 | 2.1                       | 2.1  | 2.1               | 2.1 | 2.1 | 2.1             | 2.1           | 2.1           | 2.1 | 2.1 |
| 5-Feb   | Z                             | 2.1  | 2.1      | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.1 | 2.1 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0                       | 2.1  | 2.1               | 2.1 | 2.1 | 2.1             | 2.1           | 2.1           | 2.1 | 2.2 |
| 6-Feb   | 2.0                           | Z  | 2.0      | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0                       | 2.0  | 2.0               | 2.0 | 2.0 | 2.0             | 2.0           | 2.0           | 2.0 | 2.0 |
| 7-Feb   | 2.0                           | 2.0  | Z        | 2.0 | 1.9 | 1.9 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0                       | 2.0  | 2.0               | 2.0 | 2.0 | 2.0             | 2.0           | 2.0           | 2.0 | 2.0 |
| 8-Feb   | 2.0                           | 2.0  | 2.0      | Z   | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1                       | 2.1  | 2.0               | 2.1 | 2.0 | 2.0             | 2.0           | 2.0           | 2.1 | 2.1 |
| 9-Feb   | 2.0                           | 2.0  | 2.0      | 2.0 | Z   | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 1.9 | 2.0 | 2.0                       | 2.0  | 2.0               | 2.1 | 2.1 | 2.0             | 2.0           | 2.0           | 2.1 | 2.1 |
| 10-Feb  | 2.1                           | 2.1  | 2.1      | 2.1 | 2.1 | Z   | 2.2 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0                       | 2.0  | 2.0               | 2.0 | 2.0 | 2.0             | 2.0           | 2.0           | 2.0 | 2.2 |
| 11-Feb  | Z                             | 2.0  | 2.0      | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9                       | 1.9  | 1.9               | 2.0 | 2.0 | 2.0             | 2.0           | 2.0           | 2.0 | 2.0 |
| 12-Feb  | 2.0                           | Z  | 2.0      | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 1.9 | 1.9 | 1.9 | 1.9                       | 1.9  | 1.9               | 1.9 | 1.9 | 1.9             | 1.9           | 2.0           | 2.0 | 2.0 |
| 13-Feb  | 2.0                           | 2.0  | Z        | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0                       | 2.0  | 2.0               | 2.0 | 2.0 | 2.0             | 2.0           | 2.0           | 2.0 | 2.0 |
| 14-Feb  | 2.0                           | 2.0  | 2.0      | Z   | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0                       | 2.0  | 2.0               | 2.0 | 2.0 | 2.0             | 2.0           | 2.0           | 2.0 | 2.0 |
| 15-Feb  | 2.0                           | 2.0  | 2.0      | 2.0 | Z   | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0                       | 2.0  | 2.0               | 2.0 | 2.0 | 2.0             | 2.0           | 2.0           | 2.0 | 2.0 |
| 16-Feb  | 2.0                           | 2.0  | 2.0      | 2.0 | 2.0 | Z   | 2.0 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1                       | 2.0  | 2.0               | 2.0 | 2.0 | 2.1             | 2.1           | 2.1           | 2.1 | 2.1 |
| 17-Feb  | Z                             | 2.1  | 2.1      | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1 | 2.1 | 2.0 | 2.0 | 2.0                       | 2.0  | 2.0               | 2.0 | 2.1 | 2.1             | 2.1           | 2.1           | 2.1 | 2.1 |
| 18-Feb  | 2.0                           | Z  | 2.0      | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0                       | 2.0  | 2.0               | 2.0 | 2.1 | 2.1             | 2.1           | 2.1           | 2.1 | 2.1 |
| 19-Feb  | 2.1                           | 2.1  | Z        | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0                       | 2.0  | 2.0               | 2.0 | 2.0 | 2.0             | 2.0           | 2.0           | 2.0 | 2.1 |
| 20-Feb  | 2.0                           | 2.0  | 2.0      | Z   | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1 | 2.0 | 2.0 | 2.0                       | 2.0  | 2.0               | 2.0 | 2.0 | 2.0             | 2.0           | 2.0           | 2.0 | 2.1 |
| 21-Feb  | 2.0                           | 2.0  | 2.0      | 2.0 | Z   | 2.0 | 2.0 | 2.0 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0                       | 2.0  | 2.0               | 2.0 | 2.0 | 2.0             | 2.0           | 2.0           | 2.0 | 2.1 |
| 22-Feb  | 2.0                           | 2.1  | 2.0      | 2.1 | 2.1 | Z   | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | C   | C   | C   | C   | C   | 2.0 | 2.0                       | 2.0  | 2.0               | 2.0 | 2.0 | 2.0             | 2.0           | 2.0           | 2.1 | 2.1 |
| 23-Feb  | Z                             | 2.1  | 2.1      | 2.0 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0                       | 2.0  | 2.0               | 2.1 | 2.2 | 2.1             | 2.1           | 2.1           | 2.2 | 2.2 |
| 24-Feb  | 2.0                           | Z  | 2.0      | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0                       | 2.0  | 2.0               | 2.0 | 2.0 | 2.1             | 2.0           | 2.0           | 2.1 | 2.1 |
| 25-Feb  | 2.1                           | 2.0  | Z        | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1 | 2.0 | 2.0 | 2.1                       | 2.1  | 2.0               | 2.0 | 2.1 | 2.0             | 2.1           | 2.1           | 2.1 | 2.1 |
| 26-Feb  | 2.1                           | 2.1  | 2.1      | Z   | 2.1 | 2.0 | 2.1 | 2.2 | 2.2 | 2.1 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0                       | 2.0  | 2.0               | 2.0 | 2.0 | 2.0             | 2.0           | 2.0           | 2.0 | 2.2 |
| 27-Feb  | 2.0                           | 2.0  | 2.0      | 2.0 | Z   | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0                       | 2.0  | 2.0               | 2.0 | 2.0 | 2.0             | 2.0           | 2.0           | 2.0 | 2.1 |
| 28-Feb  | 2.0                           | 2.0  | 2.0      | 2.0 | 2.0 | Z   | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0                       | 2.0  | 2.0               | 2.0 | 2.0 | 2.0             | 2.0           | 2.0           | 2.0 | 2.1 |
|   |                               |  |          |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                           |      |                   |     |     | Diurnal Average |               |               |     |     |
|   |                               |  |          |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                           |      |                   |     |     | Diurnal Maximum |               |               |     |     |
| Z - zerspan                      C - Calibration                      M - Maintenance |                               |  |          |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                           |      |                   |     |     |                 |               |               |     |     |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Methane (CH<sub>4</sub>) - ppm**  
**Janvier - February 2023**





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Methane (CH<sub>4</sub>) - ppm  
Janvier - February 2023**

| <b>Concentration Ranges (ppm)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 2.0                           | 465                    | 72.88    | 72.88               |
| 2.1 - 3.0                         | 173                    | 27.12    | 100.00              |
| 3.1 - 10.0                        | 0                      | 0.00     | 100.00              |
| > 10.0                            | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 638

Total Number of Hours: 672





**Wood Buffalo Environmental Association  
Frequency Distribution**

**Methane (CH<sub>4</sub>) - ppm  
Janvier - February 2023**

| <b>Concentration<br/>Ranges (ppm)</b> | <b>Wind Direction</b> |     |    |     |   |     |    |     |    |     |    |     |    |     |    |     | <b>Totals</b> |
|---------------------------------------|-----------------------|-----|----|-----|---|-----|----|-----|----|-----|----|-----|----|-----|----|-----|---------------|
|                                       | N                     | NNE | NE | ENE | E | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |               |
| 0 - 2.0                               | 44                    | 91  | 35 | 18  | 7 | 3   | 5  | 11  | 25 | 61  | 62 | 32  | 21 | 19  | 16 | 13  | 463           |
| 2.1 - 3.0                             | 13                    | 25  | 9  | 0   | 2 | 3   | 2  | 9   | 15 | 49  | 34 | 4   | 1  | 1   | 1  | 5   | 173           |
| 3.1 - 10.0                            | 0                     | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| > 10.0                                | 0                     | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| <b>Totals</b>                         | 57                    | 116 | 44 | 18  | 9 | 6   | 7  | 20  | 40 | 110 | 96 | 36  | 22 | 20  | 17 | 18  | 636           |

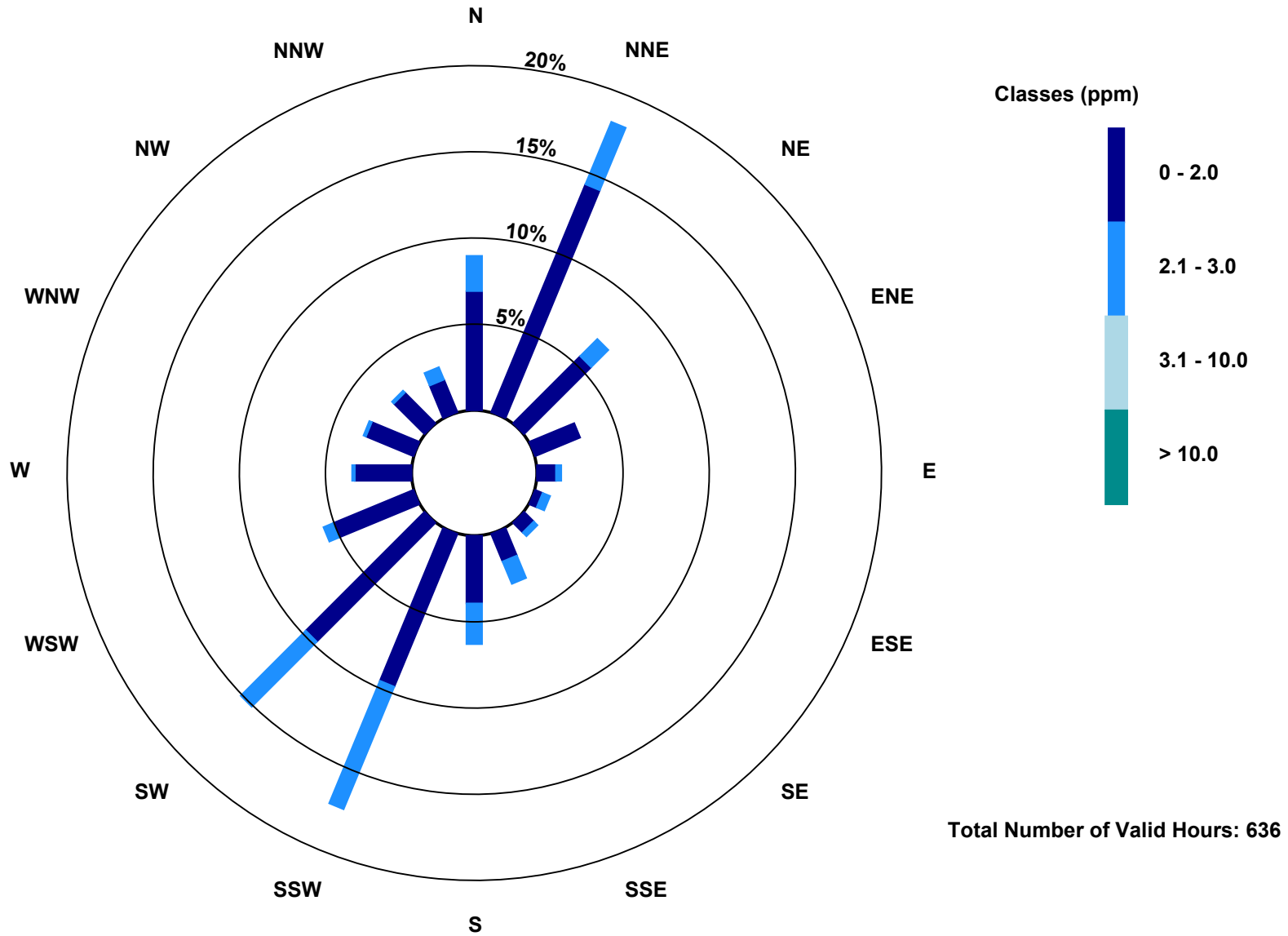
Total Number of Valid Hours: 636

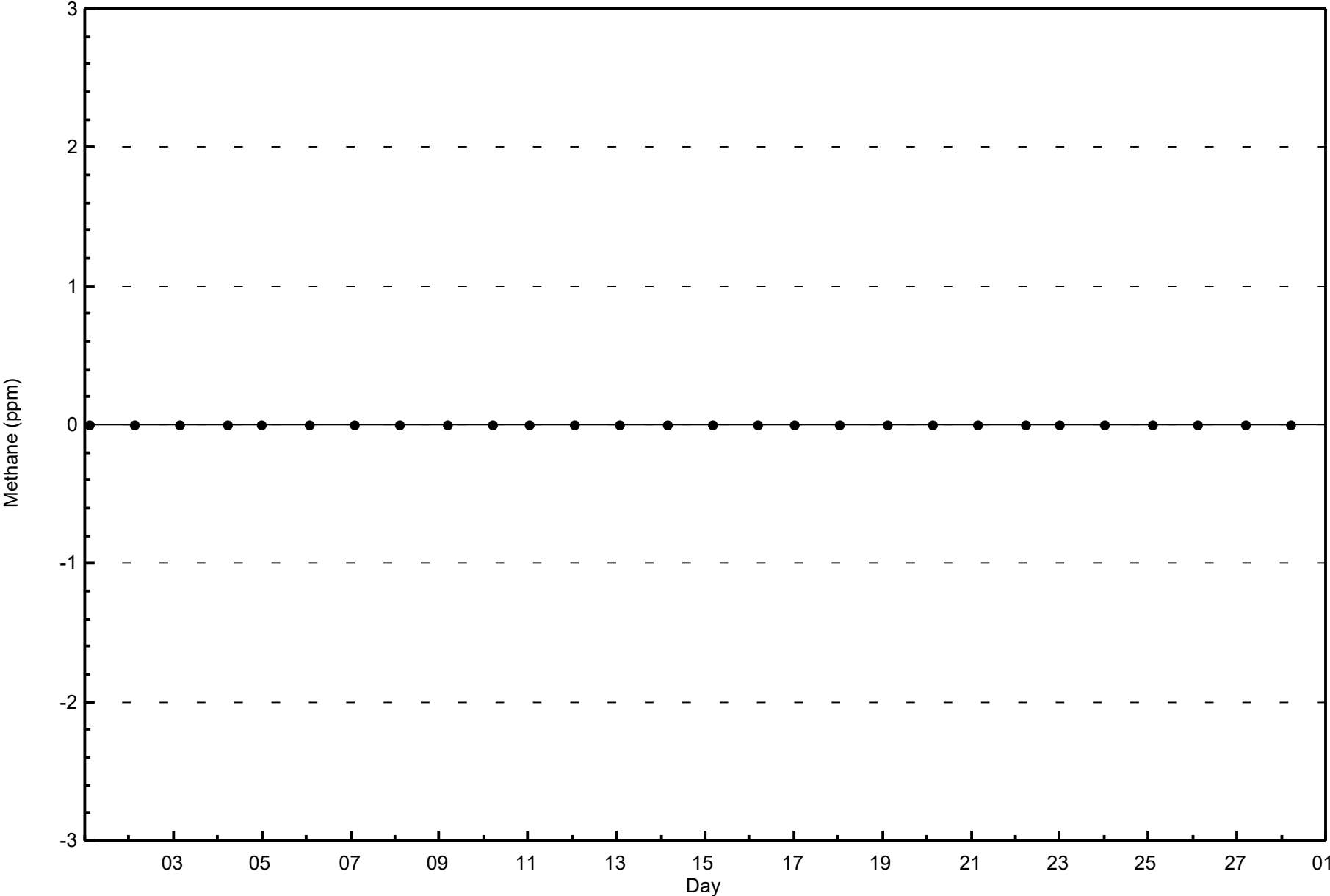
Total Number of Hours: 672

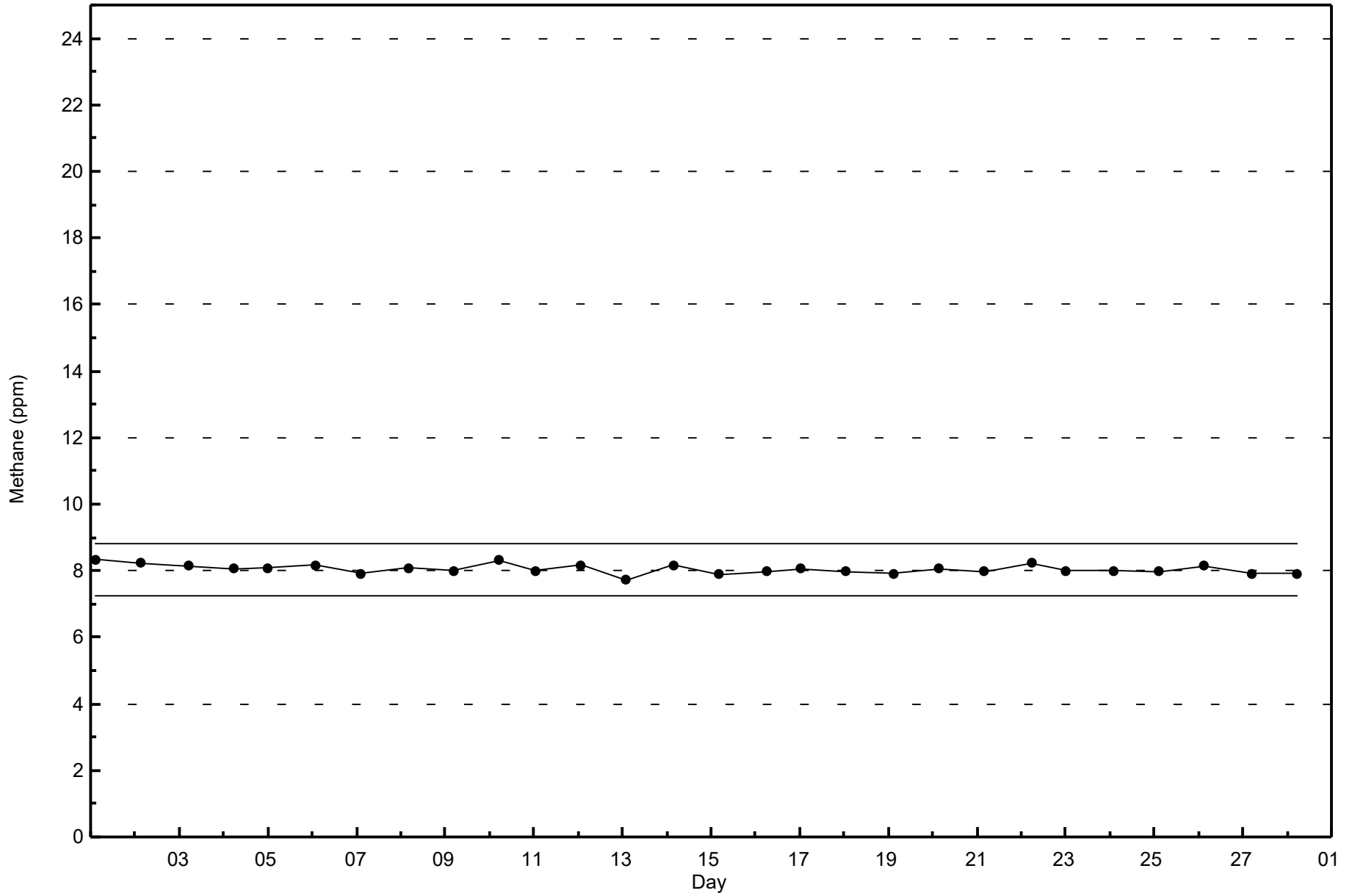


Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Methane (CH<sub>4</sub>) - ppm  
Janvier









**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

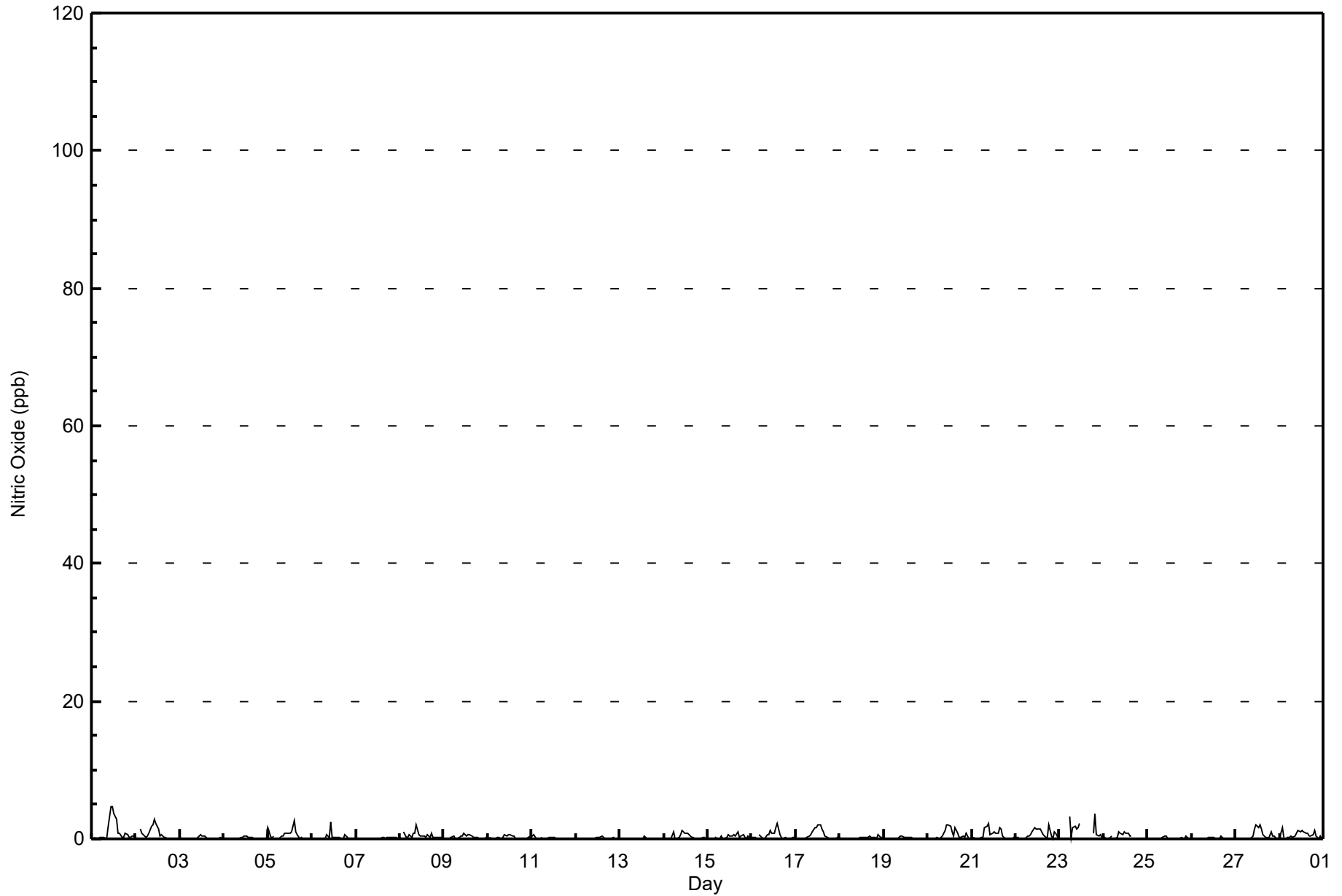
**Nitric Oxide (NO) - ppb**  
**Janvier - February 2023**

| Maximum Value: 4.7 ppb on Feb 1 12:00  |                               | Maximum Daily Average: 1.0 ppb on Feb 1  |     | Hours in Service: 672          |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |               |               |
|--|-------------------------------|--|-----|--------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----------------|---------------|---------------|
| Minimum Value: 0.0 ppb on Feb 2 19:00  |                               | Minimum Daily Average: 0.0 ppb on Feb 13   |     | Hours of Data: 637             |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |               |               |
| Maximum Diurnal Average: 1.0 ppb at hour 11  |                               | Minimum Diurnal Average: 0.1 ppb at hour 7   |     | Hours of Missing Data: 35      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |               |               |
| Monthly Average: 0.36 ppb  |                               | Percentiles: P <sub>1</sub> = 0.0 P <sub>10</sub> = 0.0 Q <sub>1</sub> = 0.0 Median = 0.1 Q <sub>3</sub> = 0.4 P <sub>90</sub> = 1.0 P <sub>99</sub> = 2.7 |     | Hours of Calibration: 34       |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |               |               |
|  |                               |  |     | Percent Operational Time: 99.9 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |               |               |
| Day  | Hourly Period Ending At (MST) |  |     |                                |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 | Daily Average | Daily Maximum |
|  | 1                             | 2  | 3   | 4                              | 5   | 6   | 7   | 8   | 9   | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19  | 20  | 21  | 22  | 23  | 24              |               |               |
| 1-Feb  | Z                             | 0.1  | 0.1 | 0.1                            | 0.1 | 0.1 | 0.1 | 0.1 | 0.3 | 1.8 | 4.6 | 4.7 | 3.7 | 2.8 | 0.8 | 0.8 | 0.3 | 0.2 | 0.7 | 0.5 | 0.2 | 0.2 | 0.4 | 0.4             | 1.0           | 4.7           |
| 2-Feb  | 0.2                           | Z  | 1.4 | 0.8                            | 0.6 | 0.2 | 0.4 | 0.8 | 1.8 | 2.1 | 2.9 | 2.1 | 1.5 | 0.5 | 0.5 | 0.2 | 0.2 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.7           | 2.9           |
| 3-Feb  | 0.0                           | 0.0  | Z   | 0.0                            | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.3 | 0.6 | 0.5 | 0.3 | 0.3 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.0             | 0.1           | 0.6           |
| 4-Feb  | 0.0                           | 0.0  | 0.0 | Z                              | 0.1 | 0.1 | 0.0 | 0.0 | 0.1 | 0.1 | 0.3 | 0.4 | 0.4 | 0.3 | 0.2 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.1           | 0.4           |
| 5-Feb  | 1.5                           | 0.3  | 0.1 | 0.4                            | Z   | 0.0 | 0.1 | 0.3 | 0.4 | 0.9 | 0.8 | 0.9 | 0.8 | 1.0 | 2.6 | 1.0 | 0.6 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.5           | 2.6           |
| 6-Feb  | 0.0                           | 0.0  | 0.0 | 0.0                            | 0.0 | Z   | 0.0 | 0.1 | 0.6 | 0.2 | 2.5 | 0.2 | 0.2 | 0.2 | 0.1 | 0.1 | 0.0 | 0.1 | 0.5 | 0.2 | 0.0 | 0.0 | 0.1 | 0.0             | 0.2           | 2.5           |
| 7-Feb  | Z                             | 0.0  | 0.0 | 0.0                            | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.1 | 0.1             | 0.1           | 0.2           |
| 8-Feb  | 0.1                           | Z  | 1.0 | 0.3                            | 0.2 | 0.5 | 0.1 | 0.9 | 0.8 | 2.1 | 0.6 | 0.4 | 0.3 | 0.3 | 0.2 | 0.6 | 0.2 | 0.8 | 0.2 | 0.1 | 0.2 | 0.2 | 0.2 | 0.1             | 0.5           | 2.1           |
| 9-Feb  | 0.1                           | 0.0  | Z   | 0.3                            | 0.2 | 0.3 | 0.0 | 0.0 | 0.2 | 0.4 | 0.5 | 0.8 | 0.4 | 0.5 | 0.7 | 0.3 | 0.2 | 0.2 | 0.1 | 0.0 | 0.1 | 0.1 | 0.0 | 0.2             | 0.3           | 0.8           |
| 10-Feb   | 0.1                           | 0.2  | 0.1 | Z                              | 0.0 | 0.1 | 0.1 | 0.1 | 0.1 | 0.5 | 0.4 | 0.5 | 0.6 | 0.5 | 0.4 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.4             | 0.2           | 0.6           |
| 11-Feb   | 0.5                           | 0.6  | 0.0 | 0.0                            | Z   | 0.2 | 0.0 | 0.0 | 0.1 | 0.3 | 0.1 | 0.2 | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0             | 0.1           | 0.6           |
| 12-Feb   | 0.0                           | 0.0  | 0.0 | 0.0                            | 0.0 | Z   | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.2 | 0.1 | 0.3 | 0.5 | 0.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0             | 0.1           | 0.5           |
| 13-Feb   | Z                             | 0.0  | 0.0 | 0.0                            | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.3 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0             | 0.0           | 0.3           |
| 14-Feb   | 0.0                           | Z  | 0.0 | 0.0                            | 0.0 | 1.1 | 0.0 | 0.0 | 0.3 | 0.5 | 1.2 | 0.9 | 0.8 | 0.9 | 0.4 | 0.3 | 0.2 | 0.0 | 0.0 | 0.1 | 0.0 | 0.2 | 0.2 | 0.0             | 0.3           | 1.2           |
| 15-Feb   | 0.0                           | 0.0  | Z   | 0.0                            | 0.3 | 0.1 | 0.1 | 0.4 | 0.1 | 0.1 | 0.1 | 0.7 | 0.5 | 0.5 | 0.5 | 0.4 | 0.9 | 0.2 | 0.5 | 0.6 | 0.3 | 0.1 | 0.3 | 0.1             | 0.3           | 0.9           |
| 16-Feb   | 0.1                           | 0.2  | 0.2 | Z                              | 0.5 | 0.1 | 0.1 | 0.1 | 0.5 | 0.6 | 1.3 | 0.8 | 0.8 | 1.6 | 2.2 | 0.5 | 0.2 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.1 | 0.2             | 0.5           | 2.2           |
| 17-Feb   | 0.0                           | 0.1  | 0.0 | 0.1                            | Z   | 0.1 | 0.2 | 0.4 | 0.5 | 1.1 | 1.7 | 1.6 | 1.9 | 2.1 | 1.3 | 0.9 | 0.5 | 0.1 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.4             | 0.6           | 2.1           |
| 18-Feb   | 0.0                           | 0.0  | 0.0 | 0.1                            | 0.0 | Z   | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.1 | 0.2 | 0.2 | 0.1 | 0.3 | 0.4 | 0.3 | 0.2 | 0.2 | 0.1 | 0.6 | 0.2 | 0.2             | 0.1           | 0.6           |
| 19-Feb   | Z                             | 0.0  | 0.1 | 0.1                            | 0.1 | 0.0 | 0.0 | 0.1 | 0.2 | 0.4 | 0.4 | 0.2 | 0.2 | 0.2 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1             | 0.1           | 0.4           |
| 20-Feb   | 0.0                           | Z  | 0.0 | 0.0                            | 0.0 | 0.1 | 0.0 | 0.2 | 0.3 | 1.2 | 2.0 | 2.1 | 1.9 | 1.1 | 0.3 | 1.6 | 0.8 | 0.2 | 0.2 | 0.4 | 0.3 | 0.8 | 0.1 | 0.1             | 0.6           | 2.1           |
| 21-Feb   | 0.1                           | 0.2  | Z   | 0.1                            | 0.1 | 0.1 | 0.2 | 1.7 | 1.9 | 2.1 | 0.7 | 0.9 | 0.9 | 0.7 | 0.9 | 1.6 | 1.4 | 0.4 | 0.0 | 0.0 | 0.1 | 0.1 | 0.1 | 0.1             | 0.6           | 2.1           |
| 22-Feb   | 0.1                           | 0.1  | 0.1 | Z                              | 0.1 | 0.0 | 0.5 | 0.4 | 0.5 | 1.1 | 1.7 | 1.4 | 1.4 | 1.4 | 1.1 | 0.7 | 0.2 | 0.2 | 2.0 | 0.3 | 0.0 | 1.1 | 0.8 | 0.0             | 0.7           | 2.0           |
| 23-Feb   | 0.0                           | 0.0  | 0.0 | 0.0                            | Z   | 3.2 | 0.1 | 1.6 | 1.8 | 1.4 | 1.6 | 2.3 | C   | C   | C   | C   | C   | C   | 0.7 | 3.7 | 0.6 | 0.5 | 0.5 | 0.2             | --            | 3.7           |
| 24-Feb   | 0.1                           | 0.0  | 0.0 | 0.1                            | 0.4 | Z   | 0.1 | 0.2 | 1.0 | 0.8 | 0.7 | 0.9 | 0.8 | 0.8 | 0.5 | 0.5 | M   | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.3           | 1.0           |
| 25-Feb   | Z                             | 0.0  | 0.0 | 0.0                            | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.3 | 0.3 | 0.1 | 0.1 | 0.1 | 0.0 | 0.1 | 0.0 | 0.0 | 0.2 | 0.0 | 0.0 | 0.5 | 0.0 | 0.1             | 0.1           | 0.5           |
| 26-Feb   | 0.3                           | Z  | 0.0 | 0.0                            | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.2 | 0.3 | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 | 0.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.1           | 0.5           |
| 27-Feb   | 0.0                           | 0.0  | Z   | 0.0                            | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.4 | 1.4 | 2.0 | 1.6 | 2.1 | 1.4 | 0.6 | 0.2 | 0.1 | 0.0 | 1.0 | 0.5 | 0.4 | 0.1 | 0.1             | 0.5           | 2.1           |
| 28-Feb   | 0.1                           | 1.6  | 0.1 | Z                              | 0.2 | 0.1 | 0.4 | 0.2 | 0.4 | 0.8 | 1.2 | 1.0 | 1.1 | 1.0 | 0.8 | 0.8 | 0.5 | 0.5 | 0.5 | 1.2 | 0.3 | 0.0 | 0.4 | 0.0             | 0.6           | 1.6           |
|  |                               |  |     |                                |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Diurnal Average |               |               |
|  |                               |  |     |                                |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Diurnal Maximum |               |               |
|  |                               |  |     |                                |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |               |               |
| Z - zerospan                      C - Calibration                      M - Maintenance |                               |  |     |                                |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |               |               |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Nitric Oxide (NO) - ppb**  
**Janvier - February 2023**





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Nitric Oxide (NO) - ppb  
Janvier - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 20                            | 637                    | 100.00   | 100.00              |
| 21 - 40                           | 0                      | 0.00     | 100.00              |
| 41 - 80                           | 0                      | 0.00     | 100.00              |
| 81 - 159                          | 0                      | 0.00     | 100.00              |
| > 159                             | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 637

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Nitric Oxide (NO) - ppb  
Janvier - February 2023**

| <b>Concentration<br/>Ranges (ppb)</b> | <b>Wind Direction</b> |     |    |     |   |     |    |     |    |     |    |     |    |     |    |     | <b>Totals</b> |
|---------------------------------------|-----------------------|-----|----|-----|---|-----|----|-----|----|-----|----|-----|----|-----|----|-----|---------------|
|                                       | N                     | NNE | NE | ENE | E | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |               |
| 0 - 20                                | 55                    | 122 | 43 | 17  | 8 | 5   | 8  | 18  | 40 | 113 | 94 | 37  | 21 | 19  | 17 | 18  | 635           |
| 21 - 40                               | 0                     | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| 11 - 80                               | 0                     | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| 81 - 159                              | 0                     | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| > 159                                 | 0                     | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| <b>Totals</b>                         | 55                    | 122 | 43 | 17  | 8 | 5   | 8  | 18  | 40 | 113 | 94 | 37  | 21 | 19  | 17 | 18  | 635           |

Total Number of Valid Hours: 635

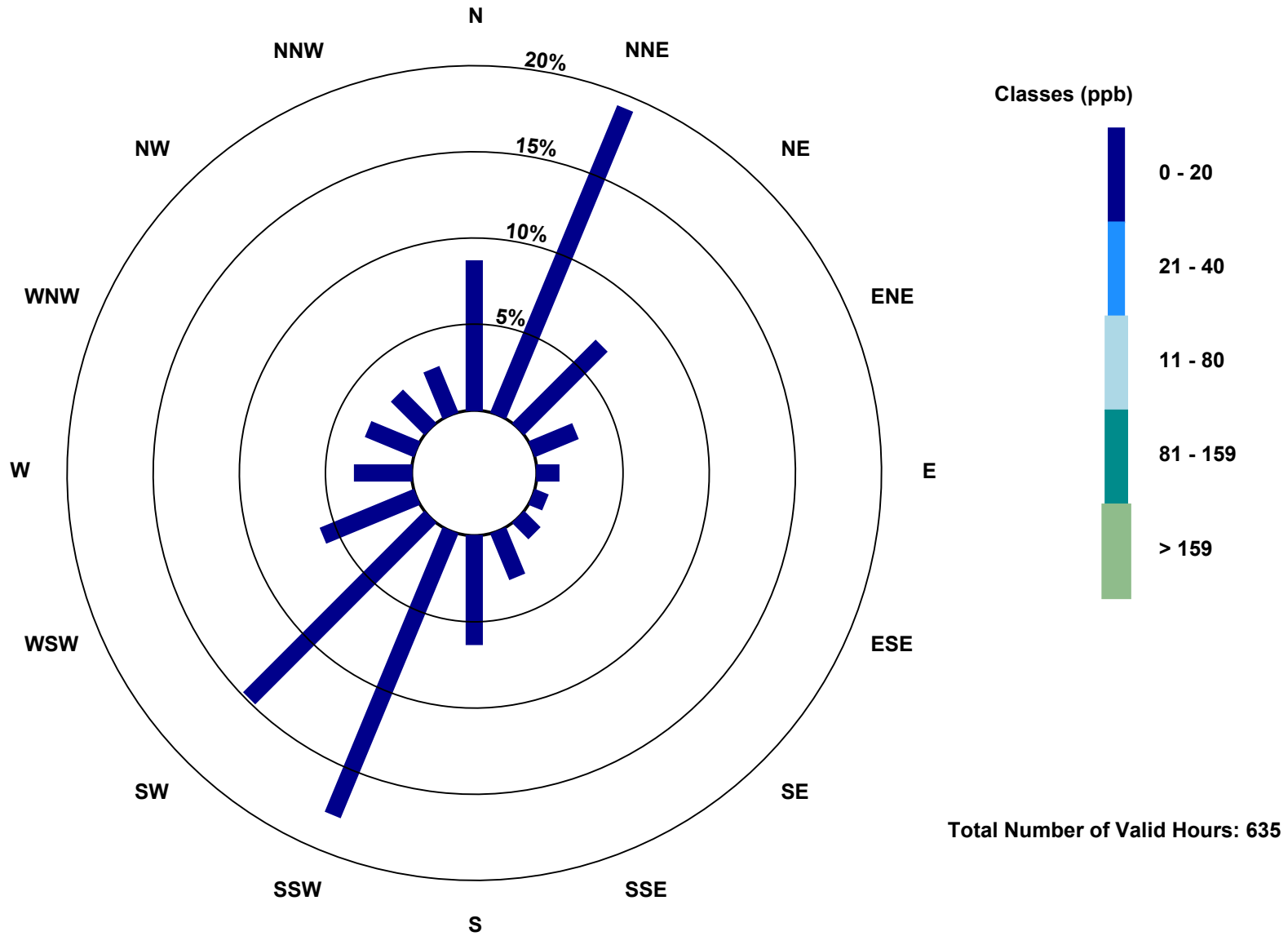
Total Number of Hours: 672

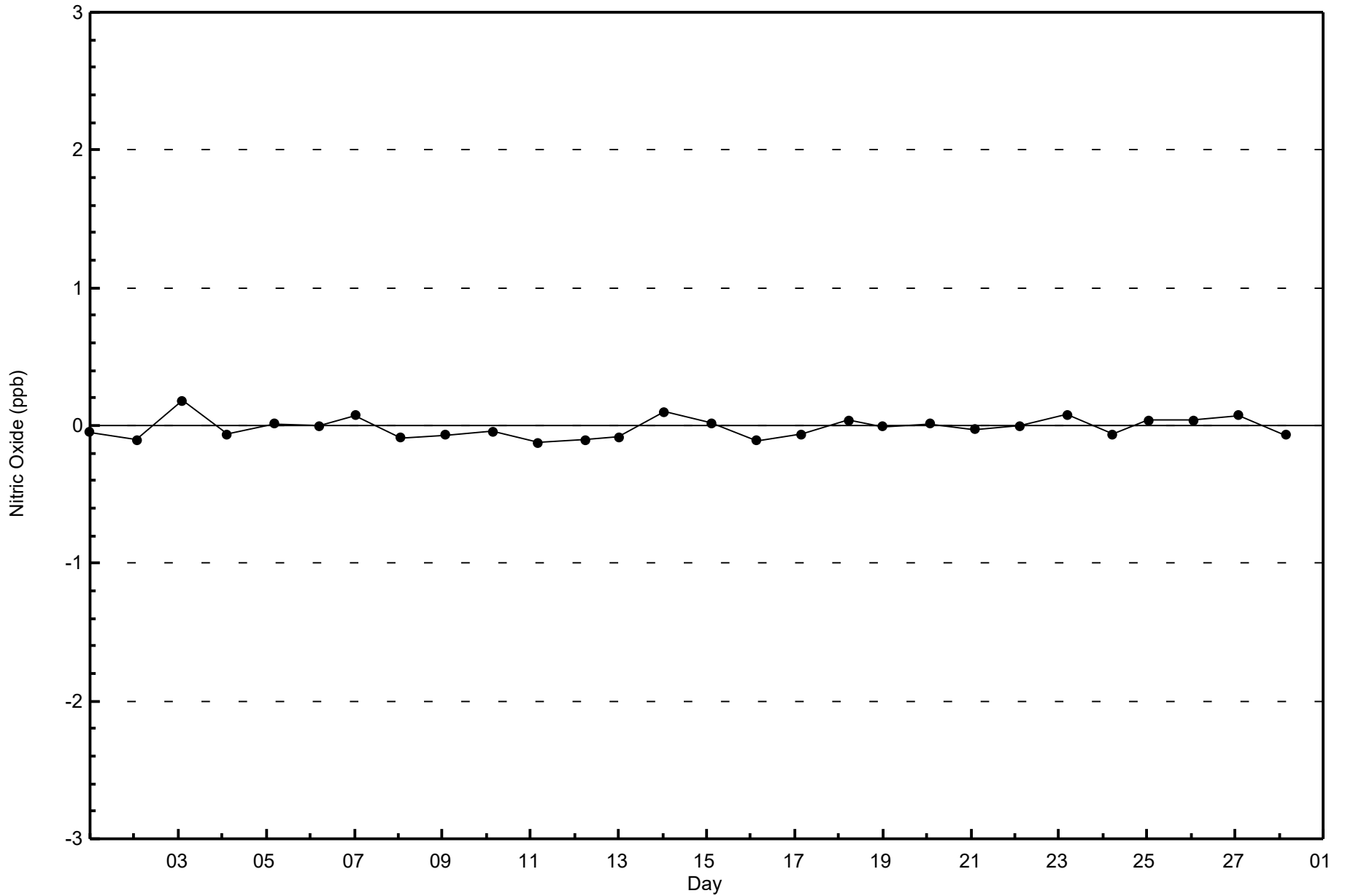


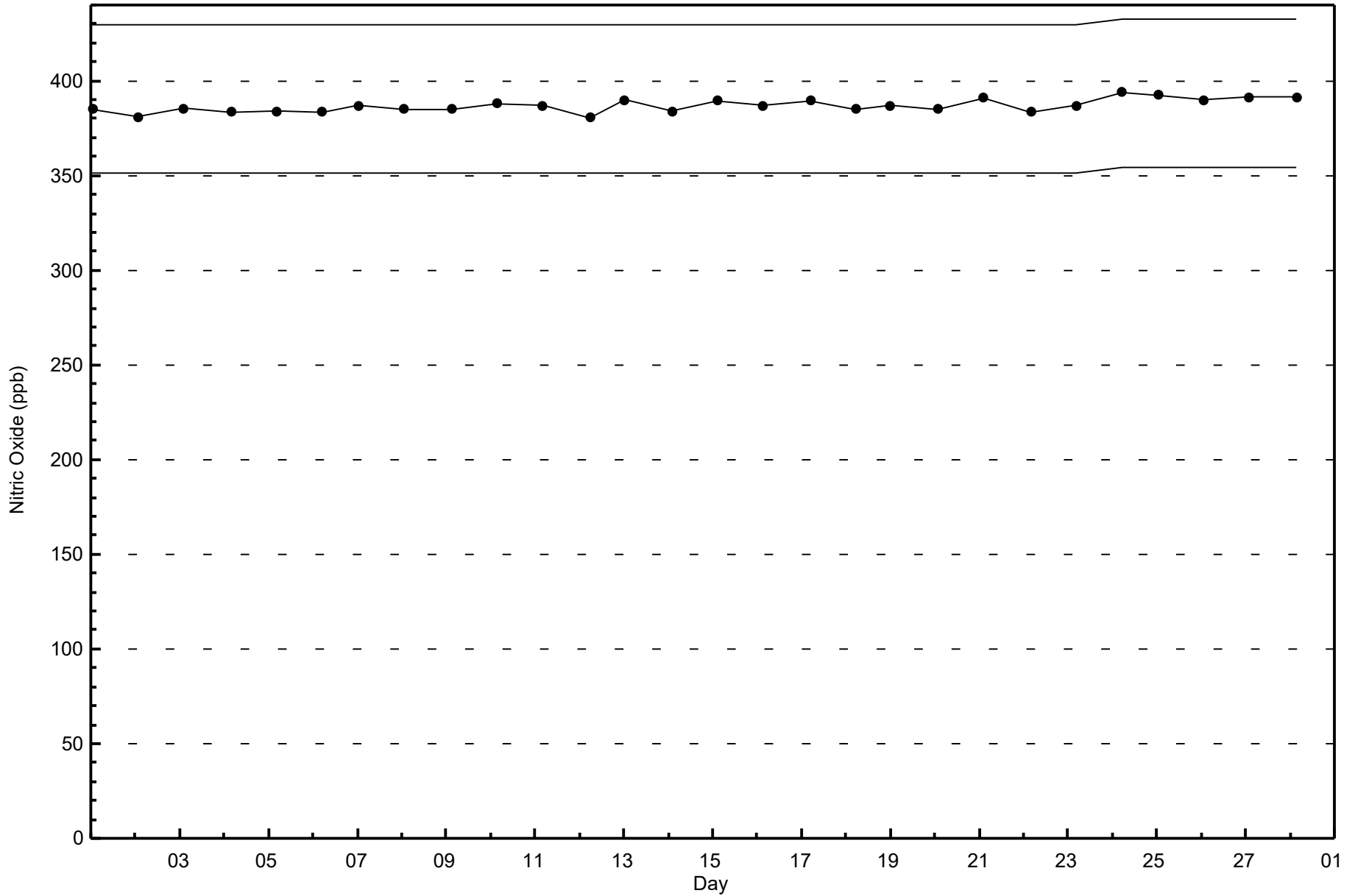


Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Nitric Oxide (NO) - ppb  
Janvier









**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

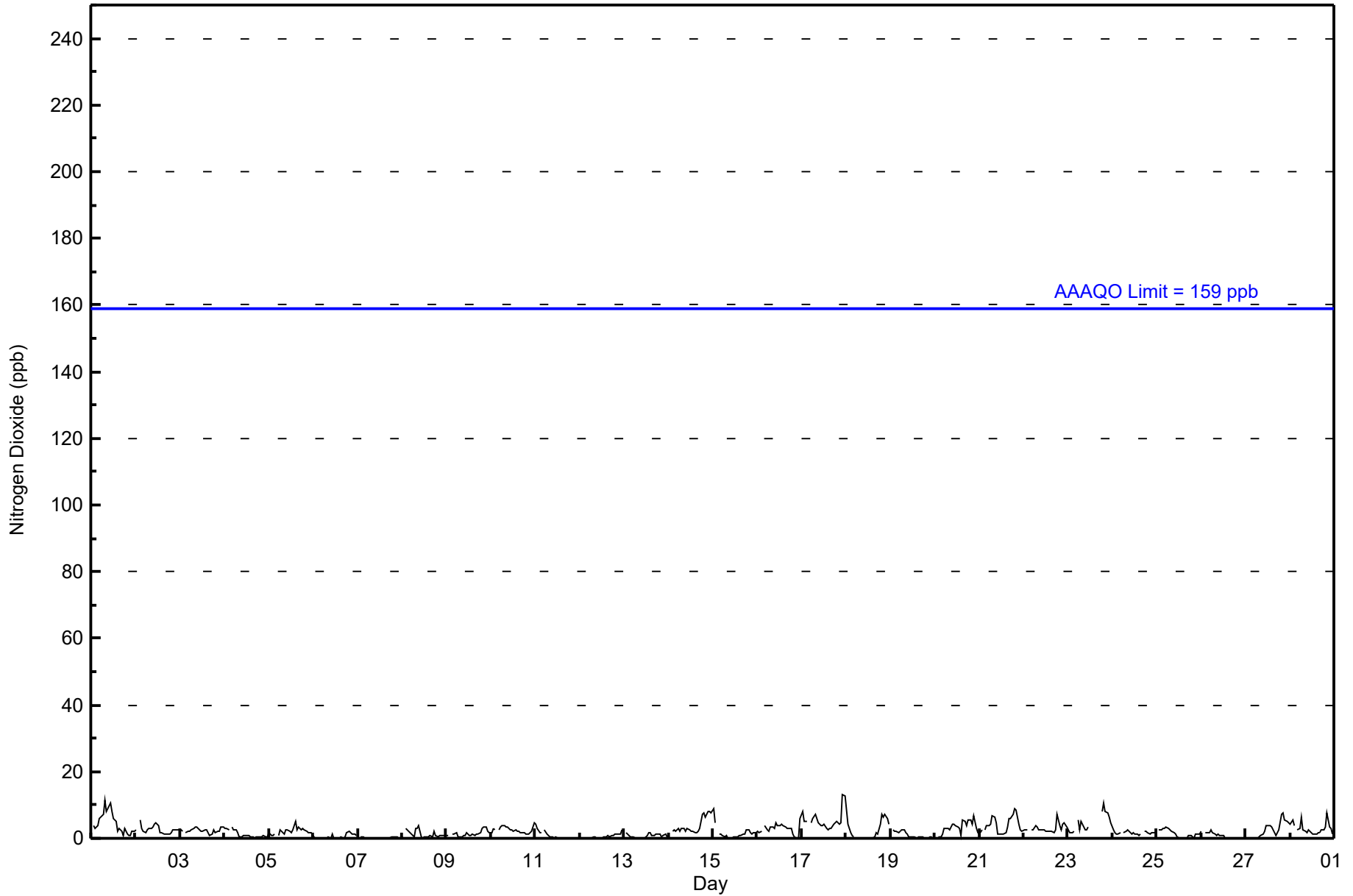
**Nitrogen Dioxide (NO<sub>2</sub>) - ppb**  
**Janvier - February 2023**

| Number of Exceedences (AAAQO):   |                               | 1-hr: 0  | 24-hr: 0 | Hours in Service: 672 |     |     |     |      |     |     |      |     |     |     |     |     |     |     |                                |      | 672 |     |      |                 |               |               |
|--|-------------------------------|--|----------|-----------------------|-----|-----|-----|------|-----|-----|------|-----|-----|-----|-----|-----|-----|-----|--------------------------------|------|-----|-----|------|-----------------|---------------|---------------|
| Maximum Value: 13.0 ppb on Feb 17 23:00  |                               | Maximum Daily Average: 5.3 ppb on Feb 17   |          |                       |     |     |     |      |     |     |      |     |     |     |     |     |     |     | Hours of Data: 637             |      |     |     |      |                 |               |               |
| Minimum Value: 0.0 ppb on Feb 6 02:00  |                               | Minimum Daily Average: 0.2 ppb on Feb 7  |          |                       |     |     |     |      |     |     |      |     |     |     |     |     |     |     | Hours of Missing Data: 35      |      |     |     |      |                 |               |               |
| Maximum Diurnal Average: 3.0 ppb at hour 20  |                               | Minimum Diurnal Average: 1.4 ppb at hour 15  |          |                       |     |     |     |      |     |     |      |     |     |     |     |     |     |     | Hours of Calibration: 34       |      |     |     |      |                 |               |               |
| Monthly Average: 2.18 ppb  |                               | Percentiles: P <sub>1</sub> = 0.0 P <sub>10</sub> = 0.1 Q <sub>1</sub> = 0.6 Median = 1.8 Q <sub>3</sub> = 2.9 P <sub>90</sub> = 4.8 P <sub>99</sub> = 9.0 |          |                       |     |     |     |      |     |     |      |     |     |     |     |     |     |     | Percent Operational Time: 99.9 |      |     |     |      |                 |               |               |
| Day  | Hourly Period Ending At (MST) |  |          |                       |     |     |     |      |     |     |      |     |     |     |     |     |     |     |                                |      |     |     |      |                 | Daily Average | Daily Maximum |
|  | 1                             | 2  | 3        | 4                     | 5   | 6   | 7   | 8    | 9   | 10  | 11   | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19                             | 20   | 21  | 22  | 23   | 24              |               |               |
| 1-Feb  | Z                             | 3.8  | 2.9      | 3.8                   | 6.0 | 6.5 | 7.1 | 11.3 | 8.0 | 9.1 | 10.4 | 8.2 | 6.0 | 4.9 | 2.1 | 3.0 | 2.1 | 0.9 | 3.0                            | 1.4  | 0.8 | 0.9 | 2.1  | 2.0             | 4.6           | 11.3          |
| 2-Feb  | 2.4                           | Z  | 5.3      | 2.9                   | 2.2 | 1.6 | 2.6 | 2.9  | 2.9 | 3.2 | 4.1  | 4.6 | 4.0 | 1.7 | 1.6 | 1.4 | 1.3 | 1.3 | 1.2                            | 1.8  | 2.7 | 2.7 | 2.4  | 2.6             | 2.6           | 5.3           |
| 3-Feb  | 2.6                           | 2.3  | Z        | 1.9                   | 2.0 | 2.2 | 2.5 | 3.0  | 3.5 | 3.3 | 2.5  | 2.3 | 2.3 | 2.5 | 1.9 | 1.0 | 1.4 | 2.5 | 1.9                            | 2.1  | 2.1 | 3.6 | 3.3  | 2.4             | 3.6           |               |
| 4-Feb  | 3.1                           | 2.8  | 2.5      | Z                     | 3.2 | 2.5 | 2.7 | 1.7  | 0.4 | 0.6 | 0.8  | 0.9 | 0.8 | 0.7 | 0.4 | 0.3 | 0.2 | 0.4 | 0.4                            | 0.5  | 0.4 | 0.9 | 0.3  | 0.3             | 1.2           | 3.2           |
| 5-Feb  | 1.6                           | 0.9  | 0.8      | 1.1                   | Z   | 1.0 | 2.4 | 1.5  | 1.2 | 2.7 | 2.5  | 2.0 | 1.8 | 2.7 | 5.2 | 2.7 | 3.3 | 2.5 | 3.1                            | 2.7  | 2.2 | 1.8 | 1.6  | 1.6             | 2.1           | 5.2           |
| 6-Feb  | 0.4                           | 0.0  | 0.0      | 0.0                   | 0.0 | Z   | 0.0 | 0.0  | 0.5 | 0.0 | 1.4  | 0.0 | 0.0 | 0.0 | 0.1 | 0.3 | 0.1 | 0.3 | 1.9                            | 2.1  | 1.5 | 1.1 | 1.1  | 0.7             | 0.5           | 2.1           |
| 7-Feb  | Z                             | 0.6  | 0.4      | 0.5                   | 0.2 | 0.1 | 0.0 | 0.0  | 0.0 | 0.0 | 0.0  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.3                            | 0.3  | 0.5 | 0.5 | 0.2  | 0.2             | 0.2           | 0.6           |
| 8-Feb  | 0.3                           | Z  | 2.9      | 2.2                   | 1.5 | 1.4 | 0.5 | 3.1  | 2.8 | 3.7 | 0.6  | 0.2 | 0.4 | 0.4 | 0.3 | 0.8 | 0.4 | 2.1 | 1.0                            | 0.6  | 0.8 | 0.8 | 0.9  | 0.8             | 1.2           | 3.7           |
| 9-Feb  | 1.0                           | 1.0  | Z        | 1.2                   | 1.3 | 1.6 | 0.6 | 0.5  | 0.5 | 0.8 | 0.9  | 1.8 | 0.8 | 0.7 | 1.2 | 0.7 | 1.1 | 1.1 | 1.5                            | 2.8  | 3.3 | 3.5 | 2.2  | 1.6             | 1.4           | 3.5           |
| 10-Feb   | 1.5                           | 2.9  | 2.6      | Z                     | 2.6 | 3.3 | 3.8 | 3.9  | 3.3 | 3.2 | 2.6  | 2.4 | 2.2 | 2.4 | 2.3 | 2.1 | 1.7 | 1.7 | 1.7                            | 1.3  | 1.4 | 1.7 | 2.0  | 4.5             | 2.5           | 4.5           |
| 11-Feb   | 4.4                           | 3.1  | 1.6      | 1.8                   | Z   | 2.5 | 1.2 | 0.7  | 0.4 | 0.6 | 0.1  | 0.3 | 0.2 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.0                            | 0.0  | 0.0 | 0.0 | 0.0  | 0.0             | 0.8           | 4.4           |
| 12-Feb   | 0.0                           | 0.0  | 0.0      | 0.0                   | 0.0 | Z   | 0.1 | 0.3  | 0.4 | 0.0 | 0.0  | 0.2 | 0.1 | 0.3 | 0.6 | 0.9 | 0.4 | 0.7 | 0.8                            | 1.1  | 1.1 | 1.2 | 1.2  | 2.6             | 0.5           | 2.6           |
| 13-Feb   | Z                             | 1.7  | 1.2      | 0.6                   | 0.5 | 0.4 | 0.0 | 0.0  | 0.0 | 0.0 | 0.0  | 0.0 | 1.0 | 1.8 | 1.7 | 0.8 | 0.8 | 1.1 | 1.4                            | 1.1  | 0.6 | 0.7 | 1.4  | 0.6             | 0.8           | 1.8           |
| 14-Feb   | 0.5                           | Z  | 2.2      | 2.6                   | 2.3 | 3.1 | 2.2 | 3.0  | 3.0 | 2.1 | 3.1  | 2.4 | 2.1 | 2.0 | 1.5 | 1.8 | 2.0 | 2.9 | 7.2                            | 7.7  | 6.5 | 8.2 | 8.2  | 7.8             | 3.7           | 8.2           |
| 15-Feb   | 9.1                           | 4.7  | Z        | 1.3                   | 1.4 | 0.8 | 0.5 | 0.7  | 0.1 | 0.0 | 0.1  | 0.4 | 0.6 | 0.6 | 0.8 | 0.8 | 1.3 | 1.2 | 2.7                            | 2.5  | 1.8 | 1.4 | 1.8  | 1.5             | 1.6           | 9.1           |
| 16-Feb   | 2.0                           | 1.9  | 2.2      | Z                     | 3.8 | 2.6 | 2.3 | 3.3  | 3.5 | 3.1 | 4.8  | 3.9 | 3.7 | 4.3 | 3.9 | 3.4 | 3.0 | 3.0 | 2.9                            | 1.2  | 0.3 | 0.2 | 0.1  | 5.9             | 2.8           | 5.9           |
| 17-Feb   | 7.9                           | 5.0  | 5.0      | 5.0                   | Z   | 4.6 | 6.0 | 7.3  | 5.9 | 4.5 | 3.9  | 3.7 | 4.1 | 3.0 | 2.6 | 2.9 | 3.1 | 4.1 | 4.6                            | 4.9  | 4.3 | 4.6 | 13.0 | 12.7            | 5.3           | 13.0          |
| 18-Feb   | 8.3                           | 4.1  | 1.9      | 0.8                   | 0.3 | Z   | 0.1 | 0.0  | 0.0 | 0.0 | 0.0  | 0.1 | 0.2 | 0.1 | 0.1 | 0.5 | 1.6 | 1.4 | 4.1                            | 7.0  | 6.4 | 7.1 | 6.0  | 4.3             | 2.4           | 8.3           |
| 19-Feb   | Z                             | 2.4  | 2.3      | 2.3                   | 1.9 | 2.1 | 2.7 | 2.4  | 1.9 | 1.1 | 0.5  | 0.4 | 0.3 | 0.3 | 0.2 | 0.4 | 0.3 | 0.3 | 0.2                            | 0.2  | 0.2 | 0.4 | 0.4  | 0.1             | 1.0           | 2.7           |
| 20-Feb   | 0.1                           | Z  | 0.3      | 0.3                   | 1.2 | 2.9 | 2.9 | 2.8  | 2.7 | 4.3 | 4.3  | 3.8 | 3.4 | 3.1 | 0.9 | 5.5 | 5.1 | 4.0 | 5.5                            | 5.6  | 4.4 | 6.7 | 3.1  | 1.9             | 3.3           | 6.7           |
| 21-Feb   | 1.4                           | 2.5  | Z        | 2.6                   | 3.9 | 4.0 | 4.2 | 6.8  | 6.5 | 4.6 | 1.2  | 1.4 | 1.3 | 1.2 | 1.7 | 3.4 | 5.8 | 5.9 | 7.2                            | 8.8  | 8.5 | 4.1 | 2.5  | 2.0             | 4.0           | 8.8           |
| 22-Feb   | 2.4                           | 2.4  | 2.5      | Z                     | 2.5 | 2.5 | 3.9 | 3.2  | 2.6 | 2.5 | 2.4  | 2.4 | 2.1 | 2.3 | 2.3 | 2.1 | 1.5 | 2.5 | 7.3                            | 4.0  | 2.4 | 4.2 | 4.8  | 3.6             | 3.0           | 7.3           |
| 23-Feb   | 2.5                           | 1.9  | 1.8      | 2.1                   | Z   | 5.4 | 2.6 | 4.9  | 3.5 | 2.4 | 2.4  | 3.3 | C   | C   | C   | C   | C   | C   | 8.1                            | 10.5 | 8.1 | 7.6 | 6.5  | 4.8             | --            | 10.5          |
| 24-Feb   | 2.5                           | 1.6  | 1.4      | 1.2                   | 1.6 | Z   | 1.8 | 2.0  | 2.6 | 2.0 | 1.3  | 1.5 | 1.2 | 1.2 | 1.0 | 1.2 | M   | 2.0 | 2.1                            | 1.5  | 1.4 | 1.7 | 1.8  | 1.8             | 1.7           | 2.6           |
| 25-Feb   | Z                             | 2.6  | 2.7      | 2.9                   | 3.1 | 3.2 | 2.9 | 2.6  | 2.1 | 1.8 | 1.1  | 0.4 | 0.2 | 0.1 | 0.2 | 0.1 | 0.1 | 0.7 | 0.9                            | 0.4  | 0.2 | 1.3 | 1.1  | 1.1             | 1.4           | 3.2           |
| 26-Feb   | 2.0                           | Z  | 1.6      | 1.7                   | 1.5 | 2.5 | 1.8 | 1.2  | 0.8 | 1.3 | 0.9  | 0.7 | 0.7 | 0.1 | 0.1 | 0.0 | 0.2 | 0.2 | 0.0                            | 0.1  | 0.0 | 0.0 | 0.0  | 0.0             | 0.8           | 2.5           |
| 27-Feb   | 0.0                           | 0.0  | Z        | 0.0                   | 0.0 | 0.0 | 0.1 | 0.4  | 0.7 | 1.2 | 2.3  | 3.7 | 4.0 | 3.9 | 3.5 | 2.4 | 1.0 | 1.8 | 2.6                            | 7.2  | 7.5 | 5.5 | 4.9  | 4.5             | 2.5           | 7.5           |
| 28-Feb   | 4.3                           | 5.6  | 3.7      | Z                     | 2.6 | 3.1 | 6.5 | 2.4  | 2.0 | 1.9 | 2.4  | 1.6 | 1.3 | 1.2 | 1.4 | 1.6 | 1.8 | 2.7 | 2.7                            | 3.4  | 7.8 | 3.6 | 2.8  | 1.4             | 2.9           | 7.8           |
| 2.6 2.3 2.1 1.7 1.9 2.5 2.3 2.6 2.2 2.1 2.0 1.9 1.7 1.5 1.4 1.5 1.5 1.7 2.7 3.0 2.8 2.7 2.7 2.7      |                               |  |          |                       |     |     |     |      |     |     |      |     |     |     |     |     |     |     |                                |      |     |     |      | Diurnal Average |               |               |
| 9.1 5.6 5.3 5.0 6.0 6.5 7.1 11.3 8.0 9.1 10.4 8.2 6.0 4.9 5.2 5.5 5.8 5.9 8.1 10.5 8.5 8.2 13.0 12.7 |                               |  |          |                       |     |     |     |      |     |     |      |     |     |     |     |     |     |     |                                |      |     |     |      | Diurnal Maximum |               |               |
| Z - zerspan C - Calibration M - Maintenance  |                               |  |          |                       |     |     |     |      |     |     |      |     |     |     |     |     |     |     |                                |      |     |     |      |                 |               |               |
| Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 159 ppb   |                               |  |          |                       |     |     |     |      |     |     |      |     |     |     |     |     |     |     |                                |      |     |     |      |                 |               |               |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Nitrogen Dioxide (NO<sub>2</sub>) - ppb**  
**Janvier - February 2023**





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Nitrogen Dioxide (NO<sub>2</sub>) - ppb  
Janvier - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 20                            | 637                    | 100.00   | 100.00              |
| 21 - 40                           | 0                      | 0.00     | 100.00              |
| 41 - 80                           | 0                      | 0.00     | 100.00              |
| 81 - 159                          | 0                      | 0.00     | 100.00              |
| > 159                             | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 637

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Nitrogen Dioxide (NO<sub>2</sub>) - ppb  
Janvier - February 2023**

| <b>Concentration<br/>Ranges (ppb)</b> | <b>Wind Direction</b> |     |    |     |   |     |    |     |    |     |    |     |    |     |    |     | <b>Totals</b> |
|---------------------------------------|-----------------------|-----|----|-----|---|-----|----|-----|----|-----|----|-----|----|-----|----|-----|---------------|
|                                       | N                     | NNE | NE | ENE | E | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |               |
| 0 - 20                                | 55                    | 122 | 43 | 17  | 8 | 5   | 8  | 18  | 40 | 113 | 94 | 37  | 21 | 19  | 17 | 18  | 635           |
| 21 - 40                               | 0                     | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| 11 - 80                               | 0                     | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| 81 - 159                              | 0                     | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| > 159                                 | 0                     | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| <b>Totals</b>                         | 55                    | 122 | 43 | 17  | 8 | 5   | 8  | 18  | 40 | 113 | 94 | 37  | 21 | 19  | 17 | 18  | 635           |

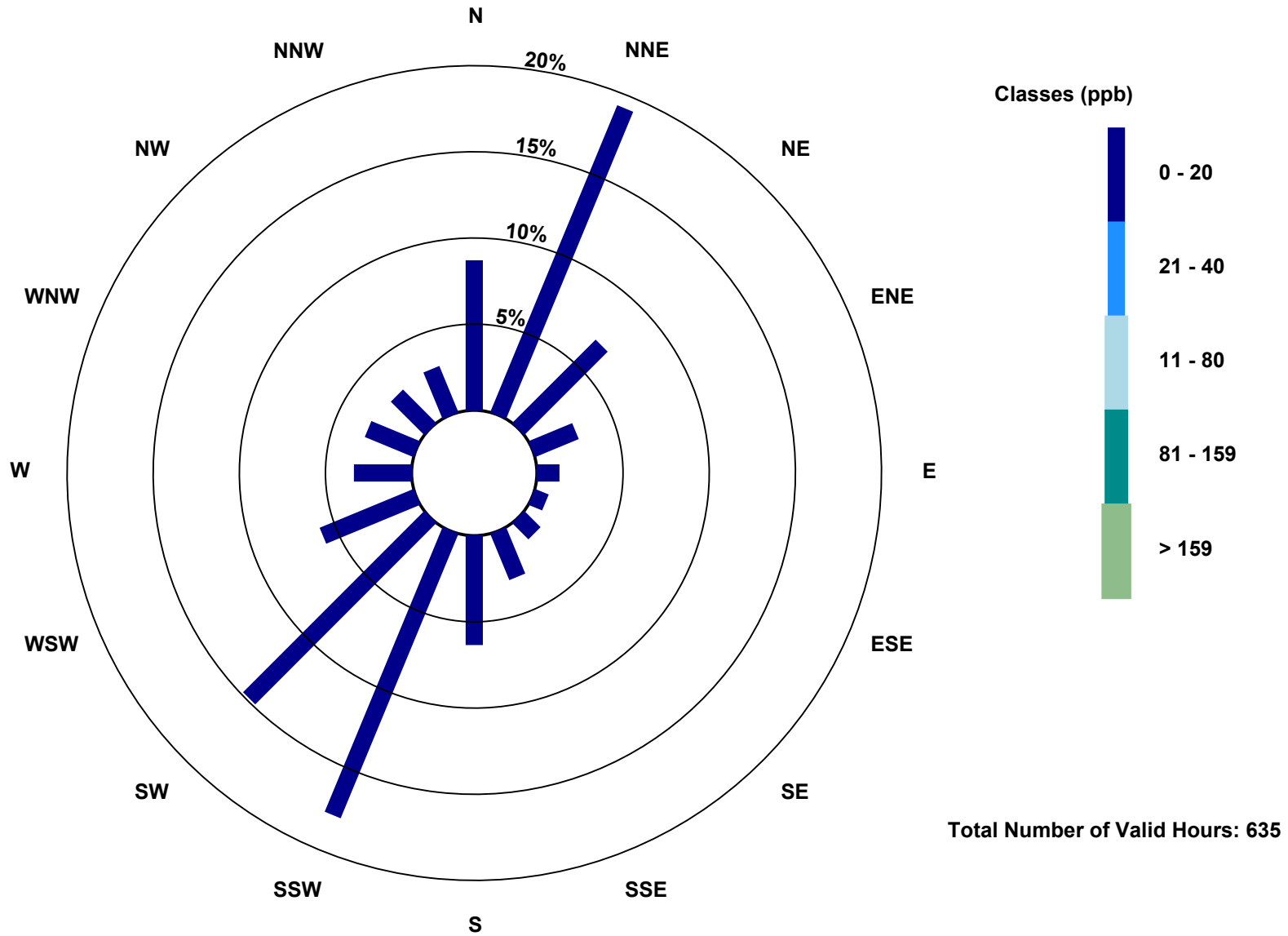
Total Number of Valid Hours: 635

Total Number of Hours: 672

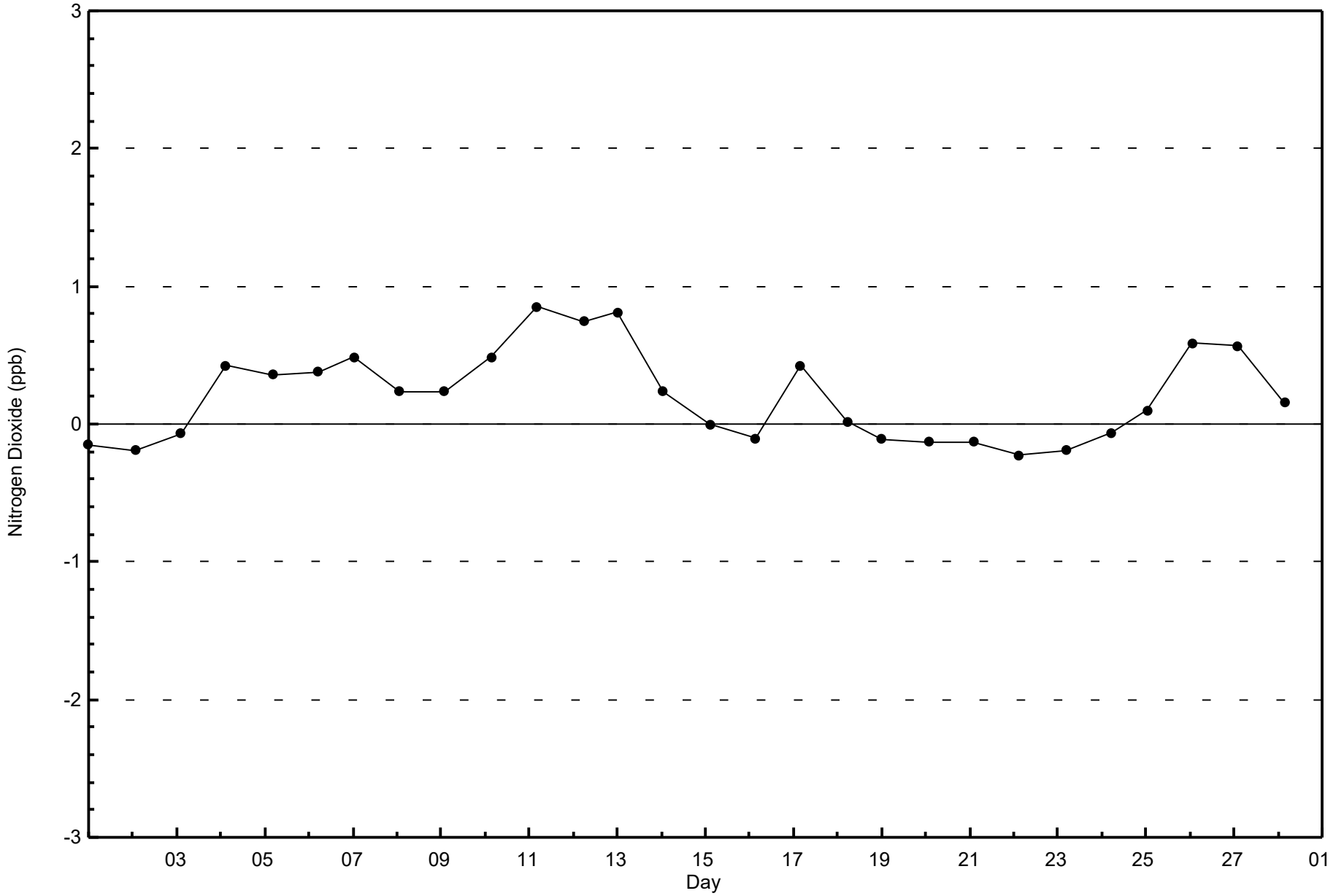


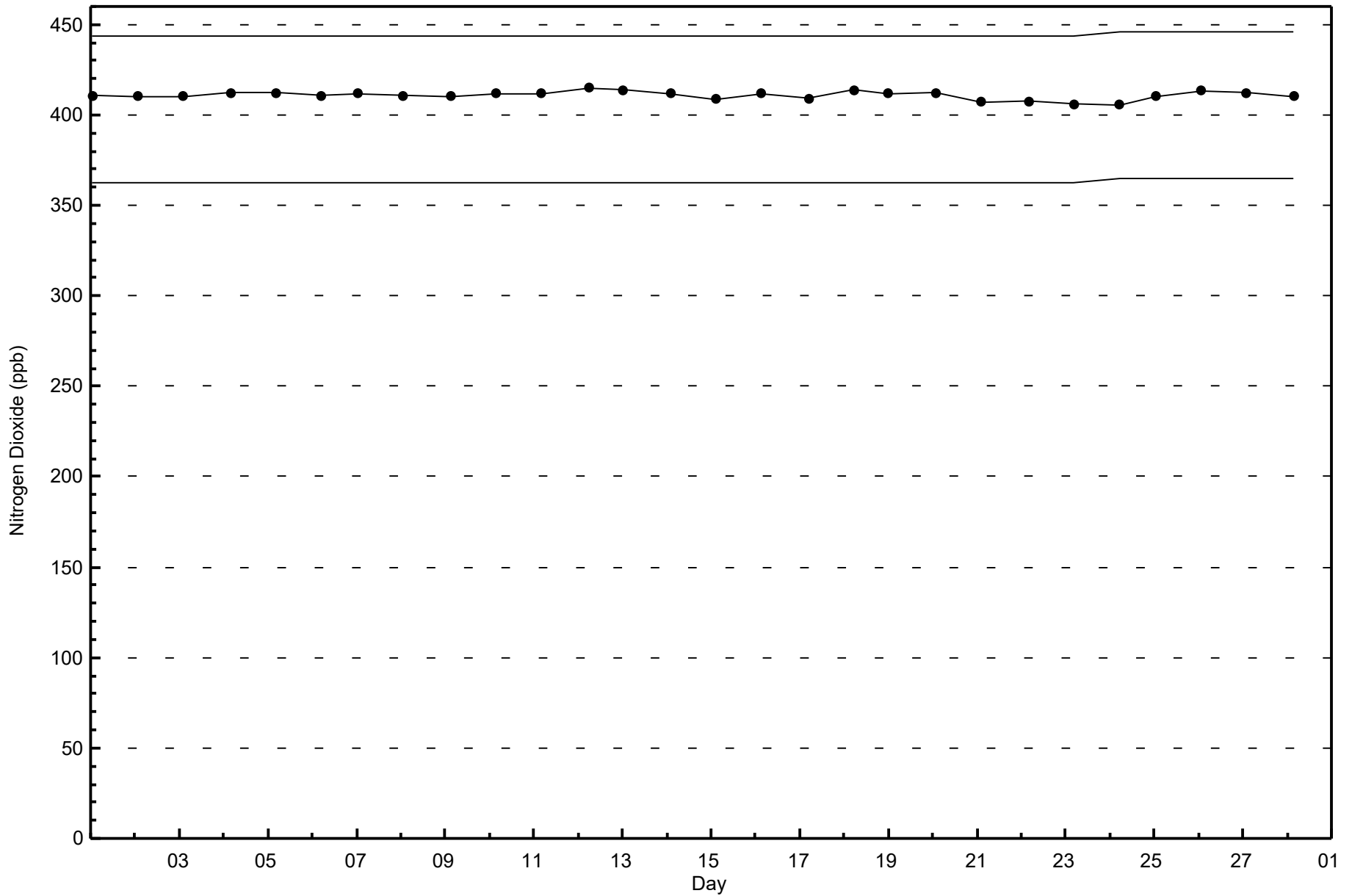
Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Nitrogen Dioxide (NO<sub>2</sub>) - ppb  
Janvier











**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

**Nitrogen Oxides (NO<sub>x</sub>) - ppb**  
**Janvier - February 2023**

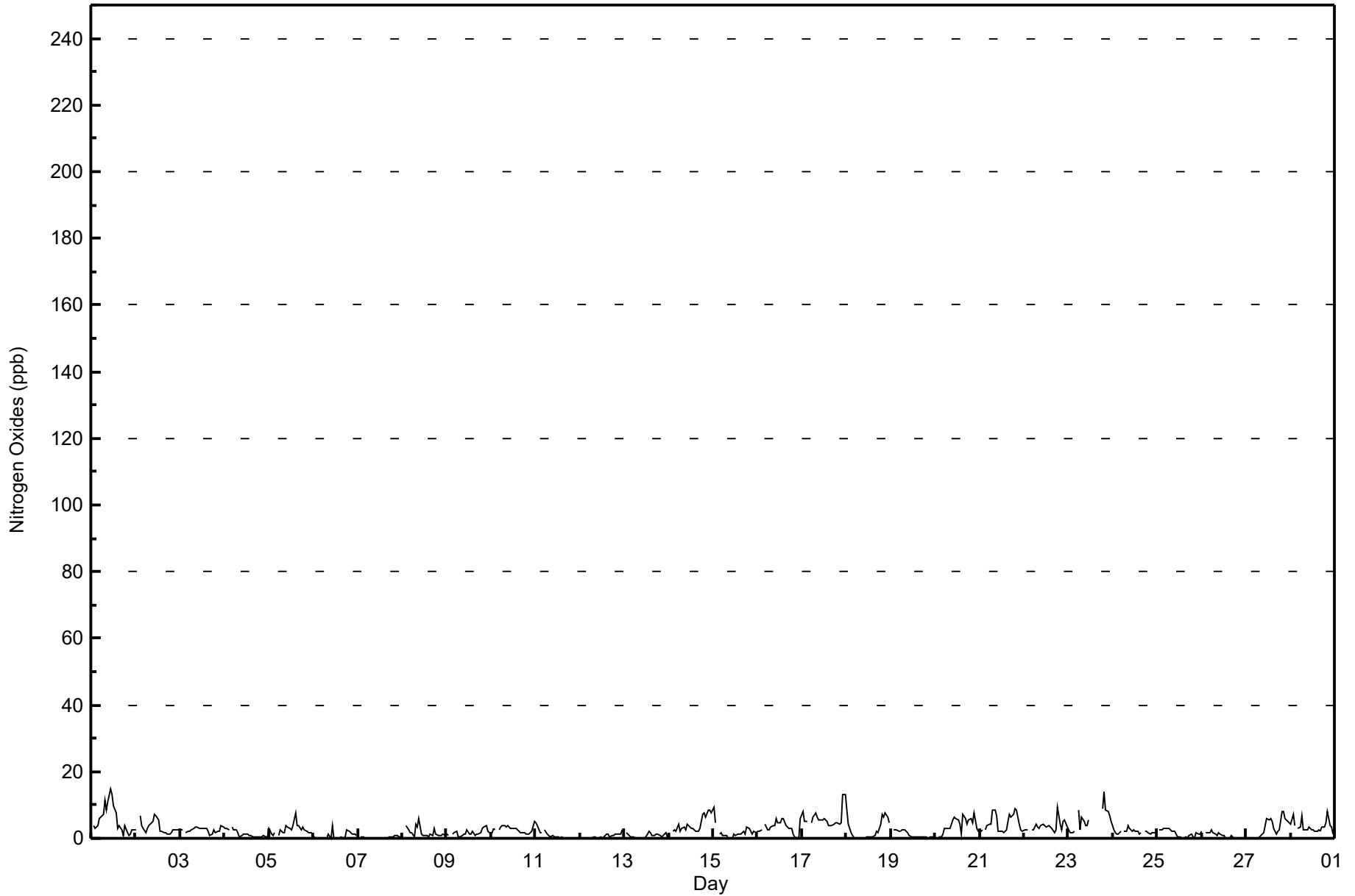
| Maximum Value: 15.0 ppb on Feb 1 11:00      |                               | Maximum Daily Average: 5.9 ppb on Feb 17  |     | Hours in Service: 672          |     |     |     |      |     |      |      |      |     |     |     |     |     |     |     |      |     |     |      |                 |               |               |
|---|-------------------------------|---|-----|--------------------------------|-----|-----|-----|------|-----|------|------|------|-----|-----|-----|-----|-----|-----|-----|------|-----|-----|------|-----------------|---------------|---------------|
| Minimum Value: 0.0 ppb on Feb 6 02:00       |                               | Minimum Daily Average: 0.2 ppb on Feb 7   |     | Hours of Data: 637             |     |     |     |      |     |      |      |      |     |     |     |     |     |     |     |      |     |     |      |                 |               |               |
| Maximum Diurnal Average: 3.3 ppb at hour 20 |                               | Minimum Diurnal Average: 1.8 ppb at hour 4  |     | Hours of Missing Data: 35      |     |     |     |      |     |      |      |      |     |     |     |     |     |     |     |      |     |     |      |                 |               |               |
| Monthly Average: 2.54 ppb                   |                               | Percentiles: P <sub>1</sub> = 0.0 P <sub>10</sub> = 0.2 Q <sub>1</sub> = 0.7 Median = 2.0 Q <sub>3</sub> = 3.5 P <sub>90</sub> = 5.9 P <sub>99</sub> = 10.5 |     | Hours of Calibration: 34       |     |     |     |      |     |      |      |      |     |     |     |     |     |     |     |      |     |     |      |                 |               |               |
|   |                               |   |     | Percent Operational Time: 99.9 |     |     |     |      |     |      |      |      |     |     |     |     |     |     |     |      |     |     |      |                 |               |               |
| Day   | Hourly Period Ending At (MST) |   |     |                                |     |     |     |      |     |      |      |      |     |     |     |     |     |     |     |      |     |     |      |                 | Daily Average | Daily Maximum |
|   | 1                             | 2   | 3   | 4                              | 5   | 6   | 7   | 8    | 9   | 10   | 11   | 12   | 13  | 14  | 15  | 16  | 17  | 18  | 19  | 20   | 21  | 22  | 23   | 24              |               |               |
| 1-Feb                                       | Z                             | 3.9   | 3.0 | 3.9                            | 6.1 | 6.6 | 7.2 | 11.4 | 8.3 | 10.9 | 15.0 | 12.9 | 9.7 | 7.7 | 2.9 | 3.8 | 2.4 | 1.1 | 3.7 | 1.9  | 1.0 | 1.1 | 2.5  | 2.4             | 5.6           | 15.0          |
| 2-Feb                                       | 2.6                           | Z   | 6.7 | 3.7                            | 2.8 | 1.8 | 3.0 | 3.7  | 4.7 | 5.3  | 7.0  | 6.7  | 5.5 | 2.2 | 2.1 | 1.6 | 1.5 | 1.4 | 1.2 | 1.8  | 2.7 | 2.7 | 2.4  | 2.6             | 3.3           | 7.0           |
| 3-Feb                                       | 2.6                           | 2.3   | Z   | 1.9                            | 2.0 | 2.2 | 2.5 | 3.0  | 3.5 | 3.4  | 2.8  | 2.9  | 2.8 | 2.8 | 2.0 | 1.0 | 1.4 | 2.5 | 1.9 | 2.1  | 2.2 | 3.7 | 3.3  | 2.5             | 3.7           |               |
| 4-Feb                                       | 3.1                           | 2.8   | 2.5 | Z                              | 3.3 | 2.6 | 2.7 | 1.7  | 0.5 | 0.7  | 1.1  | 1.3  | 1.2 | 1.0 | 0.6 | 0.5 | 0.3 | 0.4 | 0.4 | 0.5  | 0.4 | 0.9 | 0.3  | 0.3             | 1.3           | 3.3           |
| 5-Feb                                       | 3.1                           | 1.2   | 0.9 | 1.5                            | Z   | 1.0 | 2.5 | 1.8  | 1.6 | 3.6  | 3.3  | 2.9  | 2.6 | 3.7 | 7.8 | 3.7 | 3.9 | 2.6 | 3.2 | 2.7  | 2.2 | 1.8 | 1.6  | 1.6             | 2.6           | 7.8           |
| 6-Feb                                       | 0.4                           | 0.0   | 0.0 | 0.0                            | 0.0 | Z   | 0.0 | 0.1  | 1.1 | 0.2  | 3.9  | 0.2  | 0.2 | 0.2 | 0.2 | 0.4 | 0.1 | 0.4 | 2.4 | 2.3  | 1.5 | 1.1 | 1.2  | 0.7             | 0.7           | 3.9           |
| 7-Feb                                       | Z                             | 0.6   | 0.4 | 0.5                            | 0.2 | 0.1 | 0.0 | 0.0  | 0.0 | 0.1  | 0.1  | 0.1  | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.4 | 0.5  | 0.7 | 0.7 | 0.3  | 0.3             | 0.2           | 0.7           |
| 8-Feb                                       | 0.4                           | Z   | 3.9 | 2.5                            | 1.7 | 1.9 | 0.6 | 4.0  | 3.6 | 5.8  | 1.2  | 0.6  | 0.7 | 0.7 | 0.5 | 1.4 | 0.6 | 2.9 | 1.2 | 0.7  | 1.0 | 1.0 | 1.1  | 0.9             | 1.7           | 5.8           |
| 9-Feb                                       | 1.1                           | 1.0   | Z   | 1.5                            | 1.5 | 1.9 | 0.6 | 0.5  | 0.7 | 1.2  | 1.4  | 2.6  | 1.2 | 1.2 | 1.9 | 1.0 | 1.3 | 1.3 | 1.6 | 2.8  | 3.4 | 3.6 | 2.2  | 1.8             | 1.6           | 3.6           |
| 10-Feb                                      | 1.6                           | 3.1   | 2.7 | Z                              | 2.6 | 3.4 | 3.9 | 4.0  | 3.4 | 3.7  | 3.0  | 2.9  | 2.8 | 2.9 | 2.7 | 2.2 | 1.7 | 1.7 | 1.7 | 1.3  | 1.4 | 1.8 | 2.1  | 4.9             | 2.7           | 4.9           |
| 11-Feb                                      | 4.9                           | 3.7   | 1.6 | 1.8                            | Z   | 2.7 | 1.2 | 0.7  | 0.5 | 0.9  | 0.2  | 0.5  | 0.3 | 0.2 | 0.2 | 0.1 | 0.2 | 0.2 | 0.0 | 0.0  | 0.0 | 0.1 | 0.0  | 0.0             | 0.9           | 4.9           |
| 12-Feb                                      | 0.0                           | 0.0   | 0.0 | 0.0                            | 0.0 | Z   | 0.1 | 0.3  | 0.4 | 0.1  | 0.1  | 0.4  | 0.2 | 0.6 | 1.1 | 1.2 | 0.4 | 0.7 | 0.8 | 1.1  | 1.2 | 1.2 | 1.2  | 2.6             | 0.6           | 2.6           |
| 13-Feb                                      | Z                             | 1.7   | 1.2 | 0.6                            | 0.5 | 0.4 | 0.0 | 0.0  | 0.0 | 0.0  | 0.0  | 0.0  | 1.1 | 2.1 | 1.8 | 0.8 | 0.8 | 1.1 | 1.4 | 1.1  | 0.6 | 0.7 | 1.5  | 0.6             | 0.8           | 2.1           |
| 14-Feb                                      | 0.5                           | Z   | 2.2 | 2.6                            | 2.3 | 4.2 | 2.2 | 3.0  | 3.3 | 2.6  | 4.3  | 3.3  | 2.9 | 2.9 | 1.9 | 2.1 | 2.2 | 2.9 | 7.2 | 7.8  | 6.5 | 8.4 | 8.4  | 7.8             | 4.0           | 8.4           |
| 15-Feb                                      | 9.1                           | 4.7   | Z   | 1.3                            | 1.7 | 0.9 | 0.6 | 1.1  | 0.2 | 0.1  | 0.2  | 1.1  | 1.1 | 1.1 | 1.3 | 1.2 | 2.2 | 1.4 | 3.2 | 3.1  | 2.1 | 1.5 | 2.1  | 1.6             | 1.9           | 9.1           |
| 16-Feb                                      | 2.1                           | 2.1   | 2.4 | Z                              | 4.3 | 2.7 | 2.4 | 3.4  | 4.0 | 3.7  | 6.1  | 4.7  | 4.5 | 5.9 | 6.1 | 3.9 | 3.2 | 3.1 | 3.0 | 1.2  | 0.3 | 0.2 | 0.2  | 6.1             | 3.3           | 6.1           |
| 17-Feb                                      | 7.9                           | 5.1   | 5.0 | 5.1                            | Z   | 4.7 | 6.2 | 7.7  | 6.4 | 5.6  | 5.6  | 5.3  | 6.0 | 5.1 | 3.9 | 3.8 | 3.6 | 4.2 | 4.6 | 4.9  | 4.3 | 4.7 | 13.1 | 13.1            | 5.9           | 13.1          |
| 18-Feb                                      | 8.3                           | 4.1   | 1.9 | 0.9                            | 0.3 | Z   | 0.1 | 0.0  | 0.1 | 0.0  | 0.0  | 0.2  | 0.4 | 0.3 | 0.2 | 0.8 | 2.0 | 1.7 | 4.3 | 7.2  | 6.5 | 7.7 | 6.2  | 4.5             | 2.5           | 8.3           |
| 19-Feb                                      | Z                             | 2.4   | 2.4 | 2.4                            | 2.0 | 2.1 | 2.7 | 2.5  | 2.1 | 1.5  | 0.9  | 0.6  | 0.5 | 0.5 | 0.3 | 0.5 | 0.3 | 0.3 | 0.2 | 0.2  | 0.2 | 0.4 | 0.4  | 0.2             | 1.1           | 2.7           |
| 20-Feb                                      | 0.1                           | Z   | 0.3 | 0.3                            | 1.2 | 3.0 | 2.9 | 3.0  | 3.0 | 5.5  | 6.3  | 5.9  | 5.3 | 4.2 | 1.2 | 7.1 | 5.9 | 4.2 | 5.7 | 6.0  | 4.7 | 7.5 | 3.2  | 2.0             | 3.9           | 7.5           |
| 21-Feb                                      | 1.5                           | 2.7   | Z   | 2.7                            | 4.0 | 4.1 | 4.4 | 8.5  | 8.4 | 6.7  | 1.9  | 2.3  | 2.2 | 1.9 | 2.6 | 5.0 | 7.2 | 6.3 | 7.2 | 8.8  | 8.6 | 4.2 | 2.6  | 2.1             | 4.6           | 8.8           |
| 22-Feb                                      | 2.5                           | 2.5   | 2.6 | Z                              | 2.6 | 2.5 | 4.4 | 3.6  | 3.1 | 3.6  | 4.1  | 3.8  | 3.5 | 3.7 | 3.4 | 2.8 | 1.7 | 2.7 | 9.3 | 4.3  | 2.4 | 5.3 | 5.6  | 3.6             | 3.6           | 9.3           |
| 23-Feb                                      | 2.5                           | 1.9   | 1.8 | 2.1                            | Z   | 8.6 | 2.7 | 6.5  | 5.3 | 3.8  | 4.0  | 5.6  | C   | C   | C   | C   | C   | C   | 8.8 | 14.2 | 8.7 | 8.1 | 7.0  | 5.0             | --            | 14.2          |
| 24-Feb                                      | 2.6                           | 1.6   | 1.4 | 1.3                            | 2.0 | Z   | 1.9 | 2.2  | 3.6 | 2.8  | 2.0  | 2.4  | 2.0 | 2.0 | 1.5 | 1.7 | M   | 2.0 | 2.1 | 1.5  | 1.4 | 1.7 | 1.8  | 1.8             | 2.0           | 3.6           |
| 25-Feb                                      | Z                             | 2.6   | 2.7 | 2.9                            | 3.1 | 3.2 | 2.9 | 2.6  | 2.2 | 2.1  | 1.4  | 0.5  | 0.3 | 0.2 | 0.2 | 0.2 | 0.1 | 0.7 | 1.1 | 0.4  | 0.2 | 1.8 | 1.1  | 1.2             | 1.5           | 3.2           |
| 26-Feb                                      | 2.3                           | Z   | 1.6 | 1.7                            | 1.5 | 2.5 | 1.8 | 1.2  | 0.9 | 1.5  | 1.2  | 0.8  | 0.8 | 0.2 | 0.1 | 0.0 | 0.7 | 0.2 | 0.0 | 0.1  | 0.0 | 0.0 | 0.0  | 0.0             | 0.8           | 2.5           |
| 27-Feb                                      | 0.0                           | 0.0   | Z   | 0.0                            | 0.0 | 0.0 | 0.1 | 0.4  | 0.7 | 1.6  | 3.7  | 5.7  | 5.6 | 6.0 | 4.9 | 3.0 | 1.2 | 1.9 | 2.6 | 8.2  | 8.0 | 5.9 | 5.0  | 4.6             | 3.0           | 8.2           |
| 28-Feb                                      | 4.4                           | 7.2   | 3.8 | Z                              | 2.8 | 3.2 | 6.9 | 2.6  | 2.4 | 2.7  | 3.6  | 2.6  | 2.4 | 2.2 | 2.2 | 2.4 | 2.3 | 3.2 | 3.2 | 4.6  | 8.1 | 3.6 | 3.2  | 1.4             | 3.5           | 8.1           |
|   |                               |   |     |                                |     |     |     |      |     |      |      |      |     |     |     |     |     |     |     |      |     |     |      | Diurnal Average |               |               |
|   |                               |   |     |                                |     |     |     |      |     |      |      |      |     |     |     |     |     |     |     |      |     |     |      | Diurnal Maximum |               |               |
|   |                               |   |     |                                |     |     |     |      |     |      |      |      |     |     |     |     |     |     |     |      |     |     |      | 2.8 9.1         |               |               |
|   |                               |   |     |                                |     |     |     |      |     |      |      |      |     |     |     |     |     |     |     |      |     |     |      | 2.5 7.2         |               |               |
|   |                               |   |     |                                |     |     |     |      |     |      |      |      |     |     |     |     |     |     |     |      |     |     |      | 2.2 6.7         |               |               |
|   |                               |   |     |                                |     |     |     |      |     |      |      |      |     |     |     |     |     |     |     |      |     |     |      | 1.8 5.1         |               |               |
|   |                               |   |     |                                |     |     |     |      |     |      |      |      |     |     |     |     |     |     |     |      |     |     |      | 2.0 6.1         |               |               |
|   |                               |   |     |                                |     |     |     |      |     |      |      |      |     |     |     |     |     |     |     |      |     |     |      | 2.8 8.6         |               |               |
|   |                               |   |     |                                |     |     |     |      |     |      |      |      |     |     |     |     |     |     |     |      |     |     |      | 2.4 7.2         |               |               |
|   |                               |   |     |                                |     |     |     |      |     |      |      |      |     |     |     |     |     |     |     |      |     |     |      | 2.8 11.4        |               |               |
|   |                               |   |     |                                |     |     |     |      |     |      |      |      |     |     |     |     |     |     |     |      |     |     |      | 2.6 8.4         |               |               |
|   |                               |   |     |                                |     |     |     |      |     |      |      |      |     |     |     |     |     |     |     |      |     |     |      | 2.9 10.9        |               |               |
|   |                               |   |     |                                |     |     |     |      |     |      |      |      |     |     |     |     |     |     |     |      |     |     |      | 3.0 15.0        |               |               |
|   |                               |   |     |                                |     |     |     |      |     |      |      |      |     |     |     |     |     |     |     |      |     |     |      | 2.8 12.9        |               |               |
|   |                               |   |     |                                |     |     |     |      |     |      |      |      |     |     |     |     |     |     |     |      |     |     |      | 2.4 9.7         |               |               |
|   |                               |   |     |                                |     |     |     |      |     |      |      |      |     |     |     |     |     |     |     |      |     |     |      | 2.3 7.7         |               |               |
|   |                               |   |     |                                |     |     |     |      |     |      |      |      |     |     |     |     |     |     |     |      |     |     |      | 2.0 7.8         |               |               |
|   |                               |   |     |                                |     |     |     |      |     |      |      |      |     |     |     |     |     |     |     |      |     |     |      | 2.0 7.1         |               |               |
|   |                               |   |     |                                |     |     |     |      |     |      |      |      |     |     |     |     |     |     |     |      |     |     |      | 1.8 7.2         |               |               |
|   |                               |   |     |                                |     |     |     |      |     |      |      |      |     |     |     |     |     |     |     |      |     |     |      | 1.9 6.3         |               |               |
|   |                               |   |     |                                |     |     |     |      |     |      |      |      |     |     |     |     |     |     |     |      |     |     |      | 3.0 9.3         |               |               |
|   |                               |   |     |                                |     |     |     |      |     |      |      |      |     |     |     |     |     |     |     |      |     |     |      | 2.9 8.7         |               |               |
|   |                               |   |     |                                |     |     |     |      |     |      |      |      |     |     |     |     |     |     |     |      |     |     |      | 2.9 8.4         |               |               |
|   |                               |   |     |                                |     |     |     |      |     |      |      |      |     |     |     |     |     |     |     |      |     |     |      | 2.8 13.1        |               |               |
|   |                               |   |     |                                |     |     |     |      |     |      |      |      |     |     |     |     |     |     |     |      |     |     |      | 2.8 13.1        |               |               |

Z - zerospan      C - Calibration      M - Maintenance



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Nitrogen Oxides (NO<sub>x</sub>) - ppb**  
**Janvier - February 2023**





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Nitrogen Oxides (NO<sub>x</sub>) - ppb  
Janvier - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 20                            | 637                    | 100.00   | 100.00              |
| 21 - 40                           | 0                      | 0.00     | 100.00              |
| 41 - 80                           | 0                      | 0.00     | 100.00              |
| 81 - 159                          | 0                      | 0.00     | 100.00              |
| > 159                             | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 637

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Nitrogen Oxides (NO<sub>x</sub>) - ppb  
Janvier - February 2023**

| <b>Concentration<br/>Ranges (ppb)</b> | <b>Wind Direction</b> |            |           |            |          |            |           |            |          |            |           |            |          |            |           |            | <b>Totals</b> |
|---------------------------------------|-----------------------|------------|-----------|------------|----------|------------|-----------|------------|----------|------------|-----------|------------|----------|------------|-----------|------------|---------------|
|                                       | <b>N</b>              | <b>NNE</b> | <b>NE</b> | <b>ENE</b> | <b>E</b> | <b>ESE</b> | <b>SE</b> | <b>SSE</b> | <b>S</b> | <b>SSW</b> | <b>SW</b> | <b>WSW</b> | <b>W</b> | <b>WNW</b> | <b>NW</b> | <b>NNW</b> |               |
| 0 - 20                                | 55                    | 122        | 43        | 17         | 8        | 5          | 8         | 18         | 40       | 113        | 94        | 37         | 21       | 19         | 17        | 18         | 635           |
| 21 - 40                               | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0             |
| 11 - 80                               | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0             |
| 81 - 159                              | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0             |
| > 159                                 | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0             |
| <b>Totals</b>                         | 55                    | 122        | 43        | 17         | 8        | 5          | 8         | 18         | 40       | 113        | 94        | 37         | 21       | 19         | 17        | 18         | 635           |

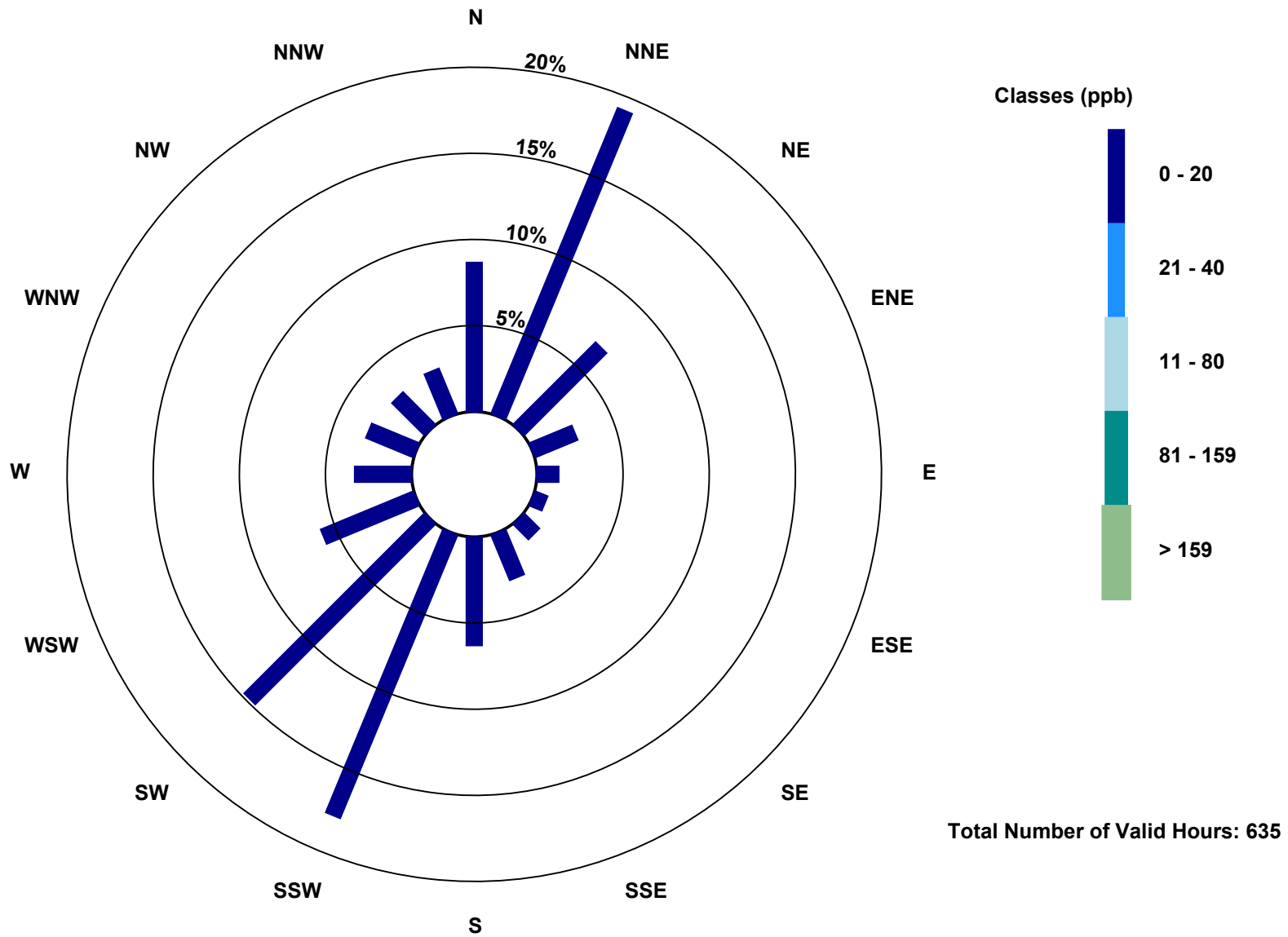
Total Number of Valid Hours: 635

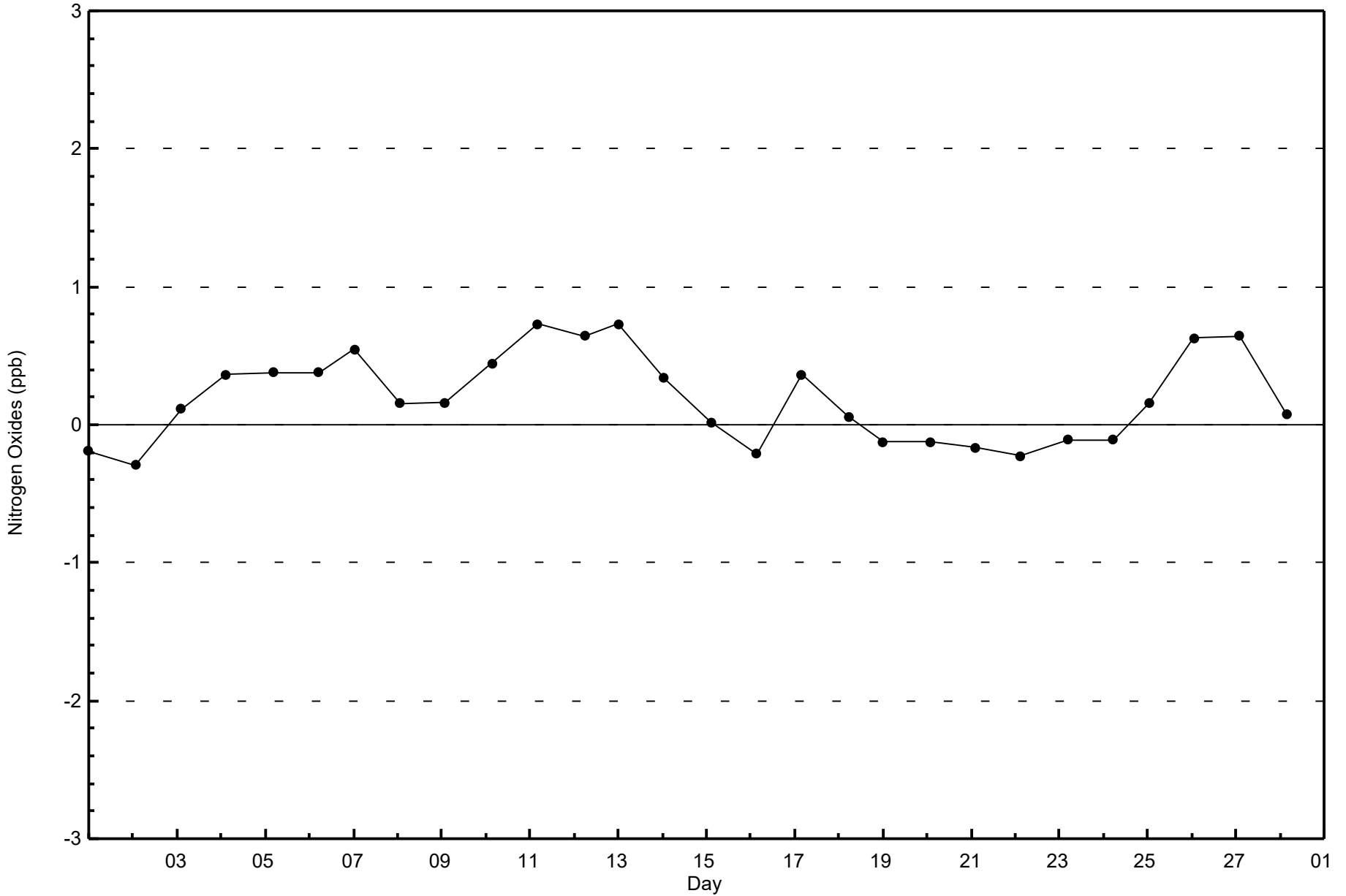
Total Number of Hours: 672



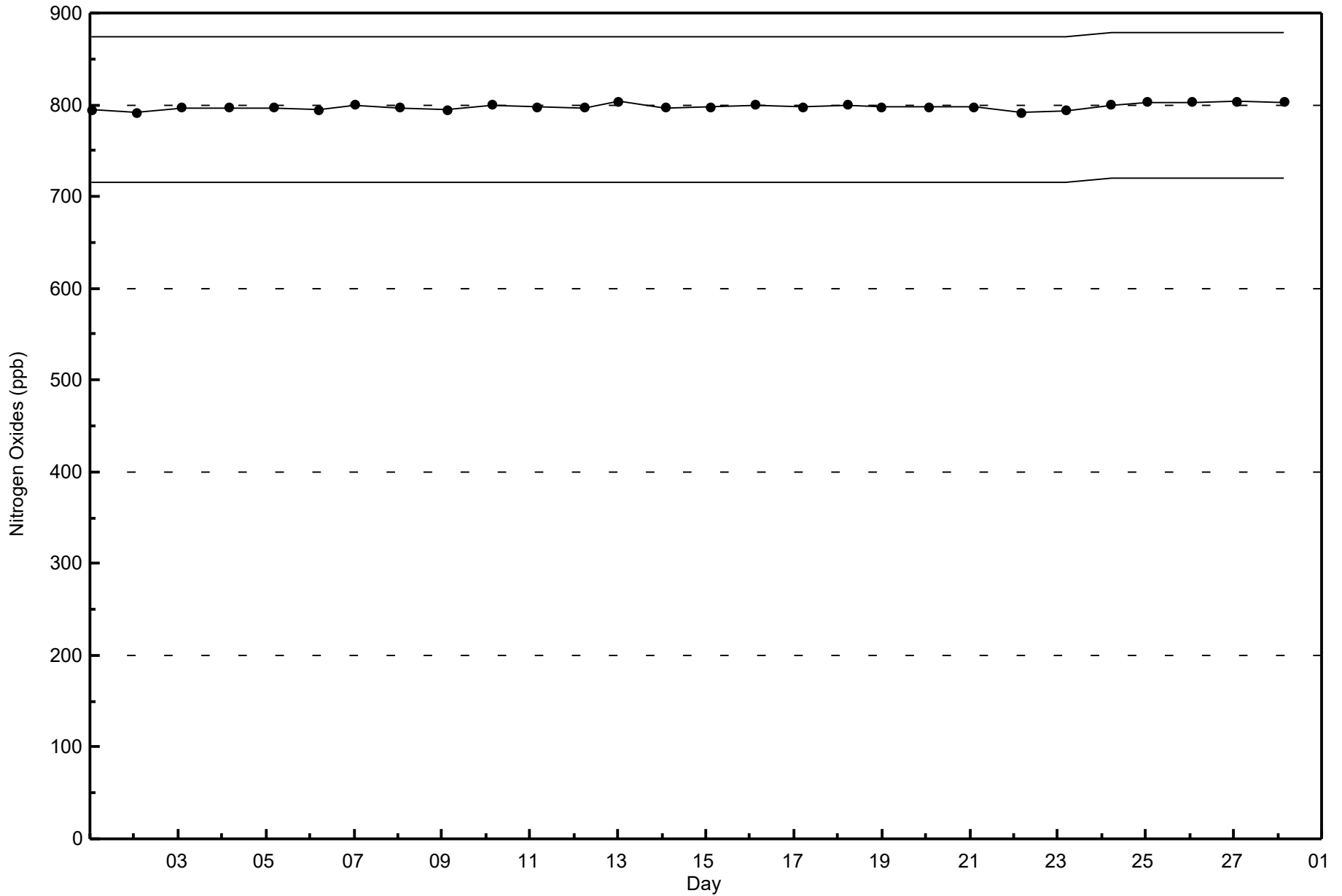
Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Nitrogen Oxides (NO<sub>x</sub>) - ppb  
Janvier











# Wood Buffalo Environmental Association

## Summary of Hour Averages

Ozone (O<sub>3</sub>) - ppb

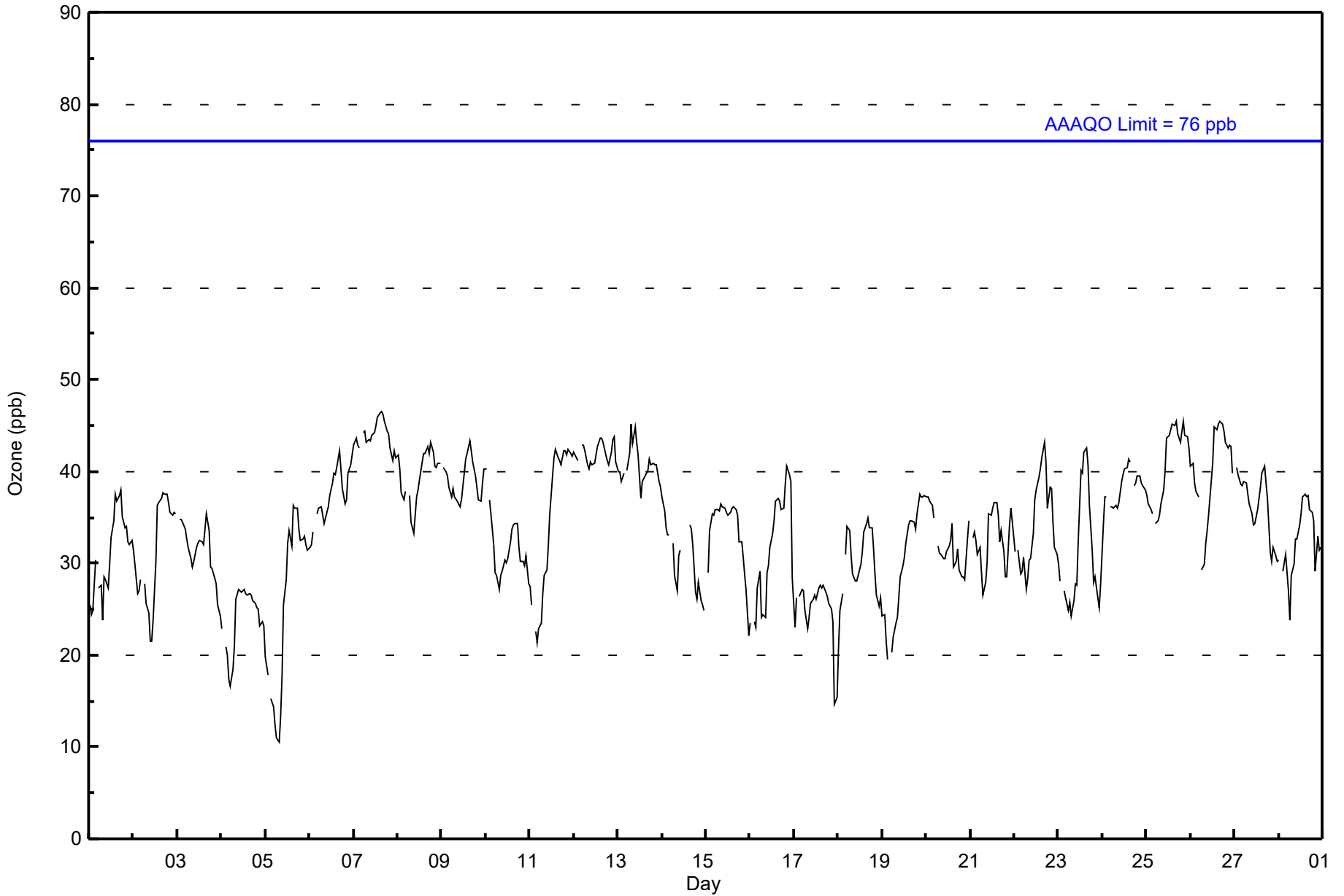
Janvier - February 2023

| Number of Exceedences (AAAQO):                                     |                               | 1-hr: 0   | 24-hr: 0 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                           |      | Hours in Service: | 672  |      |      |               |               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
|--|-------------------------------|---|----------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|---------------------------|------|-------------------|------|------|------|---------------|---------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----------------|--|
| Maximum Value: 46.5 ppb on Feb 7 16:00                             |                               | Maximum Daily Average: 43.9 ppb on Feb 7  |          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Hours of Data:            | 639  |                   |      |      |      |               |               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| Minimum Value: 10.5 ppb on Feb 5 08:00                             |                               | Minimum Daily Average: 23.9 ppb on Feb 4  |          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Hours of Missing Data:    | 33   |                   |      |      |      |               |               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| Maximum Diurnal Average: 38.0 ppb at hour 16                       |                               | Minimum Diurnal Average: 30.2 ppb at hour 8   |          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Hours of Calibration:     | 32   |                   |      |      |      |               |               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| Monthly Average: 33.91 ppb   |                               | Percentiles: P <sub>1</sub> = 15.3 P <sub>10</sub> = 25.4 Q <sub>1</sub> = 29.0 Median = 34.6 Q <sub>3</sub> = 39.1 P <sub>90</sub> = 42.3 P <sub>99</sub> = 45.4 |          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Percent Operational Time: | 99.9 |                   |      |      |      |               |               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| Day  | Hourly Period Ending At (MST) |   |          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                           |      |                   |      |      |      | Daily Average | Daily Maximum |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
|  | 1                             | 2   | 3        | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19                        | 20   | 21                | 22   | 23   | 24   |               |               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 1-Feb  | 25.5                          | 24.4  | 24.8     | 30.4 | Z    | 27.2 | 27.6 | 23.8 | 28.6 | 28.2 | 27.3 | 29.9 | 32.9 | 34.6 | 37.6 | 36.8 | 37.4 | 38.0 | 35.2                      | 33.9 | 34.0              | 32.3 | 32.0 | 32.5 | 31.1          | 38.0          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 2-Feb  | 31.4                          | 30.0  | 26.7     | 27.0 | 28.3 | Z    | 27.7 | 25.7 | 24.5 | 21.5 | 21.5 | 23.8 | 30.2 | 36.3 | 36.6 | 37.1 | 37.7 | 37.6 | 37.5                      | 36.6 | 35.6              | 35.3 | 35.5 | 35.4 | 31.3          | 37.7          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 3-Feb  | Z                             | 34.8  | 34.8     | 34.5 | 33.7 | 32.7 | 31.7 | 30.5 | 29.6 | 30.2 | 31.8 | 32.1 | 32.5 | 32.3 | 32.0 | 33.7 | 35.4 | 33.5 | 29.6                      | 29.4 | 28.4              | 27.8 | 25.5 | 24.3 | 31.3          | 35.4          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 4-Feb  | 22.9                          | Z   | 20.8     | 19.9 | 17.4 | 16.6 | 18.4 | 21.1 | 26.1 | 27.1 | 26.9 | 26.8 | 27.2 | 26.7 | 26.6 | 26.7 | 26.5 | 25.9 | 25.7                      | 25.1 | 25.1              | 23.2 | 23.7 | 23.1 | 23.9          | 27.2          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 5-Feb  | 19.8                          | 17.8  | Z        | 15.2 | 14.3 | 12.3 | 11.0 | 10.5 | 13.4 | 17.8 | 25.5 | 28.2 | 32.2 | 33.6 | 31.8 | 36.3 | 35.9 | 36.0 | 33.8                      | 32.6 | 32.6              | 32.9 | 32.1 | 31.4 | 25.5          | 36.3          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 6-Feb  | 31.7                          | 32.0  | 33.4     | Z    | 35.4 | 35.9 | 36.1 | 35.2 | 34.3 | 35.6 | 36.1 | 37.3 | 38.8 | 39.7 | 39.7 | 40.4 | 42.3 | 40.3 | 38.2                      | 36.4 | 36.9              | 39.8 | 40.8 | 41.9 | 37.3          | 42.3          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 7-Feb  | 42.9                          | 43.7  | 42.8     | 42.5 | Z    | 44.3 | 44.4 | 43.1 | 43.5 | 43.3 | 43.9 | 44.3 | 45.0 | 46.0 | 46.4 | 46.5 | 46.2 | 45.4 | 44.4                      | 44.0 | 42.6              | 41.2 | 42.3 | 41.4 | 43.9          | 46.5          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 8-Feb  | 41.8                          | 40.3  | 37.6     | 36.9 | 37.9 | Z    | 37.4 | 34.5 | 33.9 | 33.2 | 37.2 | 38.0 | 39.1 | 41.0 | 41.9 | 41.9 | 42.8 | 42.0 | 43.2                      | 42.0 | 40.5              | 40.4 | 40.9 | 40.8 | 39.4          | 43.2          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 9-Feb  | Z                             | 40.5  | 40.0     | 39.5 | 38.3 | 37.2 | 38.2 | 37.3 | 36.8 | 36.4 | 36.2 | 37.0 | 39.9 | 41.4 | 41.9 | 43.4 | 42.2 | 41.0 | 39.5                      | 38.2 | 36.9              | 36.8 | 38.8 | 40.2 | 39.0          | 43.4          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 10-Feb   | 40.3                          | Z   | 36.9     | 35.4 | 32.0 | 29.0 | 28.7 | 27.2 | 28.7 | 29.1 | 30.4 | 30.1 | 30.5 | 32.3 | 33.8 | 34.1 | 34.3 | 34.3 | 31.7                      | 30.2 | 30.2              | 29.7 | 30.9 | 27.8 | 31.6          | 40.3          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 11-Feb   | 27.5                          | 25.4  | Z        | 22.5 | 21.4 | 22.9 | 23.5 | 26.7 | 28.7 | 29.3 | 32.0 | 35.3 | 39.5 | 41.5 | 42.3 | 41.5 | 41.2 | 40.7 | 42.2                      | 42.2 | 41.7              | 42.4 | 42.0 | 41.7 | 34.5          | 42.4          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 12-Feb   | 42.1                          | 41.5  | 41.1     | Z    | 42.8 | 42.8 | 42.3 | 40.8 | 40.3 | 41.0 | 40.8 | 40.9 | 41.7 | 42.7 | 43.6 | 43.6 | 43.2 | 41.9 | 41.2                      | 40.7 | 42.1              | 43.5 | 43.7 | 41.0 | 42.0          | 43.7          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 13-Feb   | 39.9                          | 40.0  | 38.8     | 39.8 | Z    | 40.2 | 41.9 | 45.2 | 43.1 | 44.9 | 43.1 | 41.8 | 37.0 | 38.9 | 39.2 | 39.6 | 40.2 | 41.4 | 40.7                      | 40.8 | 40.7              | 40.7 | 38.9 | 38.2 | 40.7          | 45.2          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 14-Feb   | 37.2                          | 35.6  | 33.9     | 33.0 | 33.2 | Z    | 32.2 | 28.7 | 26.9 | 30.8 | 31.4 | C    | C    | C    | C    | 34.2 | 33.8 | 32.0 | 26.8                      | 26.1 | 27.9              | 26.0 | 25.4 | 24.9 | 30.5          | 37.2          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 15-Feb   | Z                             | 28.9  | 33.6     | 35.4 | 35.3 | 35.8 | 35.8 | 35.7 | 36.4 | 36.1 | 36.0 | 35.5 | 35.3 | 35.5 | 36.0 | 36.2 | 35.9 | 35.2 | 32.3                      | 32.4 | 30.6              | 28.8 | 27.1 | 22.1 | 33.6          | 36.4          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 16-Feb   | 23.4                          | Z   | 23.6     | 23.0 | 27.3 | 29.2 | 24.0 | 24.5 | 24.1 | 29.0 | 29.7 | 31.7 | 33.2 | 34.6 | 36.8 | 37.1 | 36.8 | 35.8 | 36.0                      | 38.6 | 40.6              | 39.6 | 38.9 | 28.4 | 31.6          | 40.6          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 17-Feb   | 23.0                          | 26.2  | Z        | 26.3 | 27.2 | 27.0 | 24.9 | 22.8 | 24.1 | 25.6 | 26.1 | 26.5 | 26.1 | 27.4 | 27.6 | 27.3 | 27.7 | 26.9 | 26.4                      | 25.6 | 25.1              | 23.6 | 14.6 | 15.4 | 24.9          | 27.7          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 18-Feb   | 20.8                          | 24.9  | 26.7     | Z    | 30.9 | 34.1 | 33.6 | 30.8 | 28.8 | 28.0 | 28.0 | 28.7 | 29.9 | 31.3 | 33.4 | 34.4 | 34.9 | 33.9 | 33.9                      | 31.5 | 28.8              | 26.5 | 25.3 | 26.2 | 29.8          | 34.9          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 19-Feb   | 24.3                          | 24.5  | 21.5     | 19.5 | Z    | 20.2 | 21.9 | 23.5 | 24.2 | 26.2 | 28.6 | 29.8 | 30.7 | 32.2 | 34.1 | 34.6 | 34.6 | 34.4 | 33.7                      | 35.4 | 37.6              | 37.2 | 37.2 | 37.4 | 29.7          | 37.6          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 20-Feb   | 37.3                          | 37.2  | 36.8     | 36.4 | 35.0 | Z    | 31.9 | 31.2 | 31.0 | 30.5 | 30.5 | 31.2 | 31.8 | 32.5 | 34.4 | 29.6 | 30.3 | 31.5 | 29.3                      | 28.5 | 28.5              | 28.2 | 32.7 | 34.7 | 32.2          | 37.3          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 21-Feb   | Z                             | 32.8  | 33.4     | 32.5 | 30.9 | 31.7 | 29.0 | 26.5 | 27.9 | 30.1 | 35.3 | 35.3 | 36.0 | 36.6 | 36.7 | 35.2 | 32.4 | 33.5 | 31.2                      | 28.6 | 28.5              | 34.2 | 36.0 | 34.4 | 32.6          | 36.7          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 22-Feb   | 31.3                          | Z   | 31.4     | 28.8 | 29.1 | 30.7 | 27.1 | 28.4 | 30.4 | 30.5 | 33.3 | 36.9 | 38.0 | 39.3 | 40.3 | 41.6 | 43.1 | 41.1 | 36.0                      | 38.2 | 38.1              | 34.4 | 31.7 | 31.0 | 34.4          | 43.1          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 23-Feb   | 29.9                          | 28.0  | Z        | 27.0 | 26.3 | 24.9 | 25.8 | 24.3 | 26.0 | 27.7 | 27.6 | 32.4 | 40.1 | 39.8 | 42.1 | 42.6 | 40.7 | 36.3 | 31.5                      | 27.9 | 28.5              | 26.3 | 25.2 | 27.8 | 30.8          | 42.6          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 24-Feb   | 34.4                          | 37.3  | 37.3     | Z    | 36.1 | 36.1 | 35.9 | 36.3 | 36.0 | 36.5 | 38.9 | 39.6 | 40.2 | 40.4 | 41.3 | 41.1 | M    | 38.5 | 38.8                      | 39.6 | 39.5              | 38.8 | 38.4 | 38.0 | 38.1          | 41.3          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 25-Feb   | 37.3                          | 36.5  | 35.9     | 35.4 | Z    | 34.4 | 34.6 | 35.2 | 36.4 | 37.9 | 40.1 | 43.7 | 43.9 | 44.6 | 45.1 | 45.0 | 45.4 | 44.2 | 43.2                      | 44.4 | 45.5              | 44.0 | 43.9 | 42.6 | 40.8          | 45.5          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 26-Feb   | 40.5                          | 40.8  | 38.8     | 37.8 | 37.3 | Z    | 29.4 | 29.9 | 32.1 | 33.6 | 35.3 | 39.1 | 41.1 | 44.8 | 44.6 | 45.2 | 45.4 | 45.1 | 44.3                      | 43.1 | 42.6              | 42.8 | 42.7 | 39.7 | 39.8          | 45.4          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 27-Feb   | Z                             | 40.4  | 39.7     | 38.6 | 38.5 | 39.0 | 38.8 | 37.6 | 36.5 | 35.5 | 34.1 | 34.3 | 35.8 | 37.1 | 38.3 | 39.7 | 40.6 | 38.8 | 37.1                      | 31.3 | 30.2              | 31.7 | 30.8 | 30.3 | 36.3          | 40.6          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| 28-Feb   | 30.3                          | Z   | 29.2     | 30.1 | 30.9 | 26.9 | 23.8 | 28.7 | 29.9 | 32.7 | 32.6 | 34.2 | 35.4 | 37.2 | 37.5 | 37.2 | 37.3 | 35.9 | 35.5                      | 34.7 | 29.1              | 32.9 | 31.5 | 31.8 | 32.4          | 37.5          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
|  |                               |   |          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                           |      |                   |      |      | 32.0 | 33.2          | 33.3          | 31.1 | 31.3 | 30.9 | 30.6 | 30.2 | 30.8 | 31.7 | 32.9 | 34.2 | 35.7 | 37.1 | 37.8 | 38.0 | 37.9 | 37.2 | 35.7 | 34.9 | 34.6 | 34.3 | 33.9 | 33.0 | Diurnal Average |  |
|  |                               |   |          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                           |      |                   |      |      | 42.9 | 43.7          | 42.8          | 42.5 | 42.8 | 44.3 | 44.4 | 45.2 | 43.5 | 44.9 | 43.9 | 44.3 | 45.0 | 46.0 | 46.4 | 46.5 | 46.2 | 45.4 | 44.4 | 44.4 | 45.5 | 44.0 | 43.9 | 42.6 | Diurnal Maximum |  |
| Z - zerospan            C - Calibration            M - Maintenance |                               |   |          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                           |      |                   |      |      |      |               |               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |
| Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 76 ppb        |                               |   |          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                           |      |                   |      |      |      |               |               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |  |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Ozone (O<sub>3</sub>) - ppb**  
**Janvier - February 2023**





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Ozone (O<sub>3</sub>) - ppb**  
**Janvier - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 20                            | 17                     | 2.66     | 2.66                |
| 21 - 50                           | 622                    | 97.34    | 100.00              |
| 51 - 82                           | 0                      | 0.00     | 100.00              |
| > 83                              | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 639

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Ozone (O<sub>3</sub>) - ppb  
Janvier - February 2023**

| <b>Concentration<br/>Ranges (ppb)</b> | <b>Wind Direction</b> |     |    |     |   |     |    |     |    |     |    |     |    |     |    |     | <b>Totals</b> |
|---------------------------------------|-----------------------|-----|----|-----|---|-----|----|-----|----|-----|----|-----|----|-----|----|-----|---------------|
|                                       | N                     | NNE | NE | ENE | E | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |               |
| 0 - 20                                | 0                     | 6   | 1  | 0   | 0 | 2   | 1  | 1   | 3  | 2   | 1  | 0   | 0  | 0   | 0  | 0   | 17            |
| 21 - 50                               | 58                    | 112 | 42 | 20  | 9 | 4   | 5  | 20  | 39 | 108 | 93 | 34  | 22 | 19  | 17 | 18  | 620           |
| 51 - 82                               | 0                     | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| > 83                                  | 0                     | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| <b>Totals</b>                         | 58                    | 118 | 43 | 20  | 9 | 6   | 6  | 21  | 42 | 110 | 94 | 34  | 22 | 19  | 17 | 18  | 637           |

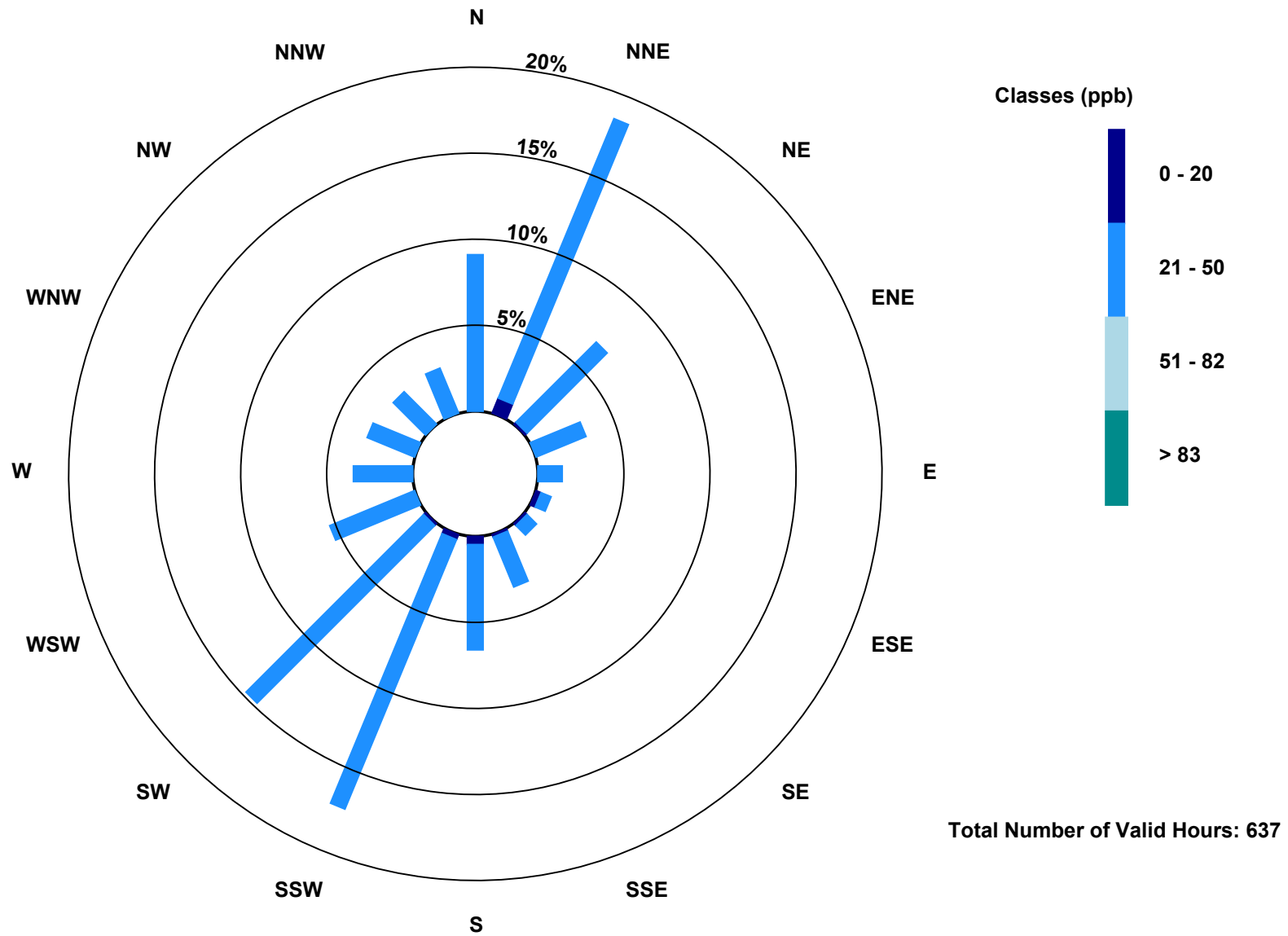
Total Number of Valid Hours: 637

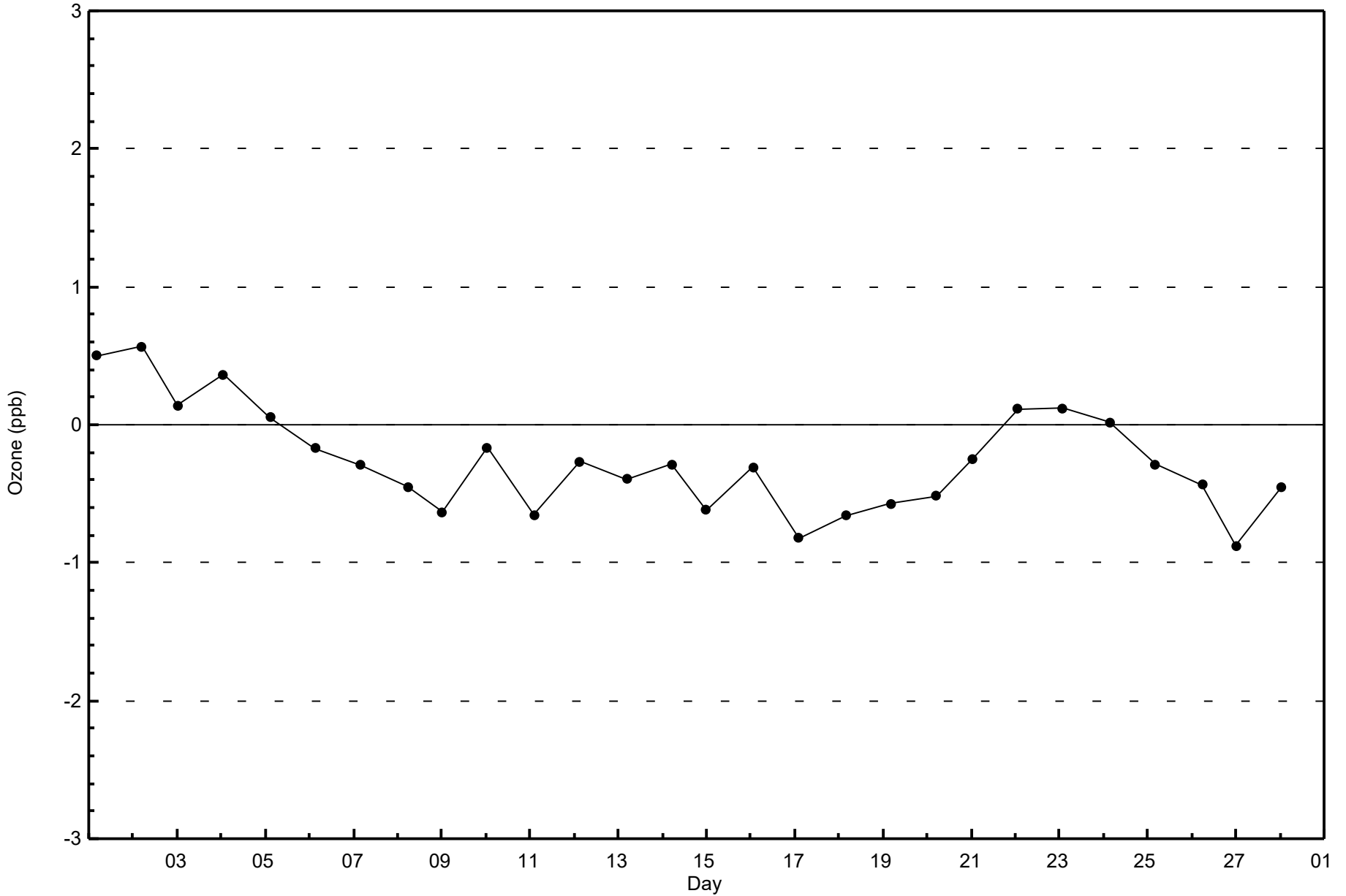
Total Number of Hours: 672



Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Ozone (O<sub>3</sub>) - ppb  
Janvier

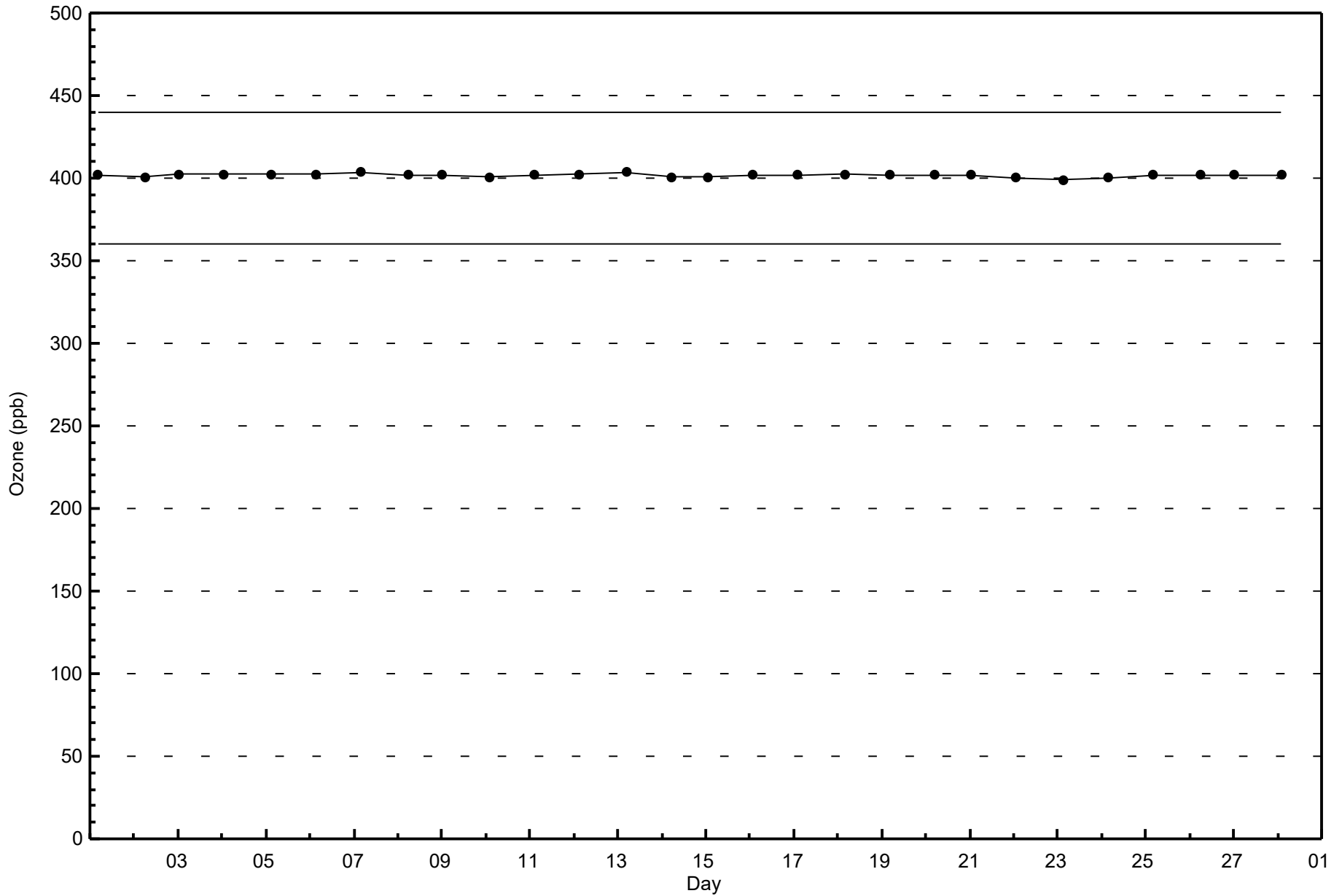






**Wood Buffalo Environmental Association**  
**Span Responses**

**Ozone (O<sub>3</sub>) - ppb**  
**Janvier - February 2023**



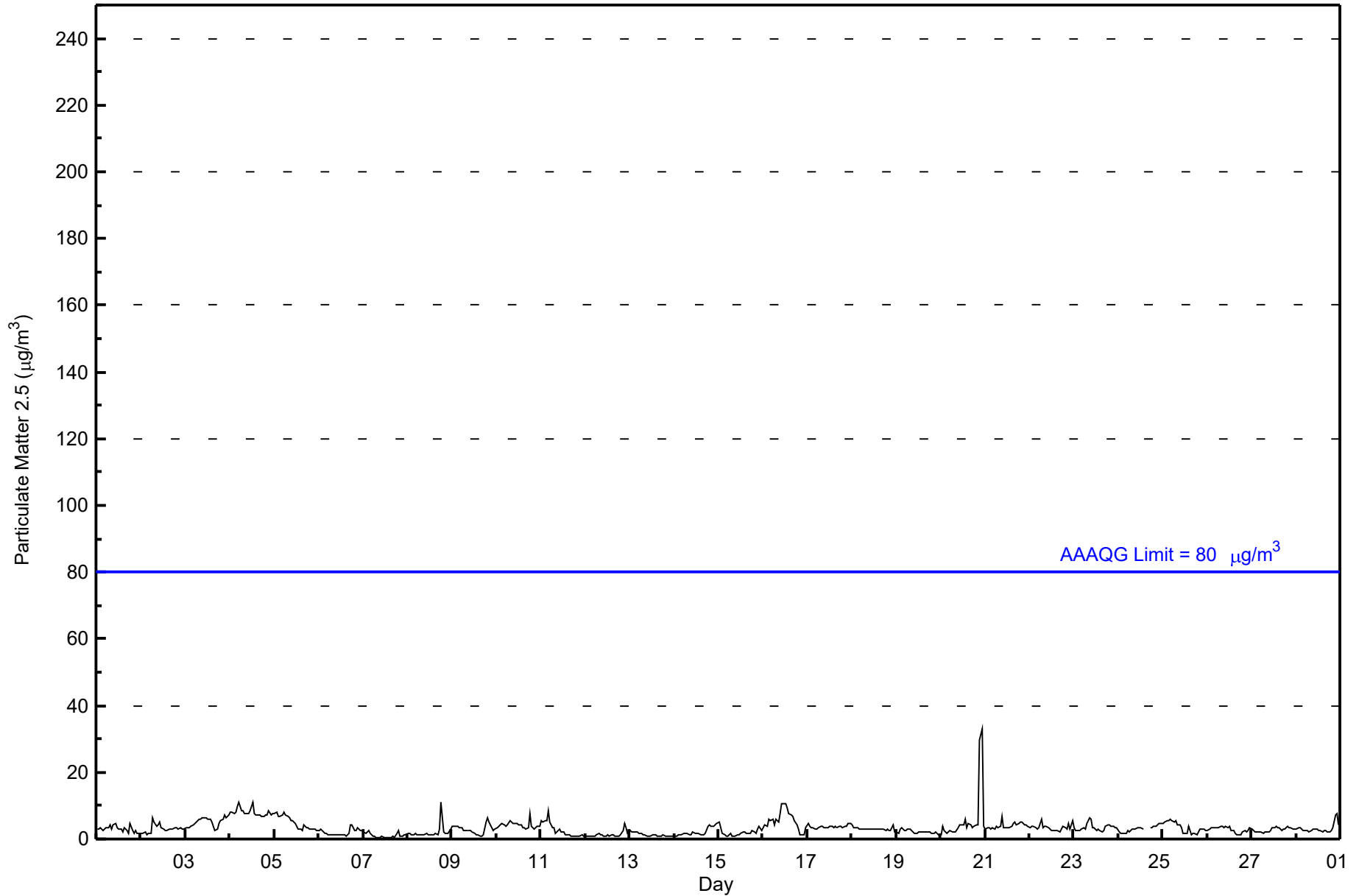




Summary of Hour Averages

Janvier - February 2023

| Number of Exceedences (AAAQO):   |                               | 1-hr: 0 |     | 24-hr: 0  |     | Hours in Service: 672           |     |     |     |     |      |      |      |     |     |     |     |     |      | 672   |     |      |      |     |               |               |     |     |      |     |     |     |     |      |      |      |     |     |     |     |     |      |     |     |      |      |                 |                 |  |
|--|-------------------------------|---------|-----|---|-----|---------------------------------|-----|-----|-----|-----|------|------|------|-----|-----|-----|-----|-----|------|-------|-----|------|------|-----|---------------|---------------|-----|-----|------|-----|-----|-----|-----|------|------|------|-----|-----|-----|-----|-----|------|-----|-----|------|------|-----------------|-----------------|--|
| Maximum Value: 32.9 µg/m <sup>3</sup> on Feb 20 23:00  |                               |         |     | Maximum Daily Average: 8.0 µg/m <sup>3</sup> on Feb 4   |     | Hours of Data: 669              |     |     |     |     |      |      |      |     |     |     |     |     |      | 669   |     |      |      |     |               |               |     |     |      |     |     |     |     |      |      |      |     |     |     |     |     |      |     |     |      |      |                 |                 |  |
| Minimum Value: 0.4 µg/m <sup>3</sup> on Feb 7 16:00  |                               |         |     | Minimum Daily Average: 1.1 µg/m <sup>3</sup> on Feb 7   |     | Hours of Missing Data: 3        |     |     |     |     |      |      |      |     |     |     |     |     |      | 3     |     |      |      |     |               |               |     |     |      |     |     |     |     |      |      |      |     |     |     |     |     |      |     |     |      |      |                 |                 |  |
| Maximum Diurnal Average: 4.4 µg/m <sup>3</sup> at hour 23  |                               |         |     | Minimum Diurnal Average: 2.6 µg/m <sup>3</sup> at hour 17   |     | Hours of Calibration: 3         |     |     |     |     |      |      |      |     |     |     |     |     |      | 3     |     |      |      |     |               |               |     |     |      |     |     |     |     |      |      |      |     |     |     |     |     |      |     |     |      |      |                 |                 |  |
| Monthly Average: 3.28 µg/m <sup>3</sup>  |                               |         |     | Percentiles: P <sub>1</sub> = 0.6 P <sub>10</sub> = 1.1 Q <sub>1</sub> = 1.8 Median = 3.0 Q <sub>3</sub> = 3.9 P <sub>90</sub> = 5.8 P <sub>99</sub> = 10.5 |     | Percent Operational Time: 100.0 |     |     |     |     |      |      |      |     |     |     |     |     |      | 100.0 |     |      |      |     |               |               |     |     |      |     |     |     |     |      |      |      |     |     |     |     |     |      |     |     |      |      |                 |                 |  |
| Day  | Hourly Period Ending At (MST) |         |     |   |     |                                 |     |     |     |     |      |      |      |     |     |     |     |     |      |       |     |      |      |     | Daily Average | Daily Maximum |     |     |      |     |     |     |     |      |      |      |     |     |     |     |     |      |     |     |      |      |                 |                 |  |
|  | 1                             | 2       | 3   | 4   | 5   | 6                               | 7   | 8   | 9   | 10  | 11   | 12   | 13   | 14  | 15  | 16  | 17  | 18  | 19   | 20    | 21  | 22   | 23   | 24  |               |               |     |     |      |     |     |     |     |      |      |      |     |     |     |     |     |      |     |     |      |      |                 |                 |  |
| 1-Feb  | 3.0                           | 2.9     | 3.3 | 2.5   | 3.0 | 3.3                             | 3.2 | 4.1 | 3.0 | 4.2 | 4.5  | 3.6  | 2.9  | 2.8 | 2.0 | 3.3 | 2.4 | 1.8 | 4.8  | 2.7   | 1.9 | 2.4  | 1.6  | 1.6 | 2.9           | 4.8           |     |     |      |     |     |     |     |      |      |      |     |     |     |     |     |      |     |     |      |      |                 |                 |  |
| 2-Feb  | 1.5                           | 1.5     | 2.2 | 1.4   | 1.6 | 1.8                             | 6.3 | 5.1 | 3.8 | 4.4 | 5.0  | 3.3  | 3.2  | 2.5 | 2.5 | 2.8 | 2.8 | 3.2 | 3.3  | 3.4   | 3.1 | 3.3  | 2.9  | 3.1 | 3.1           | 6.3           |     |     |      |     |     |     |     |      |      |      |     |     |     |     |     |      |     |     |      |      |                 |                 |  |
| 3-Feb  | 3.2                           | 3.3     | 3.4 | 3.7   | 4.2 | 4.8                             | 5.1 | 6.1 | 6.0 | 6.4 | 6.2  | 6.3  | 5.9  | 5.8 | 5.3 | 4.0 | 2.7 | 3.0 | 4.7  | 5.6   | 6.1 | 7.1  | 6.3  | 7.1 | 5.1           | 7.1           |     |     |      |     |     |     |     |      |      |      |     |     |     |     |     |      |     |     |      |      |                 |                 |  |
| 4-Feb  | 7.9                           | 8.1     | 7.8 | 8.0   | 9.9 | 11.1                            | 8.5 | 8.6 | 7.6 | 7.5 | 7.8  | 8.4  | 11.0 | 7.5 | 7.2 | 7.3 | 7.1 | 6.9 | 6.7  | 7.2   | 7.3 | 8.5  | 7.2  | 7.4 | 8.0           | 11.1          |     |     |      |     |     |     |     |      |      |      |     |     |     |     |     |      |     |     |      |      |                 |                 |  |
| 5-Feb  | 7.6                           | 7.9     | 7.0 | 6.7   | 7.1 | 8.2                             | 7.3 | 7.0 | 6.4 | 5.6 | 5.3  | 4.6  | 3.7  | 3.1 | 3.0 | 2.4 | 4.3 | 3.5 | 3.6  | 3.2   | 3.1 | 2.9  | 2.9  | 2.6 | 4.9           | 8.2           |     |     |      |     |     |     |     |      |      |      |     |     |     |     |     |      |     |     |      |      |                 |                 |  |
| 6-Feb  | 2.5                           | 2.9     | 2.5 | 1.8   | 1.8 | 1.4                             | 1.1 | 1.2 | 1.3 | 1.4 | 1.4  | 1.3  | 1.2  | 1.2 | 1.1 | 1.1 | 1.7 | 4.2 | 4.1  | 2.4   | 2.5 | 3.5  | 2.7  | 2.7 | 2.0           | 4.2           |     |     |      |     |     |     |     |      |      |      |     |     |     |     |     |      |     |     |      |      |                 |                 |  |
| 7-Feb  | 2.0                           | 1.6     | 2.2 | 2.7   | 1.5 | 1.0                             | 0.7 | 0.6 | 0.4 | 0.6 | 0.6  | 0.6  | 0.5  | 0.5 | 0.5 | 0.4 | 0.6 | 0.4 | 1.7  | 2.6   | 0.7 | 0.8  | 1.2  | 1.2 | 1.1           | 2.7           |     |     |      |     |     |     |     |      |      |      |     |     |     |     |     |      |     |     |      |      |                 |                 |  |
| 8-Feb  | 1.7                           | 1.7     | 1.1 | 1.1   | 1.8 | 1.3                             | 1.2 | 1.1 | 1.3 | 1.3 | 1.6  | 1.4  | 1.3  | 1.5 | 1.4 | 1.8 | 1.5 | 2.9 | 11.1 | 2.1   | 1.5 | 1.5  | 1.7  | 2.8 | 2.0           | 11.1          |     |     |      |     |     |     |     |      |      |      |     |     |     |     |     |      |     |     |      |      |                 |                 |  |
| 9-Feb  | 3.9                           | 3.9     | 3.6 | 3.8   | 3.4 | 3.2                             | 2.6 | 2.4 | 2.4 | 2.5 | 2.5  | 2.1  | 1.6  | 1.2 | 1.1 | 0.8 | 0.9 | 1.1 | 4.9  | 6.4   | 5.0 | 3.2  | 2.7  | 3.1 | 2.9           | 6.4           |     |     |      |     |     |     |     |      |      |      |     |     |     |     |     |      |     |     |      |      |                 |                 |  |
| 10-Feb   | 3.4                           | 3.7     | 4.2 | 4.6   | 4.2 | 3.8                             | 4.4 | 5.4 | 5.0 | 4.8 | 4.6  | 4.5  | 4.1  | 4.0 | 3.6 | 3.2 | 2.8 | 3.3 | 7.6  | 3.7   | 3.1 | 3.2  | 3.9  | 3.9 | 4.1           | 7.6           |     |     |      |     |     |     |     |      |      |      |     |     |     |     |     |      |     |     |      |      |                 |                 |  |
| 11-Feb   | 5.7                           | 4.9     | 5.5 | 5.5   | 8.3 | 4.9                             | 3.4 | 3.4 | 1.9 | 2.4 | 2.8  | 2.2  | 2.2  | 1.3 | 1.4 | 1.1 | 0.7 | 0.9 | 0.7  | 0.7   | 0.7 | 1.0  | 1.2  | 0.8 | 2.6           | 8.3           |     |     |      |     |     |     |     |      |      |      |     |     |     |     |     |      |     |     |      |      |                 |                 |  |
| 12-Feb   | 0.8                           | 0.8     | 0.9 | 0.7   | 0.8 | 0.8                             | 1.1 | 1.8 | 1.2 | 1.1 | 1.0  | 1.0  | 1.1  | 1.0 | 1.1 | 1.3 | 1.0 | 0.9 | 1.0  | 1.4   | 2.7 | 4.6  | 3.4  | 1.7 | 1.4           | 4.6           |     |     |      |     |     |     |     |      |      |      |     |     |     |     |     |      |     |     |      |      |                 |                 |  |
| 13-Feb   | 2.5                           | 2.3     | 2.1 | 2.0   | 2.0 | 1.8                             | 1.6 | 1.3 | 1.3 | 0.9 | 0.9  | 1.0  | 1.2  | 1.1 | 1.1 | 1.0 | 0.9 | 1.0 | 1.2  | 0.9   | 0.9 | 0.8  | 0.8  | 0.8 | 1.3           | 2.5           |     |     |      |     |     |     |     |      |      |      |     |     |     |     |     |      |     |     |      |      |                 |                 |  |
| 14-Feb   | 0.9                           | 0.9     | 1.1 | 1.2   | 1.3 | 1.5                             | 1.6 | 1.5 | 1.3 | 1.4 | 2.0  | 1.8  | 1.7  | 1.5 | 1.3 | 1.4 | 1.4 | 1.8 | 3.6  | 4.2   | 3.7 | 3.9  | 4.3  | 4.7 | 2.1           | 4.7           |     |     |      |     |     |     |     |      |      |      |     |     |     |     |     |      |     |     |      |      |                 |                 |  |
| 15-Feb   | 5.2                           | 3.5     | 1.8 | 1.2   | 1.0 | 1.0                             | 1.6 | 0.9 | 1.0 | 1.0 | 1.1  | 1.4  | 1.8  | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 2.6  | 2.1   | 1.8 | 3.1  | 3.7  | 2.7 | 2.0           | 5.2           |     |     |      |     |     |     |     |      |      |      |     |     |     |     |     |      |     |     |      |      |                 |                 |  |
| 16-Feb   | 3.6                           | 4.3     | 3.7 | 5.8   | 5.5 | 5.9                             | 4.4 | 5.7 | 4.9 | 7.7 | 10.6 | 10.7 | 10.5 | 9.4 | 7.7 | 7.2 | 6.7 | 5.4 | 4.1  | 3.0   | 1.1 | 1.2  | 1.4  | 3.4 | 5.6           | 10.7          |     |     |      |     |     |     |     |      |      |      |     |     |     |     |     |      |     |     |      |      |                 |                 |  |
| 17-Feb   | 4.5                           | 3.7     | 3.5 | 3.4   | 3.1 | 3.1                             | 3.4 | 3.7 | 3.6 | 3.4 | 3.4  | 3.5  | 3.9  | 3.7 | 3.6 | 3.6 | 3.4 | 3.8 | 3.8  | 3.6   | 3.7 | 3.9  | 4.5  | 4.6 | 3.7           | 4.6           |     |     |      |     |     |     |     |      |      |      |     |     |     |     |     |      |     |     |      |      |                 |                 |  |
| 18-Feb   | 4.0                           | 3.4     | 3.2 | 3.3   | 2.8 | 2.9                             | 2.9 | 3.1 | 3.0 | 3.0 | 2.9  | 3.0  | 2.9  | 3.0 | 2.9 | 2.8 | 2.8 | 2.9 | 2.5  | 2.9   | 2.7 | 2.5  | 4.1  | 2.3 | 3.0           | 4.1           |     |     |      |     |     |     |     |      |      |      |     |     |     |     |     |      |     |     |      |      |                 |                 |  |
| 19-Feb   | 2.0                           | 1.8     | 3.0 | 3.5   | 2.5 | 2.6                             | 2.8 | 3.1 | 2.7 | 2.0 | 1.7  | 1.6  | 2.0  | 2.0 | 1.9 | 2.0 | 2.2 | 2.1 | 2.1  | 1.8   | 1.8 | 2.2  | 1.6  | 1.4 | 2.2           | 3.5           |     |     |      |     |     |     |     |      |      |      |     |     |     |     |     |      |     |     |      |      |                 |                 |  |
| 20-Feb   | 1.4                           | 3.9     | 2.7 | 1.7   | 2.2 | 2.5                             | 2.3 | 2.3 | 2.3 | 3.6 | 4.1  | 4.1  | 4.1  | 5.8 | 3.5 | 4.5 | 4.2 | 3.5 | 3.9  | 4.3   | 4.2 | 29.7 | 32.9 | 3.7 | 5.7           | 32.9          |     |     |      |     |     |     |     |      |      |      |     |     |     |     |     |      |     |     |      |      |                 |                 |  |
| 21-Feb   | 3.0                           | 3.4     | 3.5 | 3.2   | 3.2 | 3.2                             | 3.8 | 3.5 | 3.6 | 6.6 | 3.4  | 3.4  | 3.4  | 3.4 | 3.7 | 4.5 | 5.1 | 4.2 | 4.5  | 5.0   | 5.2 | 4.3  | 4.1  | 3.7 | 4.0           | 6.6           |     |     |      |     |     |     |     |      |      |      |     |     |     |     |     |      |     |     |      |      |                 |                 |  |
| 22-Feb   | 3.3                           | 3.7     | 3.9 | 3.4   | 3.1 | 3.3                             | 6.1 | 3.5 | 3.9 | 3.9 | 3.6  | 3.1  | 2.6  | 2.5 | 2.5 | 2.4 | 2.2 | 3.1 | 3.6  | 3.3   | 3.1 | 4.5  | 3.0  | 5.5 | 3.4           | 6.1           |     |     |      |     |     |     |     |      |      |      |     |     |     |     |     |      |     |     |      |      |                 |                 |  |
| 23-Feb   | 3.5                           | 2.4     | 2.7 | 2.6   | 2.9 | 3.6                             | 2.9 | 4.7 | 6.2 | 5.9 | 3.3  | 3.6  | 2.6  | 2.8 | 2.4 | 1.9 | 2.5 | 3.7 | 4.1  | 4.1   | 3.7 | 3.9  | 3.5  | 3.2 | 3.4           | 6.2           |     |     |      |     |     |     |     |      |      |      |     |     |     |     |     |      |     |     |      |      |                 |                 |  |
| 24-Feb   | 2.2                           | 1.7     | 1.8 | 1.9   | 1.8 | 2.4                             | 2.2 | 2.9 | 3.0 | 3.0 | 3.3  | 3.5  | 3.3  | 3.0 | C   | C   | C   | 3.4 | 3.5  | 3.6   | 3.8 | 4.3  | 4.6  | 4.7 | 3.0           | 4.7           |     |     |      |     |     |     |     |      |      |      |     |     |     |     |     |      |     |     |      |      |                 |                 |  |
| 25-Feb   | 4.9                           | 5.2     | 5.5 | 5.6   | 5.9 | 5.4                             | 4.9 | 5.4 | 4.3 | 4.1 | 3.5  | 1.5  | 1.7  | 1.5 | 3.6 | 1.5 | 1.7 | 1.8 | 1.2  | 2.0   | 3.1 | 3.1  | 3.2  | 2.5 | 3.5           | 5.9           |     |     |      |     |     |     |     |      |      |      |     |     |     |     |     |      |     |     |      |      |                 |                 |  |
| 26-Feb   | 2.5                           | 2.9     | 3.2 | 3.5   | 3.5 | 3.5                             | 3.3 | 3.7 | 3.6 | 3.3 | 3.7  | 3.6  | 3.6  | 2.5 | 2.4 | 1.9 | 1.5 | 1.3 | 1.3  | 2.0   | 2.6 | 2.2  | 2.5  | 3.4 | 2.8           | 3.7           |     |     |      |     |     |     |     |      |      |      |     |     |     |     |     |      |     |     |      |      |                 |                 |  |
| 27-Feb   | 3.0                           | 2.7     | 2.2 | 2.2   | 1.9 | 1.9                             | 1.8 | 2.0 | 2.2 | 2.1 | 2.6  | 3.3  | 3.4  | 3.7 | 3.6 | 3.4 | 2.5 | 3.0 | 3.0  | 3.7   | 3.6 | 3.2  | 3.1  | 2.8 | 2.8           | 3.7           |     |     |      |     |     |     |     |      |      |      |     |     |     |     |     |      |     |     |      |      |                 |                 |  |
| 28-Feb   | 2.8                           | 3.2     | 3.3 | 3.0   | 2.6 | 2.6                             | 2.4 | 2.2 | 2.5 | 3.1 | 3.1  | 2.8  | 2.6  | 2.4 | 2.2 | 2.4 | 2.5 | 2.0 | 2.0  | 2.4   | 3.2 | 7.4  | 7.7  | 4.4 | 3.1           | 7.7           |     |     |      |     |     |     |     |      |      |      |     |     |     |     |     |      |     |     |      |      |                 |                 |  |
|  |                               |         |     |   |     |                                 |     |     |     |     |      |      |      |     |     |     |     |     |      |       |     |      |      | 3.3 | 3.3           | 3.2           | 3.2 | 3.3 | 3.3  | 3.4 | 3.2 | 3.5 | 3.5 | 3.3  | 3.2  | 3.0  | 2.8 | 2.7 | 2.6 | 2.7 | 3.6 | 3.2  | 3.1 | 4.4 | 4.4  | 3.3  | Diurnal Average |                 |  |
|  |                               |         |     |   |     |                                 |     |     |     |     |      |      |      |     |     |     |     |     |      |       |     |      |      | 7.9 | 8.1           | 7.8           | 8.0 | 9.9 | 11.1 | 8.5 | 8.6 | 7.6 | 7.7 | 10.6 | 10.7 | 11.0 | 9.4 | 7.7 | 7.3 | 7.1 | 6.9 | 11.1 | 7.2 | 7.3 | 29.7 | 32.9 | 7.4             | Diurnal Maximum |  |
| C - Calibration  |                               |         |     |   |     |                                 |     |     |     |     |      |      |      |     |     |     |     |     |      |       |     |      |      |     |               |               |     |     |      |     |     |     |     |      |      |      |     |     |     |     |     |      |     |     |      |      |                 |                 |  |
| Alberta Ambient Air Quality Guideline/Objectives: 1-hr 80 µg/m <sup>3</sup> 24-hr 29 µg/m <sup>3</sup> |                               |         |     |   |     |                                 |     |     |     |     |      |      |      |     |     |     |     |     |      |       |     |      |      |     |               |               |     |     |      |     |     |     |     |      |      |      |     |     |     |     |     |      |     |     |      |      |                 |                 |  |





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Particulate Matter 2.5 (PM<sub>2.5</sub>) -  $\mu\text{g}/\text{m}^3$**   
**Janvier - February 2023**

| <b>Concentration Ranges (<math>\mu\text{g}/\text{m}^3</math>)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---|------------------------|----------|---------------------|
| 0 - 5   | 593                    | 88.64    | 88.64               |
| 6 - 15  | 74                     | 11.06    | 99.70               |
| 16 - 25   | 0                      | 0.00     | 99.70               |
| 26 - 80   | 2                      | 0.30     | 100.00              |
| > 81.0  | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 669

Total Number of Hours: 672



**Wood Buffalo Environmental Association**  
**Frequency Distribution**

**Particulate Matter 2.5 (PM<sub>2.5</sub>) - µg/m<sup>3</sup>**  
**Janvier - February 2023**

| Concentration<br>Ranges (µg/m <sup>3</sup> ) | Wind Direction |     |    |     |   |     |    |     |    |     |    |     |    |     |    |     | Totals |
|--|----------------|-----|----|-----|---|-----|----|-----|----|-----|----|-----|----|-----|----|-----|--------|
|  | N              | NNE | NE | ENE | E | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |        |
| 0 - 5  | 55             | 108 | 39 | 20  | 9 | 4   | 8  | 20  | 33 | 106 | 83 | 36  | 20 | 18  | 18 | 14  | 591    |
| 6 - 15                                       | 4              | 13  | 6  | 0   | 0 | 2   | 0  | 1   | 10 | 11  | 16 | 1   | 3  | 2   | 0  | 5   | 74     |
| 16 - 25                                      | 0              | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| 26 - 80                                      | 0              | 2   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 2      |
| > 81.0                                       | 0              | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| <b>Totals</b>                                | 59             | 123 | 45 | 20  | 9 | 6   | 8  | 21  | 43 | 117 | 99 | 37  | 23 | 20  | 18 | 19  | 667    |

Total Number of Valid Hours: 667

Total Number of Hours: 672

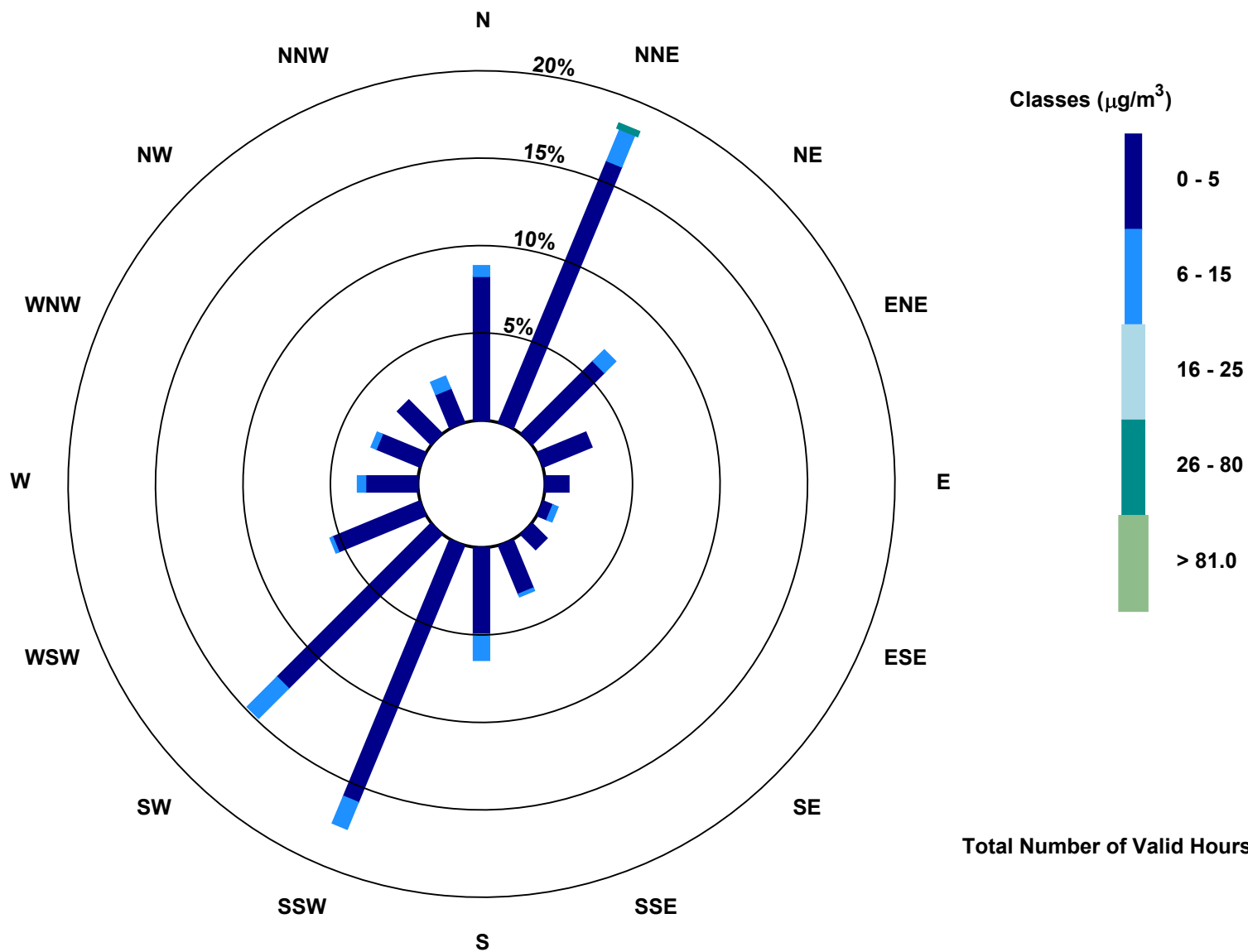


Wood Buffalo Environmental Association

Wind Rose Feb 2023

Particulate Matter 2.5 (PM<sub>2.5</sub>) -  $\mu\text{g}/\text{m}^3$

Janvier



Total Number of Valid Hours: 667



**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

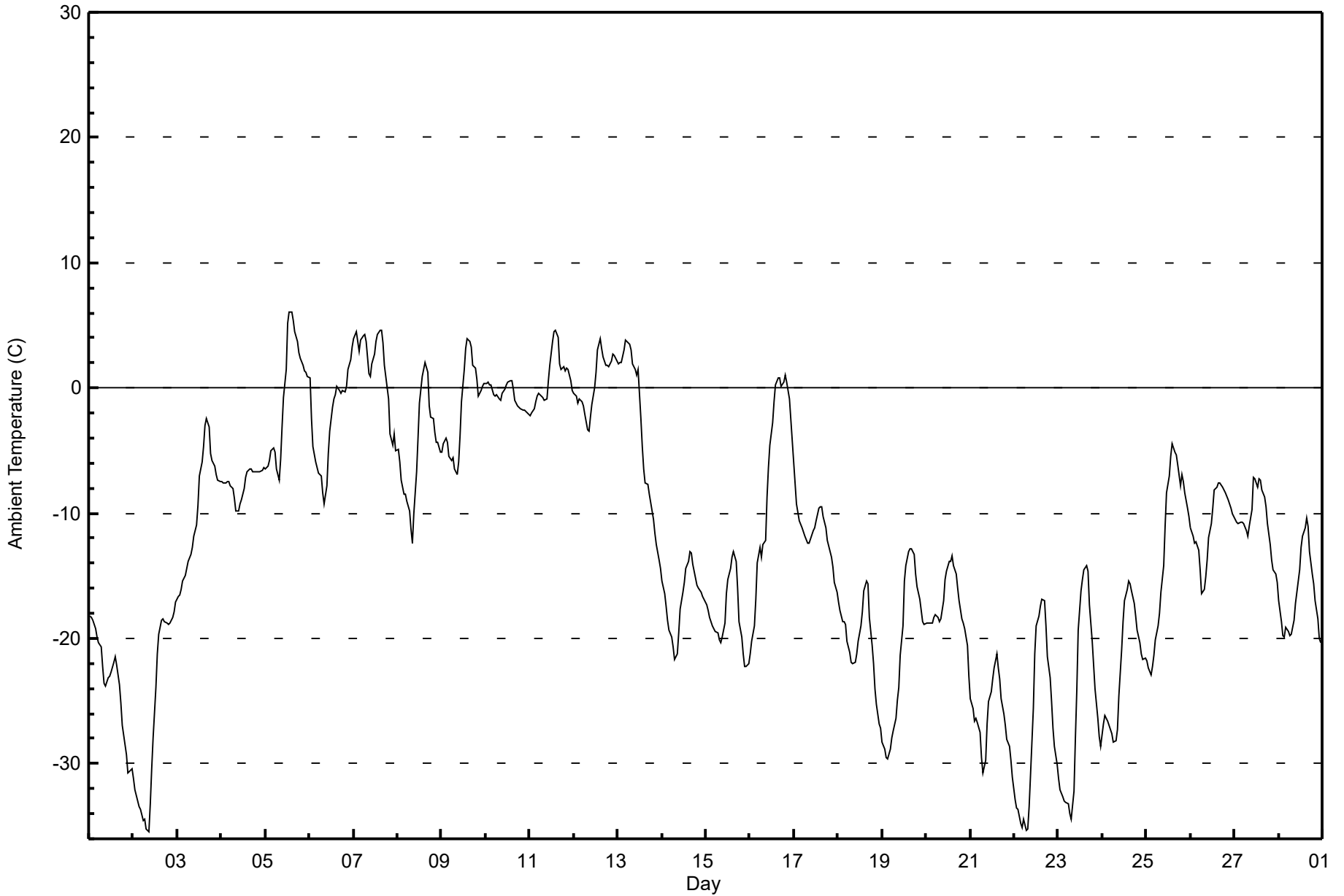
**Ambient Temperature (AT) - C**  
**Janvier - February 2023**

| Maximum Value: 6.1 C on Feb 5 15:00        |                               | Maximum Daily Average: 1.8 C on Feb 7   |       | Hours in Service: 672           |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |               |               |       |       |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |       |       |       |       |                 |
|--|-------------------------------|---|-------|---------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------------|---------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|------|------|------|------|------|-------|-------|-------|-------|-------|-------|-----------------|
| Minimum Value: -35.4 C on Feb 2 09:00      |                               | Minimum Daily Average: -27.0 C on Feb 22  |       | Hours of Data: 672              |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |               |               |       |       |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |       |       |       |       |                 |
| Maximum Diurnal Average: -7.6 C at hour 16 |                               | Minimum Diurnal Average: -15.7 C at hour 8  |       | Hours of Missing Data: 0        |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |               |               |       |       |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |       |       |       |       |                 |
| Monthly Average: -12.18 C                  |                               | Percentiles: P <sub>1</sub> = -34.5 P <sub>10</sub> = -26.8 Q <sub>1</sub> = -19.2 Median = -12.2 Q <sub>3</sub> = -3.4 P <sub>90</sub> = 1.4 P <sub>99</sub> = 4.6 |       | Hours of Calibration: 0         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |               |               |       |       |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |       |       |       |       |                 |
|  |                               |   |       | Percent Operational Time: 100.0 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |               |               |       |       |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |       |       |       |       |                 |
| Day  | Hourly Period Ending At (MST) |   |       |                                 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Daily Average | Daily Maximum |       |       |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |       |       |       |       |                 |
|  | 1                             | 2   | 3     | 4                               | 5     | 6     | 7     | 8     | 9     | 10    | 11    | 12    | 13    | 14    | 15    | 16    | 17    | 18    | 19    | 20    | 21    | 22    | 23    | 24    |               |               |       |       |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |       |       |       |       |                 |
| 1-Feb                                      | -18.2                         | -18.4   | -18.6 | -19.2                           | -19.9 | -20.4 | -20.7 | -22.2 | -23.6 | -23.8 | -23.2 | -23.0 | -22.7 | -22.0 | -21.5 | -22.1 | -23.7 | -25.2 | -26.9 | -28.5 | -29.3 | -30.7 | -30.7 | -30.5 | -23.5         | -18.2         |       |       |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |       |       |       |       |                 |
| 2-Feb                                      | -31.1                         | -32.1   | -33.0 | -33.5                           | -33.6 | -34.5 | -34.5 | -35.3 | -35.4 | -33.2 | -30.4 | -28.0 | -24.0 | -21.3 | -19.7 | -18.6 | -18.5 | -18.7 | -18.8 | -18.9 | -18.7 | -18.3 | -17.8 | -17.1 | -26.0         | -17.1         |       |       |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |       |       |       |       |                 |
| 3-Feb                                      | -16.6                         | -16.5   | -16.1 | -15.4                           | -14.9 | -14.4 | -13.9 | -13.3 | -12.7 | -11.8 | -11.0 | -9.3  | -7.0  | -5.9  | -4.7  | -3.0  | -2.4  | -3.1  | -5.2  | -5.8  | -6.2  | -6.9  | -7.3  | -7.5  | -9.6          | -2.4          |       |       |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |       |       |       |       |                 |
| 4-Feb                                      | -7.5                          | -7.5  | -7.6  | -7.5                            | -7.5  | -7.8  | -8.1  | -8.8  | -9.8  | -9.8  | -9.3  | -8.9  | -8.1  | -7.1  | -6.7  | -6.4  | -6.5  | -6.7  | -6.7  | -6.7  | -6.7  | -6.7  | -6.5  | -6.3  | -7.5          | -6.3          |       |       |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |       |       |       |       |                 |
| 5-Feb                                      | -6.5                          | -6.2  | -5.8  | -5.0                            | -4.8  | -5.1  | -6.5  | -7.4  | -5.7  | -3.2  | -0.7  | 1.5   | 5.1   | 6.1   | 6.1   | 5.4   | 4.5   | 3.7   | 2.8   | 2.4   | 1.8   | 1.3   | 1.2   | 0.9   | -0.6          | 6.1           |       |       |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |       |       |       |       |                 |
| 6-Feb                                      | 0.8                           | -2.4  | -4.7  | -6.0                            | -6.3  | -6.8  | -7.1  | -8.4  | -9.3  | -7.8  | -5.2  | -3.4  | -1.6  | -0.9  | -0.5  | 0.2   | -0.2  | -0.4  | -0.2  | -0.3  | 0.2   | 1.5   | 2.2   | 3.2   | -2.7          | 3.2           |       |       |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |       |       |       |       |                 |
| 7-Feb                                      | 4.0                           | 4.5   | 3.7   | 2.9                             | 3.8   | 4.1   | 4.3   | 3.7   | 1.1   | 0.9   | 1.9   | 2.7   | 3.7   | 4.3   | 4.6   | 4.6   | 3.5   | 1.8   | 0.0   | -0.9  | -3.7  | -4.6  | -3.7  | -5.1  | 1.8           | 4.6           |       |       |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |       |       |       |       |                 |
| 8-Feb                                      | -4.8                          | -5.9  | -7.3  | -8.5                            | -8.4  | -9.1  | -9.9  | -11.3 | -12.4 | -10.1 | -6.7  | -4.0  | -1.2  | 0.9   | 1.5   | 2.0   | 1.3   | -1.4  | -2.4  | -2.4  | -3.6  | -4.3  | -4.4  | -5.1  | -4.9          | 2.0           |       |       |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |       |       |       |       |                 |
| 9-Feb                                      | -5.1                          | -4.5  | -4.0  | -4.3                            | -5.4  | -5.8  | -5.6  | -6.4  | -6.9  | -6.0  | -3.8  | -1.1  | 1.5   | 3.2   | 4.0   | 3.7   | 3.2   | 1.9   | 1.6   | 0.7   | -0.7  | -0.2  | 0.2   | 0.4   | -1.7          | 4.0           |       |       |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |       |       |       |       |                 |
| 10-Feb                                     | 0.4                           | 0.4   | 0.3   | 0.2                             | -0.5  | -0.7  | -0.6  | -0.8  | -1.0  | -0.5  | -0.1  | 0.2   | 0.5   | 0.6   | 0.6   | -0.1  | -1.0  | -1.5  | -1.6  | -1.7  | -1.8  | -1.7  | -1.9  | -2.1  | -0.6          | 0.6           |       |       |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |       |       |       |       |                 |
| 11-Feb                                     | -2.2                          | -2.0  | -1.7  | -1.1                            | -0.6  | -0.4  | -0.7  | -0.7  | -1.0  | -0.9  | 0.6   | 1.8   | 3.7   | 4.4   | 4.6   | 4.1   | 1.9   | 1.4   | 1.7   | 1.3   | 1.6   | 1.4   | 0.6   | -0.2  | 0.7           | 4.6           |       |       |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |       |       |       |       |                 |
| 12-Feb                                     | -0.5                          | -0.6  | -1.2  | -0.9                            | -1.1  | -1.5  | -2.1  | -3.3  | -3.4  | -2.3  | -1.3  | 0.0   | 1.3   | 3.0   | 4.0   | 3.2   | 2.4   | 1.8   | 1.8   | 1.7   | 2.1   | 2.7   | 2.6   | 2.3   | 0.5           | 4.0           |       |       |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |       |       |       |       |                 |
| 13-Feb                                     | 1.9                           | 2.0   | 2.1   | 3.0                             | 3.8   | 3.7   | 3.5   | 3.1   | 1.9   | 1.4   | 1.0   | 1.5   | -2.4  | -4.6  | -6.4  | -7.6  | -7.7  | -8.5  | -9.2  | -10.5 | -11.6 | -12.5 | -13.7 | -14.4 | -3.3          | 3.8           |       |       |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |       |       |       |       |                 |
| 14-Feb                                     | -15.4                         | -16.4   | -17.4 | -18.5                           | -19.3 | -19.9 | -20.6 | -21.6 | -21.3 | -19.5 | -17.7 | -16.4 | -15.5 | -14.4 | -13.8 | -13.1 | -13.1 | -14.1 | -15.2 | -15.7 | -16.0 | -16.3 | -16.6 | -16.9 | -16.9         | -13.1         | -13.1 |       |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |       |       |       |       |                 |
| 15-Feb                                     | -17.3                         | -17.8   | -18.3 | -19.0                           | -19.2 | -19.4 | -19.6 | -20.1 | -20.4 | -19.9 | -18.8 | -16.5 | -15.4 | -14.4 | -13.6 | -13.0 | -13.8 | -16.0 | -18.7 | -19.9 | -21.3 | -22.2 | -22.2 | -22.1 | -18.3         | -13.0         |       |       |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |       |       |       |       |                 |
| 16-Feb                                     | -21.2                         | -20.3   | -19.1 | -16.8                           | -14.0 | -12.7 | -13.5 | -12.5 | -12.2 | -8.7  | -6.3  | -4.5  | -2.8  | -1.1  | 0.2   | 0.8   | 0.8   | 0.2   | 0.4   | 1.0   | 0.5   | -0.9  | -2.6  | -4.2  | -7.1          | 1.0           |       |       |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |       |       |       |       |                 |
| 17-Feb                                     | -7.6                          | -9.3  | -9.9  | -10.6                           | -11.1 | -11.5 | -11.9 | -12.4 | -12.4 | -12.1 | -11.4 | -11.1 | -10.6 | -9.6  | -9.4  | -9.5  | -10.3 | -11.1 | -12.1 | -12.6 | -13.6 | -14.2 | -15.5 | -16.3 | -11.5         | -7.6          |       |       |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |       |       |       |       |                 |
| 18-Feb                                     | -17.1                         | -17.8   | -18.7 | -18.6                           | -18.9 | -20.2 | -21.2 | -21.9 | -22.1 | -21.9 | -21.2 | -20.2 | -19.0 | -17.9 | -16.2 | -15.4 | -15.6 | -18.3 | -20.5 | -22.1 | -24.0 | -25.3 | -26.8 | -27.2 | -20.3         | -15.4         |       |       |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |       |       |       |       |                 |
| 19-Feb                                     | -28.3                         | -28.9   | -29.5 | -29.7                           | -28.9 | -28.0 | -27.4 | -26.4 | -25.0 | -23.9 | -21.4 | -19.0 | -15.4 | -14.2 | -13.1 | -12.8 | -12.9 | -13.3 | -14.8 | -15.8 | -16.8 | -17.7 | -18.6 | -18.8 | -20.8         | -12.8         |       |       |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |       |       |       |       |                 |
| 20-Feb                                     | -18.7                         | -18.8   | -18.8 | -18.8                           | -18.3 | -18.1 | -18.3 | -18.7 | -18.5 | -17.0 | -15.4 | -14.6 | -13.9 | -13.8 | -13.4 | -14.2 | -14.8 | -15.9 | -16.9 | -18.4 | -18.8 | -19.2 | -20.5 | -23.0 | -17.4         | -13.4         |       |       |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |       |       |       |       |                 |
| 21-Feb                                     | -24.8                         | -25.6   | -26.6 | -26.4                           | -26.7 | -27.5 | -29.5 | -30.8 | -29.7 | -26.8 | -25.0 | -24.2 | -23.2 | -22.3 | -21.3 | -22.4 | -23.2 | -24.8 | -26.0 | -27.0 | -28.0 | -28.7 | -29.7 | -31.1 | -26.3         | -21.3         |       |       |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |       |       |       |       |                 |
| 22-Feb                                     | -32.8                         | -33.6   | -33.7 | -34.7                           | -35.1 | -34.4 | -35.3 | -35.2 | -33.5 | -30.8 | -25.6 | -21.3 | -19.0 | -18.2 | -17.4 | -16.9 | -17.0 | -19.0 | -21.5 | -23.1 | -25.0 | -27.1 | -28.6 | -30.1 | -27.0         | -16.9         |       |       |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |       |       |       |       |                 |
| 23-Feb                                     | -31.2                         | -32.1   | -32.6 | -33.0                           | -33.1 | -33.2 | -34.0 | -34.5 | -32.2 | -27.9 | -24.1 | -19.3 | -16.2 | -15.3 | -14.5 | -14.2 | -14.6 | -17.3 | -20.2 | -22.1 | -24.0 | -26.4 | -27.9 | -28.6 | -25.4         | -14.2         |       |       |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |       |       |       |       |                 |
| 24-Feb                                     | -26.8                         | -26.1   | -26.4 | -26.6                           | -27.2 | -27.6 | -28.3 | -28.1 | -27.2 | -24.6 | -20.9 | -18.6 | -17.0 | -16.1 | -15.4 | -15.6 | -16.3 | -17.3 | -18.2 | -19.3 | -20.4 | -21.2 | -21.6 | -21.6 | -22.0         | -15.4         |       |       |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |       |       |       |       |                 |
| 25-Feb                                     | -21.8                         | -22.3   | -22.9 | -22.2                           | -21.3 | -20.1 | -19.0 | -18.0 | -16.3 | -14.2 | -11.1 | -8.3  | -7.1  | -5.5  | -4.5  | -5.1  | -5.3  | -6.2  | -7.8  | -6.9  | -7.4  | -8.4  | -9.6  | -10.3 | -12.6         | -4.5          |       |       |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |       |       |       |       |                 |
| 26-Feb                                     | -11.2                         | -11.8   | -12.5 | -12.3                           | -12.9 | -14.6 | -16.5 | -16.1 | -15.0 | -13.8 | -12.0 | -10.8 | -9.6  | -8.1  | -7.9  | -7.6  | -7.5  | -7.9  | -8.2  | -8.4  | -9.0  | -9.3  | -9.6  | -10.1 | -10.9         | -7.5          |       |       |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |       |       |       |       |                 |
| 27-Feb                                     | -10.5                         | -10.7   | -10.8 | -10.7                           | -10.7 | -10.8 | -11.3 | -11.8 | -11.1 | -9.7  | -7.2  | -7.2  | -7.9  | -7.2  | -7.3  | -8.2  | -8.7  | -9.5  | -10.8 | -12.5 | -13.8 | -14.5 | -14.8 | -15.6 | -10.6         | -7.2          |       |       |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |       |       |       |       |                 |
| 28-Feb                                     | -17.0                         | -18.7   | -19.8 | -19.9                           | -19.1 | -19.4 | -19.8 | -19.6 | -18.5 | -17.2 | -16.3 | -14.5 | -12.7 | -11.8 | -11.2 | -10.4 | -11.0 | -13.0 | -14.8 | -15.7 | -17.0 | -18.4 | -20.0 | -20.4 | -16.5         | -10.4         |       |       |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |       |       |       |       |                 |
|  |                               |   |       |                                 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | -13.8 | -14.3         | -14.7         | -14.8 | -14.7 | -14.9 | -15.3 | -15.7 | -15.5 | -14.1 | -12.2 | -10.6 | -9.2 | -8.2 | -7.6 | -7.6 | -8.1 | -9.2 | -10.3 | -11.0 | -11.8 | -12.5 | -13.0 | -13.5 | Diurnal Average |
|  |                               |   |       |                                 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | 4.0   | 4.5           | 3.7           | 3.0   | 3.8   | 4.1   | 4.3   | 3.7   | 1.9   | 1.4   | 1.9   | 2.7   | 5.1  | 6.1  | 6.1  | 5.4  | 4.5  | 3.7  | 2.8   | 2.4   | 2.1   | 2.7   | 2.6   | 3.2   | Diurnal Maximum |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Ambient Temperature (AT) - C**  
**Janvier - February 2023**





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Ambient Temperature (AT) - C  
Janvier - February 2023**

| <b>Concentration Ranges (C)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---------------------------------|------------------------|----------|---------------------|
| -50 - -20                       | 151                    | 22.47    | 22.47               |
| -20 - 0                         | 418                    | 62.20    | 84.67               |
| 0 - 10                          | 103                    | 15.33    | 100.00              |
| 10 - 20                         | 0                      | 0.00     | 100.00              |
| > 20                            | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 672

Total Number of Hours: 672





**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

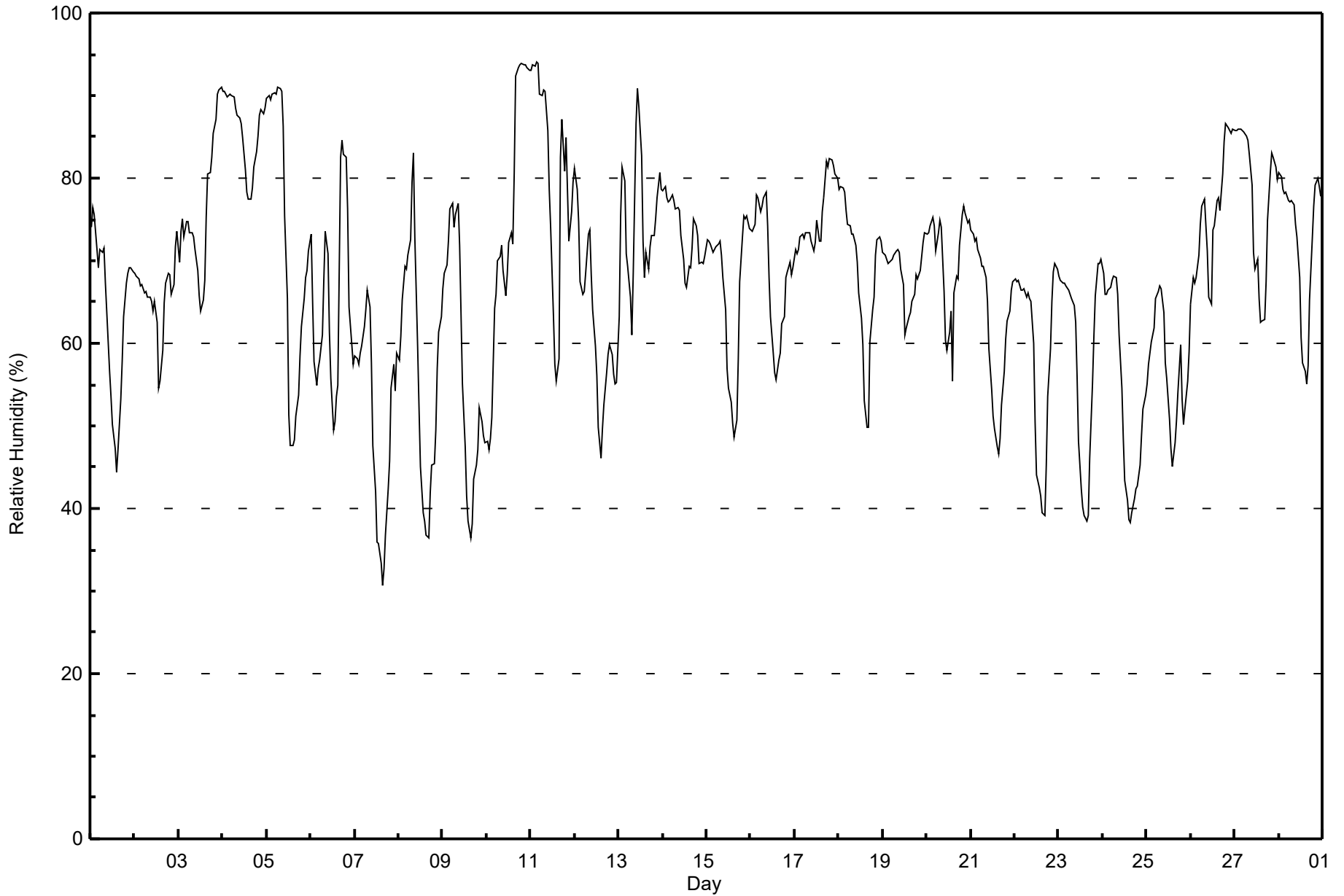
**Relative Humidity (RH) - %**  
**Janvier - February 2023**

| Maximum Value: 94.1 % on Feb 11 04:00      Maximum Daily Average: 85.9 % on Feb 4  |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Hours in Service: 672<br>Hours of Data: 672  |      |                 |               |               |
|--|-------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|--|------|-----------------|---------------|---------------|
| Minimum Value: 30.7 % on Feb 7 16:00      Minimum Daily Average: 50.6 % on Feb 7<br>Maximum Diurnal Average: 73.9 % at hour 8      Minimum Diurnal Average: 54.5 % at hour 15<br>Monthly Average: 67.62 %      Percentiles: P <sub>1</sub> = 36.7 P <sub>10</sub> = 48.9 Q <sub>1</sub> = 59.6 Median = 68.7 Q <sub>3</sub> = 75.5 P <sub>90</sub> = 84.7 P <sub>99</sub> = 93.6 |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Hours of Missing Data: 0<br>Hours of Calibration: 0<br>Percent Operational Time: 100.0 |      |                 |               |               |
| Day  | Hourly Period Ending At (MST) |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |      |                 | Daily Average | Daily Maximum |
|  | 1                             | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20   | 21   | 22   | 23   | 24              |               |               |
| 1-Feb  | 74.0                          | 76.5 | 75.6 | 71.3 | 69.2 | 71.4 | 71.0 | 71.5 | 67.2 | 63.7 | 56.6 | 53.5 | 50.2 | 47.3 | 44.5 | 47.2 | 53.3 | 57.8 | 63.3 | 67.3 | 68.5 | 69.1   | 69.2 | 68.6            | 63.7          | 76.5          |
| 2-Feb  | 68.5                          | 68.2 | 67.8 | 67.0 | 67.0 | 66.1 | 66.3 | 65.5 | 65.6 | 65.1 | 64.0 | 65.1 | 62.6 | 54.5 | 55.3 | 59.2 | 65.0 | 67.2 | 68.5 | 68.3 | 65.9 | 67.1   | 71.6 | 73.6            | 65.6          | 73.6          |
| 3-Feb  | 69.9                          | 73.6 | 75.0 | 72.9 | 74.7 | 74.8 | 73.3 | 73.4 | 72.9 | 71.4 | 68.9 | 65.8 | 64.0 | 65.2 | 67.7 | 75.3 | 80.4 | 80.7 | 82.6 | 85.5 | 87.1 | 90.2   | 90.7 | 91.1            | 76.1          | 91.1          |
| 4-Feb  | 90.6                          | 90.5 | 89.9 | 90.1 | 90.2 | 90.0 | 89.8 | 88.5 | 87.6 | 87.3 | 86.6 | 84.9 | 81.0 | 78.3 | 77.4 | 77.4 | 78.8 | 81.3 | 83.3 | 85.1 | 87.7 | 88.4   | 87.8 | 88.4            | 85.9          | 90.6          |
| 5-Feb  | 89.6                          | 89.9 | 89.4 | 90.2 | 90.3 | 90.2 | 91.1 | 90.9 | 90.5 | 86.3 | 75.5 | 65.4 | 51.4 | 47.7 | 47.6 | 48.2 | 51.2 | 53.8 | 58.5 | 62.0 | 65.4 | 68.0   | 68.7 | 71.2            | 72.2          | 91.1          |
| 6-Feb  | 73.2                          | 65.0 | 57.7 | 55.0 | 56.9 | 57.9 | 61.1 | 67.6 | 73.5 | 70.8 | 61.4 | 55.8 | 49.5 | 50.6 | 53.6 | 54.9 | 82.6 | 84.7 | 82.9 | 82.6 | 76.3 | 64.4   | 59.7 | 57.5            | 64.8          | 84.7          |
| 7-Feb  | 58.4                          | 58.1 | 57.5 | 58.7 | 59.6 | 62.0 | 64.0 | 66.5 | 64.4 | 57.6 | 47.6 | 42.1 | 36.0 | 35.7 | 33.4 | 30.7 | 32.6 | 36.7 | 42.3 | 45.8 | 54.6 | 57.4   | 54.3 | 58.8            | 50.6          | 66.5          |
| 8-Feb  | 57.9                          | 60.9 | 65.3 | 69.3 | 69.0 | 70.8 | 72.6 | 79.4 | 83.0 | 72.8 | 59.6 | 52.2 | 45.0 | 39.5 | 38.4 | 36.8 | 36.5 | 41.9 | 45.2 | 45.5 | 49.5 | 57.0   | 61.3 | 63.2            | 57.2          | 83.0          |
| 9-Feb  | 66.7                          | 68.5 | 69.6 | 72.3 | 76.3 | 77.0 | 74.0 | 75.5 | 76.9 | 71.8 | 63.6 | 55.1 | 47.5 | 41.5 | 38.5 | 36.5 | 38.1 | 43.5 | 45.3 | 47.1 | 52.3 | 50.5   | 48.9 | 48.0            | 57.7          | 77.0          |
| 10-Feb   | 48.1                          | 47.1 | 48.5 | 51.0 | 64.3 | 66.0 | 70.0 | 70.5 | 71.9 | 68.9 | 65.8 | 68.3 | 72.3 | 73.5 | 72.1 | 80.7 | 92.3 | 93.3 | 93.8 | 93.9 | 93.8 | 93.8   | 93.4 | 93.1            | 74.4          | 93.9          |
| 11-Feb   | 93.1                          | 93.8 | 93.6 | 94.1 | 93.9 | 90.1 | 90.1 | 90.6 | 90.5 | 85.7 | 78.6 | 74.1 | 63.4 | 57.5 | 55.4 | 58.2 | 82.5 | 87.1 | 80.9 | 84.9 | 78.6 | 72.3   | 76.0 | 79.5            | 81.0          | 94.1          |
| 12-Feb   | 81.2                          | 78.7 | 74.7 | 67.4 | 66.0 | 66.3 | 68.5 | 73.1 | 73.6 | 68.4 | 64.1 | 59.7 | 56.1 | 49.8 | 46.0 | 49.6 | 52.6 | 56.5 | 58.6 | 59.8 | 58.6 | 56.4   | 55.1 | 55.2            | 62.3          | 81.2          |
| 13-Feb   | 63.3                          | 75.4 | 81.3 | 79.7 | 70.9 | 69.3 | 65.5 | 61.0 | 68.5 | 86.7 | 90.8 | 88.6 | 82.8 | 72.4 | 68.0 | 71.1 | 69.0 | 71.7 | 73.1 | 73.1 | 75.0 | 77.7   | 80.8 | 78.7            | 74.8          | 90.8          |
| 14-Feb   | 78.5                          | 78.9 | 77.7 | 77.1 | 77.3 | 77.9 | 77.2 | 76.3 | 76.4 | 76.1 | 73.1 | 70.1 | 67.2 | 66.8 | 69.3 | 69.2 | 71.5 | 75.0 | 74.2 | 73.1 | 69.6 | 69.9   | 69.7 | 70.4            | 73.4          | 78.9          |
| 15-Feb   | 72.6                          | 72.3 | 72.0 | 71.1 | 71.3 | 71.7 | 72.1 | 72.4 | 70.8 | 68.0 | 64.0 | 56.9 | 54.7 | 52.9 | 50.4 | 48.6 | 50.7 | 58.1 | 67.5 | 72.9 | 75.5 | 75.1   | 75.4 | 73.9            | 66.3          | 75.5          |
| 16-Feb   | 73.8                          | 73.5 | 74.4 | 78.0 | 77.6 | 75.9 | 76.6 | 77.6 | 78.3 | 74.2 | 67.9 | 63.2 | 58.8 | 56.5 | 55.6 | 58.0 | 58.8 | 62.4 | 63.2 | 67.9 | 68.6 | 69.8   | 68.2 | 69.2            | 68.7          | 78.3          |
| 17-Feb   | 71.3                          | 70.9 | 71.4 | 72.9 | 73.2 | 72.7 | 73.3 | 73.4 | 73.3 | 72.4 | 71.1 | 72.2 | 75.0 | 72.4 | 72.3 | 75.9 | 77.7 | 82.0 | 81.4 | 82.4 | 82.3 | 81.6   | 80.6 | 79.9            | 75.5          | 82.4          |
| 18-Feb   | 78.7                          | 79.0 | 78.8 | 78.3 | 76.1 | 74.4 | 74.3 | 73.2 | 73.2 | 71.8 | 69.8 | 66.1 | 63.0 | 59.9 | 53.0 | 49.9 | 49.8 | 60.1 | 64.1 | 65.6 | 70.6 | 72.6   | 72.9 | 72.3            | 68.7          | 79.0          |
| 19-Feb   | 71.0                          | 70.7 | 70.1 | 69.7 | 69.9 | 70.1 | 70.6 | 71.1 | 71.4 | 71.0 | 69.0 | 67.2 | 61.0 | 61.8 | 63.2 | 63.7 | 65.1 | 66.0 | 68.3 | 67.8 | 68.9 | 70.6   | 72.2 | 73.3            | 68.5          | 73.3          |
| 20-Feb   | 73.3                          | 73.4 | 74.3 | 75.2 | 74.3 | 71.2 | 73.4 | 75.0 | 74.0 | 66.3 | 60.3 | 59.2 | 61.4 | 63.9 | 55.4 | 66.0 | 68.2 | 67.8 | 71.9 | 75.6 | 76.7 | 75.7   | 74.6 | 75.0            | 70.1          | 76.7          |
| 21-Feb   | 73.8                          | 73.2 | 72.4 | 72.8 | 71.4 | 70.4 | 69.4 | 69.4 | 67.9 | 65.1 | 59.3 | 54.4 | 51.2 | 49.6 | 47.4 | 46.6 | 48.5 | 52.5 | 56.7 | 60.5 | 62.8 | 64.0   | 66.5 | 67.5            | 62.2          | 73.8          |
| 22-Feb   | 67.8                          | 67.4 | 67.7 | 66.5 | 66.5 | 66.6 | 65.6 | 66.1 | 65.5 | 65.1 | 60.0 | 50.6 | 44.1 | 42.6 | 41.5 | 39.5 | 39.2 | 45.3 | 53.5 | 59.3 | 65.1 | 68.6   | 69.7 | 69.0            | 58.9          | 69.7          |
| 23-Feb   | 68.1                          | 67.6 | 67.2 | 67.2 | 66.9 | 66.5 | 66.0 | 65.4 | 64.5 | 62.6 | 55.9 | 48.2 | 42.4 | 40.2 | 39.1 | 38.4 | 39.1 | 46.0 | 55.2 | 60.9 | 65.8 | 69.6   | 69.7 | 70.1            | 58.4          | 70.1          |
| 24-Feb   | 68.5                          | 65.9 | 65.9 | 66.4 | 66.8 | 67.6 | 68.1 | 68.0 | 65.9 | 61.1 | 54.6 | 48.5 | 43.4 | 41.1 | 38.6 | 38.3 | 39.4 | 41.2 | 42.4 | 42.8 | 45.2 | 48.9   | 52.1 | 53.7            | 53.9          | 68.5          |
| 25-Feb   | 55.1                          | 57.4 | 60.2 | 60.9 | 61.8 | 65.4 | 66.3 | 66.9 | 66.5 | 63.7 | 57.6 | 55.8 | 50.9 | 47.3 | 45.1 | 47.9 | 50.7 | 54.0 | 59.8 | 53.2 | 50.1 | 52.0   | 55.5 | 58.9            | 56.8          | 66.9          |
| 26-Feb   | 64.7                          | 68.0 | 67.2 | 67.9 | 70.6 | 74.5 | 76.6 | 77.4 | 74.3 | 71.2 | 65.7 | 64.7 | 73.6 | 74.2 | 77.2 | 77.6 | 76.0 | 80.5 | 84.4 | 86.6 | 86.2 | 85.8   | 85.4 | 85.9            | 75.7          | 86.6          |
| 27-Feb   | 85.8                          | 85.8 | 86.0 | 86.0 | 85.8 | 85.6 | 85.0 | 84.6 | 82.9 | 79.2 | 71.1 | 68.9 | 70.2 | 65.4 | 62.5 | 62.8 | 62.9 | 67.5 | 74.9 | 80.7 | 83.1 | 82.6   | 81.3 | 79.9            | 77.5          | 86.0          |
| 28-Feb   | 80.7                          | 80.1 | 78.7 | 78.2 | 78.3 | 77.3 | 77.1 | 77.3 | 76.8 | 74.4 | 72.9 | 67.9 | 60.8 | 57.7 | 56.6 | 55.0 | 57.2 | 65.3 | 72.7 | 76.6 | 79.2 | 80.0   | 79.0 | 77.8            | 72.4          | 80.7          |
| 72.1 72.5 72.5 72.4 72.7 72.8 73.2 73.9 73.9 71.4 66.3 62.3 58.5 55.9 54.5 55.8 59.6 63.6 66.7 68.8 70.1 70.7 71.1 71.6  |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |      | Diurnal Average |               |               |
| 93.1 93.8 93.6 94.1 93.9 90.2 91.1 90.9 90.5 87.3 90.8 88.6 82.8 78.3 77.4 80.7 92.3 93.3 93.8 93.9 93.8 93.8 93.4 93.1  |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |      | Diurnal Maximum |               |               |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Relative Humidity (RH) - %**  
**Janvier - February 2023**





|   |   |                                |
|---|---|--------------------------------|
| Maximum Speed: 25 km/h on Feb 7 14:00             | Maximum Daily Speed Average: 14.1 km/h on Feb 24  | Hours in Service: 672          |
| Minimum Speed Value: 1 km/h on Feb 28 16:00       | Minimum Daily Speed Average: 0.9 km/h on Feb 10   | Hours of Data: 670             |
| Maximum Diurnal Speed Average: 4.0 km/h at hour 6 | Minimum Diurnal Speed Average: 0.7 km/h at hour 19  | Hours of Missing Data: 2       |
| Monthly Average Velocity: 2.4 km/h 245.5 deg      | Percentiles: P <sub>1</sub> = 1 P <sub>10</sub> = 3 Q <sub>1</sub> = 5 Median = 8 Q <sub>3</sub> = 11 P <sub>90</sub> = 14 P <sub>99</sub> = 20 | Percent Operational Time: 99.7 |

| Day  | Hourly Period Ending At (MST) |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 | Daily Average | Daily Maximum |
|--|-------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-----------------|---------------|---------------|
|  | 1                             | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     | 10    | 11    | 12    | 13    | 14    | 15    | 16    | 17    | 18    | 19    | 20    | 21    | 22    | 23    | 24              |               |               |
| 1-Feb  | SW2                           | SW4   | NNE7  | NNE10 | N7    | NNW4  | NNE9  | NNE10 | N11   | N9    | N10   | NNE10 | NNE13 | NNE9  | N9    | NNE9  | N6    | NNW5  | NW3   | W3    | SW4   | SW5   | SSW8  | SSW9            | N4.6          | NNE13         |
| 2-Feb  | SSW8                          | SSW6  | SSW8  | SSW7  | SSW9  | SSW7  | SSW8  | SSW5  | S4    | SSW2  | WSW1  | NNE2  | SSE6  | SSE10 | SSE10 | SSE12 | SSE14 | SSE15 | S14   | S14   | S12   | S12   | S12   | SSW14           | S8.1          | SSE15         |
| 3-Feb  | SSW16                         | SSW15 | SSW15 | SSW16 | SSW17 | SW18  | SW17  | SW16  | SW16  | SW17  | SW20  | SW17  | WSW14 | SW9   | SW7   | NW9   | NW7   | N6    | NE8   | NE6   | NE6   | NE7   | NE6   | NNE4            | SW7.6         | SW20          |
| 4-Feb  | NE1                           | SSW5  | W2    | ESE1  | NNE3  | NNE4  | NNE3  | NNE5  | N6    | NNE7  | NNE5  | NNE6  | NNE6  | N2    | NNE4  | N5    | NNE3  | NNW2  | NNE1  | NNW2  | N2    | NNW2  | WNW1  | S3              | NNE2.5        | NNE7          |
| 5-Feb  | S5                            | S6    | S6    | S4    | SSE2  | ESE1  | NE1   | SSW3  | SSW10 | SW8   | SSW12 | SW10  | SW11  | WSW6  | SW3   | SSW12 | SW12  | SW13  | SW12  | SW13  | SW12  | SW12  | SW10  | SW7.7           | SW13          |               |
| 6-Feb  | WNW20                         | NW18  | WNW15 | WNW16 | WNW15 | WNW12 | WSW8  | SW8   | SW8   | SW10  | SW9   | WSW8  | WSW5  | SSW7  | SSW6  | S5    | SSW8  | SSE5  | SSE7  | SSW6  | SW9   | SW12  | SW13  | SW13            | WSW7.5        | WNW20         |
| 7-Feb  | SW13                          | SW11  | SSW13 | SW14  | WSW14 | W14   | W18   | WNW20 | WNW20 | WNW21 | WNW19 | W18   | W21   | W25   | W21   | WNW22 | WNW15 | WNW11 | W9    | W7    | SW6   | S9    | SSW10 | SSW9            | W13.2         | W25           |
| 8-Feb  | SW12                          | SW10  | SSW9  | SSW10 | SW9   | SSW10 | SSW10 | SSW5  | SSW4  | SW6   | SSW6  | SW4   | WSW6  | SW7   | SSW9  | SSW10 | WSW8  | SW6   | SSW10 | SSW12 | SSW11 | SSW12 | SSW12 | SSW12           | SSW8.5        | SSW12         |
| 9-Feb  | SSW13                         | SW12  | SW13  | SW12  | SW11  | SSW12 | SSW14 | SSW15 | SSW15 | SSW12 | SW11  | SW11  | SW11  | SW12  | SW10  | SSW11 | SSW8  | S9    | S12   | S8    | S7    | SSW8  | SSW8  | SSW8            | SSW10.5       | SSW15         |
| 10-Feb   | SSW10                         | SSW10 | SSW9  | S5    | ESE2  | SSW5  | SSE4  | SE3   | E6    | NE4   | E4    | NNE6  | NNE6  | N8    | NNE8  | N4    | N5    | NNE5  | NNW3  | NNW3  | N2    | NNE2  | NE2   | UO              | ENE0.9        | SSW10         |
| 11-Feb   | S2                            | S3    | SW4   | W5    | W6    | W6    | SW7   | SW10  | SW9   | SW10  | SW10  | SSW11 | WSW14 | WSW16 | WSW12 | WSW15 | WSW14 | WSW13 | WSW15 | W14   | WNW20 | WNW19 | W13   | WSW12           | WSW9.8        | WNW20         |
| 12-Feb   | WSW12                         | WSW11 | WSW7  | W13   | W15   | W14   | SW10  | SW8   | SW10  | SW13  | WSW13 | SW10  | SW11  | WSW11 | SW10  | SSW9  | S9    | S8    | S9    | S9    | S10   | S11   | S12   | S13             | SW9.3         | W15           |
| 13-Feb   | SSW11                         | SSW17 | SW15  | SW16  | SW18  | SW16  | WSW16 | W16   | SW10  | WSW13 | WSW13 | W14   | N19   | N14   | N16   | N15   | N17   | N16   | N17   | N13   | N10   | N6    | N9    | WNW6.5          | N19           |               |
| 14-Feb   | N7                            | N9    | NNE9  | NNE7  | NNE7  | NE8   | ENE5  | NNE3  | SW4   | SW5   | SW5   | SW5   | SW7   | WSW5  | WSW5  | SSW4  | N4    | NNE7  | NNE9  | NNE9  | N9    | NNE7  | NNE8  | NNE8            | N3.4          | NNE9          |
| 15-Feb   | NNE8                          | NE7   | NE7   | E6    | ENE4  | NE4   | NE4   | E5    | E6    | E5    | ENE5  | ENE4  | NE6   | ENE7  | ENE6  | NE5   | E6    | E6    | SE1   | S1    | SE2   | SW2   | ESE2  | ESE3            | ENE4.0        | NNE8          |
| 16-Feb   | SSE3                          | SE2   | S6    | S6    | S9    | S8    | SSE6  | S7    | SSW9  | SSW12 | SW14  | SSW16 | SSW16 | SW13  | SW14  | SW14  | SW13  | SW8   | WSW8  | WNW13 | NW14  | NNW12 | N11   | N9              | SW6.3         | SSW16         |
| 17-Feb   | N12                           | NNE11 | NNE8  | NNE9  | N6    | NNE7  | NE8   | NE7   | ENE4  | E5    | ENE6  | ENE5  | NE5   | NNE6  | NNE7  | N7    | NNE9  | NNE8  | NNE9  | NNE8  | NNE7  | NNE9  | NNE9  | NNE9            | NNE7.0        | N12           |
| 18-Feb   | NNE8                          | NNE8  | NNE7  | NNE8  | NNE10 | NNE9  | NNE8  | NNE10 | NNE9  | NNE8  | NNE8  | NNE9  | NE9   | NE8   | NE4   | NE4   | NE4   | NE4   | NNE6  | ENE2  | SSW2  | S3    | SSW4  | S3              | NNE5.4        | NNE10         |
| 19-Feb   | SSE2                          | SSE2  | SSE2  | SE2   | NE1   | NNE2  | N3    | NNE3  | NNE4  | N5    | NNE6  | NNE7  | NNE5  | NNE8  | N12   | NNE11 | NNE7  | NE8   | NNE8  | NNE10 | NNE7  | NNE7  | NNE5  | NNE5            | NNE4.9        | N12           |
| 20-Feb   | N3                            | NW2   | WSW2  | SW5   | WNW1  | NW2   | NW1   | W2    | S2    | NW3   | NE2   | NE3   | NE5   | WNW3  | NNW9  | NNE9  | NE10  | NNE9  | NNE7  | NE5   | NNE6  | NNE8  | NNE8  | NNE4            | NNE3.3        | NE10          |
| 21-Feb   | NNW2                          | NW3   | NNW6  | N8    | N7    | N6    | NNW3  | NW2   | NNW4  | NNW7  | N10   | NNW11 | NNE13 | NNE12 | NNE11 | NNE16 | NNE13 | NNE12 | NNE9  | N7    | N7    | NNE8  | NNE5  | NNE3            | N7.3          | NNE16         |
| 22-Feb   | SSW4                          | SSW7  | SSW6  | SSW6  | SSW8  | SSW11 | SSW6  | SSW10 | SSW10 | SSW7  | S4    | ENE3  | ENE3  | NE7   | NNE8  | NNE8  | NNE8  | NNE8  | NNE6  | NNE6  | NNE2  | WSW2  | S2    | SSW2            | SSW1.1        | SSW11         |
| 23-Feb   | SSW1                          | SSW4  | SSW3  | SSW3  | SSW8  | SSW6  | SSW7  | SSW6  | SSW6  | SW3   | WSW2  | WSW3  | S3    | ENE7  | ENE7  | E7    | ENE5  | NE5   | NNE3  | NNE1  | UO    | SSW3  | SSW6  | SSW9            | S2.2          | SSW9          |
| 24-Feb   | SSW12                         | SSW13 | SSW13 | SSW12 | SSW11 | SW12  | SSW12 | SSW11 | SSW11 | SW7   | SW11  | SSW17 | SSW17 | S16   | SSW17 | SSW17 | SSW17 | SSW14 | SSW16 | SSW18 | SSW20 | SSW19 | SW16  | SSW15           | SSW14.1       | SSW20         |
| 25-Feb   | SSW13                         | SSW12 | SSW14 | SW14  | SW12  | SW14  | SW13  | SW12  | SW12  | SW10  | W11   | SSW12 | WSW10 | SW10  | SW12  | SW9   | S6    | S7    | SSW12 | SSW9  | SSW9  | S6    | SSE8  | SW10.1          | SSW14         |               |
| 26-Feb   | SSE9                          | SSE8  | S6    | SE2   | SSE4  | SE4   | NE3   | N3    | N3    | NNE5  | NNE5  | NNE6  | NNE6  | ENE11 | NE13  | NE13  | ENE9  | ENE8  | NE6   | NE7   | NE7   | ENE7  | NE5   | NNE5            | ENE4.6        | NE13          |
| 27-Feb   | NNE6                          | NNE4  | N4    | NNW3  | NNW3  | NW4   | NW5   | WNW6  | WNW4  | NW3   | NNE5  | N7    | NW8   | NW10  | NW11  | NW14  | NNW11 | NNW9  | N7    | N5    | N5    | N5    | N6    | N6              | NNW5.7        | NW14          |
| 28-Feb   | NNE6                          | NNE4  | NNE1  | N3    | N3    | W3    | WSW2  | W1    | SW3   | NNE3  | NNE5  | NNE4  | NE6   | NE8   | NNE5  | N1    | NE5   | ESE2  | NNE2  | NE3   | NNE2  | NNE3  | SSW3  | SE1             | NNE2.2        | NE8           |
| SW3.3 SW3.7 SW3.5 SW3.5WSW3.7WSW4.0 SW3.6WSW3.5 SW3.7WSW3.8WSW3.4 W3.1 W2.5WNW2.1WNW2.1WNW1.5 NW1.1 N0.7WNW0.7 W1.2 W1.6WSW1.7 SW2.2 SW2.7 |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Diurnal Average |               |               |
| WNW20 NW18 SSW15 SSW16 SW18 SW18 W18WNW20WNW20WNW21 SW20 W18 W21 W25 W21WNW22 N17 N16 N17 SSW18 SSW20 SSW19 SW16 SSW15                     |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Diurnal Maximum |               |               |

UO - Unstable Operation

All monthly, daily, and diurnal averages have been calculated using vector methods



**Wood Buffalo Environmental Association**  
**Summary of Hour Standard Deviations**

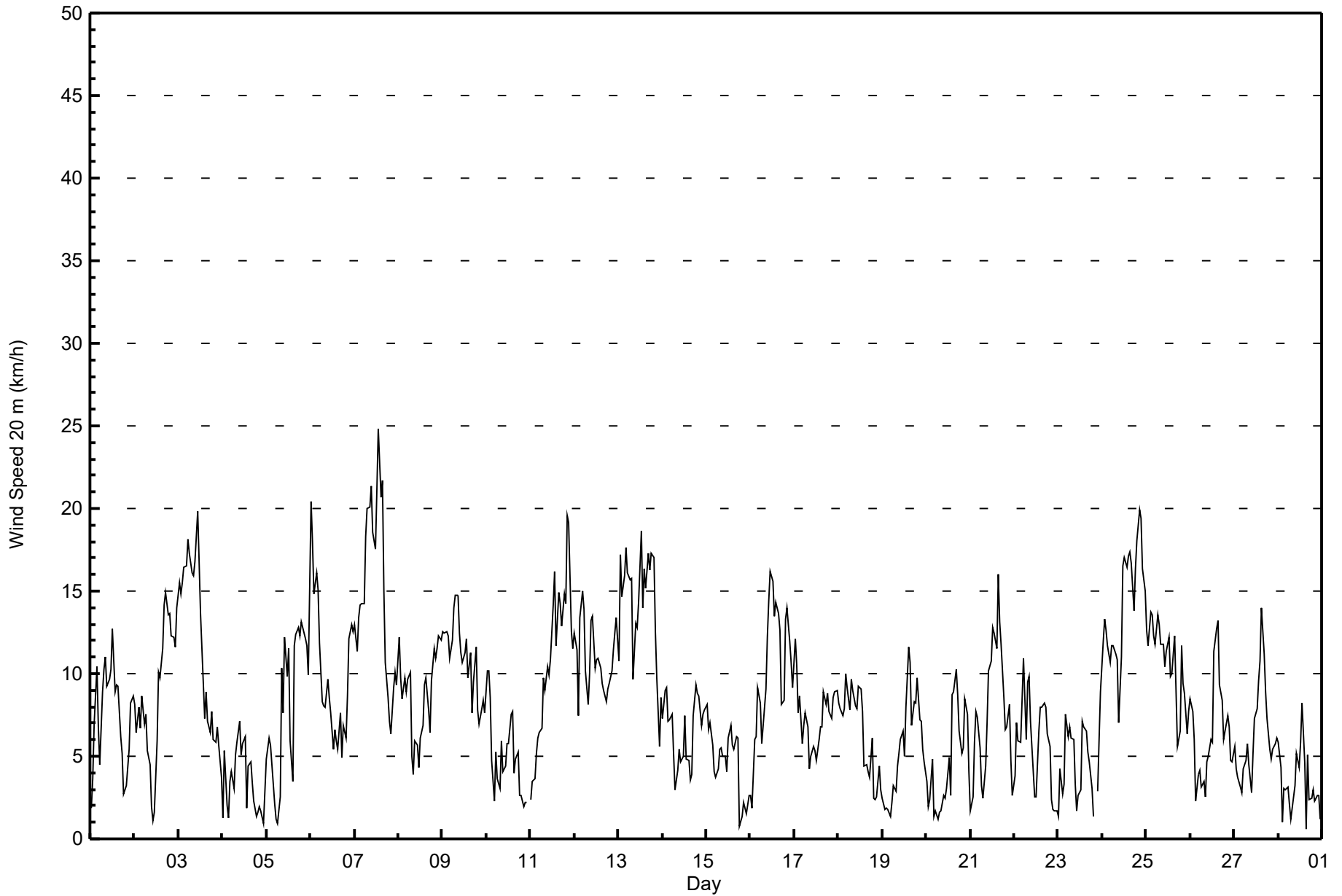
**Wind Speed 20 m (WS20m) - km/h**  
**Janvier - February 2023**

| Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0  |                               |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    | Hours in Service: 672          |    |    |    |    |    |    |    |               |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
|--|-------------------------------|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|--------------------------------|----|----|----|----|----|----|----|---------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|--|
| Maximum Value: 8 km/h on Feb 6 01:00   |                               |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    | Hours of Data: 670             |    |    |    |    |    |    |    |               |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| Minimum Value: 1 km/h on Feb 15 21:00  |                               |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    | Hours of Missing Data: 2       |    |    |    |    |    |    |    |               |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| Percentiles: P <sub>1</sub> = 1 P <sub>10</sub> = 1 Q <sub>1</sub> = 1 Median = 2 Q <sub>3</sub> = 3 P <sub>90</sub> = 4 P <sub>99</sub> = 7 |                               |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    | Hours of Calibration: 0        |    |    |    |    |    |    |    |               |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
|  |                               |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    | Percent Operational Time: 99.7 |    |    |    |    |    |    |    |               |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| Day  | Hourly Period Ending At (MST) |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |                                |    |    |    |    |    |    |    | Daily Maximum |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
|  | 1                             | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17                             | 18 | 19 | 20 | 21 | 22 | 23 | 24 |               |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| 1-Feb  | 1                             | 2 | 4 | 3 | 3 | 1 | 4 | 4 | 4 | 4  | 4  | 3  | 3  | 4  | 4  | 3  | 3                              | 2  | 1  | 1  | 1  | 2  | 1  | 2  | 4             | 4 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| 2-Feb  | 1                             | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 1  | 1  | 1  | 3  | 4  | 3  | 4  | 5                              | 5  | 4  | 4  | 4  | 4  | 3  | 4  | 5             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| 3-Feb  | 4                             | 4 | 4 | 4 | 4 | 5 | 5 | 5 | 4 | 5  | 5  | 5  | 4  | 3  | 2  | 4  | 3                              | 3  | 1  | 1  | 2  | 2  | 1  | 2  | 5             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| 4-Feb  | 1                             | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2  | 1  | 1  | 2  | 1  | 2  | 2  | 1                              | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 2             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| 5-Feb  | 2                             | 1 | 1 | 2 | 2 | 1 | 1 | 2 | 3 | 3  | 3  | 3  | 3  | 3  | 1  | 2  | 2                              | 4  | 3  | 3  | 3  | 3  | 3  | 2  | 4             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| 6-Feb  | 8                             | 8 | 7 | 6 | 4 | 3 | 3 | 2 | 2 | 2  | 2  | 2  | 2  | 2  | 4  | 3  | 1                              | 2  | 1  | 2  | 3  | 3  | 3  | 3  | 8             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| 7-Feb  | 3                             | 3 | 3 | 3 | 4 | 4 | 5 | 6 | 6 | 6  | 6  | 5  | 7  | 8  | 6  | 7  | 4                              | 4  | 2  | 2  | 1  | 2  | 2  | 2  | 8             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| 8-Feb  | 2                             | 2 | 2 | 1 | 2 | 1 | 1 | 2 | 2 | 2  | 1  | 2  | 2  | 3  | 3  | 2  | 2                              | 1  | 2  | 2  | 2  | 2  | 2  | 2  | 3             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| 9-Feb  | 2                             | 3 | 3 | 3 | 2 | 2 | 3 | 3 | 3 | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 2                              | 3  | 2  | 2  | 2  | 2  | 2  | 1  | 3             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| 10-Feb   | 2                             | 2 | 2 | 3 | 1 | 2 | 2 | 2 | 2 | 1  | 2  | 2  | 1  | 3  | 2  | 1  | 2                              | 1  | 1  | 1  | 1  | 1  | 1  | UO | 3             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| 11-Feb   | 1                             | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2  | 2  | 2  | 5  | 5  | 4  | 7  | 5                              | 4  | 5  | 4  | 6  | 5  | 4  | 3  | 7             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| 12-Feb   | 4                             | 4 | 3 | 4 | 4 | 4 | 3 | 2 | 3 | 3  | 3  | 3  | 3  | 3  | 3  | 2  | 2                              | 3  | 2  | 2  | 3  | 3  | 3  | 4  | 4             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| 13-Feb   | 3                             | 4 | 4 | 4 | 4 | 5 | 4 | 5 | 3 | 5  | 4  | 5  | 7  | 7  | 6  | 6  | 7                              | 6  | 7  | 6  | 4  | 5  | 2  | 4  | 7             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| 14-Feb   | 2                             | 3 | 3 | 2 | 2 | 1 | 2 | 2 | 1 | 1  | 1  | 2  | 2  | 2  | 1  | 2  | 2                              | 2  | 3  | 3  | 3  | 2  | 2  | 2  | 3             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| 15-Feb   | 3                             | 2 | 2 | 1 | 1 | 1 | 1 | 2 | 2 | 2  | 1  | 1  | 2  | 2  | 2  | 1  | 2                              | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 3             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| 16-Feb   | 1                             | 1 | 1 | 2 | 2 | 3 | 2 | 2 | 3 | 3  | 4  | 4  | 4  | 4  | 4  | 4  | 3                              | 2  | 3  | 4  | 6  | 5  | 5  | 4  | 6             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| 17-Feb   | 4                             | 3 | 2 | 3 | 2 | 2 | 1 | 1 | 1 | 1  | 2  | 2  | 1  | 1  | 2  | 2  | 2                              | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 4             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| 18-Feb   | 2                             | 2 | 2 | 2 | 3 | 2 | 2 | 3 | 2 | 2  | 2  | 2  | 2  | 2  | 1  | 1  | 2                              | 1  | 1  | 2  | 1  | 1  | 1  | 1  | 3             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| 19-Feb   | 1                             | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1  | 1  | 1  | 1  | 2  | 3  | 3  | 2                              | 2  | 2  | 3  | 2  | 2  | 2  | 1  | 3             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| 20-Feb   | 1                             | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1  | 1  | 1  | 2  | 3  | 3  | 2  | 3                              | 2  | 1  | 1  | 1  | 3  | 2  | 1  | 3             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| 21-Feb   | 1                             | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 3  | 4  | 4  | 4  | 3  | 3  | 4  | 4                              | 4  | 2  | 2  | 2  | 3  | 2  | 1  | 4             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| 22-Feb   | 2                             | 2 | 1 | 1 | 2 | 2 | 2 | 2 | 3 | 3  | 1  | 1  | 1  | 3  | 2  | 2  | 2                              | 2  | 2  | 1  | 1  | 1  | 1  | 1  | 3             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| 23-Feb   | 1                             | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2  | 1  | 1  | 2  | 2  | 1  | 2  | 1                              | 1  | 2  | 1  | UO | 2  | 1  | 1  | 2             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| 24-Feb   | 2                             | 2 | 2 | 2 | 3 | 2 | 2 | 2 | 2 | 3  | 6  | 5  | 5  | 5  | 5  | 4  | 4                              | 4  | 4  | 5  | 5  | 6  | 4  | 4  | 6             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| 25-Feb   | 3                             | 3 | 3 | 4 | 3 | 3 | 3 | 3 | 3 | 3  | 4  | 3  | 3  | 4  | 4  | 3  | 3                              | 1  | 2  | 4  | 2  | 1  | 2  | 2  | 4             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| 26-Feb   | 2                             | 2 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1  | 1  | 2  | 1  | 3  | 3  | 4  | 3                              | 2  | 1  | 2  | 1  | 2  | 2  | 1  | 4             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| 27-Feb   | 1                             | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1  | 2  | 3  | 3  | 4  | 4  | 5  | 5                              | 4  | 3  | 2  | 1  | 1  | 2  | 2  | 5             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| 28-Feb   | 1                             | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 3                              | 1  | 1  | 1  | 1  | 1  | 2  | 1  | 3             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
|  |                               |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    | 8                              | 8  | 7  | 6  | 4  | 5  | 5  | 6  | 6             | 6 | 6 | 5 | 7 | 8 | 6 | 7 | 7 | 6 | 7 | 6 | 6 | 6 | 5 | 4 |  |
| Diurnal Maximum  |                               |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |                                |    |    |    |    |    |    |    |               |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| UO - Unstable Operation  |                               |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |                                |    |    |    |    |    |    |    |               |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Wind Speed 20 m (WS20m) - km/h**  
**Janvier - February 2023**





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Wind Speed 20 m (WS20m) - km/h  
Janvier - February 2023**

| <b>Wind Speed Ranges (km/h)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---------------------------------|------------------------|----------|---------------------|
| 0 - 5                           | 205                    | 30.60    | 30.60               |
| 6 - 11                          | 300                    | 44.78    | 75.37               |
| 12 - 19                         | 154                    | 22.99    | 98.36               |
| 20 - 28                         | 11                     | 1.64     | 100.00              |
| 29 - 38                         | 0                      | 0.00     | 100.00              |
| > 38                            | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 670

Total Number of Hours: 672



**Wood Buffalo Environmental Association**  
**Frequency Distribution**

**Wind Speed 20 m (WS20m) - km/h**  
**Janvier - February 2023**

| <b>Wind Speed</b><br><b>Ranges (km/h)</b> | <b>Wind Direction</b> |            |           |            |          |            |           |            |           |            |           |            |           |            |           |            | <b>Totals</b> |
|---|-----------------------|------------|-----------|------------|----------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|---------------|
|   | <b>N</b>              | <b>NNE</b> | <b>NE</b> | <b>ENE</b> | <b>E</b> | <b>ESE</b> | <b>SE</b> | <b>SSE</b> | <b>S</b>  | <b>SSW</b> | <b>SW</b> | <b>WSW</b> | <b>W</b>  | <b>WNW</b> | <b>NW</b> | <b>NNW</b> |               |
| 0 - 5                                     | 19                    | 39         | 22        | 11         | 3        | 6          | 8         | 9          | 14        | 18         | 15        | 9          | 6         | 4          | 10        | 12         | 205           |
| 6 - 11                                    | 29                    | 78         | 21        | 9          | 6        | 0          | 0         | 8          | 21        | 58         | 40        | 13         | 4         | 2          | 5         | 6          | 300           |
| 12 - 19                                   | 11                    | 6          | 2         | 0          | 0        | 0          | 0         | 4          | 8         | 43         | 43        | 15         | 10        | 8          | 3         | 1          | 154           |
| 20 - 28                                   | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0         | 1          | 1         | 0          | 3         | 6          | 0         | 0          | 11            |
| 29 - 38                                   | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0             |
| > 38                                      | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0             |
| <b>Totals</b>                             | <b>59</b>             | <b>123</b> | <b>45</b> | <b>20</b>  | <b>9</b> | <b>6</b>   | <b>8</b>  | <b>21</b>  | <b>43</b> | <b>120</b> | <b>99</b> | <b>37</b>  | <b>23</b> | <b>20</b>  | <b>18</b> | <b>19</b>  | <b>670</b>    |

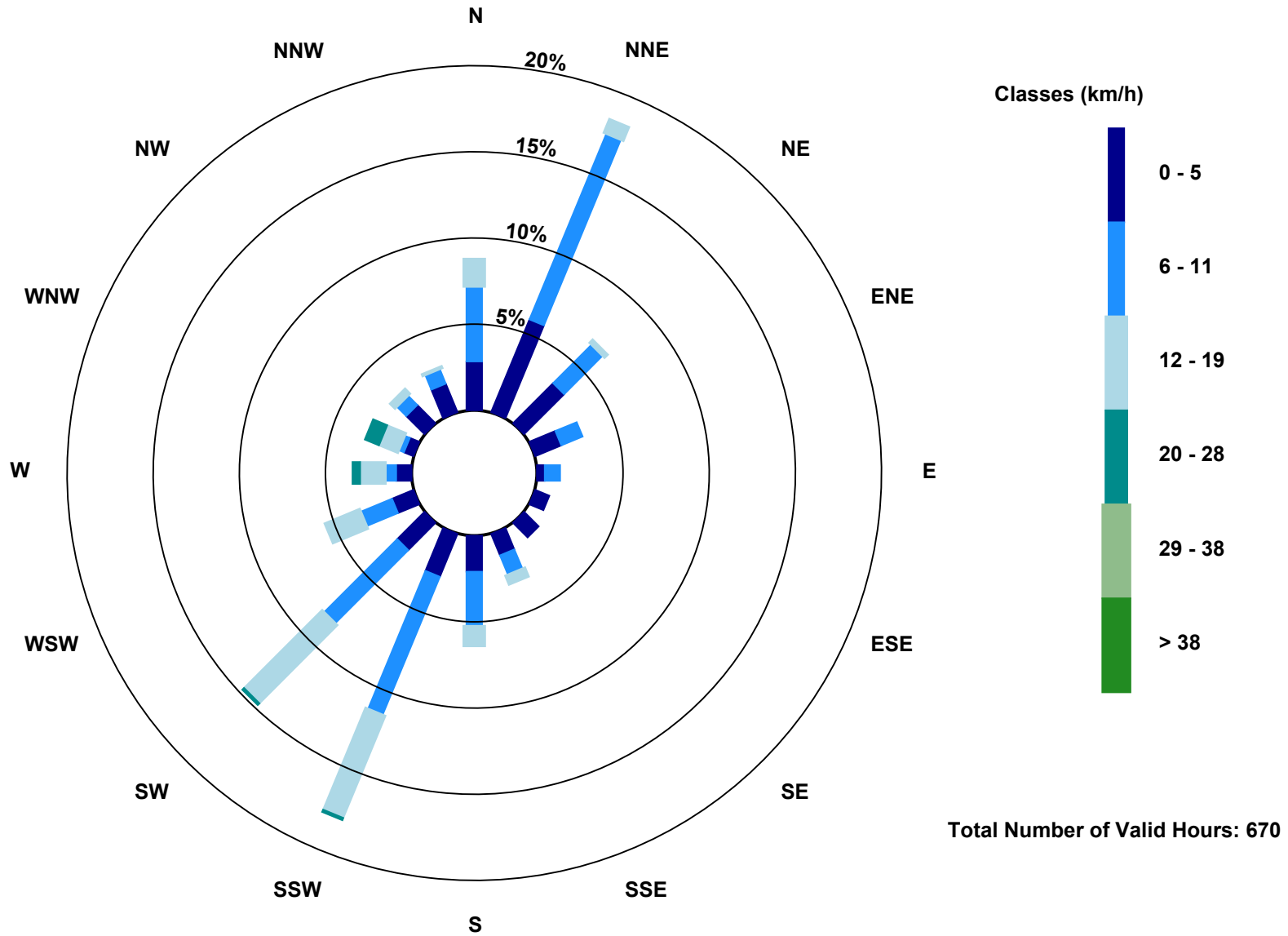
Total Number of Valid Hours: 670

Total Number of Hours: 672



Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Wind Speed 20 m (WS20m) - km/h  
Janvier







|   |                                |
|---|--------------------------------|
| Direction of Maximum Speed: 275 deg on Feb 7 14:00            | Hours in Service: 672          |
| Direction of Maximum Daily Speed Average: 204.7 deg on Feb 24 | Hours of Data: 670             |
| Direction of Minimum Speed: 0 deg on Feb 28 16:00             | Hours of Missing Data: 2       |
| Direction of Minimum Daily Speed Average: 0.9 deg on Feb 10   | Percent Operational Time: 99.7 |
| Monthly Average Direction: 245.5 deg                          |                                |

| Day   | Hourly Period Ending At (MST) |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Daily Average |
|---|-------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---------------|
|   | 1                             | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19  | 20  | 21  | 22  | 23  | 24  |               |
| 1-Feb   | 219                           | 217 | 14  | 12  | 359 | 329 | 15  | 12  | 360 | 356 | 4   | 17  | 30  | 15  | 355 | 14  | 4   | 333 | 316 | 263 | 235 | 219 | 208 | 208 | 356.7         |
| 2-Feb   | 209                           | 200 | 206 | 205 | 202 | 199 | 201 | 195 | 188 | 203 | 243 | 14  | 147 | 152 | 153 | 153 | 161 | 163 | 169 | 174 | 174 | 171 | 178 | 194 | 177.9         |
| 3-Feb   | 197                           | 200 | 199 | 208 | 209 | 215 | 215 | 221 | 224 | 225 | 228 | 235 | 241 | 227 | 230 | 311 | 319 | 4   | 42  | 43  | 42  | 36  | 35  | 33  | 223.5         |
| 4-Feb   | 39                            | 212 | 260 | 116 | 23  | 16  | 25  | 19  | 8   | 25  | 29  | 21  | 25  | 358 | 20  | 6   | 28  | 345 | 17  | 345 | 2   | 340 | 290 | 185 | 14.4          |
| 5-Feb   | 184                           | 173 | 169 | 178 | 157 | 103 | 36  | 207 | 208 | 225 | 211 | 223 | 227 | 240 | 227 | 207 | 214 | 222 | 230 | 224 | 225 | 231 | 220 | 224 | 215.8         |
| 6-Feb   | 295                           | 307 | 299 | 296 | 282 | 284 | 252 | 223 | 221 | 227 | 228 | 246 | 239 | 208 | 195 | 169 | 204 | 168 | 167 | 197 | 218 | 224 | 218 | 223 | 247.4         |
| 7-Feb   | 233                           | 224 | 210 | 232 | 251 | 261 | 270 | 289 | 294 | 291 | 282 | 269 | 266 | 275 | 275 | 284 | 288 | 287 | 263 | 265 | 218 | 181 | 208 | 207 | 263.7         |
| 8-Feb   | 216                           | 227 | 212 | 208 | 223 | 211 | 204 | 201 | 204 | 221 | 209 | 217 | 240 | 219 | 213 | 200 | 242 | 216 | 206 | 213 | 208 | 203 | 210 | 209 | 213.2         |
| 9-Feb   | 213                           | 218 | 220 | 226 | 214 | 203 | 204 | 211 | 208 | 209 | 229 | 231 | 232 | 233 | 217 | 211 | 196 | 175 | 187 | 178 | 182 | 205 | 208 | 205 | 210.6         |
| 10-Feb  | 194                           | 202 | 198 | 191 | 116 | 198 | 155 | 130 | 80  | 48  | 84  | 31  | 15  | 3   | 20  | 2   | 11  | 22  | 344 | 331 | 356 | 25  | 34  | UO  | 60.8          |
| 11-Feb  | 186                           | 188 | 219 | 268 | 276 | 269 | 231 | 236 | 219 | 217 | 225 | 206 | 245 | 251 | 243 | 242 | 243 | 247 | 258 | 267 | 291 | 294 | 275 | 257 | 251.3         |
| 12-Feb  | 253                           | 254 | 251 | 271 | 279 | 264 | 234 | 216 | 217 | 233 | 239 | 233 | 231 | 237 | 233 | 207 | 191 | 180 | 182 | 173 | 169 | 186 | 184 | 190 | 224.1         |
| 13-Feb  | 212                           | 201 | 217 | 221 | 225 | 234 | 249 | 260 | 231 | 258 | 248 | 269 | 357 | 355 | 0   | 357 | 0   | 356 | 356 | 359 | 1   | 9   | 4   | 5   | 298.9         |
| 14-Feb  | 11                            | 10  | 15  | 23  | 27  | 38  | 61  | 26  | 231 | 232 | 231 | 235 | 219 | 243 | 249 | 200 | 2   | 23  | 27  | 15  | 11  | 20  | 22  | 23  | 8.1           |
| 15-Feb  | 33                            | 38  | 51  | 91  | 71  | 45  | 56  | 85  | 85  | 86  | 77  | 75  | 51  | 60  | 73  | 56  | 94  | 101 | 132 | 173 | 126 | 227 | 110 | 120 | 71.7          |
| 16-Feb  | 148                           | 140 | 172 | 181 | 191 | 182 | 162 | 186 | 200 | 212 | 218 | 212 | 211 | 218 | 222 | 226 | 219 | 236 | 257 | 298 | 326 | 328 | 351 | 0   | 227.3         |
| 17-Feb  | 8                             | 17  | 21  | 21  | 4   | 22  | 39  | 45  | 66  | 79  | 77  | 70  | 46  | 17  | 18  | 11  | 27  | 23  | 23  | 22  | 20  | 19  | 20  | 13  | 26.5          |
| 18-Feb  | 16                            | 20  | 22  | 26  | 17  | 18  | 17  | 21  | 26  | 22  | 24  | 31  | 37  | 39  | 36  | 41  | 51  | 53  | 32  | 57  | 211 | 188 | 203 | 175 | 28.4          |
| 19-Feb  | 168                           | 160 | 150 | 139 | 51  | 21  | 5   | 15  | 15  | 10  | 16  | 21  | 18  | 15  | 10  | 24  | 24  | 39  | 27  | 30  | 24  | 22  | 16  | 13  | 23.4          |
| 20-Feb  | 2                             | 326 | 241 | 221 | 303 | 309 | 321 | 266 | 172 | 312 | 43  | 40  | 42  | 302 | 332 | 32  | 36  | 31  | 31  | 40  | 25  | 20  | 30  | 18  | 14.6          |
| 21-Feb  | 341                           | 318 | 348 | 6   | 358 | 4   | 335 | 313 | 346 | 332 | 3   | 347 | 17  | 29  | 19  | 28  | 17  | 12  | 12  | 353 | 1   | 17  | 25  | 20  | 7.1           |
| 22-Feb  | 208                           | 204 | 203 | 198 | 210 | 204 | 203 | 209 | 207 | 206 | 189 | 66  | 63  | 45  | 22  | 19  | 18  | 22  | 25  | 30  | 17  | 238 | 172 | 200 | 197.3         |
| 23-Feb  | 192                           | 203 | 195 | 194 | 203 | 206 | 204 | 210 | 211 | 215 | 243 | 249 | 176 | 77  | 75  | 87  | 57  | 37  | 32  | 14  | UO  | 198 | 202 | 205 | 181.6         |
| 24-Feb  | 209                           | 207 | 208 | 211 | 212 | 217 | 208 | 208 | 205 | 226 | 225 | 200 | 198 | 185 | 198 | 195 | 196 | 192 | 199 | 198 | 207 | 212 | 214 | 213 | 204.7         |
| 25-Feb  | 209                           | 212 | 210 | 225 | 219 | 227 | 219 | 227 | 227 | 233 | 236 | 259 | 234 | 255 | 235 | 223 | 227 | 184 | 182 | 207 | 208 | 203 | 180 | 165 | 219.9         |
| 26-Feb  | 160                           | 151 | 171 | 144 | 153 | 124 | 53  | 9   | 357 | 16  | 15  | 14  | 22  | 59  | 55  | 56  | 70  | 62  | 43  | 46  | 51  | 67  | 53  | 20  | 61.9          |
| 27-Feb  | 23                            | 16  | 2   | 348 | 340 | 322 | 306 | 295 | 296 | 305 | 16  | 352 | 318 | 323 | 311 | 308 | 330 | 339 | 350 | 7   | 353 | 7   | 2   | 7   | 336.5         |
| 28-Feb  | 21                            | 21  | 21  | 350 | 357 | 269 | 247 | 265 | 227 | 27  | 13  | 28  | 47  | 44  | 26  | 0   | 46  | 120 | 21  | 49  | 25  | 28  | 212 | 126 | 25.2          |
| 228.2 221.7 220.2 234.4 241.6 239.4 231.7 239.4 230.9 249.3 250.1 261.5 270.1 285.5 295.3 289.3 310.7 358.0 295.5 269.3 263.9 246.6 220.4 216.5 |                               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |               |
| Diurnal Average   |                               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |               |

UO - Unstable Operation

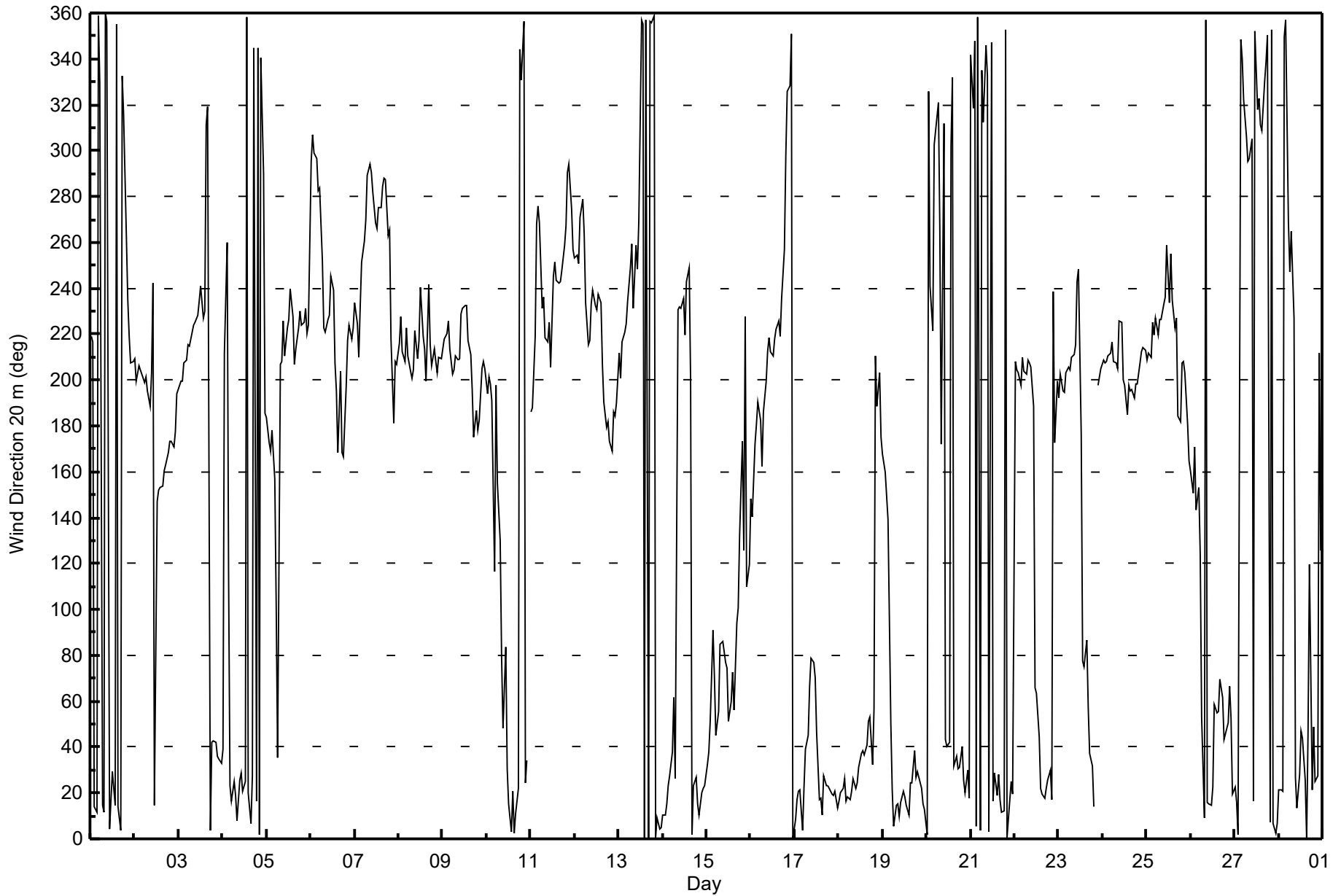
All monthly, daily, and diurnal averages have been calculated using vector methods



**Wood Buffalo Environmental Association**  
**Summary of Hour Standard Deviations**

**Wind Direction 20 m (WD20m) - deg**  
**Janvier - February 2023**

| Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0<br>Maximum Value: 107 deg on Feb 28 16:00<br>Minimum Value: 6 deg on Feb 28 21:00<br>Percentiles: P <sub>1</sub> = 8 P <sub>10</sub> = 12 Q <sub>1</sub> = 16 Median = 20 Q <sub>3</sub> = 27 P <sub>90</sub> = 38 P <sub>99</sub> = 75 |                               |    |    |    |    |    |    |    |    |    |    |    |    |    |    |     |    |    | Hours in Service: 672<br>Hours of Data: 670<br>Hours of Missing Data: 2<br>Hours of Calibration: 0<br>Percent Operational Time: 99.7 |    |    |    |    |    |               |    |    |    |    |    |    |    |    |    |    |    |    |    |     |    |    |    |    |    |    |    |    |
|---|-------------------------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-----|----|----|--|----|----|----|----|----|---------------|----|----|----|----|----|----|----|----|----|----|----|----|----|-----|----|----|----|----|----|----|----|----|
| Day   | Hourly Period Ending At (MST) |    |    |    |    |    |    |    |    |    |    |    |    |    |    |     |    |    |  |    |    |    |    |    | Daily Maximum |    |    |    |    |    |    |    |    |    |    |    |    |    |     |    |    |    |    |    |    |    |    |
|   | 1                             | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 | 14 | 15 | 16  | 17 | 18 | 19   | 20 | 21 | 22 | 23 | 24 |               |    |    |    |    |    |    |    |    |    |    |    |    |    |     |    |    |    |    |    |    |    |    |
| 1-Feb   | 12                            | 23 | 57 | 21 | 29 | 27 | 24 | 21 | 23 | 29 | 29 | 20 | 15 | 36 | 34 | 23  | 27 | 25 | 30   | 28 | 19 | 12 | 11 | 12 | 57            |    |    |    |    |    |    |    |    |    |    |    |    |    |     |    |    |    |    |    |    |    |    |
| 2-Feb   | 9                             | 15 | 13 | 12 | 9  | 13 | 10 | 9  | 21 | 52 | 71 | 54 | 36 | 26 | 26 | 24  | 23 | 23 | 22   | 20 | 20 | 20 | 17 | 17 | 71            |    |    |    |    |    |    |    |    |    |    |    |    |    |     |    |    |    |    |    |    |    |    |
| 3-Feb   | 16                            | 17 | 16 | 17 | 19 | 19 | 19 | 20 | 17 | 19 | 19 | 19 | 19 | 22 | 28 | 35  | 42 | 11 | 15   | 18 | 14 | 11 | 37 | 42 |               |    |    |    |    |    |    |    |    |    |    |    |    |    |     |    |    |    |    |    |    |    |    |
| 4-Feb   | 67                            | 19 | 36 | 64 | 11 | 16 | 18 | 22 | 19 | 17 | 15 | 21 | 20 | 59 | 34 | 37  | 43 | 25 | 33   | 55 | 57 | 47 | 85 | 14 | 85            |    |    |    |    |    |    |    |    |    |    |    |    |    |     |    |    |    |    |    |    |    |    |
| 5-Feb   | 21                            | 19 | 20 | 19 | 77 | 80 | 69 | 68 | 10 | 30 | 17 | 28 | 20 | 27 | 38 | 14  | 15 | 17 | 18   | 17 | 17 | 17 | 16 | 21 | 80            |    |    |    |    |    |    |    |    |    |    |    |    |    |     |    |    |    |    |    |    |    |    |
| 6-Feb   | 19                            | 22 | 25 | 22 | 19 | 19 | 33 | 20 | 20 | 17 | 22 | 29 | 37 | 24 | 24 | 33  | 30 | 18 | 17   | 14 | 13 | 15 | 17 | 18 | 37            |    |    |    |    |    |    |    |    |    |    |    |    |    |     |    |    |    |    |    |    |    |    |
| 7-Feb   | 19                            | 19 | 15 | 20 | 18 | 20 | 19 | 22 | 20 | 18 | 19 | 21 | 20 | 20 | 22 | 19  | 16 | 14 | 14   | 20 | 25 | 19 | 10 | 13 | 25            |    |    |    |    |    |    |    |    |    |    |    |    |    |     |    |    |    |    |    |    |    |    |
| 8-Feb   | 12                            | 13 | 18 | 12 | 15 | 10 | 9  | 17 | 21 | 20 | 22 | 36 | 23 | 27 | 22 | 14  | 25 | 25 | 11   | 15 | 14 | 11 | 12 | 12 | 36            |    |    |    |    |    |    |    |    |    |    |    |    |    |     |    |    |    |    |    |    |    |    |
| 9-Feb   | 15                            | 16 | 16 | 16 | 14 | 10 | 13 | 15 | 13 | 17 | 21 | 20 | 20 | 21 | 21 | 17  | 21 | 15 | 15   | 18 | 18 | 16 | 16 | 18 | 21            |    |    |    |    |    |    |    |    |    |    |    |    |    |     |    |    |    |    |    |    |    |    |
| 10-Feb  | 13                            | 14 | 14 | 52 | 52 | 22 | 21 | 52 | 19 | 28 | 23 | 25 | 30 | 29 | 21 | 28  | 27 | 15 | 28   | 36 | 28 | 20 | 20 | UO | 52            |    |    |    |    |    |    |    |    |    |    |    |    |    |     |    |    |    |    |    |    |    |    |
| 11-Feb  | 28                            | 21 | 16 | 30 | 13 | 21 | 18 | 14 | 18 | 17 | 18 | 17 | 25 | 21 | 26 | 27  | 22 | 22 | 20   | 20 | 19 | 17 | 21 | 22 | 30            |    |    |    |    |    |    |    |    |    |    |    |    |    |     |    |    |    |    |    |    |    |    |
| 12-Feb  | 20                            | 20 | 31 | 20 | 18 | 21 | 20 | 19 | 16 | 19 | 19 | 23 | 21 | 23 | 21 | 16  | 15 | 18 | 14   | 16 | 20 | 20 | 17 | 16 | 31            |    |    |    |    |    |    |    |    |    |    |    |    |    |     |    |    |    |    |    |    |    |    |
| 13-Feb  | 21                            | 16 | 18 | 19 | 19 | 22 | 19 | 22 | 37 | 24 | 20 | 28 | 30 | 29 | 28 | 32  | 30 | 32 | 32   | 27 | 27 | 25 | 25 | 28 | 37            |    |    |    |    |    |    |    |    |    |    |    |    |    |     |    |    |    |    |    |    |    |    |
| 14-Feb  | 19                            | 20 | 18 | 15 | 15 | 8  | 15 | 58 | 19 | 18 | 26 | 32 | 30 | 45 | 37 | 69  | 35 | 16 | 15   | 18 | 20 | 16 | 16 | 18 | 69            |    |    |    |    |    |    |    |    |    |    |    |    |    |     |    |    |    |    |    |    |    |    |
| 15-Feb  | 15                            | 22 | 17 | 17 | 19 | 22 | 22 | 20 | 21 | 24 | 22 | 39 | 21 | 22 | 29 | 25  | 17 | 16 | 86   | 65 | 19 | 29 | 48 | 36 | 86            |    |    |    |    |    |    |    |    |    |    |    |    |    |     |    |    |    |    |    |    |    |    |
| 16-Feb  | 28                            | 55 | 14 | 14 | 15 | 17 | 21 | 17 | 12 | 18 | 19 | 18 | 18 | 19 | 19 | 20  | 21 | 16 | 25   | 19 | 32 | 37 | 37 | 35 | 55            |    |    |    |    |    |    |    |    |    |    |    |    |    |     |    |    |    |    |    |    |    |    |
| 17-Feb  | 22                            | 18 | 16 | 17 | 24 | 18 | 12 | 13 | 31 | 22 | 26 | 41 | 26 | 20 | 20 | 26  | 14 | 16 | 14   | 16 | 15 | 15 | 15 | 20 | 41            |    |    |    |    |    |    |    |    |    |    |    |    |    |     |    |    |    |    |    |    |    |    |
| 18-Feb  | 18                            | 12 | 13 | 13 | 18 | 16 | 19 | 20 | 16 | 19 | 22 | 15 | 14 | 12 | 36 | 26  | 38 | 26 | 9  | 58 | 66 | 23 | 16 | 28 | 66            |    |    |    |    |    |    |    |    |    |    |    |    |    |     |    |    |    |    |    |    |    |    |
| 19-Feb  | 33                            | 30 | 44 | 41 | 23 | 24 | 25 | 27 | 22 | 21 | 19 | 17 | 29 | 18 | 18 | 18  | 17 | 17 | 22   | 15 | 14 | 15 | 17 | 16 | 44            |    |    |    |    |    |    |    |    |    |    |    |    |    |     |    |    |    |    |    |    |    |    |
| 20-Feb  | 20                            | 38 | 22 | 16 | 88 | 60 | 72 | 43 | 42 | 42 | 45 | 52 | 21 | 93 | 36 | 14  | 11 | 12 | 10   | 11 | 11 | 15 | 12 | 9  | 93            |    |    |    |    |    |    |    |    |    |    |    |    |    |     |    |    |    |    |    |    |    |    |
| 21-Feb  | 59                            | 15 | 18 | 17 | 21 | 17 | 28 | 42 | 37 | 31 | 31 | 34 | 21 | 17 | 19 | 13  | 18 | 19 | 17   | 22 | 19 | 17 | 12 | 60 | 60            |    |    |    |    |    |    |    |    |    |    |    |    |    |     |    |    |    |    |    |    |    |    |
| 22-Feb  | 44                            | 10 | 9  | 8  | 7  | 7  | 14 | 9  | 11 | 15 | 29 | 56 | 49 | 22 | 23 | 21  | 16 | 12 | 9  | 6  | 31 | 32 | 44 | 55 | 56            |    |    |    |    |    |    |    |    |    |    |    |    |    |     |    |    |    |    |    |    |    |    |
| 23-Feb  | 52                            | 12 | 18 | 10 | 8  | 7  | 7  | 9  | 8  | 36 | 45 | 56 | 64 | 25 | 17 | 26  | 21 | 10 | 38   | 50 | UO | 9  | 6  | 10 | 64            |    |    |    |    |    |    |    |    |    |    |    |    |    |     |    |    |    |    |    |    |    |    |
| 24-Feb  | 8                             | 10 | 10 | 11 | 13 | 13 | 11 | 11 | 12 | 25 | 31 | 23 | 21 | 23 | 22 | 20  | 19 | 17 | 17   | 16 | 19 | 18 | 19 | 19 | 31            |    |    |    |    |    |    |    |    |    |    |    |    |    |     |    |    |    |    |    |    |    |    |
| 25-Feb  | 16                            | 17 | 16 | 19 | 18 | 18 | 15 | 16 | 20 | 21 | 24 | 26 | 22 | 35 | 35 | 20  | 20 | 23 | 17   | 16 | 16 | 11 | 18 | 16 | 35            |    |    |    |    |    |    |    |    |    |    |    |    |    |     |    |    |    |    |    |    |    |    |
| 26-Feb  | 16                            | 19 | 21 | 73 | 26 | 15 | 37 | 13 | 36 | 14 | 20 | 19 | 18 | 16 | 15 | 17  | 21 | 18 | 14   | 16 | 15 | 19 | 34 | 15 | 73            |    |    |    |    |    |    |    |    |    |    |    |    |    |     |    |    |    |    |    |    |    |    |
| 27-Feb  | 14                            | 19 | 18 | 29 | 33 | 29 | 16 | 13 | 16 | 28 | 31 | 37 | 31 | 31 | 29 | 23  | 39 | 42 | 34   | 18 | 20 | 14 | 20 | 18 | 42            |    |    |    |    |    |    |    |    |    |    |    |    |    |     |    |    |    |    |    |    |    |    |
| 28-Feb  | 10                            | 13 | 16 | 18 | 39 | 29 | 42 | 35 | 27 | 73 | 27 | 45 | 25 | 18 | 57 | 107 | 18 | 29 | 22   | 25 | 6  | 47 | 46 | 17 | 107           |    |    |    |    |    |    |    |    |    |    |    |    |    |     |    |    |    |    |    |    |    |    |
| Diurnal Maximum   |                               |    |    |    |    |    |    |    |    |    |    |    |    |    |    |     |    |    |  |    |    |    |    | 67 | 55            | 57 | 73 | 88 | 80 | 72 | 68 | 42 | 73 | 71 | 56 | 64 | 93 | 57 | 107 | 43 | 42 | 86 | 65 | 66 | 47 | 85 | 60 |
| UO - Unstable Operation   |                               |    |    |    |    |    |    |    |    |    |    |    |    |    |    |     |    |    |  |    |    |    |    |    |               |    |    |    |    |    |    |    |    |    |    |    |    |    |     |    |    |    |    |    |    |    |    |





## WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY  
MONITORING PROGRAM  
MONTHLY REPORT

### **AMS23 FORT HILLS FEBRUARY 2023**

Operations, Data Collection,  
QA/QC, Data Validation and Reporting by:  
Wood Buffalo Environmental Association  
Fort McMurray, Alberta

March 31, 2023

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - FORT HILLS (AMS23)  
 FEBRUARY 2023

MONTHLY SUMMARY for  
 AMD SECTION III.B.1(c)

| Parameter                         | Hours of Data | Hours of Calibration | Hours without Data | Operational Time | Maximum 1-Hour Value | 1-Hour Exceedances | Maximum 24-Hour Value | 24-Hour Exceedances |
|-----------------------------------|---------------|----------------------|--------------------|------------------|----------------------|--------------------|-----------------------|---------------------|
| SO2(ppb) Average                  | 639           | 32                   | 33                 | 99.85            | 33.7                 | 0                  | 4.7                   | 0                   |
| TRS(ppb) Average                  | 631           | 33                   | 41                 | 98.81            | 2.6                  | 0                  | 1                     | 0                   |
| THC(ppm) Average                  | 639           | 31                   | 33                 | 99.7             | 6                    | -                  | 3.1                   | -                   |
| NMHC(ppm) Average                 | 638           | 32                   | 34                 | 99.7             | 0.846                | -                  | 0.279                 | -                   |
| CH4(ppm) Average                  | 638           | 32                   | 34                 | 99.7             | 5.3                  | -                  | 2.8                   | -                   |
| NO2 (ppb) Average                 | 589           | 32                   | 83                 | 92.41            | 55.5                 | 0                  | 31                    | -                   |
| NO (ppb) Average                  | 589           | 32                   | 83                 | 92.41            | 222.4                | -                  | 59.1                  | -                   |
| NOX (ppb) Average                 | 589           | 32                   | 83                 | 92.41            | 277.9                | -                  | 89.1                  | -                   |
| PM2.5 (ug/m3) Average             | 670           | 2                    | 2                  | 100              | 46.7                 | 0                  | 16.2                  | 0                   |
| Temperature 2 m (C) Average       | 672           | 0                    | 0                  | 100              | 3                    | -                  | -2.4                  | -                   |
| Relative Humidity (%) Average     | 672           | 0                    | 0                  | 100              | 94.3                 | -                  | 90.2                  | -                   |
| Wind Speed 10 m (km/h) Average    | 666           | 0                    | 6                  | 99.11            | 37                   | -                  | 21                    | -                   |
| Wind Direction 10 m (deg) Average | 666           | 0                    | 6                  | 99.11            | -                    | -                  | -                     | -                   |

Note : Operational time includes periods of data collection and instrument calibration

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - FORT HILLS (AMS23)  
FEBRUARY 2023

MONTHLY SUMMARY FOR AIR QUALITY/ METEOROLOGICAL MONITORING MEASUREMENTS

| Parameter                         | Number | Mean   | StnDev | Total | Percentile |       |       |        |       |      |       |
|-----------------------------------|--------|--------|--------|-------|------------|-------|-------|--------|-------|------|-------|
|                                   |        |        |        |       | Min        | P10   | Q1    | Median | Q3    | P90  | Max   |
| SO2 (ppb) Average                 | 639    | 1.08   | 2.7    | -     | 0          | 0     | 0.1   | 0.3    | 0.8   | 2.7  | 33.7  |
| TRS (ppb) Average                 | 631    | 0.43   | 0.3    | -     | 0.2        | 0.2   | 0.2   | 0.3    | 0.5   | 0.9  | 2.6   |
| THC (ppm) Average                 | 639    | 2.4    | 0.5    | -     | 1.9        | 2     | 2     | 2.2    | 2.6   | 3    | 6     |
| NMHC(ppm) Average                 | 638    | 0.113  | 0.142  | -     | 0          | 0     | 0     | 0.1    | 0.2   | 0.3  | 0.846 |
| CH4(ppm) Average                  | 638    | 2.29   | 0.4    | -     | 1.9        | 2     | 2     | 2.2    | 2.4   | 2.7  | 5.3   |
| NO2 (ppb) Average                 | 589    | 19.43  | 11.4   | -     | 0.4        | 4.9   | 10.2  | 17.9   | 28.8  | 35.5 | 55.5  |
| NO (ppb) Average                  | 589    | 14.37  | 24.3   | -     | 0          | 0     | 0.8   | 4.3    | 16.6  | 39.7 | 222.4 |
| NOX (ppb) Average                 | 589    | 33.8   | 33     | -     | 0.4        | 5.8   | 12.2  | 23.4   | 43.8  | 72.7 | 277.9 |
| PM2.5 (ug/m3) Average             | 670    | 6.52   | 4.7    | -     | 0.6        | 2.7   | 3.7   | 5.3    | 8.1   | 11.2 | 46.7  |
| Temperature 2 m (C) Average       | 672    | -16.53 | 8.7    | -     | -35.2      | -29.2 | -23.1 | -16.3  | -10.2 | -6   | 3     |
| Relative Humidity (%) Average     | 672    | 75.37  | 9.7    | -     | 44.9       | 61.7  | 70.6  | 75.7   | 83.1  | 86.8 | 94.3  |
| Wind Speed 10 m (km/h) Average    | 666    | 9.2    | 7      | -     | 0          | 2     | 4     | 8      | 13    | 18   | 37    |
| Wind Direction 10 m (deg) Average | 666    | -      | -      | -     | -          | -     | -     | -      | -     | -    | -     |

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - FORT HILLS (AMS23)  
FEBRUARY 2023

OPERATIONAL NOTES

| Parameter                  | Period<br>Start   | Period<br>End     | Duration<br>(Hours) | Notes   |
|----------------------------|-------------------|-------------------|---------------------|---|
| TRS                        | 14 Feb 2023 12:00 | 14 Feb 2023 17:00 | 6                   | Maintenance - replaced sample pump                        |
| TRS                        | 24 Feb 2023 10:00 | 24 Feb 2023 11:00 | 2                   | Maintenance - verify daily QA response                    |
| THC/NMHC/CH4               | 24 Feb 2023 09:00 | 24 Feb 2023 10:00 | 2                   | Maintenance - verify daily QA response                    |
| SO2                        | 24 Feb 2023 10:00 | 24 Feb 2023 10:00 | 1                   | Maintenance - verify daily QA response                    |
| NO2                        | 22 Feb 2023 05:00 | 23 Feb 2023 04:00 | 24                  | Unstable Operation - span outside AMD criteria            |
| NO2                        | 23 Feb 2023 06:00 | 23 Feb 2023 11:00 | 6                   | Unstable Operation - span outside AMD criteria            |
| NO2                        | 23 Feb 2023 12:00 | 24 Feb 2023 08:00 | 21                  | Maintenance - replaced analyzer and verify daily QA check |
| Wind Speed, Wind Direction | 09 Feb 2023 23:00 | 09 Feb 2023 23:00 | 1                   | Flat line in sensor output signal - Sensor frozen         |
| Wind Speed, Wind Direction | 18 Feb 2023 16:00 | 18 Feb 2023 16:00 | 1                   | Flat line in sensor output signal - Sensor frozen         |
| Wind Speed, Wind Direction | 19 Feb 2023 08:00 | 19 Feb 2023 08:00 | 1                   | Flat line in sensor output signal - Sensor frozen         |
| Wind Speed, Wind Direction | 23 Feb 2023 20:00 | 23 Feb 2023 21:00 | 2                   | Flat line in sensor output signal - Sensor frozen         |
| Wind Speed, Wind Direction | 28 Feb 2023 05:00 | 28 Feb 2023 05:00 | 1                   | Flat line in sensor output signal - Sensor frozen         |



Wood Buffalo Environmental Association

Summary of Hour Averages

Sulphur Dioxide (SO<sub>2</sub>) - ppb

Fort Hills - February 2023

|   |   |          |                           |      |
|---|---|----------|---------------------------|------|
| Number of Exceedences (AAAQO):              | 1-hr: 0   | 24-hr: 0 | Hours in Service:         | 672  |
| Maximum Value: 33.7 ppb on Feb 15 21:00     | Maximum Daily Average: 4.7 ppb on Feb 3   |          | Hours of Data:            | 639  |
| Minimum Value: 0.0 ppb on Feb 1 15:00       | Minimum Daily Average: 0.0 ppb on Feb 14  |          | Hours of Missing Data:    | 33   |
| Maximum Diurnal Average: 1.9 ppb at hour 21 | Minimum Diurnal Average: 0.5 ppb at hour 10   |          | Hours of Calibration:     | 32   |
| Monthly Average: 1.08 ppb                   | Percentiles: P <sub>1</sub> = 0.0 P <sub>10</sub> = 0.0 Q <sub>1</sub> = 0.1 Median = 0.3 Q <sub>3</sub> = 0.8 P <sub>90</sub> = 2.7 P <sub>99</sub> = 13.0 |          | Percent Operational Time: | 99.9 |

| Day    | Hourly Period Ending At (MST) |      |      |      |     |     |     |     |     |     |     |     |     |      |     |     |     |     |      |      |      |      |      |     | Daily Average | Daily Maximum   |
|--------|-------------------------------|------|------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|-----|-----|-----|-----|------|------|------|------|------|-----|---------------|-----------------|
|        | 1                             | 2    | 3    | 4    | 5   | 6   | 7   | 8   | 9   | 10  | 11  | 12  | 13  | 14   | 15  | 16  | 17  | 18  | 19   | 20   | 21   | 22   | 23   | 24  |               |                 |
| 1-Feb  | 0.2                           | 0.2  | Z    | 0.2  | 0.2 | 0.2 | 0.2 | 0.1 | 0.0 | 0.2 | C   | C   | C   | C    | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0 | 0.1           | 0.2             |
| 2-Feb  | 0.0                           | 0.0  | 0.1  | Z    | 2.0 | 2.6 | 2.9 | 4.2 | 4.2 | 2.3 | 3.8 | 2.6 | 2.2 | 3.5  | 4.0 | 2.6 | 1.6 | 1.1 | 0.8  | 0.6  | 0.6  | 0.9  | 1.4  | 9.7 | 2.3           | 9.7             |
| 3-Feb  | 16.8                          | 12.8 | 19.1 | 28.9 | Z   | 5.3 | 5.0 | 4.9 | 2.8 | 1.2 | 0.9 | 1.0 | 1.0 | 0.9  | 0.8 | 0.6 | 0.7 | 0.7 | 0.9  | 1.0  | 1.0  | 1.0  | 0.9  | 0.8 | 4.7           | 28.9            |
| 4-Feb  | 0.8                           | 0.8  | 0.8  | 0.8  | 0.7 | Z   | 0.5 | 0.4 | 0.4 | 0.4 | 0.3 | 0.4 | 0.4 | 0.3  | 0.4 | 0.3 | 0.2 | 0.2 | 0.1  | 0.2  | 0.1  | 0.1  | 0.2  | 0.1 | 0.4           | 0.8             |
| 5-Feb  | Z                             | 0.1  | 0.4  | 0.2  | 0.1 | 0.3 | 0.3 | 0.3 | 0.3 | 1.0 | 1.9 | 4.1 | 7.2 | 11.3 | 4.6 | 2.9 | 1.6 | 1.2 | 1.0  | 1.1  | 0.9  | 1.5  | 0.9  | 0.4 | 1.9           | 11.3            |
| 6-Feb  | 0.2                           | Z    | 0.3  | 0.2  | 0.2 | 0.2 | 0.2 | 0.2 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.3  | 0.3 | 0.3 | 0.2 | 0.1 | 0.3  | 0.3  | 0.5  | 0.7  | 0.3  | 0.2 | 0.3           | 0.7             |
| 7-Feb  | 0.3                           | 0.3  | Z    | 0.1  | 0.2 | 0.3 | 0.2 | 1.0 | 0.7 | 0.2 | 0.1 | 0.1 | 0.2 | 0.8  | 0.1 | 0.0 | 0.1 | 1.3 | 0.3  | 0.1  | 0.0  | 0.0  | 0.0  | 0.0 | 0.3           | 1.3             |
| 8-Feb  | 0.0                           | 0.0  | 0.0  | Z    | 0.0 | 0.2 | 0.6 | 0.4 | 0.0 | 0.0 | 0.0 | 0.2 | 3.2 | 9.9  | 7.4 | 7.9 | 7.8 | 5.4 | 3.9  | 4.1  | 4.6  | 5.1  | 3.7  | 3.7 | 3.0           | 9.9             |
| 9-Feb  | 1.9                           | 2.9  | 4.9  | 2.0  | Z   | 0.6 | 0.4 | 0.3 | 0.3 | 0.2 | 0.4 | 0.7 | 0.8 | 2.0  | 4.2 | 3.3 | 3.4 | 2.4 | 1.9  | 2.7  | 2.6  | 1.8  | 1.5  | 2.0 | 1.9           | 4.9             |
| 10-Feb | 1.1                           | 0.7  | 0.8  | 0.7  | 0.4 | Z   | 0.2 | 0.1 | 0.1 | 0.1 | 0.2 | 0.1 | 0.2 | 0.1  | 0.2 | 0.2 | 0.2 | 0.1 | 0.1  | 0.1  | 0.1  | 0.1  | 0.2  | 0.1 | 0.3           | 1.1             |
| 11-Feb | Z                             | 0.1  | 0.3  | 0.4  | 0.6 | 0.2 | 0.2 | 0.1 | 0.0 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2  | 0.2 | 0.3 | 0.2 | 0.1 | 0.4  | 0.2  | 0.1  | 0.2  | 0.0  | 0.0 | 0.2           | 0.6             |
| 12-Feb | 0.2                           | Z    | 0.1  | 0.1  | 0.0 | 0.1 | 0.1 | 0.4 | 0.5 | 0.0 | 0.1 | 0.1 | 0.1 | 0.2  | 0.2 | 0.3 | 1.1 | 1.3 | 0.2  | 0.2  | 0.2  | 0.2  | 0.2  | 0.4 | 0.3           | 1.3             |
| 13-Feb | 0.9                           | 1.2  | Z    | 0.7  | 0.2 | 0.1 | 0.2 | 0.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0 | 0.2           | 1.2             |
| 14-Feb | 0.0                           | 0.0  | 0.0  | Z    | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0 | 0.0 | 0.0 | 0.1 | 0.0  | 0.0  | 0.1  | 0.1  | 0.0  | 0.1 | 0.0           | 0.1             |
| 15-Feb | 0.1                           | 0.6  | 1.0  | 0.8  | Z   | 0.3 | 0.4 | 0.3 | 0.2 | 0.1 | 0.2 | 0.2 | 0.6 | 0.8  | 0.8 | 0.6 | 0.5 | 0.7 | 3.5  | 16.4 | 33.7 | 18.9 | 13.1 | 4.9 | 4.3           | 33.7            |
| 16-Feb | 2.8                           | 1.6  | 1.5  | 2.8  | 2.7 | Z   | 2.0 | 1.7 | 1.9 | 0.8 | 0.9 | 4.7 | 2.8 | 1.0  | 0.5 | 0.6 | 1.3 | 3.3 | 2.5  | 0.9  | 0.6  | 0.7  | 0.7  | 0.6 | 1.7           | 4.7             |
| 17-Feb | Z                             | 0.6  | 0.7  | 0.6  | 0.5 | 0.6 | 0.6 | 0.5 | 0.5 | 0.5 | 0.4 | 0.4 | 0.4 | 0.5  | 0.3 | 0.2 | 0.1 | 0.1 | 0.1  | 0.1  | 0.1  | 0.0  | 0.0  | 0.0 | 0.3           | 0.7             |
| 18-Feb | 0.0                           | Z    | 0.0  | 0.0  | 0.0 | 0.0 | 0.0 | 0.2 | 0.1 | 0.2 | 0.3 | 0.3 | 0.4 | 0.3  | 0.2 | 0.2 | 0.2 | 0.2 | 0.2  | 0.2  | 0.5  | 0.4  | 0.3  | 0.2 | 0.2           | 0.5             |
| 19-Feb | 0.2                           | 0.8  | Z    | 0.2  | 0.3 | 0.6 | 0.7 | 0.8 | 1.5 | 2.3 | 2.4 | 1.6 | 1.3 | 1.7  | 1.9 | 1.2 | 1.1 | 0.8 | 1.2  | 0.5  | 0.7  | 1.4  | 1.4  | 1.5 | 1.1           | 2.4             |
| 20-Feb | 1.1                           | 0.7  | 0.6  | Z    | 0.6 | 0.5 | 0.5 | 0.3 | 0.5 | 0.9 | 1.1 | 1.7 | 1.5 | 0.7  | 0.6 | 0.5 | 0.3 | 0.2 | 0.1  | 0.1  | 0.1  | 0.1  | 0.1  | 0.1 | 0.6           | 1.7             |
| 21-Feb | 0.1                           | 0.1  | 0.1  | 0.1  | Z   | 0.1 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 | 0.1  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0  | 0.0  | 0.1  | 0.0  | 0.2 | 0.1           | 0.2             |
| 22-Feb | 0.1                           | 0.0  | 0.0  | 0.0  | 0.0 | Z   | 0.1 | 0.8 | 0.7 | 1.0 | 0.6 | 0.5 | 0.7 | 0.8  | 0.4 | 0.4 | 0.3 | 0.2 | 0.1  | 0.1  | 0.2  | 0.7  | 0.2  | 0.2 | 0.4           | 1.0             |
| 23-Feb | Z                             | 0.2  | 0.2  | 0.1  | 0.1 | 0.0 | 0.0 | 0.0 | 0.1 | 0.4 | 0.8 | 0.7 | 0.4 | 0.6  | 1.2 | 0.7 | 0.7 | 0.4 | 0.3  | 0.3  | 0.5  | 1.8  | 5.0  | 4.9 | 0.9           | 5.0             |
| 24-Feb | 5.3                           | Z    | 5.5  | 4.5  | 5.4 | 5.6 | 5.6 | 3.4 | 2.2 | M   | 2.7 | 2.4 | 1.0 | 0.7  | 0.9 | 0.6 | 0.3 | 0.2 | 0.2  | 0.3  | 0.4  | 0.5  | 0.5  | 0.5 | 2.2           | 5.6             |
| 25-Feb | 0.5                           | 0.4  | Z    | 0.4  | 0.3 | 0.4 | 0.3 | 0.4 | 0.3 | 0.3 | 0.3 | 1.1 | 1.4 | 0.3  | 0.3 | 0.6 | 5.2 | 3.9 | 11.1 | 7.4  | 5.9  | 3.8  | 2.2  | 1.6 | 2.1           | 11.1            |
| 26-Feb | 1.3                           | 1.0  | 0.8  | Z    | 1.1 | 0.6 | 0.5 | 0.8 | 0.6 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4  | 0.4 | 0.4 | 0.4 | 0.3 | 0.3  | 0.3  | 0.2  | 0.2  | 0.2  | 0.1 | 0.5           | 1.3             |
| 27-Feb | 0.1                           | 0.2  | 0.1  | 0.1  | Z   | 0.0 | 0.1 | 0.0 | 0.1 | 0.1 | 0.1 | 0.0 | 0.1 | 0.1  | 0.1 | 0.1 | 0.1 | 0.1 | 0.0  | 0.0  | 0.1  | 0.0  | 0.1  | 0.0 | 0.1           | 0.2             |
| 28-Feb | 0.7                           | 0.4  | 0.2  | 0.1  | 0.1 | Z   | 0.1 | 0.0 | 0.1 | 0.2 | 0.2 | 0.1 | 0.1 | 0.2  | 0.1 | 0.1 | 0.0 | 0.0 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.1 | 0.1           | 0.7             |
|        | 1.4                           | 1.1  | 1.6  | 1.9  | 0.7 | 0.8 | 0.8 | 0.8 | 0.6 | 0.5 | 0.7 | 0.9 | 1.0 | 1.4  | 1.1 | 0.9 | 1.0 | 0.9 | 1.1  | 1.3  | 1.9  | 1.4  | 1.2  | 1.2 |               | Diurnal Average |
|        | 16.8                          | 12.8 | 19.1 | 28.9 | 5.4 | 5.6 | 5.6 | 4.9 | 4.2 | 2.3 | 3.8 | 4.7 | 7.2 | 11.3 | 7.4 | 7.9 | 7.8 | 5.4 | 11.1 | 16.4 | 33.7 | 18.9 | 13.1 | 9.7 |               | Diurnal Maximum |

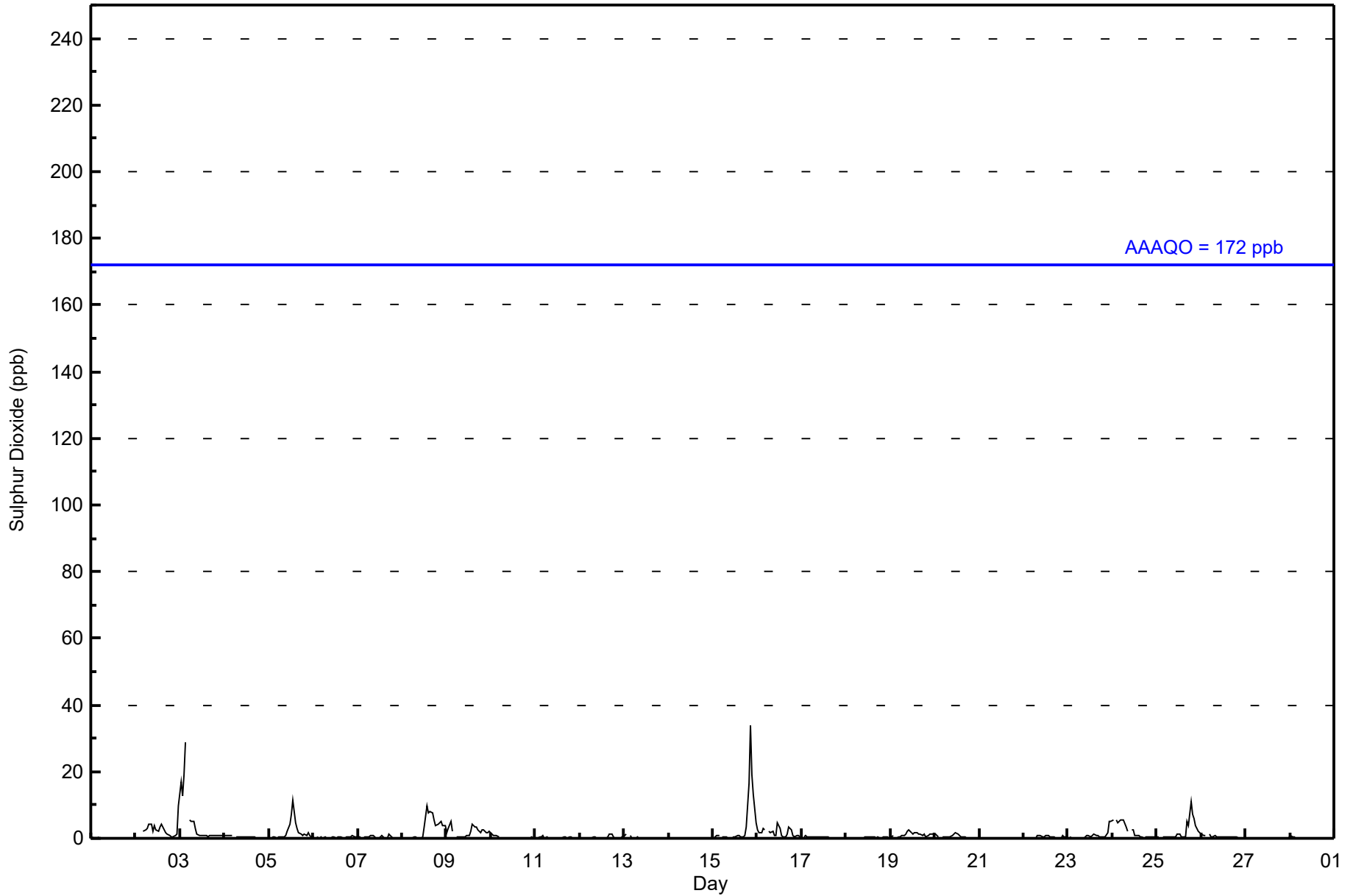
Z - zerospan      C - Calibration      M - Maintenance  
 Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 172 ppb    24-hr 48 ppb





**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Sulphur Dioxide (SO<sub>2</sub>) - ppb**  
**Fort Hills - February 2023**





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Sulphur Dioxide (SO<sub>2</sub>) - ppb**  
**Fort Hills - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 10                            | 629                    | 98.44    | 98.44               |
| 11 - 20                           | 8                      | 1.25     | 99.69               |
| 21 - 60                           | 2                      | 0.31     | 100.00              |
| 61 - 110                          | 0                      | 0.00     | 100.00              |
| 111 - 172                         | 0                      | 0.00     | 100.00              |
| > 172                             | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 639

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Sulphur Dioxide (SO<sub>2</sub>) - ppb  
Fort Hills - February 2023**

| Concentration<br>Ranges (ppb) | Wind Direction |     |    |     |   |     |    |     |    |     |    |     |    |     |    |     | Totals |
|-------------------------------|----------------|-----|----|-----|---|-----|----|-----|----|-----|----|-----|----|-----|----|-----|--------|
|                               | N              | NNE | NE | ENE | E | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |        |
| 0 - 10                        | 86             | 103 | 19 | 27  | 6 | 21  | 60 | 88  | 45 | 38  | 24 | 14  | 19 | 16  | 18 | 39  | 623    |
| 11 - 20                       | 0              | 0   | 0  | 0   | 0 | 1   | 0  | 3   | 4  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 8      |
| 21 - 60                       | 0              | 0   | 0  | 0   | 0 | 0   | 0  | 1   | 1  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 2      |
| 61 - 110                      | 0              | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| 111 - 172                     | 0              | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| > 172                         | 0              | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| <b>Totals</b>                 | 86             | 103 | 19 | 27  | 6 | 22  | 60 | 92  | 50 | 38  | 24 | 14  | 19 | 16  | 18 | 39  | 633    |

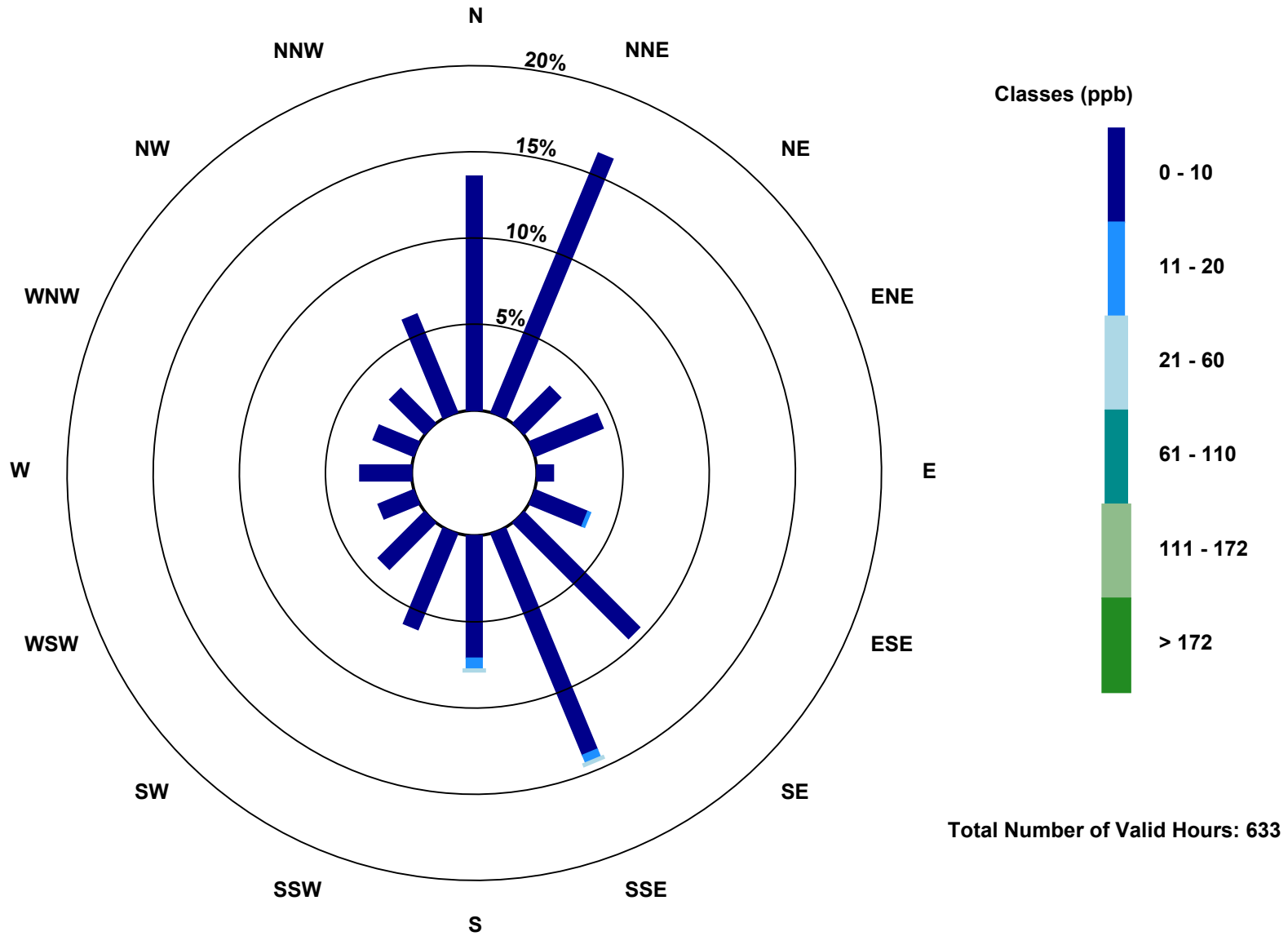
Total Number of Valid Hours: 633

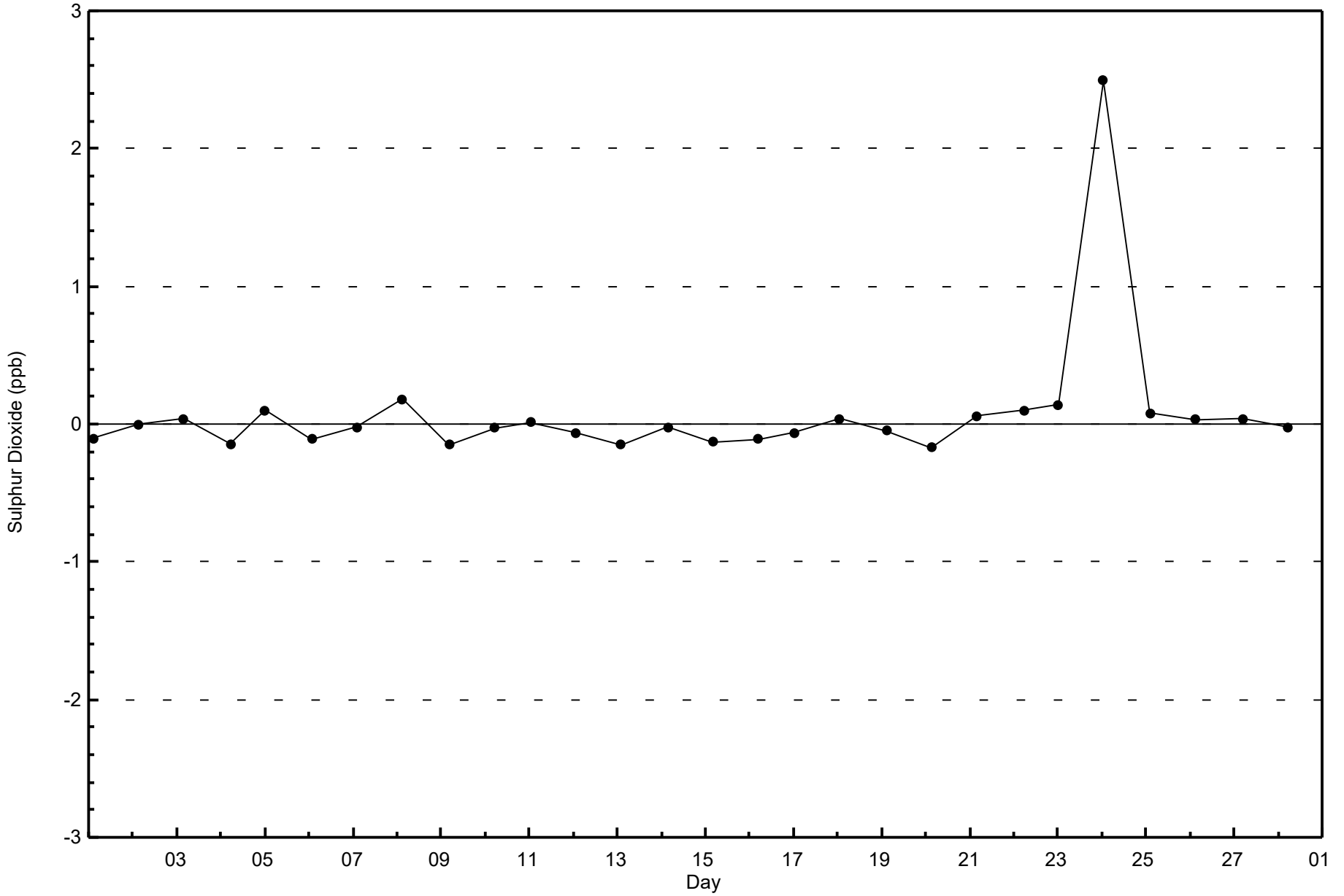
Total Number of Hours: 672

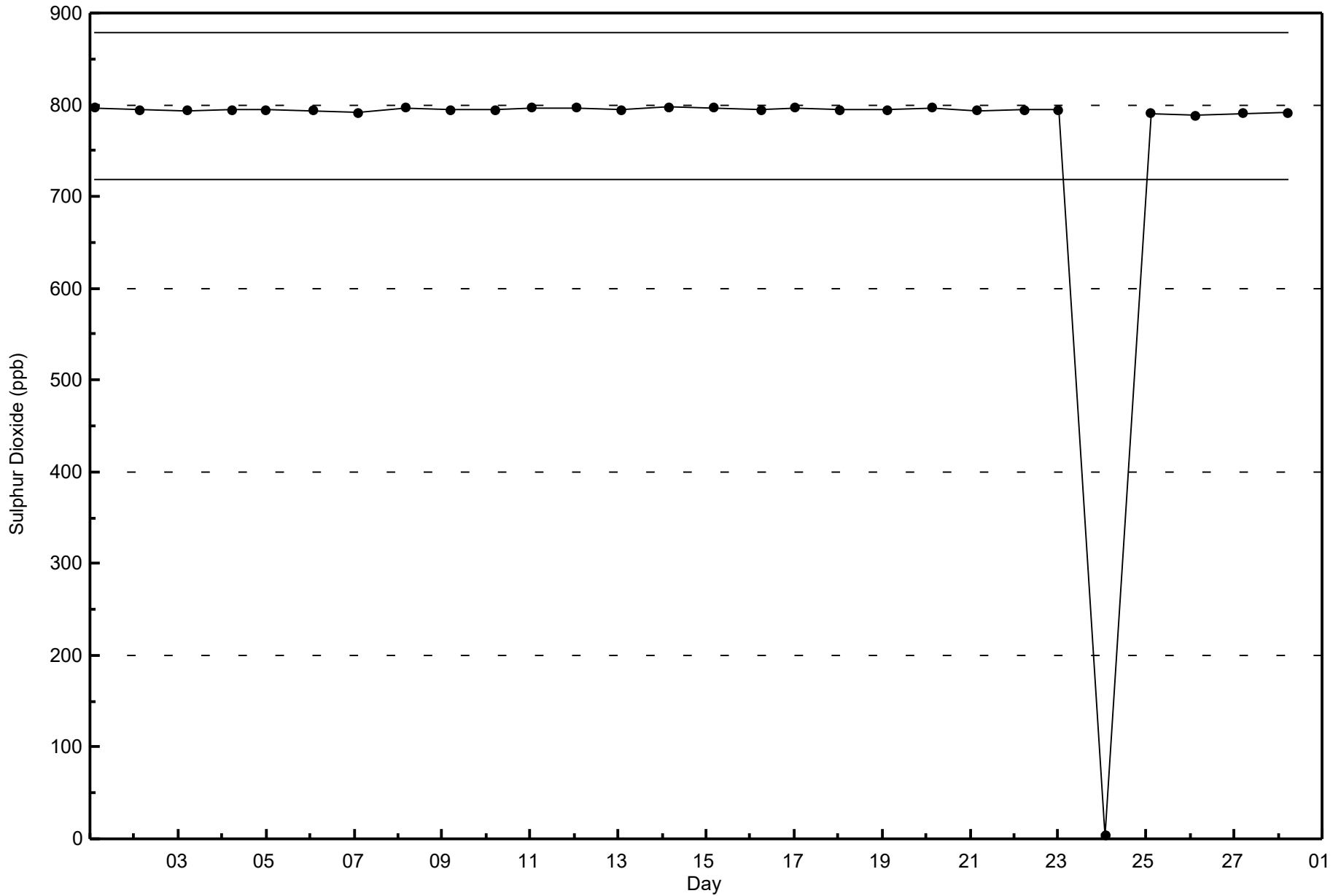


Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Sulphur Dioxide (SO<sub>2</sub>) - ppb  
Fort Hills



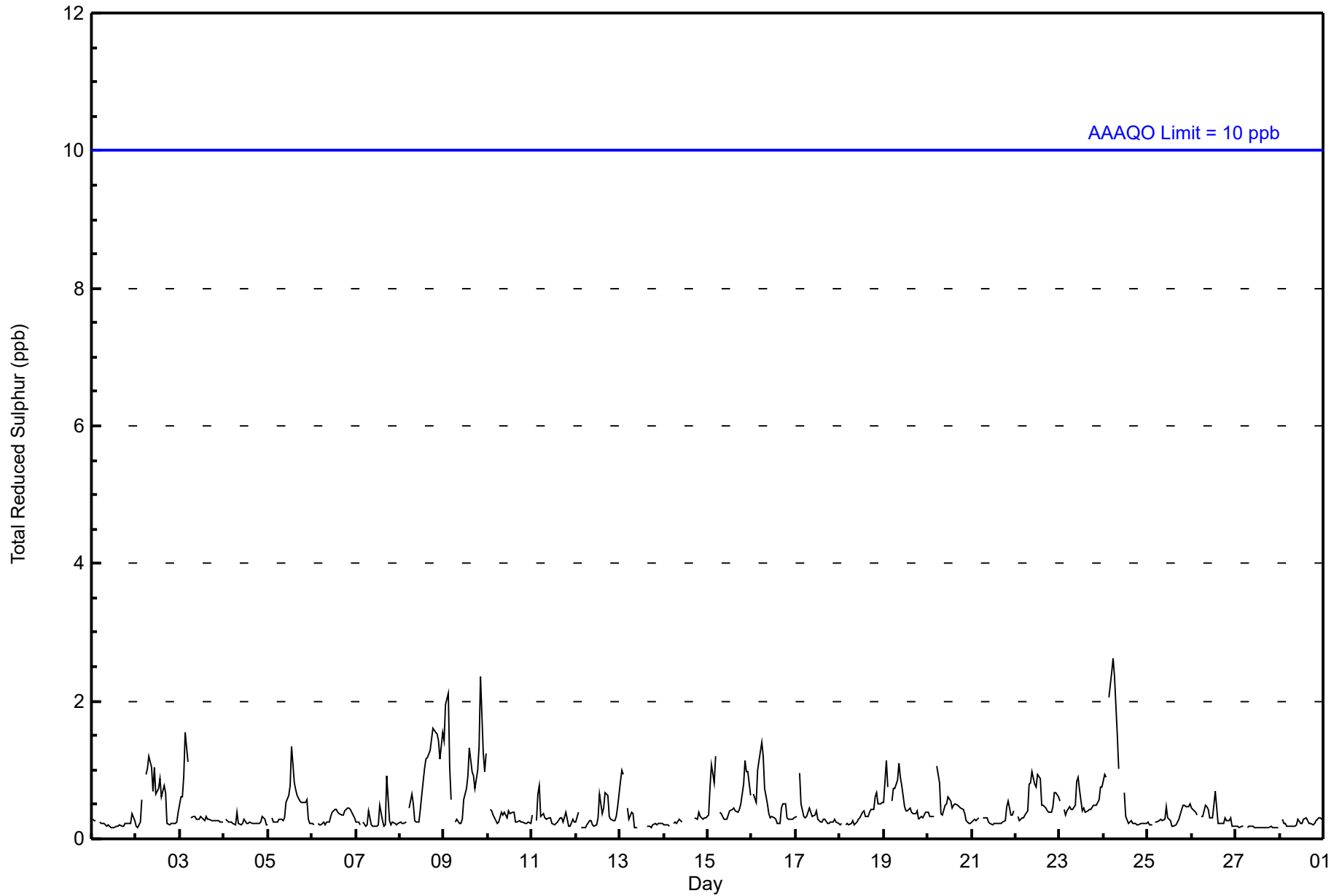






| Number of Exceedences (AAAQO):             |                               | 1-hr: 0                                     |     | 24-hr: 0   |     | Hours in Service: 672 |     |     |     |     |     |     |     |     |     |     |     |                                |     | Daily Average            |     | Daily Maximum |     |                 |               |                 |  |
|--|-------------------------------|---|-----|--|-----|-----------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------------------------------|-----|--------------------------|-----|---------------|-----|-----------------|---------------|-----------------|--|
| Maximum Value: 2.6 ppb on Feb 24 06:00     |                               | Maximum Daily Average: 1.0 ppb on Feb 9     |     | Hours of Data: 631   |     |                       |     |     |     |     |     |     |     |     |     |     |     | Hours of Missing Data: 41      |     | Hours of Calibration: 33 |     |               |     |                 |               |                 |  |
| Minimum Value: 0.2 ppb on Feb 12 04:00     |                               | Minimum Daily Average: 0.2 ppb on Feb 27    |     | Hours of Calibration: 33   |     |                       |     |     |     |     |     |     |     |     |     |     |     | Percent Operational Time: 98.8 |     |                          |     |               |     |                 |               |                 |  |
| Maximum Diurnal Average: 0.5 ppb at hour 4 |                               | Minimum Diurnal Average: 0.4 ppb at hour 10 |     | Percentiles: P <sub>1</sub> = 0.2 P <sub>10</sub> = 0.2 Q <sub>1</sub> = 0.2 Median = 0.3 Q <sub>3</sub> = 0.5 P <sub>90</sub> = 0.9 P <sub>99</sub> = 1.9 |     |                       |     |     |     |     |     |     |     |     |     |     |     |                                |     |                          |     |               |     |                 |               |                 |  |
| Monthly Average: 0.43 ppb                  |                               |   |     |  |     |                       |     |     |     |     |     |     |     |     |     |     |     |                                |     |                          |     |               |     |                 |               |                 |  |
| Day  | Hourly Period Ending At (MST) |   |     |  |     |                       |     |     |     |     |     |     |     |     |     |     |     |                                |     |                          |     |               |     |                 | Daily Average | Daily Maximum   |  |
|  | 1                             | 2   | 3   | 4  | 5   | 6                     | 7   | 8   | 9   | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18                             | 19  | 20                       | 21  | 22            | 23  | 24              |               |                 |  |
| 1-Feb                                      | 0.3                           | 0.3   | 0.3 | Z  | 0.3 | 0.2                   | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2                            | 0.2 | 0.2                      | 0.2 | 0.2           | 0.4 | 0.3             | 0.2           | 0.4             |  |
| 2-Feb                                      | 0.2                           | 0.2   | 0.2 | 0.6  | Z   | 0.9                   | 1.0 | 1.2 | 1.0 | 0.7 | 1.0 | 0.6 | 0.7 | 0.9 | 0.6 | 0.8 | 0.7 | 0.2                            | 0.2 | 0.2                      | 0.2 | 0.2           | 0.2 | 0.4             | 0.6           | 1.2             |  |
| 3-Feb                                      | 0.6                           | 0.6   | 0.9 | 1.5  | 1.1 | Z                     | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3                            | 0.3 | 0.3                      | 0.3 | 0.3           | 0.3 | 0.4             | 1.5           |                 |  |
| 4-Feb                                      | Z                             | 0.3   | 0.2 | 0.2  | 0.2 | 0.2                   | 0.2 | 0.4 | 0.2 | 0.2 | 0.2 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2                            | 0.2 | 0.2                      | 0.2 | 0.3           | 0.3 | 0.2             | 0.4           |                 |  |
| 5-Feb                                      | 0.2                           | Z   | 0.3 | 0.2  | 0.2 | 0.3                   | 0.3 | 0.3 | 0.3 | 0.3 | 0.5 | 0.6 | 0.8 | 1.3 | 0.8 | 0.7 | 0.6 | 0.5                            | 0.5 | 0.5                      | 0.5 | 0.6           | 0.3 | 0.5             | 1.3           |                 |  |
| 6-Feb                                      | 0.2                           | 0.2   | Z   | 0.2  | 0.2 | 0.2                   | 0.3 | 0.2 | 0.3 | 0.2 | 0.3 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.3 | 0.4                            | 0.4 | 0.4                      | 0.5 | 0.4           | 0.3 | 0.3             | 0.5           |                 |  |
| 7-Feb                                      | 0.2                           | 0.3   | 0.2 | Z  | 0.2 | 0.2                   | 0.2 | 0.4 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.5 | 0.3 | 0.2 | 0.2 | 0.9                            | 0.3 | 0.2                      | 0.2 | 0.2           | 0.2 | 0.3             | 0.9           |                 |  |
| 8-Feb                                      | 0.2                           | 0.2   | 0.2 | 0.2  | Z   | 0.4                   | 0.7 | 0.5 | 0.3 | 0.2 | 0.2 | 0.4 | 0.6 | 1.0 | 1.2 | 1.2 | 1.3 | 1.4                            | 1.6 | 1.5                      | 1.5 | 1.4           | 1.2 | 0.8             | 1.6           |                 |  |
| 9-Feb                                      | 1.4                           | 2.0   | 2.1 | 1.0  | 0.6 | Z                     | 0.2 | 0.3 | 0.2 | 0.2 | 0.3 | 0.6 | 0.7 | 0.9 | 1.3 | 1.0 | 0.9 | 0.7                            | 1.0 | 1.3                      | 2.4 | 1.2           | 1.0 | 1.0             | 2.4           |                 |  |
| 10-Feb                                     | Z                             | 0.4   | 0.4 | 0.4  | 0.3 | 0.2                   | 0.2 | 0.4 | 0.3 | 0.4 | 0.3 | 0.4 | 0.4 | 0.4 | 0.4 | 0.3 | 0.2 | 0.3                            | 0.2 | 0.2                      | 0.2 | 0.2           | 0.2 | 0.3             | 0.4           |                 |  |
| 11-Feb                                     | 0.4                           | Z   | 0.3 | 0.7  | 0.8 | 0.3                   | 0.4 | 0.3 | 0.3 | 0.3 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 | 0.3 | 0.3 | 0.3                            | 0.4 | 0.3                      | 0.2 | 0.2           | 0.3 | 0.3             | 0.8           |                 |  |
| 12-Feb                                     | 0.2                           | 0.4   | Z   | 0.2  | 0.2 | 0.2                   | 0.2 | 0.3 | 0.3 | 0.2 | 0.2 | 0.2 | 0.3 | 0.6 | 0.4 | 0.4 | 0.7 | 0.6                            | 0.3 | 0.3                      | 0.3 | 0.3           | 0.5 | 0.3             | 0.7           |                 |  |
| 13-Feb                                     | 0.8                           | 1.0   | 0.9 | Z  | 0.5 | 0.3                   | 0.4 | 0.4 | 0.2 | 0.2 | C   | C   | C   | C   | C   | 0.2 | 0.2 | 0.2                            | 0.2 | 0.2                      | 0.2 | 0.2           | 0.2 | 0.4             | 1.0           |                 |  |
| 14-Feb                                     | 0.2                           | 0.2   | 0.2 | 0.2  | Z   | 0.2                   | 0.2 | 0.2 | 0.3 | 0.3 | 0.2 | M   | M   | M   | M   | M   | M   | 0.3                            | 0.3 | 0.4                      | 0.3 | 0.3           | 0.3 | --              | 0.4           |                 |  |
| 15-Feb                                     | 0.3                           | 0.8   | 1.1 | 0.8  | 1.2 | Z                     | 0.4 | 0.4 | 0.3 | 0.3 | 0.3 | 0.3 | 0.4 | 0.4 | 0.5 | 0.4 | 0.4 | 0.4                            | 0.5 | 0.8                      | 1.1 | 1.0           | 1.0 | 0.6             | 1.2           |                 |  |
| 16-Feb                                     | Z                             | 0.6   | 0.5 | 1.0  | 1.1 | 1.4                   | 1.2 | 0.7 | 0.5 | 0.4 | 0.3 | 0.3 | 0.3 | 0.3 | 0.2 | 0.2 | 0.4 | 0.5                            | 0.5 | 0.3                      | 0.3 | 0.3           | 0.3 | 0.5             | 1.4           |                 |  |
| 17-Feb                                     | 0.3                           | Z   | 1.0 | 0.5  | 0.3 | 0.3                   | 0.3 | 0.5 | 0.4 | 0.3 | 0.3 | 0.4 | 0.3 | 0.2 | 0.2 | 0.3 | 0.3 | 0.2                            | 0.2 | 0.2                      | 0.3 | 0.3           | 0.3 | 0.3             | 1.0           |                 |  |
| 18-Feb                                     | 0.2                           | 0.2   | Z   | 0.2  | 0.2 | 0.2                   | 0.2 | 0.3 | 0.2 | 0.2 | 0.3 | 0.3 | 0.4 | 0.4 | 0.3 | 0.3 | 0.4 | 0.4                            | 0.4 | 0.6                      | 0.7 | 0.5           | 0.5 | 0.4             | 0.7           |                 |  |
| 19-Feb                                     | 0.5                           | 1.1   | 0.8 | Z  | 0.6 | 0.7                   | 0.7 | 0.9 | 1.1 | 0.9 | 0.8 | 0.5 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4                            | 0.4 | 0.3                      | 0.3 | 0.3           | 0.4 | 0.6             | 1.1           |                 |  |
| 20-Feb                                     | 0.4                           | 0.3   | 0.3 | 0.3  | Z   | 1.1                   | 0.8 | 0.4 | 0.3 | 0.5 | 0.5 | 0.6 | 0.5 | 0.4 | 0.5 | 0.5 | 0.5 | 0.5                            | 0.4 | 0.4                      | 0.4 | 0.3           | 0.2 | 0.5             | 1.1           |                 |  |
| 21-Feb                                     | 0.2                           | 0.3   | 0.3 | 0.3  | 0.3 | Z                     | 0.3 | 0.3 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2                            | 0.3 | 0.5                      | 0.5 | 0.3           | 0.3 | 0.3             | 0.5           |                 |  |
| 22-Feb                                     | Z                             | 0.3   | 0.3 | 0.3  | 0.3 | 0.3                   | 0.4 | 0.8 | 0.8 | 1.0 | 0.8 | 0.8 | 0.9 | 0.9 | 0.5 | 0.5 | 0.4 | 0.4                            | 0.4 | 0.4                      | 0.5 | 0.7           | 0.7 | 0.6             | 1.0           |                 |  |
| 23-Feb                                     | 0.5                           | Z   | 0.4 | 0.3  | 0.4 | 0.5                   | 0.4 | 0.4 | 0.5 | 0.8 | 0.9 | 0.7 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.5                            | 0.5 | 0.5                      | 0.6 | 0.8           | 0.7 | 0.5             | 0.9           |                 |  |
| 24-Feb                                     | 0.9                           | 0.9   | Z   | 2.0  | 2.4 | 2.6                   | 2.4 | 1.5 | 1.0 | M   | M   | 0.7 | 0.3 | 0.2 | 0.2 | 0.3 | 0.2 | 0.2                            | 0.2 | 0.2                      | 0.2 | 0.2           | 0.2 | 0.8             | 2.6           |                 |  |
| 25-Feb                                     | 0.2                           | 0.2   | 0.2 | Z  | 0.2 | 0.2                   | 0.3 | 0.3 | 0.3 | 0.3 | 0.5 | 0.3 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 | 0.3                            | 0.3 | 0.4                      | 0.5 | 0.5           | 0.5 | 0.3             | 0.5           |                 |  |
| 26-Feb                                     | 0.4                           | 0.4   | 0.4 | 0.4  | Z   | 0.3                   | 0.3 | 0.5 | 0.5 | 0.4 | 0.3 | 0.3 | 0.5 | 0.7 | 0.2 | 0.2 | 0.2 | 0.2                            | 0.3 | 0.3                      | 0.3 | 0.3           | 0.2 | 0.3             | 0.7           |                 |  |
| 27-Feb                                     | 0.2                           | 0.2   | 0.2 | 0.2  | 0.2 | Z                     | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2                            | 0.2 | 0.2                      | 0.2 | 0.2           | 0.2 | 0.2             | 0.2           |                 |  |
| 28-Feb                                     | Z                             | 0.3   | 0.2 | 0.2  | 0.2 | 0.2                   | 0.2 | 0.2 | 0.2 | 0.2 | 0.3 | 0.2 | 0.2 | 0.3 | 0.3 | 0.3 | 0.2 | 0.2                            | 0.2 | 0.2                      | 0.3 | 0.3           | 0.3 | 0.2             | 0.3           |                 |  |
|  |                               |   |     |  |     |                       |     |     |     |     |     |     |     |     |     |     |     |                                |     |                          |     |               |     | Diurnal Average |               | Diurnal Maximum |  |
|  |                               |   |     |  |     |                       |     |     |     |     |     |     |     |     |     |     |     |                                |     |                          |     |               |     | 0.4             |               | 1.4             |  |
|  |                               |   |     |  |     |                       |     |     |     |     |     |     |     |     |     |     |     |                                |     |                          |     |               |     | 0.5             |               | 2.0             |  |
|  |                               |   |     |  |     |                       |     |     |     |     |     |     |     |     |     |     |     |                                |     |                          |     |               |     | 0.5             |               | 2.1             |  |
|  |                               |   |     |  |     |                       |     |     |     |     |     |     |     |     |     |     |     |                                |     |                          |     |               |     | 0.5             |               | 2.0             |  |
|  |                               |   |     |  |     |                       |     |     |     |     |     |     |     |     |     |     |     |                                |     |                          |     |               |     | 0.5             |               | 2.4             |  |
|  |                               |   |     |  |     |                       |     |     |     |     |     |     |     |     |     |     |     |                                |     |                          |     |               |     | 0.5             |               | 2.6             |  |
|  |                               |   |     |  |     |                       |     |     |     |     |     |     |     |     |     |     |     |                                |     |                          |     |               |     | 0.5             |               | 2.4             |  |
|  |                               |   |     |  |     |                       |     |     |     |     |     |     |     |     |     |     |     |                                |     |                          |     |               |     | 0.4             |               | 1.5             |  |
|  |                               |   |     |  |     |                       |     |     |     |     |     |     |     |     |     |     |     |                                |     |                          |     |               |     | 0.4             |               | 1.1             |  |
|  |                               |   |     |  |     |                       |     |     |     |     |     |     |     |     |     |     |     |                                |     |                          |     |               |     | 0.4             |               | 1.0             |  |
|  |                               |   |     |  |     |                       |     |     |     |     |     |     |     |     |     |     |     |                                |     |                          |     |               |     | 0.4             |               | 1.0             |  |
|  |                               |   |     |  |     |                       |     |     |     |     |     |     |     |     |     |     |     |                                |     |                          |     |               |     | 0.4             |               | 0.8             |  |
|  |                               |   |     |  |     |                       |     |     |     |     |     |     |     |     |     |     |     |                                |     |                          |     |               |     | 0.4             |               | 0.9             |  |
|  |                               |   |     |  |     |                       |     |     |     |     |     |     |     |     |     |     |     |                                |     |                          |     |               |     | 0.5             |               | 1.3             |  |
|  |                               |   |     |  |     |                       |     |     |     |     |     |     |     |     |     |     |     |                                |     |                          |     |               |     | 0.4             |               | 1.3             |  |
|  |                               |   |     |  |     |                       |     |     |     |     |     |     |     |     |     |     |     |                                |     |                          |     |               |     | 0.4             |               | 1.2             |  |
|  |                               |   |     |  |     |                       |     |     |     |     |     |     |     |     |     |     |     |                                |     |                          |     |               |     | 0.4             |               | 1.3             |  |
|  |                               |   |     |  |     |                       |     |     |     |     |     |     |     |     |     |     |     |                                |     |                          |     |               |     | 0.4             |               | 1.4             |  |
|  |                               |   |     |  |     |                       |     |     |     |     |     |     |     |     |     |     |     |                                |     |                          |     |               |     | 0.4             |               | 1.6             |  |
|  |                               |   |     |  |     |                       |     |     |     |     |     |     |     |     |     |     |     |                                |     |                          |     |               |     | 0.4             |               | 1.5             |  |
|  |                               |   |     |  |     |                       |     |     |     |     |     |     |     |     |     |     |     |                                |     |                          |     |               |     | 0.5             |               | 2.4             |  |
|  |                               |   |     |  |     |                       |     |     |     |     |     |     |     |     |     |     |     |                                |     |                          |     |               |     | 0.4             |               | 1.4             |  |
|  |                               |   |     |  |     |                       |     |     |     |     |     |     |     |     |     |     |     |                                |     |                          |     |               |     | 0.4             |               | 1.2             |  |
|  |                               |   |     |  |     |                       |     |     |     |     |     |     |     |     |     |     |     |                                |     |                          |     |               |     | 0.4             |               | 1.5             |  |

Z - zerospan      C - Calibration      M - Maintenance  
 Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 10 ppb    24-hr 3 ppb







**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Total Reduced Sulphur (TRS) - ppb**  
**Fort Hills - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 2                             | 630                    | 99.84    | 99.84               |
| 3 - 4                             | 1                      | 0.16     | 100.00              |
| 5 - 7                             | 0                      | 0.00     | 100.00              |
| 8 - 11                            | 0                      | 0.00     | 100.00              |
| > 11                              | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 631

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Total Reduced Sulphur (TRS) - ppb  
Fort Hills - February 2023**

| <b>Concentration<br/>Ranges (ppb)</b> | <b>Wind Direction</b> |     |    |     |   |     |    |     |    |     |    |     |    |     |    |     | <b>Totals</b> |
|---------------------------------------|-----------------------|-----|----|-----|---|-----|----|-----|----|-----|----|-----|----|-----|----|-----|---------------|
|                                       | N                     | NNE | NE | ENE | E | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |               |
| 0 - 2                                 | 79                    | 105 | 17 | 23  | 6 | 22  | 59 | 89  | 52 | 35  | 26 | 13  | 20 | 15  | 22 | 41  | 624           |
| 3 - 4                                 | 0                     | 0   | 0  | 0   | 0 | 0   | 0  | 1   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 1             |
| 5 - 7                                 | 0                     | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| 8 - 11                                | 0                     | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| > 11                                  | 0                     | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| <b>Totals</b>                         | 79                    | 105 | 17 | 23  | 6 | 22  | 59 | 90  | 52 | 35  | 26 | 13  | 20 | 15  | 22 | 41  | 625           |

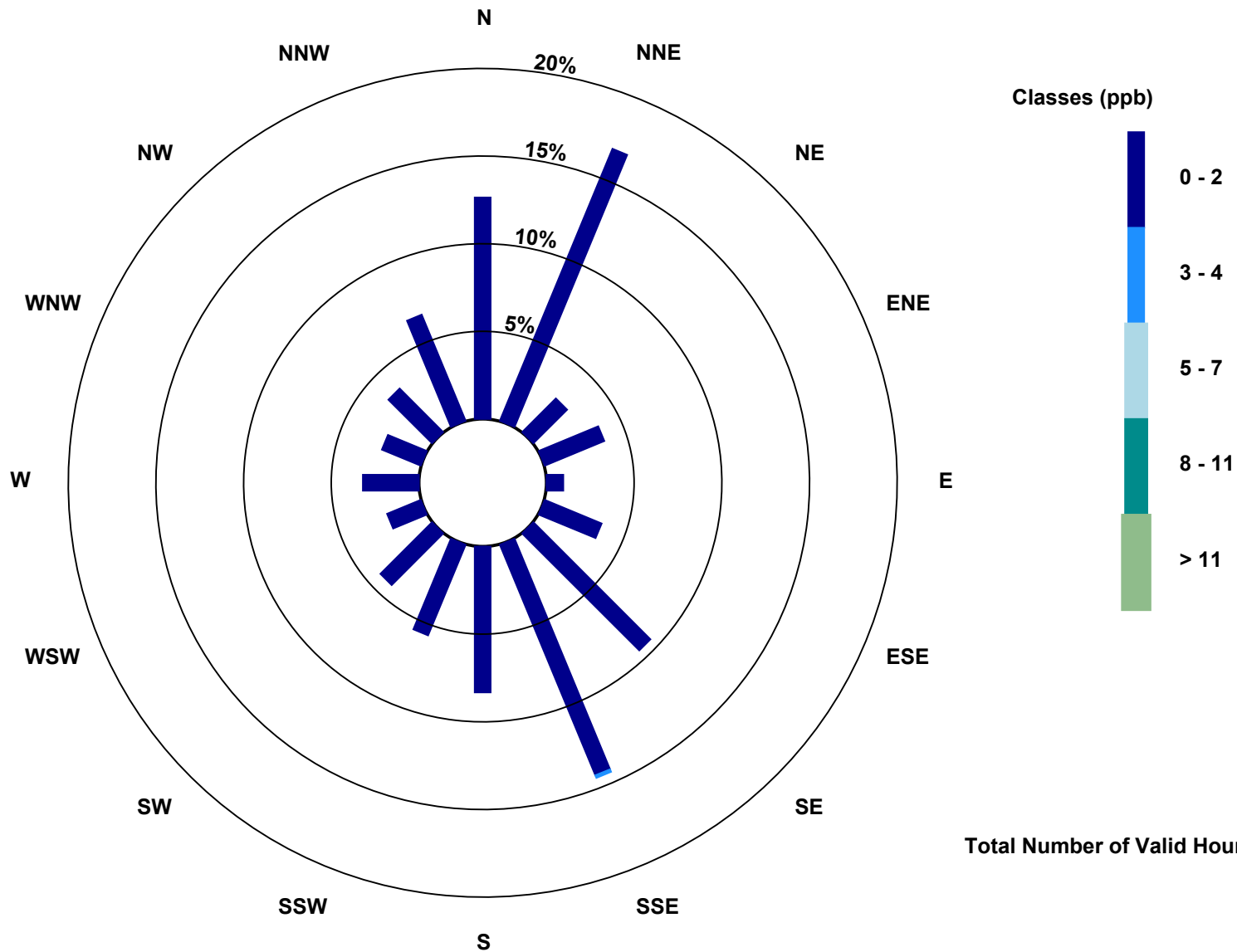
Total Number of Valid Hours: 625

Total Number of Hours: 672

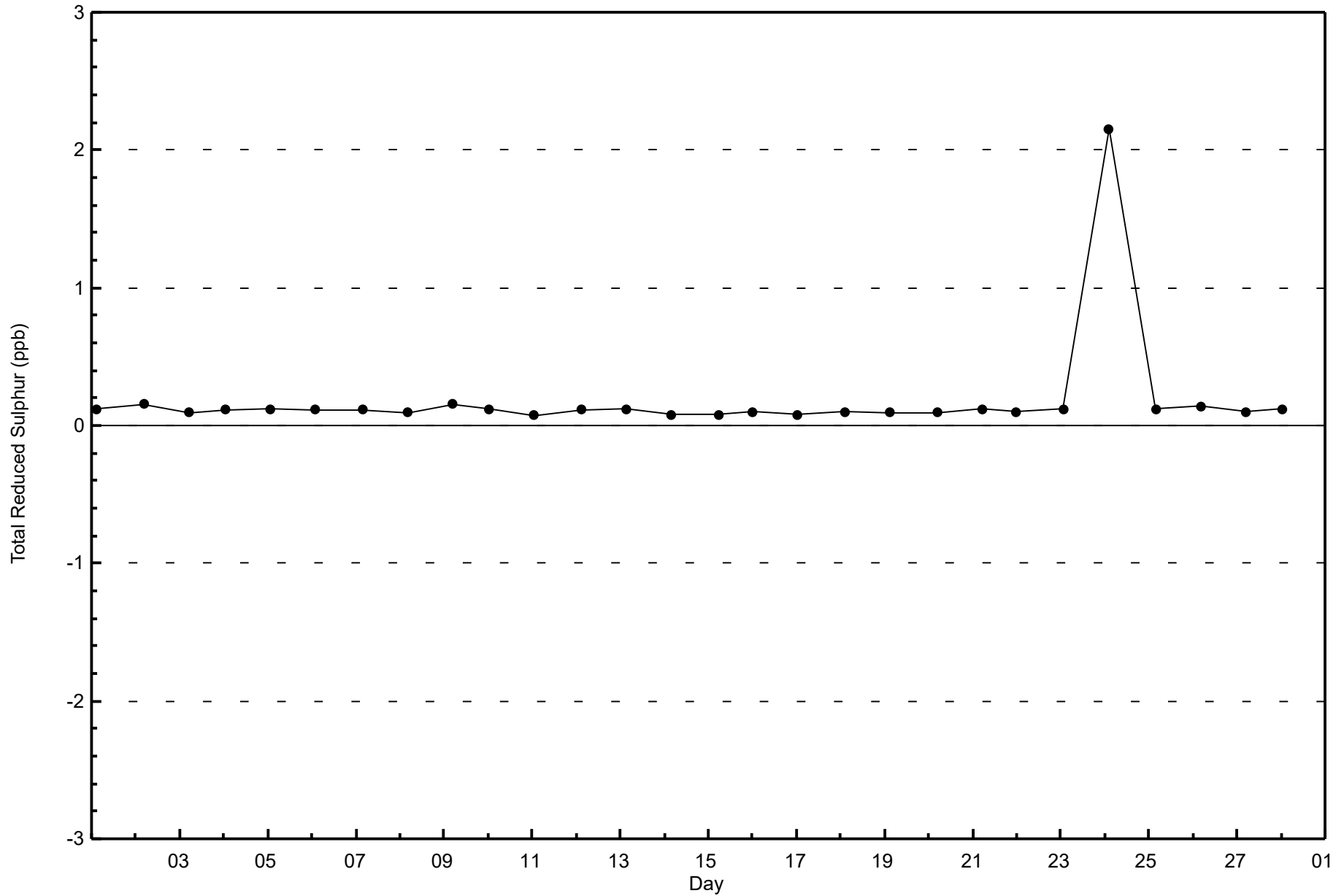


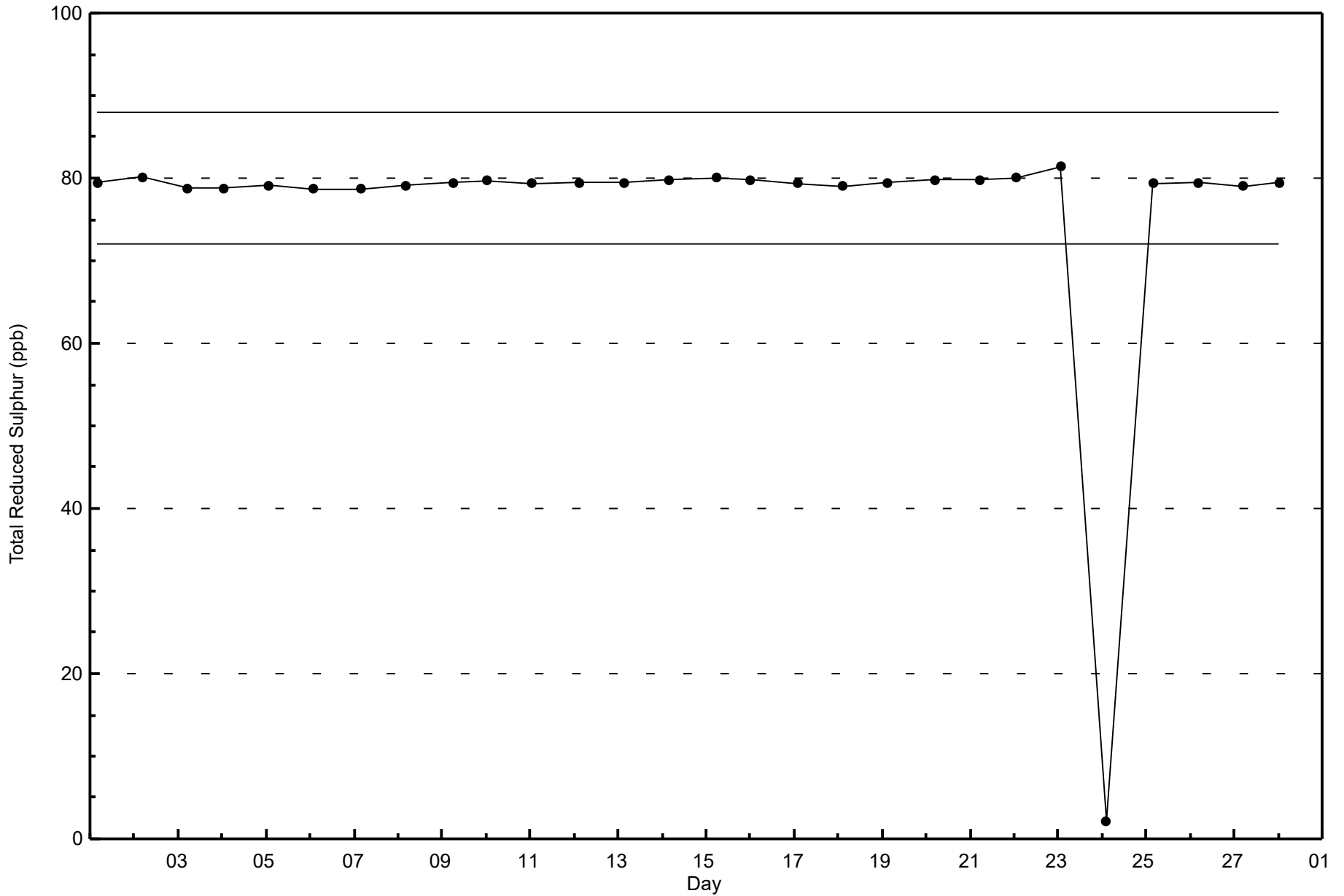
Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Total Reduced Sulphur (TRS) - ppb  
Fort Hills



Total Number of Valid Hours: 625







**Wood Buffalo Environmental Association**

**Summary of Hour Averages**

**Total Hydrocarbons (THC) - ppm**

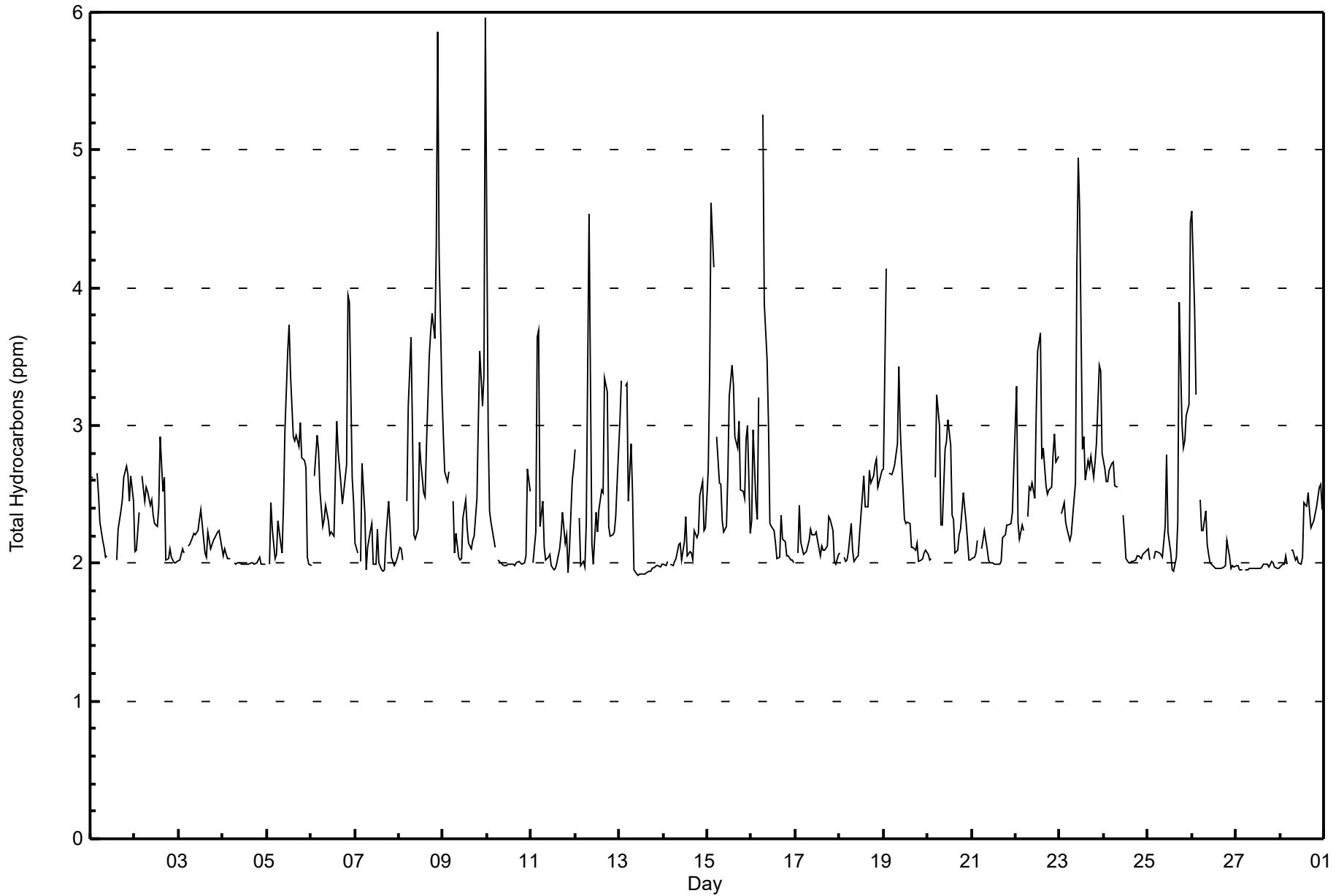
**Fort Hills - February 2023**

| Number of Exceedences (AAAQO):              |                               | 1-hr: 0  |     | 24-hr: 0                       |     | Hours in Service: 672 |     |     |     |     |     |     |     |     |     |     |     |      |     | 639 |     |     |     |                 |               |               |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
|---|-------------------------------|--|-----|--------------------------------|-----|-----------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|-----|-----|-----|-----|-----|-----------------|---------------|---------------|-----|-----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----------------|
| Maximum Value: 6.0 ppm on Feb 10 00:00      |                               | Maximum Daily Average: 3.1 ppm on Feb 8  |     | Hours of Data: 639             |     |                       |     |     |     |     |     |     |     |     |     |     |     | 33   |     |     |     |     |     |                 |               |               |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| Minimum Value: 1.9 ppm on Feb 13 11:00      |                               | Minimum Daily Average: 2.0 ppm on Feb 27   |     | Hours of Missing Data: 33      |     |                       |     |     |     |     |     |     |     |     |     |     |     | 31   |     |     |     |     |     |                 |               |               |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| Maximum Diurnal Average: 2.5 ppm at hour 22 |                               | Minimum Diurnal Average: 2.3 ppm at hour 16  |     | Hours of Calibration: 31       |     |                       |     |     |     |     |     |     |     |     |     |     |     | 99.7 |     |     |     |     |     |                 |               |               |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| Monthly Average: 2.40 ppm                   |                               | Percentiles: P <sub>1</sub> = 1.9 P <sub>10</sub> = 2.0 Q <sub>1</sub> = 2.0 Median = 2.2 Q <sub>3</sub> = 2.6 P <sub>90</sub> = 3.0 P <sub>99</sub> = 4.5 |     | Percent Operational Time: 99.7 |     |                       |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |     |     |                 |               |               |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| Day   | Hourly Period Ending At (MST) |  |     |                                |     |                       |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |     |     |                 | Daily Average | Daily Maximum |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
|   | 1                             | 2  | 3   | 4                              | 5   | 6                     | 7   | 8   | 9   | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18   | 19  | 20  | 21  | 22  | 23  | 24              |               |               |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 1-Feb                                       | 2.6                           | 2.6  | Z   | 2.7                            | 2.5 | 2.3                   | 2.2 | 2.1 | 2.0 | 2.1 | C   | C   | C   | C   | 2.0 | 2.3 | 2.4 | 2.5  | 2.6 | 2.7 | 2.6 | 2.5 | 2.6 | 2.4             | 2.4           | 2.7           |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 2-Feb                                       | 2.1                           | 2.1  | 2.4 | Z                              | 2.6 | 2.5                   | 2.6 | 2.5 | 2.4 | 2.5 | 2.3 | 2.3 | 2.3 | 2.4 | 2.9 | 2.5 | 2.6 | 2.0  | 2.0 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0             | 2.3           | 2.9           |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 3-Feb                                       | 2.0                           | 2.1  | 2.1 | 2.1                            | Z   | 2.1                   | 2.1 | 2.2 | 2.2 | 2.2 | 2.2 | 2.3 | 2.4 | 2.2 | 2.1 | 2.0 | 2.2 | 2.1  | 2.1 | 2.2 | 2.2 | 2.2 | 2.2 | 2.1             | 2.2           | 2.4           |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 4-Feb                                       | 2.1                           | 2.1  | 2.0 | 2.0                            | 2.0 | Z                     | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0  | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0             | 2.0           | 2.1           |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 5-Feb                                       | Z                             | 2.0  | 2.4 | 2.2                            | 2.0 | 2.1                   | 2.3 | 2.1 | 2.1 | 2.4 | 3.0 | 3.5 | 3.7 | 3.4 | 2.9 | 2.9 | 2.9 | 2.9  | 3.0 | 2.8 | 2.7 | 2.7 | 2.0 | 2.0             | 2.6           | 3.7           |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 6-Feb                                       | 2.0                           | Z  | 2.6 | 2.9                            | 2.8 | 2.5                   | 2.3 | 2.3 | 2.4 | 2.3 | 2.2 | 2.2 | 2.2 | 2.6 | 3.0 | 2.8 | 2.6 | 2.4  | 2.5 | 2.7 | 3.9 | 3.9 | 2.6 | 2.4             | 2.6           | 3.9           |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 7-Feb                                       | 2.1                           | 2.1  | Z   | 2.0                            | 2.7 | 2.4                   | 1.9 | 2.1 | 2.2 | 2.3 | 2.0 | 2.0 | 2.2 | 2.0 | 1.9 | 1.9 | 2.0 | 2.2  | 2.4 | 2.3 | 2.0 | 2.0 | 2.0 | 2.0             | 2.1           | 2.7           |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 8-Feb                                       | 2.1                           | 2.1  | 2.0 | Z                              | 2.5 | 3.1                   | 3.6 | 3.0 | 2.2 | 2.2 | 2.2 | 2.9 | 2.7 | 2.5 | 2.5 | 2.9 | 3.5 | 3.7  | 3.8 | 3.6 | 4.3 | 5.9 | 4.2 | 3.3             | 3.1           | 5.9           |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 9-Feb                                       | 2.9                           | 2.7  | 2.6 | 2.7                            | Z   | 2.5                   | 2.1 | 2.2 | 2.0 | 2.0 | 2.0 | 2.3 | 2.5 | 2.3 | 2.1 | 2.1 | 2.2 | 2.2  | 2.5 | 3.0 | 3.5 | 3.1 | 3.4 | 6.0             | 2.6           | 6.0           |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 10-Feb                                      | 3.0                           | 2.4  | 2.3 | 2.2                            | 2.1 | Z                     | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0  | 2.0 | 2.0 | 2.0 | 2.0 | 2.7 | 2.5             | 2.1           | 3.0           |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 11-Feb                                      | Z                             | 2.0  | 2.2 | 3.6                            | 3.7 | 2.3                   | 2.5 | 2.1 | 2.0 | 2.0 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1 | 2.2 | 2.4  | 2.1 | 2.2 | 1.9 | 2.1 | 2.6 | 2.7             | 2.3           | 3.7           |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 12-Feb                                      | 2.8                           | Z  | 2.3 | 2.0                            | 2.0 | 2.0                   | 2.3 | 4.5 | 3.3 | 2.1 | 2.0 | 2.4 | 2.2 | 2.4 | 2.5 | 2.5 | 3.4 | 3.2  | 2.3 | 2.2 | 2.2 | 2.2 | 2.3 | 2.6             | 2.5           | 4.5           |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 13-Feb                                      | 3.0                           | 3.3  | Z   | 3.3                            | 3.3 | 2.4                   | 2.9 | 2.5 | 2.0 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9  | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0             | 2.3           | 3.3           |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 14-Feb                                      | 2.0                           | 2.0  | 2.0 | Z                              | 2.0 | 2.0                   | 2.0 | 2.0 | 2.1 | 2.1 | 2.0 | 2.2 | 2.3 | 2.1 | 2.1 | 2.1 | 2.0 | 2.2  | 2.2 | 2.2 | 2.5 | 2.6 | 2.2 | 2.3             | 2.1           | 2.6           |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 15-Feb                                      | 2.7                           | 3.3  | 4.6 | 4.1                            | Z   | 2.9                   | 2.6 | 2.6 | 2.3 | 2.2 | 2.3 | 2.6 | 3.2 | 3.4 | 3.3 | 2.9 | 2.8 | 3.0  | 2.5 | 2.5 | 2.5 | 2.9 | 3.0 | 2.2             | 2.9           | 4.6           |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 16-Feb                                      | 2.3                           | 3.0  | 2.5 | 2.3                            | 3.2 | Z                     | 5.3 | 3.9 | 3.5 | 3.0 | 2.3 | 2.3 | 2.2 | 2.1 | 2.0 | 2.0 | 2.4 | 2.2  | 2.2 | 2.1 | 2.1 | 2.0 | 2.0 | 2.0             | 2.6           | 5.3           |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 17-Feb                                      | Z                             | 2.1  | 2.4 | 2.2                            | 2.1 | 2.1                   | 2.1 | 2.2 | 2.3 | 2.2 | 2.2 | 2.2 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1  | 2.3 | 2.3 | 2.2 | 2.0 | 2.0 | 2.1             | 2.2           | 2.4           |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 18-Feb                                      | 2.1                           | Z  | 2.0 | 2.0                            | 2.0 | 2.1                   | 2.3 | 2.1 | 2.0 | 2.0 | 2.1 | 2.2 | 2.5 | 2.6 | 2.4 | 2.4 | 2.7 | 2.6  | 2.6 | 2.7 | 2.8 | 2.6 | 2.6 | 2.7             | 2.4           | 2.8           |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 19-Feb                                      | 2.7                           | 4.1  | Z   | 2.7                            | 2.6 | 2.7                   | 2.7 | 2.9 | 3.4 | 3.0 | 2.7 | 2.3 | 2.3 | 2.3 | 2.3 | 2.1 | 2.1 | 2.1  | 2.2 | 2.0 | 2.0 | 2.0 | 2.1 | 2.1             | 2.5           | 4.1           |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 20-Feb                                      | 2.1                           | 2.0  | 2.0 | Z                              | 2.6 | 3.2                   | 3.0 | 2.3 | 2.3 | 2.8 | 2.9 | 3.0 | 2.9 | 2.3 | 2.3 | 2.1 | 2.1 | 2.2  | 2.2 | 2.5 | 2.4 | 2.3 | 2.0 | 2.0             | 2.4           | 3.2           |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 21-Feb                                      | 2.0                           | 2.0  | 2.1 | 2.2                            | Z   | 2.1                   | 2.2 | 2.2 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.2  | 2.2 | 2.3 | 2.3 | 2.3 | 2.4 | 2.7             | 2.1           | 2.7           |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 22-Feb                                      | 3.3                           | 2.3  | 2.2 | 2.3                            | 2.2 | Z                     | 2.3 | 2.5 | 2.5 | 2.6 | 2.5 | 3.1 | 3.5 | 3.7 | 2.8 | 2.8 | 2.6 | 2.5  | 2.5 | 2.6 | 2.8 | 2.9 | 2.7 | 2.8             | 2.7           | 3.7           |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 23-Feb                                      | Z                             | 2.4  | 2.4 | 2.3                            | 2.2 | 2.2                   | 2.2 | 2.3 | 2.6 | 4.2 | 4.9 | 4.6 | 2.8 | 2.9 | 2.6 | 2.7 | 2.7 | 2.8  | 2.6 | 2.7 | 2.9 | 3.4 | 3.4 | 2.8             | 2.9           | 4.9           |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 24-Feb                                      | 2.7                           | 2.6  | 2.6 | 2.7                            | 2.7 | 2.7                   | 2.6 | 2.6 | M   | M   | 2.4 | 2.2 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0  | 2.0 | 2.1 | 2.0 | 2.1 | 2.1 | 2.1             | 2.3           | 2.7           |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 25-Feb                                      | 2.1                           | 2.0  | Z   | 2.0                            | 2.1 | 2.1                   | 2.1 | 2.1 | 2.1 | 2.0 | 2.3 | 2.8 | 2.2 | 2.1 | 1.9 | 1.9 | 2.0 | 2.3  | 3.9 | 3.0 | 2.8 | 2.9 | 3.1 | 3.1             | 2.5           | 4.5           |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 26-Feb                                      | 4.6                           | 3.8  | 3.2 | Z                              | 2.5 | 2.2                   | 2.2 | 2.4 | 2.1 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0  | 2.0 | 2.2 | 2.0 | 2.0 | 2.0 | 2.0             | 2.3           | 4.6           |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 27-Feb                                      | 2.0                           | 2.0  | 2.0 | 2.0                            | Z   | 2.0                   | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0  | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0             | 2.0           | 2.0           | 2.0 |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 28-Feb                                      | 2.0                           | 2.0  | 2.0 | 2.1                            | 2.0 | Z                     | 2.1 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.4 | 2.4 | 2.5 | 2.4 | 2.3  | 2.3 | 2.4 | 2.4 | 2.5 | 2.6 | 2.4             | 2.2           | 2.6           |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
|   |                               |  |     |                                |     |                       |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |     |     | 2.5             | 2.4           | 2.4           | 2.5 | 2.5             | 2.4 | 2.4 | 2.3 | 2.3 | 2.3 | 2.3 | 2.4 | 2.4 | 2.4 | 2.3 | 2.3 | 2.4 | 2.4 | 2.4 | 2.4 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | Diurnal Average |
|   |                               |  |     |                                |     |                       |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |     |     | 4.6             | 4.1           | 4.6           | 4.1 | 3.7             | 3.2 | 5.3 | 4.5 | 3.5 | 4.2 | 4.9 | 4.6 | 3.7 | 3.7 | 3.3 | 2.9 | 3.5 | 3.9 | 3.8 | 3.6 | 4.3 | 5.9 | 4.2 | 6.0 | 6.0 | Diurnal Maximum |
| Z - zerospan                                |                               |  |     |                                |     |                       |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |     |     | C - Calibration |               |               |     | M - Maintenance |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Total Hydrocarbons (THC) - ppm**  
**Fort Hills - February 2023**





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Total Hydrocarbons (THC) - ppm**  
**Fort Hills - February 2023**

| <b>Concentration Ranges (ppm)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 2.0                           | 193                    | 30.20    | 30.20               |
| 2.1 - 3.0                         | 389                    | 60.88    | 91.08               |
| 3.1 - 10.0                        | 57                     | 8.92     | 100.00              |
| > 10.0                            | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 639

Total Number of Hours: 672





**Wood Buffalo Environmental Association  
Frequency Distribution**

**Total Hydrocarbons (THC) - ppm  
Fort Hills - February 2023**

| <b>Concentration<br/>Ranges (ppm)</b> | <b>Wind Direction</b> |     |    |     |   |     |    |     |    |     |    |     |    |     |    |     | <b>Totals</b> |
|---------------------------------------|-----------------------|-----|----|-----|---|-----|----|-----|----|-----|----|-----|----|-----|----|-----|---------------|
|                                       | N                     | NNE | NE | ENE | E | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |               |
| 0 - 2.0                               | 52                    | 70  | 0  | 1   | 0 | 0   | 1  | 11  | 11 | 10  | 3  | 1   | 5  | 11  | 7  | 9   | 192           |
| 2.1 - 3.0                             | 31                    | 31  | 16 | 24  | 5 | 15  | 47 | 71  | 31 | 26  | 17 | 13  | 13 | 5   | 11 | 29  | 385           |
| 3.1 - 10.0                            | 3                     | 2   | 3  | 2   | 1 | 7   | 12 | 10  | 8  | 2   | 4  | 0   | 1  | 0   | 0  | 1   | 56            |
| > 10.0                                | 0                     | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| <b>Totals</b>                         | 86                    | 103 | 19 | 27  | 6 | 22  | 60 | 92  | 50 | 38  | 24 | 14  | 19 | 16  | 18 | 39  | 633           |

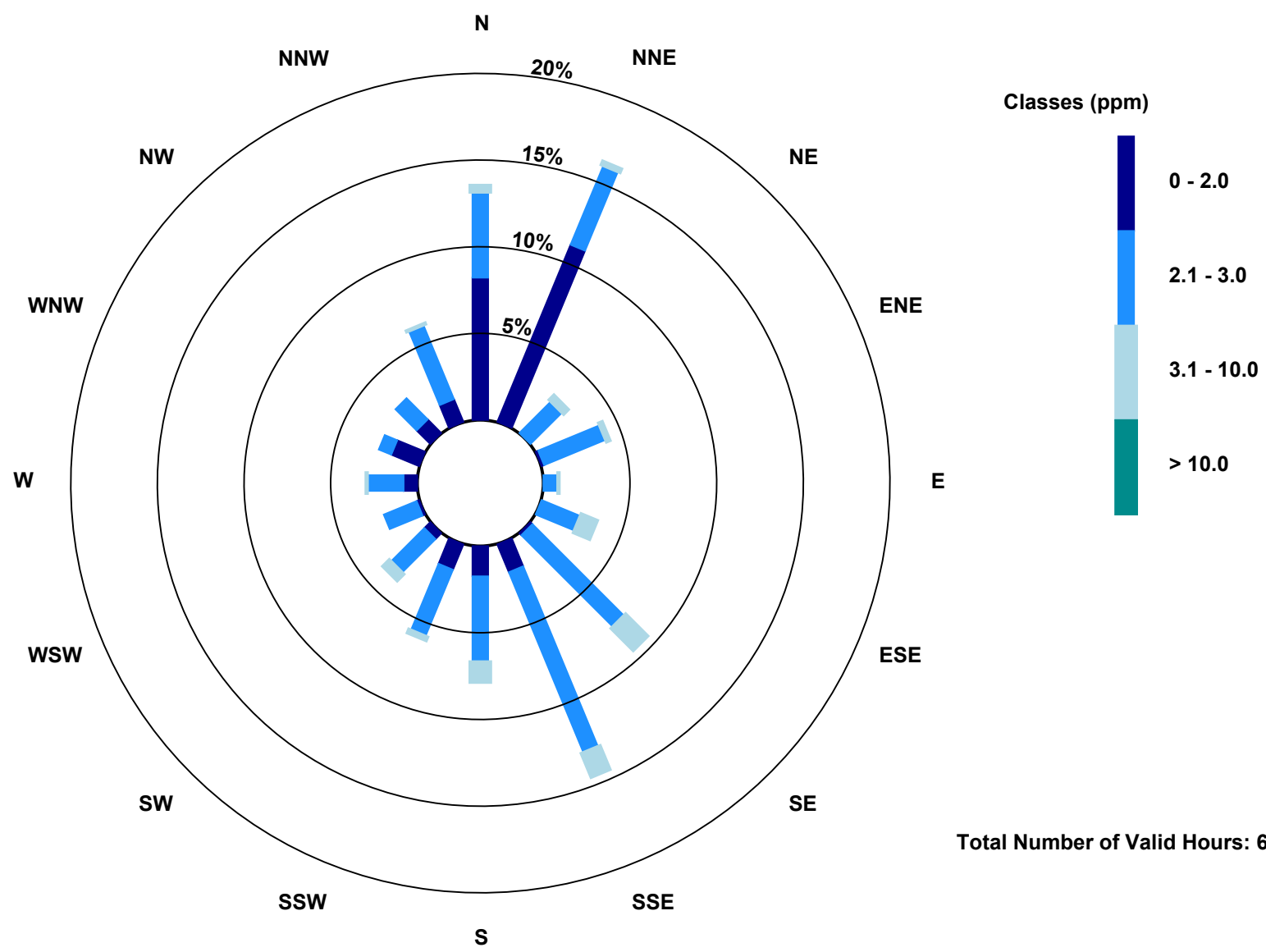
Total Number of Valid Hours: 633

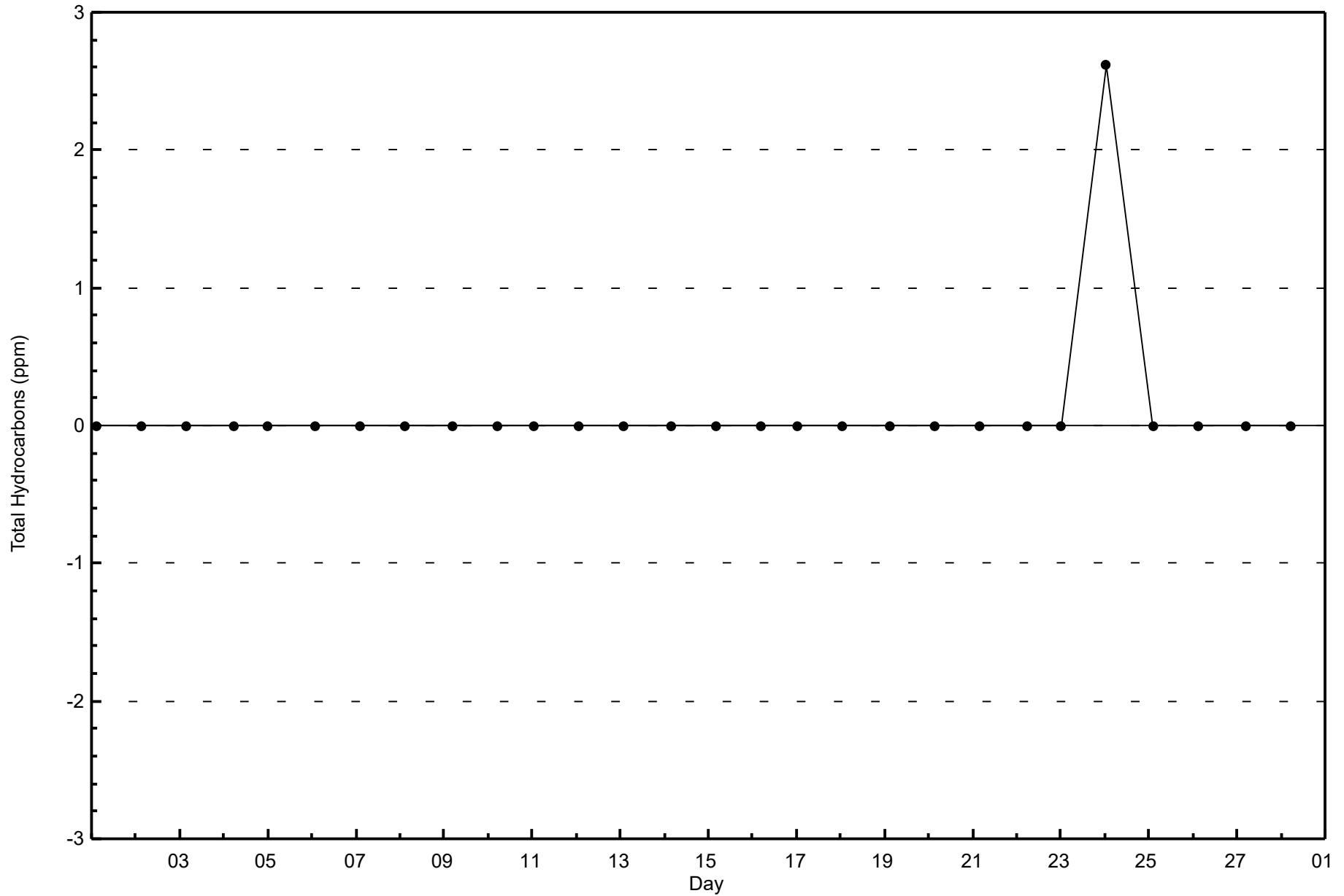
Total Number of Hours: 672

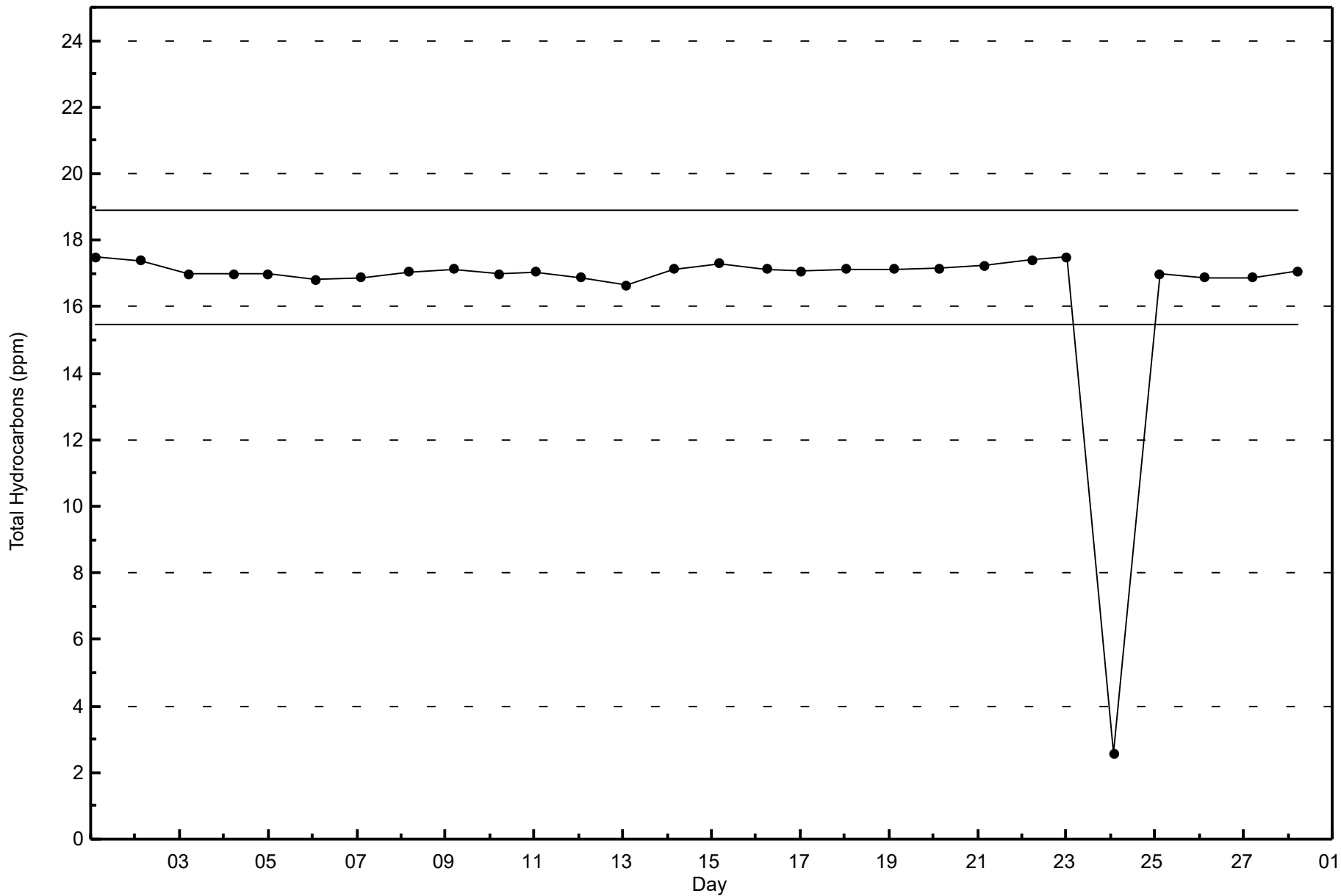


Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Total Hydrocarbons (THC) - ppm  
Fort Hills





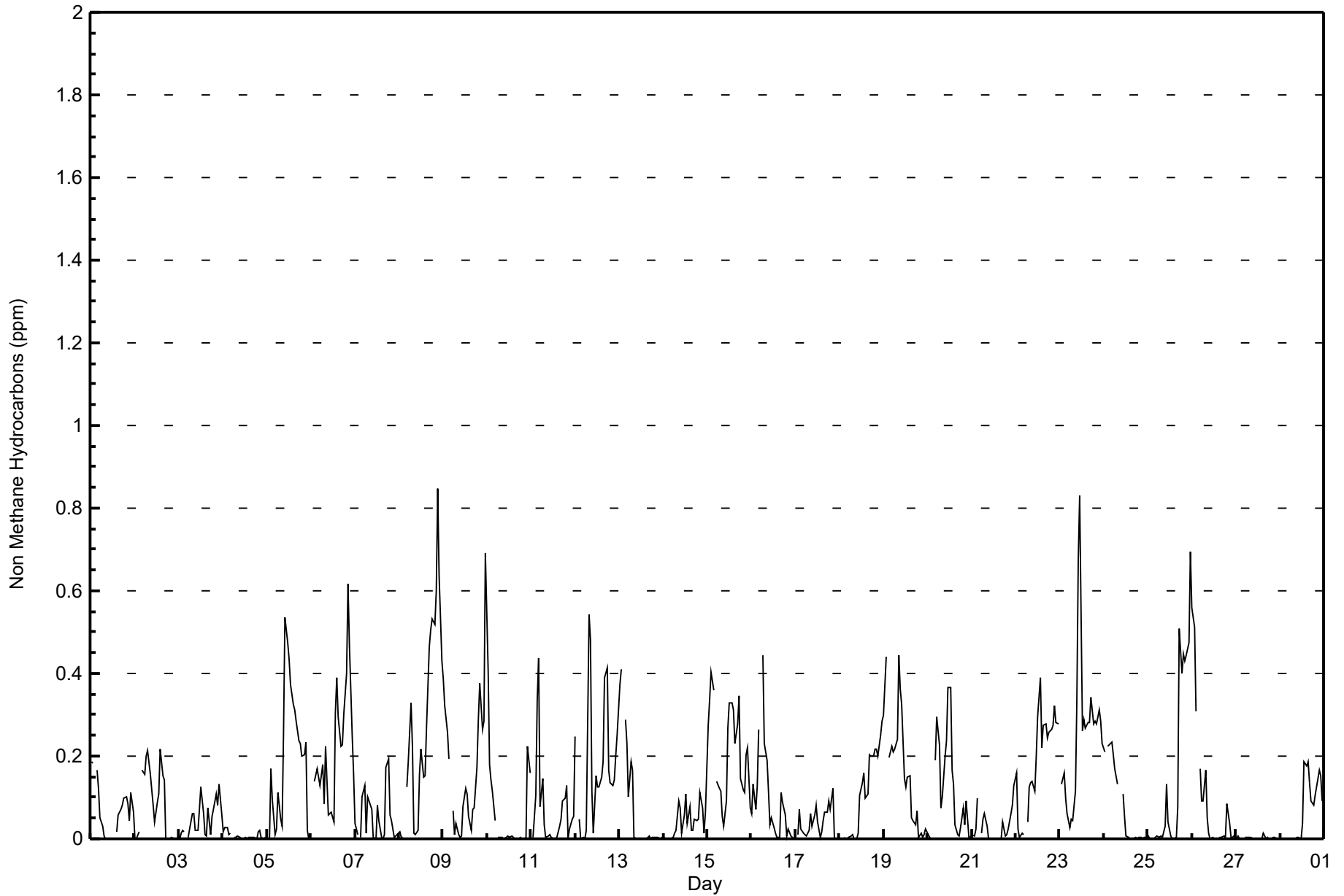




Summary of Hour Averages

Fort Hills - February 2023

| Maximum Value: 0.846 ppm on Feb 8 22:00   |                               | Maximum Daily Average: 0.279 ppm on Feb 8  |       | Hours in Service: 672          |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |               |               |
|---|-------------------------------|--|-------|--------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-----------------|---------------|---------------|
| Minimum Value: 0.000 ppm on Feb 1 09:00   |                               | Minimum Daily Average: 0.002 ppm on Feb 27   |       | Hours of Data: 638             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |               |               |
| Maximum Diurnal Average: 0.144 ppm at hour 22   |                               | Minimum Diurnal Average: 0.074 ppm at hour 10  |       | Hours of Missing Data: 34      |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |               |               |
| Monthly Average: 0.113 ppm  |                               | Percentiles: P <sub>1</sub> = 0.0 P <sub>10</sub> = 0.0 Q <sub>1</sub> = 0.0 Median = 0.1 Q <sub>3</sub> = 0.2 P <sub>90</sub> = 0.3 P <sub>99</sub> = 0.6 |       | Hours of Calibration: 32       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |               |               |
|   |                               |  |       | Percent Operational Time: 99.7 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |               |               |
| Day   | Hourly Period Ending At (MST) |  |       |                                |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 | Daily Average | Daily Maximum |
|   | 1                             | 2  | 3     | 4                              | 5     | 6     | 7     | 8     | 9     | 10    | 11    | 12    | 13    | 14    | 15    | 16    | 17    | 18    | 19    | 20    | 21    | 22    | 23    | 24              |               |               |
| 1-Feb   | 0.187                         | 0.182  | Z     | 0.167                          | 0.122 | 0.051 | 0.032 | 0.007 | 0.000 | 0.001 | C     | C     | C     | C     | 0.018 | 0.057 | 0.071 | 0.082 | 0.100 | 0.101 | 0.086 | 0.043 | 0.112 | 0.063           | 0.078         | 0.187         |
| 2-Feb   | 0.001                         | 0.002  | 0.018 | Z                              | 0.168 | 0.157 | 0.199 | 0.214 | 0.158 | 0.118 | 0.082 | 0.042 | 0.088 | 0.109 | 0.217 | 0.153 | 0.141 | 0.001 | 0.000 | 0.001 | 0.003 | 0.001 | 0.000 | 0.001           | 0.081         | 0.217         |
| 3-Feb   | 0.000                         | 0.013  | 0.020 | 0.016                          | Z     | 0.003 | 0.023 | 0.060 | 0.062 | 0.019 | 0.020 | 0.070 | 0.125 | 0.060 | 0.011 | 0.007 | 0.073 | 0.011 | 0.054 | 0.073 | 0.109 | 0.082 | 0.131 | 0.056           | 0.048         | 0.131         |
| 4-Feb   | 0.018                         | 0.029  | 0.026 | 0.011                          | 0.015 | Z     | 0.005 | 0.002 | 0.006 | 0.004 | 0.001 | 0.000 | 0.002 | 0.000 | 0.002 | 0.004 | 0.003 | 0.003 | 0.001 | 0.015 | 0.022 | 0.003 | 0.001 | 0.002           | 0.008         | 0.029         |
| 5-Feb   | Z                             | 0.000  | 0.171 | 0.094                          | 0.009 | 0.025 | 0.111 | 0.047 | 0.029 | 0.256 | 0.536 | 0.474 | 0.432 | 0.374 | 0.325 | 0.313 | 0.285 | 0.238 | 0.230 | 0.199 | 0.204 | 0.235 | 0.020 | 0.001           | 0.200         | 0.536         |
| 6-Feb   | 0.000                         | Z  | 0.138 | 0.168                          | 0.151 | 0.127 | 0.180 | 0.083 | 0.225 | 0.057 | 0.063 | 0.064 | 0.040 | 0.306 | 0.390 | 0.296 | 0.225 | 0.228 | 0.303 | 0.399 | 0.616 | 0.473 | 0.249 | 0.156           | 0.215         | 0.616         |
| 7-Feb   | 0.038                         | 0.010  | Z     | 0.004                          | 0.101 | 0.130 | 0.015 | 0.100 | 0.081 | 0.070 | 0.003 | 0.000 | 0.081 | 0.044 | 0.004 | 0.002 | 0.009 | 0.174 | 0.194 | 0.057 | 0.044 | 0.002 | 0.006 | 0.010           | 0.051         | 0.194         |
| 8-Feb   | 0.018                         | 0.004  | 0.004 | Z                              | 0.125 | 0.187 | 0.330 | 0.219 | 0.014 | 0.010 | 0.020 | 0.156 | 0.217 | 0.150 | 0.152 | 0.268 | 0.466 | 0.506 | 0.534 | 0.518 | 0.600 | 0.846 | 0.636 | 0.430           | 0.279         | 0.846         |
| 9-Feb   | 0.386                         | 0.321  | 0.259 | 0.195                          | Z     | 0.068 | 0.009 | 0.037 | 0.009 | 0.004 | 0.007 | 0.078 | 0.122 | 0.108 | 0.055 | 0.021 | 0.072 | 0.075 | 0.172 | 0.289 | 0.376 | 0.266 | 0.283 | 0.691           | 0.170         | 0.691         |
| 10-Feb  | 0.407                         | 0.179  | 0.142 | 0.114                          | 0.045 | Z     | 0.003 | 0.004 | 0.002 | 0.001 | 0.003 | 0.007 | 0.003 | 0.006 | 0.003 | 0.000 | 0.001 | 0.001 | 0.002 | 0.001 | 0.001 | 0.005 | 0.223 | 0.159           | 0.057         | 0.407         |
| 11-Feb  | Z                             | 0.004  | 0.107 | 0.335                          | 0.436 | 0.077 | 0.146 | 0.033 | 0.004 | 0.006 | 0.010 | 0.004 | 0.001 | 0.001 | 0.002 | 0.031 | 0.046 | 0.091 | 0.097 | 0.128 | 0.000 | 0.024 | 0.049 | 0.056           | 0.073         | 0.436         |
| 12-Feb  | 0.246                         | Z  | 0.047 | 0.002                          | 0.004 | 0.002 | 0.021 | 0.541 | 0.482 | 0.115 | 0.014 | 0.154 | 0.127 | 0.126 | 0.148 | 0.185 | 0.390 | 0.415 | 0.165 | 0.135 | 0.130 | 0.141 | 0.199 | 0.252           | 0.176         | 0.541         |
| 13-Feb  | 0.373                         | 0.412  | Z     | 0.289                          | 0.230 | 0.101 | 0.186 | 0.168 | 0.004 | 0.001 | 0.001 | 0.001 | 0.002 | 0.001 | 0.001 | 0.001 | 0.008 | 0.002 | 0.005 | 0.002 | 0.004 | 0.002 | 0.000 | 0.005           | 0.078         | 0.412         |
| 14-Feb  | 0.005                         | 0.002  | 0.001 | Z                              | 0.001 | 0.003 | 0.015 | 0.019 | 0.091 | 0.073 | 0.015 | 0.058 | 0.110 | 0.039 | 0.078 | 0.019 | 0.021 | 0.046 | 0.044 | 0.049 | 0.111 | 0.073 | 0.015 | 0.063           | 0.041         | 0.111         |
| 15-Feb  | 0.276                         | 0.335  | 0.404 | 0.359                          | Z     | 0.140 | 0.122 | 0.117 | 0.056 | 0.031 | 0.090 | 0.267 | 0.327 | 0.329 | 0.313 | 0.230 | 0.279 | 0.346 | 0.147 | 0.120 | 0.111 | 0.202 | 0.219 | 0.073           | 0.213         | 0.404         |
| 16-Feb  | 0.062                         | 0.134  | 0.071 | 0.129                          | 0.266 | Z     | 0.444 | 0.230 | 0.189 | 0.114 | 0.035 | 0.050 | 0.028 | 0.013 | 0.003 | 0.002 | 0.113 | 0.087 | 0.057 | 0.008 | 0.022 | 0.005 | 0.002 | 0.000           | 0.090         | 0.444         |
| 17-Feb  | Z                             | 0.009  | 0.073 | 0.025                          | 0.013 | 0.011 | 0.007 | 0.022 | 0.061 | 0.030 | 0.058 | 0.081 | 0.041 | 0.005 | 0.018 | 0.045 | 0.065 | 0.065 | 0.092 | 0.072 | 0.122 | 0.003 | 0.001 | 0.001           | 0.040         | 0.122         |
| 18-Feb  | 0.003                         | Z  | 0.003 | 0.000                          | 0.002 | 0.003 | 0.006 | 0.012 | 0.001 | 0.002 | 0.013 | 0.104 | 0.135 | 0.160 | 0.097 | 0.108 | 0.203 | 0.201 | 0.199 | 0.218 | 0.216 | 0.200 | 0.251 | 0.286           | 0.105         | 0.286         |
| 19-Feb  | 0.298                         | 0.441  | Z     | 0.197                          | 0.223 | 0.211 | 0.216 | 0.240 | 0.444 | 0.363 | 0.325 | 0.146 | 0.126 | 0.149 | 0.152 | 0.051 | 0.046 | 0.032 | 0.067 | 0.003 | 0.014 | 0.004 | 0.010 | 0.022           | 0.164         | 0.444         |
| 20-Feb  | 0.010                         | 0.003  | 0.001 | Z                              | 0.189 | 0.294 | 0.229 | 0.075 | 0.100 | 0.200 | 0.236 | 0.368 | 0.366 | 0.167 | 0.133 | 0.034 | 0.012 | 0.006 | 0.026 | 0.075 | 0.035 | 0.092 | 0.004 | 0.002           | 0.115         | 0.368         |
| 21-Feb  | 0.009                         | 0.007  | 0.023 | 0.099                          | Z     | 0.015 | 0.046 | 0.061 | 0.032 | 0.001 | 0.000 | 0.001 | 0.001 | 0.001 | 0.001 | 0.002 | 0.001 | 0.039 | 0.008 | 0.011 | 0.025 | 0.060 | 0.081 | 0.127           | 0.028         | 0.127         |
| 22-Feb  | 0.159                         | 0.025  | 0.005 | 0.014                          | 0.010 | Z     | 0.042 | 0.125 | 0.137 | 0.138 | 0.115 | 0.198 | 0.294 | 0.391 | 0.221 | 0.273 | 0.278 | 0.244 | 0.257 | 0.264 | 0.275 | 0.324 | 0.282 | 0.278           | 0.189         | 0.391         |
| 23-Feb  | Z                             | 0.131  | 0.160 | 0.099                          | 0.061 | 0.027 | 0.047 | 0.044 | 0.115 | 0.337 | 0.676 | 0.831 | 0.261 | 0.288 | 0.269 | 0.282 | 0.282 | 0.344 | 0.277 | 0.286 | 0.279 | 0.312 | 0.285 | 0.232           | 0.257         | 0.831         |
| 24-Feb  | 0.211                         | Z  | 0.223 | 0.228                          | 0.235 | 0.203 | 0.170 | 0.131 | M     | M     | 0.108 | 0.053 | 0.005 | 0.002 | 0.000 | 0.001 | 0.001 | 0.002 | 0.001 | 0.004 | 0.002 | 0.001 | 0.003 | 0.003           | 0.076         | 0.235         |
| 25-Feb  | 0.008                         | 0.001  | Z     | 0.002                          | 0.003 | 0.007 | 0.002 | 0.007 | 0.003 | 0.030 | 0.132 | 0.041 | 0.006 | 0.000 | 0.002 | 0.002 | 0.078 | 0.508 | 0.398 | 0.449 | 0.429 | 0.446 | 0.474 | 0.695           | 0.162         | 0.695         |
| 26-Feb  | 0.559                         | 0.512  | 0.307 | Z                              | 0.168 | 0.090 | 0.092 | 0.166 | 0.050 | 0.014 | 0.001 | 0.003 | 0.002 | 0.000 | 0.001 | 0.005 | 0.003 | 0.007 | 0.003 | 0.085 | 0.036 | 0.003 | 0.004 | 0.005           | 0.092         | 0.559         |
| 27-Feb  | 0.002                         | 0.007  | 0.000 | 0.001                          | Z     | 0.002 | 0.002 | 0.002 | 0.003 | 0.000 | 0.000 | 0.002 | 0.001 | 0.001 | 0.000 | 0.012 | 0.001 | 0.004 | 0.001 | 0.001 | 0.003 | 0.003 | 0.001 | 0.001           | 0.002         | 0.012         |
| 28-Feb  | 0.000                         | 0.000  | 0.000 | 0.002                          | 0.000 | Z     | 0.000 | 0.001 | 0.001 | 0.003 | 0.002 | 0.002 | 0.036 | 0.186 | 0.175 | 0.187 | 0.134 | 0.090 | 0.083 | 0.106 | 0.124 | 0.168 | 0.154 | 0.092           | 0.067         | 0.187         |
|   |                               |  |       |                                |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Diurnal Average |               |               |
|   |                               |  |       |                                |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Diurnal Maximum |               |               |
| 0.137 0.115 0.096 0.111 0.112 0.084 0.096 0.099 0.087 0.074 0.095 0.120 0.110 0.112 0.100 0.093 0.118 0.137 0.126 0.131 0.143 0.144 0.132 0.134 |                               |  |       |                                |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |               |               |
| 0.559 0.512 0.404 0.359 0.436 0.294 0.444 0.541 0.482 0.363 0.676 0.831 0.432 0.391 0.390 0.313 0.466 0.508 0.534 0.518 0.616 0.846 0.636 0.695 |                               |  |       |                                |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |               |               |
| Z - zerospan                      C - Calibration                      M - Maintenance  |                               |  |       |                                |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |               |               |





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Non Methane Hydrocarbons (NMHC) - ppm**  
**Fort Hills - February 2023**

| <b>Concentration Ranges (ppm)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 0.005                         | 180                    | 28.21    | 28.21               |
| 0.006 - 0.05                      | 134                    | 21.00    | 49.22               |
| 0.06 - 0.1                        | 138                    | 21.63    | 70.85               |
| > 0.1                             | 186                    | 29.15    | 100.00              |

Total Number of Valid Hours: 638

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Non Methane Hydrocarbons (NMHC) - ppm  
Fort Hills - February 2023**

| <b>Concentration<br/>Ranges (ppm)</b> | <b>Wind Direction</b> |            |           |            |          |            |           |            |           |            |           |            |           |            |           |            | <b>Totals</b> |
|---------------------------------------|-----------------------|------------|-----------|------------|----------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|---------------|
|                                       | <b>N</b>              | <b>NNE</b> | <b>NE</b> | <b>ENE</b> | <b>E</b> | <b>ESE</b> | <b>SE</b> | <b>SSE</b> | <b>S</b>  | <b>SSW</b> | <b>SW</b> | <b>WSW</b> | <b>W</b>  | <b>WNW</b> | <b>NW</b> | <b>NNW</b> |               |
| 0 - 0.005                             | 45                    | 54         | 1         | 0          | 0        | 0          | 1         | 15         | 16        | 10         | 3         | 1          | 4         | 9          | 9         | 11         | 179           |
| 0.006 - 0.05                          | 19                    | 28         | 6         | 12         | 1        | 0          | 4         | 12         | 12        | 13         | 6         | 1          | 4         | 2          | 2         | 12         | 134           |
| 0.06 - 0.1                            | 12                    | 15         | 7         | 9          | 3        | 3          | 17        | 27         | 7         | 10         | 6         | 6          | 6         | 0          | 2         | 7          | 137           |
| > 0.1                                 | 10                    | 6          | 5         | 6          | 2        | 19         | 38        | 37         | 15        | 5          | 9         | 6          | 5         | 5          | 5         | 9          | 182           |
| <b>Totals</b>                         | <b>86</b>             | <b>103</b> | <b>19</b> | <b>27</b>  | <b>6</b> | <b>22</b>  | <b>60</b> | <b>91</b>  | <b>50</b> | <b>38</b>  | <b>24</b> | <b>14</b>  | <b>19</b> | <b>16</b>  | <b>18</b> | <b>39</b>  | <b>632</b>    |

Total Number of Valid Hours: 632

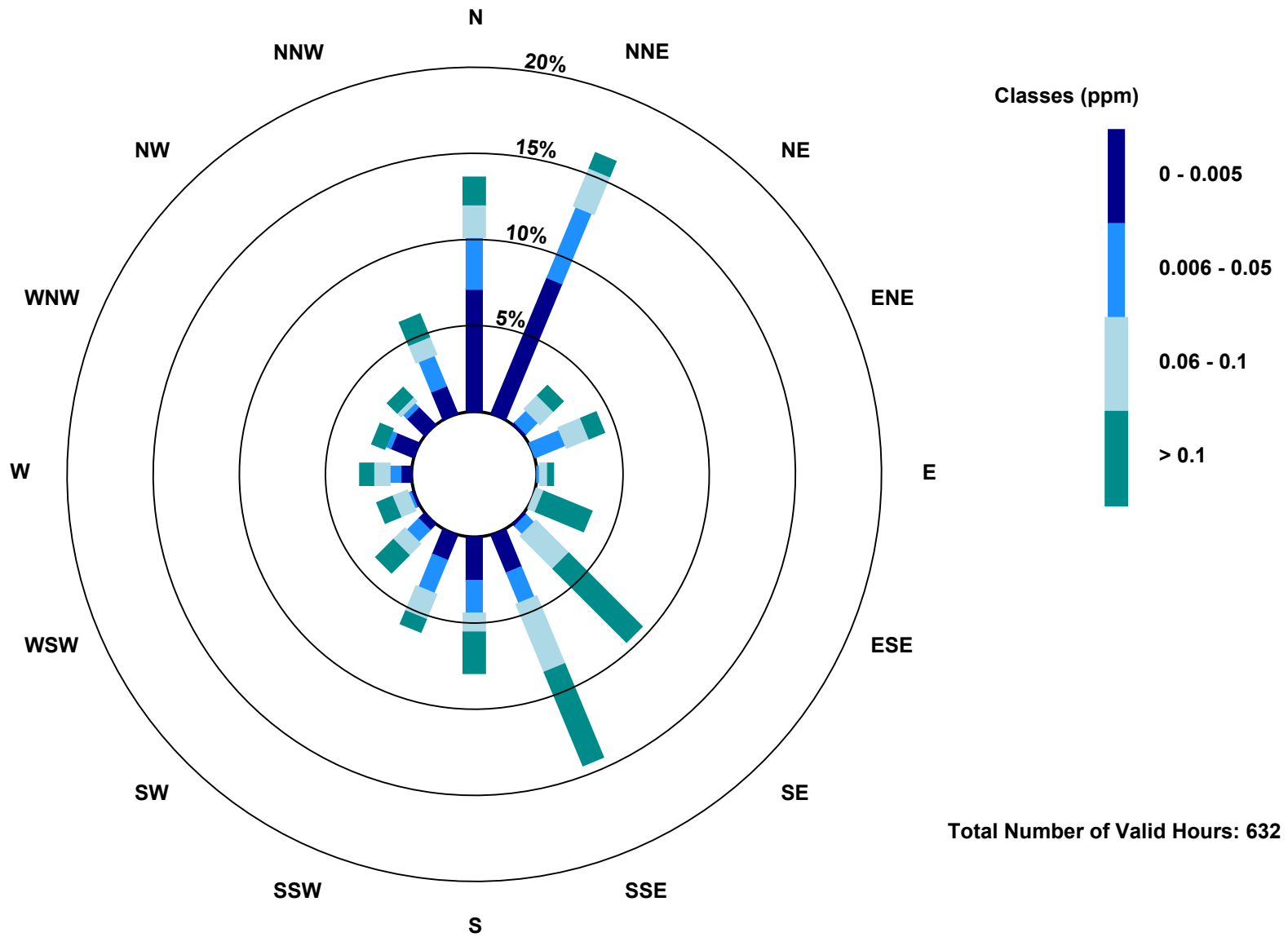
Total Number of Hours: 672

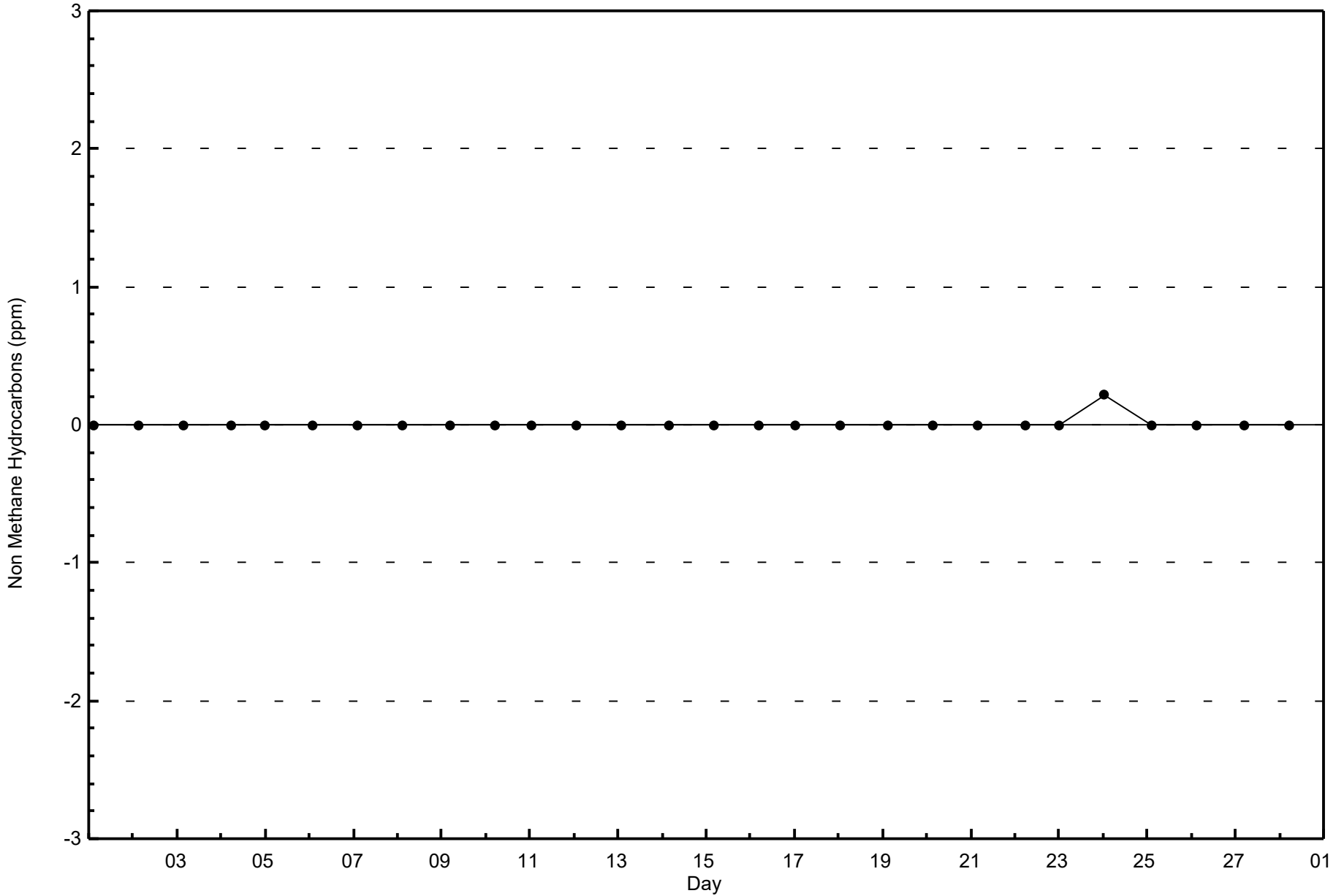


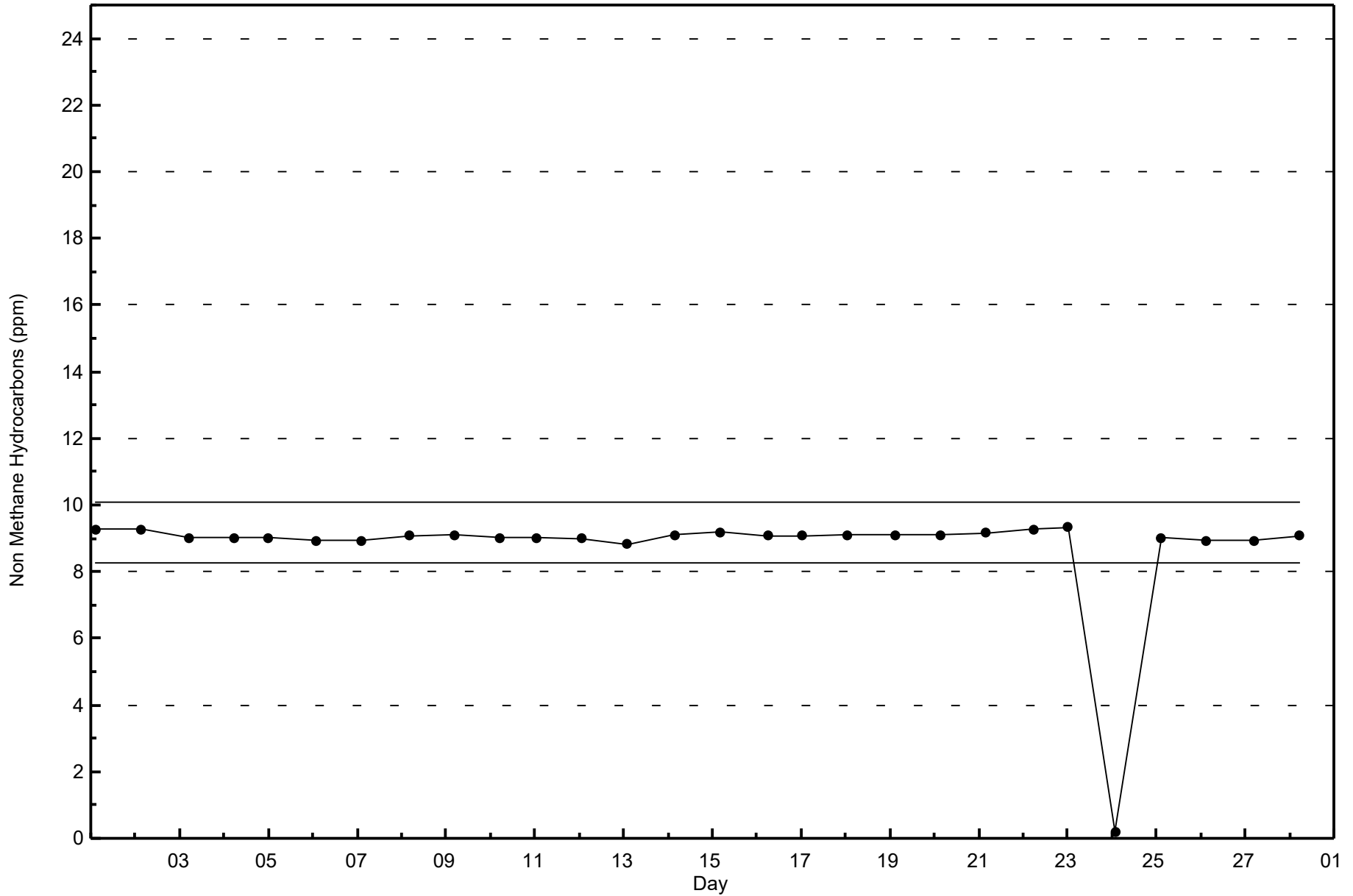


Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Non Methane Hydrocarbons (NMHC) - ppm  
Fort Hills









Wood Buffalo Environmental Association

Summary of Hour Averages

Methane (CH<sub>4</sub>) - ppm

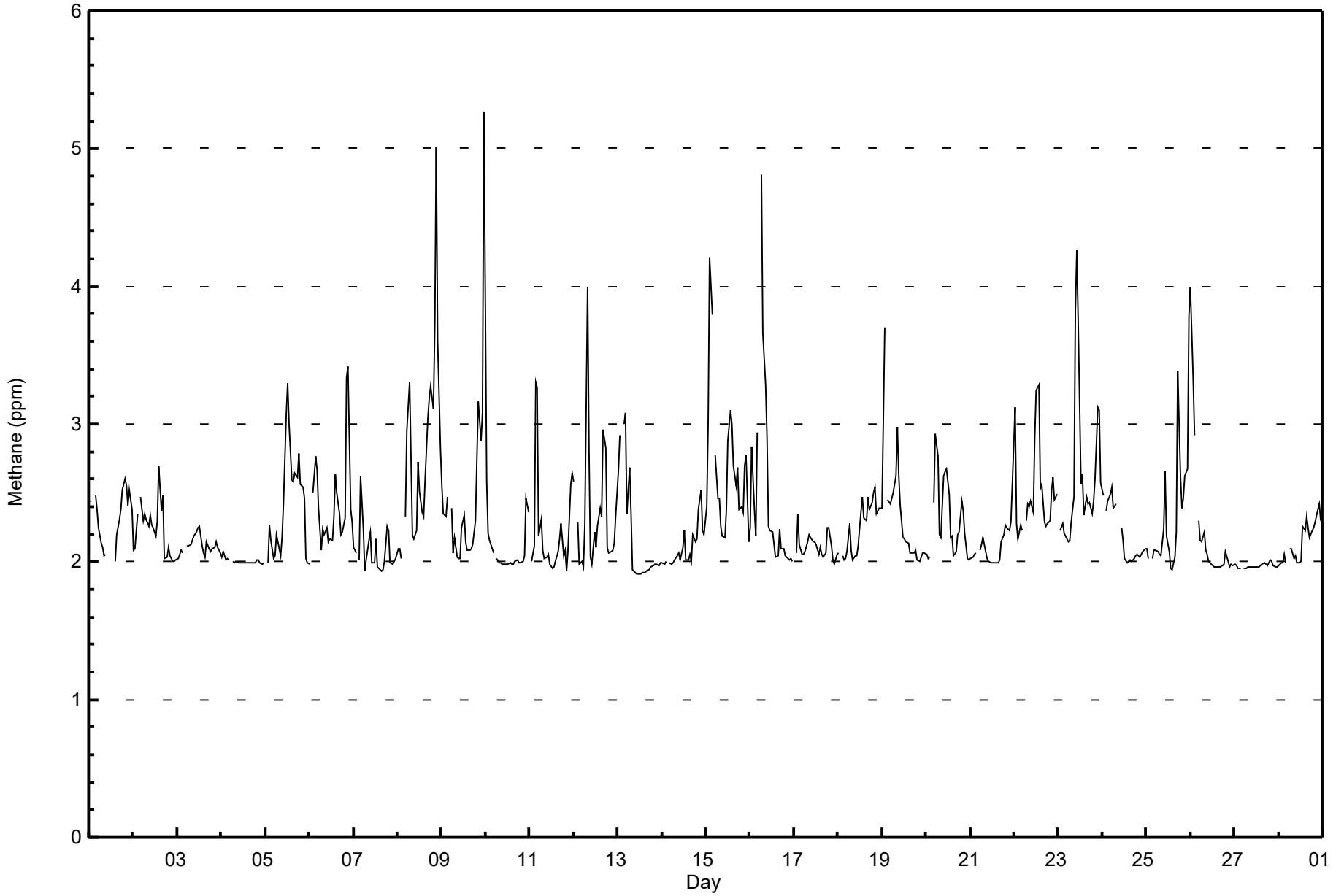
Fort Hills - February 2023

| Number of Exceedences (AAAQO):              |                               | 1-hr: 0  | 24-hr: 0 | Hours in Service: 672 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                                |     | 638 |     |     |                 |               |               |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
|---|-------------------------------|--|----------|-----------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------------------------------|-----|-----|-----|-----|-----------------|---------------|---------------|-----|-----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----------------|--|
| Maximum Value: 5.3 ppm on Feb 10 00:00      |                               | Maximum Daily Average: 2.8 ppm on Feb 8  |          |                       |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Hours of Data: 638             |     |     |     |     |                 |               |               |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| Minimum Value: 1.9 ppm on Feb 13 11:00      |                               | Minimum Daily Average: 2.0 ppm on Feb 27   |          |                       |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Hours of Missing Data: 34      |     |     |     |     |                 |               |               |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| Maximum Diurnal Average: 2.4 ppm at hour 22 |                               | Minimum Diurnal Average: 2.2 ppm at hour 16  |          |                       |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Hours of Calibration: 32       |     |     |     |     |                 |               |               |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| Monthly Average: 2.29 ppm                   |                               | Percentiles: P <sub>1</sub> = 1.9 P <sub>10</sub> = 2.0 Q <sub>1</sub> = 2.0 Median = 2.2 Q <sub>3</sub> = 2.4 P <sub>90</sub> = 2.7 P <sub>99</sub> = 3.9 |          |                       |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Percent Operational Time: 99.7 |     |     |     |     |                 |               |               |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| Day   | Hourly Period Ending At (MST) |  |          |                       |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                                |     |     |     |     |                 | Daily Average | Daily Maximum |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
|   | 1                             | 2  | 3        | 4                     | 5   | 6   | 7   | 8   | 9   | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19                             | 20  | 21  | 22  | 23  | 24              |               |               |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 1-Feb                                       | 2.4                           | 2.4  | Z        | 2.5                   | 2.4 | 2.2 | 2.1 | 2.1 | 2.0 | 2.1 | C   | C   | C   | C   | 2.0 | 2.2 | 2.3 | 2.4 | 2.5                            | 2.6 | 2.6 | 2.4 | 2.5 | 2.4             | 2.3           | 2.6           |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 2-Feb                                       | 2.1                           | 2.1  | 2.4      | Z                     | 2.5 | 2.3 | 2.4 | 2.3 | 2.3 | 2.3 | 2.3 | 2.2 | 2.2 | 2.3 | 2.7 | 2.4 | 2.5 | 2.0 | 2.0                            | 2.1 | 2.0 | 2.0 | 2.0 | 2.0             | 2.0           | 2.2           | 2.7 |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 3-Feb                                       | 2.0                           | 2.1  | 2.1      | 2.1                   | Z   | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | 2.2 | 2.3 | 2.3 | 2.1 | 2.1 | 2.0 | 2.2 | 2.1 | 2.1                            | 2.1 | 2.1 | 2.1 | 2.1 | 2.1             | 2.1           | 2.1           | 2.3 |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 4-Feb                                       | 2.0                           | 2.1  | 2.0      | 2.0                   | 2.0 | Z   | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0                            | 2.0 | 2.0 | 2.0 | 2.0 | 2.0             | 2.0           | 2.0           | 2.1 |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 5-Feb                                       | Z                             | 2.0  | 2.3      | 2.2                   | 2.0 | 2.0 | 2.2 | 2.1 | 2.0 | 2.2 | 2.4 | 3.1 | 3.3 | 3.0 | 2.6 | 2.6 | 2.6 | 2.6 | 2.8                            | 2.6 | 2.5 | 2.5 | 2.0 | 2.0             | 2.4           | 3.3           |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 6-Feb                                       | 2.0                           | Z  | 2.5      | 2.8                   | 2.7 | 2.4 | 2.1 | 2.2 | 2.2 | 2.2 | 2.1 | 2.2 | 2.2 | 2.3 | 2.6 | 2.5 | 2.3 | 2.2 | 2.2                            | 2.3 | 3.3 | 3.4 | 2.4 | 2.3             | 2.4           | 3.4           |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 7-Feb                                       | 2.1                           | 2.1  | Z        | 2.0                   | 2.6 | 2.2 | 1.9 | 2.0 | 2.2 | 2.2 | 2.0 | 2.0 | 2.2 | 2.0 | 1.9 | 1.9 | 1.9 | 2.0 | 2.3                            | 2.2 | 2.0 | 2.0 | 2.0 | 2.0             | 2.1           | 2.6           |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 8-Feb                                       | 2.1                           | 2.1  | 2.0      | Z                     | 2.3 | 3.0 | 3.3 | 2.8 | 2.2 | 2.2 | 2.2 | 2.7 | 2.5 | 2.4 | 2.3 | 2.6 | 3.0 | 3.2 | 3.3                            | 3.1 | 3.7 | 5.0 | 3.6 | 2.8             | 2.8           | 5.0           |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 9-Feb                                       | 2.6                           | 2.3  | 2.3      | 2.5                   | Z   | 2.4 | 2.1 | 2.2 | 2.0 | 2.0 | 2.0 | 2.2 | 2.3 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.3                            | 2.7 | 3.2 | 2.9 | 3.1 | 5.3             | 2.5           | 5.3           |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 10-Feb                                      | 2.6                           | 2.2  | 2.2      | 2.1                   | 2.1 | Z   | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0                            | 2.0 | 2.0 | 2.0 | 2.5 | 2.4             | 2.1           | 2.6           |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 11-Feb                                      | Z                             | 2.0  | 2.1      | 3.3                   | 3.3 | 2.2 | 2.3 | 2.1 | 2.0 | 2.0 | 2.1 | 2.0 | 1.9 | 2.0 | 2.0 | 2.1 | 2.2 | 2.3 | 2.0                            | 2.1 | 1.9 | 2.1 | 2.6 | 2.6             | 2.2           | 3.3           |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 12-Feb                                      | 2.6                           | Z  | 2.3      | 2.0                   | 2.0 | 2.0 | 2.3 | 4.0 | 2.8 | 2.0 | 2.0 | 2.2 | 2.1 | 2.3 | 2.4 | 2.3 | 3.0 | 2.8 | 2.1                            | 2.1 | 2.1 | 2.1 | 2.1 | 2.3             | 2.3           | 4.0           |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 13-Feb                                      | 2.7                           | 2.9  | Z        | 3.0                   | 3.1 | 2.3 | 2.7 | 2.3 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 2.0                            | 2.0 | 2.0 | 2.0 | 2.0 | 2.0             | 2.2           | 3.1           |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 14-Feb                                      | 2.0                           | 2.0  | 2.0      | Z                     | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1 | 2.0 | 2.1 | 2.2 | 2.0 | 2.0 | 2.1 | 2.0 | 2.2 | 2.1                            | 2.2 | 2.4 | 2.5 | 2.2 | 2.2             | 2.1           | 2.5           |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 15-Feb                                      | 2.4                           | 3.0  | 4.2      | 3.8                   | Z   | 2.8 | 2.5 | 2.5 | 2.3 | 2.2 | 2.2 | 2.4 | 2.9 | 3.1 | 3.0 | 2.7 | 2.6 | 2.7 | 2.4                            | 2.4 | 2.4 | 2.7 | 2.8 | 2.1             | 2.7           | 4.2           |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 16-Feb                                      | 2.3                           | 2.8  | 2.4      | 2.2                   | 2.9 | Z   | 4.8 | 3.7 | 3.3 | 2.9 | 2.3 | 2.2 | 2.2 | 2.1 | 2.0 | 2.0 | 2.2 | 2.1 | 2.1                            | 2.0 | 2.0 | 2.0 | 2.0 | 2.0             | 2.5           | 4.8           |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 17-Feb                                      | Z                             | 2.1  | 2.3      | 2.1                   | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | 2.1 | 2.1 | 2.1 | 2.0 | 2.1 | 2.1 | 2.0 | 2.1 | 2.2                            | 2.2 | 2.1 | 2.0 | 2.0 | 2.1             | 2.1           | 2.3           |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 18-Feb                                      | 2.1                           | Z  | 2.0      | 2.0                   | 2.0 | 2.1 | 2.3 | 2.1 | 2.0 | 2.0 | 2.0 | 2.1 | 2.4 | 2.5 | 2.3 | 2.3 | 2.5 | 2.4 | 2.4                            | 2.5 | 2.5 | 2.4 | 2.4 | 2.4             | 2.2           | 2.5           |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 19-Feb                                      | 2.4                           | 3.7  | Z        | 2.5                   | 2.4 | 2.5 | 2.5 | 2.6 | 3.0 | 2.6 | 2.4 | 2.2 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1                            | 2.0 | 2.0 | 2.0 | 2.1 | 2.1             | 2.3           | 3.7           |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 20-Feb                                      | 2.1                           | 2.0  | 2.0      | Z                     | 2.4 | 2.9 | 2.8 | 2.2 | 2.2 | 2.6 | 2.7 | 2.7 | 2.5 | 2.2 | 2.2 | 2.0 | 2.1 | 2.2 | 2.2                            | 2.4 | 2.4 | 2.2 | 2.0 | 2.0             | 2.3           | 2.9           |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 21-Feb                                      | 2.0                           | 2.0  | 2.1      | 2.1                   | Z   | 2.1 | 2.1 | 2.2 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1 | 2.2                            | 2.3 | 2.3 | 2.2 | 2.3 | 2.6             | 2.1           | 2.6           |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 22-Feb                                      | 3.1                           | 2.3  | 2.2      | 2.3                   | 2.2 | Z   | 2.3 | 2.4 | 2.4 | 2.4 | 2.4 | 2.9 | 3.2 | 3.3 | 2.5 | 2.6 | 2.3 | 2.3 | 2.3                            | 2.3 | 2.5 | 2.6 | 2.5 | 2.5             | 2.5           | 3.3           |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 23-Feb                                      | Z                             | 2.2  | 2.3      | 2.2                   | 2.2 | 2.1 | 2.2 | 2.3 | 2.5 | 3.8 | 4.3 | 3.7 | 2.6 | 2.6 | 2.3 | 2.5 | 2.4 | 2.4 | 2.3                            | 2.4 | 2.6 | 3.1 | 3.1 | 2.6             | 2.6           | 4.3           |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 24-Feb                                      | 2.5                           | Z  | 2.4      | 2.4                   | 2.5 | 2.5 | 2.4 | 2.4 | M   | M   | 2.2 | 2.2 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0                            | 2.1 | 2.0 | 2.1 | 2.1 | 2.1             | 2.2           | 2.5           |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 25-Feb                                      | 2.1                           | 2.0  | Z        | 2.0                   | 2.1 | 2.1 | 2.1 | 2.1 | 2.0 | 2.2 | 2.7 | 2.2 | 2.1 | 1.9 | 1.9 | 2.0 | 2.2 | 3.4 | 2.6                            | 2.4 | 2.5 | 2.6 | 2.7 | 3.8             | 2.3           | 3.8           |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 26-Feb                                      | 4.0                           | 3.3  | 2.9      | Z                     | 2.3 | 2.2 | 2.1 | 2.2 | 2.1 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0                            | 2.1 | 2.0 | 2.0 | 2.0 | 2.0             | 2.2           | 4.0           |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 27-Feb                                      | 2.0                           | 2.0  | 2.0      | 1.9                   | Z   | 1.9 | 1.9 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0                            | 2.0 | 2.0 | 2.0 | 2.0 | 2.0             | 2.0           | 2.0           | 2.0 |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
| 28-Feb                                      | 2.0                           | 2.0  | 2.0      | 2.1                   | 2.0 | Z   | 2.1 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.3 | 2.2 | 2.3 | 2.2 | 2.2 | 2.2                            | 2.2 | 2.3 | 2.4 | 2.4 | 2.3             | 2.1           | 2.4           |     |                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |
|   |                               |  |          |                       |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                                |     |     |     |     | 2.3             | 2.3           | 2.3           | 2.3 | 2.3             | 2.3 | 2.3 | 2.2 | 2.2 | 2.2 | 2.2 | 2.3 | 2.3 | 2.2 | 2.2 | 2.2 | 2.2 | 2.3 | 2.2 | 2.3 | 2.3 | 2.4 | 2.3 | 2.4 | Diurnal Average |  |
|   |                               |  |          |                       |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                                |     |     |     |     | 4.0             | 3.7           | 4.2           | 3.8 | 3.3             | 3.0 | 4.8 | 4.0 | 3.3 | 3.8 | 4.3 | 3.7 | 3.3 | 3.3 | 3.0 | 2.7 | 3.0 | 3.4 | 3.3 | 3.1 | 3.7 | 5.0 | 3.6 | 5.3 | Diurnal Maximum |  |
| Z - zerospan                                |                               |  |          |                       |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                                |     |     |     |     | C - Calibration |               |               |     | M - Maintenance |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |  |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Methane (CH<sub>4</sub>) - ppm**  
**Fort Hills - February 2023**





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Methane (CH<sub>4</sub>) - ppm**  
**Fort Hills - February 2023**

| <b>Concentration Ranges (ppm)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 2.0                           | 209                    | 32.76    | 32.76               |
| 2.1 - 3.0                         | 392                    | 61.44    | 94.20               |
| 3.1 - 10.0                        | 37                     | 5.80     | 100.00              |
| > 10.0                            | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 638

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Methane (CH<sub>4</sub>) - ppm  
Fort Hills - February 2023**

| <b>Concentration<br/>Ranges (ppm)</b> | <b>Wind Direction</b> |     |    |     |   |     |    |     |    |     |    |     |    |     |    |     | <b>Totals</b> |
|---------------------------------------|-----------------------|-----|----|-----|---|-----|----|-----|----|-----|----|-----|----|-----|----|-----|---------------|
|                                       | N                     | NNE | NE | ENE | E | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |               |
| 0 - 2.0                               | 54                    | 74  | 2  | 3   | 1 | 0   | 1  | 11  | 11 | 10  | 3  | 2   | 7  | 11  | 7  | 11  | 208           |
| 2.1 - 3.0                             | 31                    | 28  | 14 | 23  | 5 | 18  | 50 | 73  | 33 | 27  | 18 | 12  | 12 | 5   | 11 | 28  | 388           |
| 3.1 - 10.0                            | 1                     | 1   | 3  | 1   | 0 | 4   | 9  | 7   | 6  | 1   | 3  | 0   | 0  | 0   | 0  | 0   | 36            |
| > 10.0                                | 0                     | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| <b>Totals</b>                         | 86                    | 103 | 19 | 27  | 6 | 22  | 60 | 91  | 50 | 38  | 24 | 14  | 19 | 16  | 18 | 39  | 632           |

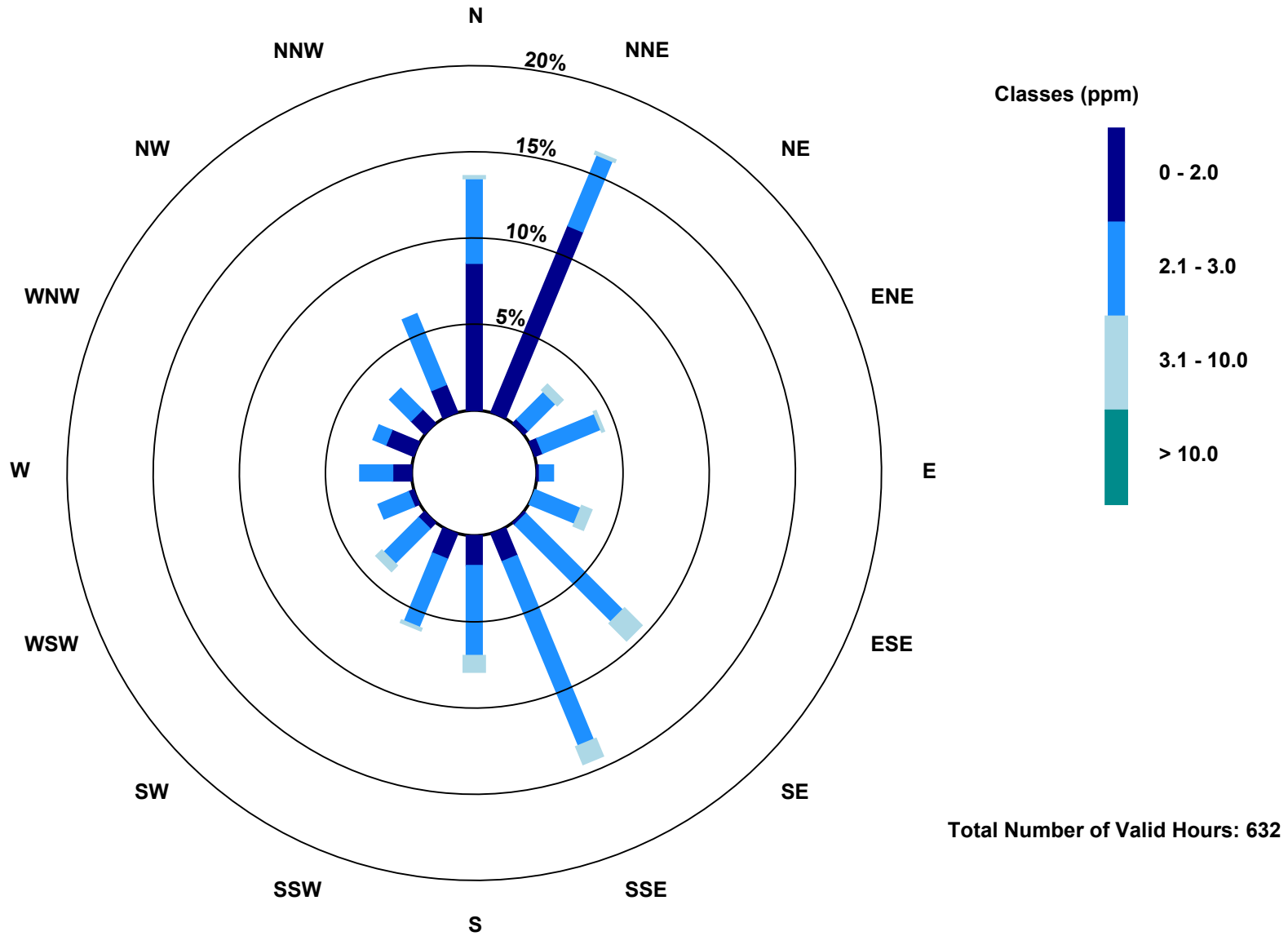
Total Number of Valid Hours: 632

Total Number of Hours: 672

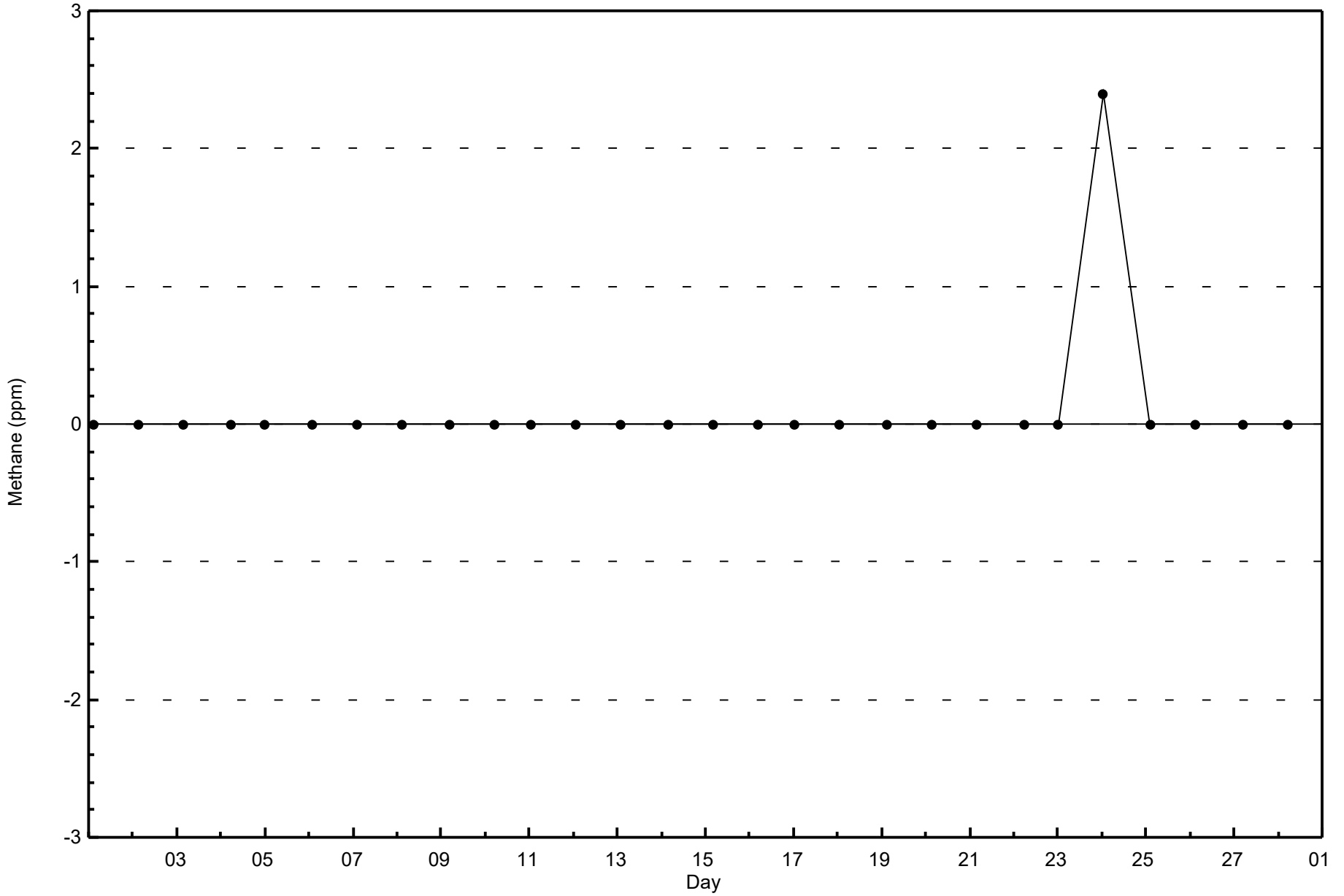


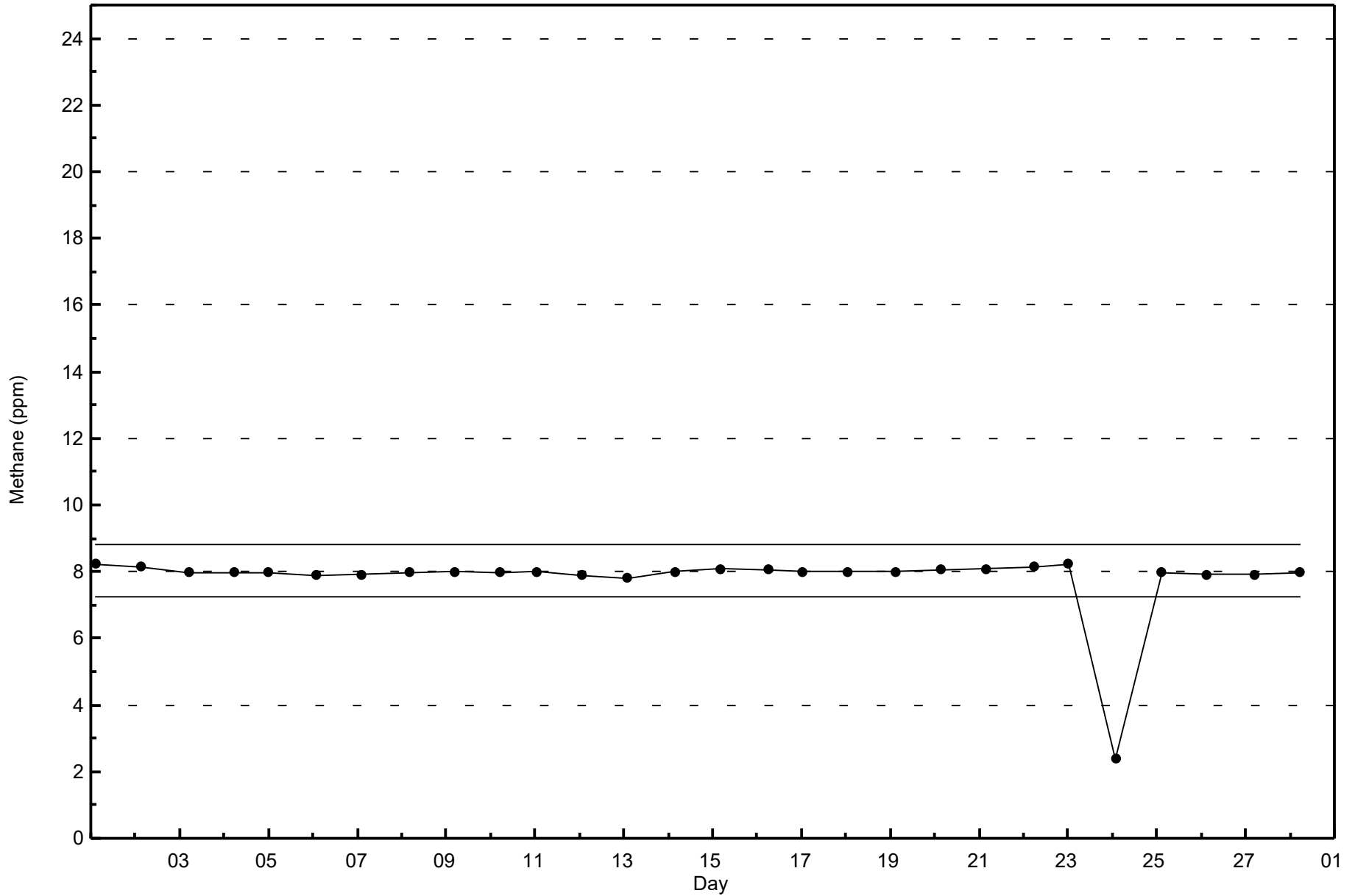
Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Methane (CH<sub>4</sub>) - ppm  
Fort Hills











Wood Buffalo Environmental Association

Summary of Hour Averages

Nitric Oxide (NO) - ppb

Fort Hills - February 2023

|  |  |          |                           |      |
|--|--|----------|---------------------------|------|
| Number of Exceedences (AAAQO):               | 1-hr: 0  | 24-hr: 0 | Hours in Service:         | 672  |
| Maximum Value: 222.4 ppb on Feb 8 22:00      | Maximum Daily Average: 59.1 ppb on Feb 8   |          | Hours of Data:            | 589  |
| Minimum Value: 0.0 ppb on Feb 2 18:00        | Minimum Daily Average: 1.4 ppb on Feb 7  |          | Hours of Missing Data:    | 83   |
| Maximum Diurnal Average: 18.3 ppb at hour 22 | Minimum Diurnal Average: 11.2 ppb at hour 10   |          | Hours of Calibration:     | 32   |
| Monthly Average: 14.37 ppb                   | Percentiles: P <sub>1</sub> = 0.0 P <sub>10</sub> = 0.0 Q <sub>1</sub> = 0.8 Median = 4.3 Q <sub>3</sub> = 16.6 P <sub>90</sub> = 39.7 P <sub>99</sub> = 115.2 |          | Percent Operational Time: | 92.4 |

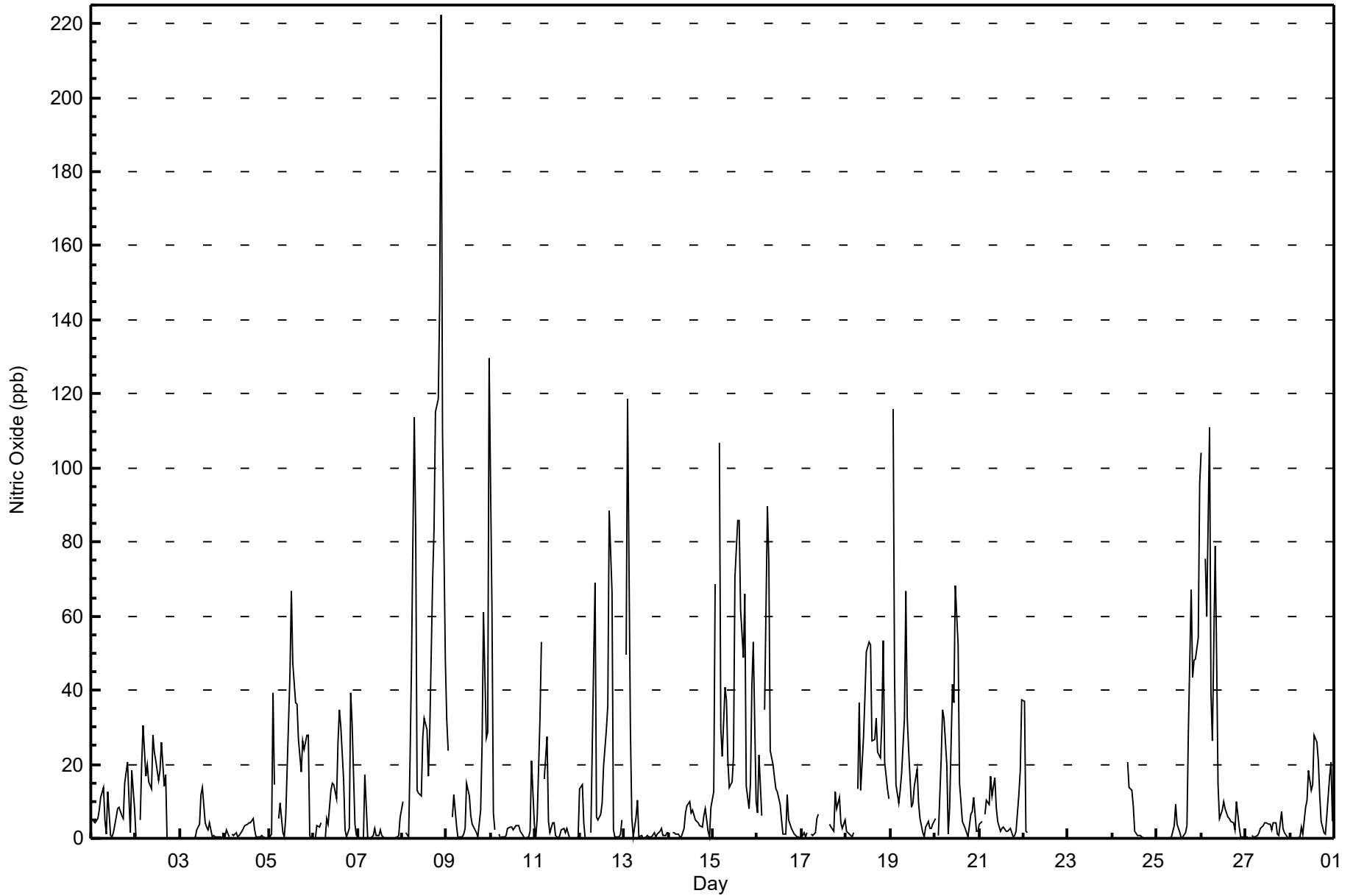
| Day    | Hourly Period Ending At (MST) |       |       |       |       |      |       |      |      |      |      |      |      |      |      |      |      |      |       |       |       |       |       |       | Daily Average | Daily Maximum |       |       |      |       |      |      |      |      |      |      |      |      |      |      |      |       |       |       |       |       |       |                 |
|--------|-------------------------------|-------|-------|-------|-------|------|-------|------|------|------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|-------|---------------|---------------|-------|-------|------|-------|------|------|------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|-------|-----------------|
|        | 1                             | 2     | 3     | 4     | 5     | 6    | 7     | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19    | 20    | 21    | 22    | 23    | 24    |               |               |       |       |      |       |      |      |      |      |      |      |      |      |      |      |      |       |       |       |       |       |       |                 |
| 1-Feb  | Z                             | 4.6   | 4.2   | 5.3   | 7.6   | 11.0 | 13.8  | 5.0  | 1.0  | 12.8 | 0.8  | 0.2  | 1.4  | 5.5  | 8.0  | 8.5  | 6.0  | 5.5  | 14.9  | 20.6  | 10.9  | 1.7   | 18.2  | 8.1   | 7.6           | 20.6          |       |       |      |       |      |      |      |      |      |      |      |      |      |      |      |       |       |       |       |       |       |                 |
| 2-Feb  | 0.3                           | Z     | 5.1   | 19.8  | 30.6  | 16.8 | 20.0  | 15.4 | 13.5 | 28.0 | 23.3 | 21.1 | 15.5 | 18.5 | 25.8 | 14.0 | 17.2 | 0.0  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 12.4          | 30.6          |       |       |      |       |      |      |      |      |      |      |      |      |      |      |      |       |       |       |       |       |       |                 |
| 3-Feb  | 0.0                           | 0.0   | Z     | 0.0   | 0.0   | 0.0  | 0.0   | 0.0  | 0.4  | 2.4  | 3.6  | 11.7 | 13.7 | 4.3  | 3.1  | 2.4  | 4.3  | 0.5  | 0.9   | 0.5   | 0.3   | 0.4   | 0.3   | 0.0   | 2.1           | 13.7          |       |       |      |       |      |      |      |      |      |      |      |      |      |      |      |       |       |       |       |       |       |                 |
| 4-Feb  | 0.6                           | 2.4   | 0.5   | Z     | 1.1   | 0.7  | 1.3   | 0.6  | 0.9  | 1.8  | 2.8  | 3.3  | 3.7  | 4.4  | 4.4  | 5.4  | 2.3  | 0.5  | 0.3   | 0.5   | 0.9   | 0.3   | 0.0   | 0.0   | 1.7           | 5.4           |       |       |      |       |      |      |      |      |      |      |      |      |      |      |      |       |       |       |       |       |       |                 |
| 5-Feb  | 0.0                           | 1.0   | 39.1  | 14.6  | Z     | 5.2  | 9.5   | 1.6  | 0.4  | 5.8  | 18.7 | 44.2 | 66.8 | 47.3 | 36.8 | 36.1 | 26.8 | 17.9 | 26.4  | 24.2  | 27.9  | 28.0  | 0.9   | 0.0   | 20.8          | 66.8          |       |       |      |       |      |      |      |      |      |      |      |      |      |      |      |       |       |       |       |       |       |                 |
| 6-Feb  | 0.0                           | 0.0   | 3.3   | 3.0   | 4.1   | Z    | 0.0   | 5.3  | 4.0  | 13.2 | 14.8 | 14.3 | 10.6 | 25.9 | 34.8 | 30.0 | 15.5 | 2.1  | 0.3   | 2.8   | 39.4  | 30.7  | 4.0   | 0.8   | 11.3          | 39.4          |       |       |      |       |      |      |      |      |      |      |      |      |      |      |      |       |       |       |       |       |       |                 |
| 7-Feb  | Z                             | 0.0   | 0.0   | 0.0   | 17.1  | 0.3  | 0.0   | 0.0  | 0.8  | 2.5  | 0.7  | 0.7  | 2.4  | 0.7  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0   | 0.0   | 0.0   | 0.2   | 0.6   | 5.7   | 1.4           | 17.1          |       |       |      |       |      |      |      |      |      |      |      |      |      |      |      |       |       |       |       |       |       |                 |
| 8-Feb  | 9.9                           | Z     | 1.6   | 0.3   | 21.0  | 45.7 | 113.7 | 83.6 | 12.9 | 12.0 | 11.6 | 27.3 | 32.4 | 29.5 | 16.9 | 29.6 | 69.8 | 83.6 | 115.1 | 118.6 | 144.7 | 222.4 | 109.6 | 48.0  | 59.1          | 222.4         |       |       |      |       |      |      |      |      |      |      |      |      |      |      |      |       |       |       |       |       |       |                 |
| 9-Feb  | 32.0                          | 23.7  | Z     | 5.7   | 11.7  | 3.1  | 0.0   | 0.5  | 0.2  | 1.0  | 2.8  | 15.0 | 11.6 | 6.0  | 3.7  | 2.4  | 1.5  | 0.3  | 7.5   | 25.3  | 61.0  | 26.9  | 28.8  | 129.6 | 17.4          | 129.6         |       |       |      |       |      |      |      |      |      |      |      |      |      |      |      |       |       |       |       |       |       |                 |
| 10-Feb | 62.1                          | 6.8   | 2.3   | Z     | 1.3   | 0.2  | 0.3   | 0.3  | 0.6  | 2.6  | 2.9  | 3.0  | 2.5  | 3.4  | 3.3  | 3.5  | 1.8  | 0.7  | 0.2   | 0.2   | 0.4   | 2.1   | 21.1  | 3.9   | 5.4           | 62.1          |       |       |      |       |      |      |      |      |      |      |      |      |      |      |      |       |       |       |       |       |       |                 |
| 11-Feb | 0.2                           | 5.3   | 32.4  | 53.0  | Z     | 16.2 | 27.6  | 4.5  | 1.4  | 4.1  | 4.2  | 0.8  | 0.1  | 0.9  | 2.4  | 2.5  | 1.5  | 2.8  | 0.0   | 0.2   | 0.0   | 0.0   | 0.0   | 0.2   | 7.0           | 53.0          |       |       |      |       |      |      |      |      |      |      |      |      |      |      |      |       |       |       |       |       |       |                 |
| 12-Feb | 13.4                          | 14.5  | 4.1   | 0.0   | 0.0   | Z    | 1.5   | 47.6 | 69.0 | 5.9  | 4.9  | 6.5  | 9.5  | 19.4 | 29.3 | 35.7 | 88.3 | 66.3 | 2.2   | 0.3   | 0.4   | 0.3   | 1.0   | 5.1   | 18.5          | 88.3          |       |       |      |       |      |      |      |      |      |      |      |      |      |      |      |       |       |       |       |       |       |                 |
| 13-Feb | Z                             | 49.5  | 118.7 | 29.7  | 5.7   | 0.3  | 5.9   | 10.5 | 0.4  | 0.7  | 0.1  | 0.1  | 0.8  | 0.3  | 0.5  | 0.3  | 1.7  | 0.6  | 1.2   | 2.1   | 2.8   | 0.9   | 0.6   | 1.4   | 10.2          | 118.7         |       |       |      |       |      |      |      |      |      |      |      |      |      |      |      |       |       |       |       |       |       |                 |
| 14-Feb | 1.6                           | Z     | 1.7   | 1.7   | 1.2   | 1.1  | 0.5   | 0.5  | 2.7  | 6.8  | 8.7  | 9.9  | 6.9  | 7.5  | 4.8  | 4.5  | 4.4  | 3.6  | 3.2   | 6.1   | 8.1   | 1.8   | 0.3   | 8.6   | 4.2           | 9.9           |       |       |      |       |      |      |      |      |      |      |      |      |      |      |      |       |       |       |       |       |       |                 |
| 15-Feb | 12.4                          | 68.7  | Z     | 106.6 | 29.6  | 22.0 | 40.7  | 37.5 | 20.9 | 13.8 | 15.4 | 22.1 | 70.4 | 85.7 | 85.9 | 61.7 | 48.7 | 65.8 | 14.1  | 7.9   | 15.0  | 41.0  | 52.8  | 9.8   | 41.2          | 106.6         |       |       |      |       |      |      |      |      |      |      |      |      |      |      |      |       |       |       |       |       |       |                 |
| 16-Feb | 7.0                           | 22.6  | 6.0   | Z     | 34.7  | 89.6 | 74.8  | 23.5 | 20.0 | 16.3 | 13.4 | 12.7 | 9.1  | 4.8  | 1.0  | 1.0  | 11.7 | 4.9  | 2.5   | 1.8   | 1.1   | 0.5   | 0.3   | 0.0   | 15.6          | 89.6          |       |       |      |       |      |      |      |      |      |      |      |      |      |      |      |       |       |       |       |       |       |                 |
| 17-Feb | 0.6                           | 1.6   | 0.4   | 1.6   | Z     | 1.0  | 0.8   | 1.6  | 5.2  | 6.6  | C    | C    | C    | C    | C    | 3.9  | 3.0  | 1.9  | 12.7  | 8.0   | 11.2  | 4.3   | 2.6   | 4.9   | 4.0           | 12.7          |       |       |      |       |      |      |      |      |      |      |      |      |      |      |      |       |       |       |       |       |       |                 |
| 18-Feb | 2.0                           | 1.6   | 0.8   | 0.5   | 1.4   | Z    | 13.3  | 36.8 | 12.9 | 27.0 | 37.8 | 50.5 | 53.1 | 52.1 | 26.5 | 26.8 | 32.6 | 23.3 | 21.9  | 31.3  | 53.5  | 20.6  | 13.3  | 10.6  | 23.9          | 53.5          |       |       |      |       |      |      |      |      |      |      |      |      |      |      |      |       |       |       |       |       |       |                 |
| 19-Feb | Z                             | 115.9 | 43.7  | 14.5  | 9.6   | 12.8 | 17.7  | 32.5 | 66.6 | 32.6 | 23.6 | 8.5  | 9.6  | 14.3 | 18.7 | 9.4  | 5.2  | 1.7  | 0.2   | 2.9   | 4.6   | 2.7   | 2.8   | 3.8   | 19.7          | 115.9         |       |       |      |       |      |      |      |      |      |      |      |      |      |      |      |       |       |       |       |       |       |                 |
| 20-Feb | 5.4                           | Z     | 0.7   | 21.2  | 34.8  | 32.4 | 20.0  | 1.3  | 8.4  | 41.4 | 36.4 | 68.3 | 52.2 | 15.0 | 10.0 | 4.5  | 2.7  | 1.4  | 0.4   | 6.3   | 7.3   | 11.1  | 1.9   | 1.8   | 16.7          | 68.3          |       |       |      |       |      |      |      |      |      |      |      |      |      |      |      |       |       |       |       |       |       |                 |
| 21-Feb | 3.7                           | 4.5   | Z     | 6.5   | 10.3  | 9.2  | 16.6  | 11.5 | 16.5 | 8.4  | 4.4  | 2.0  | 2.6  | 3.0  | 2.0  | 1.7  | 2.2  | 2.5  | 0.2   | 0.6   | 1.9   | 12.0  | 18.3  | 37.2  | 7.7           | 37.2          |       |       |      |       |      |      |      |      |      |      |      |      |      |      |      |       |       |       |       |       |       |                 |
| 22-Feb | 37.1                          | 2.0   | 1.7   | Z     | UO    | UO   | UO    | UO   | UO   | UO   | UO   | UO   | UO   | UO   | UO   | UO   | UO   | UO   | UO    | UO    | UO    | UO    | UO    | UO    | --            | 37.1          |       |       |      |       |      |      |      |      |      |      |      |      |      |      |      |       |       |       |       |       |       |                 |
| 23-Feb | UO                            | UO    | UO    | UO    | Z     | UO   | UO    | UO   | UO   | UO   | UO   | M    | M    | M    | M    | M    | M    | M    | M     | M     | M     | M     | M     | M     | --            | --            |       |       |      |       |      |      |      |      |      |      |      |      |      |      |      |       |       |       |       |       |       |                 |
| 24-Feb | M                             | M     | M     | M     | M     | M    | M     | M    | M    | 20.5 | 13.8 | 12.8 | 8.8  | 1.8  | 0.6  | 0.7  | 0.7  | 0.3  | 0.1   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 20.5          | 20.5          |       |       |      |       |      |      |      |      |      |      |      |      |      |      |      |       |       |       |       |       |       |                 |
| 25-Feb | Z                             | 0.0   | 0.0   | 0.0   | 0.0   | 0.0  | 0.0   | 0.0  | 0.4  | 3.5  | 9.3  | 3.7  | 1.6  | 0.1  | 0.5  | 1.6  | 3.3  | 29.0 | 67.0  | 43.4  | 47.9  | 48.3  | 54.2  | 95.8  | 17.8          | 95.8          |       |       |      |       |      |      |      |      |      |      |      |      |      |      |      |       |       |       |       |       |       |                 |
| 26-Feb | 103.9                         | Z     | 75.3  | 59.9  | 110.9 | 38.9 | 26.2  | 79.1 | 48.7 | 14.4 | 5.2  | 7.7  | 9.8  | 8.2  | 5.8  | 5.2  | 4.5  | 4.3  | 2.5   | 10.0  | 2.9   | 0.5   | 0.5   | 0.4   | 27.2          | 110.9         |       |       |      |       |      |      |      |      |      |      |      |      |      |      |      |       |       |       |       |       |       |                 |
| 27-Feb | 0.3                           | 0.3   | Z     | 0.7   | 0.5   | 0.3  | 0.7   | 1.5  | 2.8  | 3.4  | 4.1  | 4.1  | 3.7  | 3.9  | 2.4  | 4.1  | 4.3  | 1.0  | 0.6   | 7.4   | 2.8   | 1.7   | 0.5   | 0.0   | 2.2           | 7.4           |       |       |      |       |      |      |      |      |      |      |      |      |      |      |      |       |       |       |       |       |       |                 |
| 28-Feb | 0.0                           | 0.0   | 0.0   | Z     | 0.0   | 0.4  | 3.2   | 1.3  | 8.3  | 10.5 | 18.4 | 12.9 | 14.5 | 27.8 | 25.9 | 21.0 | 11.4 | 4.4  | 1.7   | 1.2   | 5.9   | 16.6  | 20.8  | 4.5   | 9.2           | 27.8          |       |       |      |       |      |      |      |      |      |      |      |      |      |      |      |       |       |       |       |       |       |                 |
|        |                               |       |       |       |       |      |       |      |      |      |      |      |      |      |      |      |      |      |       |       |       |       |       | 13.9  | 15.5          | 16.3          | 16.4  | 15.1  | 14.0 | 16.3  | 16.1 | 13.1 | 11.2 | 11.2 | 14.4 | 16.2 | 15.6 | 14.1 | 12.2 | 14.3 | 12.5 | 11.4  | 12.4  | 17.3  | 18.3  | 13.6  | 14.6  | Diurnal Average |
|        |                               |       |       |       |       |      |       |      |      |      |      |      |      |      |      |      |      |      |       |       |       |       |       | 103.9 | 115.9         | 118.7         | 106.6 | 110.9 | 89.6 | 113.7 | 83.6 | 69.0 | 41.4 | 37.8 | 68.3 | 70.4 | 85.7 | 85.9 | 61.7 | 88.3 | 83.6 | 115.1 | 118.6 | 144.7 | 222.4 | 109.6 | 129.6 | Diurnal Maximum |

Z - zerospan                      C - Calibration                      M - Maintenance                      UO - Unstable Operation



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Nitric Oxide (NO) - ppb**  
**Fort Hills - February 2023**





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Nitric Oxide (NO) - ppb  
Fort Hills - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 20                            | 461                    | 78.27    | 78.27               |
| 21 - 40                           | 69                     | 11.71    | 89.98               |
| 41 - 80                           | 40                     | 6.79     | 96.77               |
| 81 - 159                          | 18                     | 3.06     | 99.83               |
| > 159                             | 1                      | 0.17     | 100.00              |

Total Number of Valid Hours: 589

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Nitric Oxide (NO) - ppb  
Fort Hills - February 2023**

| <b>Concentration<br/>Ranges (ppb)</b> | <b>Wind Direction</b> |     |    |     |   |     |    |     |    |     |    |     |    |     |    |     | <b>Totals</b> |
|---------------------------------------|-----------------------|-----|----|-----|---|-----|----|-----|----|-----|----|-----|----|-----|----|-----|---------------|
|                                       | N                     | NNE | NE | ENE | E | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |               |
| 0 - 20                                | 67                    | 99  | 10 | 22  | 3 | 2   | 27 | 52  | 35 | 29  | 21 | 13  | 13 | 15  | 19 | 33  | 460           |
| 21 - 40                               | 7                     | 1   | 2  | 3   | 2 | 3   | 11 | 16  | 8  | 4   | 4  | 0   | 1  | 2   | 0  | 2   | 66            |
| 41 - 80                               | 4                     | 3   | 0  | 1   | 1 | 8   | 5  | 7   | 4  | 4   | 0  | 1   | 0  | 0   | 0  | 2   | 40            |
| 81 - 159                              | 3                     | 0   | 3  | 1   | 0 | 2   | 3  | 3   | 1  | 0   | 0  | 0   | 1  | 0   | 0  | 1   | 18            |
| > 159                                 | 0                     | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 1  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 1             |
| <b>Totals</b>                         | 81                    | 103 | 15 | 27  | 6 | 15  | 46 | 78  | 49 | 37  | 25 | 14  | 15 | 17  | 19 | 38  | 585           |

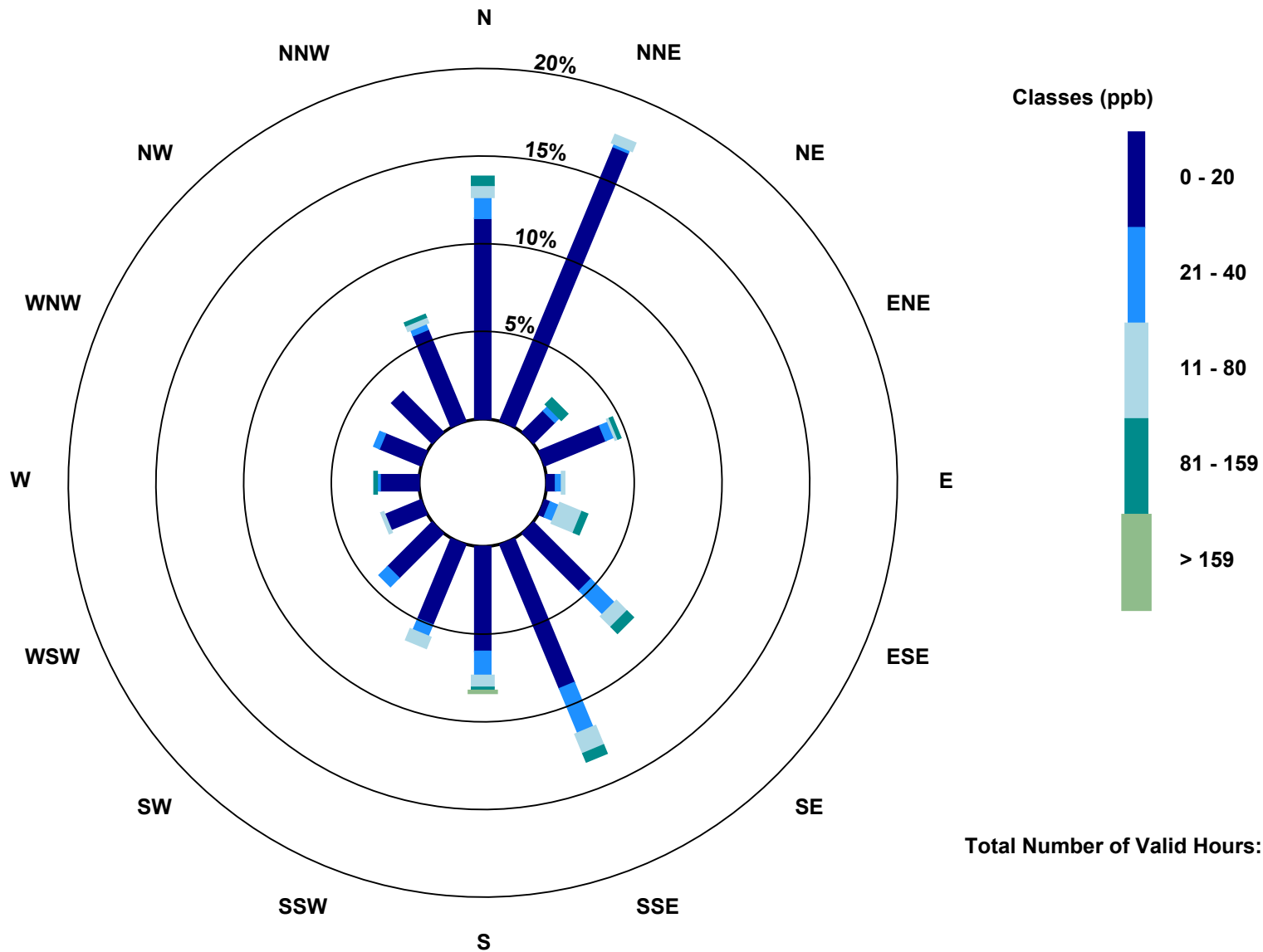
Total Number of Valid Hours: 585

Total Number of Hours: 672

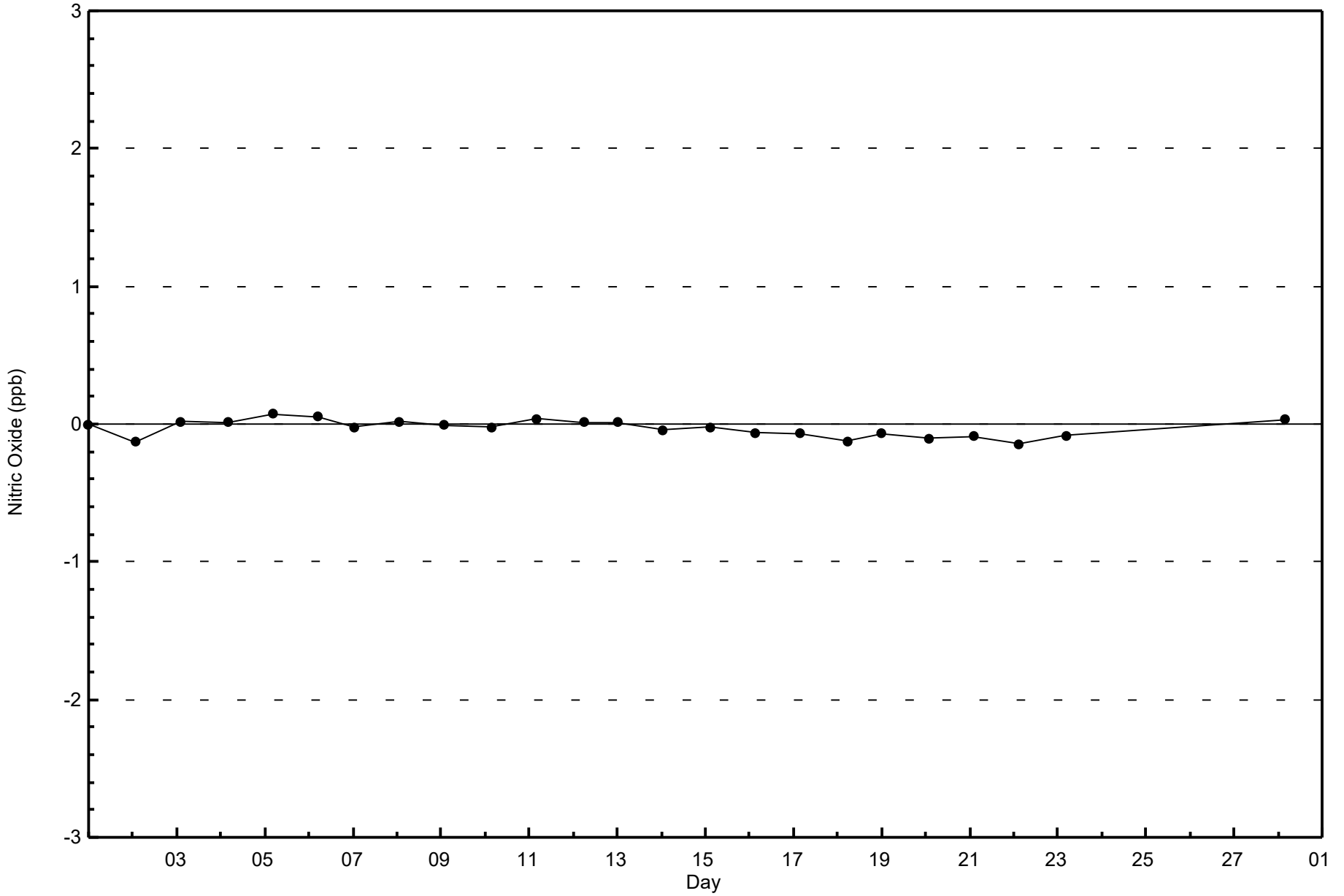


Wood Buffalo Environmental Association  
Wind Rose Feb 2023

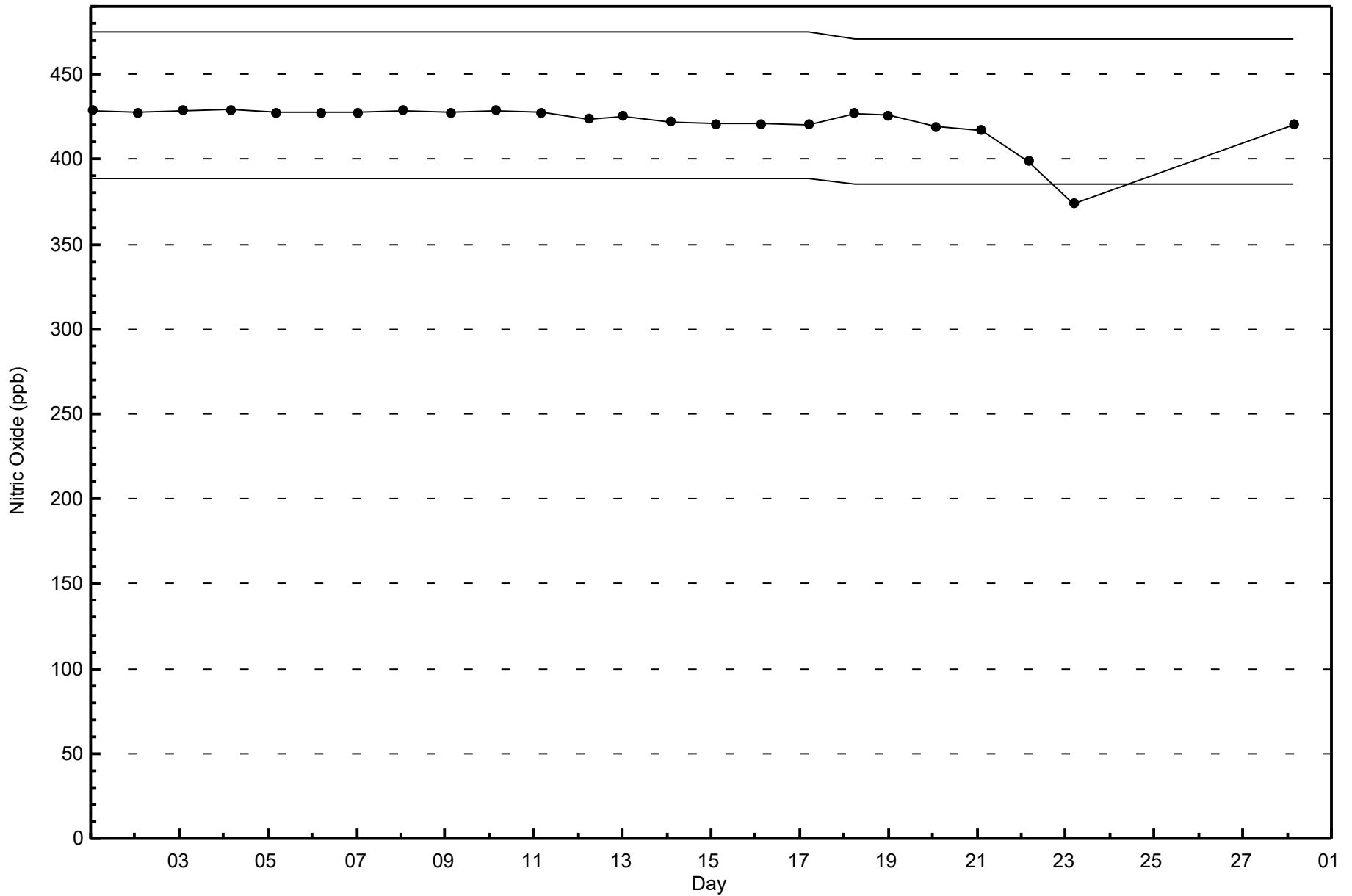
Nitric Oxide (NO) - ppb  
Fort Hills



Total Number of Valid Hours: 585









**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

**Nitrogen Dioxide (NO<sub>2</sub>) - ppb**  
**Fort Hills - February 2023**

|   |   |
|---|---|
| Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0   | Hours in Service: 672                     |
| Maximum Value: 55.5 ppb on Feb 8 22:00  | Maximum Daily Average: 31.0 ppb on Feb 15 |
| Minimum Value: 0.4 ppb on Feb 6 01:00   | Hours of Data: 589                        |
| Maximum Diurnal Average: 25.1 ppb at hour 21  | Hours of Missing Data: 83                 |
| Monthly Average: 19.43 ppb  | Hours of Calibration: 32                  |
| Minimum Daily Average: 8.3 ppb on Feb 7   | Percent Operational Time: 92.4            |
| Minimum Diurnal Average: 11.9 ppb at hour 12  |   |
| Percentiles: P <sub>1</sub> = 0.8 P <sub>10</sub> = 4.9 Q <sub>1</sub> = 10.2 Median = 17.9 Q <sub>3</sub> = 28.8 P <sub>90</sub> = 35.5 P <sub>99</sub> = 43.4 |   |

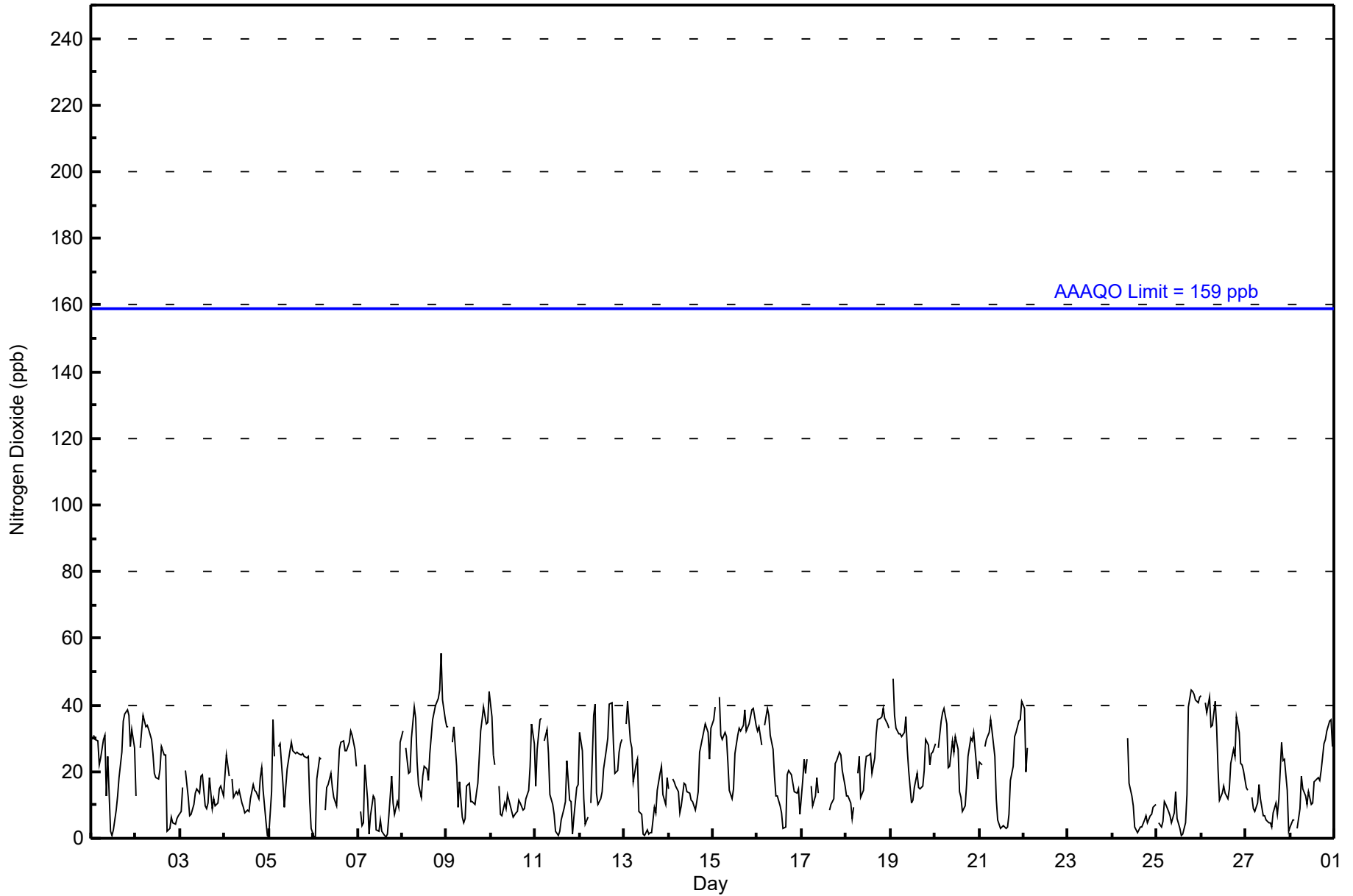
| Day    | Hourly Period Ending At (MST) |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Daily Average | Daily Maximum   |      |
|--------|-------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|---------------|-----------------|------|
|        | 1                             | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20   | 21   | 22   | 23   | 24   |               |                 |      |
| 1-Feb  | Z                             | 31.1 | 29.7 | 29.1 | 22.1 | 24.1 | 29.7 | 31.0 | 12.5 | 24.4 | 2.2  | 0.7  | 2.4  | 8.5  | 12.7 | 18.1 | 25.9 | 35.0 | 37.1 | 38.4 | 36.8 | 27.4 | 32.5 | 27.0 | 23.4          | 38.4            |      |
| 2-Feb  | 12.8                          | Z    | 27.3 | 32.2 | 36.7 | 33.6 | 34.0 | 32.7 | 29.5 | 25.6 | 19.6 | 18.2 | 17.7 | 20.6 | 27.6 | 24.9 | 25.1 | 2.3  | 3.0  | 6.3  | 4.7  | 4.1  | 5.8  | 6.8  | 19.6          | 36.7            |      |
| 3-Feb  | 7.9                           | 15.2 | Z    | 20.3 | 12.4 | 6.7  | 7.3  | 10.3 | 13.5 | 14.7 | 13.5 | 18.7 | 19.2 | 9.9  | 9.0  | 10.5 | 18.1 | 8.9  | 11.9 | 9.6  | 10.6 | 14.8 | 15.5 | 12.7 | 12.7          | 20.3            |      |
| 4-Feb  | 18.9                          | 24.8 | 18.6 | Z    | 17.8 | 12.1 | 14.1 | 13.2 | 14.4 | 10.5 | 9.2  | 7.8  | 8.3  | 7.9  | 11.7 | 16.1 | 14.3 | 14.0 | 11.8 | 18.2 | 21.1 | 14.5 | 5.0  | 0.9  | 13.3          | 24.8            |      |
| 5-Feb  | 0.8                           | 14.1 | 35.7 | 24.4 | Z    | 27.4 | 28.5 | 16.5 | 9.3  | 15.2 | 20.7 | 26.4 | 28.8 | 26.2 | 25.5 | 25.9 | 25.6 | 25.1 | 25.6 | 24.4 | 24.3 | 24.4 | 11.0 | 2.8  | 21.2          | 35.7            |      |
| 6-Feb  | 0.4                           | 0.5  | 17.7 | 24.3 | 23.8 | Z    | 8.4  | 15.2 | 16.0 | 19.6 | 15.4 | 12.3 | 9.8  | 18.4 | 26.8 | 28.7 | 29.3 | 26.3 | 26.1 | 28.8 | 32.2 | 31.0 | 26.8 | 21.7 | 20.0          | 32.2            |      |
| 7-Feb  | Z                             | 7.9  | 3.9  | 4.5  | 22.1 | 11.5 | 1.3  | 6.9  | 12.6 | 11.8 | 2.7  | 2.2  | 5.5  | 2.3  | 1.0  | 0.5  | 1.2  | 6.7  | 18.5 | 10.7 | 7.0  | 10.9 | 9.5  | 28.8 | 8.3           | 28.8            |      |
| 8-Feb  | 32.0                          | Z    | 27.2 | 19.4 | 19.9 | 30.1 | 39.3 | 36.0 | 22.9 | 15.9 | 12.2 | 18.5 | 21.4 | 20.6 | 17.2 | 25.5 | 35.8 | 37.8 | 39.8 | 41.8 | 44.6 | 55.5 | 41.7 | 35.5 | 30.0          | 55.5            |      |
| 9-Feb  | 33.4                          | 33.5 | Z    | 28.8 | 33.3 | 21.6 | 9.5  | 16.8 | 6.2  | 4.7  | 5.8  | 15.6 | 16.4 | 11.1 | 11.2 | 10.3 | 13.7 | 16.6 | 32.2 | 35.7 | 39.2 | 34.2 | 34.9 | 43.9 | 22.1          | 43.9            |      |
| 10-Feb | 36.6                          | 24.9 | 22.1 | Z    | 15.7 | 7.2  | 6.7  | 10.7 | 8.9  | 13.1 | 9.6  | 8.2  | 6.2  | 7.6  | 8.1  | 11.4 | 10.7 | 8.5  | 9.1  | 11.8 | 14.5 | 21.6 | 34.3 | 28.5 | 14.6          | 36.6            |      |
| 11-Feb | 15.5                          | 26.6 | 35.6 | 36.1 | Z    | 29.3 | 32.7 | 25.5 | 13.1 | 10.0 | 7.3  | 2.1  | 0.7  | 2.0  | 5.3  | 9.0  | 11.1 | 23.1 | 11.5 | 11.1 | 1.2  | 6.2  | 15.1 | 15.9 | 15.0          | 36.1            |      |
| 12-Feb | 31.8                          | 26.1 | 11.8 | 4.4  | 6.4  | Z    | 10.7 | 37.0 | 40.2 | 13.6 | 10.3 | 11.9 | 13.9 | 20.8 | 26.7 | 30.1 | 40.4 | 40.5 | 28.5 | 19.5 | 20.4 | 25.7 | 28.6 | 29.6 | 23.0          | 40.5            |      |
| 13-Feb | Z                             | 34.4 | 41.2 | 29.4 | 27.3 | 17.0 | 22.2 | 23.9 | 8.0  | 7.4  | 1.2  | 1.0  | 2.7  | 1.2  | 1.8  | 1.9  | 9.5  | 7.5  | 14.6 | 19.4 | 21.6 | 13.2 | 10.2 | 18.1 | 14.6          | 41.2            |      |
| 14-Feb | 14.7                          | Z    | 18.0 | 17.1 | 15.7 | 14.1 | 7.8  | 9.6  | 16.6 | 16.1 | 14.1 | 13.5 | 11.3 | 10.9 | 8.4  | 11.1 | 14.1 | 26.0 | 29.9 | 32.2 | 34.5 | 31.6 | 23.8 | 33.1 | 18.4          | 34.5            |      |
| 15-Feb | 35.8                          | 39.6 | Z    | 42.3 | 31.0 | 29.8 | 31.8 | 30.6 | 22.8 | 14.3 | 11.7 | 14.7 | 25.3 | 30.9 | 33.1 | 32.3 | 33.8 | 38.7 | 32.0 | 34.2 | 36.6 | 38.5 | 38.9 | 34.1 | 31.0          | 42.3            |      |
| 16-Feb | 32.1                          | 33.3 | 27.8 | Z    | 34.0 | 39.0 | 36.8 | 30.9 | 26.5 | 18.8 | 12.7 | 12.9 | 9.9  | 7.8  | 3.0  | 3.3  | 19.1 | 20.2 | 19.2 | 16.5 | 13.8 | 13.7 | 14.7 | 7.4  | 19.7          | 39.0            |      |
| 17-Feb | 17.4                          | 23.7 | 19.4 | 23.8 | Z    | 15.7 | 9.9  | 12.5 | 18.1 | 13.5 | C    | C    | C    | C    | C    | 8.5  | 10.0 | 11.7 | 22.5 | 23.1 | 26.0 | 25.0 | 20.3 | 15.7 | 17.6          | 26.0            |      |
| 18-Feb | 12.9                          | 12.9 | 10.7 | 5.9  | 9.3  | Z    | 19.5 | 24.7 | 12.2 | 14.4 | 20.9 | 24.6 | 24.8 | 25.4 | 19.3 | 24.1 | 31.3 | 35.6 | 36.0 | 36.4 | 38.8 | 36.0 | 34.5 | 33.0 | 23.6          | 38.8            |      |
| 19-Feb | Z                             | 47.9 | 36.9 | 33.1 | 31.5 | 31.4 | 30.6 | 31.9 | 36.6 | 26.9 | 20.2 | 10.4 | 11.5 | 15.1 | 19.4 | 15.2 | 14.7 | 15.7 | 20.2 | 29.6 | 27.9 | 21.9 | 25.4 | 26.0 | 25.2          | 47.9            |      |
| 20-Feb | 28.2                          | Z    | 27.1 | 35.3 | 37.7 | 38.8 | 34.2 | 21.1 | 21.7 | 29.2 | 25.7 | 30.6 | 26.9 | 14.0 | 12.2 | 8.0  | 9.7  | 16.3 | 24.4 | 30.0 | 29.2 | 31.9 | 22.0 | 17.9 | 24.9          | 38.8            |      |
| 21-Feb | 22.8                          | 22.2 | Z    | 27.5 | 29.6 | 31.9 | 35.5 | 32.3 | 24.7 | 12.0 | 5.5  | 2.8  | 3.5  | 3.9  | 2.8  | 3.5  | 7.2  | 17.5 | 21.5 | 30.6 | 31.7 | 35.2 | 35.4 | 41.0 | 20.9          | 41.0            |      |
| 22-Feb | 38.8                          | 20.1 | 27.3 | Z    | UO   | UO   | UO   | UO   | UO   | UO   | UO   | UO   | UO   | UO   | UO   | UO   | UO   | UO   | UO   | UO   | UO   | UO   | UO   | UO   | UO            | --              | 38.8 |
| 23-Feb | UO                            | UO   | UO   | UO   | Z    | UO   | UO   | UO   | UO   | UO   | UO   | M    | M    | M    | M    | M    | M    | M    | M    | M    | M    | M    | M    | M    | M             | --              | --   |
| 24-Feb | M                             | M    | M    | M    | Z    | M    | M    | M    | M    | M    | M    | M    | M    | M    | M    | M    | M    | M    | M    | M    | M    | M    | M    | M    | M             | --              | 30.1 |
| 25-Feb | Z                             | 4.6  | 3.5  | 5.2  | 11.1 | 10.1 | 8.2  | 6.6  | 4.5  | 7.6  | 13.9 | 5.8  | 3.1  | 0.7  | 1.4  | 4.7  | 13.1 | 39.4 | 44.6 | 43.9 | 43.3 | 41.4 | 40.7 | 42.3 | 17.4          | 44.6            |      |
| 26-Feb | 42.8                          | Z    | 40.8 | 37.8 | 42.5 | 33.5 | 33.9 | 41.1 | 33.4 | 20.7 | 11.6 | 13.5 | 15.8 | 13.6 | 12.0 | 15.0 | 22.4 | 26.8 | 24.7 | 36.3 | 31.6 | 22.6 | 21.9 | 20.3 | 26.7          | 42.8            |      |
| 27-Feb | 15.1                          | 14.2 | Z    | 12.2 | 9.0  | 8.1  | 10.8 | 16.0 | 12.0 | 6.9  | 6.7  | 5.4  | 4.7  | 4.6  | 3.4  | 7.8  | 10.4 | 7.4  | 11.5 | 28.9 | 23.3 | 23.6 | 14.6 | 2.3  | 11.3          | 28.9            |      |
| 28-Feb | 3.4                           | 5.7  | 5.5  | Z    | 3.1  | 9.1  | 18.6 | 14.7 | 12.7 | 10.2 | 14.0 | 10.0 | 10.7 | 17.1 | 17.8 | 18.3 | 17.3 | 20.3 | 28.5 | 29.5 | 32.3 | 35.3 | 35.4 | 27.5 | 17.3          | 35.4            |      |
|        | 21.6                          | 22.1 | 23.2 | 23.5 | 22.4 | 21.9 | 20.9 | 21.9 | 18.4 | 15.1 | 12.0 | 11.9 | 12.1 | 12.1 | 12.8 | 14.2 | 18.0 | 20.5 | 22.8 | 25.1 | 25.1 | 24.9 | 23.4 | 22.4 |               | Diurnal Average |      |
|        | 42.8                          | 47.9 | 41.2 | 42.3 | 42.5 | 39.0 | 39.3 | 41.1 | 40.2 | 29.2 | 25.7 | 30.6 | 28.8 | 30.9 | 33.1 | 32.3 | 40.4 | 40.5 | 44.6 | 43.9 | 44.6 | 55.5 | 41.7 | 43.9 |               | Diurnal Maximum |      |

Z - zerospan                      C - Calibration                      M - Maintenance                      UO - Unstable Operation  
 Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 159 ppb



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Nitrogen Dioxide (NO<sub>2</sub>) - ppb**  
**Fort Hills - February 2023**





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Nitrogen Dioxide (NO<sub>2</sub>) - ppb  
Fort Hills - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 20                            | 333                    | 56.54    | 56.54               |
| 21 - 40                           | 236                    | 40.07    | 96.60               |
| 41 - 80                           | 20                     | 3.40     | 100.00              |
| 81 - 159                          | 0                      | 0.00     | 100.00              |
| > 159                             | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 589

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Nitrogen Dioxide (NO<sub>2</sub>) - ppb  
Fort Hills - February 2023**

| <b>Concentration<br/>Ranges (ppb)</b> | <b>Wind Direction</b> |     |    |     |   |     |    |     |    |     |    |     |    |     |    |     | <b>Totals</b> |
|---------------------------------------|-----------------------|-----|----|-----|---|-----|----|-----|----|-----|----|-----|----|-----|----|-----|---------------|
|                                       | N                     | NNE | NE | ENE | E | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |               |
| 0 - 20                                | 55                    | 71  | 7  | 18  | 3 | 2   | 14 | 28  | 33 | 25  | 12 | 6   | 11 | 13  | 15 | 19  | 332           |
| 21 - 40                               | 24                    | 31  | 6  | 9   | 3 | 11  | 26 | 46  | 13 | 12  | 13 | 8   | 4  | 4   | 4  | 19  | 233           |
| 11 - 80                               | 2                     | 1   | 2  | 0   | 0 | 2   | 6  | 4   | 3  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 20            |
| 81 - 159                              | 0                     | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| > 159                                 | 0                     | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| <b>Totals</b>                         | 81                    | 103 | 15 | 27  | 6 | 15  | 46 | 78  | 49 | 37  | 25 | 14  | 15 | 17  | 19 | 38  | 585           |

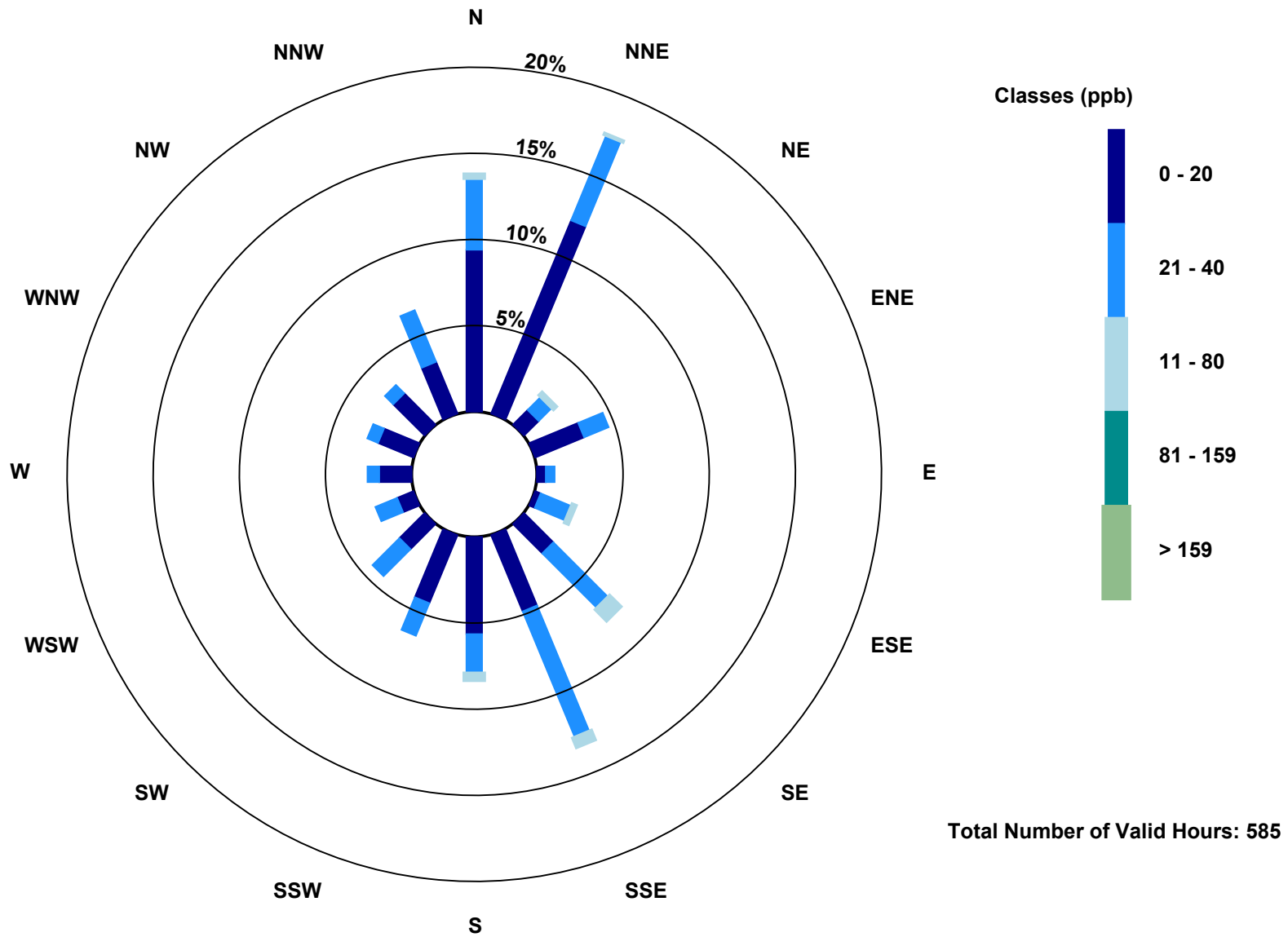
Total Number of Valid Hours: 585

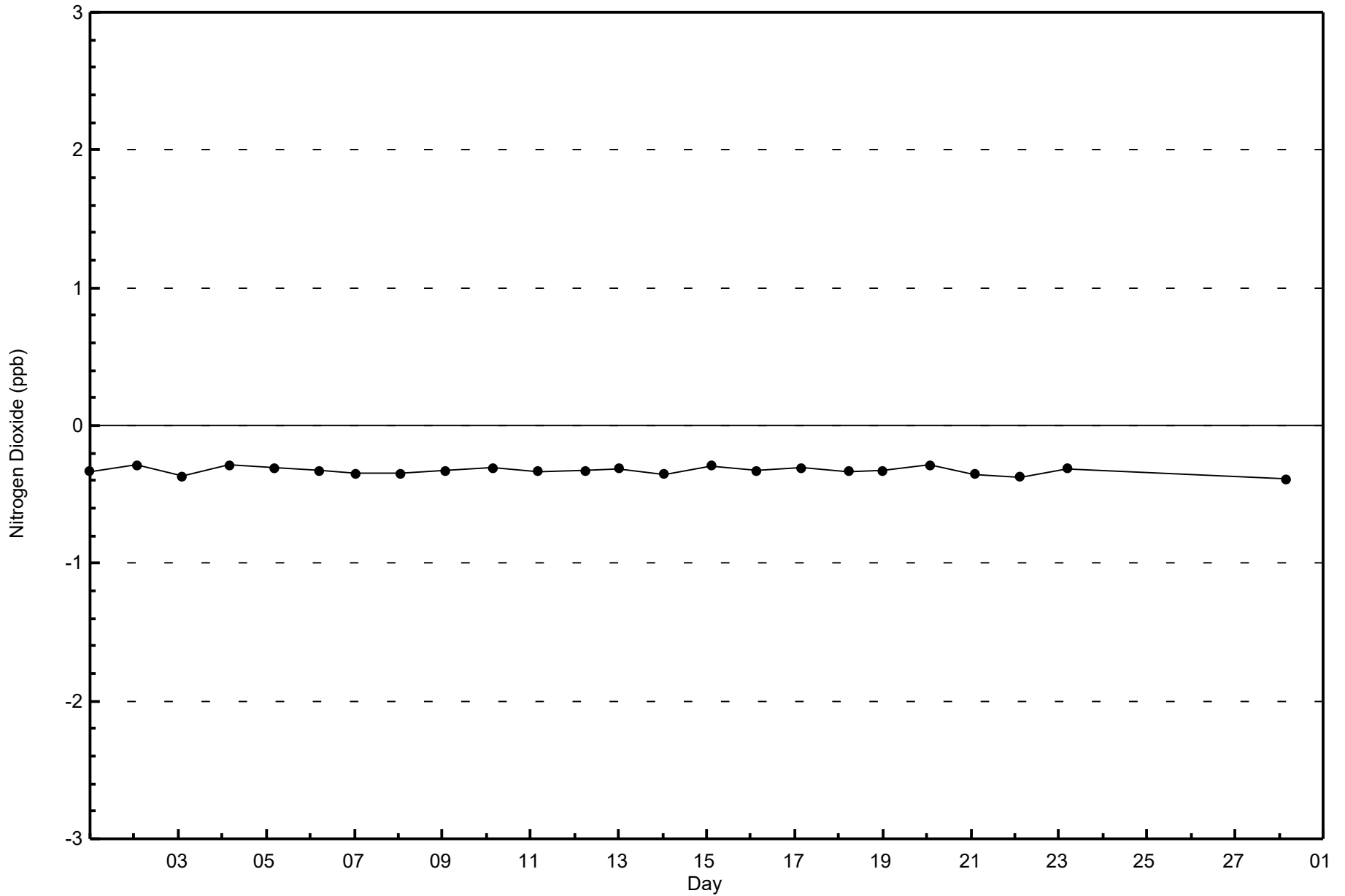
Total Number of Hours: 672

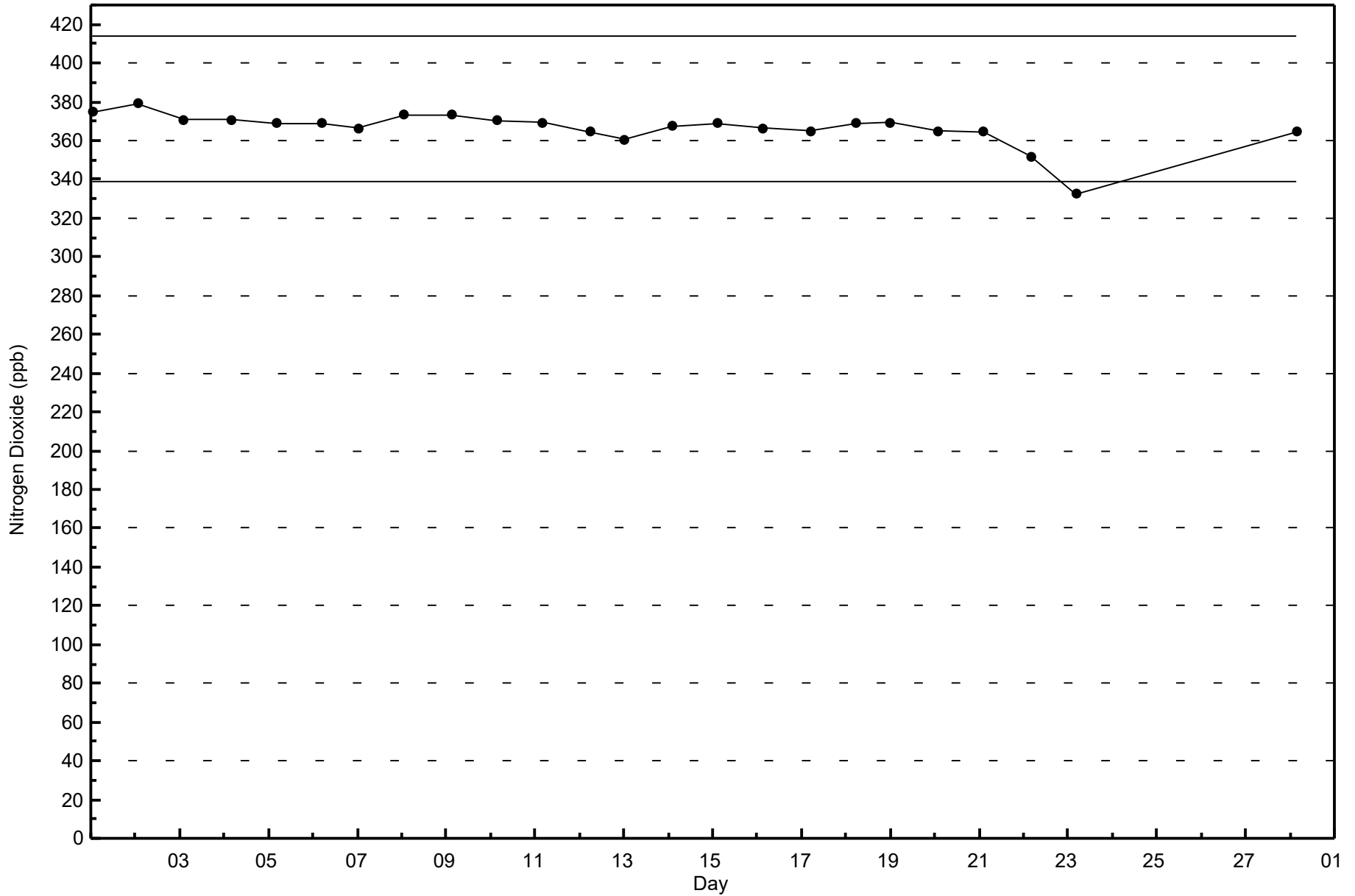


Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Nitrogen Dioxide (NO<sub>2</sub>) - ppb  
Fort Hills











Wood Buffalo Environmental Association

Summary of Hour Averages

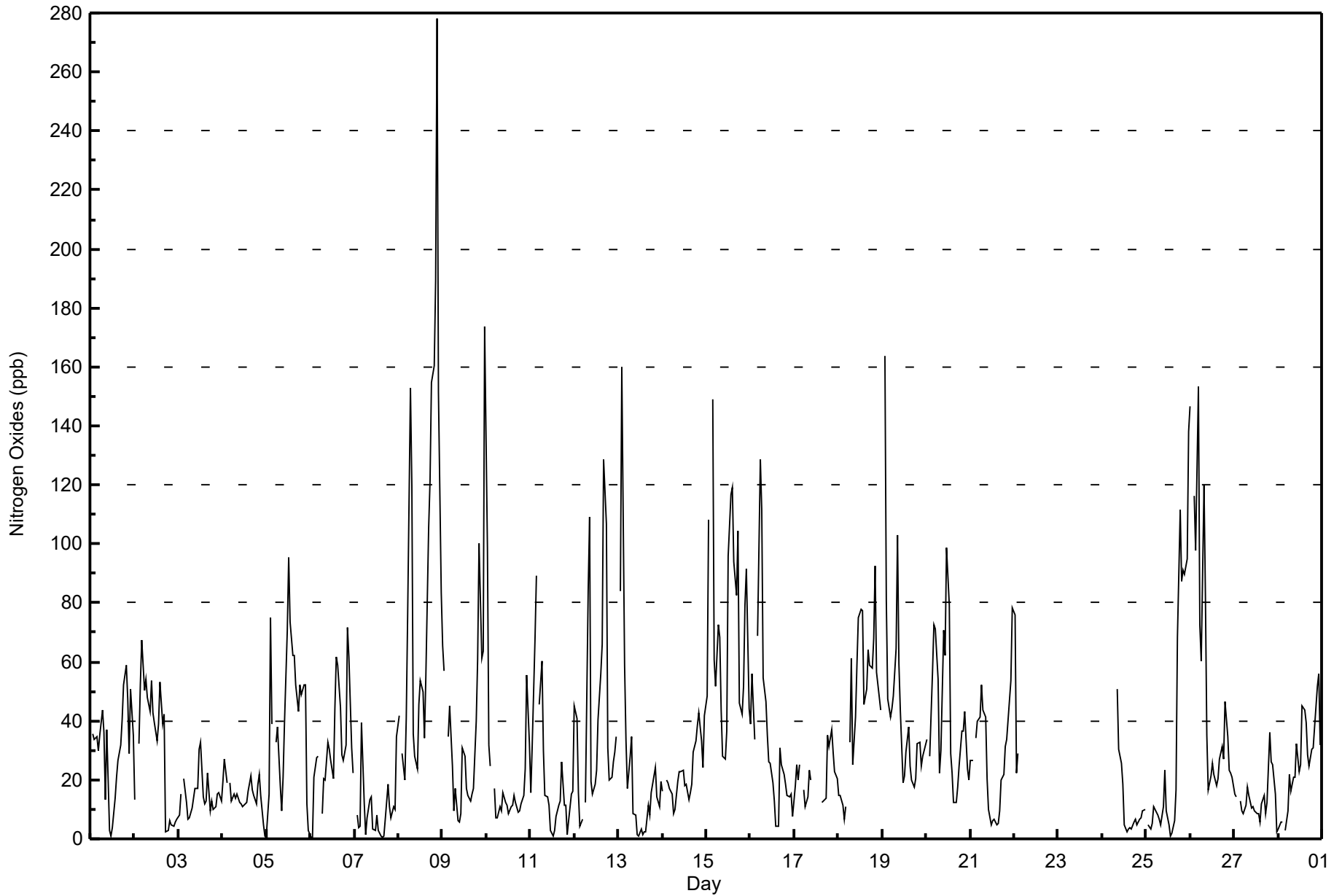
Nitrogen Oxides (NO<sub>x</sub>) - ppb

Fort Hills - February 2023

|  |  |          |                           |      |
|--|--|----------|---------------------------|------|
| Number of Exceedences (AAAQO):               | 1-hr: 0  | 24-hr: 0 | Hours in Service:         | 672  |
| Maximum Value: 277.9 ppb on Feb 8 22:00      | Maximum Daily Average: 89.1 ppb on Feb 8   |          | Hours of Data:            | 589  |
| Minimum Value: 0.4 ppb on Feb 6 01:00        | Minimum Daily Average: 9.6 ppb on Feb 7  |          | Hours of Missing Data:    | 83   |
| Maximum Diurnal Average: 43.2 ppb at hour 22 | Minimum Diurnal Average: 23.2 ppb at hour 11   |          | Hours of Calibration:     | 32   |
| Monthly Average: 33.80 ppb                   | Percentiles: P <sub>1</sub> = 0.9 P <sub>10</sub> = 5.8 Q <sub>1</sub> = 12.2 Median = 23.4 Q <sub>3</sub> = 43.8 P <sub>90</sub> = 72.7 P <sub>99</sub> = 155.5 |          | Percent Operational Time: | 92.4 |

| Day    | Hourly Period Ending At (MST) |       |       |       |       |       |       |       |       |      |      |      |      |       |       |      |       |       |       |       |       |       |       |                 | Daily Average | Daily Maximum |      |
|--------|-------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|------|------|------|------|-------|-------|------|-------|-------|-------|-------|-------|-------|-------|-----------------|---------------|---------------|------|
|        | 1                             | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     | 10   | 11   | 12   | 13   | 14    | 15    | 16   | 17    | 18    | 19    | 20    | 21    | 22    | 23    | 24              |               |               |      |
| 1-Feb  | Z                             | 35.7  | 33.9  | 34.4  | 29.7  | 35.1  | 43.5  | 36.0  | 13.5  | 37.2 | 3.0  | 0.9  | 3.8  | 14.0  | 20.7  | 26.6 | 31.9  | 40.5  | 52.0  | 59.0  | 47.7  | 29.1  | 50.7  | 35.1            | 31.0          | 59.0          |      |
| 2-Feb  | 13.1                          | Z     | 32.4  | 52.0  | 67.3  | 50.4  | 54.0  | 48.1  | 43.0  | 53.6 | 42.9 | 39.3 | 33.2 | 39.1  | 53.4  | 38.9 | 42.3  | 2.3   | 3.0   | 6.3   | 4.7   | 4.1   | 5.8   | 6.8             | 32.0          | 67.3          |      |
| 3-Feb  | 7.9                           | 15.2  | Z     | 20.3  | 12.4  | 6.7   | 7.3   | 10.3  | 13.9  | 17.1 | 17.1 | 30.4 | 32.9 | 14.2  | 12.1  | 12.9 | 22.4  | 9.4   | 12.8  | 10.1  | 10.9  | 15.2  | 15.8  | 12.7            | 14.8          | 32.9          |      |
| 4-Feb  | 19.5                          | 27.2  | 19.1  | Z     | 18.9  | 12.8  | 15.4  | 13.8  | 15.3  | 12.3 | 12.0 | 11.1 | 12.0 | 12.3  | 16.1  | 21.5 | 16.6  | 14.5  | 12.1  | 18.7  | 22.0  | 14.8  | 5.0   | 0.9             | 14.9          | 27.2          |      |
| 5-Feb  | 0.8                           | 15.1  | 74.8  | 39.0  | Z     | 32.6  | 38.0  | 18.1  | 9.7   | 21.0 | 39.4 | 70.6 | 95.6 | 73.5  | 62.3  | 62.0 | 52.4  | 43.0  | 52.0  | 48.6  | 52.2  | 52.4  | 11.9  | 2.8             | 42.1          | 95.6          |      |
| 6-Feb  | 0.4                           | 0.5   | 21.0  | 27.3  | 27.9  | Z     | 8.4   | 20.5  | 20.0  | 32.8 | 30.2 | 26.6 | 20.4 | 44.3  | 61.6  | 58.7 | 44.8  | 28.4  | 26.4  | 31.6  | 71.6  | 61.7  | 30.8  | 22.5            | 31.2          | 71.6          |      |
| 7-Feb  | Z                             | 7.9   | 3.9   | 4.5   | 39.2  | 11.8  | 1.3   | 6.9   | 13.4  | 14.3 | 3.4  | 2.9  | 7.9  | 3.0   | 1.0   | 0.5  | 1.2   | 6.7   | 18.5  | 10.7  | 7.0   | 11.1  | 10.1  | 34.5            | 9.6           | 39.2          |      |
| 8-Feb  | 41.9                          | Z     | 28.8  | 19.7  | 40.9  | 75.8  | 153.0 | 119.6 | 35.8  | 27.9 | 23.8 | 45.8 | 53.8 | 50.1  | 34.1  | 55.1 | 105.6 | 121.4 | 154.9 | 160.4 | 189.3 | 277.9 | 151.3 | 83.5            | 89.1          | 277.9         |      |
| 9-Feb  | 65.4                          | 57.2  | Z     | 34.5  | 45.0  | 24.7  | 9.5   | 17.3  | 6.4   | 5.7  | 8.6  | 30.6 | 28.0 | 17.1  | 14.9  | 12.7 | 15.2  | 16.9  | 39.7  | 61.0  | 100.2 | 61.1  | 63.7  | 173.5           | 39.5          | 173.5         |      |
| 10-Feb | 98.7                          | 31.7  | 24.4  | Z     | 17.0  | 7.4   | 7.0   | 11.0  | 9.5   | 15.7 | 12.5 | 11.2 | 8.7  | 11.0  | 11.4  | 14.9 | 12.5  | 9.2   | 9.3   | 12.0  | 14.9  | 23.7  | 55.4  | 32.4            | 20.1          | 98.7          |      |
| 11-Feb | 15.7                          | 31.9  | 68.0  | 89.1  | Z     | 45.5  | 60.3  | 30.0  | 14.5  | 14.1 | 11.5 | 2.9  | 0.8  | 2.9   | 7.7   | 11.5 | 12.6  | 25.9  | 11.5  | 11.3  | 1.2   | 6.2   | 15.1  | 16.1            | 22.0          | 89.1          |      |
| 12-Feb | 45.2                          | 40.6  | 15.9  | 4.4   | 6.4   | Z     | 12.2  | 84.6  | 109.2 | 19.5 | 15.2 | 18.4 | 23.4 | 40.2  | 56.0  | 65.8 | 128.7 | 106.8 | 30.7  | 19.8  | 20.8  | 26.0  | 29.6  | 34.7            | 41.5          | 128.7         |      |
| 13-Feb | Z                             | 83.9  | 159.9 | 59.1  | 33.0  | 17.3  | 28.1  | 34.4  | 8.4   | 8.1  | 1.3  | 1.1  | 3.5  | 1.5   | 2.3   | 2.2  | 11.2  | 8.1   | 15.8  | 21.5  | 24.4  | 14.1  | 10.8  | 19.5            | 24.8          | 159.9         |      |
| 14-Feb | 16.3                          | Z     | 19.7  | 18.8  | 16.9  | 15.2  | 8.3   | 10.1  | 19.3  | 22.9 | 22.8 | 23.4 | 18.2 | 18.4  | 13.2  | 15.6 | 18.5  | 29.6  | 33.1  | 38.3  | 42.6  | 33.4  | 24.1  | 41.7            | 22.6          | 42.6          |      |
| 15-Feb | 48.2                          | 108.3 | Z     | 148.9 | 60.6  | 51.8  | 72.5  | 68.1  | 43.7  | 28.1 | 27.1 | 36.8 | 95.7 | 116.6 | 119.0 | 94.0 | 82.5  | 104.5 | 46.1  | 42.1  | 51.6  | 79.5  | 91.7  | 43.9            | 72.2          | 148.9         |      |
| 16-Feb | 39.1                          | 55.9  | 33.8  | Z     | 68.7  | 128.6 | 111.6 | 54.4  | 46.5  | 35.1 | 26.1 | 25.6 | 19.0 | 12.6  | 4.0   | 4.3  | 30.8  | 25.1  | 21.7  | 18.3  | 14.9  | 14.2  | 15.0  | 7.4             | 35.3          | 128.6         |      |
| 17-Feb | 18.0                          | 25.3  | 19.8  | 25.4  | Z     | 16.7  | 10.7  | 14.1  | 23.3  | 20.1 | Z    | Z    | Z    | Z     | Z     | 12.4 | 13.0  | 13.6  | 35.2  | 31.1  | 37.2  | 29.3  | 22.9  | 20.6            | 21.6          | 37.2          |      |
| 18-Feb | 14.9                          | 14.5  | 11.5  | 6.4   | 10.7  | Z     | 32.8  | 61.5  | 25.1  | 41.4 | 58.7 | 75.1 | 77.9 | 77.5  | 45.8  | 50.9 | 63.9  | 58.9  | 57.9  | 67.7  | 92.3  | 56.6  | 47.8  | 43.6            | 47.5          | 92.3          |      |
| 19-Feb | Z                             | 163.8 | 80.6  | 47.6  | 41.1  | 44.2  | 48.3  | 64.4  | 103.2 | 59.5 | 43.8 | 18.9 | 21.1 | 29.4  | 38.1  | 24.6 | 19.9  | 17.4  | 20.4  | 32.5  | 32.5  | 24.6  | 28.2  | 29.8            | 45.0          | 163.8         |      |
| 20-Feb | 33.6                          | Z     | 27.8  | 56.5  | 72.5  | 71.2  | 54.2  | 22.4  | 30.1  | 70.6 | 62.1 | 98.9 | 79.1 | 29.0  | 22.2  | 12.5 | 12.4  | 17.7  | 24.8  | 36.3  | 36.5  | 43.0  | 23.9  | 19.7            | 41.6          | 98.9          |      |
| 21-Feb | 26.5                          | 26.7  | Z     | 34.0  | 39.9  | 41.1  | 52.1  | 43.8  | 41.2  | 20.4 | 9.9  | 4.8  | 6.1  | 6.9   | 4.8   | 5.2  | 9.4   | 20.0  | 21.7  | 31.2  | 33.6  | 47.2  | 53.7  | 78.2            | 28.6          | 78.2          |      |
| 22-Feb | 75.9                          | 22.1  | 29.0  | Z     | UO    | UO    | UO    | UO    | UO    | UO   | UO   | UO   | UO   | UO    | UO    | UO   | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO              | UO            | --            | 75.9 |
| 23-Feb | UO                            | UO    | UO    | UO    | Z     | UO    | UO    | UO    | UO    | UO   | UO   | M    | M    | M     | M     | M    | M     | M     | M     | M     | M     | M     | M     | M               | M             | --            | --   |
| 24-Feb | M                             | M     | M     | M     | Z     | M     | M     | M     | M     | 50.6 | 30.4 | 25.5 | 18.5 | 5.0   | 2.3   | 3.1  | 3.9   | 3.5   | 5.5   | 6.8   | 4.6   | 6.6   | 7.3   | 9.3             | 10.2          | --            | 50.6 |
| 25-Feb | Z                             | 4.6   | 3.5   | 5.2   | 11.1  | 10.1  | 8.2   | 6.6   | 4.9   | 11.1 | 23.2 | 9.5  | 4.7  | 0.8   | 1.9   | 6.3  | 16.4  | 68.4  | 111.6 | 87.3  | 91.2  | 89.7  | 94.9  | 138.1           | 35.2          | 138.1         |      |
| 26-Feb | 146.7                         | Z     | 116.1 | 97.7  | 153.4 | 72.4  | 60.1  | 120.2 | 82.1  | 35.1 | 16.8 | 21.2 | 25.6 | 21.8  | 17.8  | 20.2 | 26.9  | 31.1  | 27.2  | 46.3  | 34.5  | 23.1  | 22.4  | 20.7            | 53.9          | 153.4         |      |
| 27-Feb | 15.4                          | 14.5  | Z     | 12.9  | 9.5   | 8.4   | 11.5  | 17.5  | 14.8  | 10.3 | 10.8 | 9.5  | 8.4  | 8.5   | 5.8   | 11.9 | 14.7  | 8.4   | 12.1  | 36.3  | 26.1  | 25.3  | 15.1  | 2.3             | 13.5          | 36.3          |      |
| 28-Feb | 3.4                           | 5.7   | 5.5   | Z     | 3.1   | 9.5   | 21.8  | 16.0  | 21.0  | 20.7 | 32.4 | 22.9 | 25.2 | 44.9  | 43.7  | 39.3 | 28.7  | 24.7  | 30.2  | 30.7  | 38.2  | 51.9  | 56.2  | 32.0            | 26.4          | 56.2          |      |
|        |                               |       |       |       |       |       |       |       |       |      |      |      |      |       |       |      |       |       |       |       |       |       |       | Diurnal Average | 37.0          |               |      |
|        |                               |       |       |       |       |       |       |       |       |      |      |      |      |       |       |      |       |       |       |       |       |       |       | Diurnal Maximum | 173.5         |               |      |

Z - zerospan                      C - Calibration                      M - Maintenance                      UO - Unstable Operation





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Nitrogen Oxides (NO<sub>x</sub>) - ppb  
Fort Hills - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 20                            | 262                    | 44.48    | 44.48               |
| 21 - 40                           | 159                    | 26.99    | 71.48               |
| 41 - 80                           | 119                    | 20.20    | 91.68               |
| 81 - 159                          | 42                     | 7.13     | 98.81               |
| > 159                             | 6                      | 1.02     | 99.83               |

Total Number of Valid Hours: 589

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Nitrogen Oxides (NO<sub>x</sub>) - ppb  
Fort Hills - February 2023**

| <b>Concentration<br/>Ranges (ppb)</b> | <b>Wind Direction</b> |     |    |     |   |     |    |     |    |     |    |     |    |     |    |     | <b>Totals</b> |
|---------------------------------------|-----------------------|-----|----|-----|---|-----|----|-----|----|-----|----|-----|----|-----|----|-----|---------------|
|                                       | N                     | NNE | NE | ENE | E | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |               |
| 0 - 20                                | 44                    | 62  | 4  | 13  | 2 | 0   | 5  | 24  | 28 | 20  | 9  | 4   | 10 | 9   | 11 | 16  | 261           |
| 21 - 40                               | 20                    | 33  | 5  | 9   | 1 | 2   | 15 | 15  | 4  | 8   | 8  | 8   | 3  | 5   | 7  | 16  | 159           |
| 11 - 80                               | 10                    | 5   | 3  | 3   | 2 | 5   | 18 | 34  | 11 | 7   | 8  | 2   | 1  | 3   | 1  | 3   | 116           |
| 81 - 159                              | 7                     | 3   | 1  | 2   | 1 | 8   | 7  | 3   | 5  | 1   | 0  | 0   | 1  | 0   | 0  | 3   | 42            |
| > 159                                 | 0                     | 0   | 2  | 0   | 0 | 0   | 1  | 2   | 1  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 6             |
| <b>Totals</b>                         | 81                    | 103 | 15 | 27  | 6 | 15  | 46 | 78  | 49 | 36  | 25 | 14  | 15 | 17  | 19 | 38  | 584           |

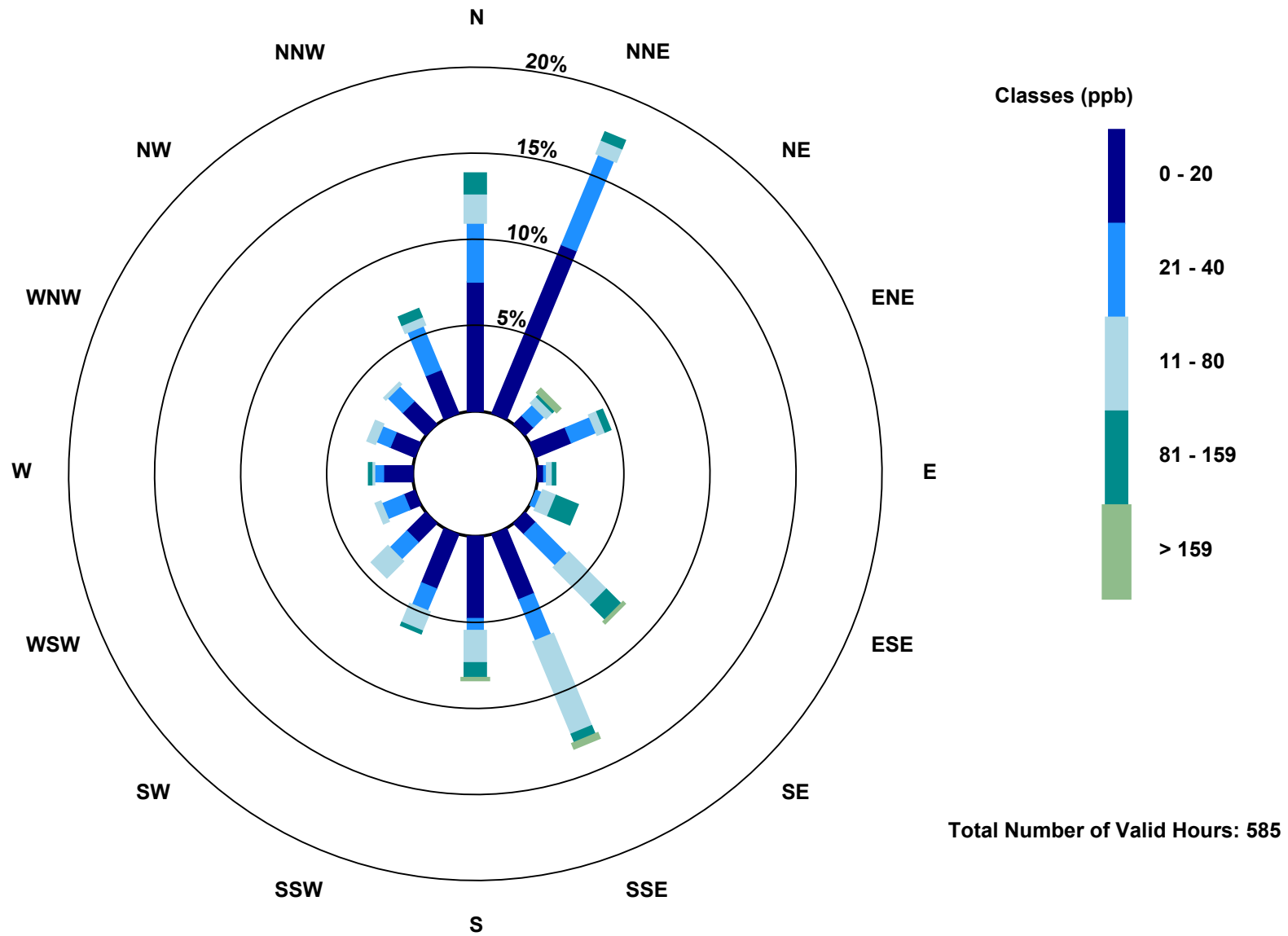
Total Number of Valid Hours: 585

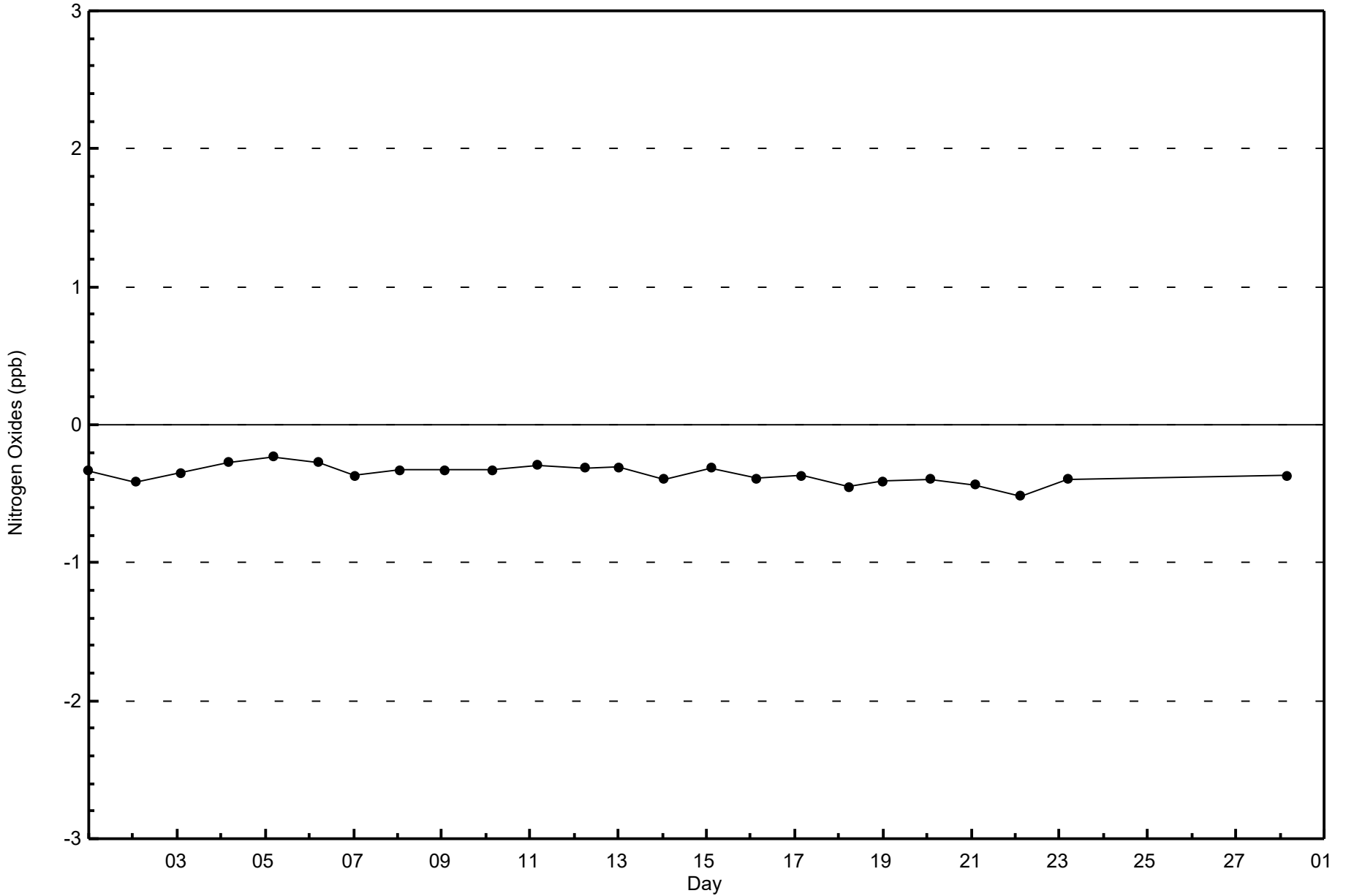
Total Number of Hours: 672

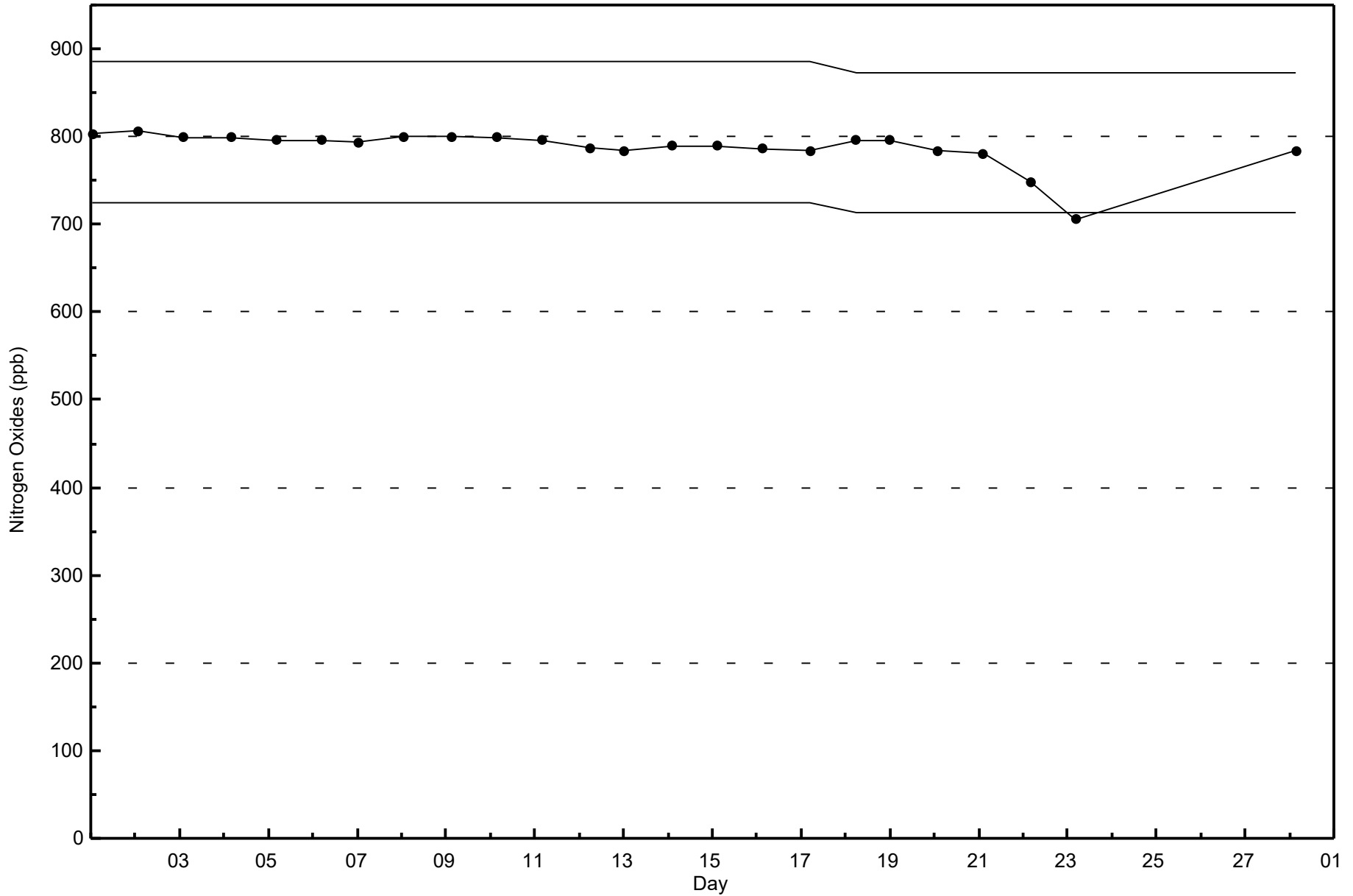


Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Nitrogen Oxides (NO<sub>x</sub>) - ppb  
Fort Hills









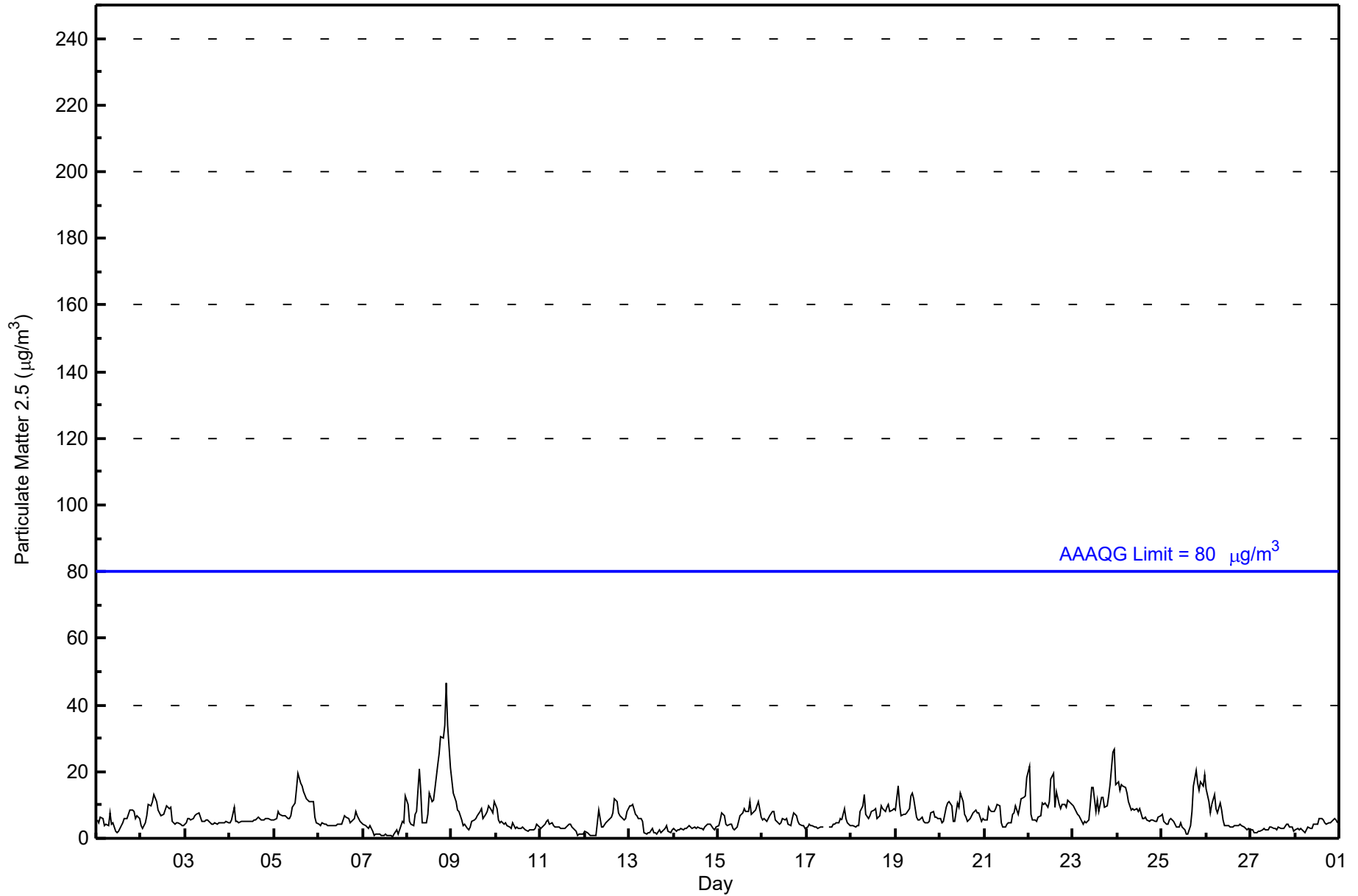
|   |  |          |                           |       |
|---|--|----------|---------------------------|-------|
| Number of Exceedences (AAAQO):                            | 1-hr: 0  | 24-hr: 0 | Hours in Service:         | 672   |
| Maximum Value: 46.7 µg/m <sup>3</sup> on Feb 8 22:00      | Maximum Daily Average: 16.2 µg/m <sup>3</sup> on Feb 8   |          | Hours of Data:            | 670   |
| Minimum Value: 0.6 µg/m <sup>3</sup> on Feb 7 17:00       | Minimum Daily Average: 2.5 µg/m <sup>3</sup> on Feb 7  |          | Hours of Missing Data:    | 2     |
| Maximum Diurnal Average: 8.5 µg/m <sup>3</sup> at hour 22 | Minimum Diurnal Average: 5.2 µg/m <sup>3</sup> at hour 10  |          | Hours of Calibration:     | 2     |
| Monthly Average: 6.52 µg/m <sup>3</sup>                   | Percentiles: P <sub>1</sub> = 0.8 P <sub>10</sub> = 2.7 Q <sub>1</sub> = 3.7 Median = 5.3 Q <sub>3</sub> = 8.1 P <sub>90</sub> = 11.2 P <sub>99</sub> = 25.6 |          | Percent Operational Time: | 100.0 |

| Day    | Hourly Period Ending At (MST) |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Daily Average | Daily Maximum |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
|--------|-------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|---------------|---------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----------------|
|        | 1                             | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20   | 21   | 22   | 23   | 24   |               |               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 1-Feb  | 5.3                           | 4.8  | 6.3  | 5.8  | 3.8  | 4.1  | 3.8  | 7.7  | 4.2  | 4.7  | 2.2  | 1.9  | 2.0  | 3.8  | 4.8  | 5.7  | 5.8  | 7.4  | 8.7  | 8.5  | 8.3  | 6.0  | 6.9  | 6.1  | 5.4           | 8.7           |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 2-Feb  | 3.6                           | 3.1  | 4.7  | 6.7  | 10.1 | 9.9  | 10.9 | 13.3 | 11.1 | 8.5  | 7.8  | 7.0  | 7.4  | 8.3  | 9.9  | 9.1  | 9.5  | 5.2  | 4.1  | 4.8  | 4.5  | 4.2  | 3.7  | 3.7  | 7.1           | 13.3          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 3-Feb  | 4.8                           | 6.0  | 6.0  | 5.7  | 5.7  | 6.8  | 7.4  | 7.7  | 6.5  | 5.1  | 5.0  | 5.5  | 5.5  | 4.6  | 4.3  | 4.2  | 4.6  | 4.4  | 4.5  | 4.6  | 4.9  | 4.8  | 5.1  | 4.9  | 5.4           | 7.7           |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 4-Feb  | 4.8                           | 5.4  | 9.5  | 5.3  | 5.0  | 4.7  | 4.9  | 4.9  | 5.3  | 4.9  | 4.9  | 5.1  | 5.1  | 5.6  | 5.7  | 6.2  | 6.0  | 5.7  | 5.7  | 6.0  | 5.9  | 5.9  | 5.5  | 5.7  | 5.6           | 9.5           |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 5-Feb  | 5.6                           | 5.9  | 8.2  | 7.2  | 6.7  | 6.6  | 7.0  | 6.1  | 5.9  | 6.8  | 9.2  | 10.8 | 15.0 | 19.4 | 16.5 | 15.7 | 13.9 | 11.8 | 11.3 | 10.9 | 11.0 | 11.2 | 6.4  | 4.6  | 9.7           | 19.4          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 6-Feb  | 4.1                           | 3.9  | 4.5  | 4.4  | 4.1  | 3.9  | 3.8  | 3.9  | 4.0  | 4.0  | 4.4  | 4.2  | 4.1  | 5.6  | 6.7  | 6.5  | 5.9  | 4.7  | 5.1  | 6.0  | 7.9  | 6.8  | 5.0  | 4.5  | 4.9           | 7.9           |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 7-Feb  | 4.1                           | 4.0  | 3.2  | 2.9  | 3.8  | 2.0  | 0.9  | 1.2  | 1.2  | 1.3  | 0.8  | 0.7  | 1.1  | 1.0  | 0.7  | 0.7  | 0.6  | 1.1  | 2.7  | 1.2  | 2.7  | 5.0  | 4.5  | 12.6 | 2.5           | 12.6          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 8-Feb  | 10.0                          | 5.2  | 4.4  | 3.8  | 7.3  | 8.0  | 20.6 | 14.2 | 4.6  | 4.5  | 4.7  | 7.0  | 13.7 | 10.9 | 11.3 | 15.0 | 22.0 | 25.4 | 30.7 | 30.1 | 33.8 | 46.7 | 33.9 | 21.4 | 16.2          | 46.7          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 9-Feb  | 17.5                          | 13.7 | 10.9 | 8.5  | 7.9  | 5.3  | 3.7  | 4.3  | 3.0  | 2.8  | 3.3  | 5.1  | 5.7  | 5.8  | 7.0  | 8.0  | 9.1  | 5.9  | 7.4  | 8.2  | 10.0 | 8.3  | 7.8  | 11.0 | 7.5           | 17.5          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 10-Feb | 9.1                           | 5.4  | 4.8  | 5.1  | 4.3  | 4.8  | 3.9  | 3.3  | 2.9  | 4.5  | 3.1  | 3.2  | 3.0  | 2.8  | 3.2  | 2.9  | 2.5  | 2.3  | 2.3  | 2.6  | 2.5  | 2.9  | 4.1  | 3.5  | 3.7           | 9.1           |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 11-Feb | 3.0                           | 3.3  | 4.2  | 4.9  | 5.6  | 4.2  | 4.5  | 3.9  | 3.3  | 3.3  | 3.5  | 3.2  | 2.9  | 3.0  | 3.5  | 4.4  | 4.3  | 3.2  | 2.7  | 2.3  | 0.9  | 1.1  | 1.3  | 1.2  | 3.2           | 5.6           |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 12-Feb | 2.0                           | 1.9  | 1.1  | 0.7  | 0.9  | 0.7  | 0.9  | 8.4  | 6.1  | 3.6  | 3.4  | 4.5  | 5.2  | 5.6  | 6.5  | 7.5  | 11.8 | 11.1 | 7.6  | 6.8  | 5.8  | 5.7  | 6.0  | 7.9  | 5.1           | 11.8          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 13-Feb | 9.6                           | 9.6  | 10.3 | 7.1  | 6.8  | 5.9  | 5.7  | 5.1  | 1.8  | 1.5  | 1.5  | 1.7  | 3.0  | 1.7  | 1.8  | 1.4  | 2.4  | 1.8  | 2.0  | 2.9  | 3.7  | 2.1  | 1.6  | 2.5  | 3.9           | 10.3          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 14-Feb | 2.8                           | 2.1  | 2.6  | 2.7  | 2.8  | 2.7  | 2.8  | 3.1  | 3.6  | 3.5  | 3.0  | 3.3  | 2.9  | 3.3  | 3.1  | 2.8  | 2.7  | 3.5  | 4.3  | 4.1  | 4.3  | 2.9  | 2.3  | 3.3  | 3.1           | 4.3           |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 15-Feb | 3.8                           | 5.5  | 7.7  | 6.7  | 4.2  | 3.7  | 4.0  | 4.0  | 3.1  | 2.5  | 3.4  | 5.1  | 6.7  | 7.5  | 9.0  | 7.9  | 8.2  | 11.2 | 7.3  | 8.1  | 8.6  | 9.7  | 10.9 | 6.2  | 6.5           | 11.2          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 16-Feb | 5.3                           | 5.8  | 5.0  | 6.1  | 6.9  | 8.2  | 8.1  | 5.4  | 4.8  | 4.4  | 4.5  | 5.9  | 5.6  | 5.8  | 4.3  | 3.7  | 5.8  | 7.5  | 6.7  | 5.0  | 4.3  | 3.6  | 3.7  | 3.0  | 5.4           | 8.2           |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 17-Feb | 3.5                           | 4.3  | 3.8  | 3.8  | 3.6  | 3.6  | 3.0  | 3.3  | 3.5  | 3.4  | C    | C    | 3.5  | 3.3  | 4.0  | 4.4  | 4.5  | 4.7  | 6.0  | 5.7  | 8.9  | 5.7  | 4.5  | 3.6  | 4.3           | 8.9           |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 18-Feb | 3.7                           | 3.8  | 3.4  | 3.7  | 3.8  | 7.9  | 9.9  | 13.0 | 7.3  | 5.8  | 6.9  | 8.3  | 8.5  | 8.9  | 6.1  | 6.8  | 9.7  | 9.1  | 7.9  | 9.5  | 10.3 | 8.1  | 8.7  | 9.1  | 7.5           | 13.0          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 19-Feb | 8.6                           | 15.7 | 10.1 | 6.7  | 7.1  | 7.4  | 7.6  | 8.8  | 12.8 | 13.4 | 12.0 | 6.3  | 5.4  | 5.5  | 6.4  | 5.2  | 4.6  | 4.7  | 5.2  | 7.7  | 8.2  | 6.3  | 6.4  | 5.8  | 7.8           | 15.7          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 20-Feb | 6.0                           | 4.8  | 5.0  | 9.4  | 10.4 | 11.2 | 9.6  | 5.2  | 5.3  | 10.5 | 9.4  | 13.6 | 10.9 | 7.3  | 6.5  | 5.3  | 5.8  | 7.0  | 7.8  | 8.5  | 7.4  | 7.7  | 4.9  | 6.1  | 7.7           | 13.6          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 21-Feb | 5.6                           | 5.7  | 9.3  | 8.4  | 8.0  | 7.9  | 9.1  | 10.2 | 9.6  | 4.7  | 3.6  | 3.2  | 4.1  | 4.5  | 4.5  | 7.2  | 7.5  | 9.7  | 7.3  | 9.5  | 12.0 | 12.2 | 12.5 | 18.2 | 8.1           | 18.2          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 22-Feb | 21.5                          | 7.3  | 5.6  | 5.6  | 5.1  | 6.3  | 6.9  | 10.4 | 10.4 | 10.5 | 9.3  | 10.8 | 17.7 | 19.6 | 9.3  | 13.8 | 10.2 | 8.9  | 10.1 | 10.1 | 9.4  | 11.4 | 10.8 | 10.3 | 10.5          | 21.5          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 23-Feb | 9.8                           | 8.8  | 7.4  | 6.6  | 6.1  | 4.4  | 5.1  | 4.5  | 5.4  | 10.3 | 15.2 | 15.2 | 7.9  | 11.3 | 7.9  | 12.3 | 12.2 | 9.2  | 9.9  | 12.6 | 16.1 | 26.0 | 26.6 | 16.3 | 11.1          | 26.6          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 24-Feb | 17.0                          | 14.6 | 16.2 | 15.8 | 15.1 | 13.4 | 10.9 | 8.5  | 8.9  | 8.6  | 8.7  | 8.1  | 8.8  | 5.7  | 5.7  | 6.5  | 5.6  | 4.9  | 5.7  | 5.5  | 4.9  | 5.2  | 6.5  | 6.6  | 9.1           | 17.0          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 25-Feb | 7.0                           | 4.9  | 4.3  | 4.3  | 5.7  | 5.8  | 5.0  | 4.1  | 3.4  | 3.2  | 4.5  | 3.2  | 2.5  | 1.4  | 1.4  | 3.8  | 8.0  | 15.6 | 20.3 | 16.4 | 14.4 | 16.7 | 15.9 | 19.2 | 8.0           | 20.3          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 26-Feb | 15.0                          | 11.1 | 7.6  | 10.2 | 13.3 | 8.7  | 7.6  | 10.7 | 8.5  | 5.3  | 3.8  | 3.7  | 3.7  | 3.6  | 3.4  | 3.8  | 3.8  | 3.6  | 4.1  | 3.7  | 3.3  | 3.0  | 2.7  | 2.9  | 6.1           | 15.0          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 27-Feb | 2.7                           | 2.4  | 1.5  | 1.8  | 2.1  | 2.3  | 2.5  | 2.8  | 2.6  | 2.7  | 3.3  | 3.2  | 3.1  | 3.0  | 2.5  | 3.3  | 3.2  | 2.9  | 2.9  | 4.4  | 4.1  | 3.5  | 3.3  | 2.3  | 2.8           | 4.4           |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
| 28-Feb | 2.7                           | 2.8  | 2.7  | 2.8  | 2.4  | 1.8  | 2.5  | 3.5  | 3.0  | 2.9  | 4.2  | 4.2  | 4.3  | 6.0  | 6.0  | 5.5  | 4.7  | 4.3  | 4.5  | 4.7  | 5.1  | 5.8  | 5.5  | 4.5  | 4.0           | 6.0           |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |
|        |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 7.1  | 6.1           | 6.1           | 5.8  | 6.0  | 5.8  | 6.2  | 6.5  | 5.4  | 5.2  | 5.4  | 5.7  | 6.1  | 6.2  | 5.8  | 6.4  | 7.0  | 7.0  | 7.3  | 7.5  | 8.0  | 8.5  | 7.7  | 7.4  | Diurnal Average |
|        |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 21.5 | 15.7          | 16.2          | 15.8 | 15.1 | 13.4 | 20.6 | 14.2 | 12.8 | 13.4 | 15.2 | 15.2 | 17.7 | 19.6 | 16.5 | 15.7 | 22.0 | 25.4 | 30.7 | 30.1 | 33.8 | 46.7 | 33.9 | 21.4 | Diurnal Maximum |

C - Calibration

Alberta Ambient Air Quality Guideline/Objectives: 1-hr 80 µg/m<sup>3</sup> 24-hr 29 µg/m<sup>3</sup>







**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Particulate Matter 2.5 (PM<sub>2.5</sub>) -  $\mu\text{g}/\text{m}^3$**   
**Fort Hills - February 2023**

| <b>Concentration Ranges (<math>\mu\text{g}/\text{m}^3</math>)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---|------------------------|----------|---------------------|
| 0 - 5   | 344                    | 51.34    | 51.34               |
| 6 - 15  | 295                    | 44.03    | 95.37               |
| 16 - 25   | 24                     | 3.58     | 98.96               |
| 26 - 80   | 7                      | 1.04     | 100.00              |
| > 81.0  | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 670

Total Number of Hours: 672



**Wood Buffalo Environmental Association**  
**Frequency Distribution**

**Particulate Matter 2.5 (PM<sub>2.5</sub>) - μg/m<sup>3</sup>**  
**Fort Hills - February 2023**

| Concentration<br>Ranges (μg/m <sup>3</sup> ) | Wind Direction |     |    |     |   |     |    |     |    |     |    |     |    |     |    |     | Totals |
|--|----------------|-----|----|-----|---|-----|----|-----|----|-----|----|-----|----|-----|----|-----|--------|
|  | N              | NNE | NE | ENE | E | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |        |
| 0 - 5  | 55             | 80  | 11 | 15  | 4 | 2   | 13 | 36  | 18 | 23  | 17 | 11  | 13 | 11  | 14 | 20  | 343    |
| 6 - 15                                       | 34             | 27  | 5  | 11  | 1 | 17  | 41 | 51  | 32 | 17  | 9  | 3   | 7  | 6   | 8  | 22  | 291    |
| 16 - 25                                      | 0              | 0   | 1  | 1   | 1 | 3   | 8  | 7   | 2  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 23     |
| 26 - 80                                      | 1              | 0   | 1  | 0   | 0 | 0   | 0  | 3   | 2  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 7      |
| > 81.0                                       | 0              | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| <b>Totals</b>                                | 90             | 107 | 18 | 27  | 6 | 22  | 62 | 97  | 54 | 40  | 26 | 14  | 20 | 17  | 22 | 42  | 664    |

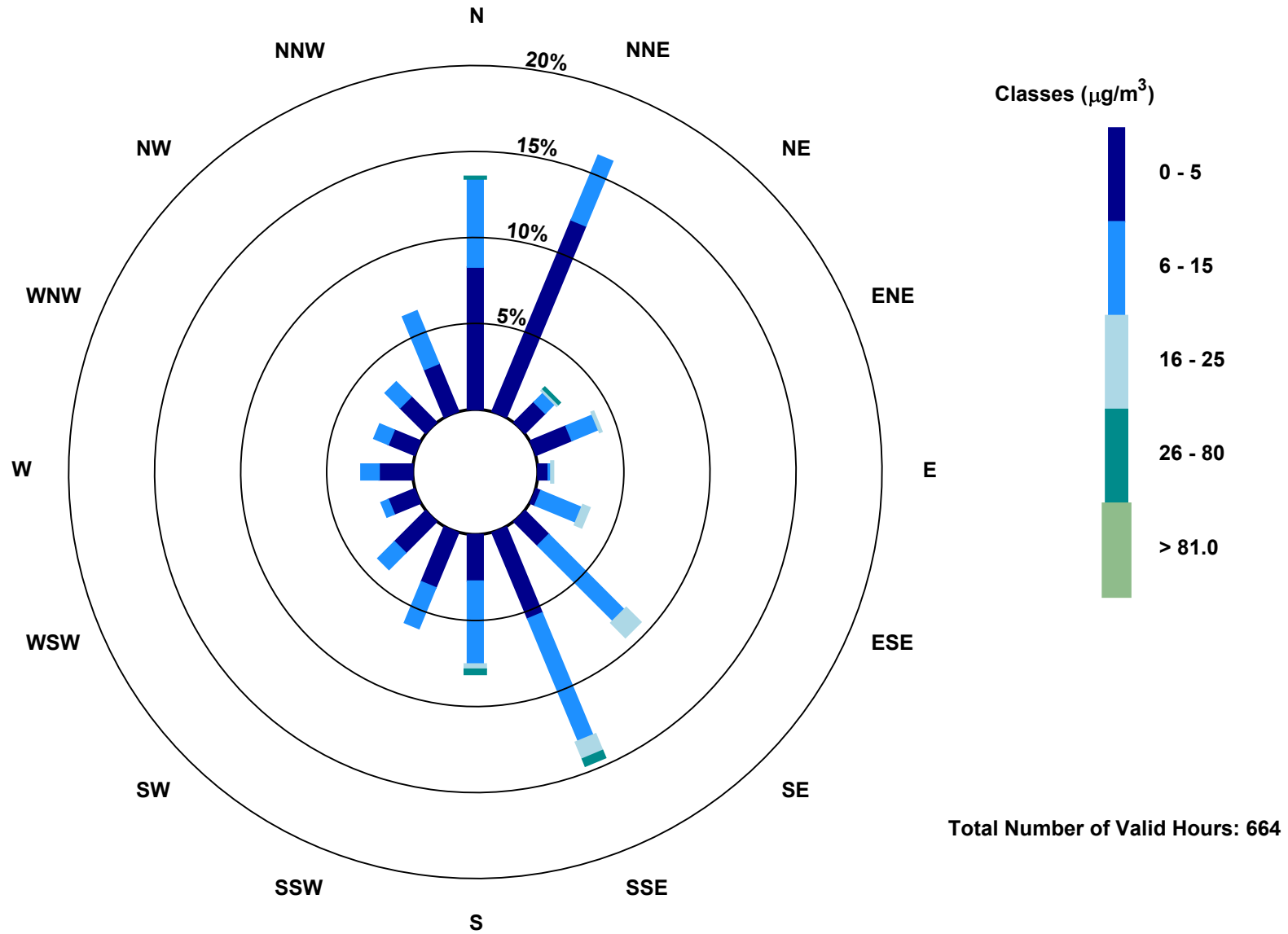
Total Number of Valid Hours: 664

Total Number of Hours: 672



Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Particulate Matter 2.5 (PM<sub>2.5</sub>) -  $\mu\text{g}/\text{m}^3$   
Fort Hills



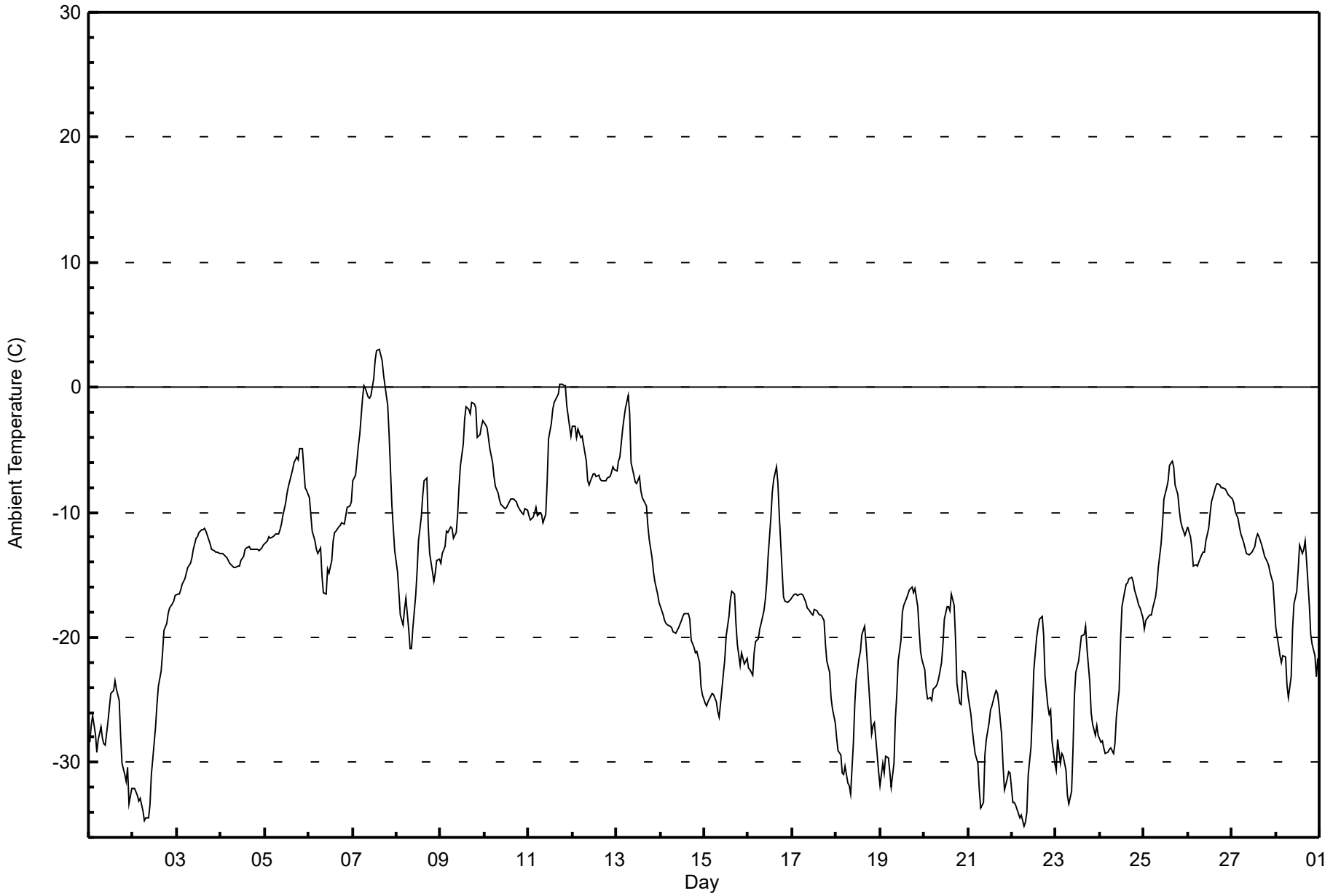


| Maximum Value: 3.0 C on Feb 7 15:00         |                               | Maximum Daily Average: -2.4 C on Feb 7  |       | Hours in Service: 672           |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |                 |  |
|---|-------------------------------|---|-------|---------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-----------------|-----------------|--|
| Minimum Value: -35.2 C on Feb 22 07:00      |                               | Minimum Daily Average: -28.4 C on Feb 21  |       | Hours of Data: 672              |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |                 |  |
| Maximum Diurnal Average: -12.5 C at hour 16 |                               | Minimum Diurnal Average: -19.4 C at hour 8  |       | Hours of Missing Data: 0        |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |                 |  |
| Monthly Average: -16.53 C                   |                               | Percentiles: P <sub>1</sub> = -34.1 P <sub>10</sub> = -29.2 Q <sub>1</sub> = -23.1 Median = -16.3 Q <sub>3</sub> = -10.2 P <sub>90</sub> = -6.0 P <sub>99</sub> = 0.4 |       | Hours of Calibration: 0         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |                 |  |
|   |                               |   |       | Percent Operational Time: 100.0 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |                 |  |
| Day   | Hourly Period Ending At (MST) |   |       |                                 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Daily Average   | Daily Maximum   |  |
|   | 1                             | 2   | 3     | 4                               | 5     | 6     | 7     | 8     | 9     | 10    | 11    | 12    | 13    | 14    | 15    | 16    | 17    | 18    | 19    | 20    | 21    | 22    | 23    | 24    |                 |                 |  |
| 1-Feb                                       | -28.4                         | -27.0   | -26.2 | -27.7                           | -29.2 | -28.1 | -27.2 | -28.0 | -28.5 | -28.6 | -26.7 | -25.6 | -24.5 | -24.2 | -23.4 | -24.1 | -25.0 | -27.8 | -30.1 | -31.0 | -31.5 | -30.4 | -33.3 | -32.1 | -27.9           | -23.4           |  |
| 2-Feb                                       | -32.1                         | -32.1   | -32.6 | -33.1                           | -32.9 | -33.8 | -34.6 | -34.4 | -34.4 | -33.4 | -31.0 | -29.8 | -27.1 | -25.4 | -23.9 | -22.7 | -21.2 | -19.4 | -18.8 | -18.1 | -17.7 | -17.3 | -17.1 | -16.7 | -26.7           | -16.7           |  |
| 3-Feb                                       | -16.6                         | -16.5   | -16.2 | -15.7                           | -15.3 | -14.8 | -14.4 | -14.1 | -13.7 | -12.9 | -12.1 | -12.0 | -11.6 | -11.4 | -11.4 | -11.3 | -11.5 | -12.1 | -12.5 | -12.9 | -13.1 | -13.2 | -13.2 | -13.3 | -13.4           | -11.3           |  |
| 4-Feb                                       | -13.3                         | -13.3   | -13.5 | -13.7                           | -13.8 | -14.1 | -14.3 | -14.5 | -14.4 | -14.3 | -14.3 | -13.9 | -13.6 | -13.0 | -12.8 | -12.7 | -12.9 | -12.9 | -13.0 | -13.0 | -12.9 | -13.0 | -12.9 | -12.7 | -13.4           | -12.7           |  |
| 5-Feb                                       | -12.5                         | -12.3   | -11.9 | -12.1                           | -12.0 | -11.9 | -11.7 | -11.7 | -11.4 | -11.0 | -10.2 | -9.3  | -8.5  | -7.9  | -7.0  | -6.6  | -6.0  | -5.5  | -5.8  | -4.9  | -4.9  | -6.4  | -8.0  | -8.3  | -9.1            | -4.9            |  |
| 6-Feb                                       | -8.8                          | -10.2   | -11.5 | -12.3                           | -13.0 | -13.3 | -12.8 | -15.0 | -16.4 | -16.6 | -14.5 | -14.8 | -13.9 | -12.3 | -11.6 | -11.5 | -11.1 | -11.0 | -10.9 | -11.0 | -10.2 | -9.6  | -9.5  | -9.1  | -12.1           | -8.8            |  |
| 7-Feb                                       | -7.5                          | -7.0  | -6.0  | -4.7                            | -3.8  | -0.9  | 0.1   | -0.1  | -0.7  | -0.9  | -0.6  | 0.7   | 2.2   | 2.9   | 3.0   | 2.6   | 2.1   | 1.0   | -0.6  | -1.4  | -3.8  | -9.5  | -11.2 | -13.1 | -2.4            | 3.0             |  |
| 8-Feb                                       | -14.8                         | -16.4   | -18.3 | -19.0                           | -17.8 | -16.9 | -19.3 | -20.9 | -20.9 | -19.2 | -16.6 | -14.7 | -12.3 | -10.3 | -8.7  | -7.4  | -7.3  | -11.2 | -13.3 | -14.7 | -15.6 | -14.8 | -13.8 | -13.8 | -14.9           | -7.3            |  |
| 9-Feb                                       | -14.1                         | -13.3   | -12.7 | -11.5                           | -11.6 | -11.1 | -11.3 | -12.1 | -11.6 | -10.2 | -7.9  | -6.3  | -4.6  | -2.5  | -1.6  | -1.8  | -2.1  | -1.3  | -1.3  | -1.7  | -4.1  | -3.8  | -3.1  | -2.6  | -6.8            | -1.3            |  |
| 10-Feb                                      | -3.0                          | -3.3  | -4.0  | -4.9                            | -6.0  | -7.1  | -7.9  | -8.5  | -9.1  | -9.4  | -9.6  | -9.7  | -9.6  | -9.2  | -8.9  | -8.9  | -8.9  | -9.2  | -9.5  | -9.7  | -10.1 | -10.1 | -9.7  | -9.8  | -8.2            | -3.0            |  |
| 11-Feb                                      | -10.3                         | -10.7   | -10.4 | -10.0                           | -9.6  | -10.3 | -10.0 | -10.1 | -10.8 | -10.2 | -7.6  | -4.1  | -2.8  | -1.8  | -1.2  | -0.8  | -0.5  | 0.2   | 0.2   | 0.1   | 0.1   | -1.5  | -3.1  | -3.9  | -5.4            | 0.2             |  |
| 12-Feb                                      | -3.1                          | -3.1  | -4.0  | -3.4                            | -4.0  | -3.9  | -4.6  | -5.9  | -7.5  | -7.8  | -7.5  | -7.0  | -7.0  | -7.1  | -7.0  | -7.4  | -7.5  | -7.4  | -7.4  | -7.3  | -7.1  | -6.8  | -6.4  | -6.6  | -6.1            | -3.1            |  |
| 13-Feb                                      | -6.7                          | -5.9  | -5.6  | -3.3                            | -2.4  | -1.7  | -0.6  | -2.1  | -6.0  | -7.1  | -7.6  | -7.7  | -7.1  | -8.3  | -8.8  | -9.0  | -9.5  | -11.0 | -12.1 | -13.6 | -14.7 | -15.5 | -16.5 | -17.2 | -8.3            | -0.6            |  |
| 14-Feb                                      | -17.5                         | -18.2   | -18.7 | -18.8                           | -19.0 | -19.1 | -19.3 | -19.6 | -19.6 | -19.5 | -19.2 | -18.7 | -18.3 | -18.1 | -18.1 | -18.1 | -18.5 | -20.2 | -20.8 | -21.3 | -21.2 | -22.0 | -24.0 | -24.5 | -19.7           | -17.5           |  |
| 15-Feb                                      | -25.3                         | -25.5   | -25.2 | -24.7                           | -24.5 | -24.6 | -25.1 | -26.0 | -26.4 | -25.3 | -22.9 | -21.8 | -19.9 | -18.4 | -17.0 | -16.3 | -16.6 | -18.8 | -20.6 | -22.3 | -21.2 | -21.6 | -22.1 | -21.7 | -22.2           | -16.3           |  |
| 16-Feb                                      | -22.5                         | -22.6   | -23.0 | -21.2                           | -20.3 | -20.1 | -19.4 | -18.8 | -17.9 | -16.9 | -15.7 | -13.5 | -10.4 | -8.4  | -7.4  | -6.4  | -7.7  | -10.3 | -14.6 | -16.8 | -17.1 | -17.2 | -17.1 | -17.0 | -15.9           | -6.4            |  |
| 17-Feb                                      | -16.6                         | -16.6   | -16.5 | -16.6                           | -16.6 | -16.5 | -16.7 | -17.2 | -17.6 | -17.8 | -18.1 | -18.2 | -17.8 | -17.9 | -18.1 | -18.3 | -18.2 | -18.7 | -20.6 | -21.9 | -22.8 | -24.8 | -25.8 | -26.8 | -19.0           | -16.5           |  |
| 18-Feb                                      | -28.1                         | -29.1   | -29.4 | -30.9                           | -31.0 | -30.3 | -31.6 | -31.9 | -32.5 | -28.4 | -25.2 | -23.3 | -21.6 | -21.1 | -19.8 | -19.2 | -20.5 | -22.1 | -25.7 | -27.7 | -27.1 | -26.8 | -29.4 | -30.7 | -26.8           | -19.2           |  |
| 19-Feb                                      | -31.9                         | -30.0   | -30.8 | -29.5                           | -29.6 | -30.8 | -32.0 | -30.0 | -26.5 | -24.6 | -21.9 | -20.2 | -18.0 | -17.5 | -16.9 | -16.5 | -16.2 | -15.9 | -16.4 | -16.1 | -17.6 | -19.5 | -21.1 | -21.8 | -23.0           | -15.9           |  |
| 20-Feb                                      | -22.6                         | -24.1   | -24.9 | -24.9                           | -25.0 | -24.2 | -23.9 | -23.7 | -23.2 | -22.0 | -20.5 | -18.6 | -17.6 | -17.6 | -17.8 | -16.6 | -17.4 | -20.1 | -23.7 | -25.2 | -25.3 | -22.7 | -22.8 | -23.6 | -22.0           | -16.6           |  |
| 21-Feb                                      | -24.7                         | -26.2   | -27.4 | -28.4                           | -29.3 | -30.0 | -32.2 | -33.6 | -33.2 | -29.4 | -28.1 | -26.9 | -25.9 | -25.4 | -24.5 | -24.3 | -24.4 | -25.3 | -27.9 | -30.3 | -32.2 | -31.3 | -30.7 | -30.9 | -28.4           | -24.3           |  |
| 22-Feb                                      | -33.2                         | -33.2   | -33.4 | -34.1                           | -34.4 | -34.3 | -35.2 | -34.8 | -34.0 | -31.0 | -28.7 | -25.8 | -22.6 | -20.0 | -19.3 | -18.5 | -18.4 | -19.8 | -23.2 | -25.5 | -26.2 | -25.8 | -28.3 | -30.0 | -27.9           | -18.4           |  |
| 23-Feb                                      | -30.6                         | -28.2   | -30.0 | -29.3                           | -29.5 | -30.7 | -32.7 | -33.3 | -32.3 | -28.9 | -24.7 | -22.8 | -21.9 | -20.9 | -19.9 | -19.7 | -19.1 | -20.9 | -23.6 | -26.1 | -26.9 | -27.8 | -27.1 | -27.8 | -26.4           | -19.1           |  |
| 24-Feb                                      | -28.4                         | -28.3   | -28.8 | -29.3                           | -29.2 | -28.9 | -28.9 | -29.2 | -28.5 | -26.3 | -24.2 | -20.2 | -17.5 | -16.4 | -15.7 | -15.6 | -15.3 | -15.2 | -15.5 | -16.2 | -16.9 | -17.5 | -17.7 | -18.4 | -22.0           | -15.2           |  |
| 25-Feb                                      | -19.3                         | -18.7   | -18.4 | -18.3                           | -18.2 | -17.6 | -16.8 | -15.9 | -14.4 | -12.5 | -10.9 | -8.9  | -8.0  | -7.5  | -6.2  | -5.9  | -6.4  | -7.8  | -8.6  | -9.8  | -10.7 | -11.1 | -11.9 | -11.5 | -12.3           | -5.9            |  |
| 26-Feb                                      | -11.2                         | -11.9   | -12.9 | -14.4                           | -14.2 | -14.3 | -13.9 | -13.4 | -13.2 | -13.2 | -12.3 | -11.3 | -10.1 | -9.1  | -8.4  | -7.9  | -7.7  | -7.9  | -8.0  | -8.0  | -8.2  | -8.4  | -8.6  | -8.8  | -10.7           | -7.7            |  |
| 27-Feb                                      | -8.9                          | -9.3  | -10.0 | -10.5                           | -11.2 | -11.8 | -12.4 | -12.8 | -13.3 | -13.4 | -13.3 | -13.2 | -12.7 | -12.0 | -11.7 | -12.0 | -12.6 | -13.0 | -13.5 | -14.0 | -14.3 | -14.8 | -15.6 | -17.4 | -12.7           | -8.9            |  |
| 28-Feb                                      | -19.2                         | -20.6   | -21.4 | -22.0                           | -21.4 | -21.5 | -23.9 | -24.8 | -23.2 | -19.3 | -17.3 | -16.3 | -14.6 | -12.6 | -13.3 | -13.0 | -12.3 | -13.8 | -17.4 | -19.8 | -20.6 | -21.5 | -23.2 | -21.6 | -18.9           | -12.3           |  |
|   |                               | -18.3   | -18.3 | -18.7                           | -18.7 | -18.7 | -19.0 | -19.4 | -19.3 | -18.2 | -16.8 | -15.5 | -14.2 | -13.3 | -12.8 | -12.5 | -12.6 | -13.5 | -14.8 | -15.7 | -16.2 | -16.6 | -17.3 | -17.6 | Diurnal Average |                 |  |
|   |                               | -3.0  | -3.1  | -4.0                            | -3.3  | -2.4  | -0.9  | 0.1   | -0.1  | -0.7  | -0.9  | -0.6  | 0.7   | 2.2   | 2.9   | 3.0   | 2.6   | 2.1   | 1.0   | 0.2   | 0.1   | 0.1   | -1.5  | -3.1  | -2.6            | Diurnal Maximum |  |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Ambient Temperature (AT) - C**  
**Fort Hills - February 2023**





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Ambient Temperature (AT) - C  
Fort Hills - February 2023**

| <b>Concentration Ranges (C)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---------------------------------|------------------------|----------|---------------------|
| -50 - -20                       | 222                    | 33.04    | 33.04               |
| -20 - 0                         | 438                    | 65.18    | 98.21               |
| 0 - 10                          | 12                     | 1.79     | 100.00              |
| 10 - 20                         | 0                      | 0.00     | 100.00              |
| > 20                            | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 672

Total Number of Hours: 672



**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

**Relative Humidity (RH) - %**  
**Fort Hills - February 2023**

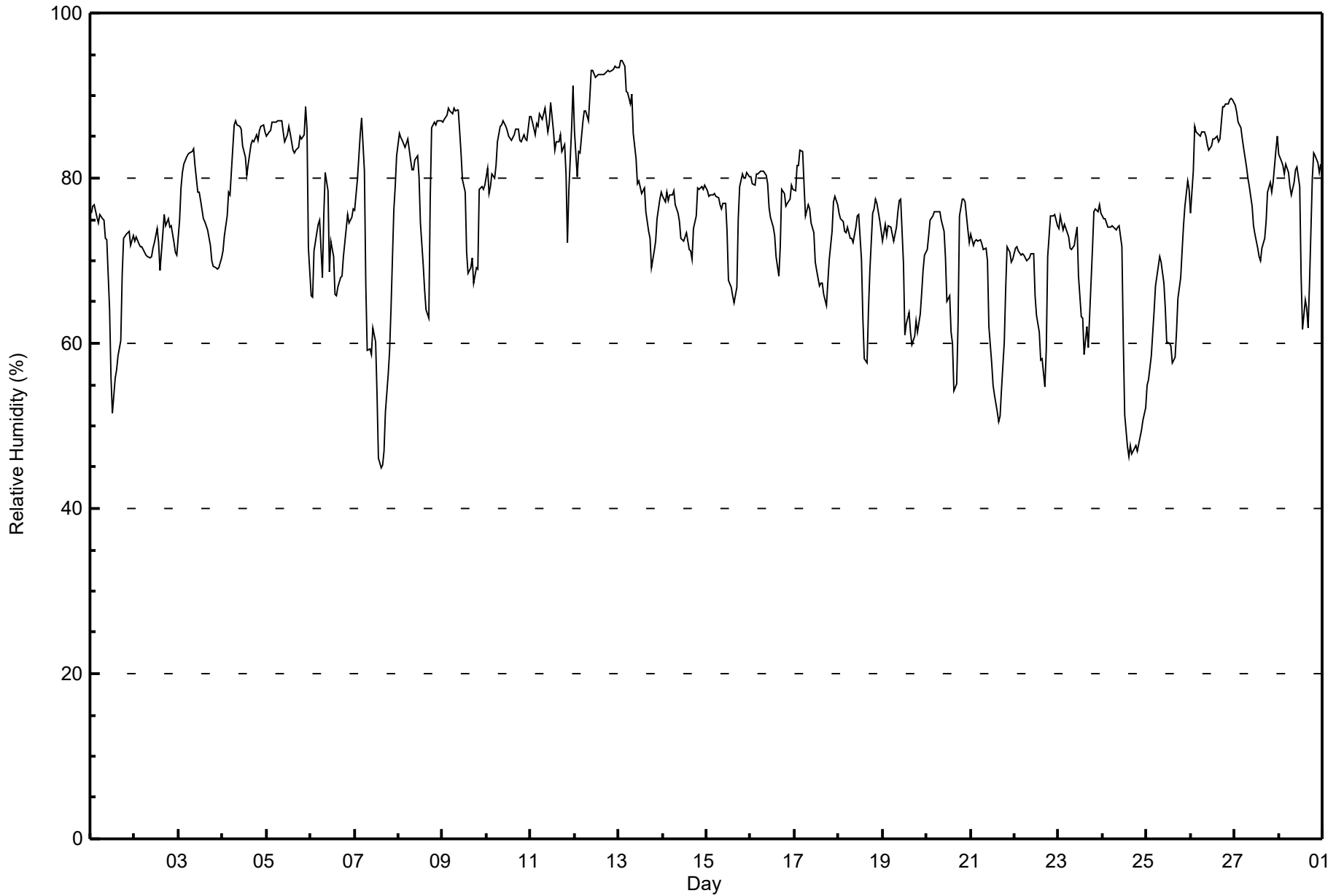
| Maximum Value: 94.3 % on Feb 13 03:00      Maximum Daily Average: 90.2 % on Feb 12  |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Hours in Service: 672<br>Hours of Data: 672  |      |                 |               |               |
|---|-------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|--|------|-----------------|---------------|---------------|
| Minimum Value: 44.9 % on Feb 7 15:00      Minimum Daily Average: 60.7 % on Feb 24<br>Maximum Diurnal Average: 79.3 % at hour 5      Minimum Diurnal Average: 67.8 % at hour 16<br>Monthly Average: 75.37 %      Percentiles: P <sub>1</sub> = 47.2 P <sub>10</sub> = 61.7 Q <sub>1</sub> = 70.6 Median = 75.7 Q <sub>3</sub> = 83.1 P <sub>90</sub> = 86.8 P <sub>99</sub> = 93.1 |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Hours of Missing Data: 0<br>Hours of Calibration: 0<br>Percent Operational Time: 100.0 |      |                 |               |               |
| Day   | Hourly Period Ending At (MST) |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |      |                 | Daily Average | Daily Maximum |
|   | 1                             | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20   | 21   | 22   | 23   | 24              |               |               |
| 1-Feb   | 75.8                          | 76.6 | 76.7 | 75.3 | 74.6 | 75.6 | 75.1 | 75.0 | 72.6 | 72.5 | 64.0 | 55.9 | 51.5 | 55.7 | 56.7 | 58.5 | 60.3 | 68.4 | 72.7 | 73.2 | 73.3 | 73.6   | 71.8 | 73.1            | 69.1          | 76.7          |
| 2-Feb   | 72.5                          | 72.9 | 72.1 | 71.8 | 71.7 | 71.0 | 70.6 | 70.6 | 70.4 | 70.5 | 71.5 | 72.2 | 73.8 | 72.1 | 68.9 | 73.1 | 75.7 | 74.2 | 75.0 | 74.1 | 74.3 | 72.3   | 71.0 | 70.6            | 72.2          | 75.7          |
| 3-Feb   | 74.9                          | 78.9 | 80.7 | 81.7 | 82.6 | 83.0 | 83.0 | 83.3 | 83.6 | 81.6 | 78.4 | 78.2 | 77.4 | 75.1 | 74.8 | 74.2 | 73.7 | 71.9 | 70.1 | 69.3 | 69.2 | 69.0   | 69.2 | 70.3            | 76.4          | 83.6          |
| 4-Feb   | 71.2                          | 73.1 | 75.5 | 78.3 | 78.0 | 80.9 | 86.4 | 86.9 | 86.4 | 86.2 | 85.9 | 83.9 | 82.6 | 80.3 | 81.7 | 84.1 | 84.5 | 84.3 | 85.2 | 84.6 | 85.8 | 86.3   | 86.4 | 85.7            | 82.7          | 86.9          |
| 5-Feb   | 85.1                          | 85.6 | 85.7 | 86.8 | 86.8 | 86.9 | 87.0 | 87.0 | 86.9 | 85.6 | 84.4 | 85.3 | 86.2 | 85.5 | 83.5 | 83.1 | 83.3 | 85.0 | 84.7 | 85.2 | 88.6 | 85.9   | 71.5 | 85.0            | 88.6          | 88.6          |
| 6-Feb   | 65.7                          | 65.6 | 71.1 | 73.3 | 74.4 | 75.0 | 68.0 | 75.6 | 80.7 | 78.5 | 68.6 | 72.4 | 70.6 | 65.9 | 65.7 | 66.7 | 68.0 | 68.1 | 70.5 | 73.8 | 75.7 | 74.5   | 75.3 | 76.3            | 71.7          | 80.7          |
| 7-Feb   | 76.1                          | 79.8 | 82.5 | 85.2 | 87.2 | 80.8 | 66.9 | 59.1 | 59.3 | 58.6 | 61.9 | 60.1 | 54.0 | 46.1 | 44.9 | 45.3 | 47.0 | 51.7 | 56.3 | 59.2 | 64.2 | 76.0   | 79.1 | 82.8            | 65.2          | 87.2          |
| 8-Feb   | 85.5                          | 84.9 | 84.6 | 83.8 | 84.2 | 84.7 | 82.2 | 81.1 | 81.0 | 82.2 | 82.7 | 80.2 | 74.5 | 69.4 | 66.4 | 64.0 | 63.1 | 77.4 | 86.1 | 86.8 | 86.5 | 87.0   | 87.0 | 86.9            | 80.5          | 87.0          |
| 9-Feb   | 86.7                          | 87.2 | 87.7 | 88.4 | 88.2 | 87.8 | 88.5 | 88.1 | 88.3 | 85.8 | 83.1 | 79.9 | 78.4 | 71.1 | 68.5 | 69.1 | 70.3 | 67.3 | 69.1 | 69.0 | 78.6 | 78.9   | 78.7 | 79.2            | 79.9          | 88.5          |
| 10-Feb  | 81.2                          | 78.1 | 78.9 | 80.5 | 79.9 | 81.5 | 84.5 | 86.2 | 86.5 | 86.9 | 86.3 | 85.8 | 85.1 | 84.5 | 85.0 | 85.3 | 85.9 | 85.9 | 84.6 | 84.4 | 85.3 | 84.7   | 84.6 | 87.5            | 84.1          | 87.5          |
| 11-Feb  | 87.4                          | 86.8 | 85.3 | 86.6 | 86.2 | 87.8 | 87.1 | 87.8 | 88.5 | 85.6 | 86.5 | 89.2 | 85.7 | 83.4 | 84.4 | 84.5 | 85.2 | 83.2 | 84.1 | 80.4 | 72.1 | 78.5   | 86.1 | 91.2            | 85.2          | 91.2          |
| 12-Feb  | 85.7                          | 80.2 | 83.2 | 83.1 | 86.8 | 88.2 | 88.2 | 87.0 | 89.8 | 93.0 | 93.0 | 92.3 | 92.3 | 92.6 | 92.5 | 92.6 | 92.6 | 93.0 | 93.0 | 92.9 | 93.0 | 93.2   | 93.6 | 93.3            | 90.2          | 93.6          |
| 13-Feb  | 93.4                          | 94.2 | 94.3 | 93.6 | 90.5 | 90.4 | 88.9 | 90.1 | 85.4 | 82.4 | 79.4 | 79.7 | 78.1 | 78.5 | 78.7 | 75.9 | 73.6 | 72.7 | 69.1 | 71.3 | 72.4 | 75.0   | 77.4 | 78.2            | 81.8          | 94.3          |
| 14-Feb  | 77.7                          | 77.2 | 78.3 | 77.3 | 78.0 | 77.9 | 78.4 | 76.8 | 75.8 | 74.7 | 72.7 | 72.3 | 73.0 | 73.4 | 71.4 | 71.1 | 70.1 | 73.9 | 75.4 | 78.8 | 78.6 | 79.0   | 78.6 | 79.1            | 75.8          | 79.1          |
| 15-Feb  | 78.5                          | 77.9 | 77.9 | 77.9 | 78.1 | 77.9 | 77.6 | 76.8 | 76.3 | 76.9 | 76.9 | 73.5 | 67.7 | 66.8 | 65.7 | 64.9 | 66.8 | 75.0 | 79.1 | 80.5 | 80.1 | 80.0   | 80.8 | 80.2            | 75.6          | 80.8          |
| 16-Feb  | 80.2                          | 79.4 | 79.1 | 80.5 | 80.6 | 80.9 | 80.9 | 80.9 | 80.4 | 79.3 | 76.5 | 75.2 | 74.0 | 73.1 | 70.6 | 68.2 | 71.7 | 78.6 | 78.1 | 76.6 | 77.0 | 77.5   | 79.1 | 78.7            | 77.4          | 80.9          |
| 17-Feb  | 78.5                          | 81.5 | 81.5 | 83.3 | 83.2 | 79.1 | 75.4 | 76.8 | 76.3 | 74.6 | 73.4 | 69.8 | 68.9 | 67.0 | 67.3 | 67.2 | 66.0 | 64.5 | 67.4 | 70.2 | 73.6 | 77.2   | 77.8 | 76.8            | 74.1          | 83.3          |
| 18-Feb  | 75.8                          | 75.2 | 74.7 | 73.5 | 73.3 | 74.1 | 72.7 | 72.7 | 72.1 | 74.1 | 75.5 | 75.6 | 70.1 | 63.1 | 58.1 | 57.6 | 64.1 | 68.8 | 75.7 | 76.2 | 77.4 | 76.9   | 75.0 | 73.8            | 71.9          | 77.4          |
| 19-Feb  | 72.4                          | 74.4 | 73.0 | 74.2 | 74.0 | 73.2 | 72.4 | 74.0 | 76.0 | 77.3 | 77.4 | 69.7 | 61.0 | 62.3 | 63.7 | 61.3 | 59.8 | 60.8 | 62.8 | 61.4 | 63.5 | 66.2   | 68.7 | 70.6            | 68.8          | 77.4          |
| 20-Feb  | 71.3                          | 73.0 | 74.9 | 75.4 | 76.0 | 76.0 | 75.9 | 75.9 | 74.9 | 73.5 | 70.3 | 65.1 | 65.7 | 61.4 | 60.0 | 54.3 | 55.1 | 62.5 | 75.4 | 77.5 | 77.5 | 77.2   | 73.7 | 72.2            | 70.6          | 77.5          |
| 21-Feb  | 73.2                          | 71.9 | 72.4 | 72.5 | 72.4 | 72.5 | 72.0 | 71.3 | 71.6 | 70.0 | 62.1 | 57.7 | 55.0 | 53.8 | 51.6 | 50.6 | 51.2 | 54.3 | 60.2 | 66.7 | 71.8 | 71.0   | 69.9 | 70.2            | 65.2          | 73.2          |
| 22-Feb  | 71.6                          | 71.6 | 71.2 | 70.7 | 70.8 | 70.7 | 70.0 | 70.2 | 70.4 | 70.8 | 70.8 | 65.7 | 63.3 | 61.3 | 58.0 | 58.2 | 54.7 | 59.3 | 70.6 | 75.5 | 75.5 | 75.5   | 75.6 | 74.3            | 68.6          | 75.6          |
| 23-Feb  | 73.9                          | 75.4 | 73.7 | 74.4 | 73.8 | 72.8 | 71.6 | 71.3 | 71.9 | 73.1 | 74.1 | 68.2 | 63.2 | 63.1 | 58.6 | 62.1 | 59.6 | 63.6 | 71.5 | 75.9 | 76.3 | 76.0   | 76.8 | 75.8            | 70.7          | 76.8          |
| 24-Feb  | 75.0                          | 75.0 | 74.5 | 74.1 | 74.1 | 74.3 | 74.0 | 73.7 | 74.1 | 74.3 | 71.7 | 60.4 | 51.3 | 47.4 | 46.2 | 47.6 | 46.6 | 47.2 | 47.5 | 47.0 | 48.6 | 49.5   | 50.7 | 52.1            | 60.7          | 75.0          |
| 25-Feb  | 54.9                          | 55.6 | 58.5 | 61.2 | 63.9 | 66.9 | 69.3 | 70.5 | 69.8 | 67.3 | 64.2 | 60.1 | 60.0 | 59.7 | 57.6 | 58.3 | 61.3 | 65.5 | 68.0 | 71.2 | 74.2 | 76.6   | 79.7 | 78.7            | 65.5          | 79.7          |
| 26-Feb  | 75.7                          | 80.8 | 86.4 | 85.6 | 85.2 | 85.1 | 85.5 | 85.5 | 85.1 | 84.1 | 83.4 | 83.9 | 84.7 | 84.8 | 85.2 | 84.5 | 84.8 | 88.6 | 88.6 | 88.9 | 89.1 | 89.5   | 89.6 | 89.4            | 85.6          | 89.6          |
| 27-Feb  | 88.9                          | 87.9 | 86.8 | 86.1 | 84.8 | 83.6 | 81.4 | 80.1 | 79.0 | 76.5 | 74.2 | 73.2 | 71.5 | 70.6 | 70.0 | 71.4 | 72.8 | 74.8 | 78.2 | 79.4 | 78.2 | 79.5   | 83.4 | 85.0            | 79.1          | 88.9          |
| 28-Feb  | 82.9                          | 82.0 | 81.5 | 80.5 | 81.6 | 80.7 | 79.0 | 78.0 | 79.4 | 81.1 | 81.3 | 79.0 | 68.2 | 61.7 | 65.2 | 64.3 | 61.9 | 67.3 | 80.0 | 83.1 | 82.7 | 81.9   | 80.7 | 81.8            | 76.9          | 83.1          |
| 77.6 77.9 78.7 79.1 79.3 79.3 78.3 78.3 78.3 77.7 76.1 73.7 71.0 68.9 67.9 67.8 68.2 71.0 74.3 75.4 76.4 77.5 78.1 78.0   |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |      | Diurnal Average |               |               |
| 93.4 94.2 94.3 93.6 90.5 90.4 88.9 90.1 89.8 93.0 93.0 92.3 92.3 92.6 92.5 92.6 92.6 93.0 93.0 92.9 93.0 93.2 93.6 93.3   |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |      | Diurnal Maximum |               |               |





**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Relative Humidity (RH) - %**  
**Fort Hills - February 2023**





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Relative Humidity (RH) - %**  
**Fort Hills - February 2023**

| <b>Concentration Ranges (%)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---------------------------------|------------------------|----------|---------------------|
| 0 - 20                          | 0                      | 0.00     | 0.00                |
| 20 - 40                         | 0                      | 0.00     | 0.00                |
| 40 - 60                         | 54                     | 8.04     | 8.04                |
| 60 - 80                         | 395                    | 58.78    | 66.82               |
| 80 - 100                        | 223                    | 33.18    | 100.00              |

Total Number of Valid Hours: 672

Total Number of Hours: 672



**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

**Wind Speed (WS) - km/h**  
**Fort Hills - February 2023**

|  |   |                                |
|--|---|--------------------------------|
| Maximum Speed: 37 km/h on Feb 13 13:00             | Maximum Daily Speed Average: 16.9 km/h on Feb 27  | Hours in Service: 672          |
| Minimum Speed Value: 0 km/h on Feb 14 22:00        | Minimum Daily Speed Average: 0.3 km/h on Feb 28   | Hours of Data: 666             |
| Maximum Diurnal Speed Average: 3.4 km/h at hour 17 | Minimum Diurnal Speed Average: 0.5 km/h at hour 6   | Hours of Missing Data: 6       |
| Monthly Average Velocity: 1.5 km/h 47.8 deg        | Percentiles: P <sub>1</sub> = 1 P <sub>10</sub> = 2 Q <sub>1</sub> = 4 Median = 8 Q <sub>3</sub> = 13 P <sub>90</sub> = 18 P <sub>99</sub> = 29 | Percent Operational Time: 99.1 |

| Day   | Hourly Period Ending At (MST) |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |        |                 | Daily Average | Daily Maximum |
|---|-------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|-----------------|---------------|---------------|
|   | 1                             | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     | 10    | 11    | 12    | 13    | 14    | 15    | 16    | 17    | 18    | 19    | 20    | 21    | 22    | 23     | 24              |               |               |
| 1-Feb   | SW1                           | WSW2  | NNW3  | WNW2  | NNW6  | NNW9  | N6    | NNE10 | NNE12 | NNW6  | NW8   | NW10  | NNW5  | NNE7  | ENE3  | SE7   | SSE5  | SSE3  | SW3   | SSW2  | SW4   | W1    | S4     | SSE5            | NNW1.9        | NNE12         |
| 2-Feb   | SSE6                          | SSE8  | SSE8  | SE9   | SSE7  | SSE8  | SE10  | SSE8  | SSE7  | SSE6  | SSW8  | SW6   | S4    | WSW5  | SW1   | SE3   | SSE10 | SSE19 | SSE18 | SSE22 | SSE25 | SSE25 | SSE21  | SSE23           | SSE10.6       | SSE25         |
| 3-Feb   | S23                           | S18   | S18   | S18   | S17   | S17   | SSW17 | SSW12 | SSE12 | SSE8  | S1    | N7    | N10   | NNE13 | N11   | NNE8  | ENE9  | ENE9  | ENE10 | ENE9  | ENE8  | ENE6  | ENE5   | NNW4            | SE4.2         | S23           |
| 4-Feb   | NE3                           | N5    | N9    | N10   | NNE13 | N14   | N14   | N14   | N15   | N14   | N12   | N11   | N11   | N10   | N8    | N7    | N7    | N8    | N9    | N7    | N7    | NNW6  | NNW6   | WNW3            | N9.2          | N15           |
| 5-Feb   | NW3                           | N2    | SSE2  | NW3   | NNW4  | NNW4  | NNW6  | NNW5  | NNW3  | NW2   | SSE6  | SSE6  | SE12  | SSE12 | S10   | SSE13 | SSE12 | SSE12 | SSE10 | SSE12 | WNW2  | N14   | N14    | NW16            | SSE1.3        | NW16          |
| 6-Feb   | WNW15                         | WNW15 | WSW9  | SW11  | WSW9  | W9    | WNW10 | NNE3  | ENE8  | NNW4  | E2    | SE7   | SE9   | SE5   | ESE3  | NNW2  | NNW5  | NNW4  | WSW2  | SSW3  | SSE5  | S9    | SSE9   | SSE11           | WSW2.1        | WNW15         |
| 7-Feb   | SSE13                         | S14   | SSE15 | SSE12 | SSE12 | W13   | WNW16 | W20   | WSW18 | SW19  | SW21  | SW21  | WSW26 | W29   | W26   | W24   | W21   | W13   | SW7   | W5    | NNW11 | N21   | NNE16  | NNE7            | WSW10.1       | W29           |
| 8-Feb   | NNE4                          | N2    | SW2   | SW5   | SE4   | ESE5  | NE2   | NNW3  | NNW4  | WSW2  | SSW4  | SE8   | SE11  | SE13  | SE10  | SE7   | E2    | ENE2  | N2    | NE0   | SSE4  | S6    | SSE8   | SSE9            | SE3.0         | SE13          |
| 9-Feb   | SSE7                          | SSE10 | SE11  | SE12  | SE13  | SE12  | SSE8  | SE10  | SSE8  | SSE11 | SSE12 | SE11  | SSE13 | SSE15 | S16   | SSE9  | S3    | SSE6  | SE7   | SE5   | S2    | W2    | UO     | NE2             | SSE8.5        | S16           |
| 10-Feb  | N10                           | NNE17 | N18   | NNE16 | NNE14 | NNE18 | NNE16 | NNE17 | NNE17 | N17   | NNE19 | N19   | N18   | NNE17 | NNE18 | N18   | NNE16 | NNE16 | NNE15 | N11   | NNE12 | NNE11 | NE4    | N3              | NNE14.9       | N19           |
| 11-Feb  | NNW7                          | N6    | E2    | SE6   | ESE3  | N3    | N2    | NNW1  | NW2   | WNW1  | SSW7  | S14   | SSW19 | S19   | S14   | S10   | SSW8  | WSW14 | WSW10 | W8    | WNW11 | SSW13 | SSW10  | SSW10           | SSW5.2        | S19           |
| 12-Feb  | WSW11                         | SSE3  | SSW12 | SSW9  | SSW8  | SSW11 | S1    | NE10  | NNE7  | N12   | NNE10 | E4    | ESE5  | SE4   | E3    | NE3   | N5    | N8    | NNW7  | NNW5  | NNW4  | W0    | NW3    | NW4             | N0.9          | SSW12         |
| 13-Feb  | NNE3                          | ENE1  | SSE8  | SSW16 | SW12  | SSW13 | WSW8  | NNE19 | NNE29 | N25   | N36   | N35   | N37   | N35   | N34   | N30   | NNE28 | N22   | NNE22 | NNE17 | NNE17 | NNE20 | NNE22  | NNE16           | N16.5         | N37           |
| 14-Feb  | NNE17                         | NNE18 | NNE14 | NNE13 | NNE12 | NNE11 | NNE11 | NNE10 | NNE8  | NNE6  | NNE7  | NE5   | ENE3  | ENE5  | ENE6  | ENE5  | ENE8  | ENE4  | ENE3  | N2    | NE3   | SSE0  | SSW3   | S4              | NNE6.5        | NNE18         |
| 15-Feb  | SSE5                          | S5    | SSE6  | S4    | S2    | SE4   | SSE5  | S4    | SSW3  | S2    | SE3   | SE6   | ESE6  | ESE9  | ESE8  | ESE8  | SE7   | SSE6  | SSE4  | SSE6  | S5    | SE6   | SSE4.7 | ESE9            |               |               |
| 16-Feb  | SSE6                          | S4    | SE4   | SSE5  | SW2   | W2    | SSW5  | SW6   | SW6   | SW8   | SSW9  | SSW11 | SSW13 | S14   | SSW12 | WSW3  | NNE13 | NNE17 | NNE19 | NNE14 | NNE13 | NNE10 | N4     | NW2             | S0.4          | NNE19         |
| 17-Feb  | SW1                           | SSW1  | S1    | SW3   | W1    | NNE5  | NNE9  | NE10  | NE9   | NE9   | NE11  | NNE9  | NE9   | NE12  | NE10  | NNE11 | NNE13 | NNE12 | NE10  | NE12  | NNE9  | NNW5  | NW3    | NW4             | NE6.4         | NNE13         |
| 18-Feb  | NNW4                          | NW2   | NNW4  | NW3   | NNW4  | NNW3  | N4    | N4    | WNW3  | NNE1  | N3    | SSW1  | SSW2  | WSW3  | ENE0  | UO    | S3    | SSE3  | ENE1  | ENE0  | NNW4  | NNW4  | WNW3   | SSW2            | NNW1.4        | NNW4          |
| 19-Feb  | S3                            | SE4   | SSW3  | SSE3  | SE3   | SE3   | S1    | UO    | N3    | N3    | WNW4  | SSE2  | NE1   | N5    | N8    | NNW8  | NNW8  | NW6   | NW3   | NNE13 | NNE18 | NNE20 | NNE13  | N12             | N4.4          | NNE20         |
| 20-Feb  | NNE15                         | N9    | WNW1  | S4    | SSE4  | SE7   | SE4   | SE7   | SE4   | SSE7  | ESE4  | ESE4  | ESE5  | ENE7  | ENE8  | E5    | ENE6  | ENE6  | ENE2  | NNW4  | NNW5  | NNE12 | NNE15  | NNE18           | ENE3.9        | NNE18         |
| 21-Feb  | NNE14                         | NNE17 | NNE14 | NNE13 | NNE11 | NNE8  | NW2   | SW2   | N1    | N5    | N6    | NW5   | NNE11 | NNE15 | NNE17 | NNE20 | NNE15 | NE8   | ENE4  | ENE2  | SW5   | S5    | SE6    | SE5             | NNE6.7        | NNE20         |
| 22-Feb  | SSE4                          | SSE5  | SSE5  | SE4   | SSE7  | SSE5  | SSE6  | SSE6  | SSE6  | SE5   | ESE6  | SE8   | ESE8  | ESE7  | SE8   | SE5   | SE3   | SW3   | W3    | W2    | N2    | NNW5  | NW3    | NW4             | SE3.4         | ESE8          |
| 23-Feb  | N6                            | N8    | W3    | N4    | N4    | NNW4  | SSW4  | SSE3  | SSE2  | S3    | SE4   | SE5   | SSE7  | SE8   | ESE7  | SE9   | ESE6  | ESE7  | SE3   | UO    | UO    | S4    | SSE7   | SSE7            | SE2.6         | SE9           |
| 24-Feb  | SSE8                          | SSE9  | SE11  | SE11  | SE13  | SSE14 | SSE16 | SSE16 | SSE11 | S15   | SSW11 | S15   | S26   | S28   | S27   | S24   | S24   | S21   | S20   | S22   | S19   | S16   | S17    | S15             | S16.3         | S28           |
| 25-Feb  | S13                           | SSW16 | SSW15 | SSW14 | SSE10 | SE10  | SSE11 | SSE11 | SSW13 | SW13  | SW14  | SW15  | SW15  | SSW16 | SSE12 | SE15  | SE13  | SE11  | ESE9  | SE3   | ESE3  | SE3   | S2     | SE5             | S8.6          | SSW16         |
| 26-Feb  | SE4                           | SE5   | SE2   | N5    | N5    | N5    | N5    | NNE9  | N9    | N11   | N13   | N14   | N14   | N16   | N18   | NNE20 | NNE18 | NNE19 | NNE19 | NNE13 | NNE12 | N14   | NNE16  | NNE16           | NNE10.9       | NNE20         |
| 27-Feb  | N18                           | N19   | N20   | N21   | N21   | N20   | N18   | N19   | N20   | N22   | NNE22 | NNE22 | NNE20 | NNE17 | NNE18 | NNE16 | NNE18 | NNE16 | NNE14 | NNE13 | NNE15 | NNE14 | N9     | W5              | NNE16.9       | NNE22         |
| 28-Feb  | WNW4                          | WNW4  | NNW2  | NW3   | UO    | N4    | W2    | NW2   | WNW2  | WNW2  | NW2   | N5    | N4    | ESE3  | S4    | SE5   | S2    | SSE3  | SSE4  | ESE2  | SSW2  | SW1   | S3     | SE5             | W0.3          | N5            |
| ENE0.9 ENE1.1 SE1.5 SSE1.5 ESE1.4 NE0.5 N0.6 NNE2.1 NNE2.5 N1.8 N2.0 NNE1.1 E1.4 E1.9 ENE2.0 NE2.8 NE3.4 NE2.5 NE2.4 NE2.2 NNE2.6 NNE2.8 NE1.6 E0.5 |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |        | Diurnal Average |               |               |
| S23 N19 N20 N21 N21 N20 N18 W20 NNE29 N25 N36 N35 N37 N35 N34 N30 NNE28 N22 NNE22 S22 SSE25 SSE25 NNE22 SSE23                                       |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |        | Diurnal Maximum |               |               |

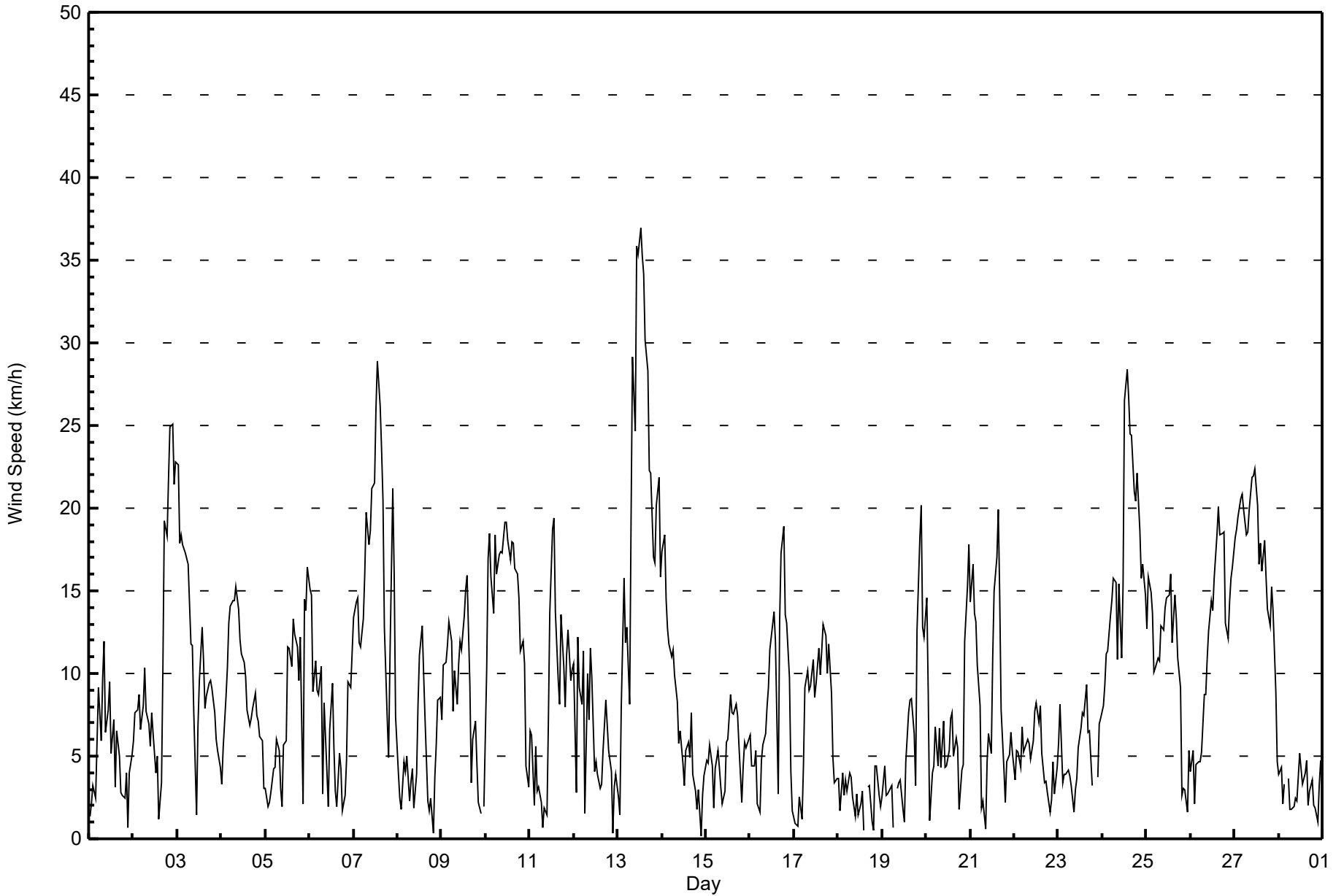
UO - Unstable Operation

All monthly, daily, and diurnal averages have been calculated using vector methods



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Wind Speed (WS) - km/h**  
**Fort Hills - February 2023**





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Wind Speed (WS) - km/h  
Fort Hills - February 2023**

| <b>Wind Speed Ranges (km/h)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---------------------------------|------------------------|----------|---------------------|
| 0 - 5                           | 255                    | 38.29    | 38.29               |
| 6 - 11                          | 199                    | 29.88    | 68.17               |
| 12 - 19                         | 164                    | 24.62    | 92.79               |
| 20 - 28                         | 40                     | 6.01     | 98.80               |
| 29 - 38                         | 8                      | 1.20     | 100.00              |
| > 38                            | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 666

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Wind Speed (WS) - km/h  
Fort Hills - February 2023**

| <b>Wind Speed<br/>Ranges (km/h)</b> | <b>Wind Direction</b> |     |    |     |   |     |    |     |    |     |    |     |    |     |    |     | <b>Totals</b> |
|-------------------------------------|-----------------------|-----|----|-----|---|-----|----|-----|----|-----|----|-----|----|-----|----|-----|---------------|
|                                     | N                     | NNE | NE | ENE | E | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |               |
| 0 - 5                               | 26                    | 5   | 9  | 15  | 6 | 10  | 26 | 30  | 24 | 14  | 12 | 6   | 11 | 12  | 18 | 31  | 255           |
| 6 - 11                              | 28                    | 24  | 8  | 12  | 0 | 12  | 28 | 43  | 4  | 11  | 6  | 5   | 2  | 2   | 3  | 11  | 199           |
| 12 - 19                             | 22                    | 67  | 2  | 0   | 0 | 0   | 8  | 19  | 18 | 14  | 6  | 2   | 2  | 3   | 1  | 0   | 164           |
| 20 - 28                             | 8                     | 11  | 0  | 0   | 0 | 0   | 0  | 5   | 8  | 1   | 2  | 1   | 4  | 0   | 0  | 0   | 40            |
| 29 - 38                             | 6                     | 1   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 1  | 0   | 0  | 0   | 8             |
| > 38                                | 0                     | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| <b>Totals</b>                       | 90                    | 108 | 19 | 27  | 6 | 22  | 62 | 97  | 54 | 40  | 26 | 14  | 20 | 17  | 22 | 42  | 666           |

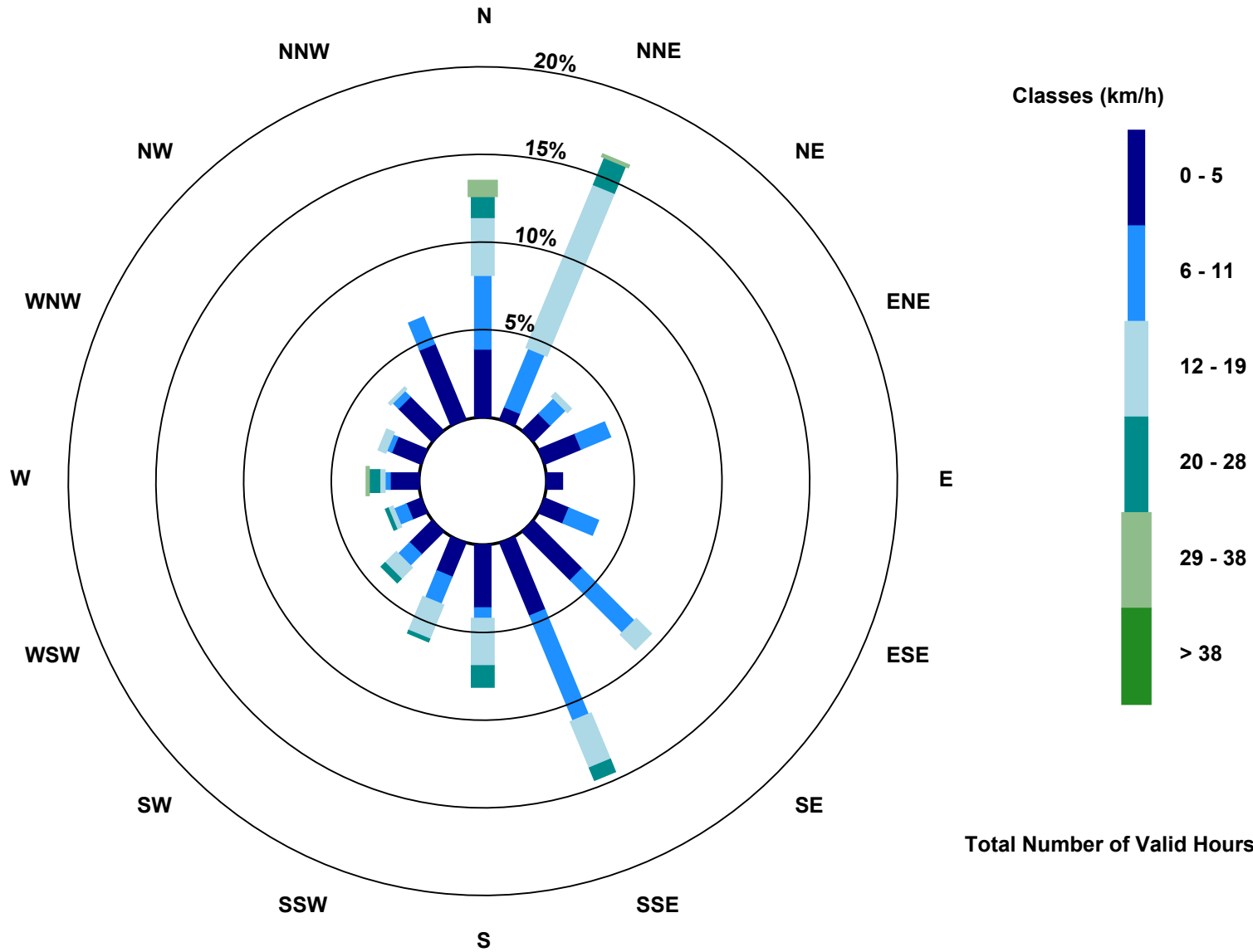
Total Number of Valid Hours: 666

Total Number of Hours: 672



Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Wind Speed (WS) - km/h  
Fort Hills





**Wood Buffalo Environmental Association**  
**Summary of Hour Standard Deviations**

**Wind Speed (WS) - km/h**  
**Fort Hills - February 2023**

| Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0<br>Maximum Value: 8 km/h on Feb 13 12:00<br>Minimum Value: 0 km/h on Feb 8 11:00<br>Percentiles: P <sub>1</sub> = 1 P <sub>10</sub> = 1 Q <sub>1</sub> = 1 Median = 2 Q <sub>3</sub> = 3 P <sub>90</sub> = 3 P <sub>99</sub> = 6 |                               |   |   |   |    |   |   |    |   |    |    |    |    |    |    |    | Hours in Service: 672<br>Hours of Data: 666<br>Hours of Missing Data: 6<br>Hours of Calibration: 0<br>Percent Operational Time: 99.1 |    |    |    |    |    |    |    |               |   |
|--|-------------------------------|---|---|---|----|---|---|----|---|----|----|----|----|----|----|----|--|----|----|----|----|----|----|----|---------------|---|
| Day  | Hourly Period Ending At (MST) |   |   |   |    |   |   |    |   |    |    |    |    |    |    |    |  |    |    |    |    |    |    |    | Daily Maximum |   |
|  | 1                             | 2 | 3 | 4 | 5  | 6 | 7 | 8  | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17   | 18 | 19 | 20 | 21 | 22 | 23 | 24 |               |   |
| 1-Feb  | 1                             | 2 | 2 | 1 | 1  | 2 | 2 | 1  | 2 | 1  | 2  | 3  | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1             | 3 |
| 2-Feb  | 2                             | 1 | 1 | 2 | 2  | 1 | 2 | 2  | 1 | 1  | 3  | 1  | 2  | 2  | 1  | 1  | 7  | 2  | 2  | 3  | 4  | 3  | 3  | 3  | 7             |   |
| 3-Feb  | 3                             | 3 | 2 | 2 | 2  | 2 | 3 | 3  | 2 | 4  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 1  | 1  | 1  | 1  | 1  | 4             |   |
| 4-Feb  | 1                             | 2 | 1 | 2 | 2  | 2 | 2 | 3  | 2 | 2  | 2  | 2  | 1  | 2  | 1  | 1  | 1  | 1  | 1  | 2  | 2  | 1  | 1  | 1  | 3             |   |
| 5-Feb  | 1                             | 1 | 1 | 1 | 1  | 1 | 1 | 2  | 1 | 1  | 2  | 1  | 3  | 3  | 3  | 2  | 2  | 2  | 3  | 2  | 2  | 7  | 4  | 4  | 7             |   |
| 6-Feb  | 4                             | 4 | 2 | 2 | 2  | 2 | 4 | 2  | 2 | 1  | 2  | 1  | 2  | 1  | 1  | 1  | 2  | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 4             |   |
| 7-Feb  | 2                             | 4 | 2 | 2 | 2  | 5 | 4 | 4  | 3 | 3  | 3  | 3  | 4  | 6  | 6  | 6  | 5  | 5  | 3  | 3  | 4  | 4  | 4  | 3  | 6             |   |
| 8-Feb  | 1                             | 1 | 1 | 1 | 1  | 1 | 1 | 1  | 1 | 1  | 0  | 2  | 1  | 1  | 1  | 1  | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 2             |   |
| 9-Feb  | 2                             | 1 | 2 | 2 | 1  | 1 | 1 | 2  | 2 | 2  | 2  | 2  | 2  | 2  | 3  | 2  | 1  | 1  | 1  | 1  | 2  | 2  | UO | 3  | 3             |   |
| 10-Feb   | 3                             | 3 | 3 | 2 | 4  | 4 | 3 | 2  | 3 | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 2  | 3  | 2  | 1  | 4             |   |
| 11-Feb   | 2                             | 2 | 1 | 1 | 1  | 1 | 1 | 1  | 2 | 1  | 3  | 2  | 3  | 3  | 2  | 2  | 2  | 2  | 2  | 3  | 5  | 2  | 2  | 2  | 5             |   |
| 12-Feb   | 3                             | 3 | 3 | 2 | 1  | 2 | 3 | 2  | 2 | 2  | 2  | 1  | 1  | 2  | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 3             |   |
| 13-Feb   | 1                             | 2 | 3 | 3 | 3  | 3 | 2 | 7  | 5 | 4  | 6  | 8  | 8  | 8  | 6  | 6  | 5  | 6  | 4  | 3  | 3  | 4  | 4  | 3  | 8             |   |
| 14-Feb   | 3                             | 4 | 3 | 2 | 3  | 3 | 2 | 2  | 1 | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 2  | 1  | 2  | 1  | 1  | 1  | 1  | 1  | 4             |   |
| 15-Feb   | 1                             | 2 | 1 | 1 | 1  | 1 | 1 | 1  | 1 | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 2             |   |
| 16-Feb   | 1                             | 2 | 1 | 1 | 1  | 1 | 1 | 1  | 1 | 1  | 1  | 2  | 3  | 2  | 2  | 2  | 3  | 3  | 4  | 3  | 3  | 2  | 2  | 1  | 4             |   |
| 17-Feb   | 1                             | 1 | 1 | 1 | 1  | 3 | 2 | 2  | 2 | 1  | 2  | 2  | 2  | 2  | 1  | 2  | 3  | 2  | 3  | 3  | 1  | 2  | 1  | 1  | 3             |   |
| 18-Feb   | 1                             | 1 | 1 | 1 | 1  | 2 | 1 | 2  | 1 | 1  | 1  | 1  | 1  | 1  | 1  | UO | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 2             |   |
| 19-Feb   | 1                             | 2 | 1 | 1 | 2  | 1 | 1 | UO | 3 | 1  | 2  | 1  | 1  | 2  | 2  | 1  | 1  | 1  | 1  | 3  | 4  | 3  | 3  | 4  | 4             |   |
| 20-Feb   | 3                             | 3 | 1 | 1 | 1  | 1 | 1 | 1  | 1 | 1  | 1  | 1  | 2  | 2  | 2  | 1  | 1  | 1  | 2  | 1  | 1  | 3  | 2  | 3  | 3             |   |
| 21-Feb   | 3                             | 3 | 2 | 2 | 3  | 2 | 1 | 1  | 1 | 1  | 2  | 2  | 4  | 3  | 4  | 4  | 3  | 2  | 2  | 1  | 2  | 1  | 2  | 1  | 4             |   |
| 22-Feb   | 1                             | 2 | 2 | 2 | 1  | 1 | 1 | 1  | 2 | 1  | 1  | 1  | 1  | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 2  | 1  | 1  | 2  | 2             |   |
| 23-Feb   | 3                             | 3 | 1 | 2 | 1  | 1 | 1 | 1  | 1 | 1  | 1  | 2  | 2  | 2  | 2  | 2  | 2  | 1  | 1  | UO | UO | 1  | 2  | 2  | 3             |   |
| 24-Feb   | 2                             | 1 | 2 | 2 | 2  | 3 | 2 | 3  | 2 | 2  | 2  | 4  | 5  | 4  | 4  | 4  | 4  | 3  | 3  | 3  | 3  | 2  | 2  | 2  | 5             |   |
| 25-Feb   | 2                             | 3 | 2 | 2 | 2  | 2 | 2 | 1  | 2 | 2  | 2  | 3  | 4  | 2  | 3  | 2  | 2  | 1  | 1  | 2  | 1  | 1  | 1  | 1  | 4             |   |
| 26-Feb   | 2                             | 2 | 2 | 1 | 1  | 1 | 2 | 1  | 2 | 2  | 2  | 2  | 2  | 2  | 3  | 3  | 2  | 2  | 3  | 3  | 2  | 3  | 2  | 2  | 3             |   |
| 27-Feb   | 2                             | 3 | 3 | 3 | 3  | 3 | 3 | 3  | 3 | 4  | 4  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 2  | 2  | 2  | 2  | 1  | 1  | 4             |   |
| 28-Feb   | 1                             | 1 | 0 | 1 | UO | 1 | 1 | 1  | 1 | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 2             |   |
|  |                               |   |   |   |    |   |   |    |   |    |    |    |    |    |    |    | Diurnal Maximum  |    |    |    |    |    |    |    |               |   |
| UO - Unstable Operation  |                               |   |   |   |    |   |   |    |   |    |    |    |    |    |    |    |  |    |    |    |    |    |    |    |               |   |





**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

**Wind Direction (WD) - deg**  
**Fort Hills - February 2023**

|  |                                |
|--|--------------------------------|
| Direction of Maximum Speed: 7 deg on Feb 13 13:00            | Hours in Service: 672          |
| Direction of Maximum Daily Speed Average: 12.9 deg on Feb 27 | Hours of Data: 666             |
| Direction of Minimum Speed: 166 deg on Feb 14 22:00          | Hours of Missing Data: 6       |
| Direction of Minimum Daily Speed Average: 0.3 deg on Feb 28  | Percent Operational Time: 99.1 |
| Monthly Average Direction: 47.8 deg                          |                                |

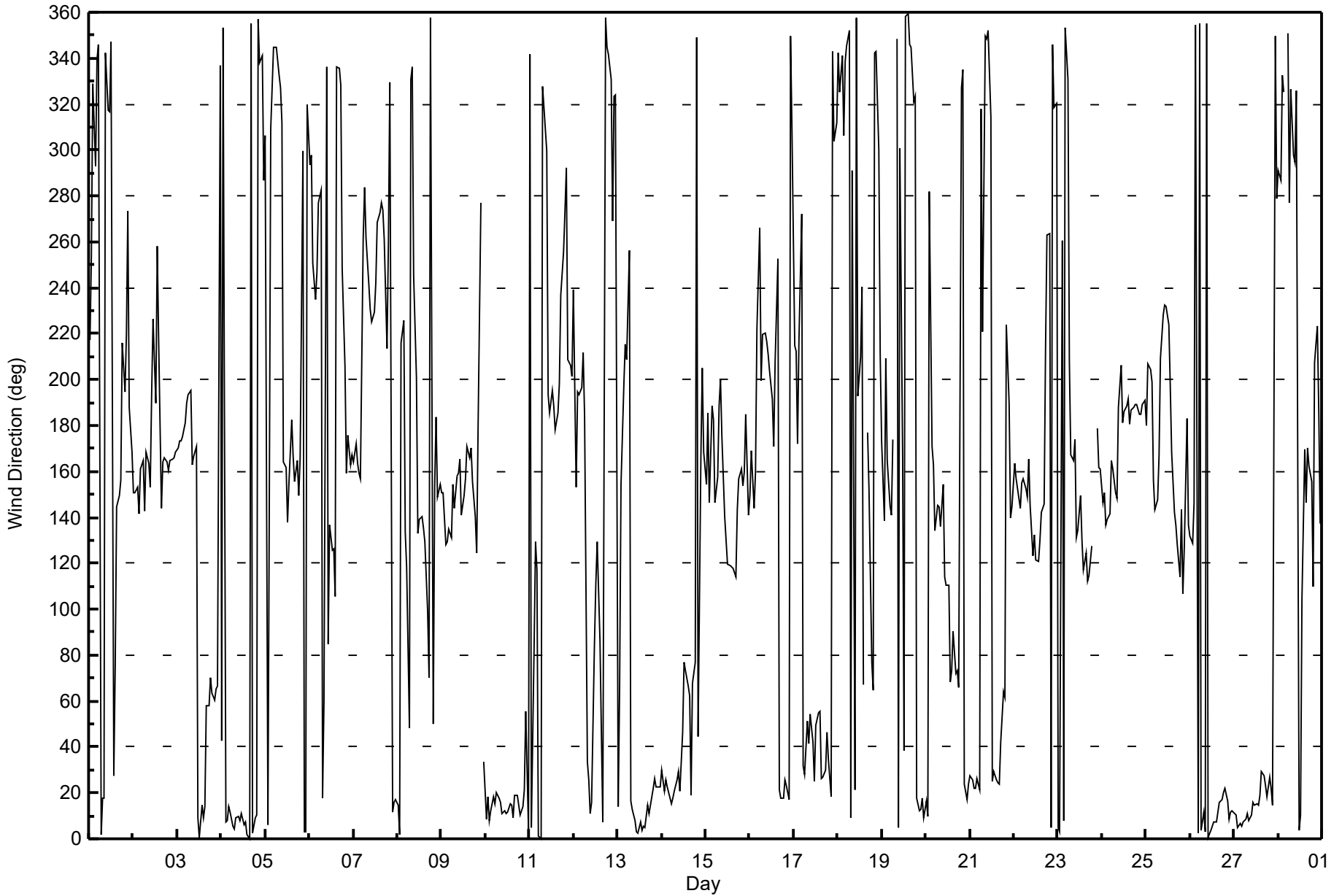
| Day             | Hourly Period Ending At (MST) |      |       |       |       |      |     |      |      |       |       |      |      |      |      |      |      |      |      |      |      |      |      |      | Daily Average |
|-----------------|-------------------------------|------|-------|-------|-------|------|-----|------|------|-------|-------|------|------|------|------|------|------|------|------|------|------|------|------|------|---------------|
|                 | 1                             | 2    | 3     | 4     | 5     | 6    | 7   | 8    | 9    | 10    | 11    | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20   | 21   | 22   | 23   | 24   |               |
| 1-Feb           | 217                           | 254  | 329   | 293   | 339   | 346  | 2   | 17   | 18   | 343   | 317   | 317  | 347  | 27   | 75   | 145  | 149  | 156  | 216  | 195  | 220  | 273  | 188  | 168  | 347.0         |
| 2-Feb           | 151                           | 151  | 153   | 142   | 161   | 165  | 143 | 168  | 163  | 153   | 194   | 227  | 190  | 258  | 217  | 144  | 164  | 166  | 164  | 161  | 165  | 165  | 166  | 168  | 165.4         |
| 3-Feb           | 170                           | 174  | 173   | 175   | 181   | 190  | 193 | 195  | 163  | 167   | 171   | 9    | 1    | 15   | 9    | 14   | 58   | 58   | 70   | 63   | 60   | 65   | 67   | 337  | 143.4         |
| 4-Feb           | 42                            | 353  | 7     | 8     | 14    | 11   | 6   | 4    | 9    | 10    | 8     | 11   | 6    | 7    | 2    | 0    | 355  | 3    | 9    | 10   | 357  | 338  | 341  | 287  | 4.9           |
| 5-Feb           | 306                           | 6    | 149   | 309   | 345   | 345  | 345 | 333  | 327  | 312   | 164   | 162  | 138  | 155  | 182  | 167  | 156  | 165  | 150  | 166  | 299  | 3    | 3    | 320  | 158.4         |
| 6-Feb           | 293                           | 298  | 251   | 235   | 247   | 277  | 283 | 18   | 60   | 336   | 85    | 137  | 125  | 126  | 105  | 336  | 335  | 328  | 248  | 205  | 159  | 176  | 163  | 167  | 238.6         |
| 7-Feb           | 164                           | 172  | 163   | 159   | 157   | 262  | 284 | 262  | 242  | 231   | 225   | 230  | 243  | 268  | 273  | 277  | 274  | 261  | 214  | 260  | 329  | 11   | 16   | 17   | 251.6         |
| 8-Feb           | 15                            | 2    | 216   | 226   | 134   | 118  | 48  | 331  | 336  | 246   | 201   | 133  | 139  | 140  | 136  | 130  | 99   | 70   | 357  | 50   | 153  | 184  | 149  | 154  | 140.1         |
| 9-Feb           | 150                           | 151  | 128   | 129   | 135   | 131  | 154 | 144  | 158  | 159   | 165   | 141  | 150  | 157  | 171  | 166  | 170  | 156  | 140  | 125  | 179  | 277  | UO   | 34   | 149.2         |
| 10-Feb          | 9                             | 18   | 8     | 12    | 18    | 15   | 20  | 17   | 16   | 11    | 12    | 11   | 11   | 15   | 14   | 9    | 19   | 19   | 15   | 10   | 14   | 21   | 56   | 3    | 14.7          |
| 11-Feb          | 342                           | 5    | 85    | 129   | 117   | 1    | 0   | 328  | 319  | 300   | 193   | 186  | 195  | 189  | 178  | 186  | 199  | 237  | 256  | 273  | 292  | 209  | 206  | 201  | 210.3         |
| 12-Feb          | 239                           | 153  | 195   | 193   | 196   | 212  | 184 | 34   | 26   | 11    | 16    | 84   | 111  | 130  | 86   | 46   | 7    | 357  | 345  | 342  | 331  | 269  | 324  | 324  | 357.3         |
| 13-Feb          | 14                            | 66   | 155   | 197   | 215   | 208  | 256 | 16   | 13   | 8     | 3     | 2    | 7    | 4    | 6    | 5    | 15   | 11   | 15   | 22   | 26   | 23   | 22   | 22   | 9.3           |
| 14-Feb          | 30                            | 21   | 25    | 23    | 20    | 15   | 18  | 21   | 26   | 29    | 21    | 46   | 77   | 73   | 66   | 62   | 19   | 68   | 77   | 349  | 45   | 166  | 205  | 169  | 30.9          |
| 15-Feb          | 155                           | 185  | 147   | 189   | 183   | 146  | 157 | 188  | 200  | 175   | 140   | 130  | 120  | 119  | 118  | 118  | 114  | 143  | 157  | 161  | 154  | 160  | 185  | 141  | 146.8         |
| 16-Feb          | 149                           | 169  | 144   | 160   | 222   | 266  | 200 | 220  | 220  | 217   | 211   | 204  | 192  | 171  | 208  | 253  | 21   | 18   | 18   | 26   | 23   | 17   | 350  | 309  | 175.0         |
| 17-Feb          | 215                           | 213  | 172   | 217   | 272   | 32   | 28  | 51   | 42   | 54    | 42    | 25   | 50   | 55   | 56   | 26   | 27   | 30   | 47   | 35   | 18   | 343  | 304  | 312  | 34.5          |
| 18-Feb          | 343                           | 325  | 341   | 306   | 338   | 345  | 352 | 9    | 291  | 22    | 358   | 193  | 210  | 240  | 67   | UO   | 177  | 152  | 77   | 64   | 342  | 343  | 300  | 211  | 329.9         |
| 19-Feb          | 173                           | 138  | 209   | 165   | 145   | 141  | 174 | UO   | 349  | 5     | 301   | 167  | 39   | 358  | 360  | 346  | 345  | 321  | 324  | 18   | 12   | 13   | 17   | 9    | 6.6           |
| 20-Feb          | 16                            | 10   | 282   | 171   | 163   | 134  | 145 | 145  | 136  | 155   | 114   | 111  | 110  | 68   | 73   | 90   | 72   | 73   | 66   | 327  | 335  | 24   | 17   | 24   | 61.1          |
| 21-Feb          | 27                            | 26   | 22    | 22    | 26    | 21   | 318 | 221  | 349  | 349   | 352   | 314  | 25   | 29   | 26   | 24   | 24   | 42   | 64   | 62   | 224  | 190  | 140  | 145  | 25.9          |
| 22-Feb          | 163                           | 157  | 153   | 144   | 155   | 157  | 153 | 149  | 165  | 145   | 123   | 132  | 121  | 121  | 130  | 142  | 146  | 214  | 263  | 264  | 5    | 346  | 318  | 320  | 145.4         |
| 23-Feb          | 5                             | 3    | 261   | 8     | 354   | 331  | 208 | 167  | 165  | 174   | 131   | 134  | 149  | 130  | 117  | 124  | 112  | 115  | 127  | UO   | UO   | 179  | 162  | 161  | 129.2         |
| 24-Feb          | 147                           | 151  | 137   | 139   | 141   | 165  | 161 | 151  | 149  | 188   | 206   | 181  | 186  | 189  | 191  | 181  | 187  | 188  | 189  | 189  | 185  | 185  | 189  | 191  | 178.0         |
| 25-Feb          | 180                           | 207  | 204   | 199   | 156   | 143  | 147 | 167  | 209  | 228   | 233   | 232  | 224  | 198  | 168  | 142  | 137  | 128  | 114  | 143  | 107  | 126  | 183  | 137  | 181.2         |
| 26-Feb          | 132                           | 129  | 146   | 355   | 2     | 355  | 4   | 12   | 3    | 355   | 0     | 4    | 5    | 8    | 7    | 12   | 16   | 17   | 20   | 22   | 16   | 9    | 12   | 12   | 11.9          |
| 27-Feb          | 11                            | 10   | 5     | 7     | 5     | 7    | 9   | 11   | 8    | 10    | 16    | 15   | 15   | 15   | 19   | 29   | 27   | 23   | 18   | 27   | 22   | 15   | 350  | 279  | 12.9          |
| 28-Feb          | 291                           | 287  | 332   | 325   | UO    | 351  | 277 | 326  | 298  | 295   | 326   | 3    | 10   | 104  | 169  | 146  | 170  | 162  | 156  | 110  | 207  | 223  | 187  | 137  | 260.8         |
| Diurnal Average |                               |      |       |       |       |      |     |      |      |       |       |      |      |      |      |      |      |      |      |      |      |      |      |      |               |
|                 | 63.3                          | 59.4 | 135.0 | 151.0 | 116.7 | 46.0 | 5.1 | 32.0 | 18.9 | 357.4 | 354.9 | 30.1 | 92.7 | 81.8 | 61.1 | 54.1 | 43.3 | 51.2 | 53.1 | 46.1 | 18.9 | 25.5 | 42.3 | 89.1 |               |

UO - Unstable Operation  
 All monthly, daily, and diurnal averages have been calculated using vector methods



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Wind Direction (WD) - deg**  
**Fort Hills - February 2023**





**Wood Buffalo Environmental Association**  
**Summary of Hour Standard Deviations**

**Wind Direction (WD) - deg**  
**Fort Hills - February 2023**

|   |                                |
|---|--------------------------------|
| Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0   | Hours in Service: 672          |
| Maximum Value: 92 deg on Feb 21 09:00   | Hours of Data: 666             |
| Minimum Value: 5 deg on Feb 12 06:00  | Hours of Missing Data: 6       |
| Percentiles: P <sub>1</sub> = 7 P <sub>10</sub> = 8 Q <sub>1</sub> = 10 Median = 14 Q <sub>3</sub> = 26 P <sub>90</sub> = 48 P <sub>99</sub> = 85 | Hours of Calibration: 0        |
|   | Percent Operational Time: 99.1 |

| Day    | Hourly Period Ending At (MST) |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    | Daily Maximum |
|--------|-------------------------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|---------------|
|        | 1                             | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |               |
| 1-Feb  | 68                            | 56 | 48 | 42 | 21 | 11 | 20 | 6  | 9  | 13 | 13 | 24 | 48 | 15 | 49 | 16 | 18 | 22 | 34 | 40 | 15 | 73 | 19 | 11 | 73            |
| 2-Feb  | 25                            | 11 | 11 | 15 | 13 | 10 | 9  | 12 | 15 | 16 | 20 | 10 | 46 | 30 | 82 | 20 | 14 | 7  | 7  | 7  | 8  | 7  | 7  | 8  | 82            |
| 3-Feb  | 7                             | 8  | 7  | 8  | 8  | 9  | 9  | 8  | 13 | 33 | 82 | 14 | 13 | 8  | 9  | 16 | 21 | 10 | 10 | 9  | 9  | 12 | 22 | 28 | 82            |
| 4-Feb  | 18                            | 16 | 11 | 8  | 7  | 8  | 10 | 10 | 9  | 12 | 11 | 8  | 10 | 10 | 11 | 10 | 14 | 11 | 10 | 10 | 19 | 14 | 19 | 21 | 21            |
| 5-Feb  | 21                            | 66 | 26 | 59 | 19 | 31 | 13 | 21 | 26 | 57 | 24 | 23 | 14 | 17 | 30 | 11 | 12 | 16 | 19 | 15 | 77 | 19 | 14 | 18 | 77            |
| 6-Feb  | 15                            | 15 | 12 | 14 | 20 | 10 | 62 | 68 | 18 | 28 | 60 | 14 | 15 | 29 | 47 | 57 | 22 | 22 | 54 | 41 | 14 | 16 | 11 | 14 | 68            |
| 7-Feb  | 19                            | 14 | 8  | 14 | 27 | 29 | 20 | 13 | 9  | 12 | 7  | 8  | 13 | 10 | 11 | 11 | 11 | 18 | 32 | 64 | 53 | 10 | 12 | 13 | 64            |
| 8-Feb  | 15                            | 46 | 62 | 8  | 27 | 18 | 26 | 23 | 10 | 61 | 24 | 19 | 7  | 8  | 8  | 15 | 68 | 54 | 22 | 81 | 26 | 20 | 10 | 8  | 81            |
| 9-Feb  | 21                            | 9  | 14 | 9  | 8  | 11 | 25 | 14 | 24 | 15 | 19 | 19 | 15 | 11 | 18 | 15 | 24 | 21 | 16 | 18 | 73 | 57 | UO | 80 | 80            |
| 10-Feb | 8                             | 7  | 9  | 10 | 10 | 9  | 8  | 7  | 9  | 10 | 7  | 8  | 11 | 9  | 10 | 11 | 10 | 10 | 10 | 9  | 8  | 10 | 27 | 34 | 34            |
| 11-Feb | 20                            | 15 | 61 | 15 | 31 | 49 | 37 | 74 | 59 | 64 | 28 | 11 | 8  | 10 | 8  | 15 | 28 | 9  | 13 | 28 | 22 | 9  | 13 | 18 | 74            |
| 12-Feb | 15                            | 75 | 17 | 13 | 11 | 5  | 86 | 16 | 31 | 11 | 11 | 34 | 37 | 37 | 41 | 45 | 11 | 10 | 9  | 18 | 29 | 89 | 37 | 27 | 89            |
| 13-Feb | 63                            | 84 | 17 | 16 | 12 | 9  | 60 | 12 | 9  | 12 | 17 | 16 | 14 | 16 | 15 | 14 | 11 | 11 | 11 | 10 | 10 | 10 | 10 | 10 | 84            |
| 14-Feb | 11                            | 11 | 9  | 10 | 9  | 9  | 8  | 9  | 15 | 25 | 28 | 35 | 37 | 20 | 15 | 23 | 12 | 22 | 39 | 55 | 29 | 89 | 57 | 28 | 89            |
| 15-Feb | 11                            | 17 | 17 | 45 | 33 | 20 | 15 | 23 | 14 | 50 | 14 | 10 | 12 | 8  | 11 | 9  | 9  | 20 | 14 | 29 | 17 | 8  | 10 | 17 | 50            |
| 16-Feb | 11                            | 32 | 12 | 19 | 38 | 45 | 23 | 13 | 18 | 15 | 11 | 10 | 14 | 16 | 11 | 70 | 9  | 9  | 10 | 13 | 11 | 10 | 49 | 41 | 70            |
| 17-Feb | 70                            | 69 | 90 | 35 | 74 | 68 | 13 | 10 | 14 | 11 | 13 | 22 | 23 | 10 | 11 | 17 | 12 | 12 | 12 | 15 | 10 | 20 | 23 | 21 | 90            |
| 18-Feb | 26                            | 43 | 12 | 51 | 12 | 46 | 11 | 23 | 45 | 17 | 19 | 65 | 27 | 32 | 90 | UO | 10 | 22 | 47 | 58 | 13 | 14 | 27 | 39 | 90            |
| 19-Feb | 26                            | 20 | 45 | 39 | 29 | 16 | 80 | UO | 57 | 60 | 30 | 67 | 82 | 27 | 13 | 12 | 8  | 14 | 27 | 8  | 8  | 8  | 9  | 12 | 82            |
| 20-Feb | 8                             | 10 | 71 | 19 | 14 | 8  | 39 | 14 | 27 | 13 | 37 | 25 | 37 | 23 | 17 | 26 | 12 | 12 | 46 | 15 | 15 | 14 | 7  | 9  | 71            |
| 21-Feb | 10                            | 9  | 7  | 7  | 11 | 5  | 59 | 20 | 92 | 21 | 17 | 31 | 21 | 14 | 12 | 9  | 9  | 20 | 36 | 13 | 40 | 14 | 32 | 21 | 92            |
| 22-Feb | 26                            | 19 | 19 | 19 | 7  | 10 | 11 | 10 | 14 | 13 | 8  | 11 | 11 | 18 | 11 | 17 | 17 | 19 | 20 | 24 | 69 | 14 | 32 | 26 | 69            |
| 23-Feb | 18                            | 17 | 41 | 70 | 15 | 26 | 29 | 21 | 40 | 26 | 12 | 15 | 19 | 26 | 21 | 16 | 21 | 14 | 17 | UO | UO | 32 | 12 | 11 | 70            |
| 24-Feb | 10                            | 9  | 11 | 12 | 9  | 7  | 7  | 9  | 14 | 12 | 9  | 16 | 12 | 10 | 11 | 10 | 9  | 8  | 8  | 8  | 8  | 8  | 7  | 7  | 16            |
| 25-Feb | 13                            | 8  | 9  | 16 | 9  | 9  | 22 | 19 | 9  | 12 | 8  | 13 | 13 | 15 | 20 | 10 | 8  | 5  | 12 | 62 | 26 | 23 | 86 | 13 | 86            |
| 26-Feb | 26                            | 14 | 76 | 32 | 13 | 12 | 9  | 7  | 11 | 12 | 12 | 11 | 11 | 10 | 9  | 8  | 7  | 7  | 7  | 10 | 11 | 9  | 7  | 7  | 76            |
| 27-Feb | 7                             | 10 | 10 | 10 | 10 | 11 | 12 | 9  | 11 | 11 | 9  | 8  | 9  | 9  | 9  | 10 | 9  | 9  | 8  | 10 | 8  | 9  | 12 | 26 | 26            |
| 28-Feb | 12                            | 19 | 12 | 14 | UO | 12 | 44 | 44 | 30 | 27 | 47 | 11 | 21 | 45 | 20 | 12 | 54 | 18 | 21 | 35 | 59 | 59 | 19 | 15 | 59            |
|        | 70                            | 84 | 90 | 70 | 74 | 68 | 86 | 74 | 92 | 64 | 82 | 67 | 82 | 45 | 90 | 70 | 68 | 54 | 54 | 81 | 77 | 89 | 86 | 80 |               |

Diurnal Maximum

UO - Unstable Operation



## WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY  
MONITORING PROGRAM  
MONTHLY REPORT

### **AMS25 WASKŌW OHCI PIMÂTISIWIN FEBRUARY 2023**

Operations, Data Collection,  
QA/QC, Data Validation and Reporting by:  
Wood Buffalo Environmental Association  
Fort McMurray, Alberta

March 31, 2023

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - WASKŌW OHCI PIMÂTISIWIN (AMS25)  
 FEBRUARY 2023

MONTHLY SUMMARY

| Parameter                         | Hours of Data | Hours of Calibration | Hours without Data | Operational Time | Maximum 1-Hour Value | 1-Hour Exceedances | Maximum 24-Hour Value | 24-Hour Exceedances |
|-----------------------------------|---------------|----------------------|--------------------|------------------|----------------------|--------------------|-----------------------|---------------------|
| SO2(ppb) Average                  | 0             | 0                    | 672                | 0                | --                   | 0                  | --                    | 0                   |
| H2S(ppb) Average                  | 0             | 0                    | 672                | 0                | --                   | 0                  | --                    | 0                   |
| Temperature 2 m (C) Average       | 0             | 0                    | 672                | 0                | --                   | 0                  | --                    | 0                   |
| Relative Humidity (%) Average     | 0             | 0                    | 672                | 0                | --                   | -                  | --                    | -                   |
| Wind Speed 10 m (km/h) Average    | 0             | 0                    | 672                | 0                | --                   | 0                  | --                    | 0                   |
| Wind Direction 10 m (deg) Average | 0             | 0                    | 672                | 0                | -                    | -                  | -                     | -                   |

Note : Operational time includes periods of data collection and instrument calibration

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - WASKŌW OHCI PIMĀTISIWIN (AMS25)  
 FEBRUARY 2023

MONTHLY SUMMARY FOR AIR QUALITY/ METEOROLOGICAL MONITORING MEASUREMENTS

| Parameter                         | Number | Mean | StnDev | Total | Percentile |     |    |        |    |     |     |    |
|-----------------------------------|--------|------|--------|-------|------------|-----|----|--------|----|-----|-----|----|
|                                   |        |      |        |       | Min        | P10 | Q1 | Median | Q3 | P90 | Max |    |
| SO2 (ppb) Average                 | 0      | --   | --     | -     | --         | 0   | 0  | 0      | 0  | 0   | 0   | -- |
| H2S (ppb) Average                 | 0      | --   | --     | -     | --         | 0   | 0  | 0      | 0  | 0   | 0   | -- |
| Temperature 2 m (C) Average       | 0      | --   | --     | -     | --         | 0   | 0  | 0      | 0  | 0   | 0   | -- |
| Relative Humidity (%) Average     | 0      | --   | --     | -     | --         | 0   | 0  | 0      | 0  | 0   | 0   | -- |
| Wind Speed 10 m (km/h) Average    | 0      | --   | --     | -     | --         | 0   | 0  | 0      | 0  | 0   | 0   | -- |
| Wind Direction 10 m (deg) Average | 0      | -    | -      | -     | -          | -   | -  | -      | -  | -   | -   | -  |

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - WASKŌW OHCI PIMÂTISIWIN (AMS25)  
FEBRUARY 2023

OPERATIONAL NOTES

| Parameter      | Period<br>Start   | Period<br>End     | Duration<br>(Hours) | Notes                 |
|----------------|-------------------|-------------------|---------------------|-----------------------|
| ALL PARAMETERS | 01 Feb 2023 01:00 | 01 Mar 2023 00:00 | 672                 | Station power failure |



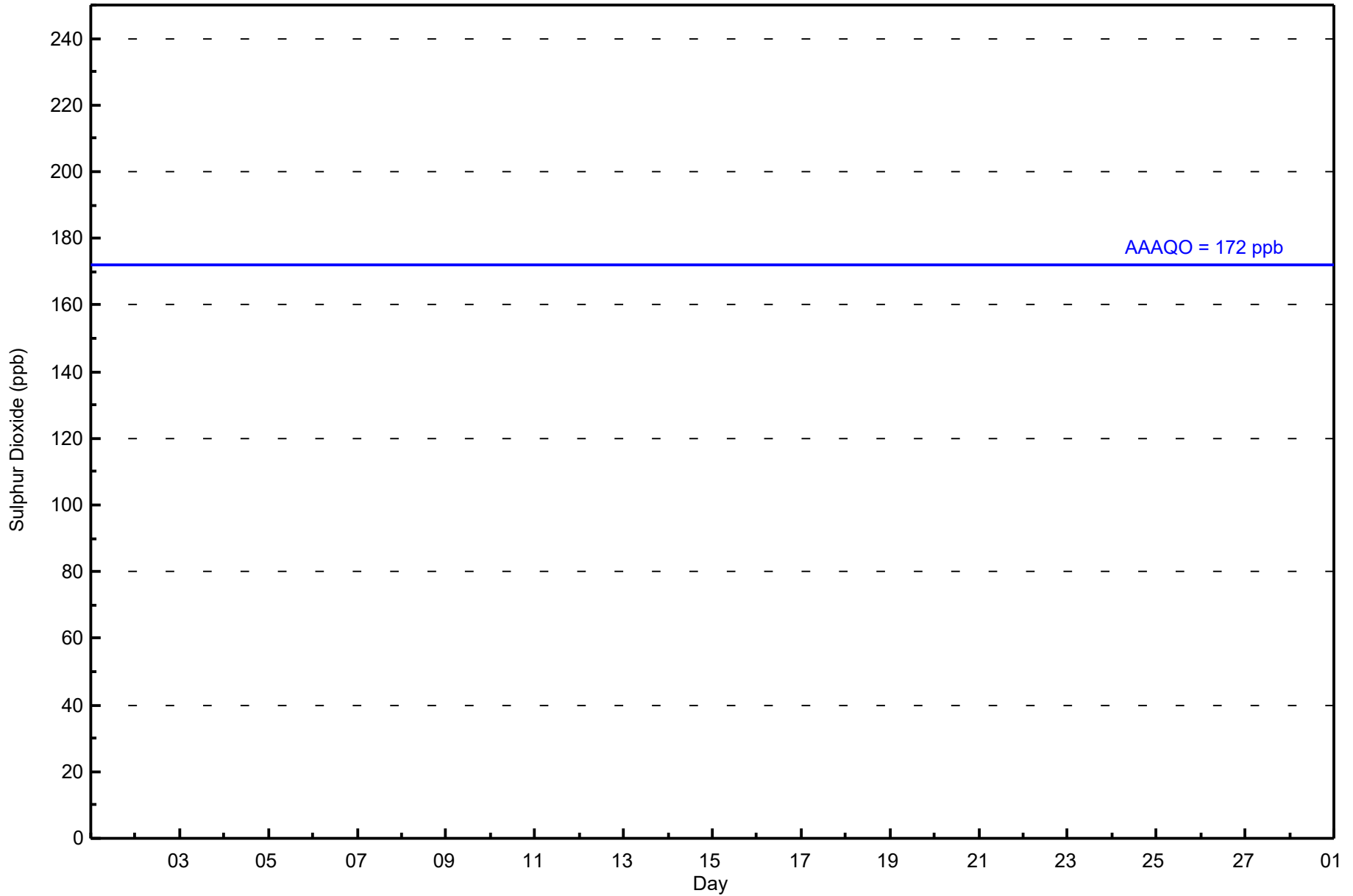
| Number of Exceedences (AAAQO):  |                               | 1-hr: 0 24-hr: 0   |    | Hours in Service: 672         |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |                 |               |               |    |
|---|-------------------------------|--|----|-------------------------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-----------------|---------------|---------------|----|
| Maximum Value: -- ppb on Feb 1 00:00                                      |                               | Maximum Daily Average: -- ppb on Jan 31  |    | Hours of Data: 0              |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |                 |               |               |    |
| Minimum Value: -- ppb on Feb 1 00:00                                      |                               | Minimum Daily Average: -- ppb on Jan 31  |    | Hours of Missing Data: 672    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |                 |               |               |    |
| Maximum Diurnal Average: -- ppb at hour 0                                 |                               | Minimum Diurnal Average: -- ppb at hour 0  |    | Hours of Calibration: 0       |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |                 |               |               |    |
| Monthly Average: -- ppb   |                               | Percentiles: P <sub>1</sub> = 0.0 P <sub>10</sub> = 0.0 Q <sub>1</sub> = 0.0 Median = 0.0 Q <sub>3</sub> = 0.0 P <sub>90</sub> = 0.0 P <sub>99</sub> = 0.0 |    | Percent Operational Time: 0.0 |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |                 |               |               |    |
| Day   | Hourly Period Ending At (MST) |  |    |                               |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |                 | Daily Average | Daily Maximum |    |
|   | 1                             | 2  | 3  | 4                             | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24              |               |               |    |
| 1-Feb   | PF                            | PF   | PF | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | --            | --            |    |
| 2-Feb   | PF                            | PF   | PF | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | --            | -- |
| 3-Feb   | PF                            | PF   | PF | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | --            | -- |
| 4-Feb   | PF                            | PF   | PF | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | --            | -- |
| 5-Feb   | PF                            | PF   | PF | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | --            | -- |
| 6-Feb   | PF                            | PF   | PF | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | --            | -- |
| 7-Feb   | PF                            | PF   | PF | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | --            | -- |
| 8-Feb   | PF                            | PF   | PF | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | --            | -- |
| 9-Feb   | PF                            | PF   | PF | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | --            | -- |
| 10-Feb  | PF                            | PF   | PF | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | --            | -- |
| 11-Feb  | PF                            | PF   | PF | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | --            | -- |
| 12-Feb  | PF                            | PF   | PF | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | --            | -- |
| 13-Feb  | PF                            | PF   | PF | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | --            | -- |
| 14-Feb  | PF                            | PF   | PF | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | --            | -- |
| 15-Feb  | PF                            | PF   | PF | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | --            | -- |
| 16-Feb  | PF                            | PF   | PF | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | --            | -- |
| 17-Feb  | PF                            | PF   | PF | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | --            | -- |
| 18-Feb  | PF                            | PF   | PF | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | --            | -- |
| 19-Feb  | PF                            | PF   | PF | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | --            | -- |
| 20-Feb  | PF                            | PF   | PF | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | --            | -- |
| 21-Feb  | PF                            | PF   | PF | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | --            | -- |
| 22-Feb  | PF                            | PF   | PF | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | --            | -- |
| 23-Feb  | PF                            | PF   | PF | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | --            | -- |
| 24-Feb  | PF                            | PF   | PF | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | --            | -- |
| 25-Feb  | PF                            | PF   | PF | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | --            | -- |
| 26-Feb  | PF                            | PF   | PF | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | --            | -- |
| 27-Feb  | PF                            | PF   | PF | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | --            | -- |
| 28-Feb  | PF                            | PF   | PF | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | --            | -- |
| --  |                               |  |    |                               |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    | Diurnal Average |               |               |    |
| --  |                               |  |    |                               |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    | Diurnal Maximum |               |               |    |
| PF - Power Failure  |                               |  |    |                               |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |                 |               |               |    |
| Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 172 ppb 24-hr 48 ppb |                               |  |    |                               |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |                 |               |               |    |





**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Sulphur Dioxide (SO<sub>2</sub>) - ppb**  
**Waskow ohci Pimatisiwin - February 2023**





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Sulphur Dioxide (SO<sub>2</sub>) - ppb**  
**Waskow ohci Pimatisiwin - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 10                            | 0                      | 0.00     | 0.00                |
| 11 - 20                           | 0                      | 0.00     | 0.00                |
| 21 - 60                           | 0                      | 0.00     | 0.00                |
| 61 - 110                          | 0                      | 0.00     | 0.00                |
| 111 - 172                         | 0                      | 0.00     | 0.00                |
| > 172                             | 0                      | 0.00     | 0.00                |

Total Number of Valid Hours: 0

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Sulphur Dioxide (SO<sub>2</sub>) - ppb  
Waskow ohci Pimatisiwin - February 2023**

| Concentration<br>Ranges (ppb) | Wind Direction |     |    |     |   |     |    |     |   |     |    |     |   |     |    |     | Totals |
|-------------------------------|----------------|-----|----|-----|---|-----|----|-----|---|-----|----|-----|---|-----|----|-----|--------|
|                               | N              | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW |        |
| 0 - 10                        | 0              | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0      |
| 11 - 20                       | 0              | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0      |
| 21 - 60                       | 0              | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0      |
| 61 - 110                      | 0              | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0      |
| 111 - 172                     | 0              | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0      |
| > 172                         | 0              | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0      |
| <b>Totals</b>                 | 0              | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0      |

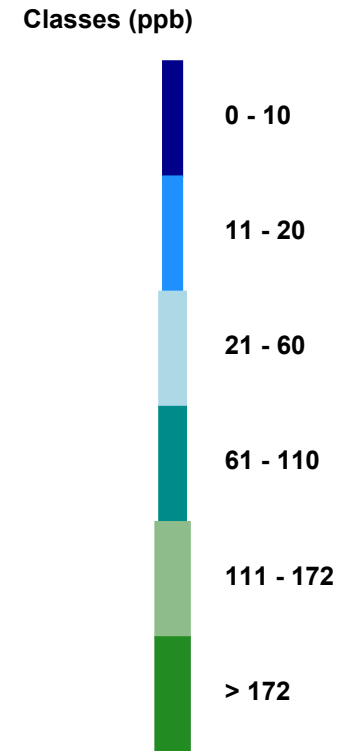
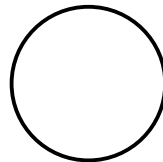
Total Number of Valid Hours: 0

Total Number of Hours: 672

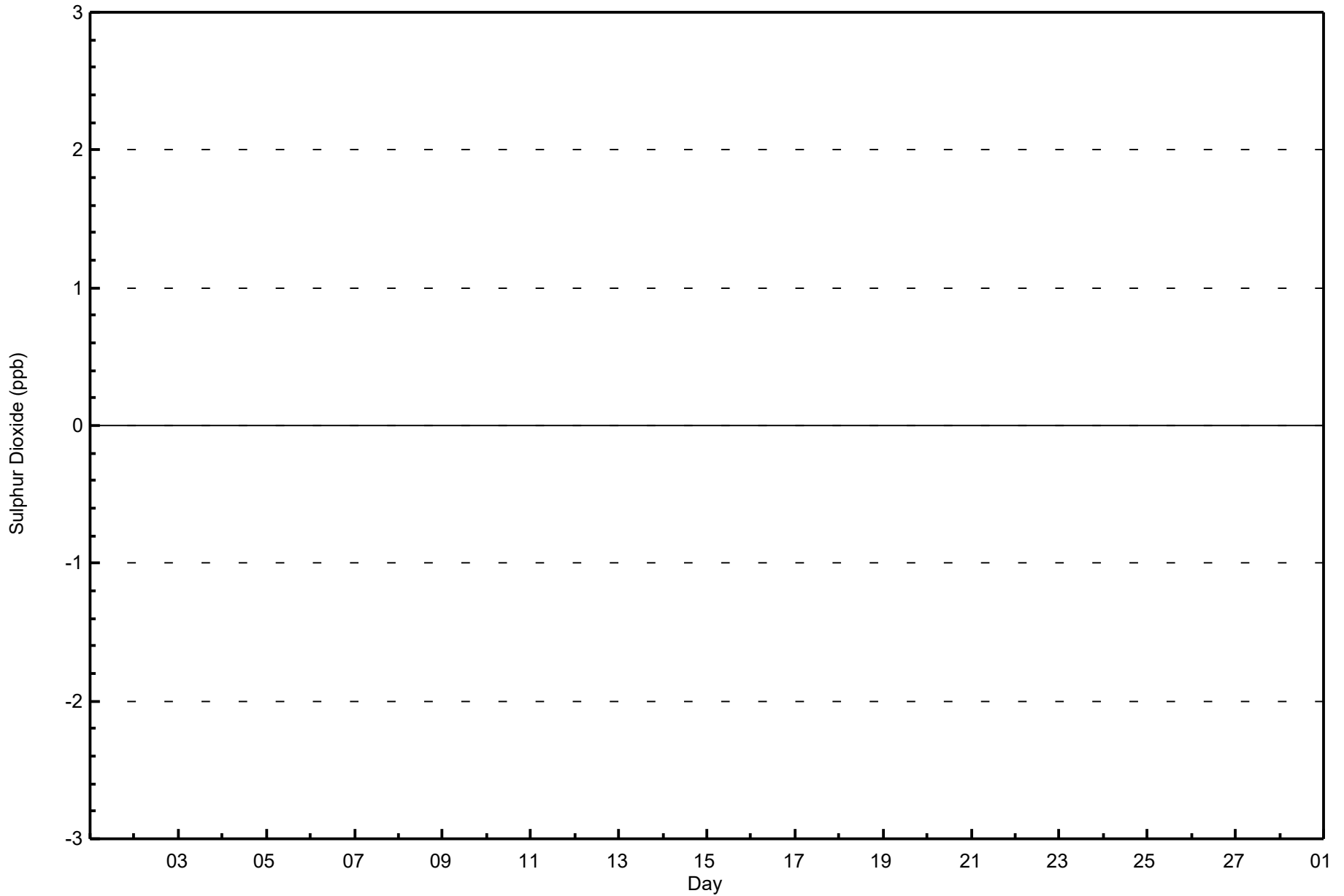


**Wood Buffalo Environmental Association**  
**Wind Rose Feb 2023**

**Sulphur Dioxide (SO<sub>2</sub>) - ppb**  
**Waskow ohci Pimatisiwin**



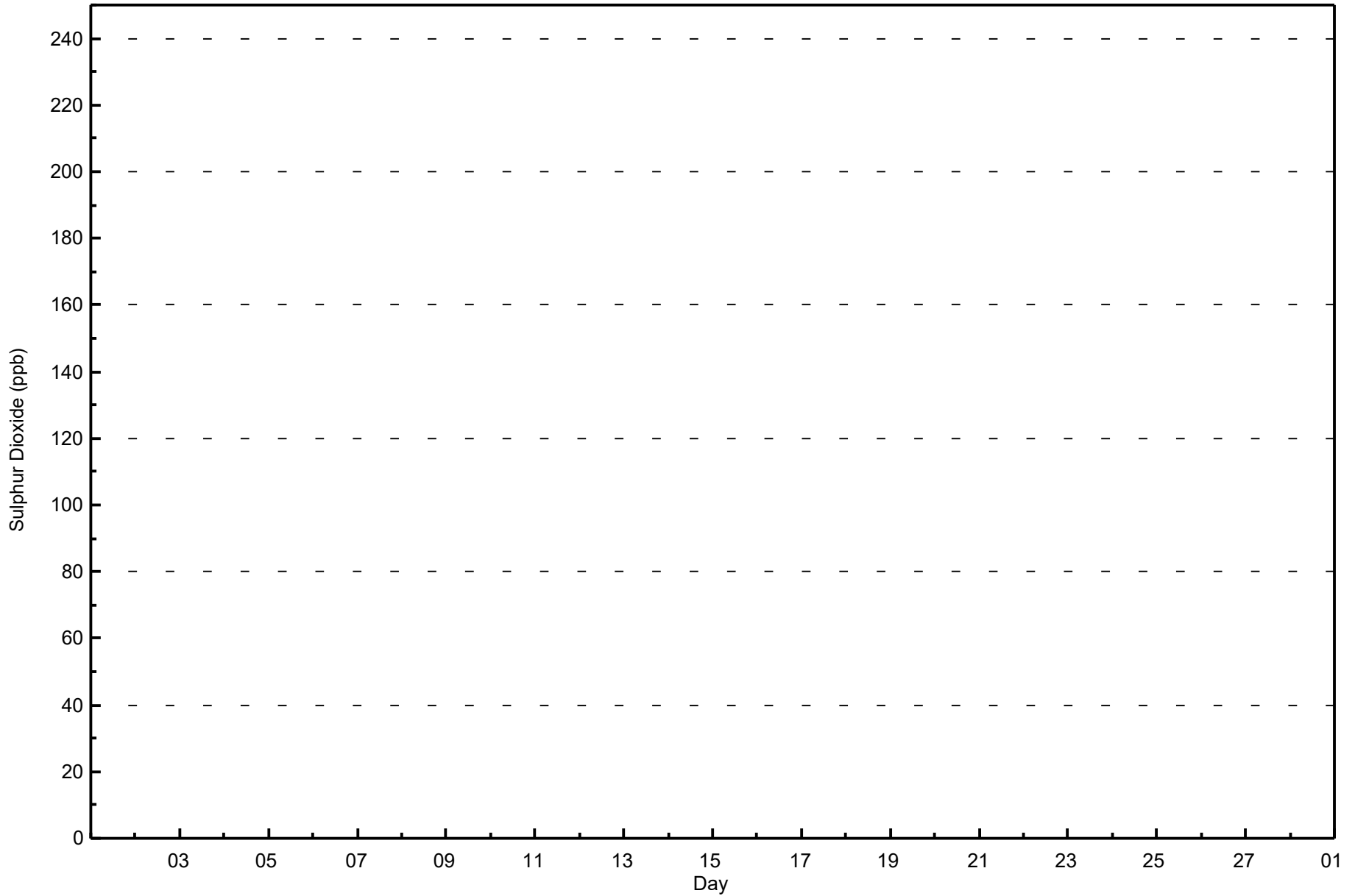
**Total Number of Valid Hours: 0**





**Wood Buffalo Environmental Association**  
**Span Responses**

**Sulphur Dioxide (SO<sub>2</sub>) - ppb**  
**Waskow ohci Pimatisiwin - February 2023**



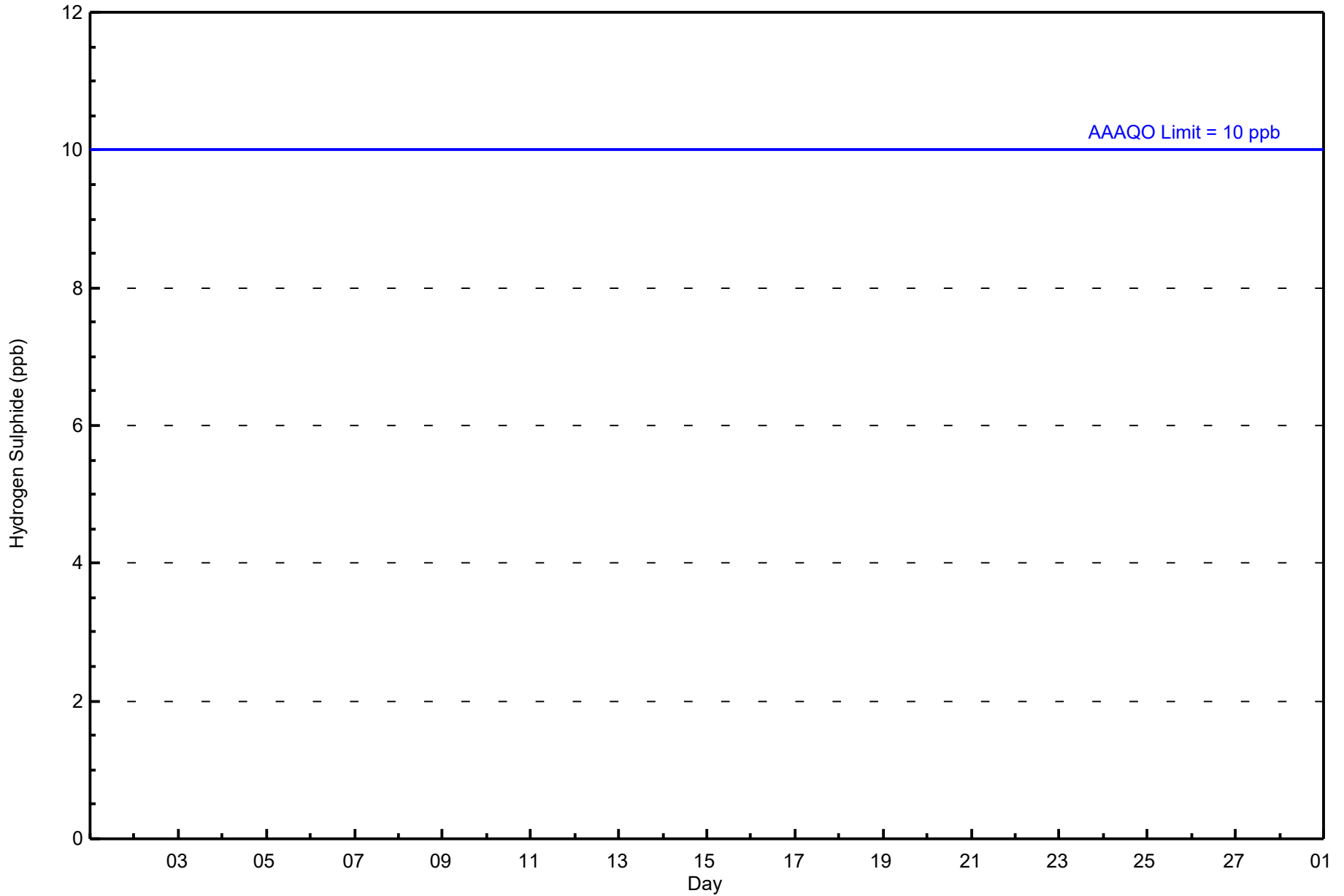


|   |  |  |  |
|---|--|--|--|
| Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0 |  | Hours in Service: 672  |  |
| Maximum Value: -- ppb on Feb 1 00:00            |  | Maximum Daily Average: -- ppb on Jan 31  |  |
| Minimum Value: -- ppb on Feb 1 00:00            |  | Hours of Data: 0   |  |
| Maximum Diurnal Average: -- ppb at hour 0       |  | Hours of Missing Data: 672   |  |
| Monthly Average: -- ppb                         |  | Hours of Calibration: 0  |  |
| Minimum Daily Average: -- ppb on Jan 31         |  | Percent Operational Time: 0.0  |  |
| Minimum Diurnal Average: -- ppb at hour 0       |  | Percentiles: P <sub>1</sub> = 0.0 P <sub>10</sub> = 0.0 Q <sub>1</sub> = 0.0 Median = 0.0 Q <sub>3</sub> = 0.0 P <sub>90</sub> = 0.0 P <sub>99</sub> = 0.0 |  |

| Day  | Hourly Period Ending At (MST) |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |                 | Daily Average | Daily Maximum |    |    |
|--|-------------------------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-----------------|---------------|---------------|----|----|
|  | 1                             | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24              |               |               |    |    |
| 1-Feb  | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | --            | -- |    |
| 2-Feb  | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | PF            | -- | -- |
| 3-Feb  | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | PF            | -- | -- |
| 4-Feb  | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | PF            | -- | -- |
| 5-Feb  | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | PF            | -- | -- |
| 6-Feb  | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | PF            | -- | -- |
| 7-Feb  | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | PF            | -- | -- |
| 8-Feb  | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | PF            | -- | -- |
| 9-Feb  | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | PF            | -- | -- |
| 10-Feb   | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | PF            | -- | -- |
| 11-Feb   | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | PF            | -- | -- |
| 12-Feb   | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | PF            | -- | -- |
| 13-Feb   | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | PF            | -- | -- |
| 14-Feb   | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | PF            | -- | -- |
| 15-Feb   | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | PF            | -- | -- |
| 16-Feb   | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | PF            | -- | -- |
| 17-Feb   | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | PF            | -- | -- |
| 18-Feb   | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | PF            | -- | -- |
| 19-Feb   | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | PF            | -- | -- |
| 20-Feb   | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | PF            | -- | -- |
| 21-Feb   | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | PF            | -- | -- |
| 22-Feb   | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | PF            | -- | -- |
| 23-Feb   | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | PF            | -- | -- |
| 24-Feb   | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | PF            | -- | -- |
| 25-Feb   | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | PF            | -- | -- |
| 26-Feb   | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | PF            | -- | -- |
| 27-Feb   | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | PF            | -- | -- |
| 28-Feb   | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | PF            | -- | -- |
| -- |                               |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    | Diurnal Average |               |               |    |    |
| -- |                               |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    | Diurnal Maximum |               |               |    |    |

PF - Power Failure  
 Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 10 ppb 24-hr 3 ppb







**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Hydrogen Sulphide (H<sub>2</sub>S) - ppb  
Waskow ohci Pimatisiwin - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 2                             | 0                      | 0.00     | 0.00                |
| 3 - 4                             | 0                      | 0.00     | 0.00                |
| 5 - 7                             | 0                      | 0.00     | 0.00                |
| 8 - 11                            | 0                      | 0.00     | 0.00                |
| > 11                              | 0                      | 0.00     | 0.00                |

Total Number of Valid Hours: 0

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Hydrogen Sulphide (H<sub>2</sub>S) - ppb  
Waskow ohci Pimatisiwin - February 2023**

| Concentration<br>Ranges (ppb) | Wind Direction |     |    |     |   |     |    |     |   |     |    |     |   |     |    |     | Totals |
|-------------------------------|----------------|-----|----|-----|---|-----|----|-----|---|-----|----|-----|---|-----|----|-----|--------|
|                               | N              | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW |        |
| 0 - 2                         | 0              | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0      |
| 3 - 4                         | 0              | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0      |
| 5 - 7                         | 0              | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0      |
| 8 - 11                        | 0              | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0      |
| > 11                          | 0              | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0      |
| <b>Totals</b>                 | 0              | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0      |

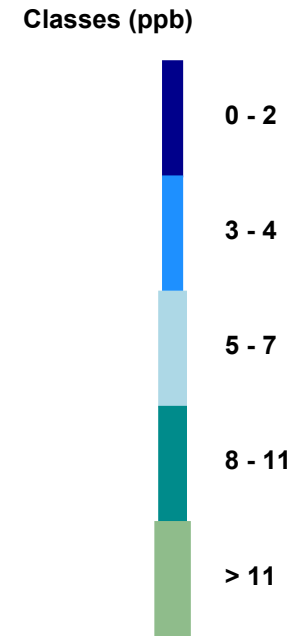
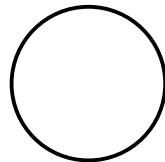
Total Number of Valid Hours: 0

Total Number of Hours: 672

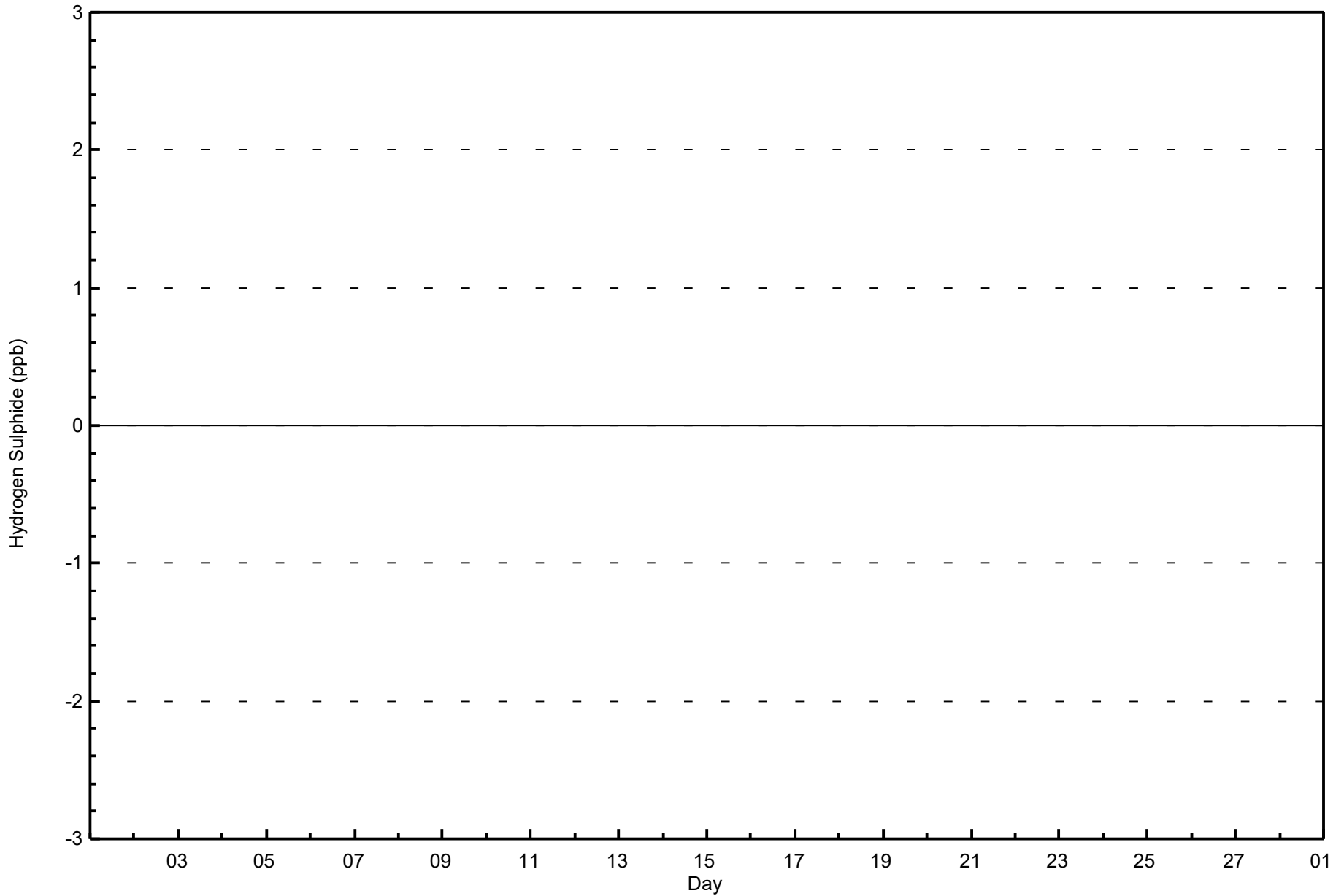


**Wood Buffalo Environmental Association**  
**Wind Rose Feb 2023**

**Hydrogen Sulphide (H<sub>2</sub>S) - ppb**  
**Waskow ohci Pimatisiwin**



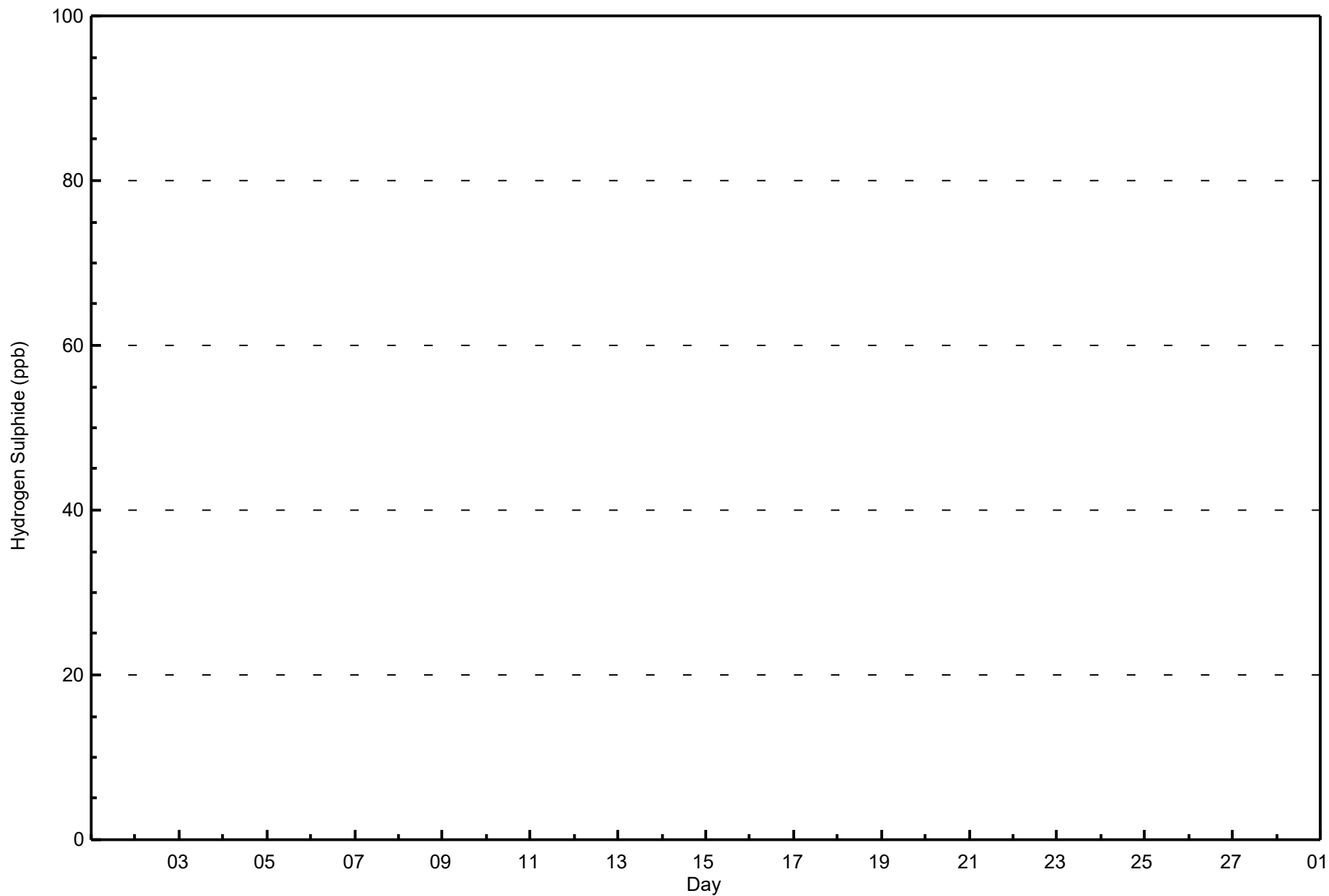
**Total Number of Valid Hours: 0**





**Wood Buffalo Environmental Association**  
**Span Responses**

**Hydrogen Sulphide (H<sub>2</sub>S) - ppb**  
**Waskow ohci Pimatisiwin - February 2023**



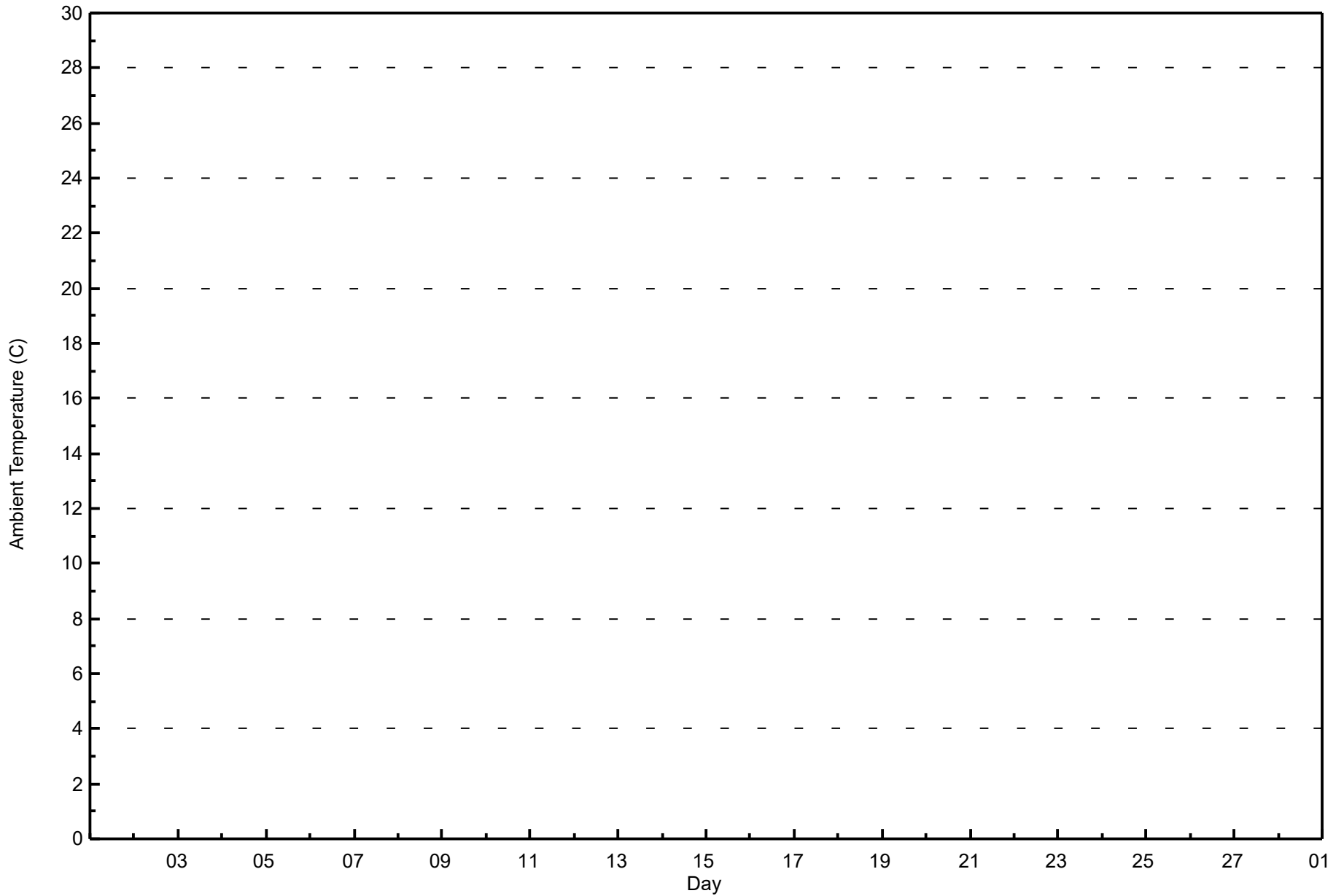


| Maximum Value: -- C on Feb 1 00:00  |                               | Maximum Daily Average: -- C on Jan 31  |    | Hours in Service: 672         |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |                 |               |               |    |
|---|-------------------------------|--|----|-------------------------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-----------------|---------------|---------------|----|
| Minimum Value: -- C on Feb 1 00:00  |                               | Minimum Daily Average: -- C on Jan 31  |    | Hours of Data: 0              |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |                 |               |               |    |
| Maximum Diurnal Average: -- C at hour 0                                       |                               | Minimum Diurnal Average: -- C at hour 0  |    | Hours of Missing Data: 672    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |                 |               |               |    |
| Monthly Average: -- C   |                               | Percentiles: P <sub>1</sub> = 0.0 P <sub>10</sub> = 0.0 Q <sub>1</sub> = 0.0 Median = 0.0 Q <sub>3</sub> = 0.0 P <sub>90</sub> = 0.0 P <sub>99</sub> = 0.0 |    | Hours of Calibration: 0       |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |                 |               |               |    |
|   |                               |  |    | Percent Operational Time: 0.0 |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |                 |               |               |    |
| Day   | Hourly Period Ending At (MST) |  |    |                               |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |                 | Daily Average | Daily Maximum |    |
|   | 1                             | 2  | 3  | 4                             | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24              |               |               |    |
| 1-Feb   | PF                            | PF   | PF | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | --            | --            |    |
| 2-Feb   | PF                            | PF   | PF | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | --            | -- |
| 3-Feb   | PF                            | PF   | PF | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | --            | -- |
| 4-Feb   | PF                            | PF   | PF | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | --            | -- |
| 5-Feb   | PF                            | PF   | PF | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | --            | -- |
| 6-Feb   | PF                            | PF   | PF | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | --            | -- |
| 7-Feb   | PF                            | PF   | PF | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | --            | -- |
| 8-Feb   | PF                            | PF   | PF | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | --            | -- |
| 9-Feb   | PF                            | PF   | PF | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | --            | -- |
| 10-Feb  | PF                            | PF   | PF | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | --            | -- |
| 11-Feb  | PF                            | PF   | PF | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | --            | -- |
| 12-Feb  | PF                            | PF   | PF | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | --            | -- |
| 13-Feb  | PF                            | PF   | PF | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | --            | -- |
| 14-Feb  | PF                            | PF   | PF | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | --            | -- |
| 15-Feb  | PF                            | PF   | PF | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | --            | -- |
| 16-Feb  | PF                            | PF   | PF | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | --            | -- |
| 17-Feb  | PF                            | PF   | PF | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | --            | -- |
| 18-Feb  | PF                            | PF   | PF | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | --            | -- |
| 19-Feb  | PF                            | PF   | PF | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | --            | -- |
| 20-Feb  | PF                            | PF   | PF | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | --            | -- |
| 21-Feb  | PF                            | PF   | PF | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | --            | -- |
| 22-Feb  | PF                            | PF   | PF | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | --            | -- |
| 23-Feb  | PF                            | PF   | PF | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | --            | -- |
| 24-Feb  | PF                            | PF   | PF | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | --            | -- |
| 25-Feb  | PF                            | PF   | PF | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | --            | -- |
| 26-Feb  | PF                            | PF   | PF | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | --            | -- |
| 27-Feb  | PF                            | PF   | PF | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | --            | -- |
| 28-Feb  | PF                            | PF   | PF | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | --            | -- |
| -- |                               |  |    |                               |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    | Diurnal Average |               |               |    |
| -- |                               |  |    |                               |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    | Diurnal Maximum |               |               |    |
| PF - Power Failure  |                               |  |    |                               |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |                 |               |               |    |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Ambient Temperature (AT) - C**  
**Waskow ohci Pimatisiwin - February 2023**





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Ambient Temperature (AT) - C  
Waskow ohci Pimatisiwin - February 2023**

| <b>Concentration Ranges (C)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---------------------------------|------------------------|----------|---------------------|
| -50 - -20                       | 0                      | 0.00     | 0.00                |
| -20 - 0                         | 0                      | 0.00     | 0.00                |
| 0 - 10                          | 0                      | 0.00     | 0.00                |
| 10 - 20                         | 0                      | 0.00     | 0.00                |
| > 20                            | 0                      | 0.00     | 0.00                |

Total Number of Valid Hours: 0

Total Number of Hours: 672



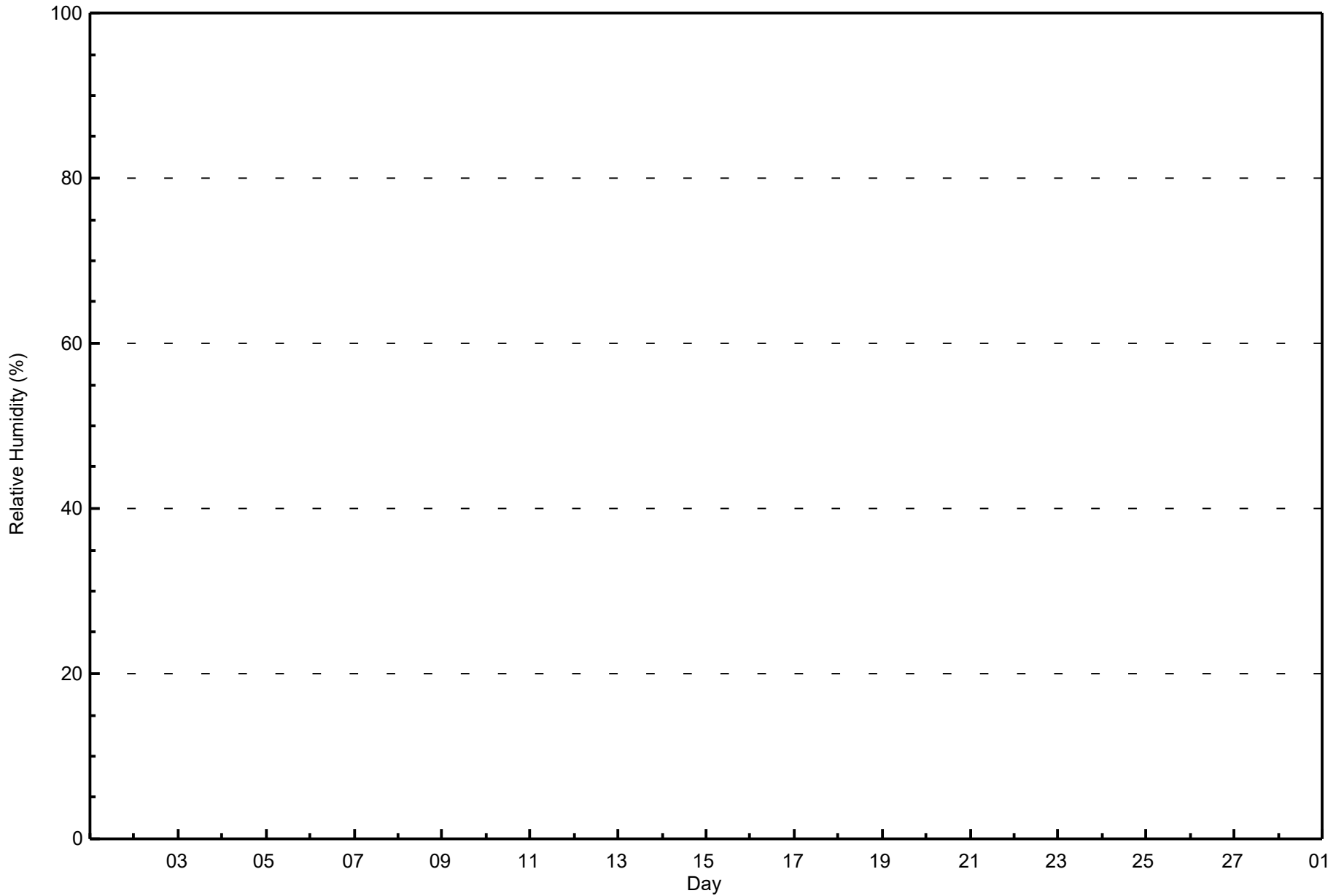


| Maximum Value: -- % on Feb 1 00:00  |                               | Maximum Daily Average: -- % on Jan 31  |    | Hours in Service: 672         |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |                 |               |               |    |
|---|-------------------------------|--|----|-------------------------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-----------------|---------------|---------------|----|
| Minimum Value: -- % on Feb 1 00:00  |                               | Minimum Daily Average: -- % on Jan 31  |    | Hours of Data: 0              |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |                 |               |               |    |
| Maximum Diurnal Average: -- % at hour 0                                       |                               | Minimum Diurnal Average: -- % at hour 0  |    | Hours of Missing Data: 672    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |                 |               |               |    |
| Monthly Average: -- %   |                               | Percentiles: P <sub>1</sub> = 0.0 P <sub>10</sub> = 0.0 Q <sub>1</sub> = 0.0 Median = 0.0 Q <sub>3</sub> = 0.0 P <sub>90</sub> = 0.0 P <sub>99</sub> = 0.0 |    | Hours of Calibration: 0       |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |                 |               |               |    |
|   |                               |  |    | Percent Operational Time: 0.0 |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |                 |               |               |    |
| Day   | Hourly Period Ending At (MST) |  |    |                               |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |                 | Daily Average | Daily Maximum |    |
|   | 1                             | 2  | 3  | 4                             | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24              |               |               |    |
| 1-Feb   | PF                            | PF   | PF | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | --            | --            |    |
| 2-Feb   | PF                            | PF   | PF | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | --            | -- |
| 3-Feb   | PF                            | PF   | PF | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | --            | -- |
| 4-Feb   | PF                            | PF   | PF | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | --            | -- |
| 5-Feb   | PF                            | PF   | PF | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | --            | -- |
| 6-Feb   | PF                            | PF   | PF | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | --            | -- |
| 7-Feb   | PF                            | PF   | PF | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | --            | -- |
| 8-Feb   | PF                            | PF   | PF | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | --            | -- |
| 9-Feb   | PF                            | PF   | PF | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | --            | -- |
| 10-Feb  | PF                            | PF   | PF | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | --            | -- |
| 11-Feb  | PF                            | PF   | PF | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | --            | -- |
| 12-Feb  | PF                            | PF   | PF | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | --            | -- |
| 13-Feb  | PF                            | PF   | PF | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | --            | -- |
| 14-Feb  | PF                            | PF   | PF | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | --            | -- |
| 15-Feb  | PF                            | PF   | PF | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | --            | -- |
| 16-Feb  | PF                            | PF   | PF | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | --            | -- |
| 17-Feb  | PF                            | PF   | PF | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | --            | -- |
| 18-Feb  | PF                            | PF   | PF | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | --            | -- |
| 19-Feb  | PF                            | PF   | PF | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | --            | -- |
| 20-Feb  | PF                            | PF   | PF | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | --            | -- |
| 21-Feb  | PF                            | PF   | PF | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | --            | -- |
| 22-Feb  | PF                            | PF   | PF | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | --            | -- |
| 23-Feb  | PF                            | PF   | PF | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | --            | -- |
| 24-Feb  | PF                            | PF   | PF | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | --            | -- |
| 25-Feb  | PF                            | PF   | PF | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | --            | -- |
| 26-Feb  | PF                            | PF   | PF | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | --            | -- |
| 27-Feb  | PF                            | PF   | PF | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | --            | -- |
| 28-Feb  | PF                            | PF   | PF | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF              | PF            | --            | -- |
| -- |                               |  |    |                               |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    | Diurnal Average |               |               |    |
| -- |                               |  |    |                               |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    | Diurnal Maximum |               |               |    |
| PF - Power Failure  |                               |  |    |                               |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |                 |               |               |    |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Relative Humidity (RH) - %**  
**Waskow ohci Pimatisiwin - February 2023**





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Relative Humidity (RH) - %  
Waskow ohci Pimatisiwin - February 2023**

| <b>Concentration Ranges (%)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---------------------------------|------------------------|----------|---------------------|
| 0 - 20                          | 0                      | 0.00     | 0.00                |
| 20 - 40                         | 0                      | 0.00     | 0.00                |
| 40 - 60                         | 0                      | 0.00     | 0.00                |
| 60 - 80                         | 0                      | 0.00     | 0.00                |
| 80 - 100                        | 0                      | 0.00     | 0.00                |

Total Number of Valid Hours: 0

Total Number of Hours: 672



|  |  |                               |
|--|--|-------------------------------|
| Maximum Speed: -- km/h on Feb 1 00:00            | Maximum Daily Speed Average: 0.0 km/h on Jan 1   | Hours in Service: 672         |
| Minimum Speed Value: -- km/h on Feb 1 00:00      | Minimum Daily Speed Average: 0.0 km/h on Jan 1   | Hours of Data: 0              |
| Maximum Diurnal Speed Average: -- km/h at hour 0 | Minimum Diurnal Speed Average: -- km/h at hour 0   | Hours of Missing Data: 672    |
| Monthly Average Velocity: -- km/h -- deg         | Percentiles: $P_1 = 0$ $P_{10} = 0$ $Q_1 = 0$ Median = 0 $Q_3 = 0$ $P_{90} = 0$ $P_{99} = 0$ | Percent Operational Time: 0.0 |

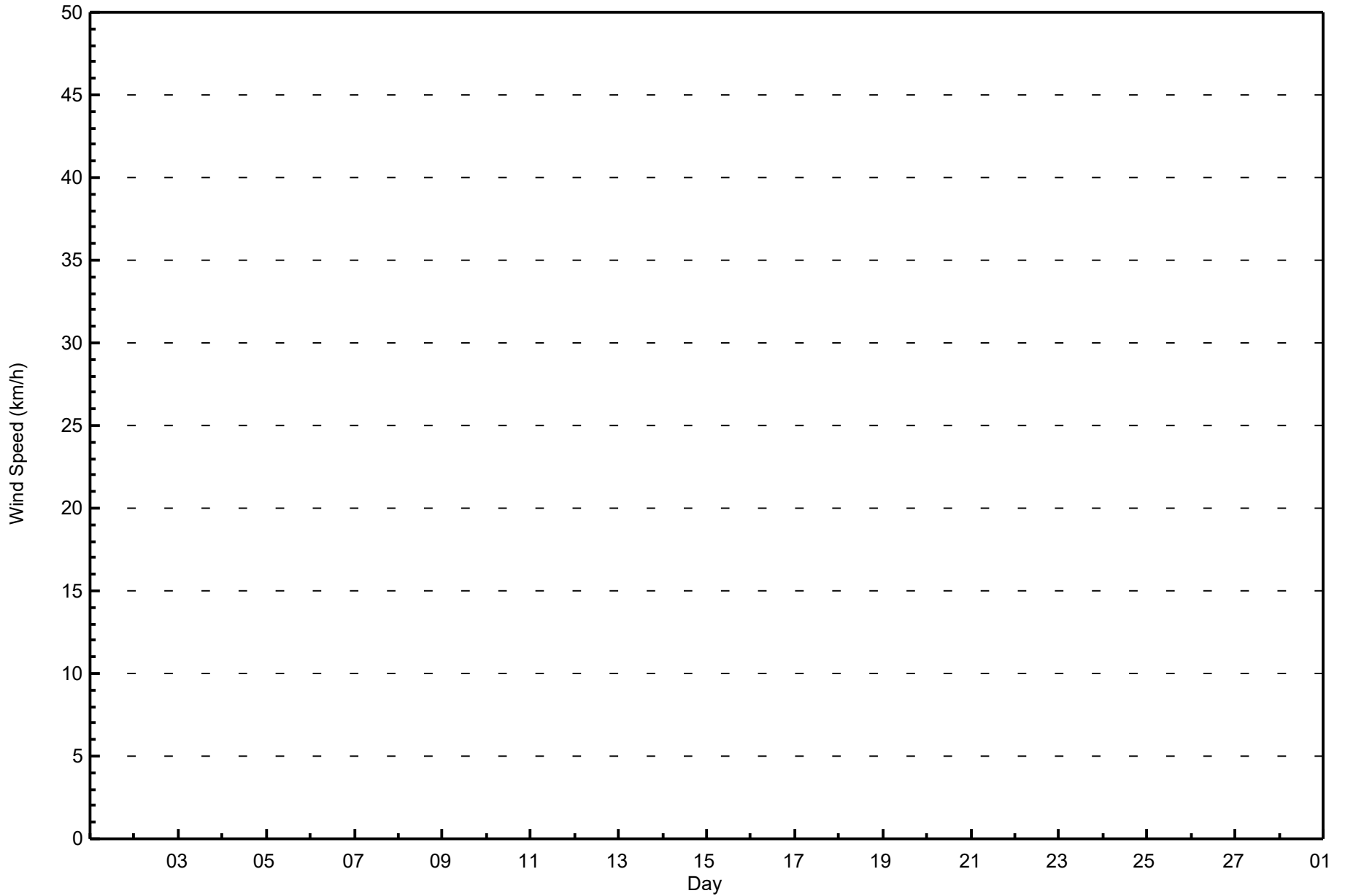
| Day    | Hourly Period Ending At (MST) |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Daily Average | Daily Maximum |                 |
|--------|-------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---------------|---------------|-----------------|
|        | 1                             | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19  | 20  | 21  | 22  | 23  | 24  |               |               |                 |
| 1-Feb  | PF                            | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF            | ---           | ---             |
| 2-Feb  | PF                            | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF            | ---           | ---             |
| 3-Feb  | PF                            | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF            | ---           | ---             |
| 4-Feb  | PF                            | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF            | ---           | ---             |
| 5-Feb  | PF                            | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF            | ---           | ---             |
| 6-Feb  | PF                            | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF            | ---           | ---             |
| 7-Feb  | PF                            | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF            | ---           | ---             |
| 8-Feb  | PF                            | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF            | ---           | ---             |
| 9-Feb  | PF                            | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF            | ---           | ---             |
| 10-Feb | PF                            | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF            | ---           | ---             |
| 11-Feb | PF                            | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF            | ---           | ---             |
| 12-Feb | PF                            | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF            | ---           | ---             |
| 13-Feb | PF                            | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF            | ---           | ---             |
| 14-Feb | PF                            | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF            | ---           | ---             |
| 15-Feb | PF                            | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF            | ---           | ---             |
| 16-Feb | PF                            | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF            | ---           | ---             |
| 17-Feb | PF                            | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF            | ---           | ---             |
| 18-Feb | PF                            | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF            | ---           | ---             |
| 19-Feb | PF                            | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF            | ---           | ---             |
| 20-Feb | PF                            | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF            | ---           | ---             |
| 21-Feb | PF                            | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF            | ---           | ---             |
| 22-Feb | PF                            | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF            | ---           | ---             |
| 23-Feb | PF                            | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF            | ---           | ---             |
| 24-Feb | PF                            | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF            | ---           | ---             |
| 25-Feb | PF                            | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF            | ---           | ---             |
| 26-Feb | PF                            | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF            | ---           | ---             |
| 27-Feb | PF                            | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF            | ---           | ---             |
| 28-Feb | PF                            | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF  | PF            | ---           | ---             |
| ---    | ---                           | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | ---           | ---           | Diurnal Average |
| ---    | ---                           | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | ---           | ---           | Diurnal Maximum |

PF - Power Failure  
 All monthly, daily, and diurnal averages have been calculated using vector methods



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Wind Speed (WS) - km/h**  
**Waskow ohci Pimatisiwin - February 2023**





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Wind Speed (WS) - km/h  
Waskow ohci Pimatisiwin - February 2023**

| <b>Wind Speed Ranges (km/h)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---------------------------------|------------------------|----------|---------------------|
| 0 - 5                           | 0                      | 0.00     | 0.00                |
| 6 - 11                          | 0                      | 0.00     | 0.00                |
| 12 - 19                         | 0                      | 0.00     | 0.00                |
| 20 - 28                         | 0                      | 0.00     | 0.00                |
| 29 - 38                         | 0                      | 0.00     | 0.00                |
| > 38                            | 0                      | 0.00     | 0.00                |

Total Number of Valid Hours: 0

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Wind Speed (WS) - km/h  
Waskow ohci Pimatisiwin - February 2023**

| Wind Speed<br>Ranges (km/h) | Wind Direction |     |    |     |   |     |    |     |   |     |    |     |   |     |    |     | Totals |
|-----------------------------|----------------|-----|----|-----|---|-----|----|-----|---|-----|----|-----|---|-----|----|-----|--------|
|                             | N              | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW |        |
| 0 - 5                       | 0              | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0      |
| 6 - 11                      | 0              | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0      |
| 12 - 19                     | 0              | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0      |
| 20 - 28                     | 0              | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0      |
| 29 - 38                     | 0              | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0      |
| > 38                        | 0              | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0      |
| <b>Totals</b>               | 0              | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0 | 0   | 0  | 0   | 0      |

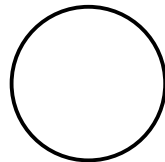
Total Number of Valid Hours: 0

Total Number of Hours: 672

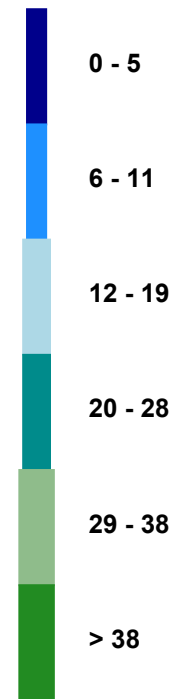


**Wood Buffalo Environmental Association**  
**Wind Rose Feb 2023**

**Wind Speed (WS) - km/h**  
**Waskow ohci Pimatisiwin**



**Classes (km/h)**



**Total Number of Valid Hours: 0**





|  |                               |
|--|-------------------------------|
| Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0  | Hours in Service: 672         |
| Maximum Value: -- km/h on Feb 1 00:00  | Hours of Data: 0              |
| Minimum Value: -- km/h on Feb 1 00:00  | Hours of Missing Data: 672    |
| Percentiles: P <sub>1</sub> = 0 P <sub>10</sub> = 0 Q <sub>1</sub> = 0 Median = 0 Q <sub>3</sub> = 0 P <sub>90</sub> = 0 P <sub>99</sub> = 0 | Hours of Calibration: 0       |
|  | Percent Operational Time: 0.0 |

| Day    | Hourly Period Ending At (MST) |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    | Daily Maximum |    |    |
|--------|-------------------------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|---------------|----|----|
|        | 1                             | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |               |    |    |
| 1-Feb  | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF            | -- |    |
| 2-Feb  | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF            | PF | -- |
| 3-Feb  | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF            | PF | -- |
| 4-Feb  | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF            | PF | -- |
| 5-Feb  | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF            | PF | -- |
| 6-Feb  | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF            | PF | -- |
| 7-Feb  | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF            | PF | -- |
| 8-Feb  | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF            | PF | -- |
| 9-Feb  | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF            | PF | -- |
| 10-Feb | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF            | PF | -- |
| 11-Feb | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF            | PF | -- |
| 12-Feb | PF                            | PF | PF | PF | PF | PF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF            | -- |    |
| 13-Feb | NF                            | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF            | NF | -- |
| 14-Feb | NF                            | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF            | NF | -- |
| 15-Feb | NF                            | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF            | NF | -- |
| 16-Feb | NF                            | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF            | NF | -- |
| 17-Feb | NF                            | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF            | NF | -- |
| 18-Feb | NF                            | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF            | NF | -- |
| 19-Feb | NF                            | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF            | NF | -- |
| 20-Feb | NF                            | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF            | NF | -- |
| 21-Feb | NF                            | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF            | NF | -- |
| 22-Feb | NF                            | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF            | NF | -- |
| 23-Feb | NF                            | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF            | NF | -- |
| 24-Feb | NF                            | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF            | NF | -- |
| 25-Feb | NF                            | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF            | NF | -- |
| 26-Feb | NF                            | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF            | NF | -- |
| 27-Feb | NF                            | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF            | NF | -- |
| 28-Feb | NF                            | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF            | NF | -- |
|        | --                            | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | --            | -- |    |
|        | Diurnal Maximum               |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |               |    |    |

PF - Power Failure      NF - Not Flagged



**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

**Wind Direction (WD) - deg**  
**Waskow ohci Pimatisiwin - February 2023**

|  |                               |
|--|-------------------------------|
| Direction of Maximum Speed: -- deg on Feb 1 00:00          | Hours in Service: 672         |
| Direction of Maximum Daily Speed Average: 0.0 deg on Jan 1 | Hours of Data: 0              |
| Direction of Minimum Speed: -- deg on Feb 1 00:00          | Hours of Missing Data: 672    |
| Direction of Minimum Daily Speed Average: 0.0 deg on Jan 1 | Percent Operational Time: 0.0 |
| Monthly Average Direction: -- deg                          |                               |

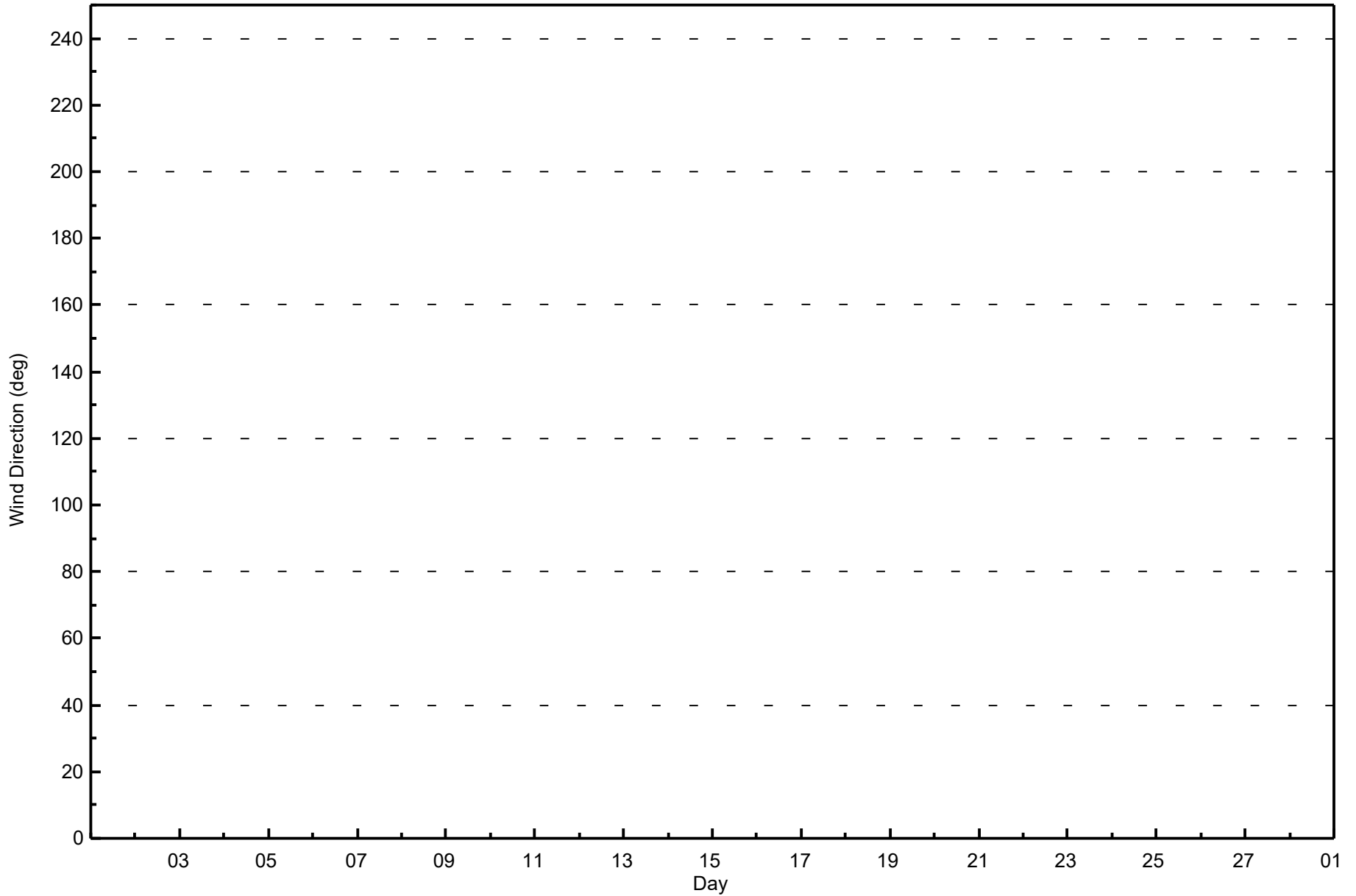
| Day             | Hourly Period Ending At (MST) |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    | Daily Average |    |
|-----------------|-------------------------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|---------------|----|
|                 | 1                             | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |               |    |
| 1-Feb           | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | --            |    |
| 2-Feb           | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF            | -- |
| 3-Feb           | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF            | -- |
| 4-Feb           | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF            | -- |
| 5-Feb           | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF            | -- |
| 6-Feb           | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF            | -- |
| 7-Feb           | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF            | -- |
| 8-Feb           | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF            | -- |
| 9-Feb           | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF            | -- |
| 10-Feb          | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF            | -- |
| 11-Feb          | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF            | -- |
| 12-Feb          | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF            | -- |
| 13-Feb          | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF            | -- |
| 14-Feb          | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF            | -- |
| 15-Feb          | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF            | -- |
| 16-Feb          | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF            | -- |
| 17-Feb          | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF            | -- |
| 18-Feb          | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF            | -- |
| 19-Feb          | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF            | -- |
| 20-Feb          | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF            | -- |
| 21-Feb          | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF            | -- |
| 22-Feb          | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF            | -- |
| 23-Feb          | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF            | -- |
| 24-Feb          | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF            | -- |
| 25-Feb          | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF            | -- |
| 26-Feb          | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF            | -- |
| 27-Feb          | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF            | -- |
| 28-Feb          | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF            | -- |
| Diurnal Average |                               |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    | --            |    |

PF - Power Failure  
 All monthly, daily, and diurnal averages have been calculated using vector methods



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Wind Direction (WD) - deg**  
**Waskow ohci Pimatisiwin - February 2023**





**Wood Buffalo Environmental Association**  
**Summary of Hour Standard Deviations**

**Wind Direction (WD) - deg**

**Waskow ohci Pimatisiwin - February 2023**

|  |                               |
|--|-------------------------------|
| Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0  | Hours in Service: 672         |
| Maximum Value: -- deg on Feb 1 00:00   | Hours of Data: 0              |
| Minimum Value: -- deg on Feb 1 00:00   | Hours of Missing Data: 672    |
| Percentiles: P <sub>1</sub> = 0 P <sub>10</sub> = 0 Q <sub>1</sub> = 0 Median = 0 Q <sub>3</sub> = 0 P <sub>90</sub> = 0 P <sub>99</sub> = 0 | Hours of Calibration: 0       |
|  | Percent Operational Time: 0.0 |

| Day    | Hourly Period Ending At (MST) |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    | Daily Maximum |    |    |
|--------|-------------------------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|---------------|----|----|
|        | 1                             | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |               |    |    |
| 1-Feb  | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF            | -- |    |
| 2-Feb  | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF            | PF | -- |
| 3-Feb  | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF            | PF | -- |
| 4-Feb  | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF            | PF | -- |
| 5-Feb  | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF            | PF | -- |
| 6-Feb  | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF            | PF | -- |
| 7-Feb  | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF            | PF | -- |
| 8-Feb  | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF            | PF | -- |
| 9-Feb  | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF            | PF | -- |
| 10-Feb | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF            | PF | -- |
| 11-Feb | PF                            | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF | PF            | PF | -- |
| 12-Feb | PF                            | PF | PF | PF | PF | PF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF            | NF | -- |
| 13-Feb | NF                            | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF            | NF | -- |
| 14-Feb | NF                            | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF            | NF | -- |
| 15-Feb | NF                            | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF            | NF | -- |
| 16-Feb | NF                            | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF            | NF | -- |
| 17-Feb | NF                            | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF            | NF | -- |
| 18-Feb | NF                            | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF            | NF | -- |
| 19-Feb | NF                            | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF            | NF | -- |
| 20-Feb | NF                            | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF            | NF | -- |
| 21-Feb | NF                            | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF            | NF | -- |
| 22-Feb | NF                            | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF            | NF | -- |
| 23-Feb | NF                            | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF            | NF | -- |
| 24-Feb | NF                            | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF            | NF | -- |
| 25-Feb | NF                            | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF            | NF | -- |
| 26-Feb | NF                            | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF            | NF | -- |
| 27-Feb | NF                            | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF            | NF | -- |
| 28-Feb | NF                            | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF | NF            | NF | -- |
|        | --                            | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | --            | -- | -- |
|        | Diurnal Maximum               |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |               |    |    |

PF - Power Failure      NF - Not Flagged



## WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY  
MONITORING PROGRAM  
MONTHLY REPORT

### **AMS26 CHRISTINA LAKE FEBRUARY 2023**

Operations, Data Collection,  
QA/QC, Data Validation and Reporting by:  
Wood Buffalo Environmental Association  
Fort McMurray, Alberta

March 31, 2023

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - CHRISTINA LAKE (AMS26)  
 FEBRUARY 2023

MONTHLY SUMMARY

| Parameter                         | Hours of Data | Hours of Calibration | Hours without Data | Operational Time | Maximum 1-Hour Value | 1-Hour Exceedances | Maximum 24-Hour Value | 24-Hour Exceedances |
|-----------------------------------|---------------|----------------------|--------------------|------------------|----------------------|--------------------|-----------------------|---------------------|
| SO2 (ppb) Average                 | 638           | 32                   | 34                 | 99.7             | 26.4                 | 0                  | 4.6                   | 0                   |
| H2S (ppb) Average                 | 637           | 33                   | 35                 | 99.7             | 1                    | 0                  | 0.3                   | 0                   |
| NO2 (ppb) Average                 | 636           | 33                   | 36                 | 99.55            | 28.1                 | 0                  | 10.9                  | -                   |
| NO (ppb) Average                  | 636           | 33                   | 36                 | 99.55            | 56.9                 | -                  | 7.5                   | -                   |
| NOX (ppb) Average                 | 636           | 33                   | 36                 | 99.55            | 85                   | -                  | 18.5                  | -                   |
| Temperature 2 m (C) Average       | 672           | 0                    | 0                  | 100              | 6.2                  | -                  | 1.7                   | -                   |
| Relative Humidity (%) Average     | 672           | 0                    | 0                  | 100              | 96.1                 | -                  | 88.6                  | -                   |
| Wind Speed 10 m (km/h) Average    | 670           | 0                    | 2                  | 99.7             | 32                   | -                  | 21                    | -                   |
| Wind Direction 10 m (deg) Average | 670           | 0                    | 2                  | 99.7             | -                    | -                  | -                     | -                   |

Note : Operational time includes periods of data collection and instrument calibration

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - CHRISTINA LAKE (AMS26)  
 FEBRUARY 2023

MONTHLY SUMMARY FOR AIR QUALITY/ METEOROLOGICAL MONITORING MEASUREMENTS

| Parameter                         | Number | Mean   | StnDev | Total | Percentile |       |       |        |      |      |      |
|-----------------------------------|--------|--------|--------|-------|------------|-------|-------|--------|------|------|------|
|                                   |        |        |        |       | Min        | P10   | Q1    | Median | Q3   | P90  | Max  |
| SO2 (ppb) Average                 | 638    | 1.5    | 2.5    | -     | 0          | 0     | 0.3   | 0.7    | 1.7  | 3.6  | 26.4 |
| H2S (ppb) Average                 | 637    | 0.09   | 0.1    | -     | 0          | 0     | 0     | 0      | 0.1  | 0.3  | 1    |
| NO2 (ppb) Average                 | 636    | 5.05   | 3.7    | -     | 0.4        | 1.6   | 2.7   | 4.2    | 6.3  | 9.3  | 28.1 |
| NO (ppb) Average                  | 636    | 1.63   | 3.3    | -     | 0          | 0     | 0.1   | 0.7    | 2    | 3.7  | 56.9 |
| NOX (ppb) Average                 | 636    | 6.67   | 6.2    | -     | 0.5        | 1.8   | 3     | 5.2    | 8.2  | 12.8 | 85   |
| Temperature 2 m (C) Average       | 672    | -11.51 | 10.3   | -     | -36.3      | -25.7 | -18.8 | -11.4  | -1.9 | 1.5  | 6.2  |
| Relative Humidity (%) Average     | 672    | 70.11  | 12     | -     | 34.3       | 53.4  | 62.5  | 72     | 78.1 | 83   | 96.1 |
| Wind Speed 10 m (km/h) Average    | 670    | 11.1   | 5      | -     | 1          | 4     | 7     | 10     | 15   | 19   | 32   |
| Wind Direction 10 m (deg) Average | 670    | -      | -      | -     | -          | -     | -     | -      | -    | -    | -    |

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - CHRISTINA LAKE (AMS26)  
FEBRUARY 2023

OPERATIONAL NOTES

| Parameter                  | Period<br>Start   | Period<br>End     | Duration<br>(Hours) | Notes                                     |
|----------------------------|-------------------|-------------------|---------------------|---|
| NO2, SO2                   | 15 Feb 2023 14:00 | 15 Feb 2023 15:00 | 2                   | Maintenance - sample manifold cleaned     |
| H2S                        | 16 Feb 2023 10:00 | 16 Feb 2023 11:00 | 2                   | Maintenance - reinitiated daily QA check  |
| NO2                        | 27 Feb 2023 02:00 | 27 Feb 2023 02:00 | 1                   | DAS Failure - negative baseline dips      |
| Wind Speed, Wind Direction | 15 Feb 2023 14:00 | 15 Feb 2023 15:00 | 2                   | Maintenance - station operator activities |





# Wood Buffalo Environmental Association

## Summary of Hour Averages

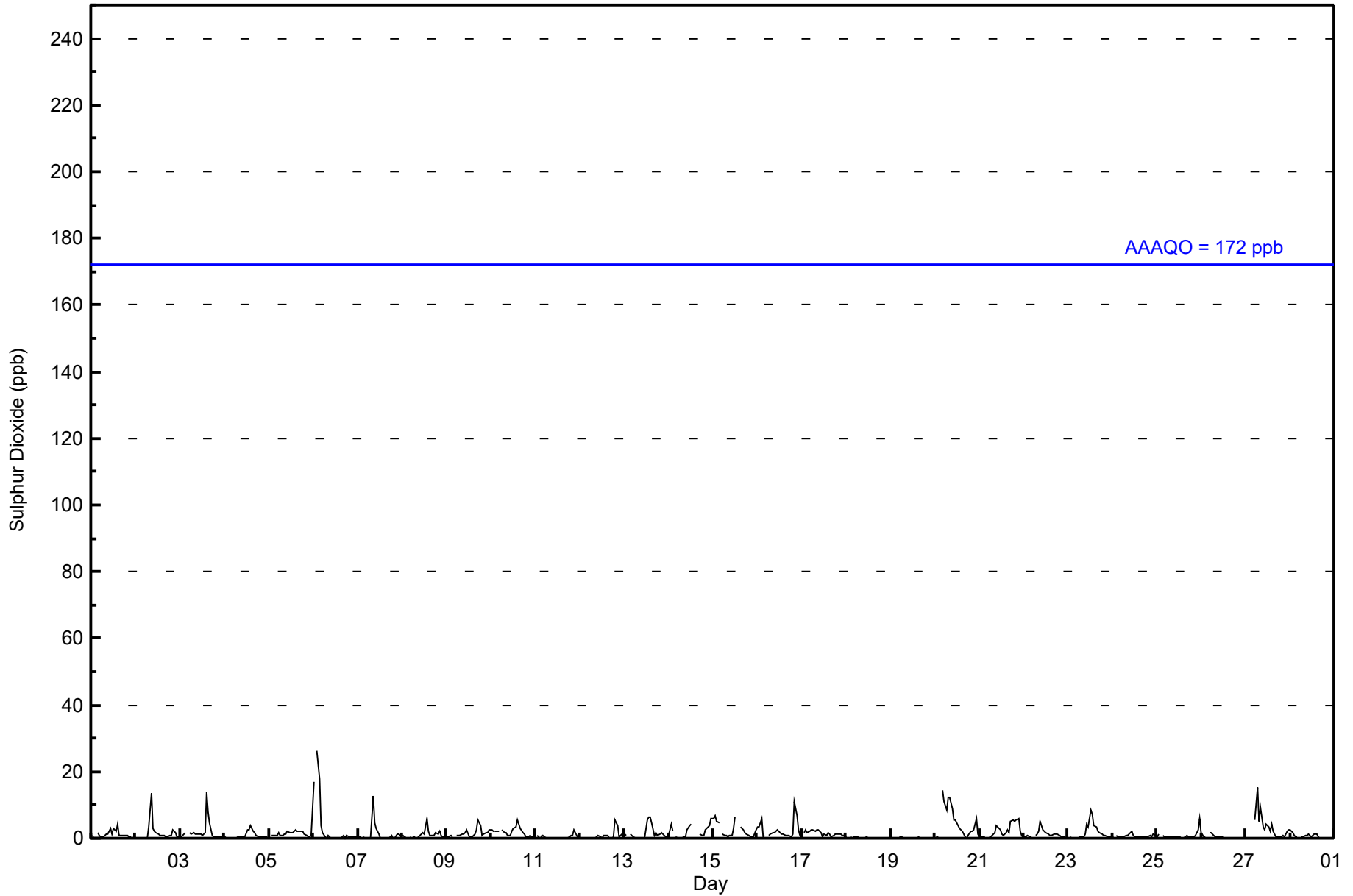
# Sulphur Dioxide (SO<sub>2</sub>) - ppb Christina Lake - February 2023

| Number of Exceedences (AAAQO):  |                               | 1-hr: 0   |      | 24-hr: 0 |      | Hours in Service: |      |      |      |     |     |     |     |     |      |                           |     |      |     | 672 |      |     |     |                 |               |               |
|---|-------------------------------|---|------|----------|------|-------------------|------|------|------|-----|-----|-----|-----|-----|------|---------------------------|-----|------|-----|-----|------|-----|-----|-----------------|---------------|---------------|
| Maximum Value: 26.4 ppb on Feb 6 03:00  |                               | Maximum Daily Average: 4.6 ppb on Feb 20  |      |          |      |                   |      |      |      |     |     |     |     |     |      | Hours of Data:            |     | 638  |     |     |      |     |     |                 |               |               |
| Minimum Value: 0.0 ppb on Feb 2 06:00   |                               | Minimum Daily Average: 0.1 ppb on Feb 19  |      |          |      |                   |      |      |      |     |     |     |     |     |      | Hours of Missing Data:    |     | 34   |     |     |      |     |     |                 |               |               |
| Maximum Diurnal Average: 2.4 ppb at hour 9  |                               | Minimum Diurnal Average: 1.0 ppb at hour 19   |      |          |      |                   |      |      |      |     |     |     |     |     |      | Hours of Calibration:     |     | 32   |     |     |      |     |     |                 |               |               |
| Monthly Average: 1.50 ppb   |                               | Percentiles: P <sub>1</sub> = 0.0 P <sub>10</sub> = 0.0 Q <sub>1</sub> = 0.3 Median = 0.7 Q <sub>3</sub> = 1.7 P <sub>90</sub> = 3.6 P <sub>99</sub> = 13.2 |      |          |      |                   |      |      |      |     |     |     |     |     |      | Percent Operational Time: |     | 99.7 |     |     |      |     |     |                 |               |               |
| Day   | Hourly Period Ending At (MST) |   |      |          |      |                   |      |      |      |     |     |     |     |     |      |                           |     |      |     |     |      |     |     |                 | Daily Average | Daily Maximum |
|   | 1                             | 2   | 3    | 4        | 5    | 6                 | 7    | 8    | 9    | 10  | 11  | 12  | 13  | 14  | 15   | 16                        | 17  | 18   | 19  | 20  | 21   | 22  | 23  | 24              |               |               |
| 1-Feb   | 0.7                           | 0.5   | Z    | 1.6      | 0.6  | 0.4               | 0.4  | 1.0  | 1.5  | 1.3 | 2.9 | 1.3 | 2.8 | 1.9 | 4.4  | 1.0                       | 0.7 | 0.9  | 0.8 | 0.9 | 0.5  | 0.3 | 0.2 | 0.3             | 1.2           | 4.4           |
| 2-Feb   | 0.1                           | 0.1   | 0.1  | Z        | 0.1  | 0.0               | 0.0  | 3.2  | 13.6 | 2.8 | 2.2 | 1.9 | 1.4 | 1.0 | 0.8  | 0.9                       | 0.6 | 0.4  | 0.6 | 1.0 | 2.4  | 1.7 | 0.4 | 0.4             | 1.6           | 13.6          |
| 3-Feb   | 0.5                           | 0.9   | 1.4  | 1.9      | Z    | 1.8               | 1.3  | 1.9  | 1.2  | 1.1 | 1.2 | 1.4 | 0.8 | 1.6 | 13.8 | 7.9                       | 4.6 | 0.8  | 0.4 | 0.4 | 0.4  | 0.4 | 0.6 | 0.5             | 2.0           | 13.8          |
| 4-Feb   | 0.2                           | 0.2   | 0.1  | 0.1      | 0.1  | Z                 | 0.2  | 0.2  | 0.5  | 0.5 | 0.4 | 0.4 | 2.7 | 2.5 | 3.7  | 2.3                       | 1.5 | 0.7  | 0.4 | 0.6 | 0.4  | 0.6 | 0.4 | 0.3             | 0.8           | 3.7           |
| 5-Feb   | Z                             | 0.7   | 0.7  | 0.7      | 0.7  | 1.5               | 1.0  | 0.8  | 1.3  | 1.1 | 2.2 | 1.6 | 1.8 | 1.6 | 2.7  | 2.3                       | 2.2 | 2.0  | 2.1 | 1.3 | 0.7  | 0.4 | 0.4 | 0.6             | 1.3           | 2.7           |
| 6-Feb   | 16.9                          | Z   | 26.4 | 17.9     | 3.6  | 1.7               | 0.4  | 0.1  | 1.0  | 0.2 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0  | 0.1                       | 0.7 | 0.1  | 0.9 | 0.3 | 0.3  | 0.6 | 0.4 | 0.2             | 3.1           | 26.4          |
| 7-Feb   | 0.2                           | 0.6   | Z    | 0.2      | 0.0  | 0.0               | 0.0  | 0.0  | 12.5 | 4.7 | 2.8 | 1.4 | 0.1 | 0.1 | 0.1  | 0.0                       | 0.0 | 0.0  | 1.0 | 0.2 | 0.1  | 1.1 | 1.4 | 0.7             | 1.2           | 12.5          |
| 8-Feb   | 0.6                           | 0.5   | 0.3  | Z        | 0.2  | 0.2               | 0.4  | 0.2  | 0.1  | 0.4 | 1.3 | 1.5 | 1.2 | 6.1 | 1.9  | 0.8                       | 0.7 | 0.7  | 1.7 | 1.3 | 2.0  | 0.8 | 0.4 | 0.4             | 1.0           | 6.1           |
| 9-Feb   | 0.4                           | 0.6   | 1.0  | 0.6      | Z    | 1.0               | 0.9  | 0.7  | 1.4  | 1.4 | 1.8 | 2.4 | 0.3 | 0.5 | 0.5  | 1.2                       | 2.4 | 5.5  | 3.7 | 0.9 | 1.4  | 1.6 | 1.6 | 2.7             | 1.5           | 5.5           |
| 10-Feb  | 2.7                           | 2.1   | 2.2  | 2.1      | 2.1  | Z                 | 2.5  | 1.7  | 1.5  | 0.9 | 0.9 | 2.0 | 2.8 | 3.6 | 5.3  | 4.2                       | 2.8 | 1.8  | 1.2 | 0.4 | 0.4  | 0.7 | 0.5 | 0.5             | 2.0           | 5.3           |
| 11-Feb  | Z                             | 0.8   | 0.1  | 0.4      | 0.7  | 0.4               | 0.1  | 0.0  | 0.1  | 0.2 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0                       | 0.0 | 0.0  | 0.2 | 0.7 | 1.0  | 2.5 | 0.9 | 0.0             | 0.4           | 2.5           |
| 12-Feb  | 0.0                           | Z   | 0.0  | 0.0      | 0.0  | 0.0               | 0.0  | 0.0  | 0.0  | 0.3 | 0.7 | 0.5 | 0.2 | 0.8 | 0.9  | 0.7                       | 0.2 | 0.2  | 0.4 | 5.5 | 3.8  | 0.5 | 0.9 | 1.4             | 0.7           | 5.5           |
| 13-Feb  | 1.1                           | 0.6   | Z    | 1.3      | 0.7  | 0.2               | 0.1  | 0.1  | 0.1  | 0.1 | 0.1 | 0.0 | 5.7 | 6.5 | 6.5  | 4.8                       | 0.9 | 1.6  | 1.0 | 1.5 | 1.6  | 1.1 | 0.4 | 0.5             | 1.6           | 6.5           |
| 14-Feb  | 0.8                           | 4.3   | 1.9  | Z        | 0.3  | 0.2               | 0.2  | 0.1  | 0.3  | 0.6 | 2.4 | 3.8 | 4.4 | C   | C    | C                         | C   | 1.3  | 1.0 | 0.8 | 2.5  | 3.2 | 3.8 | 5.9             | 2.0           | 5.9           |
| 15-Feb  | 6.1                           | 6.9   | 5.3  | 4.6      | Z    | 1.1               | 1.1  | 0.6  | 0.5  | 0.7 | 0.9 | 3.1 | 6.3 | M   | M    | 3.5                       | 2.7 | 1.9  | 1.4 | 0.9 | 0.5  | 0.5 | 0.4 | 2.4             | 2.4           | 6.9           |
| 16-Feb  | 3.2                           | 3.2   | 5.9  | 0.6      | 0.7  | Z                 | 0.6  | 1.4  | 1.6  | 1.6 | 1.9 | 2.4 | 1.8 | 1.4 | 1.3  | 1.0                       | 0.8 | 0.7  | 0.3 | 1.2 | 11.2 | 6.9 | 2.7 | 0.9             | 2.3           | 11.2          |
| 17-Feb  | Z                             | 1.6   | 2.3  | 1.8      | 2.1  | 2.6               | 2.4  | 2.3  | 2.6  | 2.4 | 1.9 | 0.4 | 1.1 | 1.0 | 1.5  | 1.1                       | 0.4 | 0.9  | 1.1 | 1.2 | 1.4  | 1.3 | 0.7 | 0.7             | 1.5           | 2.6           |
| 18-Feb  | 0.5                           | Z   | 0.3  | 0.1      | 0.5  | 0.5               | 0.3  | 0.1  | 0.0  | 0.0 | 0.0 | 0.3 | 0.2 | 0.0 | 0.0  | 0.0                       | 0.0 | 0.0  | 0.0 | 0.0 | 0.0  | 0.0 | 0.0 | 0.0             | 0.1           | 0.5           |
| 19-Feb  | 0.0                           | 0.0   | Z    | 0.0      | 0.1  | 0.2               | 0.3  | 0.1  | 0.1  | 0.0 | 0.2 | 0.0 | 0.0 | 0.0 | 0.1  | 0.2                       | 0.0 | 0.0  | 0.0 | 0.0 | 0.0  | 0.0 | 0.0 | 0.0             | 0.1           | 0.3           |
| 20-Feb  | 0.0                           | 0.4   | 0.3  | Z        | 14.4 | 10.9              | 8.5  | 12.3 | 12.5 | 9.0 | 5.7 | 5.6 | 3.8 | 2.9 | 2.4  | 2.1                       | 0.3 | 0.0  | 0.9 | 2.0 | 2.2  | 2.4 | 5.8 | 1.4             | 4.6           | 14.4          |
| 21-Feb  | 0.3                           | 0.2   | 0.3  | 0.5      | Z    | 0.4               | 0.4  | 0.7  | 1.5  | 3.6 | 3.2 | 2.7 | 1.2 | 0.8 | 1.9  | 2.4                       | 1.6 | 5.2  | 5.3 | 5.1 | 5.5  | 5.8 | 1.9 | 0.6             | 2.2           | 5.8           |
| 22-Feb  | 0.5                           | 0.6   | 0.8  | 0.5      | 0.4  | Z                 | 0.9  | 1.1  | 2.2  | 4.9 | 2.6 | 1.9 | 1.8 | 1.3 | 0.9  | 0.8                       | 1.2 | 1.5  | 1.4 | 1.0 | 0.6  | 0.2 | 0.3 | 0.2             | 1.2           | 4.9           |
| 23-Feb  | Z                             | 0.3   | 0.2  | 0.1      | 0.2  | 0.2               | 0.3  | 0.4  | 0.4  | 1.3 | 4.1 | 3.6 | 8.5 | 7.2 | 4.0  | 3.3                       | 2.0 | 1.5  | 1.1 | 1.0 | 0.9  | 0.6 | 0.6 | 0.6             | 1.8           | 8.5           |
| 24-Feb  | 0.5                           | Z   | 0.7  | 0.5      | 0.4  | 0.4               | 0.5  | 1.0  | 0.7  | 1.3 | 2.1 | 0.7 | 0.5 | 0.5 | 0.6  | 0.6                       | 0.6 | 0.5  | 0.6 | 0.6 | 1.0  | 0.5 | 1.2 | 0.7             | 0.7           | 2.1           |
| 25-Feb  | 0.6                           | 1.4   | Z    | 1.0      | 0.4  | 0.4               | 0.4  | 0.4  | 0.3  | 0.6 | 0.6 | 0.4 | 0.3 | 0.1 | 0.2  | 0.3                       | 0.8 | 0.6  | 0.6 | 0.3 | 0.3  | 0.8 | 2.7 | 5.7             | 0.8           | 5.7           |
| 26-Feb  | 1.8                           | 0.5   | 0.6  | Z        | 1.8  | 1.8               | 1.2  | 0.5  | 0.3  | 0.3 | 0.4 | 0.3 | 0.2 | 0.1 | 0.0  | 0.1                       | 0.0 | 0.1  | 0.0 | 0.0 | 0.0  | 0.0 | 0.0 | 0.0             | 0.4           | 1.8           |
| 27-Feb  | 0.0                           | 0.0   | 0.0  | 0.0      | Z    | 5.3               | 15.1 | 5.2  | 9.2  | 3.3 | 2.5 | 4.3 | 3.2 | 1.9 | 4.3  | 1.9                       | 0.3 | 0.3  | 0.3 | 0.5 | 0.7  | 0.6 | 2.0 | 2.7             | 2.8           | 15.1          |
| 28-Feb  | 2.7                           | 1.7   | 0.8  | 0.3      | 0.3  | Z                 | 0.4  | 0.3  | 0.7  | 0.8 | 1.2 | 0.4 | 0.7 | 1.3 | 1.2  | 0.3                       | 0.1 | 0.1  | 0.0 | 0.0 | 0.0  | 0.0 | 0.1 | 0.0             | 0.6           | 2.7           |
| 1.7 1.2 2.2 1.6 1.3 1.4 1.4 1.3 2.4 1.6 1.7 1.6 1.9 1.7 2.3 1.6 1.0 1.0 1.0 1.1 1.5 1.3 1.1 1.1           |                               |   |      |          |      |                   |      |      |      |     |     |     |     |     |      |                           |     |      |     |     |      |     |     | Diurnal Average |               |               |
| 16.9 6.9 26.4 17.9 14.4 10.9 15.1 12.3 13.6 9.0 5.7 5.6 8.5 7.2 13.8 7.9 4.6 5.5 5.3 5.5 11.2 6.9 5.8 5.9 |                               |   |      |          |      |                   |      |      |      |     |     |     |     |     |      |                           |     |      |     |     |      |     |     | Diurnal Maximum |               |               |
| Z - zerospan C - Calibration M - Maintenance  |                               |   |      |          |      |                   |      |      |      |     |     |     |     |     |      |                           |     |      |     |     |      |     |     |                 |               |               |
| Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 172 ppb 24-hr 48 ppb                                 |                               |   |      |          |      |                   |      |      |      |     |     |     |     |     |      |                           |     |      |     |     |      |     |     |                 |               |               |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Sulphur Dioxide (SO<sub>2</sub>) - ppb**  
**Christina Lake - February 2023**





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Sulphur Dioxide (SO<sub>2</sub>) - ppb  
Christina Lake - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 10                            | 626                    | 98.12    | 98.12               |
| 11 - 20                           | 11                     | 1.72     | 99.84               |
| 21 - 60                           | 1                      | 0.16     | 100.00              |
| 61 - 110                          | 0                      | 0.00     | 100.00              |
| 111 - 172                         | 0                      | 0.00     | 100.00              |
| > 172                             | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 638

Total Number of Hours: 672



**Wood Buffalo Environmental Association**  
**Frequency Distribution**

**Sulphur Dioxide (SO<sub>2</sub>) - ppb**  
**Christina Lake - February 2023**

| <b>Concentration</b><br><b>Ranges (ppb)</b> | <b>Wind Direction</b> |            |           |            |          |            |           |            |          |            |           |            |          |            |           |            | <b>Totals</b> |
|---|-----------------------|------------|-----------|------------|----------|------------|-----------|------------|----------|------------|-----------|------------|----------|------------|-----------|------------|---------------|
|   | <b>N</b>              | <b>NNE</b> | <b>NE</b> | <b>ENE</b> | <b>E</b> | <b>ESE</b> | <b>SE</b> | <b>SSE</b> | <b>S</b> | <b>SSW</b> | <b>SW</b> | <b>WSW</b> | <b>W</b> | <b>WNW</b> | <b>NW</b> | <b>NNW</b> |               |
| 0 - 10                                      | 10                    | 45         | 46        | 33         | 41       | 17         | 5         | 36         | 55       | 81         | 69        | 84         | 22       | 15         | 35        | 32         | 626           |
| 11 - 20                                     | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 1        | 0          | 0         | 0          | 0        | 4          | 6         | 0          | 11            |
| 21 - 60                                     | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 1          | 0         | 0          | 1             |
| 61 - 110                                    | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0             |
| 111 - 172                                   | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0             |
| > 172                                       | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0             |
| <b>Totals</b>                               | 10                    | 45         | 46        | 33         | 41       | 17         | 5         | 36         | 56       | 81         | 69        | 84         | 22       | 20         | 41        | 32         | 638           |

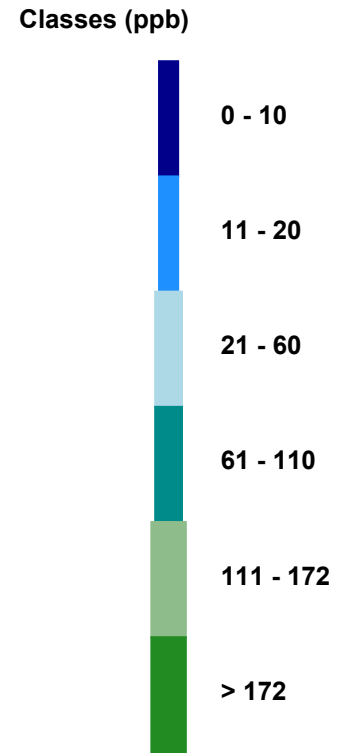
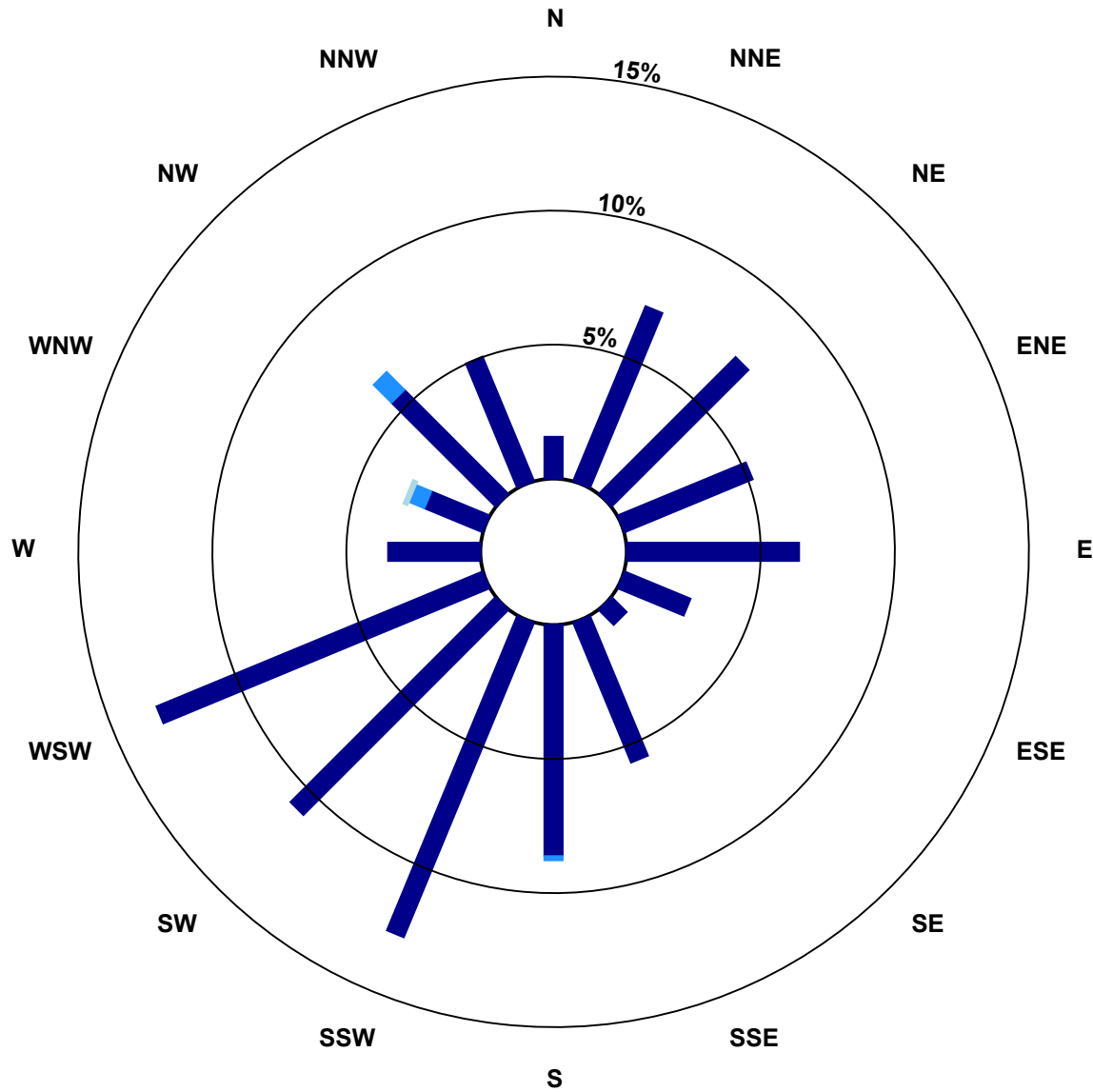
Total Number of Valid Hours: 638

Total Number of Hours: 672

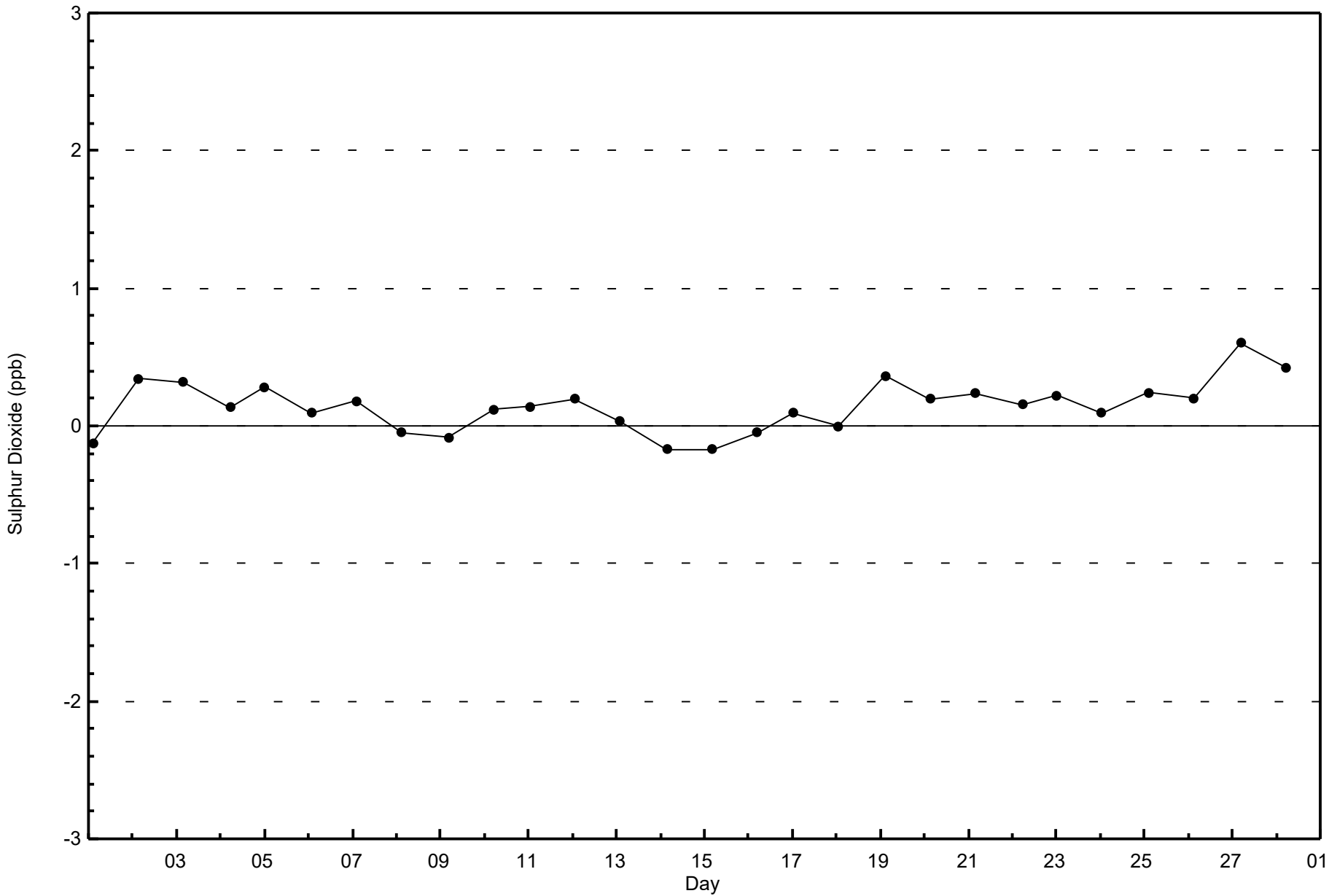


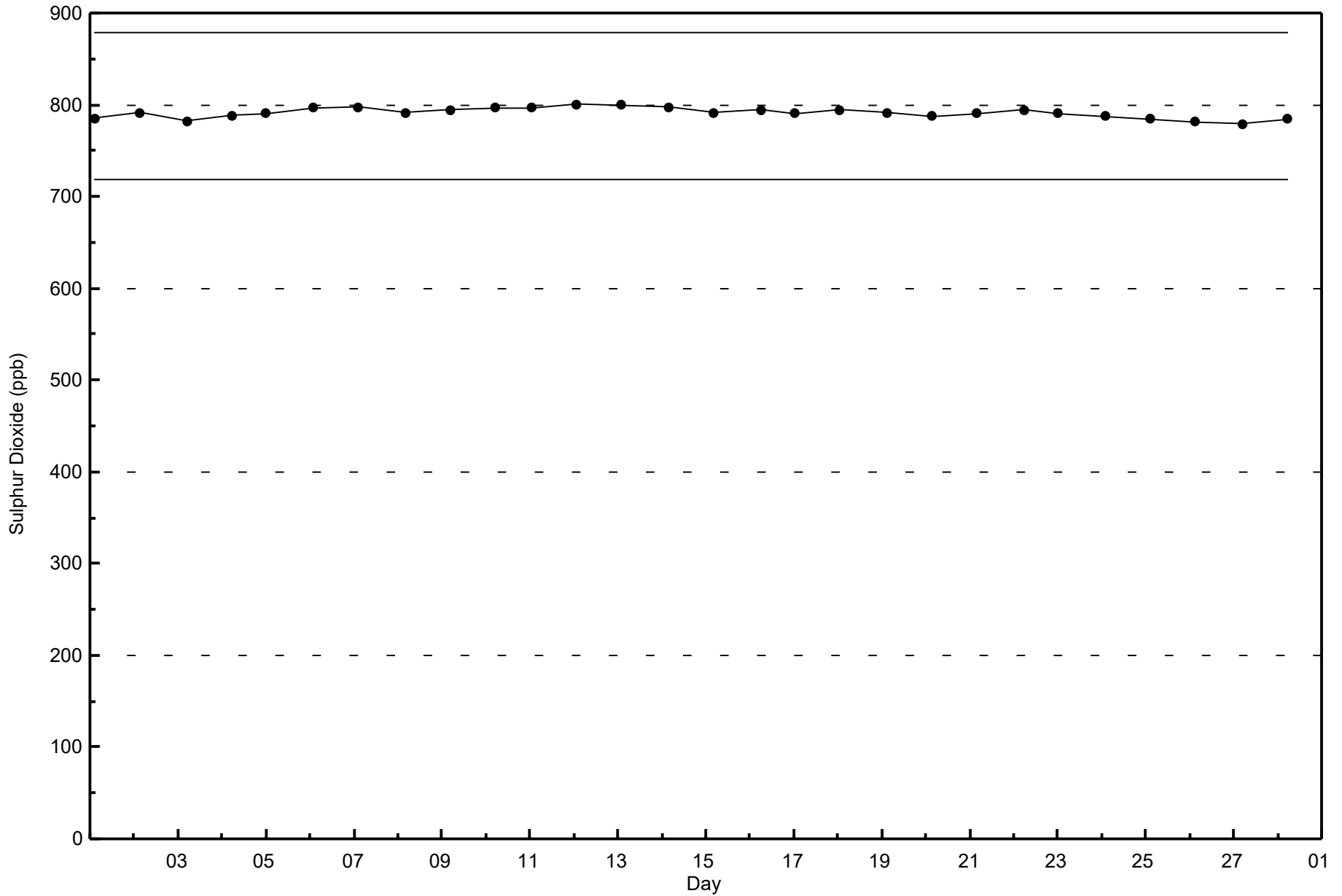
Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Sulphur Dioxide (SO<sub>2</sub>) - ppb  
Christina Lake



Total Number of Valid Hours: 638





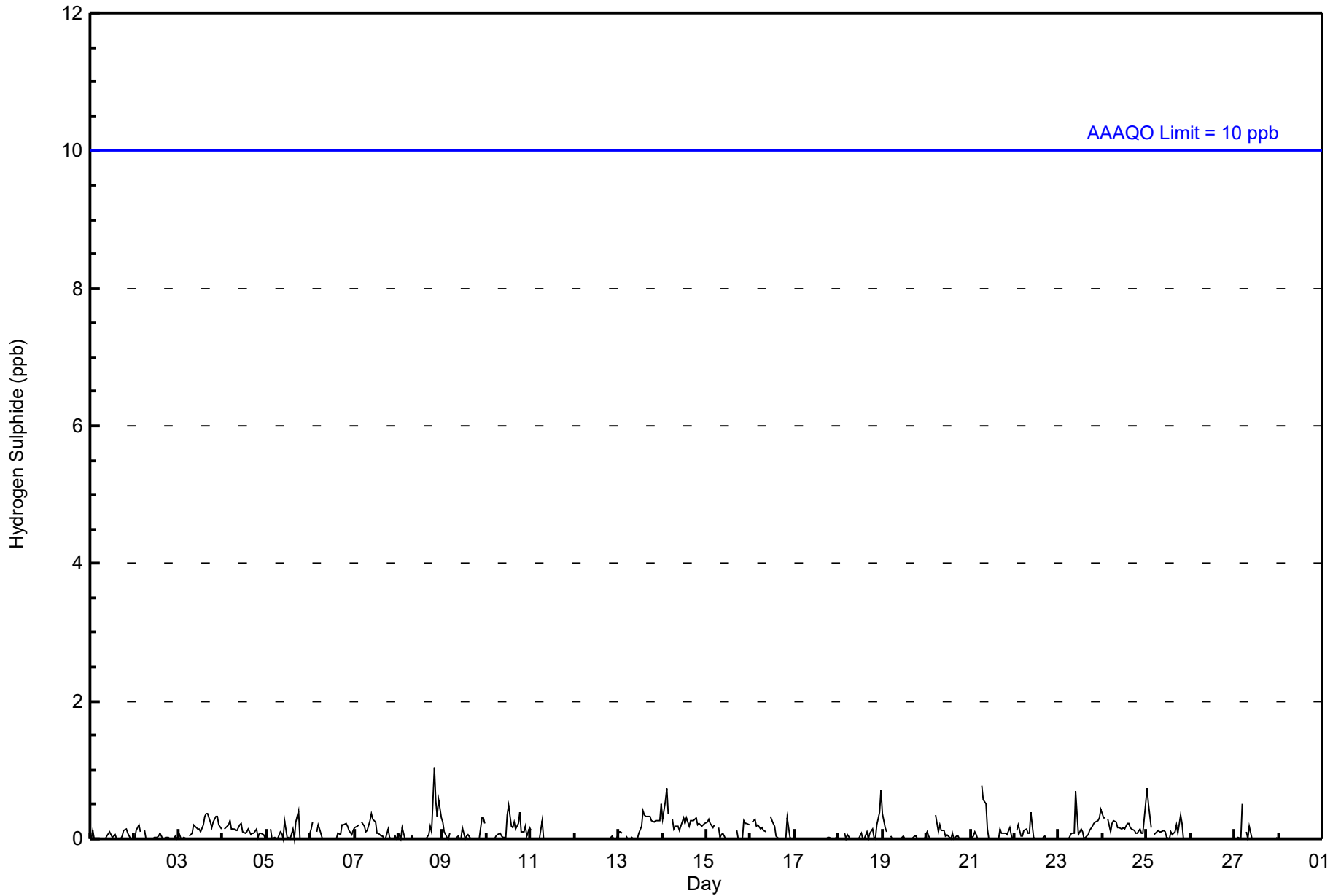






Wood Buffalo Environmental Association  
Hourly Averages

Hydrogen Sulphide (H<sub>2</sub>S) - ppb  
Christina Lake - February 2023





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Hydrogen Sulphide (H<sub>2</sub>S) - ppb  
Christina Lake - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 2                             | 637                    | 100.00   | 100.00              |
| 3 - 4                             | 0                      | 0.00     | 100.00              |
| 5 - 7                             | 0                      | 0.00     | 100.00              |
| 8 - 11                            | 0                      | 0.00     | 100.00              |
| > 11                              | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 637

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Hydrogen Sulphide (H<sub>2</sub>S) - ppb  
Christina Lake - February 2023**

| Concentration<br>Ranges (ppb) | Wind Direction |     |    |     |    |     |    |     |    |     |    |     |    |     |    |     | Totals |
|-------------------------------|----------------|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|--------|
|                               | N              | NNE | NE | ENE | E  | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |        |
| 0 - 2                         | 12             | 44  | 44 | 30  | 42 | 17  | 4  | 38  | 57 | 78  | 73 | 83  | 23 | 21  | 41 | 30  | 637    |
| 3 - 4                         | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| 5 - 7                         | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| 8 - 11                        | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| > 11                          | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| <b>Totals</b>                 | 12             | 44  | 44 | 30  | 42 | 17  | 4  | 38  | 57 | 78  | 73 | 83  | 23 | 21  | 41 | 30  | 637    |

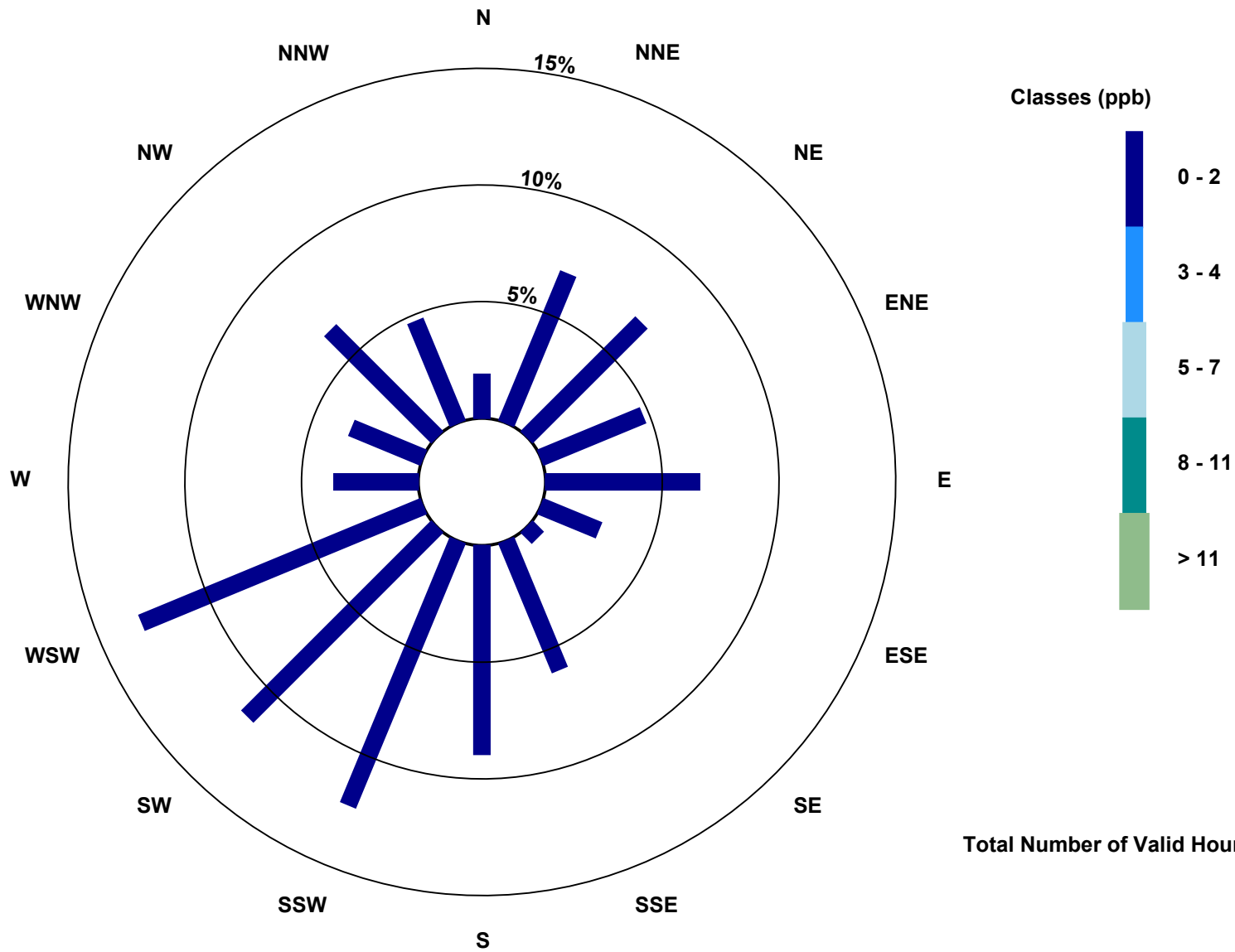
Total Number of Valid Hours: 637

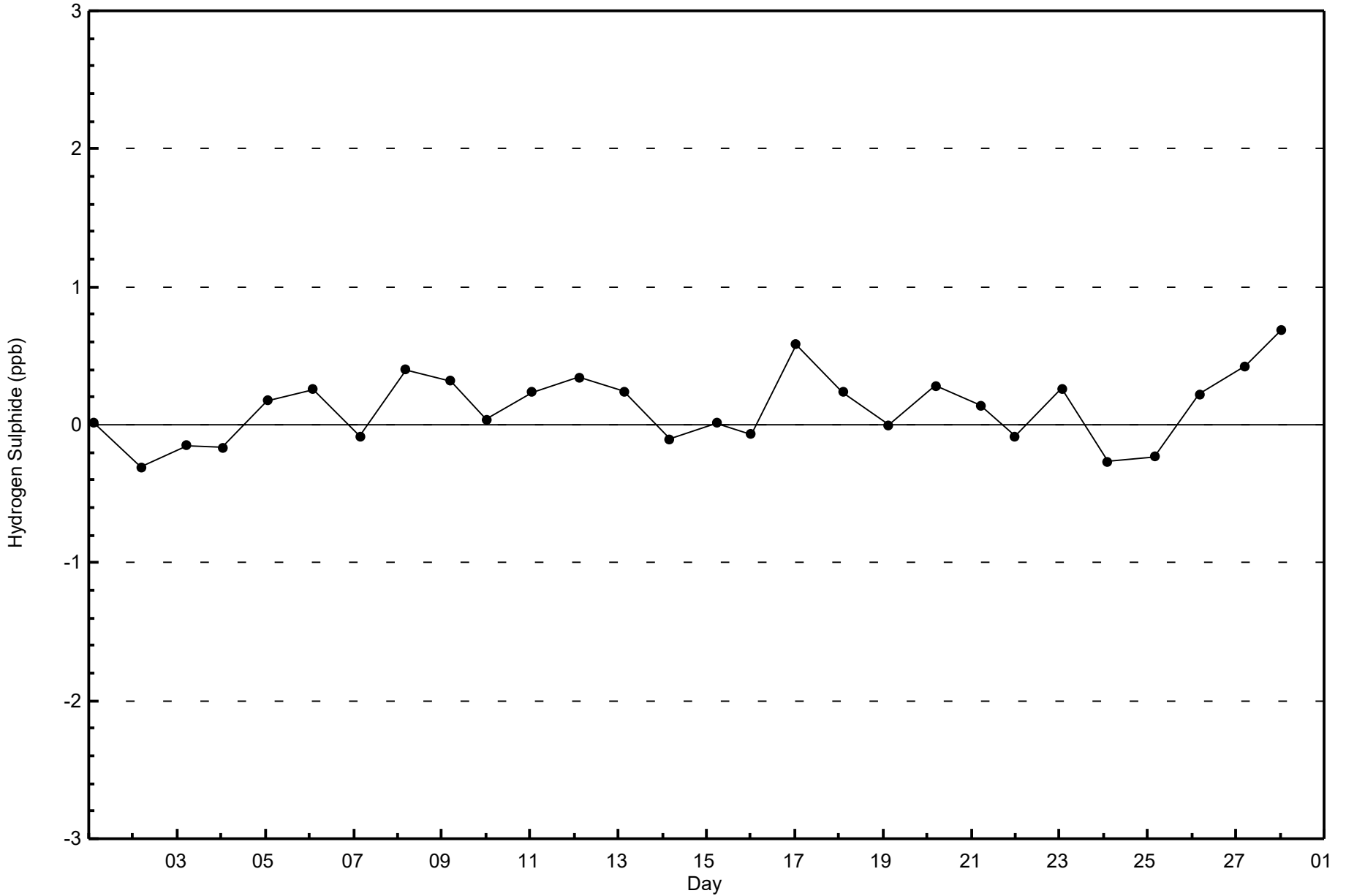
Total Number of Hours: 672

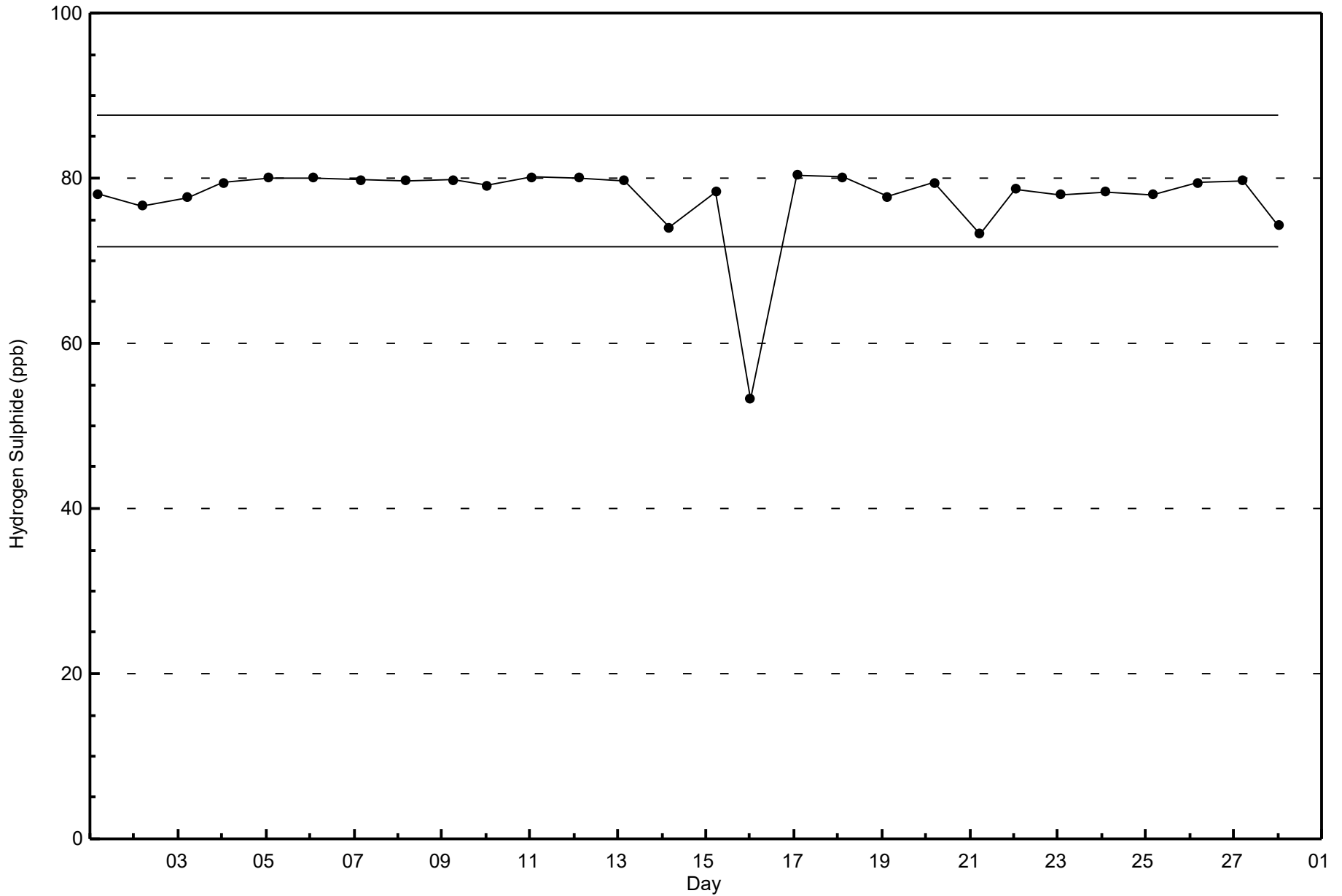


**Wood Buffalo Environmental Association**  
**Wind Rose Feb 2023**

**Hydrogen Sulphide (H<sub>2</sub>S) - ppb**  
**Christina Lake**









**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

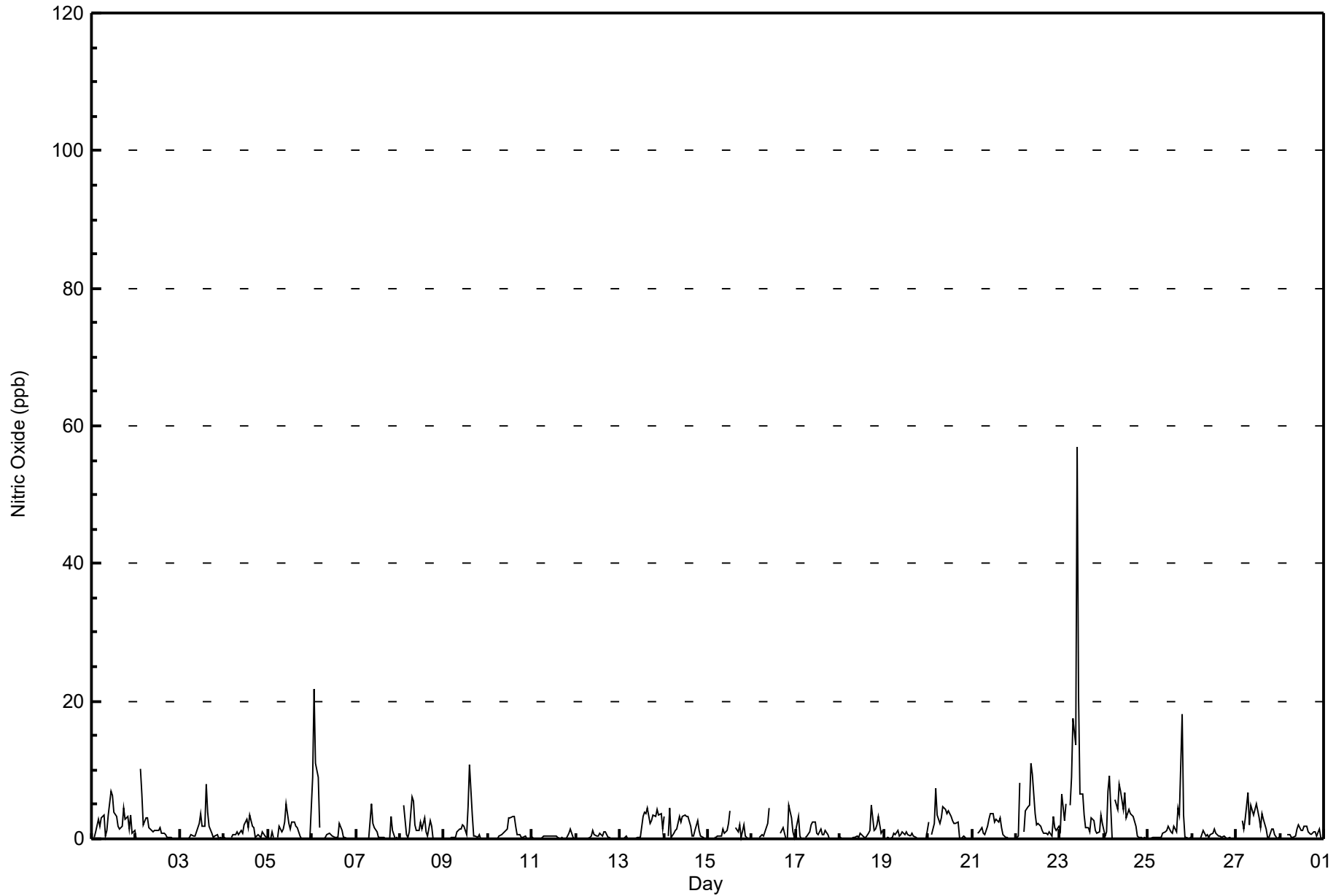
**Nitric Oxide (NO) - ppb**  
**Christina Lake - February 2023**

| Maximum Value: 56.9 ppb on Feb 23 10:00   |                               |      |      |     |     |     |     |      |      |   |      |     |     |     |      |                                |     |     |      |     | Maximum Daily Average: 7.5 ppb on Feb 23 |     |     |                 |               | Hours in Service: 672 |  |
|---|-------------------------------|------|------|-----|-----|-----|-----|------|------|---|------|-----|-----|-----|------|--------------------------------|-----|-----|------|-----|--|-----|-----|-----------------|---------------|-----------------------|--|
| Minimum Value: 0.0 ppb on Feb 5 19:00   |                               |      |      |     |     |     |     |      |      | Minimum Daily Average: 0.3 ppb on Feb 11  |      |     |     |     |      | Hours of Data: 636             |     |     |      |     |  |     |     |                 |               |                       |  |
| Maximum Diurnal Average: 4.1 ppb at hour 10   |                               |      |      |     |     |     |     |      |      | Minimum Diurnal Average: 0.3 ppb at hour 24   |      |     |     |     |      | Hours of Missing Data: 36      |     |     |      |     |  |     |     |                 |               |                       |  |
| Monthly Average: 1.63 ppb   |                               |      |      |     |     |     |     |      |      | Percentiles: P <sub>1</sub> = 0.0 P <sub>10</sub> = 0.0 Q <sub>1</sub> = 0.1 Median = 0.7 Q <sub>3</sub> = 2.0 P <sub>90</sub> = 3.7 P <sub>99</sub> = 11.0 |      |     |     |     |      | Hours of Calibration: 33       |     |     |      |     |  |     |     |                 |               |                       |  |
|   |                               |      |      |     |     |     |     |      |      |   |      |     |     |     |      | Percent Operational Time: 99.6 |     |     |      |     |  |     |     |                 |               |                       |  |
| Day   | Hourly Period Ending At (MST) |      |      |     |     |     |     |      |      |   |      |     |     |     |      |                                |     |     |      |     |  |     |     |                 | Daily Average | Daily Maximum         |  |
|   | 1                             | 2    | 3    | 4   | 5   | 6   | 7   | 8    | 9    | 10  | 11   | 12  | 13  | 14  | 15   | 16                             | 17  | 18  | 19   | 20  | 21                                       | 22  | 23  | 24              |               |                       |  |
| 1-Feb   | Z                             | 0.1  | 1.0  | 2.8 | 1.8 | 3.0 | 3.4 | 0.4  | 1.2  | 3.5   | 6.9  | 6.4 | 3.8 | 3.3 | 1.8  | 1.5                            | 1.9 | 4.5 | 2.7  | 3.3 | 1.4                                      | 3.4 | 0.7 | 1.3             | 2.6           | 6.9                   |  |
| 2-Feb   | 0.0                           | Z    | 10.2 | 6.4 | 2.0 | 3.0 | 3.1 | 1.6  | 1.3  | 1.1   | 1.2  | 1.2 | 1.3 | 1.7 | 0.8  | 0.8                            | 0.7 | 0.2 | 0.1  | 0.1 | 0.0                                      | 0.0 | 0.1 | 0.0             | 1.6           | 10.2                  |  |
| 3-Feb   | 0.1                           | 0.1  | Z    | 0.0 | 0.0 | 0.2 | 0.5 | 0.4  | 0.4  | 1.1   | 2.2  | 3.7 | 1.8 | 1.8 | 8.0  | 3.8                            | 1.7 | 0.8 | 0.1  | 0.5 | 0.6                                      | 0.1 | 0.1 | 0.0             | 1.2           | 8.0                   |  |
| 4-Feb   | 0.3                           | 0.0  | 0.1  | Z   | 0.3 | 0.6 | 0.7 | 1.0  | 0.6  | 1.2   | 0.8  | 2.0 | 2.9 | 1.7 | 3.4  | 1.8                            | 1.5 | 0.3 | 0.7  | 0.4 | 0.2                                      | 0.9 | 0.4 | 0.1             | 1.0           | 3.4                   |  |
| 5-Feb   | 0.1                           | 0.1  | 1.0  | 0.3 | Z   | 0.3 | 1.9 | 1.0  | 1.5  | 2.5   | 5.1  | 2.2 | 1.4 | 2.4 | 2.4  | 1.8                            | 1.7 | 0.4 | 0.0  | 0.0 | 0.0                                      | 0.0 | 0.0 | 0.0             | 1.1           | 5.1                   |  |
| 6-Feb   | 9.0                           | 21.7 | 11.1 | 9.0 | 1.6 | Z   | 0.0 | 0.2  | 0.5  | 0.9   | 0.6  | 0.4 | 0.3 | 0.2 | 0.2  | 2.3                            | 1.2 | 0.2 | 0.3  | 0.1 | 0.0                                      | 0.0 | 0.0 | 0.0             | 2.6           | 21.7                  |  |
| 7-Feb   | Z                             | 0.0  | 0.0  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 5.1  | 2.2   | 1.6  | 1.0 | 0.2 | 0.3 | 0.2  | 0.1                            | 0.1 | 0.0 | 0.1  | 3.3 | 1.3                                      | 0.0 | 0.2 | 0.0             | 0.7           | 5.1                   |  |
| 8-Feb   | 0.0                           | Z    | 4.8  | 0.5 | 0.2 | 1.1 | 6.2 | 5.4  | 2.0  | 1.2   | 1.2  | 2.5 | 1.5 | 3.0 | 1.0  | 0.3                            | 2.6 | 1.7 | 0.0  | 0.1 | 0.0                                      | 0.0 | 0.0 | 0.0             | 1.5           | 6.2                   |  |
| 9-Feb   | 0.0                           | 0.1  | Z    | 0.1 | 0.2 | 0.1 | 0.3 | 1.0  | 1.4  | 1.4   | 2.0  | 1.8 | 0.7 | 4.6 | 10.9 | 3.6                            | 0.4 | 0.4 | 0.1  | 0.6 | 0.0                                      | 0.0 | 0.0 | 0.0             | 1.3           | 10.9                  |  |
| 10-Feb  | 0.0                           | 0.0  | 0.0  | Z   | 0.0 | 0.0 | 0.4 | 0.7  | 0.9  | 1.0   | 1.5  | 3.0 | 3.0 | 3.2 | 3.3  | 1.8                            | 0.6 | 0.7 | 0.1  | 0.2 | 0.3                                      | 0.1 | 0.1 | 0.1             | 0.9           | 3.3                   |  |
| 11-Feb  | 0.3                           | 0.1  | 0.0  | 0.1 | Z   | 0.1 | 0.4 | 0.3  | 0.4  | 0.5   | 0.5  | 0.5 | 0.4 | 0.4 | 0.1  | 0.1                            | 0.1 | 0.1 | 0.0  | 0.3 | 0.7                                      | 1.3 | 0.3 | 0.0             | 0.3           | 1.3                   |  |
| 12-Feb  | 0.0                           | 0.0  | 0.0  | 0.0 | 0.0 | Z   | 0.0 | 0.1  | 0.5  | 1.3   | 0.7  | 0.5 | 0.3 | 0.8 | 0.3  | 1.1                            | 1.1 | 0.1 | 0.2  | 0.0 | 0.0                                      | 0.0 | 0.1 | 0.0             | 0.3           | 1.3                   |  |
| 13-Feb  | Z                             | 0.1  | 0.0  | 0.5 | 0.0 | 0.1 | 0.1 | 0.0  | 0.1  | 0.1   | 0.1  | 0.2 | 3.2 | 3.9 | 3.7  | 4.5                            | 2.2 | 2.6 | 3.4  | 3.3 | 4.2                                      | 3.4 | 3.7 | 1.5             | 1.8           | 4.5                   |  |
| 14-Feb  | 3.3                           | Z    | 0.5  | 4.5 | 0.1 | 0.7 | 1.3 | 1.4  | 3.3  | 2.5   | 3.2  | 3.5 | 3.3 | 3.3 | 1.9  | 0.5                            | 0.4 | 1.3 | 2.7  | 1.1 | 0.4                                      | 0.1 | 0.1 | 0.1             | 1.7           | 4.5                   |  |
| 15-Feb  | 0.1                           | 0.0  | Z    | 0.1 | 0.3 | 0.3 | 0.4 | 0.4  | 1.5  | 0.9   | 1.3  | 2.3 | 4.1 | M   | M    | 1.6                            | 1.0 | 2.0 | 0.2  | 2.1 | 0.3                                      | 0.1 | 0.0 | 0.0             | 0.9           | 4.1                   |  |
| 16-Feb  | 0.0                           | 0.1  | 0.0  | Z   | 0.1 | 0.5 | 0.4 | 1.0  | 2.1  | 4.5   | C    | C   | C   | C   | C    | 0.7                            | 1.2 | 1.7 | 0.0  | 0.1 | 4.8                                      | 3.0 | 0.9 | 0.2             | 1.2           | 4.8                   |  |
| 17-Feb  | 2.3                           | 3.3  | 0.4  | 0.0 | Z   | 0.2 | 0.3 | 1.0  | 2.0  | 2.4   | 2.5  | 0.8 | 0.7 | 1.5 | 0.7  | 0.6                            | 1.2 | 0.6 | 0.0  | 0.1 | 0.1                                      | 0.0 | 0.1 | 0.0             | 0.9           | 3.3                   |  |
| 18-Feb  | 0.1                           | 0.1  | 0.0  | 0.1 | 0.1 | Z   | 0.1 | 0.1  | 0.2  | 0.5   | 0.2  | 0.8 | 0.5 | 0.2 | 0.3  | 0.7                            | 1.3 | 4.9 | 1.3  | 1.4 | 2.0                                      | 3.3 | 0.8 | 1.2             | 0.9           | 4.9                   |  |
| 19-Feb  | Z                             | 0.2  | 0.2  | 0.1 | 0.2 | 0.8 | 0.7 | 1.2  | 0.5  | 0.7   | 1.0  | 0.7 | 1.1 | 0.7 | 0.4  | 0.8                            | 0.5 | 0.2 | 0.1  | 0.0 | 0.0                                      | 0.0 | 0.0 | 0.0             | 0.4           | 1.2                   |  |
| 20-Feb  | 2.5                           | Z    | 0.7  | 2.2 | 7.3 | 3.5 | 2.2 | 3.1  | 4.7  | 4.2   | 3.7  | 4.2 | 3.3 | 2.6 | 2.2  | 2.2                            | 2.4 | 0.1 | 0.1  | 0.3 | 0.1                                      | 0.1 | 0.1 | 0.0             | 2.2           | 7.3                   |  |
| 21-Feb  | 0.0                           | 0.0  | Z    | 0.7 | 1.0 | 1.6 | 0.9 | 0.6  | 1.8  | 2.9   | 3.7  | 3.6 | 2.4 | 2.8 | 2.4  | 3.0                            | 1.7 | 0.5 | 0.1  | 0.1 | 0.1                                      | 0.0 | 0.0 | 0.0             | 1.3           | 3.7                   |  |
| 22-Feb  | 0.2                           | 0.3  | 8.2  | Z   | 1.1 | 4.0 | 4.7 | 4.9  | 10.9 | 9.4   | 3.8  | 2.0 | 2.2 | 1.8 | 1.3  | 0.8                            | 0.9 | 0.6 | 0.9  | 0.3 | 3.3                                      | 1.6 | 1.3 | 1.8             | 2.9           | 10.9                  |  |
| 23-Feb  | 1.3                           | 6.5  | 2.7  | 5.1 | Z   | 4.8 | 8.9 | 17.5 | 13.7 | 56.9  | 20.8 | 6.4 | 6.5 | 3.5 | 1.6  | 1.5                            | 1.0 | 3.1 | 2.7  | 1.1 | 0.9                                      | 1.0 | 3.5 | 2.2             | 7.5           | 56.9                  |  |
| 24-Feb  | 0.3                           | 1.0  | 7.0  | 9.2 | 0.0 | Z   | 5.7 | 4.3  | 7.9  | 6.9   | 4.4  | 6.8 | 3.1 | 4.2 | 3.6  | 3.4                            | 3.3 | 1.9 | 0.5  | 0.2 | 0.2                                      | 0.1 | 0.1 | 0.0             | 3.2           | 9.2                   |  |
| 25-Feb  | Z                             | 0.1  | 0.2  | 0.1 | 0.2 | 0.2 | 0.2 | 0.2  | 0.7  | 1.1   | 1.1  | 1.9 | 0.9 | 0.9 | 1.9  | 1.1                            | 4.6 | 3.5 | 18.1 | 3.4 | 0.2                                      | 0.2 | 0.0 | 0.2             | 1.8           | 18.1                  |  |
| 26-Feb  | 0.0                           | Z    | 0.0  | 0.0 | 0.0 | 0.6 | 1.1 | 0.3  | 0.6  | 0.3   | 0.6  | 0.9 | 1.3 | 0.8 | 0.4  | 0.3                            | 0.3 | 0.4 | 0.2  | 0.0 | 0.2                                      | 0.0 | 0.0 | 0.1             | 0.4           | 1.3                   |  |
| 27-Feb  | 0.1                           | DF   | Z    | 2.6 | 1.5 | 2.8 | 6.8 | 2.1  | 4.8  | 3.4   | 4.2  | 5.1 | 3.0 | 1.7 | 3.6  | 2.8                            | 1.4 | 0.3 | 0.1  | 1.4 | 1.4                                      | 0.6 | 0.0 | 0.3             | 2.3           | 6.8                   |  |
| 28-Feb  | 0.1                           | 0.1  | 0.0  | Z   | 0.6 | 0.5 | 0.1 | 0.1  | 0.3  | 1.5   | 2.1  | 1.1 | 1.3 | 1.9 | 1.9  | 1.0                            | 0.8 | 0.6 | 1.0  | 1.0 | 0.4                                      | 1.4 | 0.1 | 0.0             | 0.8           | 2.1                   |  |
| 0.9 1.5 2.1 1.9 0.8 1.2 1.8 1.8 2.5 4.1 2.8 2.4 2.0 2.0 2.3 1.6 1.3 1.2 1.3 0.9 0.8 0.7 0.5 0.3         |                               |      |      |     |     |     |     |      |      |   |      |     |     |     |      |                                |     |     |      |     |  |     |     | Diurnal Average |               |                       |  |
| 9.0 21.7 11.1 9.2 7.3 4.8 8.9 17.5 13.7 56.9 20.8 6.8 6.5 4.6 10.9 4.5 4.6 4.9 18.1 3.4 4.8 3.4 3.7 2.2 |                               |      |      |     |     |     |     |      |      |   |      |     |     |     |      |                                |     |     |      |     |  |     |     | Diurnal Maximum |               |                       |  |
| Z - zerospan C - Calibration M - Maintenance DF - DAS Failure   |                               |      |      |     |     |     |     |      |      |   |      |     |     |     |      |                                |     |     |      |     |  |     |     |                 |               |                       |  |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Nitric Oxide (NO) - ppb**  
**Christina Lake - February 2023**







**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Nitric Oxide (NO) - ppb**  
**Christina Lake - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 20                            | 633                    | 99.53    | 99.53               |
| 21 - 40                           | 2                      | 0.31     | 99.84               |
| 41 - 80                           | 1                      | 0.16     | 100.00              |
| 81 - 159                          | 0                      | 0.00     | 100.00              |
| > 159                             | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 636

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Nitric Oxide (NO) - ppb  
Christina Lake - February 2023**

| <b>Concentration<br/>Ranges (ppb)</b> | <b>Wind Direction</b> |     |    |     |    |     |    |     |    |     |    |     |    |     |    |     | <b>Totals</b> |
|---------------------------------------|-----------------------|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|---------------|
|                                       | N                     | NNE | NE | ENE | E  | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |               |
| 0 - 20                                | 12                    | 45  | 42 | 33  | 43 | 17  | 5  | 34  | 56 | 76  | 70 | 84  | 22 | 21  | 42 | 31  | 633           |
| 21 - 40                               | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 1   | 0  | 0   | 0  | 0   | 0  | 1   | 0  | 0   | 2             |
| 41 - 80                               | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 1  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 1             |
| 81 - 159                              | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| > 159                                 | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| <b>Totals</b>                         | 12                    | 45  | 42 | 33  | 43 | 17  | 5  | 35  | 57 | 76  | 70 | 84  | 22 | 22  | 42 | 31  | 636           |

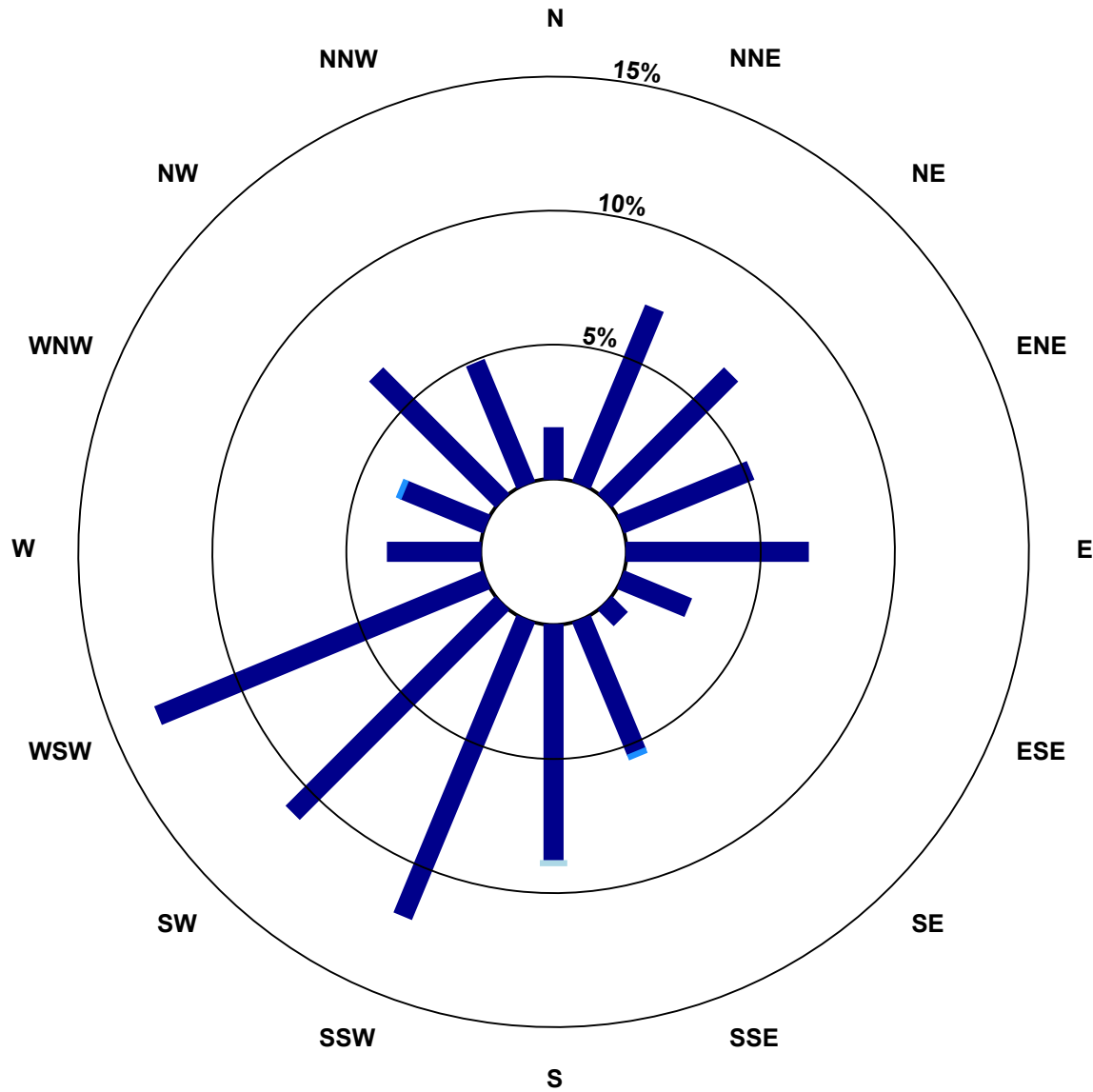
Total Number of Valid Hours: 636

Total Number of Hours: 672

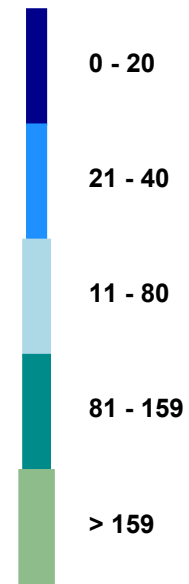


Wood Buffalo Environmental Association  
Wind Rose Feb 2023

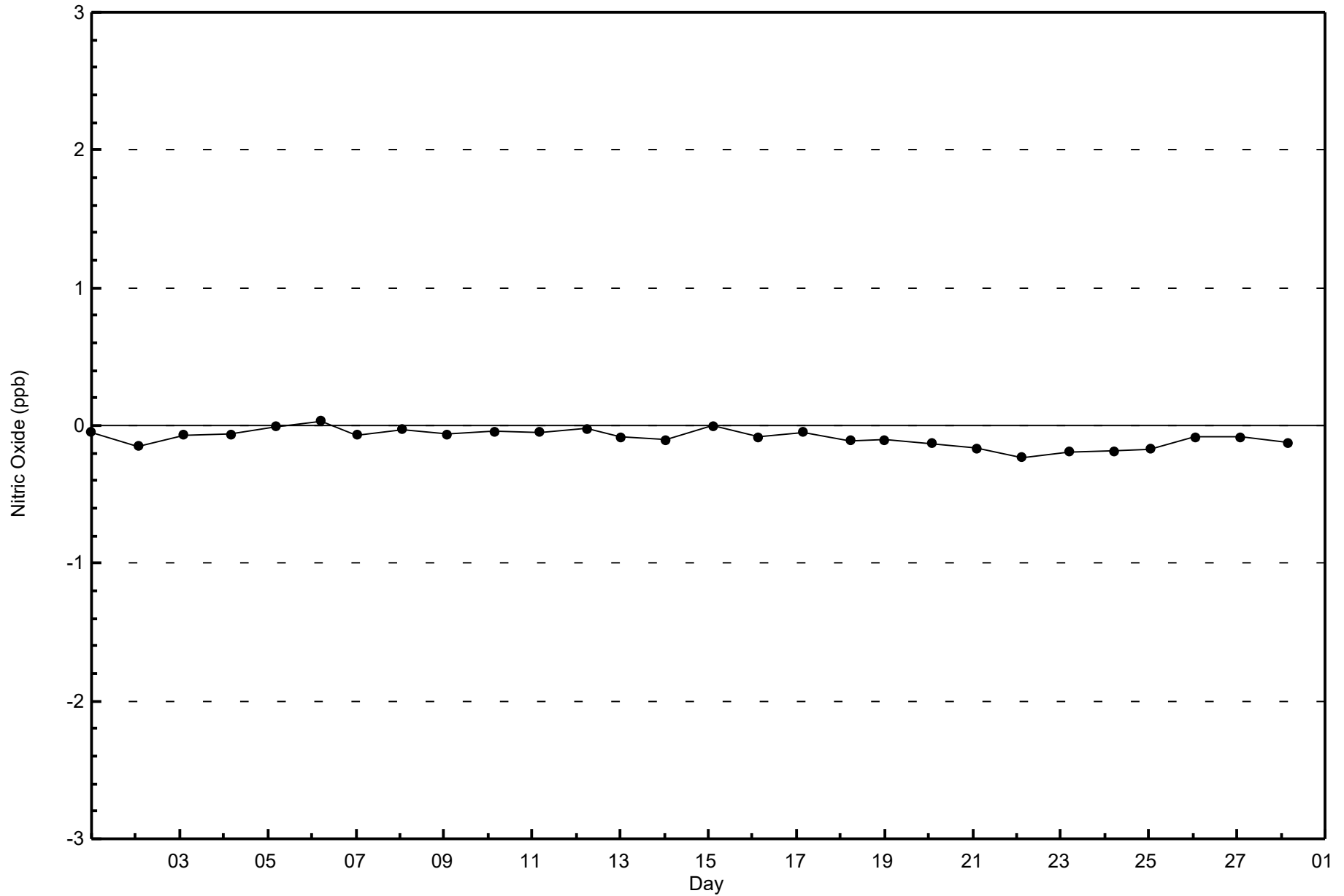
Nitric Oxide (NO) - ppb  
Christina Lake

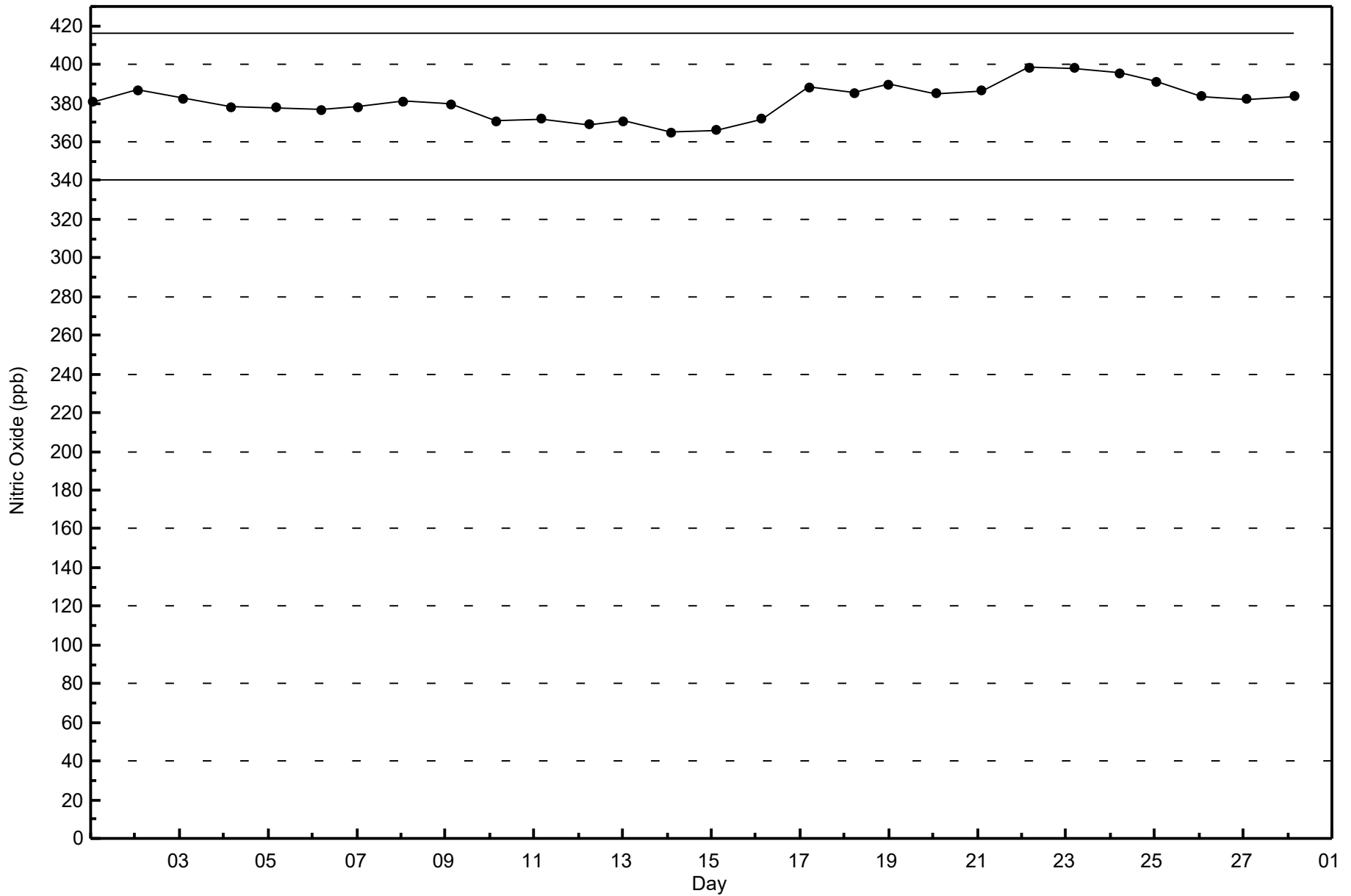


Classes (ppb)



Total Number of Valid Hours: 636







# Wood Buffalo Environmental Association

## Summary of Hour Averages

# Nitrogen Dioxide (NO<sub>2</sub>) - ppb

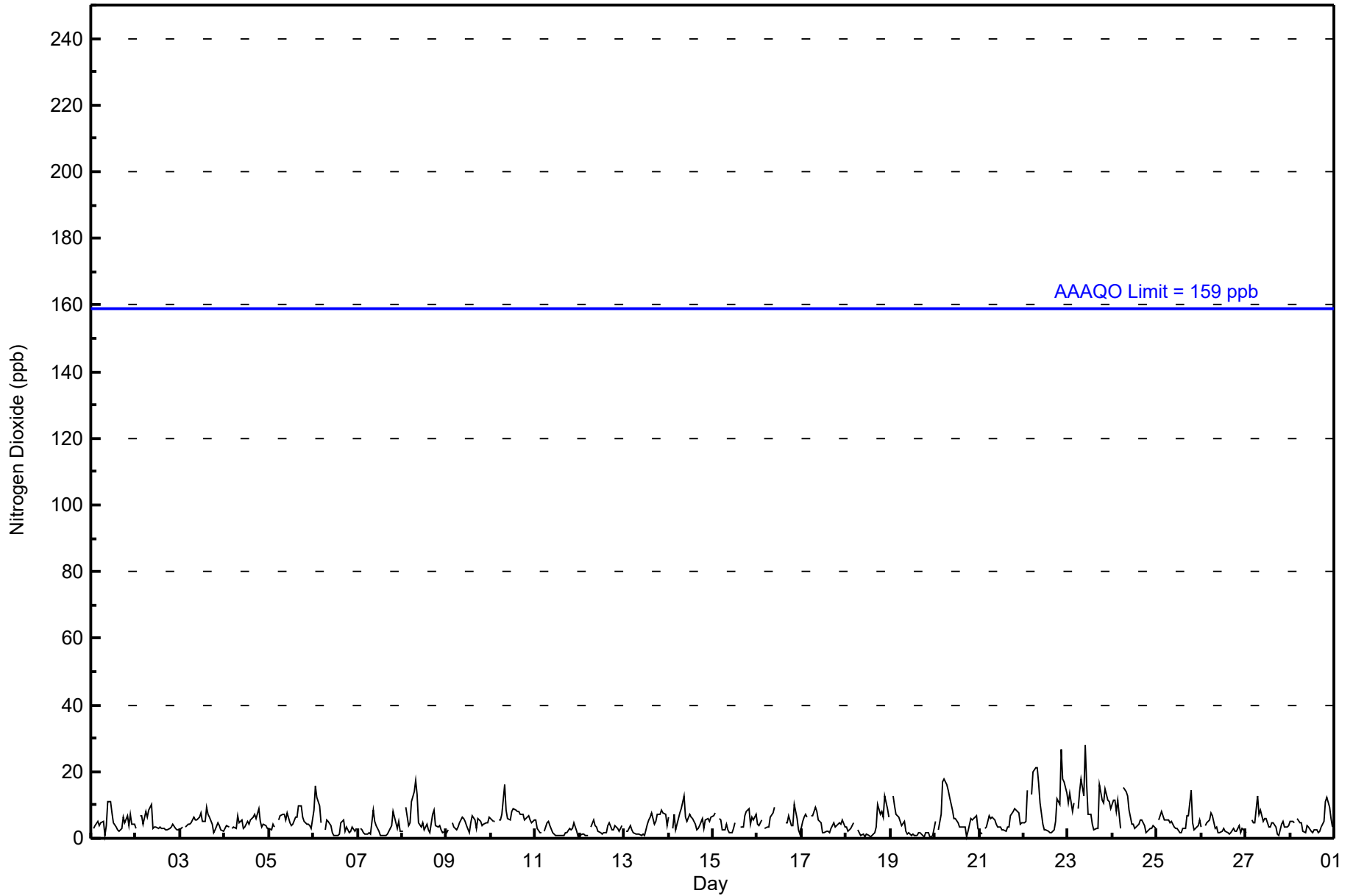
## Christina Lake - February 2023

| Number of Exceedences (AAAQO):  |                               | 1-hr: 0   | 24-hr: 0 | Hours in Service: 672 |      |      |      |      |      |      |      |     |     |     |     |     |     |      |                                |      | 672  |      |      |                 |               |               |
|---|-------------------------------|---|----------|-----------------------|------|------|------|------|------|------|------|-----|-----|-----|-----|-----|-----|------|--------------------------------|------|------|------|------|-----------------|---------------|---------------|
| Maximum Value: 28.1 ppb on Feb 23 10:00   |                               | Maximum Daily Average: 10.9 ppb on Feb 23   |          |                       |      |      |      |      |      |      |      |     |     |     |     |     |     |      | Hours of Data: 636             |      |      |      |      |                 |               |               |
| Minimum Value: 0.4 ppb on Feb 18 14:00  |                               | Minimum Daily Average: 2.3 ppb on Feb 11  |          |                       |      |      |      |      |      |      |      |     |     |     |     |     |     |      | Hours of Missing Data: 36      |      |      |      |      |                 |               |               |
| Maximum Diurnal Average: 7.6 ppb at hour 8  |                               | Minimum Diurnal Average: 3.2 ppb at hour 14   |          |                       |      |      |      |      |      |      |      |     |     |     |     |     |     |      | Hours of Calibration: 33       |      |      |      |      |                 |               |               |
| Monthly Average: 5.05 ppb   |                               | Percentiles: P <sub>1</sub> = 0.6 P <sub>10</sub> = 1.6 Q <sub>1</sub> = 2.7 Median = 4.2 Q <sub>3</sub> = 6.3 P <sub>90</sub> = 9.3 P <sub>99</sub> = 17.7 |          |                       |      |      |      |      |      |      |      |     |     |     |     |     |     |      | Percent Operational Time: 99.6 |      |      |      |      |                 |               |               |
| Day   | Hourly Period Ending At (MST) |   |          |                       |      |      |      |      |      |      |      |     |     |     |     |     |     |      |                                |      |      |      |      |                 | Daily Average | Daily Maximum |
|   | 1                             | 2   | 3        | 4                     | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12  | 13  | 14  | 15  | 16  | 17  | 18   | 19                             | 20   | 21   | 22   | 23   | 24              |               |               |
| 1-Feb   | Z                             | 3.0   | 3.8      | 4.9                   | 4.0  | 4.7  | 5.1  | 1.0  | 4.0  | 10.9 | 11.0 | 7.7 | 4.6 | 3.3 | 2.4 | 2.0 | 2.9 | 6.5  | 4.5                            | 6.8  | 4.0  | 7.2  | 4.2  | 4.3             | 4.9           | 11.0          |
| 2-Feb   | 2.9                           | Z   | 6.9      | 6.6                   | 4.4  | 8.1  | 6.2  | 8.4  | 10.2 | 2.8  | 3.5  | 3.2 | 2.9 | 3.2 | 3.0 | 3.0 | 2.7 | 2.5  | 2.8                            | 3.3  | 4.1  | 2.9  | 2.5  | 2.5             | 4.3           | 10.2          |
| 3-Feb   | 2.9                           | 3.2   | Z        | 3.6                   | 4.1  | 4.2  | 4.7  | 6.2  | 5.4  | 5.4  | 6.5  | 7.5 | 5.0 | 5.0 | 9.4 | 7.1 | 6.2 | 4.1  | 1.6                            | 2.6  | 4.6  | 4.0  | 2.6  | 2.2             | 4.7           | 9.4           |
| 4-Feb   | 2.8                           | 3.7   | 3.4      | Z                     | 2.9  | 3.5  | 2.8  | 6.6  | 4.7  | 5.4  | 2.8  | 3.4 | 5.0 | 4.1 | 5.4 | 6.3 | 7.3 | 6.1  | 8.9                            | 5.0  | 3.4  | 4.2  | 3.7  | 2.8             | 4.5           | 8.9           |
| 5-Feb   | 2.9                           | 2.6   | 4.3      | 3.4                   | Z    | 5.3  | 6.9  | 7.3  | 7.3  | 5.4  | 7.7  | 4.6 | 3.9 | 4.4 | 6.2 | 6.5 | 9.7 | 9.8  | 6.5                            | 4.9  | 4.2  | 4.2  | 3.9  | 2.8             | 5.4           | 9.8           |
| 6-Feb   | 8.6                           | 15.6  | 12.2     | 9.7                   | 4.5  | Z    | 2.6  | 5.5  | 5.1  | 3.9  | 1.8  | 1.0 | 1.0 | 1.0 | 1.4 | 4.8 | 5.4 | 2.0  | 3.6                            | 1.7  | 2.2  | 3.3  | 2.3  | 2.8             | 4.4           | 15.6          |
| 7-Feb   | Z                             | 2.8   | 2.6      | 1.5                   | 1.2  | 1.4  | 1.6  | 1.4  | 8.6  | 5.2  | 3.7  | 2.2 | 0.8 | 0.9 | 1.0 | 0.9 | 1.4 | 2.0  | 4.0                            | 8.1  | 6.2  | 3.1  | 5.2  | 2.0             | 2.9           | 8.6           |
| 8-Feb   | 2.0                           | Z   | 9.2      | 3.9                   | 4.5  | 11.1 | 14.1 | 17.3 | 13.2 | 4.5  | 3.2  | 4.6 | 2.6 | 4.2 | 2.7 | 1.8 | 7.0 | 8.6  | 4.0                            | 3.5  | 4.0  | 2.4  | 1.9  | 2.0             | 5.8           | 17.3          |
| 9-Feb   | 1.8                           | 2.7   | Z        | 4.6                   | 3.2  | 2.7  | 3.6  | 4.8  | 6.5  | 5.8  | 5.0  | 3.9 | 1.7 | 4.5 | 6.8 | 5.5 | 3.1 | 5.8  | 5.1                            | 4.0  | 4.2  | 4.5  | 4.8  | 6.2             | 4.4           | 6.8           |
| 10-Feb  | 5.7                           | 5.2   | 5.2      | Z                     | 5.4  | 5.3  | 7.3  | 16.1 | 8.4  | 5.9  | 5.3  | 8.0 | 8.7 | 8.6 | 8.0 | 7.9 | 7.1 | 7.1  | 5.7                            | 6.1  | 6.9  | 5.5  | 4.8  | 5.4             | 6.9           | 16.1          |
| 11-Feb  | 5.3                           | 2.8   | 1.5      | 1.5                   | Z    | 2.2  | 4.8  | 5.1  | 3.9  | 1.8  | 1.4  | 1.0 | 1.0 | 1.0 | 0.9 | 0.7 | 1.5 | 1.6  | 2.9                            | 2.4  | 2.8  | 4.8  | 2.3  | 0.6             | 2.3           | 5.3           |
| 12-Feb  | 0.8                           | 1.4   | 1.1      | 0.8                   | 0.9  | Z    | 3.3  | 5.3  | 4.0  | 3.2  | 2.1  | 1.6 | 1.1 | 1.9 | 1.8 | 3.8 | 4.6 | 2.7  | 2.5                            | 3.9  | 2.8  | 2.0  | 3.0  | 3.8             | 2.5           | 5.3           |
| 13-Feb  | Z                             | 2.0   | 2.1      | 3.8                   | 2.4  | 1.6  | 1.4  | 1.1  | 1.1  | 1.0  | 1.1  | 1.0 | 4.1 | 5.7 | 6.5 | 7.5 | 4.2 | 5.0  | 7.0                            | 7.3  | 8.6  | 7.5  | 7.1  | 3.9             | 4.0           | 8.6           |
| 14-Feb  | 6.4                           | Z   | 3.1      | 7.3                   | 2.6  | 6.0  | 7.6  | 8.7  | 12.6 | 6.4  | 5.2  | 7.0 | 6.3 | 5.9 | 4.3 | 2.7 | 3.1 | 4.0  | 5.9                            | 3.0  | 5.3  | 5.8  | 5.1  | 6.3             | 5.7           | 12.6          |
| 15-Feb  | 6.6                           | 7.7   | Z        | 6.0                   | 5.6  | 2.7  | 2.5  | 4.2  | 2.4  | 1.9  | 1.7  | 3.0 | 4.5 | M   | M   | 3.2 | 3.5 | 6.8  | 7.9                            | 8.8  | 4.4  | 6.3  | 5.4  | 7.1             | 4.9           | 8.8           |
| 16-Feb  | 4.4                           | 3.9   | 5.6      | Z                     | 2.9  | 3.4  | 3.4  | 6.4  | 7.7  | 9.2  | C    | C   | C   | C   | C   | 4.5 | 4.8 | 6.7  | 3.8                            | 3.7  | 10.2 | 6.0  | 2.5  | 1.1             | 5.0           | 10.2          |
| 17-Feb  | 5.0                           | 6.4   | 7.0      | 6.3                   | Z    | 6.9  | 6.9  | 9.4  | 8.1  | 5.5  | 4.7  | 1.8 | 1.9 | 2.3 | 2.2 | 1.7 | 3.0 | 4.5  | 3.5                            | 3.8  | 4.6  | 4.1  | 5.6  | 3.2             | 4.7           | 9.4           |
| 18-Feb  | 3.2                           | 2.1   | 3.0      | 3.7                   | 4.7  | Z    | 2.5  | 1.5  | 0.7  | 1.4  | 0.5  | 1.2 | 0.8 | 0.4 | 0.7 | 1.5 | 3.3 | 10.2 | 7.2                            | 8.0  | 6.3  | 12.6 | 8.8  | 6.2             | 3.9           | 12.6          |
| 19-Feb  | Z                             | 12.7  | 9.6      | 7.4                   | 6.3  | 5.2  | 3.8  | 4.9  | 2.3  | 1.4  | 1.5  | 1.0 | 1.4 | 0.9 | 0.8 | 1.7 | 1.6 | 1.0  | 0.6                            | 1.5  | 1.6  | 0.5  | 0.6  | 0.7             | 3.0           | 12.7          |
| 20-Feb  | 4.9                           | Z   | 2.4      | 7.2                   | 17.1 | 17.8 | 16.2 | 14.6 | 12.2 | 8.4  | 5.8  | 5.9 | 4.6 | 3.5 | 3.5 | 3.2 | 3.4 | 0.6  | 2.2                            | 6.0  | 5.6  | 6.0  | 6.8  | 2.9             | 7.0           | 17.8          |
| 21-Feb  | 2.2                           | 1.3   | Z        | 2.9                   | 3.6  | 6.6  | 6.1  | 6.5  | 5.5  | 4.2  | 3.5  | 3.4 | 2.5 | 2.7 | 2.3 | 3.5 | 3.3 | 6.9  | 8.2                            | 9.1  | 8.6  | 7.5  | 4.1  | 4.5             | 4.7           | 9.1           |
| 22-Feb  | 4.5                           | 5.0   | 14.2     | Z                     | 13.2 | 19.9 | 21.1 | 21.1 | 16.7 | 10.8 | 4.3  | 2.5 | 2.6 | 2.3 | 1.9 | 1.6 | 2.6 | 4.9  | 12.0                           | 10.2 | 26.5 | 17.6 | 17.0 | 13.6            | 10.7          | 26.5          |
| 23-Feb  | 10.5                          | 13.7  | 7.9      | 10.5                  | Z    | 8.7  | 13.8 | 17.7 | 12.6 | 28.1 | 16.1 | 7.0 | 7.4 | 4.3 | 2.5 | 3.0 | 3.1 | 15.9 | 11.4                           | 10.8 | 15.0 | 11.4 | 11.0 | 9.0             | 10.9          | 28.1          |
| 24-Feb  | 11.3                          | 11.3  | 7.9      | 11.3                  | 2.8  | Z    | 15.4 | 13.9 | 12.7 | 8.4  | 4.3  | 4.2 | 2.8 | 3.9 | 4.2 | 5.3 | 5.5 | 3.8  | 1.7                            | 2.3  | 3.1  | 2.8  | 3.9  | 3.1             | 6.3           | 15.4          |
| 25-Feb  | Z                             | 5.4   | 8.1      | 6.6                   | 5.4  | 5.5  | 5.7  | 4.7  | 4.9  | 3.6  | 2.8  | 3.0 | 1.7 | 1.9 | 3.0 | 2.9 | 6.7 | 6.8  | 14.2                           | 4.5  | 2.7  | 2.8  | 3.8  | 5.7             | 4.9           | 14.2          |
| 26-Feb  | 3.3                           | Z   | 3.8      | 4.6                   | 5.6  | 7.5  | 6.6  | 3.1  | 3.2  | 1.6  | 1.9  | 2.3 | 2.8 | 2.3 | 1.8 | 1.4 | 1.6 | 3.1  | 2.1                            | 2.0  | 3.8  | 1.6  | 2.9  | 2.5             | 3.1           | 7.5           |
| 27-Feb  | 1.6                           | DF  | Z        | 5.4                   | 4.7  | 4.8  | 12.8 | 7.2  | 8.3  | 5.2  | 6.0  | 6.0 | 3.6 | 3.3 | 4.5 | 4.6 | 3.3 | 1.1  | 0.9                            | 4.3  | 4.9  | 3.2  | 3.3  | 4.0             | 4.7           | 12.8          |
| 28-Feb  | 4.9                           | 5.1   | 4.7      | Z                     | 5.8  | 4.7  | 4.6  | 2.2  | 1.7  | 3.7  | 3.5  | 2.0 | 1.9 | 2.4 | 2.5 | 1.8 | 2.2 | 3.5  | 5.0                            | 11.0 | 12.3 | 9.3  | 6.1  | 3.2             | 4.5           | 12.3          |
| 4.5 5.4 5.6 5.4 4.9 6.2 6.9 7.6 6.9 5.8 4.3 3.7 3.2 3.2 3.5 3.6 4.1 5.1 5.2 5.3 6.2 5.5 4.8 4.1                   |                               |   |          |                       |      |      |      |      |      |      |      |     |     |     |     |     |     |      |                                |      |      |      |      | Diurnal Average |               |               |
| 11.3 15.6 14.2 11.3 17.1 19.9 21.1 21.1 16.7 28.1 16.1 8.0 8.7 8.6 9.4 7.9 9.7 15.9 14.2 11.0 26.5 17.6 17.0 13.6 |                               |   |          |                       |      |      |      |      |      |      |      |     |     |     |     |     |     |      |                                |      |      |      |      | Diurnal Maximum |               |               |
| Z - zerospan C - Calibration M - Maintenance DF - DAS Failure   |                               |   |          |                       |      |      |      |      |      |      |      |     |     |     |     |     |     |      |                                |      |      |      |      |                 |               |               |
| Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 159 ppb  |                               |   |          |                       |      |      |      |      |      |      |      |     |     |     |     |     |     |      |                                |      |      |      |      |                 |               |               |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Nitrogen Dioxide (NO<sub>2</sub>) - ppb**  
**Christina Lake - February 2023**





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Nitrogen Dioxide (NO<sub>2</sub>) - ppb  
Christina Lake - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 20                            | 632                    | 99.37    | 99.37               |
| 21 - 40                           | 4                      | 0.63     | 100.00              |
| 41 - 80                           | 0                      | 0.00     | 100.00              |
| 81 - 159                          | 0                      | 0.00     | 100.00              |
| > 159                             | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 636

Total Number of Hours: 672





**Wood Buffalo Environmental Association  
Frequency Distribution**

**Nitrogen Dioxide (NO<sub>2</sub>) - ppb  
Christina Lake - February 2023**

| <b>Concentration<br/>Ranges (ppb)</b> | <b>Wind Direction</b> |     |    |     |    |     |    |     |    |     |    |     |    |     |    |     | <b>Totals</b> |
|---------------------------------------|-----------------------|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|---------------|
|                                       | N                     | NNE | NE | ENE | E  | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |               |
| 0 - 20                                | 12                    | 45  | 42 | 32  | 43 | 17  | 5  | 35  | 56 | 76  | 68 | 84  | 22 | 22  | 42 | 31  | 632           |
| 21 - 40                               | 0                     | 0   | 0  | 1   | 0  | 0   | 0  | 0   | 1  | 0   | 2  | 0   | 0  | 0   | 0  | 0   | 4             |
| 41 - 80                               | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| 81 - 159                              | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| > 159                                 | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| <b>Totals</b>                         | 12                    | 45  | 42 | 33  | 43 | 17  | 5  | 35  | 57 | 76  | 70 | 84  | 22 | 22  | 42 | 31  | 636           |

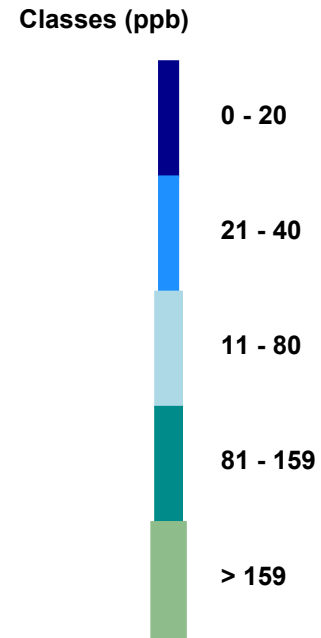
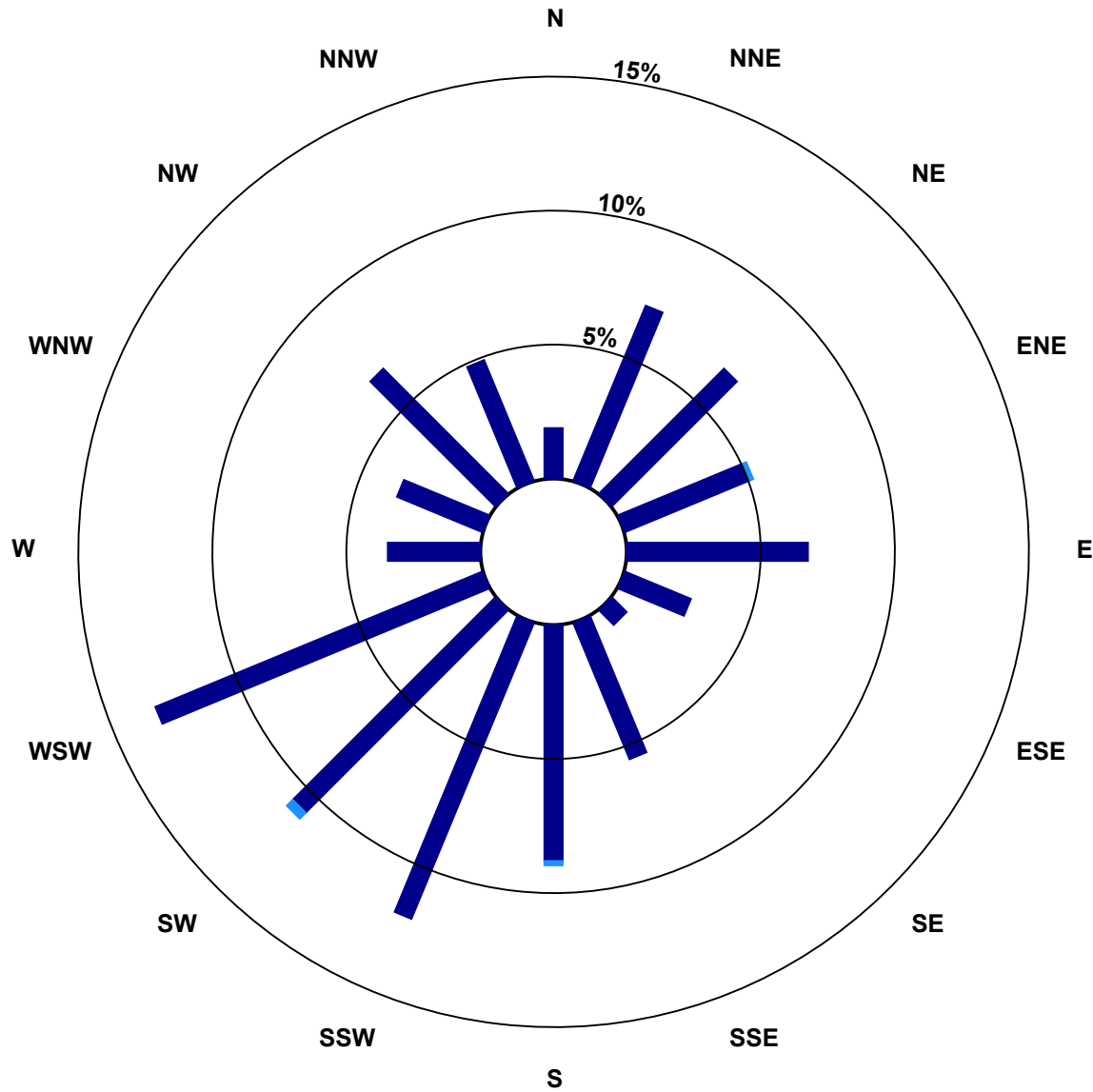
Total Number of Valid Hours: 636

Total Number of Hours: 672

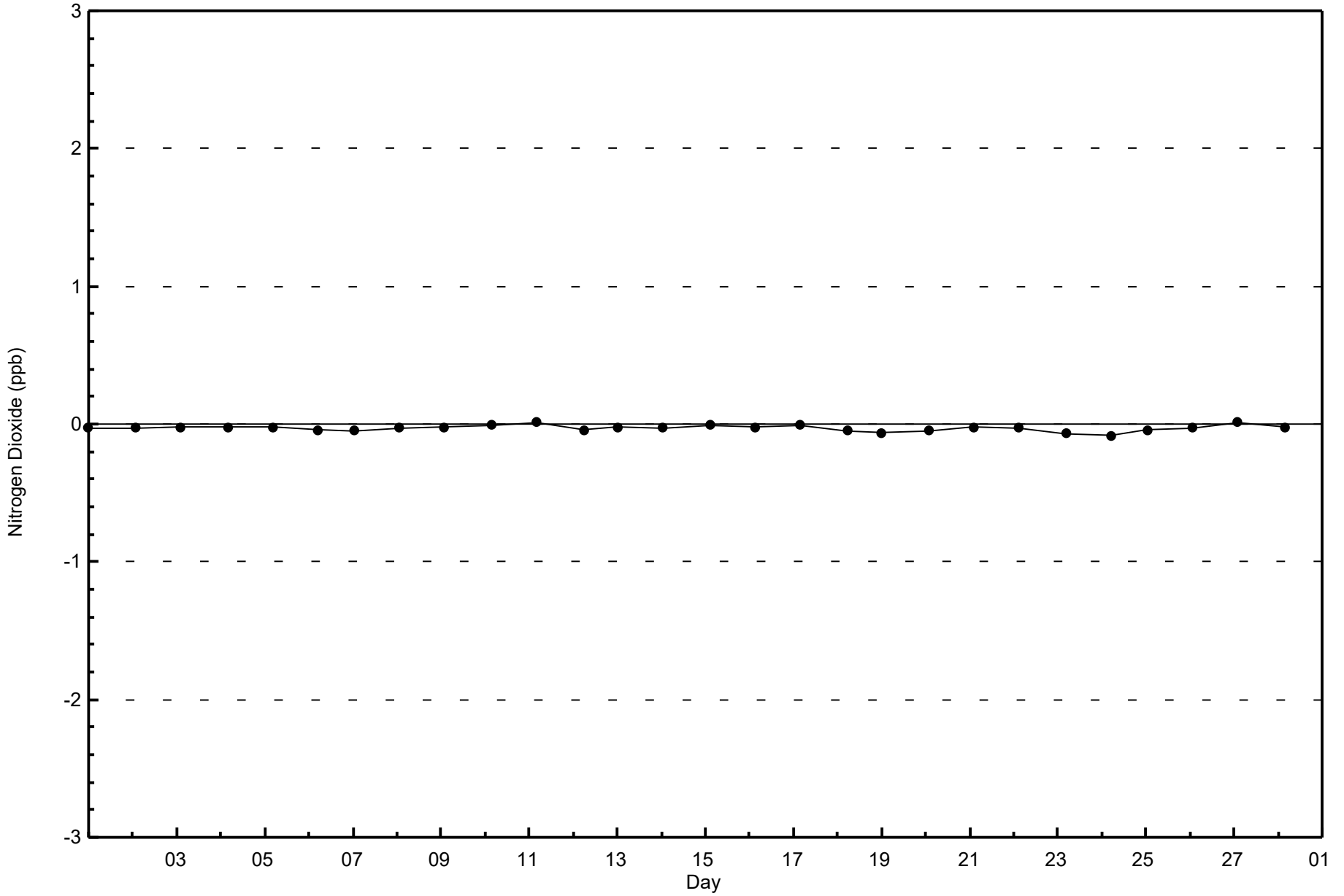


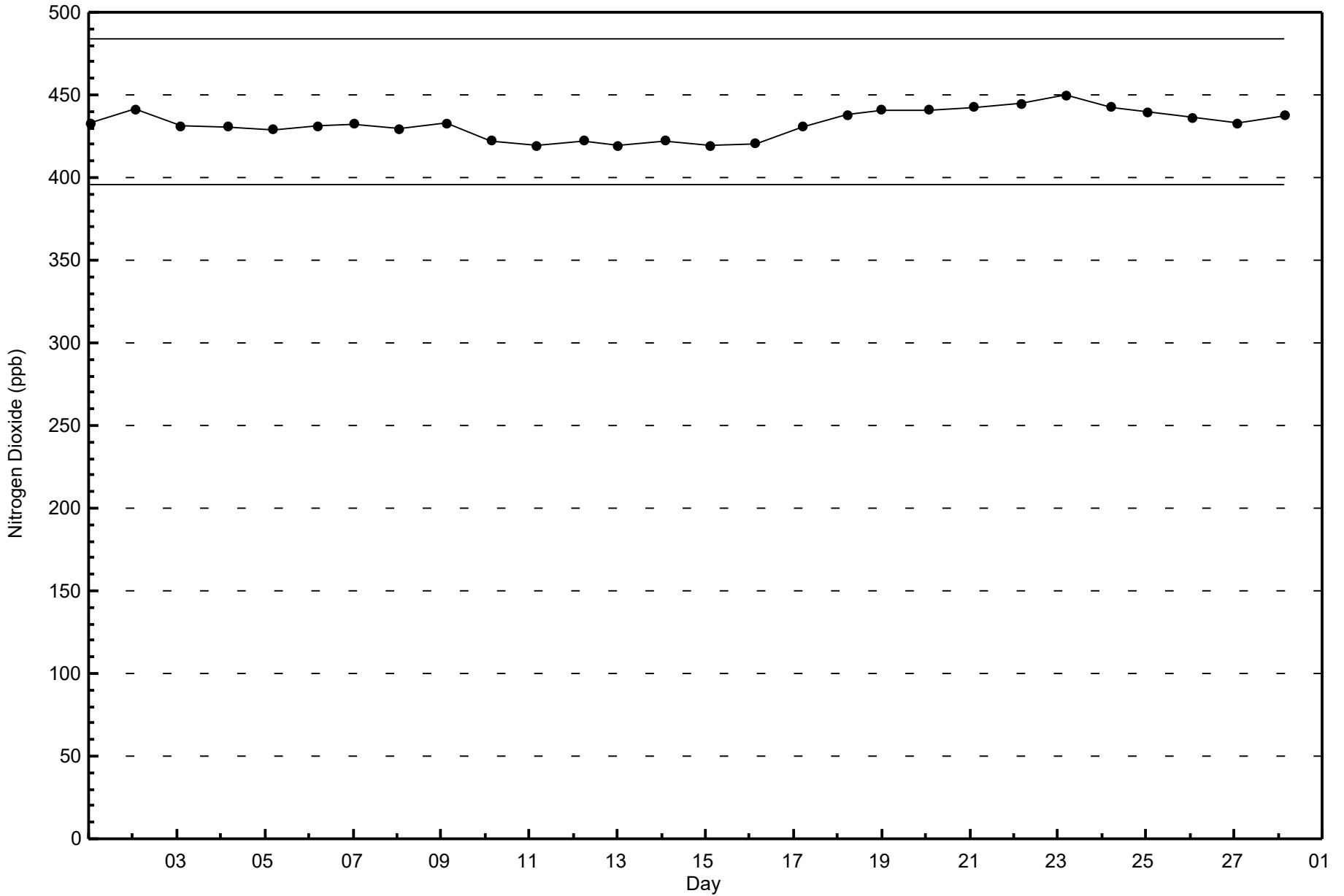
Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Nitrogen Dioxide (NO<sub>2</sub>) - ppb  
Christina Lake



Total Number of Valid Hours: 636



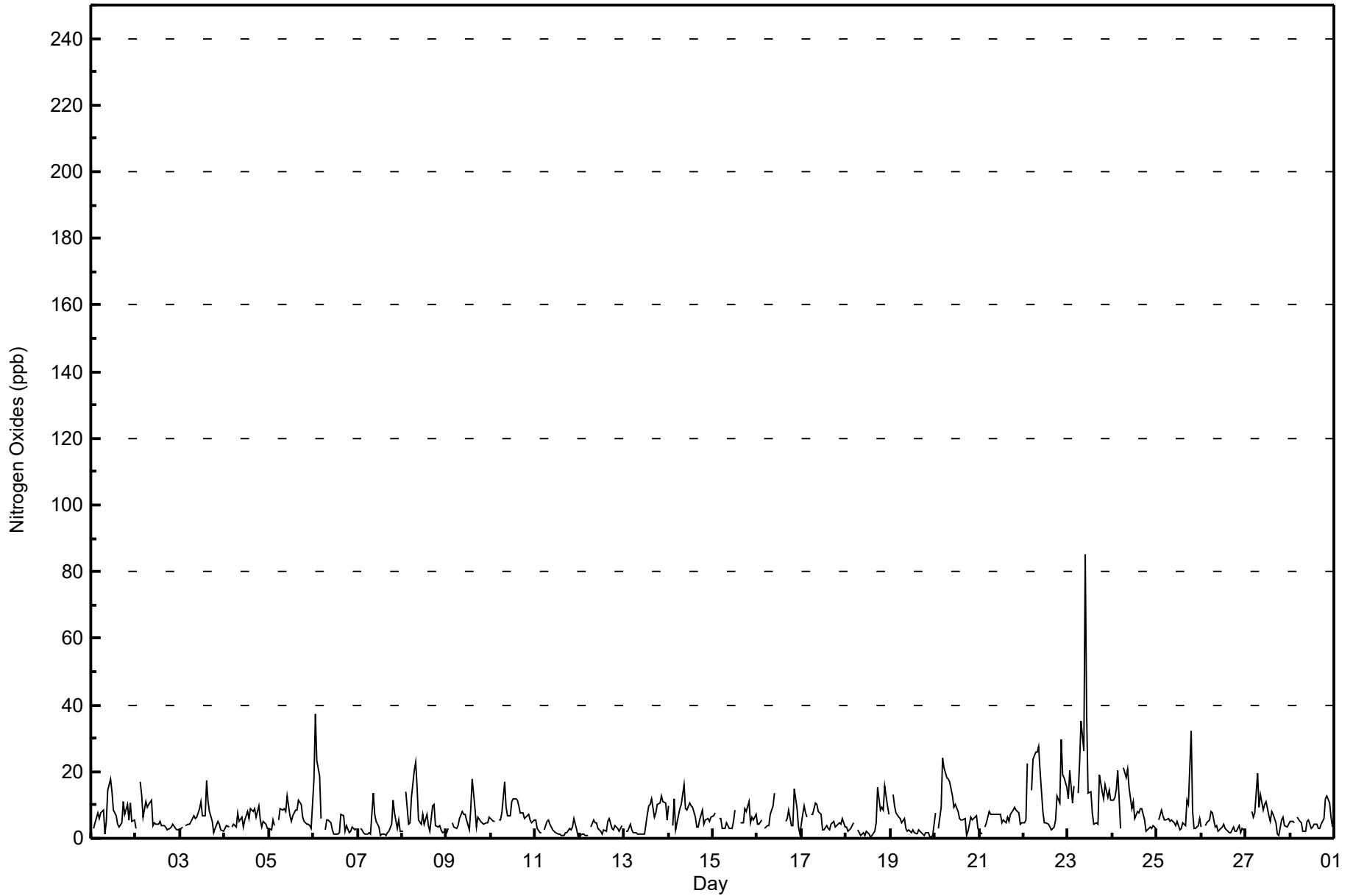




**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

**Nitrogen Oxides (NO<sub>x</sub>) - ppb**  
**Christina Lake - February 2023**

| Maximum Value: 85.0 ppb on Feb 23 10:00   |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Maximum Daily Average: 18.5 ppb on Feb 23  |      |      |      |                 | Hours in Service: 672          |               |
|---|-------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|--|------|------|------|-----------------|--------------------------------|---------------|
| Minimum Value: 0.5 ppb on Feb 19 22:00  |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Minimum Daily Average: 2.7 ppb on Feb 11   |      |      |      |                 | Hours of Data: 636             |               |
| Maximum Diurnal Average: 9.9 ppb at hour 10   |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Minimum Diurnal Average: 4.4 ppb at hour 24  |      |      |      |                 | Hours of Missing Data: 36      |               |
| Monthly Average: 6.67 ppb   |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Percentiles: P <sub>1</sub> = 0.7 P <sub>10</sub> = 1.8 Q <sub>1</sub> = 3.0 Median = 5.2 Q <sub>3</sub> = 8.2 P <sub>90</sub> = 12.8 P <sub>99</sub> = 27.2 |      |      |      |                 | Hours of Calibration: 33       |               |
|   |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |      |      |      |                 | Percent Operational Time: 99.6 |               |
| Day   | Hourly Period Ending At (MST) |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |      |      |      |                 | Daily Average                  | Daily Maximum |
|   | 1                             | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20   | 21   | 22   | 23   | 24              |                                |               |
| 1-Feb   | Z                             | 3.1  | 4.8  | 7.7  | 5.8  | 7.7  | 8.5  | 1.4  | 5.2  | 14.4 | 17.9 | 14.1 | 8.4  | 6.6  | 4.2  | 3.5  | 4.8  | 11.0 | 7.2  | 10.1   | 5.4  | 10.6 | 4.9  | 5.6             | 7.5                            | 17.9          |
| 2-Feb   | 2.9                           | Z    | 17.1 | 13.0 | 6.4  | 11.1 | 9.3  | 10.0 | 11.5 | 3.9  | 4.7  | 4.4  | 4.2  | 4.9  | 3.8  | 3.8  | 3.4  | 2.7  | 2.9  | 3.4  | 4.1  | 2.9  | 2.6  | 2.5             | 5.9                            | 17.1          |
| 3-Feb   | 3.0                           | 3.3  | Z    | 3.6  | 4.1  | 4.4  | 5.2  | 6.6  | 5.8  | 6.5  | 8.7  | 11.2 | 6.8  | 6.8  | 17.4 | 10.9 | 7.9  | 4.9  | 1.7  | 3.1  | 5.2  | 4.1  | 2.7  | 2.2             | 5.9                            | 17.4          |
| 4-Feb   | 3.1                           | 3.7  | 3.5  | Z    | 3.2  | 4.1  | 3.5  | 7.6  | 5.3  | 6.6  | 3.6  | 5.4  | 7.9  | 5.8  | 8.8  | 8.1  | 8.8  | 6.4  | 9.6  | 5.4  | 3.6  | 5.1  | 4.1  | 2.9             | 5.5                            | 9.6           |
| 5-Feb   | 3.0                           | 2.7  | 5.3  | 3.7  | Z    | 5.6  | 8.8  | 8.3  | 8.8  | 7.9  | 12.8 | 6.8  | 5.3  | 6.8  | 8.6  | 8.3  | 11.4 | 10.2 | 6.5  | 4.9  | 4.2  | 4.2  | 3.9  | 2.8             | 6.6                            | 12.8          |
| 6-Feb   | 17.6                          | 37.3 | 23.3 | 18.7 | 6.1  | Z    | 2.6  | 5.7  | 5.6  | 4.8  | 2.4  | 1.4  | 1.3  | 1.2  | 1.6  | 7.1  | 6.6  | 2.2  | 3.9  | 1.8  | 2.2  | 3.3  | 2.3  | 2.8             | 7.0                            | 37.3          |
| 7-Feb   | Z                             | 2.8  | 2.6  | 1.5  | 1.2  | 1.4  | 1.6  | 1.4  | 13.7 | 7.4  | 5.3  | 3.2  | 1.0  | 1.2  | 1.2  | 1.0  | 1.5  | 2.0  | 4.1  | 11.4   | 7.5  | 3.1  | 5.4  | 2.0             | 3.6                            | 13.7          |
| 8-Feb   | 2.0                           | Z    | 14.0 | 4.4  | 4.7  | 12.2 | 20.3 | 22.7 | 15.2 | 5.7  | 4.4  | 7.1  | 4.1  | 7.2  | 3.7  | 2.1  | 9.6  | 10.3 | 4.0  | 3.6  | 4.0  | 2.4  | 1.9  | 2.0             | 7.3                            | 22.7          |
| 9-Feb   | 1.8                           | 2.8  | Z    | 4.7  | 3.4  | 2.8  | 3.9  | 5.8  | 7.9  | 7.2  | 7.0  | 5.7  | 2.4  | 9.1  | 17.7 | 9.1  | 3.5  | 6.2  | 5.2  | 4.6  | 4.2  | 4.5  | 4.8  | 6.2             | 5.7                            | 17.7          |
| 10-Feb  | 5.7                           | 5.2  | 5.2  | Z    | 5.4  | 5.3  | 7.7  | 16.8 | 9.3  | 6.9  | 6.8  | 11.0 | 11.7 | 11.8 | 11.3 | 9.7  | 7.7  | 7.8  | 5.8  | 6.3  | 7.2  | 5.6  | 4.9  | 5.5             | 7.9                            | 16.8          |
| 11-Feb  | 5.6                           | 2.9  | 1.5  | 1.6  | Z    | 2.3  | 5.2  | 5.4  | 4.3  | 2.3  | 1.9  | 1.5  | 1.4  | 1.4  | 1.0  | 0.8  | 1.6  | 1.7  | 2.9  | 2.7  | 3.5  | 6.1  | 2.6  | 0.6             | 2.7                            | 6.1           |
| 12-Feb  | 0.8                           | 1.4  | 1.1  | 0.8  | 0.9  | Z    | 3.3  | 5.4  | 4.5  | 4.5  | 2.8  | 2.1  | 1.4  | 2.7  | 2.1  | 4.9  | 5.7  | 2.8  | 2.7  | 3.9  | 2.8  | 2.0  | 3.1  | 3.8             | 2.8                            | 5.7           |
| 13-Feb  | Z                             | 2.1  | 2.1  | 4.3  | 2.4  | 1.7  | 1.5  | 1.1  | 1.2  | 1.1  | 1.2  | 1.2  | 7.3  | 9.6  | 10.2 | 12.0 | 6.4  | 7.6  | 10.4 | 10.6   | 12.8 | 10.9 | 10.8 | 5.4             | 5.8                            | 12.8          |
| 14-Feb  | 9.7                           | Z    | 3.6  | 11.8 | 2.7  | 6.7  | 8.9  | 10.1 | 15.9 | 8.9  | 8.4  | 10.5 | 9.6  | 9.2  | 6.2  | 3.2  | 3.5  | 5.3  | 8.6  | 4.1  | 5.7  | 5.9  | 5.2  | 6.4             | 7.4                            | 15.9          |
| 15-Feb  | 6.7                           | 7.7  | Z    | 6.1  | 5.9  | 3.0  | 2.9  | 4.6  | 3.9  | 2.8  | 3.0  | 5.3  | 8.6  | M    | M    | 4.8  | 4.5  | 8.8  | 8.1  | 10.9   | 4.7  | 6.4  | 5.4  | 7.1             | 5.8                            | 10.9          |
| 16-Feb  | 4.4                           | 4.0  | 5.6  | Z    | 3.0  | 3.9  | 3.8  | 7.4  | 9.8  | 13.7 | C    | C    | C    | C    | C    | 5.2  | 6.0  | 8.4  | 3.8  | 3.8  | 15.0 | 9.0  | 3.4  | 1.3             | 6.2                            | 15.0          |
| 17-Feb  | 7.3                           | 9.7  | 7.4  | 6.3  | Z    | 7.1  | 7.2  | 10.4 | 10.1 | 7.9  | 7.2  | 2.6  | 2.6  | 3.8  | 2.9  | 2.3  | 4.2  | 5.1  | 3.5  | 3.9  | 4.7  | 4.1  | 5.7  | 3.2             | 5.6                            | 10.4          |
| 18-Feb  | 3.3                           | 2.2  | 3.0  | 3.8  | 4.8  | Z    | 2.6  | 1.6  | 0.9  | 1.9  | 0.7  | 2.0  | 1.3  | 0.6  | 1.0  | 2.2  | 4.6  | 15.1 | 8.5  | 9.4  | 8.3  | 15.9 | 9.6  | 7.4             | 4.8                            | 15.9          |
| 19-Feb  | Z                             | 12.9 | 9.8  | 7.5  | 6.5  | 6.0  | 4.5  | 6.1  | 2.8  | 2.1  | 2.5  | 1.7  | 2.5  | 1.6  | 1.2  | 2.5  | 2.1  | 1.2  | 0.7  | 1.5  | 1.6  | 0.5  | 0.6  | 0.7             | 3.4                            | 12.9          |
| 20-Feb  | 7.4                           | Z    | 3.1  | 9.4  | 24.4 | 21.3 | 18.4 | 17.7 | 16.9 | 12.6 | 9.5  | 10.1 | 7.9  | 6.1  | 5.7  | 5.4  | 5.8  | 0.7  | 2.3  | 6.3  | 5.7  | 6.1  | 6.9  | 2.9             | 9.2                            | 24.4          |
| 21-Feb  | 2.2                           | 1.3  | Z    | 3.6  | 4.6  | 8.2  | 7.0  | 7.1  | 7.3  | 7.1  | 7.2  | 7.0  | 4.9  | 5.5  | 4.7  | 6.5  | 5.0  | 7.4  | 8.3  | 9.2  | 8.7  | 7.5  | 4.1  | 4.5             | 6.0                            | 9.2           |
| 22-Feb  | 4.7                           | 5.3  | 22.4 | Z    | 14.3 | 23.9 | 25.8 | 26.0 | 27.6 | 20.2 | 8.1  | 4.5  | 4.8  | 4.1  | 3.2  | 2.4  | 3.5  | 5.5  | 12.9 | 10.5   | 29.8 | 19.2 | 18.3 | 15.4            | 13.6                           | 29.8          |
| 23-Feb  | 11.8                          | 20.2 | 10.6 | 15.6 | Z    | 13.5 | 22.7 | 35.2 | 26.3 | 85.0 | 36.9 | 13.4 | 13.9 | 7.8  | 4.1  | 4.5  | 4.1  | 19.0 | 14.1 | 11.9   | 15.9 | 12.4 | 14.5 | 11.2            | 18.5                           | 85.0          |
| 24-Feb  | 11.6                          | 12.3 | 14.9 | 20.5 | 2.8  | Z    | 21.1 | 18.2 | 20.6 | 15.3 | 8.7  | 11.0 | 5.9  | 8.1  | 7.8  | 8.7  | 8.8  | 5.7  | 2.2  | 2.5  | 3.3  | 2.9  | 4.0  | 3.1             | 9.6                            | 21.1          |
| 25-Feb  | Z                             | 5.5  | 8.3  | 6.7  | 5.6  | 5.7  | 5.9  | 4.9  | 5.6  | 4.7  | 3.9  | 4.9  | 2.6  | 2.8  | 4.9  | 4.0  | 11.3 | 10.3 | 32.3 | 7.9  | 2.9  | 3.0  | 3.8  | 5.9             | 6.7                            | 32.3          |
| 26-Feb  | 3.3                           | Z    | 3.8  | 4.6  | 5.6  | 8.1  | 7.7  | 3.4  | 3.8  | 1.9  | 2.5  | 3.2  | 4.1  | 3.1  | 2.2  | 1.7  | 1.9  | 3.5  | 2.3  | 2.0  | 4.0  | 1.6  | 2.9  | 2.6             | 3.5                            | 8.1           |
| 27-Feb  | 1.7                           | DF   | Z    | 8.0  | 6.2  | 7.6  | 19.6 | 9.3  | 13.1 | 8.6  | 10.2 | 11.1 | 6.6  | 5.0  | 8.1  | 7.4  | 4.7  | 1.4  | 1.0  | 5.7  | 6.3  | 3.8  | 3.3  | 4.3             | 7.0                            | 19.6          |
| 28-Feb  | 5.0                           | 5.2  | 4.7  | Z    | 6.4  | 5.2  | 4.7  | 2.3  | 2.0  | 5.2  | 5.6  | 3.1  | 3.2  | 4.3  | 4.4  | 2.8  | 3.0  | 4.1  | 6.0  | 12.0   | 12.7 | 10.7 | 6.2  | 3.2             | 5.3                            | 12.7          |
|   |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |      |      |      | Diurnal Average |                                |               |
|   |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |      |      |      | Diurnal Maximum |                                |               |
| 5.4 7.0 7.7 7.3 5.7 7.5 8.7 9.4 9.5 9.9 7.2 6.1 5.2 5.3 5.7 5.2 5.4 6.3 6.5 6.2 7.0 6.2 5.3 4.4                         |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |      |      |      |                 |                                |               |
| 17.6 37.3 23.3 20.5 24.4 23.9 25.8 35.2 27.6 85.0 36.9 14.1 13.9 11.8 17.7 12.0 11.4 19.0 32.3 12.0 29.8 19.2 18.3 15.4 |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |      |      |      |                 |                                |               |
| Z - zerospan C - Calibration M - Maintenance DF - DAS Failure   |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |      |      |      |                 |                                |               |





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Nitrogen Oxides (NO<sub>x</sub>) - ppb  
Christina Lake - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 20                            | 616                    | 96.86    | 96.86               |
| 21 - 40                           | 19                     | 2.99     | 99.84               |
| 41 - 80                           | 0                      | 0.00     | 99.84               |
| 81 - 159                          | 1                      | 0.16     | 100.00              |
| > 159                             | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 636

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Nitrogen Oxides (NO<sub>x</sub>) - ppb  
Christina Lake - February 2023**

| <b>Concentration<br/>Ranges (ppb)</b> | <b>Wind Direction</b> |     |    |     |    |     |    |     |    |     |    |     |    |     |    |     | <b>Totals</b> |
|---------------------------------------|-----------------------|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|---------------|
|                                       | N                     | NNE | NE | ENE | E  | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |               |
| 0 - 20                                | 12                    | 45  | 42 | 32  | 43 | 17  | 5  | 32  | 56 | 68  | 67 | 84  | 22 | 20  | 40 | 31  | 616           |
| 21 - 40                               | 0                     | 0   | 0  | 1   | 0  | 0   | 0  | 3   | 0  | 8   | 3  | 0   | 0  | 2   | 2  | 0   | 19            |
| 11 - 80                               | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| 81 - 159                              | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 1  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 1             |
| > 159                                 | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| <b>Totals</b>                         | 12                    | 45  | 42 | 33  | 43 | 17  | 5  | 35  | 57 | 76  | 70 | 84  | 22 | 22  | 42 | 31  | 636           |

Total Number of Valid Hours: 636

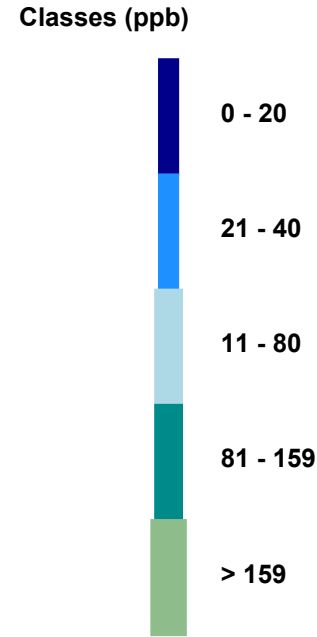
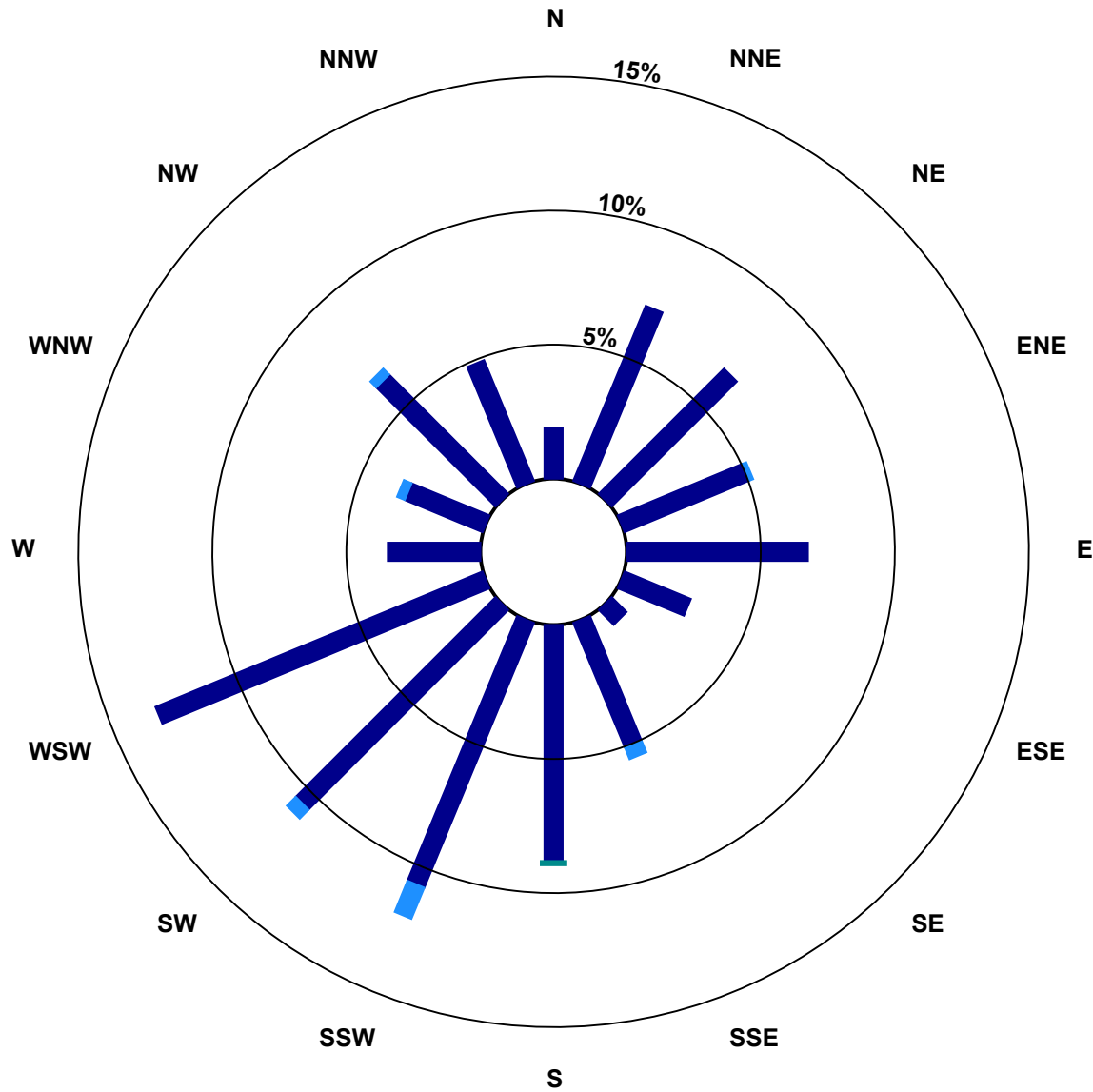
Total Number of Hours: 672



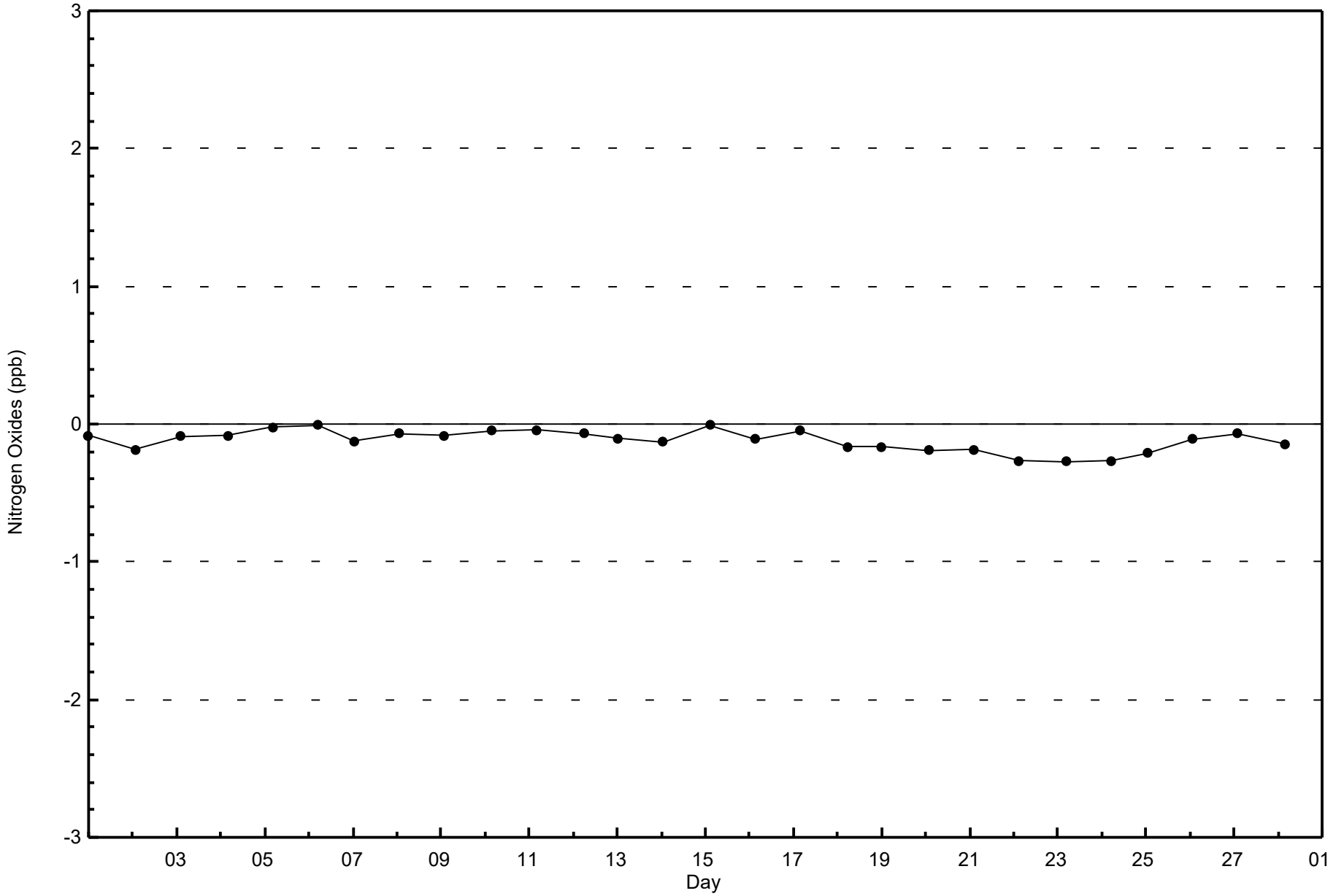


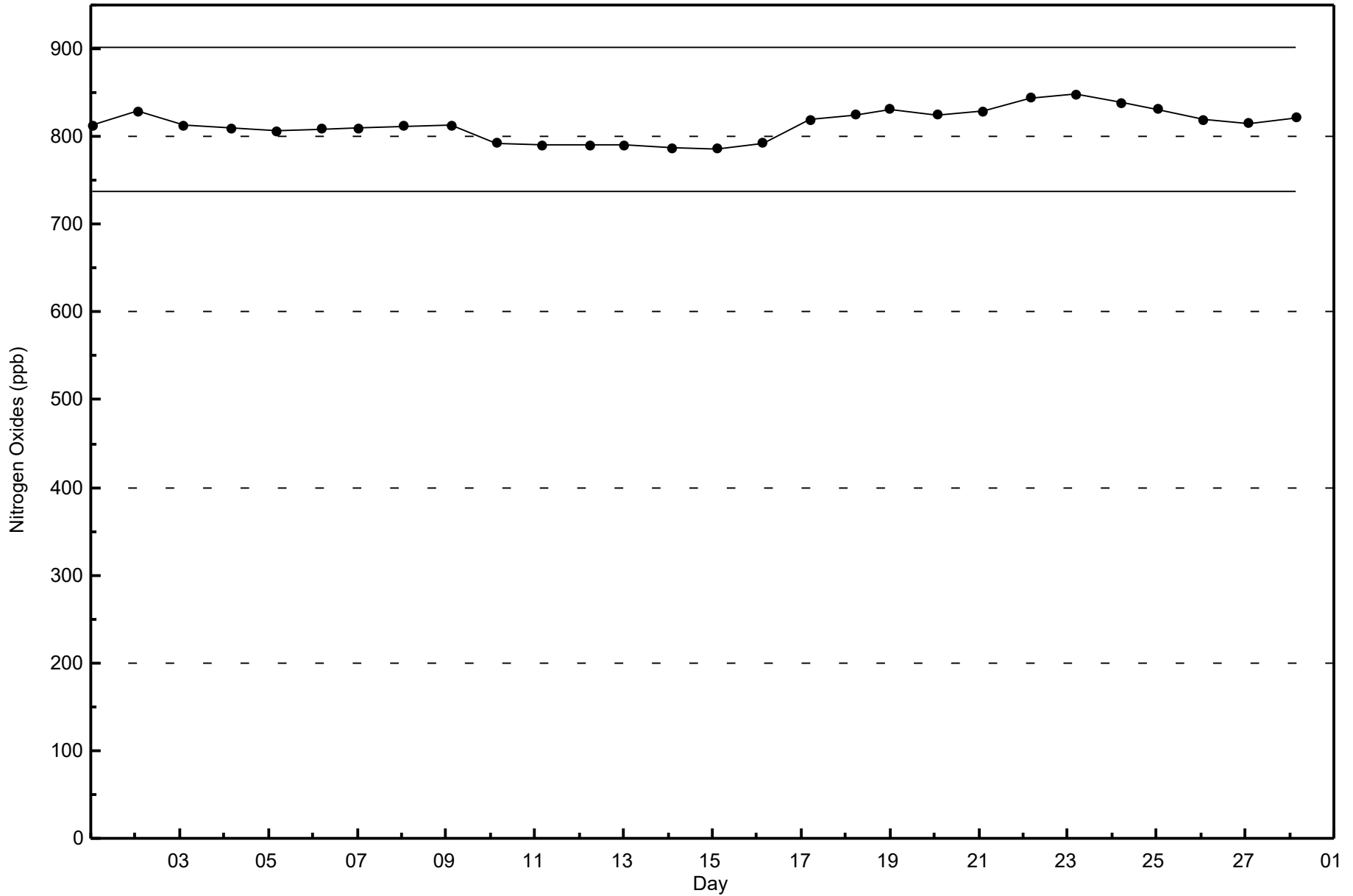
Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Nitrogen Oxides (NO<sub>x</sub>) - ppb  
Christina Lake



Total Number of Valid Hours: 636







**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

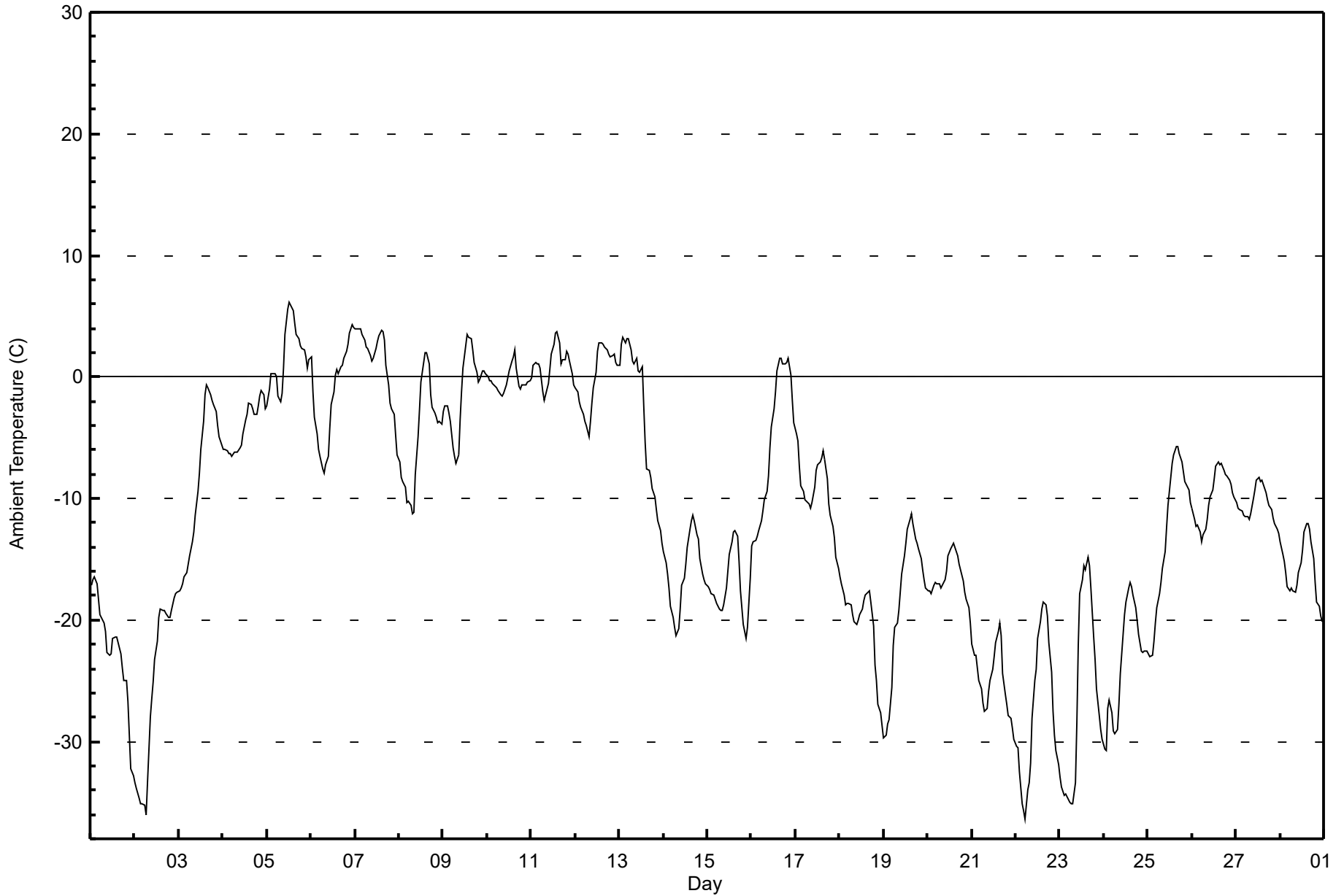
**Ambient Temperature (AT) - C**  
**Christina Lake - February 2023**

| Maximum Value: 6.2 C on Feb 5 13:00      Maximum Daily Average: 1.7 C on Feb 5                                    |                               | Hours in Service: 672<br>Hours of Data: 672<br>Hours of Missing Data: 0<br>Hours of Calibration: 0<br>Percent Operational Time: 100.0   |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |               |
|---|-------------------------------|---|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-----------------|---------------|
| Minimum Value: -36.3 C on Feb 22 06:00<br>Maximum Diurnal Average: -7.4 C at hour 16<br>Monthly Average: -11.51 C |                               | Minimum Daily Average: -27.5 C on Feb 22<br>Minimum Diurnal Average: -14.6 C at hour 8<br>Percentiles: $P_1 = -35.1$ $P_{10} = -25.7$ $Q_1 = -18.8$ Median = -11.4 $Q_3 = -1.9$ $P_{90} = 1.5$ $P_{99} = 4.0$ |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |               |
| Day   | Hourly Period Ending At (MST) |   |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Daily Average   | Daily Maximum |
|   | 1                             | 2   | 3     | 4     | 5     | 6     | 7     | 8     | 9     | 10    | 11    | 12    | 13    | 14    | 15    | 16    | 17    | 18    | 19    | 20    | 21    | 22    | 23    | 24    |                 |               |
| 1-Feb   | -17.1                         | -16.7   | -16.5 | -17.1 | -18.3 | -19.5 | -20.1 | -20.2 | -20.9 | -22.6 | -23.0 | -22.8 | -21.5 | -21.4 | -21.4 | -21.9 | -22.8 | -23.9 | -25.0 | -24.9 | -26.7 | -29.5 | -32.2 | -32.9 | -22.4           | -16.5         |
| 2-Feb   | -33.4                         | -33.9   | -34.7 | -35.1 | -35.1 | -35.3 | -36.0 | -33.3 | -28.0 | -26.5 | -25.1 | -23.3 | -21.8 | -19.8 | -19.1 | -19.2 | -19.2 | -19.5 | -19.7 | -19.7 | -19.2 | -18.1 | -17.9 | -17.8 | -25.4           | -17.8         |
| 3-Feb   | -17.6                         | -17.3   | -17.0 | -16.4 | -16.1 | -15.4 | -14.7 | -13.6 | -12.7 | -11.3 | -9.4  | -7.9  | -5.9  | -3.6  | -1.4  | -0.6  | -0.9  | -1.5  | -1.9  | -2.3  | -2.8  | -4.0  | -5.0  | -5.6  | -8.5            | -0.6          |
| 4-Feb   | -5.9                          | -6.0  | -6.1  | -6.3  | -6.3  | -6.5  | -6.2  | -6.2  | -6.2  | -5.8  | -5.6  | -4.6  | -3.5  | -3.1  | -2.2  | -2.3  | -2.6  | -3.0  | -3.1  | -2.4  | -1.6  | -1.1  | -1.4  | -2.6  | -4.2            | -1.1          |
| 5-Feb   | -2.4                          | -1.0  | 0.2   | 0.2   | 0.2   | 0.0   | -1.6  | -2.0  | -1.3  | 0.7   | 3.5   | 5.6   | 6.2   | 5.9   | 5.5   | 4.5   | 3.5   | 3.1   | 2.6   | 2.3   | 2.2   | 1.7   | 0.7   | 1.4   | 1.7             | 6.2           |
| 6-Feb   | 1.6                           | -1.2  | -3.3  | -4.7  | -6.0  | -6.6  | -7.5  | -7.9  | -7.2  | -6.5  | -4.2  | -2.3  | -1.2  | 0.1   | 0.6   | 0.3   | 0.9   | 0.9   | 1.6   | 2.1   | 2.7   | 3.6   | 4.3   | 4.1   | -1.5            | 4.3           |
| 7-Feb   | 3.9                           | 3.9   | 4.0   | 3.9   | 3.5   | 3.1   | 2.4   | 2.3   | 1.8   | 1.3   | 1.5   | 2.4   | 2.9   | 3.4   | 3.9   | 3.8   | 3.0   | 0.9   | -0.6  | -2.2  | -2.6  | -3.1  | -4.8  | -6.4  | 1.3             | 4.0           |
| 8-Feb   | -7.0                          | -8.3  | -8.7  | -9.1  | -10.3 | -10.2 | -10.6 | -11.3 | -11.1 | -8.0  | -5.0  | -2.7  | -0.5  | 1.2   | 2.0   | 1.9   | 1.1   | -1.5  | -2.6  | -3.0  | -3.4  | -3.8  | -3.7  | -3.9  | -4.9            | 2.0           |
| 9-Feb   | -2.8                          | -2.4  | -2.4  | -3.0  | -3.7  | -5.8  | -6.5  | -7.2  | -6.5  | -3.5  | -1.3  | 0.7   | 2.5   | 3.4   | 3.3   | 3.1   | 2.2   | 1.2   | 0.4   | -0.4  | -0.2  | 0.5   | 0.5   | 0.3   | -1.1            | 3.4           |
| 10-Feb  | 0.0                           | -0.3  | -0.3  | -0.5  | -0.7  | -0.9  | -1.1  | -1.5  | -1.6  | -1.4  | -0.7  | -0.1  | 0.5   | 1.3   | 1.6   | 2.2   | 0.8   | -0.8  | -0.9  | -0.7  | -0.7  | -0.7  | -0.5  | -0.3  | -0.3            | 2.2           |
| 11-Feb  | -0.1                          | 0.9   | 1.1   | 1.1   | 1.1   | 0.8   | -1.3  | -1.9  | -1.5  | -0.5  | 0.6   | 1.8   | 2.7   | 3.6   | 3.8   | 2.8   | 1.1   | 1.4   | 1.4   | 2.1   | 1.9   | 1.2   | 0.2   | -0.7  | 1.0             | 3.8           |
| 12-Feb  | -0.8                          | -1.3  | -2.0  | -2.5  | -3.0  | -3.6  | -4.0  | -4.9  | -3.7  | -2.2  | -0.9  | 0.4   | 2.1   | 2.8   | 2.9   | 2.7   | 2.5   | 2.2   | 1.8   | 1.7   | 1.8   | 1.9   | 1.1   | 0.9   | -0.2            | 2.9           |
| 13-Feb  | 1.0                           | 2.7   | 3.3   | 2.8   | 3.1   | 3.1   | 2.2   | 1.3   | 1.1   | 1.5   | 0.5   | 0.4   | 0.9   | -2.4  | -5.4  | -7.6  | -7.7  | -8.3  | -9.2  | -9.9  | -10.9 | -11.9 | -12.6 | -13.7 | -3.2            | 3.3           |
| 14-Feb  | -14.4                         | -15.3   | -16.2 | -17.4 | -18.9 | -19.8 | -20.6 | -21.2 | -20.7 | -19.2 | -17.2 | -16.6 | -15.4 | -14.0 | -12.6 | -11.8 | -11.4 | -11.9 | -13.0 | -13.3 | -14.9 | -16.2 | -16.6 | -17.0 | -16.1           | -11.4         |
| 15-Feb  | -17.3                         | -17.5   | -17.8 | -18.0 | -18.2 | -18.7 | -19.1 | -19.2 | -19.2 | -18.8 | -17.4 | -16.0 | -14.6 | -13.6 | -12.8 | -12.7 | -13.1 | -15.1 | -17.6 | -20.4 | -21.0 | -21.5 | -20.6 | -16.6 | -17.4           | -12.7         |
| 16-Feb  | -13.9                         | -13.6   | -13.5 | -13.2 | -12.6 | -11.8 | -11.0 | -10.1 | -9.4  | -8.1  | -5.8  | -4.2  | -2.6  | -1.2  | 0.5   | 1.5   | 1.5   | 1.1   | 1.1   | 1.1   | 1.5   | 0.1   | -2.0  | -3.7  | -5.3            | 1.5           |
| 17-Feb  | -4.7                          | -5.2  | -7.3  | -8.9  | -9.4  | -10.1 | -10.2 | -10.5 | -10.8 | -10.4 | -9.1  | -7.6  | -7.2  | -7.0  | -6.7  | -6.1  | -6.7  | -8.3  | -10.5 | -11.4 | -12.3 | -13.3 | -14.8 | -15.7 | -9.3            | -4.7          |
| 18-Feb  | -16.5                         | -17.1   | -17.9 | -18.7 | -18.7 | -18.6 | -18.8 | -19.6 | -20.1 | -20.3 | -20.1 | -19.6 | -19.1 | -18.5 | -18.0 | -17.7 | -17.6 | -18.6 | -20.5 | -23.7 | -25.0 | -26.9 | -27.6 | -28.7 | -20.3           | -16.5         |
| 19-Feb  | -29.7                         | -29.5   | -28.5 | -28.2 | -25.6 | -22.1 | -20.6 | -20.3 | -19.3 | -17.8 | -16.2 | -14.7 | -13.7 | -12.5 | -11.7 | -11.2 | -12.1 | -13.4 | -13.7 | -14.2 | -15.0 | -15.9 | -16.7 | -17.4 | -18.3           | -11.2         |
| 20-Feb  | -17.6                         | -17.6   | -17.8 | -17.2 | -16.9 | -17.0 | -17.0 | -17.4 | -17.2 | -16.7 | -16.0 | -14.7 | -14.2 | -13.9 | -13.7 | -14.1 | -14.7 | -15.4 | -15.9 | -16.8 | -17.8 | -18.3 | -19.0 | -20.3 | -16.5           | -13.7         |
| 21-Feb  | -21.9                         | -22.9   | -22.9 | -23.9 | -25.0 | -25.7 | -26.8 | -27.5 | -27.3 | -25.9 | -25.0 | -24.1 | -23.0 | -21.9 | -20.9 | -20.2 | -21.3 | -24.4 | -26.1 | -26.9 | -27.9 | -28.0 | -28.8 | -29.8 | -24.9           | -20.2         |
| 22-Feb  | -30.4                         | -30.6   | -32.4 | -35.2 | -35.6 | -36.3 | -33.9 | -33.4 | -31.8 | -28.1 | -25.0 | -24.0 | -21.5 | -20.2 | -19.1 | -18.5 | -18.7 | -19.7 | -21.9 | -24.2 | -27.5 | -29.5 | -30.8 | -31.9 | -27.5           | -18.5         |
| 23-Feb  | -32.9                         | -33.7   | -34.4 | -34.3 | -34.6 | -35.0 | -35.1 | -35.1 | -33.4 | -28.4 | -22.1 | -17.8 | -16.7 | -15.5 | -15.8 | -14.8 | -15.5 | -17.3 | -21.4 | -23.3 | -25.7 | -27.9 | -29.1 | -29.8 | -26.2           | -14.8         |
| 24-Feb  | -30.6                         | -30.8   | -27.3 | -26.6 | -27.6 | -29.1 | -29.4 | -29.0 | -27.0 | -24.4 | -21.1 | -19.6 | -18.5 | -17.4 | -16.9 | -17.3 | -18.0 | -19.0 | -20.0 | -21.2 | -22.6 | -22.7 | -22.6 | -22.6 | -23.4           | -16.9         |
| 25-Feb  | -22.8                         | -23.0   | -22.9 | -21.7 | -20.3 | -19.0 | -17.9 | -16.9 | -15.8 | -14.3 | -12.4 | -10.5 | -8.3  | -7.1  | -6.5  | -5.8  | -5.7  | -6.3  | -7.0  | -7.8  | -8.6  | -8.9  | -9.3  | -10.3 | -12.9           | -5.7          |
| 26-Feb  | -10.8                         | -11.7   | -12.3 | -12.2 | -12.7 | -13.5 | -13.0 | -12.5 | -11.7 | -10.6 | -9.9  | -9.3  | -8.4  | -7.4  | -7.0  | -7.2  | -7.1  | -7.6  | -8.0  | -8.2  | -8.5  | -8.8  | -9.6  | -9.9  | -9.9            | -7.0          |
| 27-Feb  | -10.4                         | -10.8   | -10.9 | -11.0 | -11.4 | -11.4 | -11.5 | -11.7 | -11.2 | -10.0 | -9.3  | -8.5  | -8.2  | -8.6  | -8.5  | -8.9  | -9.5  | -10.1 | -10.5 | -10.9 | -11.6 | -12.1 | -12.5 | -12.9 | -10.5           | -8.2          |
| 28-Feb  | -13.5                         | -14.5   | -15.2 | -16.1 | -17.2 | -17.6 | -17.4 | -17.6 | -17.7 | -17.2 | -16.1 | -15.2 | -14.3 | -12.7 | -12.0 | -12.1 | -12.5 | -13.6 | -15.0 | -16.9 | -18.5 | -18.9 | -19.7 | -20.2 | -15.9           | -12.0         |
|   | -13.1                         | -13.4   | -13.6 | -13.9 | -14.2 | -14.4 | -14.6 | -14.6 | -13.9 | -12.7 | -11.1 | -9.8  | -8.7  | -7.9  | -7.4  | -7.4  | -7.9  | -8.9  | -9.8  | -10.5 | -11.2 | -11.9 | -12.5 | -13.0 | Diurnal Average |               |
|   | 3.9                           | 3.9   | 4.0   | 3.9   | 3.5   | 3.1   | 2.4   | 2.3   | 1.8   | 1.5   | 3.5   | 5.6   | 6.2   | 5.9   | 5.5   | 4.5   | 3.5   | 3.1   | 2.6   | 2.3   | 2.7   | 3.6   | 4.3   | 4.1   | Diurnal Maximum |               |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Ambient Temperature (AT) - C**  
**Christina Lake - February 2023**





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Ambient Temperature (AT) - C  
Christina Lake - February 2023**

| <b>Concentration Ranges (C)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---------------------------------|------------------------|----------|---------------------|
| -50 - -20                       | 139                    | 20.68    | 20.68               |
| -20 - 0                         | 411                    | 61.16    | 81.85               |
| 0 - 10                          | 122                    | 18.15    | 100.00              |
| 10 - 20                         | 0                      | 0.00     | 100.00              |
| > 20                            | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 672

Total Number of Hours: 672



**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

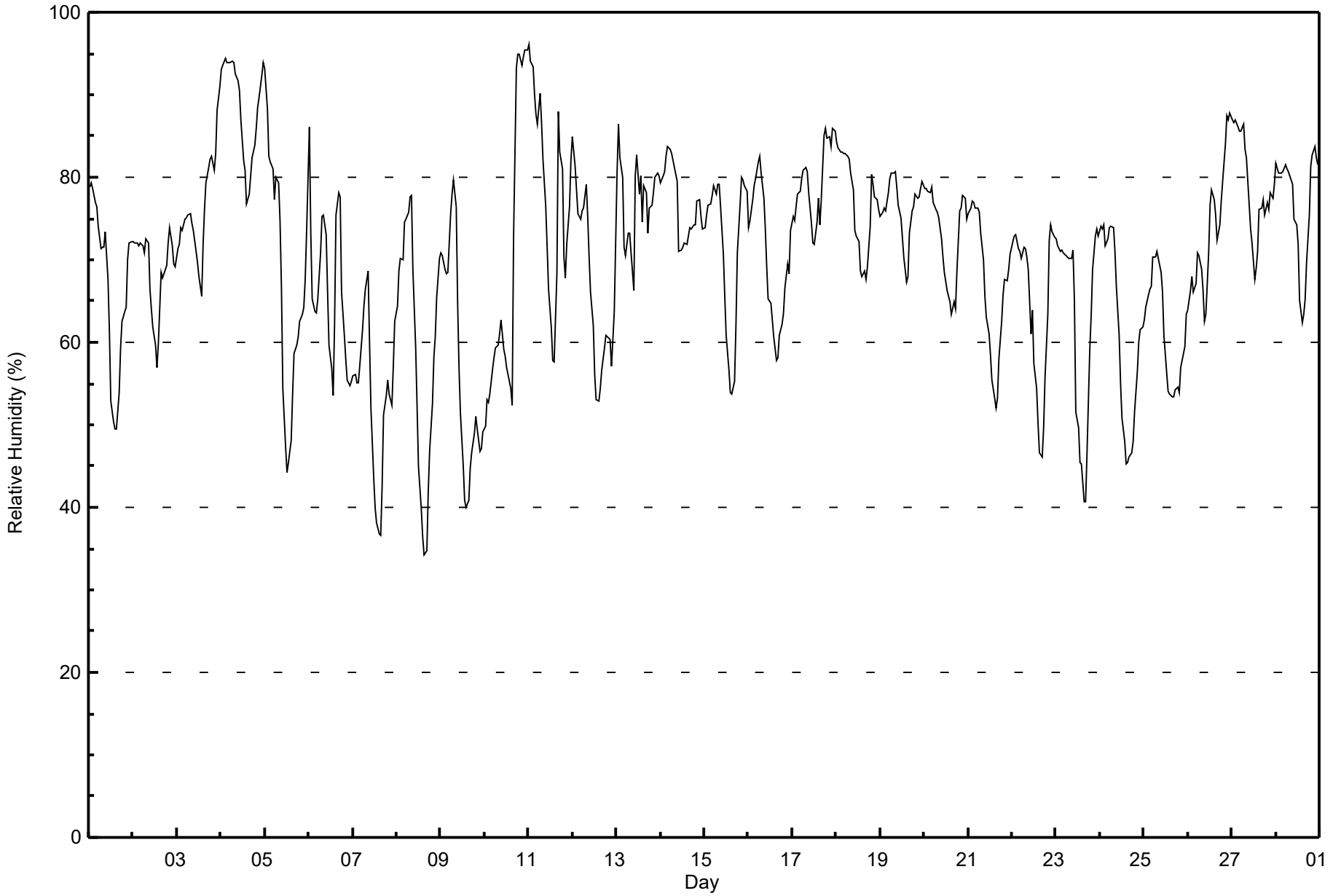
**Relative Humidity (RH) - %**  
**Christina Lake - February 2023**

| Maximum Value: 96.1 % on Feb 11 01:00<br>Minimum Value: 34.3 % on Feb 8 16:00<br>Maximum Diurnal Average: 76.6 % at hour 8<br>Monthly Average: 70.11 % |                               | Maximum Daily Average: 88.6 % on Feb 4<br>Minimum Daily Average: 53.2 % on Feb 7<br>Minimum Diurnal Average: 58.7 % at hour 15<br>Percentiles: P <sub>1</sub> = 39.9 P <sub>10</sub> = 53.4 Q <sub>1</sub> = 62.5 Median = 72.0 Q <sub>3</sub> = 78.1 P <sub>90</sub> = 83.0 P <sub>99</sub> = 94.2 |      | Hours in Service: 672<br>Hours of Data: 672<br>Hours of Missing Data: 0<br>Hours of Calibration: 0<br>Percent Operational Time: 100.0 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |               |               |
|--|-------------------------------|---|------|---|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----------------|---------------|---------------|
| Day  | Hourly Period Ending At (MST) |   |      |   |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 | Daily Average | Daily Maximum |
|  | 1                             | 2   | 3    | 4   | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20   | 21   | 22   | 23   | 24              |               |               |
| 1-Feb  | 78.8                          | 79.3  | 78.7 | 76.9  | 76.5 | 74.1 | 71.4 | 71.5 | 71.6 | 73.3 | 67.6 | 61.3 | 52.9 | 50.4 | 49.5 | 49.5 | 53.8 | 59.3 | 62.5 | 63.8 | 64.3 | 70.1 | 72.0 | 72.2            | 66.7          | 79.3          |
| 2-Feb  | 72.1                          | 72.0  | 72.0 | 71.8  | 72.0 | 71.7 | 70.9 | 72.5 | 72.0 | 66.5 | 64.1 | 61.8 | 59.6 | 57.0 | 59.8 | 68.4 | 67.9 | 68.4 | 69.4 | 72.0 | 73.8 | 71.7 | 69.5 | 69.2            | 68.6          | 73.8          |
| 3-Feb  | 71.3                          | 71.9  | 73.9 | 73.5  | 75.0 | 75.0 | 75.4 | 75.6 | 74.3 | 73.6 | 71.0 | 69.6 | 68.0 | 65.5 | 71.9 | 76.0 | 79.3 | 81.2 | 82.2 | 82.6 | 80.8 | 82.8 | 88.2 | 91.0            | 76.2          | 91.0          |
| 4-Feb  | 93.0                          | 93.6  | 94.4 | 94.0  | 93.9 | 93.8 | 94.1 | 93.9 | 92.6 | 91.7 | 90.4 | 87.0 | 82.1 | 80.9 | 76.7 | 78.0 | 80.2 | 82.4 | 84.0 | 86.0 | 88.5 | 89.6 | 92.3 | 93.9            | 88.6          | 94.4          |
| 5-Feb  | 93.2                          | 88.3  | 82.6 | 81.9  | 81.1 | 77.3 | 79.9 | 79.3 | 74.7 | 66.7 | 54.4 | 47.2 | 44.2 | 45.4 | 48.1 | 53.7 | 58.6 | 59.7 | 60.7 | 62.5 | 63.3 | 64.2 | 67.6 | 73.4            | 67.0          | 93.2          |
| 6-Feb  | 86.1                          | 73.2  | 65.3 | 63.7  | 63.5 | 65.3 | 70.9 | 75.3 | 75.5 | 73.1 | 66.0 | 59.6 | 56.7 | 53.6 | 62.2 | 75.5 | 78.1 | 77.6 | 66.2 | 60.9 | 57.9 | 55.4 | 54.8 | 55.3            | 66.3          | 86.1          |
| 7-Feb  | 56.0                          | 56.1  | 55.2 | 55.0  | 57.1 | 61.5 | 64.3 | 66.5 | 68.6 | 59.9 | 52.1 | 43.6 | 40.1 | 38.2 | 36.7 | 36.6 | 42.6 | 51.2 | 53.6 | 55.5 | 53.8 | 52.3 | 57.1 | 62.5            | 53.2          | 68.6          |
| 8-Feb  | 64.4                          | 68.6  | 70.2 | 70.0  | 74.6 | 74.9 | 75.7 | 77.6 | 77.7 | 68.8 | 59.4 | 52.2 | 44.9 | 39.9 | 36.4 | 34.3 | 34.8 | 42.1 | 47.0 | 52.5 | 58.2 | 60.7 | 65.4 | 70.2            | 59.2          | 77.7          |
| 9-Feb  | 70.9                          | 70.6  | 68.8 | 68.3  | 68.4 | 75.6 | 77.9 | 79.7 | 76.5 | 64.8 | 56.9 | 51.3 | 45.1 | 40.9 | 39.9 | 40.9 | 44.7 | 46.6 | 48.9 | 51.1 | 49.5 | 46.9 | 47.1 | 49.2            | 57.5          | 79.7          |
| 10-Feb   | 49.9                          | 53.1  | 52.6 | 53.7  | 56.7 | 58.1 | 59.3 | 59.7 | 61.0 | 62.8 | 59.1 | 58.2 | 56.9 | 55.2 | 54.3 | 52.4 | 72.8 | 93.2 | 95.0 | 95.0 | 93.6 | 94.6 | 95.4 | 95.4            | 68.3          | 95.4          |
| 11-Feb   | 96.1                          | 94.1  | 93.4 | 90.0  | 87.6 | 86.4 | 90.1 | 86.7 | 82.2 | 76.5 | 71.6 | 66.4 | 61.7 | 57.9 | 57.7 | 68.4 | 87.9 | 83.1 | 81.0 | 70.3 | 67.9 | 71.9 | 76.4 | 82.0            | 78.6          | 96.1          |
| 12-Feb   | 84.9                          | 81.4  | 78.5 | 75.5  | 74.9 | 76.0 | 76.3 | 79.1 | 75.3 | 70.4 | 66.1 | 62.1 | 56.1 | 53.0 | 52.9 | 54.5 | 56.7 | 59.3 | 60.8 | 60.6 | 60.4 | 57.1 | 60.3 | 63.7            | 66.5          | 84.9          |
| 13-Feb   | 80.6                          | 86.5  | 82.3 | 80.0  | 71.5 | 70.6 | 73.2 | 73.3 | 70.9 | 66.2 | 80.1 | 82.8 | 77.9 | 80.2 | 74.6 | 79.0 | 78.1 | 73.3 | 76.3 | 76.7 | 78.1 | 80.0 | 80.6 | 80.3            | 77.2          | 86.5          |
| 14-Feb   | 79.3                          | 80.1  | 80.6 | 82.6  | 83.7 | 83.4 | 82.9 | 82.0 | 80.4 | 79.5 | 71.0 | 71.2 | 71.5 | 72.1 | 71.8 | 72.9 | 73.9 | 73.7 | 74.2 | 74.3 | 77.1 | 77.3 | 75.3 | 73.7            | 76.8          | 83.7          |
| 15-Feb   | 73.8                          | 75.4  | 76.7 | 76.7  | 77.8 | 79.0 | 77.9 | 79.1 | 79.2 | 76.4 | 70.7 | 65.7 | 60.8 | 56.6 | 53.9 | 53.7 | 55.3 | 62.0 | 70.8 | 76.8 | 80.0 | 79.7 | 79.1 | 78.2            | 71.5          | 80.0          |
| 16-Feb   | 74.0                          | 74.7  | 77.2 | 78.9  | 79.9 | 81.8 | 82.6 | 80.5 | 77.5 | 73.8 | 69.1 | 65.3 | 64.8 | 62.7 | 60.6 | 57.7 | 58.2 | 60.9 | 62.2 | 63.5 | 66.6 | 69.5 | 68.2 | 73.6            | 70.2          | 82.6          |
| 17-Feb   | 75.3                          | 74.8  | 76.4 | 78.0  | 78.4 | 79.8 | 80.9 | 81.2 | 80.7 | 78.1 | 74.4 | 72.0 | 71.8 | 74.6 | 77.5 | 74.2 | 77.4 | 85.0 | 86.0 | 84.7 | 84.9 | 83.8 | 85.9 | 85.5            | 79.2          | 86.0          |
| 18-Feb   | 84.3                          | 83.5  | 83.1 | 83.1  | 82.8 | 82.8 | 82.5 | 82.2 | 80.6 | 78.5 | 73.5 | 72.9 | 72.2 | 68.6 | 68.0 | 68.6 | 67.6 | 69.1 | 74.2 | 80.3 | 79.2 | 77.6 | 77.2 | 76.2            | 77.0          | 84.3          |
| 19-Feb   | 75.3                          | 75.8  | 76.2 | 76.0  | 78.1 | 79.8 | 80.5 | 80.5 | 80.7 | 78.8 | 76.6 | 75.1 | 72.8 | 70.3 | 67.2 | 68.0 | 73.2 | 76.0 | 76.5 | 78.0 | 77.5 | 77.6 | 78.7 | 79.5            | 76.2          | 80.7          |
| 20-Feb   | 78.7                          | 78.6  | 78.4 | 78.2  | 78.8 | 76.9 | 76.1 | 75.7 | 75.1 | 72.6 | 70.4 | 68.5 | 66.2 | 65.5 | 64.9 | 63.3 | 65.0 | 64.0 | 68.7 | 76.0 | 76.3 | 77.8 | 77.5 | 75.0            | 72.8          | 78.8          |
| 21-Feb   | 75.6                          | 76.2  | 77.2 | 76.9  | 76.2 | 76.3 | 75.7 | 73.3 | 70.0 | 65.6 | 63.1 | 61.0 | 58.5 | 55.4 | 53.2 | 52.1 | 53.2 | 58.0 | 62.6 | 65.7 | 67.6 | 67.4 | 68.9 | 70.7            | 66.7          | 77.2          |
| 22-Feb   | 72.2                          | 72.8  | 73.0 | 71.4  | 71.0 | 70.2 | 71.5 | 71.3 | 70.3 | 68.8 | 61.1 | 63.8 | 57.5 | 54.5 | 50.2 | 46.5 | 46.1 | 49.7 | 55.7 | 63.4 | 72.4 | 74.2 | 73.4 | 72.7            | 64.7          | 74.2          |
| 23-Feb   | 72.5                          | 71.8  | 71.1 | 71.3  | 70.8 | 70.4 | 70.3 | 70.2 | 70.2 | 71.2 | 65.0 | 51.5 | 49.7 | 45.4 | 45.3 | 40.7 | 40.7 | 46.4 | 59.2 | 63.2 | 68.8 | 72.9 | 73.7 | 72.9            | 62.7          | 73.7          |
| 24-Feb   | 74.0                          | 73.7  | 74.3 | 71.7  | 72.5 | 73.9 | 74.1 | 73.8 | 71.1 | 66.8 | 60.8 | 55.2 | 50.8 | 48.0 | 45.2 | 45.4 | 46.1 | 46.7 | 47.9 | 51.5 | 56.4 | 60.0 | 61.5 | 61.9            | 61.0          | 74.3          |
| 25-Feb   | 62.8                          | 64.2  | 65.7 | 66.5  | 66.8 | 70.4 | 70.4 | 71.1 | 70.2 | 68.4 | 66.2 | 60.9 | 56.2 | 54.1 | 53.7 | 53.4 | 53.4 | 54.3 | 54.6 | 53.9 | 57.0 | 57.8 | 59.5 | 63.4            | 61.5          | 71.1          |
| 26-Feb   | 63.9                          | 66.3  | 68.0 | 66.1  | 67.1 | 70.9 | 70.5 | 68.8 | 66.4 | 62.6 | 63.4 | 70.8 | 76.7 | 78.6 | 77.3 | 75.4 | 72.3 | 74.2 | 77.1 | 79.5 | 84.0 | 87.4 | 86.9 | 87.7            | 73.4          | 87.7          |
| 27-Feb   | 86.9                          | 86.5  | 86.9 | 86.1  | 85.6 | 85.6 | 86.5 | 83.3 | 82.3 | 76.7 | 73.7 | 72.1 | 67.6 | 69.0 | 71.0 | 76.1 | 76.3 | 77.3 | 75.4 | 77.0 | 76.1 | 78.2 | 77.5 | 79.1            | 78.9          | 86.9          |
| 28-Feb   | 81.8                          | 80.5  | 80.5 | 80.5  | 80.7 | 81.6 | 81.0 | 80.7 | 79.7 | 79.2 | 74.9 | 74.2 | 71.9 | 65.1 | 62.3 | 63.4 | 65.3 | 69.7 | 75.4 | 81.4 | 82.8 | 83.7 | 82.4 | 81.5            | 76.7          | 83.7          |
|  |                               |   |      |   |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Diurnal Average |               |               |
|  |                               |   |      |   |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Diurnal Maximum |               |               |
|  |                               |   |      |   |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |               |               |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Relative Humidity (RH) - %**  
**Christina Lake - February 2023**







**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Relative Humidity (RH) - %**  
**Christina Lake - February 2023**

| <b>Concentration Ranges (%)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---------------------------------|------------------------|----------|---------------------|
| 0 - 20                          | 0                      | 0.00     | 0.00                |
| 20 - 40                         | 8                      | 1.19     | 1.19                |
| 40 - 60                         | 132                    | 19.64    | 20.83               |
| 60 - 80                         | 406                    | 60.42    | 81.25               |
| 80 - 100                        | 126                    | 18.75    | 100.00              |

Total Number of Valid Hours: 672

Total Number of Hours: 672



|  |  |                                |
|--|--|--------------------------------|
| Maximum Speed: 32 km/h on Feb 6 02:00              | Maximum Daily Speed Average: 15.9 km/h on Feb 7  | Hours in Service: 672          |
| Minimum Speed Value: 1 km/h on Feb 4 13:00         | Minimum Daily Speed Average: 2.1 km/h on Feb 22  | Hours of Data: 670             |
| Maximum Diurnal Speed Average: 5.2 km/h at hour 14 | Minimum Diurnal Speed Average: 1.8 km/h at hour 18   | Hours of Missing Data: 2       |
| Monthly Average Velocity: 3.4 km/h 256.0 deg       | Percentiles: P <sub>1</sub> = 2 P <sub>10</sub> = 4 Q <sub>1</sub> = 7 Median = 10 Q <sub>3</sub> = 15 P <sub>90</sub> = 19 P <sub>99</sub> = 25 | Percent Operational Time: 99.7 |

| Day    | Hourly Period Ending At (MST) |        |        |        |       |       |        |        |        |       |       |        |        |        |        |       |       |       |       |       |       |       |       |         | Daily Average | Daily Maximum |
|--------|-------------------------------|--------|--------|--------|-------|-------|--------|--------|--------|-------|-------|--------|--------|--------|--------|-------|-------|-------|-------|-------|-------|-------|-------|---------|---------------|---------------|
|        | 1                             | 2      | 3      | 4      | 5     | 6     | 7      | 8      | 9      | 10    | 11    | 12     | 13     | 14     | 15     | 16    | 17    | 18    | 19    | 20    | 21    | 22    | 23    | 24      |               |               |
| 1-Feb  | WSW10                         | WSW10  | NNW10  | NW18   | N16   | NNW19 | NNW20  | NW20   | NNW19  | N15   | NNW18 | NW21   | NW20   | NW20   | NW21   | NW23  | NW19  | NNW19 | N11   | NNW12 | W4    | SW5   | SSW5  | SSW4    | NW13.0        | NW23          |
| 2-Feb  | SSW3                          | SSW3   | S2     | S3     | SSW3  | SSE3  | E5     | S7     | S12    | SSE16 | SSE15 | SSE12  | SSE16  | SSE16  | SSE20  | SSE20 | SSE21 | SSE21 | SSE19 | SSE17 | S15   | S15   | S16   | S14     | SSE11.9       | SSE21         |
| 3-Feb  | SSW16                         | SSW15  | SSW14  | SSW14  | SSW14 | SSW11 | S10    | SSW10  | SW13   | SW10  | SW8   | SW10   | WSW9   | WSW10  | NNW16  | NNW15 | NNW13 | NW12  | NW14  | NW11  | WNW7  | NE7   | ENE8  | ENE11   | WSW6.3        | SSW16         |
| 4-Feb  | E6                            | ENE7   | E7     | ESE6   | ESE5  | E4    | E5     | ENE6   | E7     | NE4   | NNE7  | E3     | ESE1   | NE4    | ESE3   | S2    | ENE6  | E3    | E2    | S7    | SSW6  | S6    | S7    | SSW9    | ESE3.1        | SSW9          |
| 5-Feb  | SSW9                          | SSW10  | SSW8   | S6     | S4    | SSE4  | S5     | S6     | S6     | S10   | SW8   | S5     | SSW13  | SSW11  | SSW8   | S8    | SW7   | SW10  | WSW13 | WSW15 | WSW15 | WSW16 | WSW14 | W15     | SW8.3         | WSW16         |
| 6-Feb  | WNNW25                        | WNNW32 | WNNW26 | WNNW25 | W19   | W16   | WSW11  | WSW11  | WSW13  | WSW12 | W12   | W14    | WSW13  | WSW12  | WSW14  | SW11  | SSW8  | S9    | SSW12 | SW17  | SW16  | SW18  | WSW19 | SW19    | WSW13.7       | WNNW32        |
| 7-Feb  | WSW17                         | SW17   | WSW21  | WSW23  | WSW22 | WSW20 | WSW20  | WSW19  | WNNW23 | W23   | W19   | W16    | WSW17  | W22    | WSW21  | WSW20 | WSW15 | WSW10 | WSW9  | SW10  | SW9   | WSW10 | SW7   | SSW9    | WSW15.9       | WSW23         |
| 8-Feb  | SSW8                          | SSW6   | SW10   | SSW8   | SW7   | SW11  | SW12   | SSW9   | SW7    | WSW10 | SW11  | SW11   | WSW9   | WNNW10 | W10    | WSW11 | WSW8  | SW12  | SW11  | SW11  | SW11  | SW11  | SW14  | SW13    | SW9.6         | SW14          |
| 9-Feb  | SW14                          | SW15   | SW14   | SW14   | SW10  | SSW12 | SSW12  | S9     | SSW6   | SW13  | SW11  | SW12   | SW15   | SW17   | SSW11  | S12   | S12   | S13   | S14   | S11   | SSW8  | SW13  | SW11  | SSW5    | SSW11.3       | SW17          |
| 10-Feb | SSE4                          | S6     | SSE4   | SSE5   | SSE6  | SSE4  | SSE7   | SSE5   | S4     | E7    | ESE7  | SSW5   | ESE4   | ENE2   | NE7    | WNNW5 | NW15  | NW11  | W9    | WSW11 | WSW11 | WSW11 | SW8   | SSE1    | SW2.2         | NW15          |
| 11-Feb | SW6                           | WSW10  | WSW11  | WSW12  | WSW12 | WSW11 | SW10   | SW10   | SW12   | WSW15 | WSW15 | WSW16  | WSW19  | WSW18  | WSW17  | WSW22 | WSW17 | WSW15 | SW15  | W19   | W26   | W23   | W16   | WSW13   | WSW14.5       | W26           |
| 12-Feb | WSW15                         | WSW14  | WSW12  | WSW11  | WSW11 | SW12  | SW11   | WSW10  | WSW11  | SW12  | WSW14 | WSW14  | WSW11  | SW11   | SW10   | SW9   | SSW8  | SSW10 | SSW12 | S14   | S16   | S19   | SSW18 | SSW18   | SW11.4        | S19           |
| 13-Feb | SSW18                         | SW20   | SW20   | SW16   | SW19  | WSW22 | WSW19  | WSW18  | WSW19  | WSW20 | WSW18 | WSW15  | WNNW19 | NNW30  | NNW31  | NNW28 | N22   | N23   | NNW25 | NNW24 | NNW22 | NNW17 | NNW17 | NW16    | WNNW13.6      | NNW31         |
| 14-Feb | NNW18                         | NW22   | NW15   | N13    | NNE10 | NE8   | ENE8   | E6     | ESE4   | E5    | SE2   | S3     | SSW4   | SW6    | SW7    | WSW9  | W8    | NNW16 | NNW15 | NW16  | NNE12 | NNE10 | NE11  | NE11    | NNW5.6        | NW22          |
| 15-Feb | NE10                          | ENE8   | E8     | ENE7   | E7    | E8    | E7     | E7     | E7     | E8    | ENE8  | ENE6   | ENE6   | M      | M      | ENE7  | E7    | SE7   | S6    | S6    | S6    | SSE5  | S4    | S6      | E5.2          | NE10          |
| 16-Feb | S10                           | S10    | S14    | S14    | S12   | S13   | SSW16  | S9     | SSW13  | SSW11 | SSW11 | SW17   | SSW22  | SW17   | SW19   | WSW20 | WSW18 | WSW17 | WSW15 | W13   | NW19  | NW23  | NW22  | NW19    | SW10.6        | NW23          |
| 17-Feb | NW18                          | NNW19  | NNE12  | NE10   | NE11  | NE10  | ENE5   | ENE7   | E7     | E7    | E5    | WSW9   | W9     | WSW7   | WSW8   | WNNW9 | NW11  | NNE11 | NNE13 | NE12  | NE10  | NE9   | NE7   | NNE10   | NNE5.5        | NNW19         |
| 18-Feb | NNE10                         | NNE9   | NNE10  | NE10   | NE9   | NE9   | NNE11  | NNE9   | NNE12  | NNE10 | NNE12 | NNE9   | NNE10  | NNE9   | NE9    | NE10  | NE9   | E5    | ESE6  | S4    | SSW4  | SSE2  | SSW5  | S4      | NE6.2         | NNE12         |
| 19-Feb | SSE3                          | SSE2   | E4     | E5     | ESE3  | E6    | E7     | E7     | ESE7   | SE8   | ESE9  | ESE8   | ENE9   | E10    | ESE8   | ENE6  | NNE13 | NNE11 | NNE9  | NE8   | NE8   | NNE10 | NNE9  | NNE10   | ENE6.0        | NNE13         |
| 20-Feb | NNW10                         | NNW13  | NNE7   | NW12   | NW18  | NW16  | WNNW12 | NW19   | NW13   | NW12  | W9    | WNNW8  | WNNW12 | WNNW14 | WNNW14 | NW17  | N14   | NNE12 | NNE10 | NE12  | ENE9  | NE10  | NNE14 | NE16    | NNW9.4        | NW19          |
| 21-Feb | NNE8                          | NNE7   | NNW11  | N13    | N12   | NW8   | NW12   | NW13   | NW18   | NW14  | NNW15 | NNW13  | NNW13  | NNW15  | N15    | N16   | N19   | NNE16 | NNE12 | NNE10 | NNE11 | NNE13 | NNE10 | NE7     | N11.3         | N19           |
| 22-Feb | NE5                           | NNE6   | SSW2   | SSW3   | SSW3  | SSE3  | SW4    | SW3    | SSW2   | E1    | NE4   | NE7    | E4     | NE7    | NE8    | NNE9  | NE10  | NNE10 | NE8   | ENE4  | ENE3  | SSW4  | SSW6  | SSW5    | NE2.1         | NNE10         |
| 23-Feb | SSW5                          | SSW4   | SSW3   | SSW4   | SSW4  | SSW3  | SSW4   | SSW4   | SSW3   | S3    | SSE3  | ENE3   | ENE4   | NNE6   | NE10   | W1    | SE3   | S4    | S5    | SSE3  | S4    | SSW5  | SW5   | SSW4    | S2.2          | NE10          |
| 24-Feb | SSW4                          | S5     | S6     | SSW7   | S5    | SSE5  | SSE5   | SSE6   | S7     | S10   | SSW16 | SSW21  | SSW21  | SSW20  | SSW20  | SSW19 | SSW18 | SSW18 | SSW19 | SSW17 | SSW18 | SSW17 | SSW16 | SSW13.1 | SSW21         |               |
| 25-Feb | SW15                          | SW14   | SW13   | WSW13  | WSW13 | WSW12 | W12    | W13    | W12    | WSW12 | WSW12 | WSW13  | WSW13  | SW12   | WSW12  | SW12  | SW11  | SSW10 | SW11  | SW8   | S6    | SSW9  | S9    | S8      | WSW10.5       | SW15          |
| 26-Feb | SSE9                          | SSE8   | SSE8   | SSE12  | SE7   | ESE6  | ESE7   | ESE7   | E7     | E9    | E10   | E12    | E14    | E15    | ENE17  | ENE16 | ENE17 | ENE15 | E13   | ENE9  | ENE7  | ENE5  | E6    | E7      | E8.8          | ENE17         |
| 27-Feb | NE8                           | NE8    | NNE7   | NNW15  | NW14  | NW21  | NW16   | WNNW14 | NW16   | NW20  | NW18  | WNNW17 | NW17   | WNNW17 | NW17   | NNW17 | NW15  | NW20  | NW19  | NW16  | NNW12 | NNE9  | NNE10 | N8      | NW13.1        | NW21          |
| 28-Feb | NE10                          | NE12   | ENE11  | NE12   | NE9   | ESE6  | NNE5   | NNE7   | NE7    | NE7   | ENE5  | NE8    | NE6    | NE6    | NE7    | ENE8  | E8    | E7    | E5    | SSE4  | SSE4  | S5    | SSE3  | E6      | ENE5.7        | NE12          |

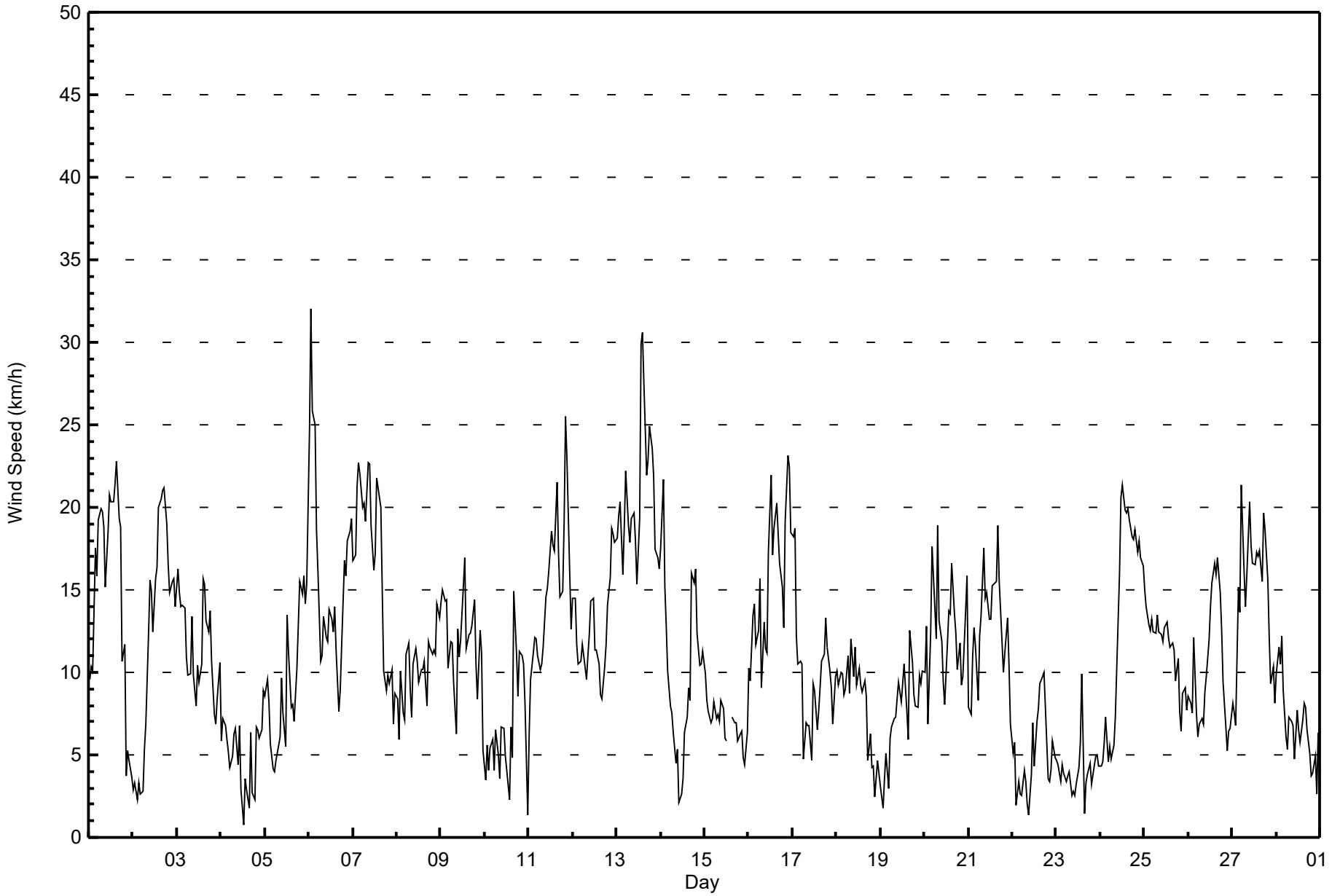
|        |        |        |        |        |        |        |        |        |        |        |        |        |       |       |       |         |         |       |        |        |        |        |        |                 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-------|-------|-------|---------|---------|-------|--------|--------|--------|--------|--------|-----------------|
| WSW3.4 | WSW3.8 | WSW3.6 | WSW3.3 | WSW3.1 | WSW3.3 | WSW3.3 | WSW3.1 | WSW3.7 | WSW3.4 | WSW3.5 | WSW4.7 | WSW5.2 | W5.2  | W4.8  | W4.7  | WNNW2.8 | WNNW1.8 | W2.5  | WSW3.4 | WSW3.0 | WSW3.3 | WSW3.0 | WSW2.2 | Diurnal Average |
| WNNW25 | WNNW32 | WNNW26 | WNNW25 | WSW22  | WSW22  | WSW20  | NW20   | WNNW23 | W23    | W19    | NNW21  | SSW22  | NNW30 | NNW31 | NNW28 | N22     | NNW23   | NNW25 | NNW24  | W26    | NW23   | NW22   | SW19   | Diurnal Maximum |

M - Maintenance  
 All monthly, daily, and diurnal averages have been calculated using vector methods



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Wind Speed (WS) - km/h**  
**Christina Lake - February 2023**





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Wind Speed (WS) - km/h  
Christina Lake - February 2023**

| <b>Wind Speed Ranges (km/h)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---------------------------------|------------------------|----------|---------------------|
| 0 - 5                           | 108                    | 16.12    | 16.12               |
| 6 - 11                          | 274                    | 40.90    | 57.01               |
| 12 - 19                         | 235                    | 35.07    | 92.09               |
| 20 - 28                         | 50                     | 7.46     | 99.55               |
| 29 - 38                         | 3                      | 0.45     | 100.00              |
| > 38                            | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 670

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Wind Speed (WS) - km/h  
Christina Lake - February 2023**

| <b>Wind Speed<br/>Ranges (km/h)</b> | <b>Wind Direction</b> |            |           |            |          |            |           |            |          |            |           |            |          |            |           |            | <b>Totals</b> |
|-------------------------------------|-----------------------|------------|-----------|------------|----------|------------|-----------|------------|----------|------------|-----------|------------|----------|------------|-----------|------------|---------------|
|                                     | <b>N</b>              | <b>NNE</b> | <b>NE</b> | <b>ENE</b> | <b>E</b> | <b>ESE</b> | <b>SE</b> | <b>SSE</b> | <b>S</b> | <b>SSW</b> | <b>SW</b> | <b>WSW</b> | <b>W</b> | <b>WNW</b> | <b>NW</b> | <b>NNW</b> |               |
| 0 - 5                               | 0                     | 1          | 4         | 8          | 14       | 6          | 2         | 20         | 18       | 28         | 4         | 0          | 2        | 1          | 0         | 0          | 108           |
| 6 - 11                              | 2                     | 34         | 37        | 21         | 26       | 12         | 3         | 6          | 26       | 28         | 35        | 28         | 5        | 5          | 3         | 3          | 274           |
| 12 - 19                             | 9                     | 11         | 5         | 4          | 4        | 0          | 0         | 9          | 15       | 23         | 34        | 48         | 12       | 11         | 29        | 21         | 235           |
| 20 - 28                             | 1                     | 0          | 0         | 0          | 0        | 0          | 0         | 4          | 0        | 6          | 2         | 11         | 4        | 4          | 11        | 7          | 50            |
| 29 - 38                             | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 1          | 0         | 2          | 3             |
| > 38                                | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0             |
| <b>Totals</b>                       | 12                    | 46         | 46        | 33         | 44       | 18         | 5         | 39         | 59       | 85         | 75        | 87         | 23       | 22         | 43        | 33         | 670           |

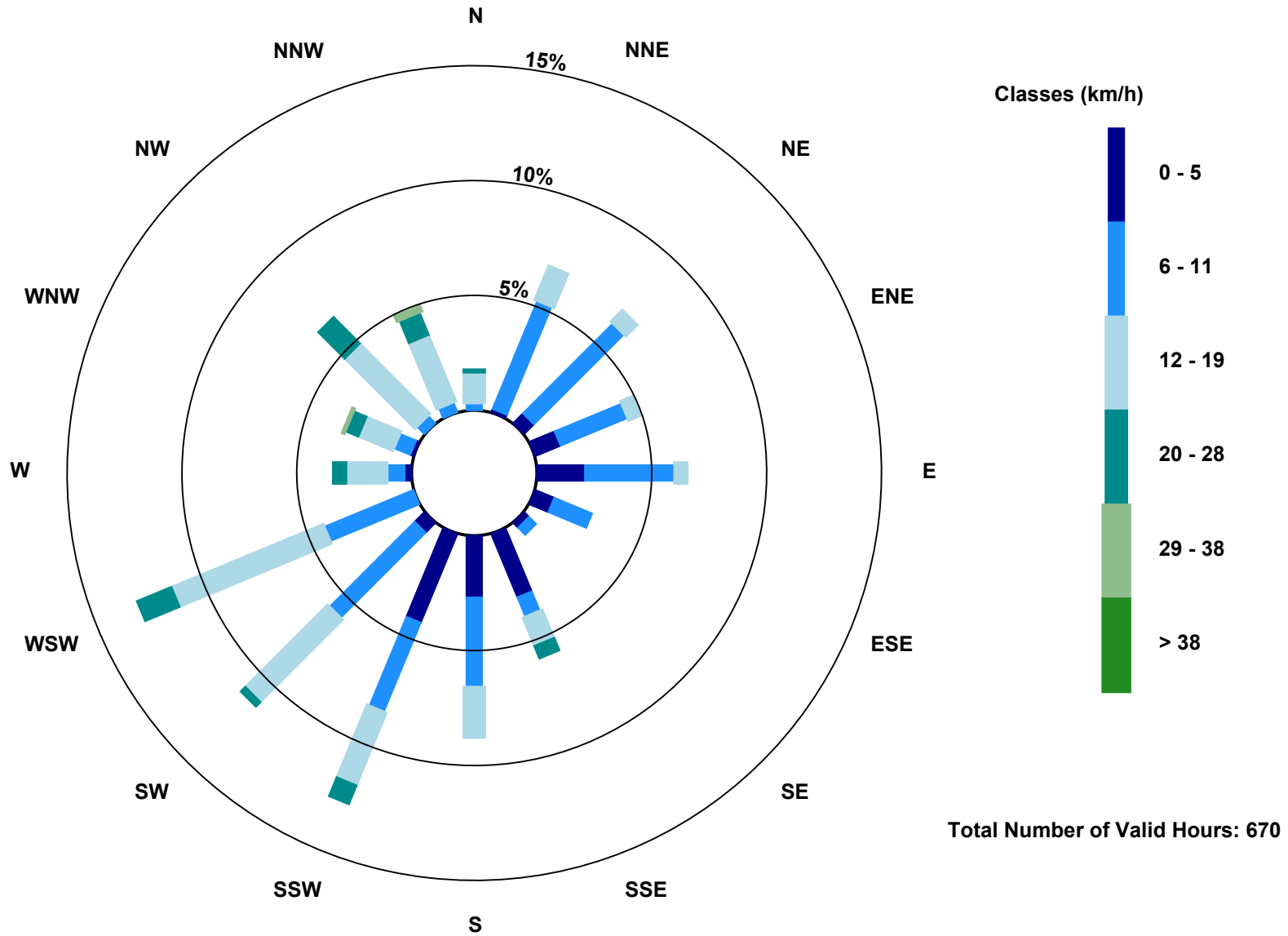
Total Number of Valid Hours: 670

Total Number of Hours: 672



Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Wind Speed (WS) - km/h  
Christina Lake





**Wood Buffalo Environmental Association**  
**Summary of Hour Standard Deviations**

**Wind Speed (WS) - km/h**  
**Christina Lake - February 2023**

| Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0  |                               |   |   |   |   |   |   |   |   |    |    |    |    | Hours in Service: 672                              |    |    |    |    |    |    |    |    |    |    |               |  |  |
|--|-------------------------------|---|---|---|---|---|---|---|---|----|----|----|----|--|----|----|----|----|----|----|----|----|----|----|---------------|--|--|
| Maximum Value: 10 km/h on Feb 13 13:00   |                               |   |   |   |   |   |   |   |   |    |    |    |    | Hours of Data: 670                                 |    |    |    |    |    |    |    |    |    |    |               |  |  |
| Minimum Value: 1 km/h on Feb 28 20:00  |                               |   |   |   |   |   |   |   |   |    |    |    |    | Hours of Missing Data: 2                           |    |    |    |    |    |    |    |    |    |    |               |  |  |
| Percentiles: P <sub>1</sub> = 1 P <sub>10</sub> = 1 Q <sub>1</sub> = 2 Median = 2 Q <sub>3</sub> = 4 P <sub>90</sub> = 5 P <sub>99</sub> = 6 |                               |   |   |   |   |   |   |   |   |    |    |    |    | Hours of Calibration: 0                            |    |    |    |    |    |    |    |    |    |    |               |  |  |
|  |                               |   |   |   |   |   |   |   |   |    |    |    |    | Percent Operational Time: 99.7                     |    |    |    |    |    |    |    |    |    |    |               |  |  |
| Day  | Hourly Period Ending At (MST) |   |   |   |   |   |   |   |   |    |    |    |    |  |    |    |    |    |    |    |    |    |    |    | Daily Maximum |  |  |
|  | 1                             | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14   | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |               |  |  |
| 1-Feb  | 3                             | 3 | 4 | 3 | 3 | 4 | 5 | 4 | 4 | 4  | 4  | 4  | 4  | 4  | 4  | 4  | 4  | 3  | 6  | 3  | 3  | 2  | 1  | 1  | 6             |  |  |
| 2-Feb  | 1                             | 1 | 1 | 1 | 2 | 1 | 2 | 4 | 3 | 3  | 3  | 3  | 4  | 4  | 5  | 4  | 5  | 5  | 5  | 4  | 4  | 4  | 4  | 3  | 5             |  |  |
| 3-Feb  | 4                             | 4 | 3 | 4 | 3 | 3 | 2 | 3 | 3 | 2  | 2  | 3  | 3  | 3  | 6  | 5  | 4  | 3  | 2  | 3  | 3  | 4  | 1  | 2  | 6             |  |  |
| 4-Feb  | 2                             | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1  | 1  | 1  | 1  | 2  | 2  | 1  | 2  | 3  | 1  | 2  | 2  | 1  | 2  | 2  | 3             |  |  |
| 5-Feb  | 1                             | 2 | 4 | 2 | 1 | 1 | 2 | 2 | 2 | 2  | 3  | 2  | 4  | 3  | 2  | 2  | 1  | 2  | 3  | 4  | 4  | 4  | 3  | 5  | 5             |  |  |
| 6-Feb  | 9                             | 8 | 7 | 6 | 5 | 4 | 3 | 3 | 3 | 2  | 3  | 4  | 3  | 4  | 4  | 3  | 2  | 2  | 3  | 3  | 3  | 4  | 4  | 3  | 9             |  |  |
| 7-Feb  | 4                             | 4 | 4 | 6 | 6 | 5 | 4 | 5 | 6 | 6  | 5  | 5  | 5  | 6  | 6  | 6  | 5  | 2  | 2  | 2  | 2  | 2  | 3  | 2  | 6             |  |  |
| 8-Feb  | 3                             | 2 | 2 | 3 | 4 | 1 | 2 | 2 | 2 | 2  | 2  | 2  | 3  | 3  | 3  | 3  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 4             |  |  |
| 9-Feb  | 2                             | 2 | 3 | 2 | 3 | 2 | 2 | 2 | 2 | 2  | 2  | 3  | 4  | 4  | 3  | 3  | 2  | 3  | 3  | 3  | 3  | 3  | 3  | 2  | 4             |  |  |
| 10-Feb   | 1                             | 1 | 1 | 1 | 2 | 2 | 2 | 1 | 2 | 1  | 1  | 3  | 2  | 2  | 3  | 3  | 5  | 2  | 2  | 2  | 2  | 1  | 3  | 1  | 5             |  |  |
| 11-Feb   | 2                             | 2 | 3 | 3 | 3 | 2 | 2 | 2 | 3 | 4  | 4  | 5  | 4  | 5  | 4  | 7  | 4  | 3  | 3  | 6  | 7  | 6  | 5  | 3  | 7             |  |  |
| 12-Feb   | 4                             | 3 | 3 | 2 | 3 | 2 | 2 | 2 | 3 | 3  | 3  | 3  | 3  | 2  | 2  | 2  | 2  | 2  | 2  | 3  | 3  | 4  | 4  | 4  | 4             |  |  |
| 13-Feb   | 4                             | 5 | 5 | 3 | 5 | 5 | 4 | 4 | 5 | 6  | 5  | 4  | 10 | 6  | 6  | 6  | 5  | 5  | 5  | 5  | 4  | 5  | 6  | 4  | 10            |  |  |
| 14-Feb   | 4                             | 3 | 3 | 4 | 1 | 1 | 1 | 1 | 1 | 1  | 1  | 2  | 2  | 2  | 2  | 2  | 4  | 3  | 4  | 3  | 3  | 2  | 2  | 1  | 4             |  |  |
| 15-Feb   | 2                             | 1 | 1 | 1 | 2 | 1 | 1 | 2 | 1 | 1  | 1  | 1  | 1  | M  | M  | 1  | 1  | 1  | 2  | 2  | 1  | 2  | 2  | 2  | 2             |  |  |
| 16-Feb   | 2                             | 2 | 3 | 3 | 3 | 3 | 4 | 3 | 3 | 3  | 3  | 5  | 4  | 5  | 5  | 4  | 3  | 4  | 3  | 5  | 5  | 5  | 4  | 5  | 5             |  |  |
| 17-Feb   | 5                             | 4 | 4 | 2 | 4 | 2 | 1 | 1 | 2 | 1  | 1  | 3  | 4  | 2  | 2  | 3  | 3  | 4  | 2  | 2  | 2  | 2  | 1  | 2  | 5             |  |  |
| 18-Feb   | 2                             | 1 | 2 | 2 | 1 | 2 | 2 | 1 | 2 | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 1  | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 2             |  |  |
| 19-Feb   | 1                             | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 2 | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 4  | 2  | 2  | 2  | 2  | 1  | 1  | 1  | 4             |  |  |
| 20-Feb   | 3                             | 3 | 2 | 6 | 3 | 4 | 4 | 3 | 4 | 3  | 4  | 3  | 4  | 4  | 4  | 3  | 3  | 2  | 2  | 3  | 2  | 1  | 3  | 3  | 6             |  |  |
| 21-Feb   | 2                             | 1 | 4 | 2 | 2 | 2 | 2 | 2 | 3 | 3  | 3  | 3  | 3  | 4  | 3  | 4  | 4  | 3  | 2  | 3  | 2  | 3  | 2  | 2  | 4             |  |  |
| 22-Feb   | 1                             | 3 | 1 | 2 | 2 | 1 | 3 | 2 | 2 | 1  | 3  | 2  | 1  | 2  | 3  | 2  | 1  | 1  | 1  | 1  | 1  | 2  | 1  | 1  | 3             |  |  |
| 23-Feb   | 1                             | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1  | 1  | 2  | 1  | 3  | 2  | 2  | 2  | 2  | 2  | 2  | 1  | 1  | 1  | 1  | 3             |  |  |
| 24-Feb   | 1                             | 2 | 1 | 1 | 2 | 1 | 2 | 2 | 3 | 2  | 5  | 5  | 5  | 5  | 4  | 4  | 4  | 4  | 5  | 4  | 5  | 5  | 4  | 4  | 5             |  |  |
| 25-Feb   | 3                             | 4 | 3 | 3 | 4 | 3 | 3 | 3 | 3 | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 2  | 3  | 2  | 2  | 2  | 2  | 2  | 4             |  |  |
| 26-Feb   | 2                             | 2 | 1 | 2 | 2 | 1 | 1 | 1 | 1 | 2  | 2  | 2  | 3  | 3  | 3  | 3  | 3  | 3  | 2  | 2  | 1  | 1  | 1  | 1  | 3             |  |  |
| 27-Feb   | 1                             | 1 | 1 | 2 | 4 | 2 | 4 | 3 | 3 | 4  | 4  | 4  | 5  | 4  | 4  | 4  | 3  | 3  | 3  | 4  | 3  | 2  | 2  | 2  | 5             |  |  |
| 28-Feb   | 2                             | 1 | 1 | 1 | 2 | 2 | 2 | 1 | 1 | 2  | 2  | 2  | 2  | 2  | 3  | 2  | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 2  | 3             |  |  |
|  |                               |   |   |   |   |   |   |   |   |    |    |    |    | 9 8 7 6 6 5 5 5 5 6 6 5 5 10 6 6 7 5 5 6 6 7 6 6 5 |    |    |    |    |    |    |    |    |    |    |               |  |  |
|  |                               |   |   |   |   |   |   |   |   |    |    |    |    | Diurnal Maximum                                    |    |    |    |    |    |    |    |    |    |    |               |  |  |
| M - Maintenance  |                               |   |   |   |   |   |   |   |   |    |    |    |    |  |    |    |    |    |    |    |    |    |    |    |               |  |  |

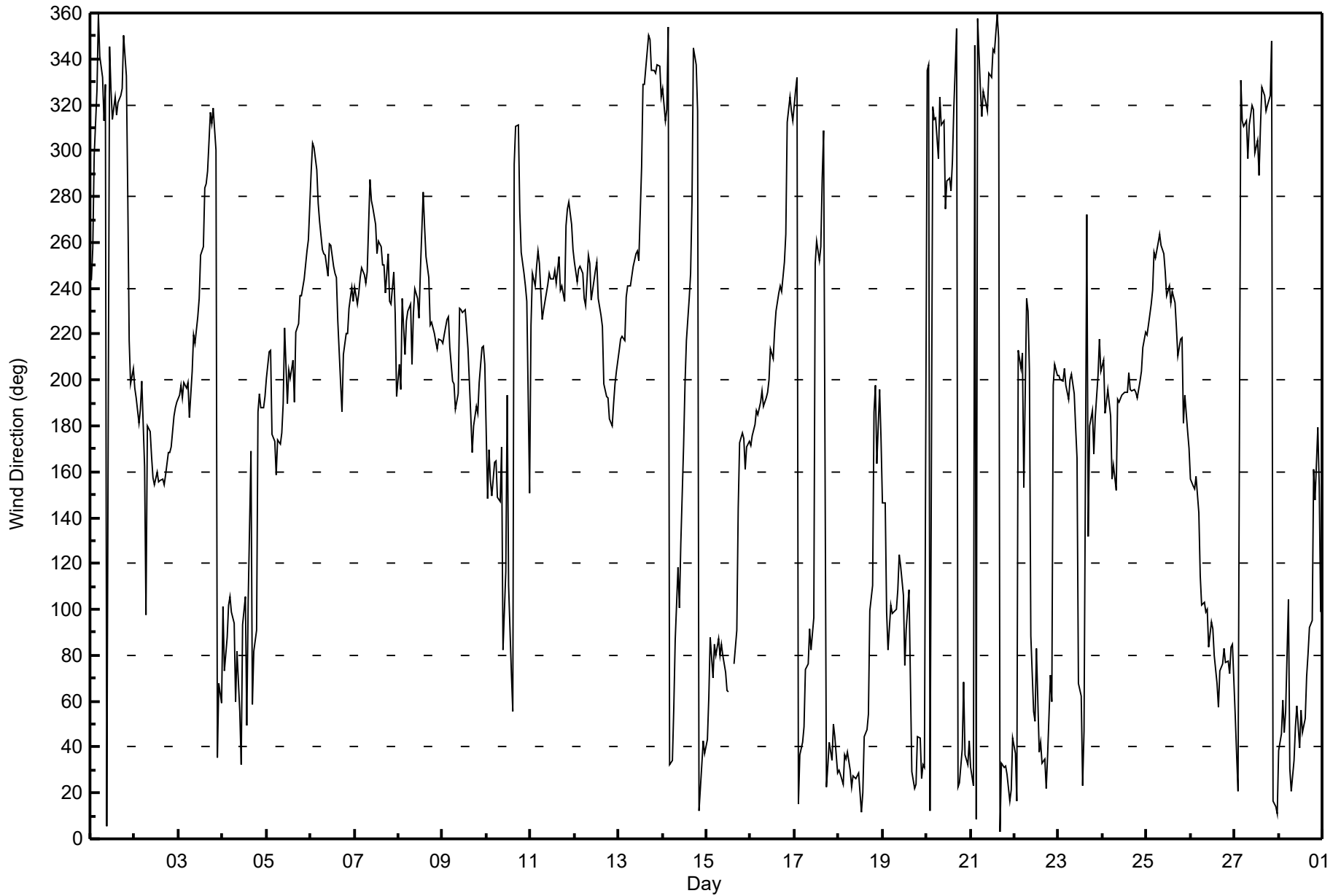


**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

**Wind Direction (WD) - deg**  
**Christina Lake - February 2023**

| Direction of Maximum Speed: 303 deg on Feb 6 02:00                                 |                               |       |       |       |       |       |       |       |       |       |       |   |       |       |       |       |       |       |       |       |       |       |       | Hours in Service:         | 672           |
|--|-------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------------------------|---------------|
| Direction of Maximum Daily Speed Average: 251.4 deg on Feb 7                       |                               |       |       |       |       |       |       |       |       |       |       |   |       |       |       |       |       |       |       |       |       |       |       | Hours of Data:            | 670           |
| Direction of Minimum Speed: 106 deg on Feb 4 13:00                                 |                               |       |       |       |       |       |       |       |       |       |       | Direction of Minimum Daily Speed Average: 2.1 deg on Feb 22 |       |       |       |       |       |       |       |       |       |       |       | Hours of Missing Data:    | 2             |
| Monthly Average Direction: 256.0 deg   |                               |       |       |       |       |       |       |       |       |       |       |   |       |       |       |       |       |       |       |       |       |       |       | Percent Operational Time: | 99.7          |
| Day  | Hourly Period Ending At (MST) |       |       |       |       |       |       |       |       |       |       |   |       |       |       |       |       |       |       |       |       |       |       |                           | Daily Average |
|  | 1                             | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     | 10    | 11    | 12  | 13    | 14    | 15    | 16    | 17    | 18    | 19    | 20    | 21    | 22    | 23    | 24                        |               |
| 1-Feb  | 244                           | 257   | 298   | 326   | 359   | 341   | 332   | 313   | 329   | 5     | 345   | 326   | 313   | 323   | 315   | 321   | 324   | 327   | 350   | 333   | 280   | 217   | 198   | 205                       | 323.0         |
| 2-Feb  | 197                           | 192   | 181   | 187   | 199   | 162   | 98    | 180   | 177   | 167   | 157   | 154   | 160   | 156   | 156   | 157   | 154   | 159   | 168   | 168   | 171   | 185   | 188   | 191                       | 166.3         |
| 3-Feb  | 194                           | 198   | 192   | 199   | 196   | 199   | 184   | 204   | 220   | 216   | 228   | 236   | 255   | 258   | 283   | 285   | 291   | 317   | 312   | 319   | 300   | 35    | 67    | 59                        | 239.3         |
| 4-Feb  | 101                           | 73    | 88    | 102   | 105   | 99    | 94    | 60    | 82    | 55    | 32    | 93  | 106   | 49    | 104   | 169   | 59    | 82    | 91    | 186   | 194   | 188   | 188   | 193                       | 106.1         |
| 5-Feb  | 201                           | 212   | 213   | 176   | 173   | 159   | 174   | 172   | 177   | 190   | 223   | 190   | 204   | 201   | 209   | 190   | 221   | 225   | 237   | 237   | 244   | 250   | 257   | 261                       | 218.3         |
| 6-Feb  | 291                           | 303   | 301   | 292   | 277   | 269   | 257   | 255   | 255   | 245   | 259   | 259   | 250   | 247   | 245   | 226   | 199   | 186   | 211   | 220   | 221   | 231   | 240   | 234                       | 257.0         |
| 7-Feb  | 240                           | 233   | 238   | 245   | 249   | 246   | 242   | 247   | 288   | 278   | 275   | 268   | 255   | 260   | 258   | 250   | 250   | 238   | 255   | 235   | 233   | 247   | 229   | 193                       | 251.4         |
| 8-Feb  | 207                           | 196   | 235   | 211   | 226   | 230   | 233   | 207   | 229   | 240   | 236   | 227   | 248   | 282   | 266   | 254   | 244   | 224   | 225   | 220   | 216   | 214   | 218   | 217                       | 229.5         |
| 9-Feb  | 216                           | 220   | 226   | 227   | 214   | 199   | 199   | 187   | 194   | 231   | 230   | 230   | 230   | 223   | 213   | 184   | 169   | 180   | 188   | 185   | 199   | 214   | 215   | 207                       | 209.0         |
| 10-Feb   | 148                           | 170   | 156   | 149   | 164   | 165   | 149   | 147   | 171   | 82    | 117   | 193   | 110   | 72    | 55    | 294   | 311   | 311   | 273   | 256   | 247   | 241   | 234   | 151                       | 214.7         |
| 11-Feb   | 224                           | 246   | 241   | 249   | 256   | 251   | 226   | 230   | 234   | 242   | 246   | 244   | 244   | 248   | 242   | 254   | 239   | 241   | 234   | 267   | 275   | 278   | 268   | 257                       | 250.2         |
| 12-Feb   | 251                           | 243   | 248   | 249   | 246   | 236   | 232   | 254   | 251   | 235   | 239   | 248   | 251   | 236   | 228   | 223   | 199   | 193   | 192   | 183   | 180   | 190   | 198   | 204                       | 223.6         |
| 13-Feb   | 213                           | 218   | 219   | 217   | 236   | 241   | 241   | 245   | 250   | 255   | 256   | 252   | 293   | 329   | 329   | 336   | 350   | 349   | 335   | 335   | 334   | 337   | 337   | 323                       | 291.4         |
| 14-Feb   | 327                           | 313   | 318   | 354   | 32    | 34    | 58    | 87    | 119   | 101   | 129   | 172   | 198   | 217   | 236   | 246   | 278   | 345   | 337   | 317   | 12    | 33    | 43    | 37                        | 347.1         |
| 15-Feb   | 43                            | 62    | 88    | 70    | 85    | 80    | 87    | 80    | 85    | 80    | 72    | 65  | 64    | M     | M     | 76    | 91    | 144   | 173   | 177   | 174   | 161   | 171   | 173                       | 95.2          |
| 16-Feb   | 172                           | 176   | 180   | 186   | 185   | 190   | 195   | 189   | 192   | 195   | 200   | 214   | 209   | 222   | 230   | 238   | 241   | 239   | 252   | 264   | 312   | 323   | 318   | 313                       | 230.3         |
| 17-Feb   | 326                           | 332   | 15    | 36    | 42    | 49    | 74    | 76    | 91    | 82    | 97    | 251   | 261   | 252   | 258   | 288   | 309   | 23    | 32    | 42    | 34    | 50    | 45    | 28                        | 12.1          |
| 18-Feb   | 30                            | 28    | 24    | 37    | 35    | 38    | 30    | 23    | 27    | 26    | 27    | 29  | 12    | 20    | 45    | 48    | 54    | 100   | 110   | 186   | 197   | 163   | 196   | 175                       | 38.1          |
| 19-Feb   | 147                           | 147   | 99    | 82    | 102   | 98    | 99    | 100   | 108   | 124   | 119   | 106   | 76    | 91    | 109   | 69    | 29    | 22    | 24    | 44    | 44    | 26    | 33    | 31                        | 71.4          |
| 20-Feb   | 335                           | 337   | 12    | 319   | 314   | 314   | 297   | 323   | 311   | 313   | 275   | 287   | 288   | 283   | 295   | 319   | 354   | 23    | 25    | 39    | 69    | 37    | 32    | 43                        | 334.2         |
| 21-Feb   | 31                            | 23    | 346   | 9     | 357   | 326   | 315   | 326   | 320   | 317   | 334   | 332   | 344   | 343   | 360   | 349   | 3     | 33    | 31    | 32    | 28    | 16    | 22    | 44                        | 355.4         |
| 22-Feb   | 37                            | 16    | 213   | 205   | 212   | 153   | 235   | 230   | 204   | 88    | 55    | 51  | 83    | 38    | 42    | 33    | 35    | 22    | 37    | 71    | 60    | 198   | 207   | 202                       | 49.4          |
| 23-Feb   | 202                           | 200   | 199   | 205   | 198   | 192   | 200   | 202   | 194   | 180   | 166   | 68  | 62    | 23    | 47    | 272   | 132   | 180   | 187   | 168   | 184   | 202   | 218   | 204                       | 180.2         |
| 24-Feb   | 208                           | 186   | 191   | 196   | 185   | 157   | 163   | 152   | 191   | 190   | 193   | 194   | 195   | 195   | 203   | 196   | 195   | 196   | 195   | 192   | 200   | 204   | 214   | 221                       | 196.2         |
| 25-Feb   | 220                           | 224   | 233   | 239   | 256   | 253   | 260   | 264   | 259   | 255   | 247   | 237   | 241   | 234   | 238   | 234   | 223   | 210   | 218   | 218   | 181   | 193   | 178   | 170                       | 232.9         |
| 26-Feb   | 157                           | 154   | 153   | 158   | 142   | 115   | 102   | 103   | 99    | 100   | 83    | 95  | 91    | 80    | 68    | 57    | 73    | 77    | 83    | 77    | 77    | 72    | 84    | 85                        | 93.6          |
| 27-Feb   | 54                            | 37    | 21    | 331   | 313   | 311   | 313   | 296   | 311   | 320   | 318   | 299   | 305   | 289   | 310   | 328   | 324   | 317   | 320   | 324   | 348   | 16    | 14    | 11                        | 323.2         |
| 28-Feb   | 38                            | 46    | 60    | 46    | 56    | 104   | 31    | 20    | 34    | 49    | 58    | 40  | 56    | 47    | 53    | 71    | 81    | 92    | 95    | 161   | 148   | 179   | 154   | 99                        | 62.6          |
| 245.0  | 257.9                         | 247.5 | 256.7 | 258.4 | 252.4 | 242.9 | 252.1 | 257.3 | 249.7 | 252.5 | 246.9 | 250.6   | 265.3 | 272.0 | 275.4 | 293.5 | 290.3 | 264.7 | 251.9 | 249.8 | 246.5 | 240.4 | 229.2 |                           |               |
| Diurnal Average  |                               |       |       |       |       |       |       |       |       |       |       |   |       |       |       |       |       |       |       |       |       |       |       |                           |               |
| M - Maintenance  |                               |       |       |       |       |       |       |       |       |       |       |   |       |       |       |       |       |       |       |       |       |       |       |                           |               |
| All monthly, daily, and diurnal averages have been calculated using vector methods |                               |       |       |       |       |       |       |       |       |       |       |   |       |       |       |       |       |       |       |       |       |       |       |                           |               |







**Wood Buffalo Environmental Association**  
**Summary of Hour Standard Deviations**

**Wind Direction (WD) - deg**  
**Christina Lake - February 2023**

| Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0<br>Maximum Value: 101 deg on Feb 23 16:00<br>Minimum Value: 6 deg on Feb 15 20:00<br>Percentiles: P <sub>1</sub> = 7 P <sub>10</sub> = 10 Q <sub>1</sub> = 12 Median = 15 Q <sub>3</sub> = 20 P <sub>90</sub> = 31 P <sub>99</sub> = 76 |                               |    |    |    |    |    |    |    |    |    |    |    |    |    |    |     |    |    | Hours in Service: 672<br>Hours of Data: 670<br>Hours of Missing Data: 2<br>Hours of Calibration: 0<br>Percent Operational Time: 99.7 |    |    |    |    |    |               |
|---|-------------------------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-----|----|----|--|----|----|----|----|----|---------------|
| Day   | Hourly Period Ending At (MST) |    |    |    |    |    |    |    |    |    |    |    |    |    |    |     |    |    |  |    |    |    |    |    | Daily Maximum |
|   | 1                             | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 | 14 | 15 | 16  | 17 | 18 | 19   | 20 | 21 | 22 | 23 | 24 |               |
| 1-Feb   | 30                            | 21 | 27 | 13 | 24 | 18 | 13 | 10 | 29 | 23 | 20 | 17 | 17 | 17 | 11 | 14  | 14 | 12 | 23   | 19 | 68 | 36 | 18 | 17 | 68            |
| 2-Feb   | 27                            | 25 | 28 | 38 | 31 | 25 | 17 | 28 | 13 | 12 | 14 | 13 | 13 | 13 | 12 | 13  | 12 | 14 | 12   | 12 | 15 | 13 | 13 | 13 | 38            |
| 3-Feb   | 13                            | 14 | 14 | 14 | 14 | 17 | 14 | 18 | 13 | 13 | 19 | 14 | 20 | 20 | 29 | 19  | 21 | 13 | 10   | 23 | 57 | 69 | 23 | 14 | 69            |
| 4-Feb   | 17                            | 7  | 13 | 11 | 12 | 12 | 20 | 19 | 23 | 32 | 15 | 45 | 90 | 34 | 54 | 48  | 16 | 62 | 42   | 15 | 15 | 16 | 13 | 12 | 90            |
| 5-Feb   | 12                            | 17 | 27 | 25 | 42 | 38 | 41 | 25 | 22 | 15 | 21 | 32 | 13 | 15 | 17 | 16  | 20 | 12 | 13   | 12 | 14 | 17 | 18 | 18 | 42            |
| 6-Feb   | 22                            | 14 | 17 | 14 | 16 | 16 | 17 | 17 | 17 | 12 | 19 | 18 | 16 | 19 | 17 | 14  | 17 | 17 | 15   | 10 | 10 | 13 | 13 | 10 | 22            |
| 7-Feb   | 13                            | 11 | 12 | 14 | 16 | 13 | 11 | 14 | 22 | 14 | 17 | 18 | 19 | 20 | 19 | 17  | 17 | 9  | 24   | 10 | 13 | 13 | 37 | 19 | 37            |
| 8-Feb   | 28                            | 44 | 9  | 25 | 52 | 9  | 7  | 11 | 13 | 10 | 9  | 13 | 25 | 25 | 22 | 18  | 20 | 12 | 8  | 9  | 9  | 10 | 10 | 10 | 52            |
| 9-Feb   | 10                            | 10 | 10 | 11 | 17 | 8  | 9  | 13 | 19 | 10 | 12 | 13 | 13 | 14 | 22 | 17  | 10 | 11 | 12   | 12 | 17 | 13 | 13 | 33 | 33            |
| 10-Feb  | 31                            | 12 | 25 | 16 | 11 | 47 | 14 | 14 | 35 | 12 | 18 | 47 | 42 | 68 | 33 | 80  | 30 | 12 | 29   | 16 | 13 | 9  | 29 | 87 | 87            |
| 11-Feb  | 29                            | 13 | 12 | 16 | 17 | 18 | 8  | 12 | 13 | 15 | 15 | 14 | 16 | 16 | 13 | 18  | 12 | 12 | 11   | 20 | 15 | 15 | 18 | 17 | 29            |
| 12-Feb  | 17                            | 13 | 15 | 14 | 15 | 13 | 14 | 16 | 16 | 14 | 13 | 15 | 19 | 14 | 14 | 13  | 15 | 11 | 10   | 10 | 12 | 11 | 12 | 12 | 19            |
| 13-Feb  | 13                            | 14 | 15 | 18 | 12 | 12 | 12 | 14 | 16 | 19 | 18 | 17 | 31 | 15 | 16 | 11  | 20 | 19 | 11   | 11 | 10 | 16 | 20 | 11 | 31            |
| 14-Feb  | 13                            | 7  | 10 | 29 | 7  | 13 | 16 | 10 | 22 | 18 | 57 | 76 | 46 | 21 | 23 | 19  | 33 | 25 | 18   | 14 | 35 | 11 | 11 | 9  | 76            |
| 15-Feb  | 13                            | 13 | 13 | 12 | 17 | 8  | 11 | 10 | 10 | 10 | 11 | 15 | 15 | M  | M  | 12  | 16 | 18 | 16   | 6  | 7  | 17 | 20 | 16 | 20            |
| 16-Feb  | 12                            | 13 | 12 | 12 | 15 | 14 | 13 | 17 | 14 | 15 | 14 | 14 | 12 | 15 | 13 | 15  | 12 | 13 | 17   | 18 | 17 | 14 | 11 | 10 | 18            |
| 17-Feb  | 15                            | 13 | 36 | 9  | 27 | 8  | 26 | 18 | 13 | 14 | 27 | 30 | 23 | 30 | 25 | 27  | 19 | 27 | 9  | 9  | 10 | 14 | 10 | 8  | 36            |
| 18-Feb  | 10                            | 9  | 9  | 9  | 8  | 9  | 9  | 10 | 12 | 17 | 13 | 17 | 17 | 18 | 15 | 15  | 10 | 39 | 10   | 24 | 18 | 50 | 25 | 18 | 50            |
| 19-Feb  | 28                            | 44 | 19 | 9  | 51 | 7  | 10 | 8  | 12 | 12 | 11 | 28 | 18 | 18 | 31 | 19  | 14 | 11 | 12   | 16 | 21 | 9  | 8  | 10 | 51            |
| 20-Feb  | 24                            | 22 | 33 | 13 | 8  | 12 | 23 | 8  | 21 | 17 | 34 | 30 | 22 | 19 | 23 | 12  | 26 | 10 | 10   | 8  | 11 | 11 | 9  | 10 | 34            |
| 21-Feb  | 13                            | 6  | 28 | 15 | 23 | 28 | 9  | 10 | 10 | 13 | 18 | 20 | 24 | 20 | 24 | 23  | 19 | 8  | 7  | 15 | 9  | 14 | 13 | 12 | 28            |
| 22-Feb  | 24                            | 35 | 94 | 46 | 64 | 60 | 78 | 65 | 68 | 86 | 45 | 23 | 38 | 51 | 25 | 19  | 15 | 7  | 6  | 17 | 27 | 13 | 8  | 9  | 94            |
| 23-Feb  | 9                             | 9  | 13 | 9  | 12 | 9  | 8  | 9  | 22 | 22 | 47 | 47 | 43 | 62 | 16 | 101 | 66 | 41 | 34   | 63 | 23 | 10 | 14 | 18 | 101           |
| 24-Feb  | 12                            | 15 | 7  | 10 | 11 | 10 | 17 | 11 | 16 | 15 | 16 | 19 | 17 | 14 | 17 | 15  | 14 | 13 | 12   | 12 | 15 | 15 | 14 | 14 | 19            |
| 25-Feb  | 13                            | 12 | 14 | 15 | 18 | 18 | 19 | 18 | 18 | 18 | 19 | 19 | 19 | 18 | 16 | 20  | 12 | 12 | 11   | 17 | 16 | 12 | 11 | 12 | 20            |
| 26-Feb  | 14                            | 14 | 13 | 11 | 22 | 20 | 10 | 10 | 12 | 14 | 11 | 12 | 11 | 11 | 16 | 10  | 12 | 10 | 10   | 11 | 9  | 10 | 9  | 11 | 22            |
| 27-Feb  | 10                            | 9  | 18 | 9  | 12 | 7  | 12 | 17 | 16 | 10 | 14 | 22 | 21 | 21 | 21 | 13  | 17 | 9  | 9  | 17 | 21 | 21 | 13 | 16 | 22            |
| 28-Feb  | 12                            | 11 | 11 | 8  | 12 | 20 | 23 | 12 | 11 | 22 | 24 | 19 | 32 | 38 | 47 | 16  | 14 | 10 | 18   | 13 | 22 | 9  | 29 | 9  | 47            |
|   |                               |    |    |    |    |    |    |    |    |    |    |    |    |    |    |     |    |    | 31 44 94 46 64 60 78 65 68 86 57 76 90 68 54 101 66 62 42 63 68 69 37 87   |    |    |    |    |    |               |
| Diurnal Maximum   |                               |    |    |    |    |    |    |    |    |    |    |    |    |    |    |     |    |    |  |    |    |    |    |    |               |
| M - Maintenance   |                               |    |    |    |    |    |    |    |    |    |    |    |    |    |    |     |    |    |  |    |    |    |    |    |               |



## WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY  
MONITORING PROGRAM  
MONTHLY REPORT

**AMS27**  
**JACKFISH 2/3**  
**FEBRUARY 2023**

Operations, Data Collection,  
QA/QC, Data Validation and Reporting by:  
Wood Buffalo Environmental Association  
Fort McMurray, Alberta

March 31, 2023

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - JACKFISH 2/3 (AMS27)  
 FEBRUARY 2023

MONTHLY SUMMARY

| Parameter                         | Hours of Data | Hours of Calibration | Hours without Data | Operational Time | Maximum 1-Hour Value | 1-Hour Exceedances | Maximum 24-Hour Value | 24-Hour Exceedances |
|-----------------------------------|---------------|----------------------|--------------------|------------------|----------------------|--------------------|-----------------------|---------------------|
| SO2 (ppb) Average                 | 639           | 31                   | 33                 | 99.7             | 8.5                  | 0                  | 2.2                   | 0                   |
| H2S (ppb) Average                 | 636           | 33                   | 36                 | 99.55            | 1.5                  | 0                  | 0.3                   | 0                   |
| NO2 (ppb) Average                 | 636           | 33                   | 36                 | 99.55            | 12.6                 | 0                  | 5.2                   | -                   |
| NO (ppb) Average                  | 636           | 33                   | 36                 | 99.55            | 11.4                 | -                  | 1                     | -                   |
| NOX (ppb) Average                 | 636           | 33                   | 36                 | 99.55            | 24                   | -                  | 5.6                   | -                   |
| Temperature 2 m (C) Average       | 670           | 0                    | 2                  | 99.7             | 4.7                  | -                  | 0.5                   | -                   |
| Relative Humidity (%) Average     | 670           | 0                    | 2                  | 99.7             | 97.3                 | -                  | 88.4                  | -                   |
| Wind Speed 10 m (km/h) Average    | 669           | 0                    | 3                  | 99.55            | 19                   | -                  | 13                    | -                   |
| Wind Direction 10 m (deg) Average | 669           | 0                    | 3                  | 99.55            | -                    | -                  | -                     | -                   |

Note : Operational time includes periods of data collection and instrument calibration

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - JACKFISH 2/3 (AMS27)  
 FEBRUARY 2023

MONTHLY SUMMARY FOR AIR QUALITY/ METEOROLOGICAL MONITORING MEASUREMENTS

| Parameter                         | Number | Mean   | StnDev | Total | Percentile |       |       |        |      |      |      |
|-----------------------------------|--------|--------|--------|-------|------------|-------|-------|--------|------|------|------|
|                                   |        |        |        |       | Min        | P10   | Q1    | Median | Q3   | P90  | Max  |
| SO2 (ppb) Average                 | 639    | 0.96   | 1.2    | -     | 0          | 0.1   | 0.2   | 0.6    | 1.3  | 2.3  | 8.5  |
| H2S (ppb) Average                 | 636    | 0.2    | 0.1    | -     | 0          | 0.1   | 0.1   | 0.2    | 0.3  | 0.3  | 1.5  |
| NO2 (ppb) Average                 | 636    | 2.3    | 1.9    | -     | 0          | 0.4   | 0.9   | 1.8    | 3.2  | 4.6  | 12.6 |
| NO (ppb) Average                  | 636    | 0.34   | 0.7    | -     | 0          | 0     | 0     | 0.1    | 0.4  | 0.8  | 11.4 |
| NOX (ppb) Average                 | 636    | 2.64   | 2.2    | -     | 0          | 0.6   | 1.1   | 2.1    | 3.7  | 5.1  | 24   |
| Temperature 2 m (C) Average       | 670    | -11.74 | 9.5    | -     | -33.6      | -24.2 | -18.9 | -12.2  | -2.6 | 0.6  | 4.7  |
| Relative Humidity (%) Average     | 670    | 71.46  | 12     | -     | 34.6       | 53.6  | 64.3  | 73.4   | 79.6 | 84.7 | 97.3 |
| Wind Speed 10 m (km/h) Average    | 669    | 7.6    | 4      | -     | 1          | 3     | 5     | 7      | 10   | 13   | 19   |
| Wind Direction 10 m (deg) Average | 669    | -      | -      | -     | -          | -     | -     | -      | -    | -    | -    |

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - JACKFISH 2/3 (AMS27)  
FEBRUARY 2023

OPERATIONAL NOTES

| Parameter                  | Period<br>Start   | Period<br>End     | Duration<br>(Hours) | Notes                                     |
|----------------------------|-------------------|-------------------|---------------------|---|
| ALL PARAMETERS             | 05 Feb 2023 00:00 | 05 Feb 2023 00:00 | 1                   | DAS Failure - data not recorded           |
| ALL PARAMETERS             | 13 Feb 2023 09:00 | 13 Feb 2023 09:00 | 1                   | DAS Failure - data not recorded           |
| H2S, NO2                   | 14 Feb 2023 12:00 | 14 Feb 2023 12:00 | 1                   | Maintenance - sample manifold cleaned     |
| Wind Speed, Wind Direction | 14 Feb 2023 13:00 | 14 Feb 2023 13:00 | 1                   | Maintenance - station operator activities |



**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

**Sulphur Dioxide (SO<sub>2</sub>) - ppb**  
**Jackfish 2/3 - February 2023**

|   |  |  |  |
|---|--|--|--|
| Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0 |  | Hours in Service: 672  |  |
| Maximum Value: 8.5 ppb on Feb 22 13:00          |  | Maximum Daily Average: 2.2 ppb on Feb 20   |  |
| Minimum Value: 0.0 ppb on Feb 1 07:00           |  | Hours of Data: 639   |  |
| Maximum Diurnal Average: 1.6 ppb at hour 13     |  | Hours of Missing Data: 33  |  |
| Monthly Average: 0.96 ppb                       |  | Hours of Calibration: 31   |  |
| Minimum Daily Average: 0.1 ppb on Feb 8         |  | Percent Operational Time: 99.7   |  |
| Minimum Diurnal Average: 0.6 ppb at hour 20     |  | Percentiles: P <sub>1</sub> = 0.0 P <sub>10</sub> = 0.1 Q <sub>1</sub> = 0.2 Median = 0.6 Q <sub>3</sub> = 1.3 P <sub>90</sub> = 2.3 P <sub>99</sub> = 6.1 |  |

| Day    | Hourly Period Ending At (MST) |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Daily Average | Daily Maximum |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
|--------|-------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---------------|---------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----------------|
|        | 1                             | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19  | 20  | 21  | 22  | 23  | 24  |               |               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 1-Feb  | 1.4                           | 1.6 | Z   | 0.1 | 0.2 | 0.1 | 0.0 | 0.0 | 0.0 | 0.4 | 0.8 | 0.6 | 0.3 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.2           | 1.6           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 2-Feb  | 0.2                           | 0.1 | 0.0 | Z   | 0.1 | 0.4 | 0.3 | 0.6 | 1.8 | 1.7 | 1.6 | 1.8 | 2.0 | 0.9 | 0.6 | 0.7 | 0.8 | 0.8 | 0.8 | 0.6 | 0.8 | 1.1 | 1.4 | 0.4 | 0.8           | 2.0           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 3-Feb  | 0.4                           | 0.4 | 0.4 | 0.4 | Z   | 1.0 | 1.4 | 1.9 | 1.0 | 0.7 | 0.6 | 0.6 | 1.4 | 1.1 | 0.9 | 0.5 | 0.8 | 1.4 | 0.9 | 0.3 | 0.3 | 0.3 | 0.4 | 0.5 | 0.8           | 1.9           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 4-Feb  | 0.3                           | 0.3 | 0.3 | 0.2 | 0.2 | Z   | 0.1 | 0.0 | 0.1 | 0.1 | 0.1 | 0.3 | 1.4 | 1.9 | 2.6 | 2.2 | 4.3 | 3.4 | 1.1 | 0.2 | 0.1 | 0.1 | 0.1 | DF  | 0.9           | 4.3           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 5-Feb  | Z                             | 0.0 | 0.0 | 0.0 | 0.7 | 0.7 | 0.4 | 0.4 | 0.3 | 0.4 | 0.4 | 0.5 | 0.5 | 2.3 | 2.1 | 2.5 | 1.7 | 1.8 | 1.5 | 2.0 | 2.1 | 1.5 | 0.7 | 0.3 | 1.0           | 2.5           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 6-Feb  | 0.4                           | Z   | 2.3 | 4.2 | 0.4 | 0.3 | 0.1 | 0.1 | 0.1 | 0.2 | 0.1 | 0.1 | 0.1 | 0.7 | 1.0 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.3 | 0.3 | 0.9 | 0.6 | 0.6           | 4.2           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 7-Feb  | 1.0                           | 0.6 | Z   | 0.7 | 0.2 | 0.2 | 1.4 | 0.2 | 2.4 | 0.7 | 0.3 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.8 | 0.8 | 0.9 | 0.1 | 0.1 | 0.9 | 0.3 | 0.1 | 0.5           | 2.4           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 8-Feb  | 0.1                           | 0.1 | 0.0 | Z   | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.1           | 0.2           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 9-Feb  | 0.2                           | 0.3 | 0.3 | 0.6 | Z   | 0.1 | 0.0 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.7 | 0.7 | 1.2 | 1.0 | 1.1 | 0.8 | 0.8 | 1.0 | 1.3 | 2.0 | 0.6           | 2.0           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 10-Feb | 2.7                           | 2.5 | 2.1 | 2.1 | 1.9 | Z   | 1.6 | 1.7 | 1.3 | 2.1 | 1.7 | 1.3 | 2.2 | 2.4 | 6.2 | 3.9 | 3.2 | 2.5 | 1.8 | 0.3 | 0.2 | 0.1 | 0.1 | 0.1 | 1.9           | 6.2           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 11-Feb | Z                             | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.3 | 0.9 | 0.7 | 1.0 | 1.0 | 0.8 | 0.6 | 0.2 | 0.6 | 0.1 | 0.1 | 0.4 | 0.3 | 0.2 | 0.1 | 0.2 | 0.0 | 0.0 | 0.3           | 1.0           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 12-Feb | 0.6                           | Z   | 0.0 | 0.0 | 0.4 | 0.6 | 0.5 | 0.1 | 0.5 | 0.2 | 0.5 | 0.9 | 1.2 | 0.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.8 | 0.2 | 0.8 | 1.5 | 0.7 | 0.4           | 1.5           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 13-Feb | 0.6                           | 0.3 | Z   | 0.2 | 0.5 | 0.3 | 0.7 | 0.8 | DF  | 0.8 | 0.1 | 0.0 | 0.3 | 0.8 | 1.5 | 1.9 | 0.8 | 0.3 | 1.0 | 1.3 | 0.8 | 0.5 | 0.4 | 0.7 | 0.7           | 1.9           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 14-Feb | 0.8                           | 1.5 | 1.6 | Z   | 0.4 | 0.1 | 0.1 | 0.1 | 2.7 | 1.5 | 2.3 | C   | C   | C   | 1.4 | 1.1 | 1.1 | 0.3 | 1.2 | 0.8 | 0.5 | 2.0 | 2.2 | 2.4 | 1.2           | 2.7           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 15-Feb | 4.9                           | 4.6 | 4.6 | 4.2 | Z   | 2.7 | 2.1 | 1.2 | 0.8 | 1.4 | 2.2 | 2.5 | 2.9 | 1.8 | 1.5 | 1.5 | 1.1 | 0.6 | 0.3 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 1.9           | 4.9           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 16-Feb | 0.5                           | 1.4 | 1.3 | 1.2 | 1.9 | Z   | 2.1 | 0.6 | 0.7 | 0.8 | 0.9 | 0.8 | 0.7 | 0.8 | 0.7 | 0.5 | 0.6 | 0.9 | 0.4 | 0.2 | 4.3 | 0.3 | 0.3 | 0.2 | 1.0           | 4.3           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 17-Feb | Z                             | 0.0 | 0.0 | 1.2 | 0.2 | 0.2 | 1.1 | 1.2 | 0.2 | 0.1 | 0.1 | 0.3 | 0.3 | 0.1 | 0.1 | 0.1 | 0.4 | 0.5 | 0.8 | 1.8 | 1.0 | 0.9 | 0.9 | 0.7 | 0.5           | 1.8           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 18-Feb | 1.2                           | Z   | 0.4 | 1.4 | 0.5 | 0.1 | 0.1 | 0.6 | 1.0 | 2.6 | 1.5 | 3.9 | 6.2 | 1.0 | 0.2 | 0.3 | 0.5 | 0.5 | 0.3 | 0.2 | 0.2 | 0.2 | 0.4 | 0.5 | 1.0           | 6.2           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 19-Feb | 0.3                           | 0.2 | Z   | 0.2 | 0.3 | 0.6 | 1.1 | 0.9 | 0.5 | 0.3 | 0.4 | 0.8 | 0.4 | 0.9 | 0.3 | 2.2 | 2.0 | 0.3 | 0.3 | 0.1 | 0.0 | 0.1 | 0.0 | 0.0 | 0.5           | 2.2           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 20-Feb | 0.1                           | 0.1 | 0.1 | Z   | 0.6 | 2.8 | 4.1 | 4.7 | 4.6 | 4.4 | 4.3 | 2.4 | 2.7 | 1.2 | 2.2 | 0.1 | 0.2 | 0.2 | 0.2 | 0.6 | 2.2 | 1.8 | 6.6 | 3.7 | 2.2           | 6.6           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 21-Feb | 1.3                           | 0.3 | 0.2 | 0.5 | Z   | 0.0 | 0.1 | 0.4 | 1.4 | 2.8 | 3.7 | 4.5 | 1.8 | 0.7 | 0.7 | 2.9 | 2.6 | 3.9 | 3.0 | 1.4 | 2.6 | 3.4 | 3.2 | 1.3 | 1.9           | 4.5           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 22-Feb | 0.5                           | 0.4 | 0.8 | 0.8 | 0.7 | Z   | 0.7 | 1.2 | 2.3 | 1.9 | 1.4 | 3.0 | 8.5 | 6.4 | 2.7 | 0.9 | 1.9 | 1.0 | 1.0 | 1.7 | 1.8 | 1.9 | 1.1 | 0.9 | 1.9           | 8.5           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 23-Feb | Z                             | 0.9 | 1.2 | 1.4 | 1.4 | 1.7 | 1.9 | 1.5 | 1.8 | 3.4 | 0.8 | 1.8 | 3.2 | 5.9 | 5.8 | 3.8 | 2.9 | 1.7 | 1.4 | 1.1 | 0.6 | 0.6 | 0.9 | 0.4 | 2.0           | 5.9           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 24-Feb | 0.3                           | Z   | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.8 | 0.6 | 0.3 | 0.3 | 0.1 | 0.6 | 0.6 | 0.2 | 0.3 | 0.2 | 0.1 | 0.2 | 0.2 | 0.3           | 0.8           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 25-Feb | 0.3                           | 0.3 | Z   | 0.9 | 1.1 | 1.7 | 1.2 | 0.3 | 0.2 | 0.4 | 0.2 | 0.2 | 0.2 | 0.4 | 0.2 | 0.6 | 0.2 | 0.2 | 0.1 | 0.2 | 0.1 | 0.2 | 1.3 | 1.5 | 0.5           | 1.7           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 26-Feb | 0.8                           | 0.6 | 0.7 | Z   | 1.7 | 1.6 | 1.2 | 0.9 | 0.6 | 0.4 | 0.5 | 0.7 | 1.4 | 1.2 | 1.6 | 1.1 | 0.5 | 1.2 | 0.6 | 0.6 | 0.3 | 0.2 | 0.1 | 0.2 | 0.8           | 1.7           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 27-Feb | 0.2                           | 0.0 | 0.0 | 0.0 | Z   | 0.0 | 0.2 | 0.4 | 1.3 | 0.7 | 0.7 | 1.1 | 1.0 | 0.9 | 1.0 | 0.6 | 2.0 | 0.7 | 0.5 | 0.1 | 0.4 | 0.6 | 1.3 | 2.0 | 0.7           | 2.0           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
| 28-Feb | 2.8                           | 2.2 | 1.4 | 1.0 | 0.5 | Z   | 0.5 | 0.6 | 0.6 | 1.1 | 6.2 | 8.0 | 3.6 | 2.2 | 3.5 | 2.7 | 2.1 | 0.4 | 0.3 | 0.6 | 0.7 | 0.3 | 0.1 | 0.0 | 1.8           | 8.0           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |
|        |                               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | 0.9 | 0.8           | 0.8           | 0.9 | 0.6 | 0.7 | 0.8 | 0.8 | 1.0 | 1.1 | 1.2 | 1.4 | 1.6 | 1.3 | 1.4 | 1.1 | 1.2 | 0.9 | 0.7 | 0.6 | 0.8 | 0.7 | 0.9 | 0.7 | Diurnal Average |
|        |                               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | 4.9 | 4.6           | 4.6           | 4.2 | 1.9 | 2.8 | 4.1 | 4.7 | 4.6 | 4.4 | 6.2 | 8.0 | 8.5 | 6.4 | 6.2 | 3.9 | 4.3 | 3.9 | 3.0 | 2.0 | 4.3 | 3.4 | 6.6 | 3.7 | Diurnal Maximum |

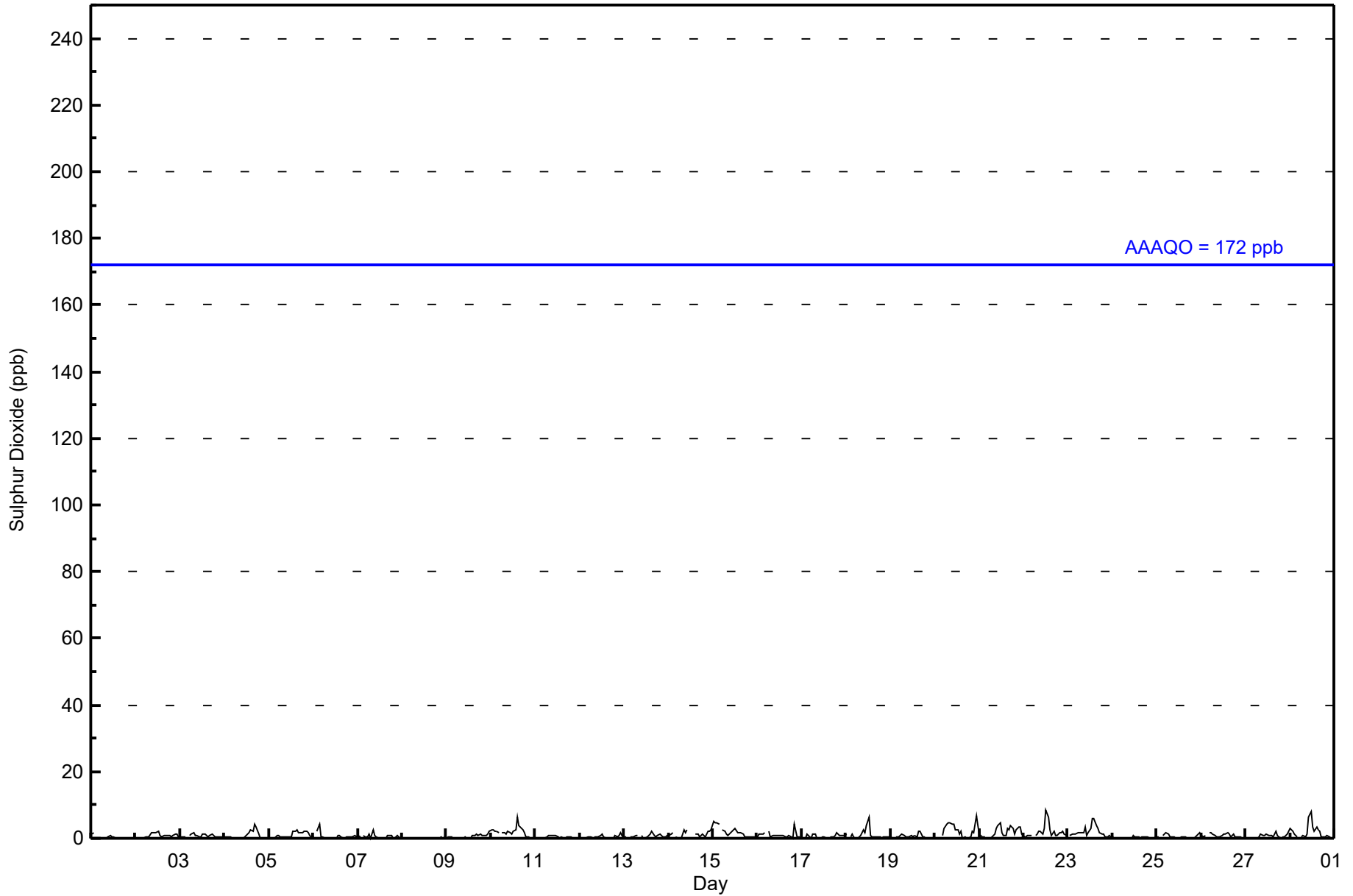
  

|   |                 |                  |
|---|-----------------|------------------|
| Z - zerospan  | C - Calibration | DF - DAS Failure |
| Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 172 ppb 24-hr 48 ppb |                 |                  |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Sulphur Dioxide (SO<sub>2</sub>) - ppb**  
**Jackfish 2/3 - February 2023**







**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Sulphur Dioxide (SO<sub>2</sub>) - ppb**  
**Jackfish 2/3 - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 10                            | 639                    | 100.00   | 100.00              |
| 11 - 20                           | 0                      | 0.00     | 100.00              |
| 21 - 60                           | 0                      | 0.00     | 100.00              |
| 61 - 110                          | 0                      | 0.00     | 100.00              |
| 111 - 172                         | 0                      | 0.00     | 100.00              |
| > 172                             | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 639

Total Number of Hours: 672



**Wood Buffalo Environmental Association**  
**Frequency Distribution**

**Sulphur Dioxide (SO<sub>2</sub>) - ppb**  
**Jackfish 2/3 - February 2023**

| Concentration<br>Ranges (ppb) | Wind Direction |     |    |     |    |     |    |     |    |     |    |     |    |     |    |     | Totals |
|-------------------------------|----------------|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|--------|
|                               | N              | NNE | NE | ENE | E  | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |        |
| 0 - 10                        | 10             | 45  | 46 | 33  | 41 | 17  | 5  | 36  | 55 | 79  | 70 | 84  | 23 | 20  | 41 | 32  | 637    |
| 11 - 20                       | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| 21 - 60                       | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| 61 - 110                      | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| 111 - 172                     | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| > 172                         | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| <b>Totals</b>                 | 10             | 45  | 46 | 33  | 41 | 17  | 5  | 36  | 55 | 79  | 70 | 84  | 23 | 20  | 41 | 32  | 637    |

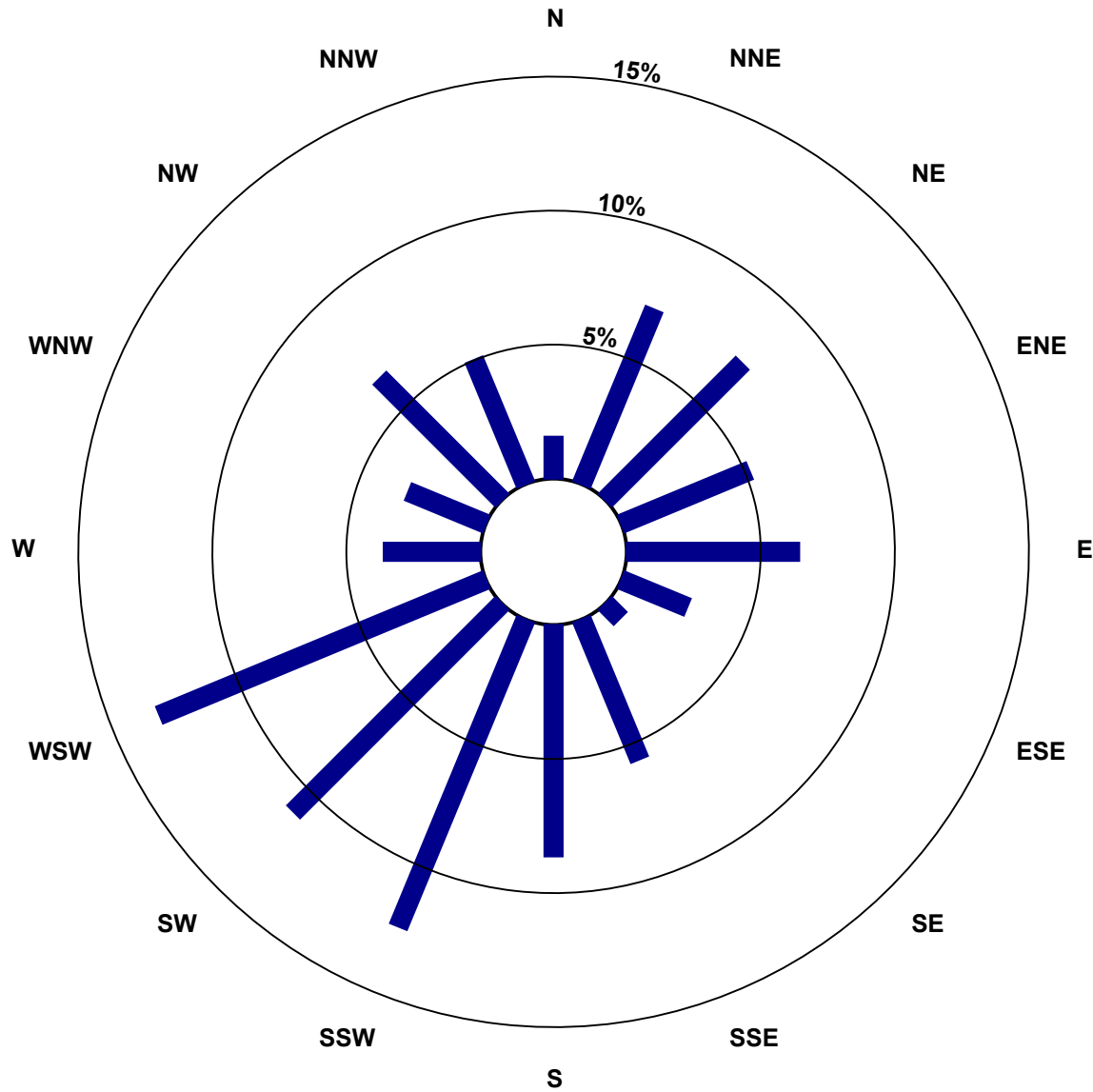
Total Number of Valid Hours: 637

Total Number of Hours: 672

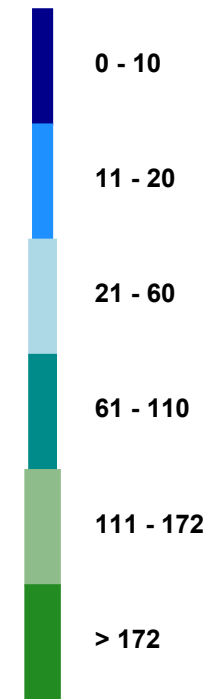


Wood Buffalo Environmental Association  
Wind Rose Feb 2023

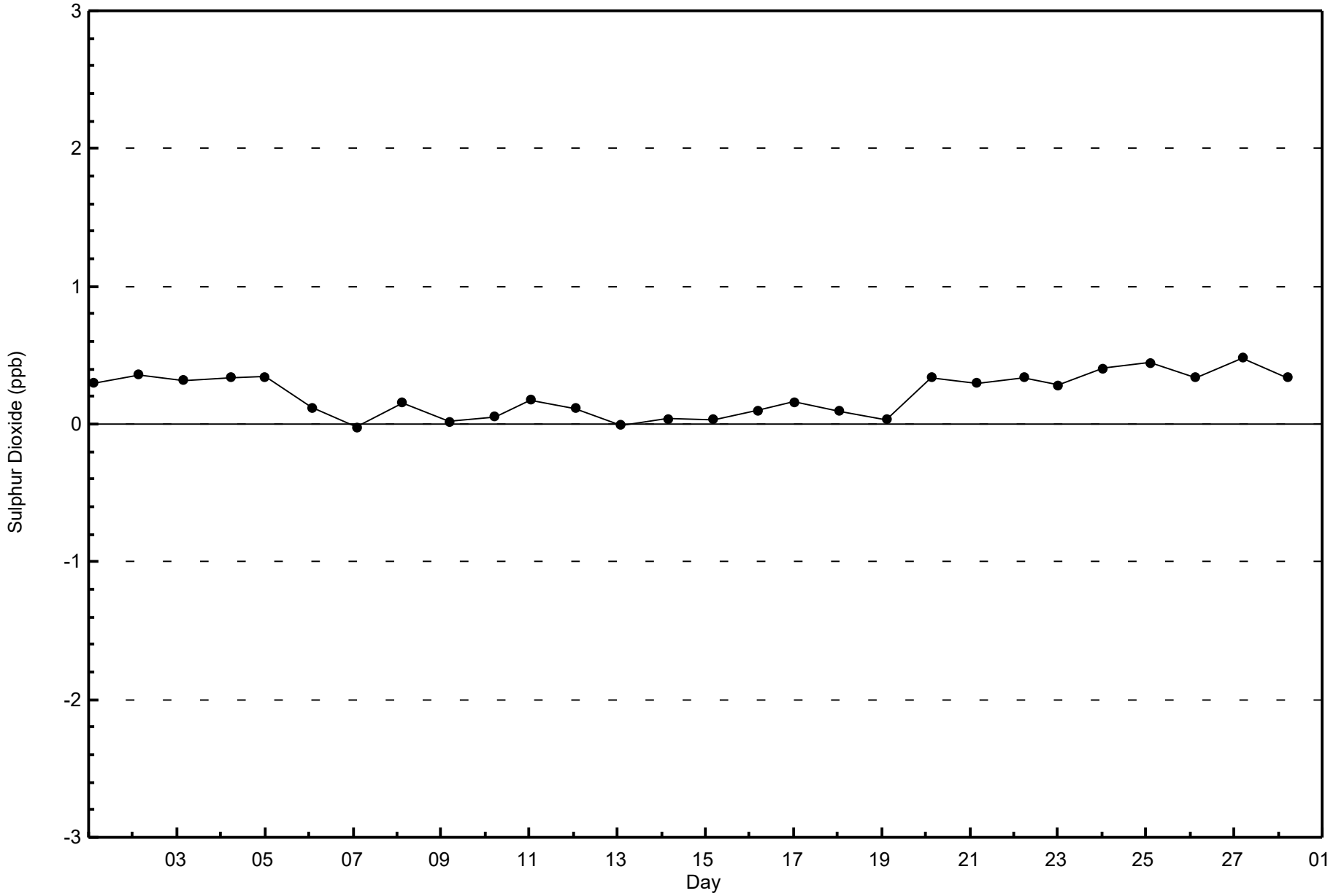
Sulphur Dioxide (SO<sub>2</sub>) - ppb  
Jackfish 2/3

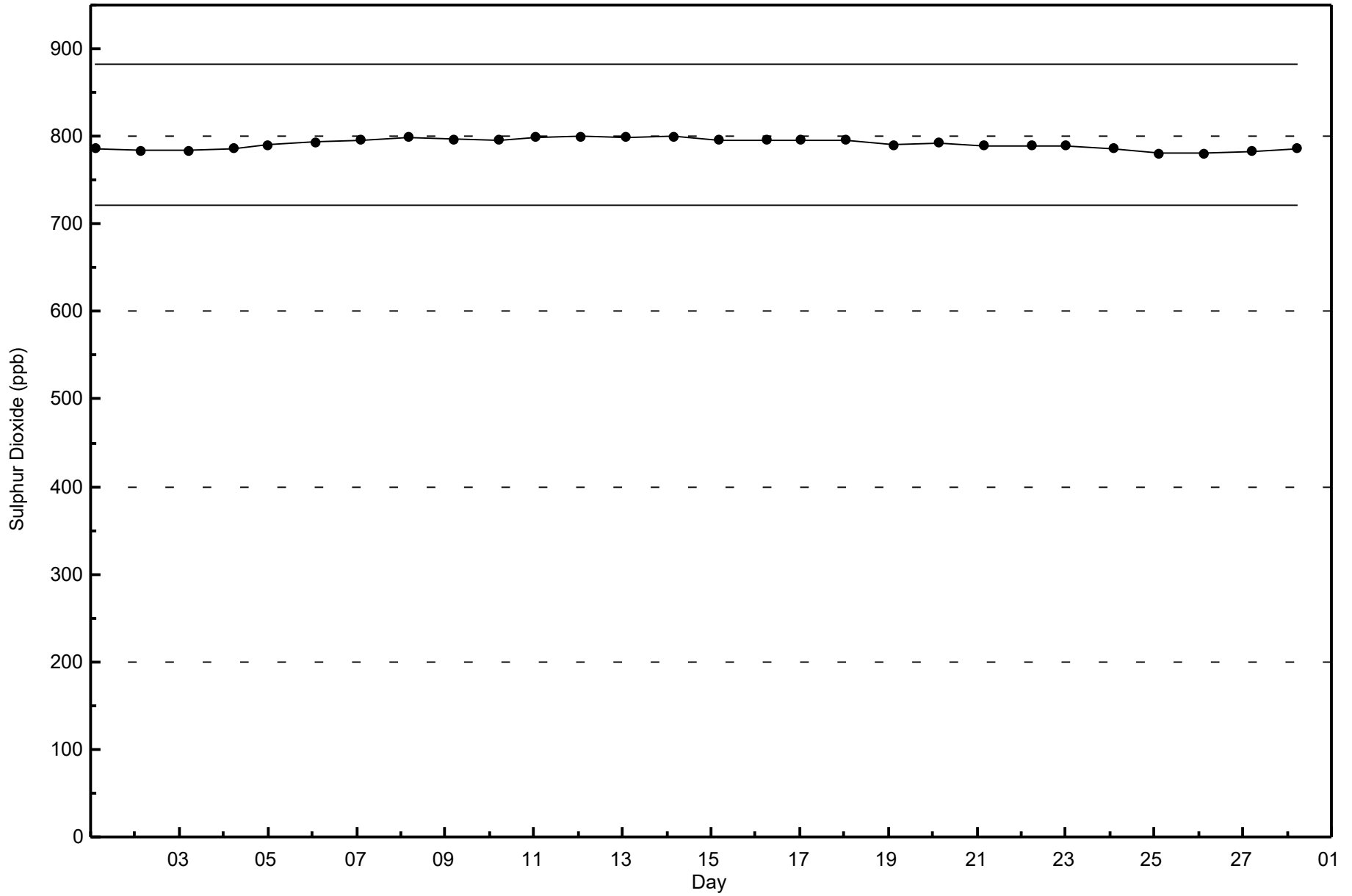


Classes (ppb)



Total Number of Valid Hours: 637







Wood Buffalo Environmental Association

Summary of Hour Averages

Hydrogen Sulphide (H2S) - ppb

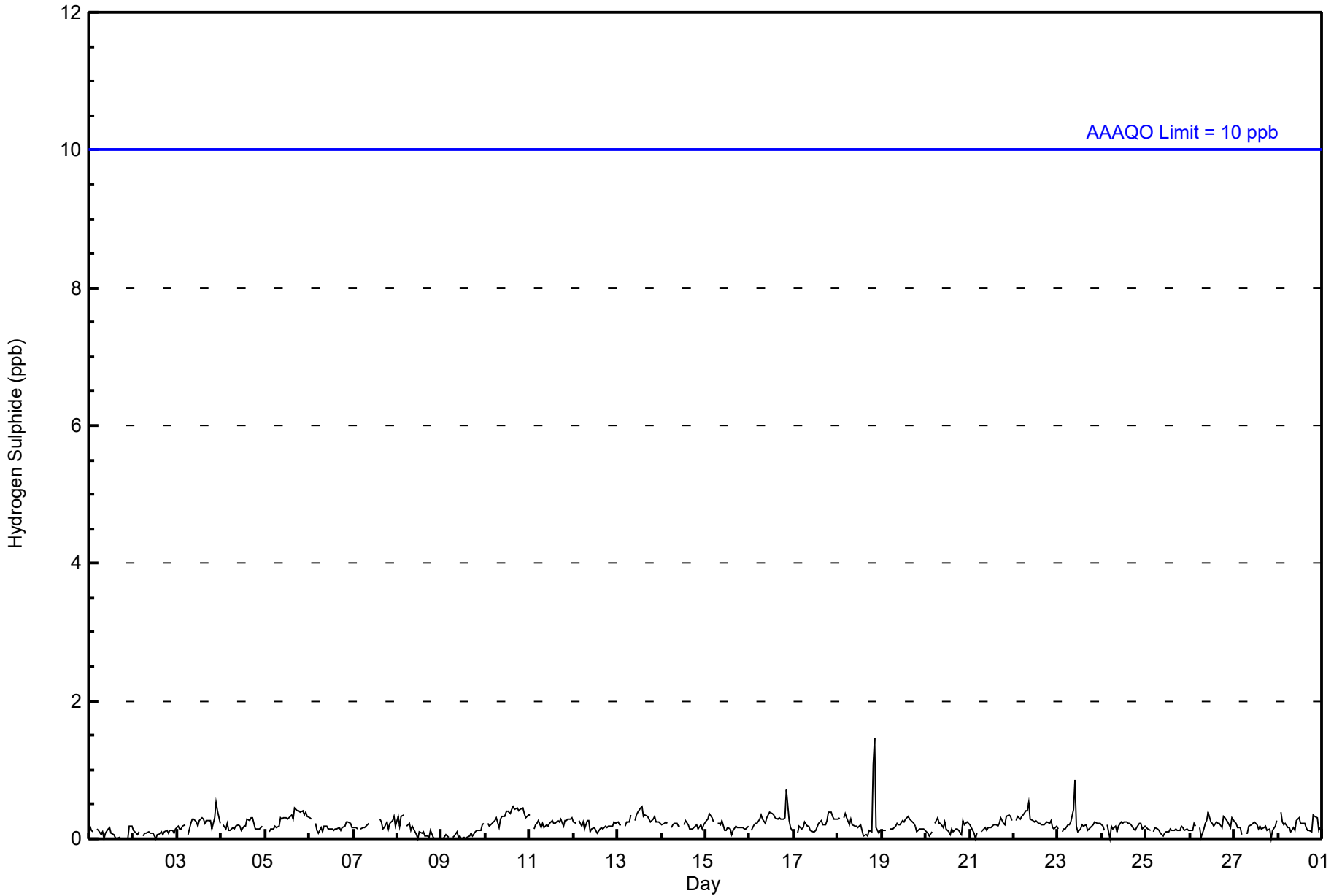
Jackfish 2/3 - February 2023

| Number of Exceedences (AAAQO):                  |                               | 1-hr: 0  |     | 24-hr: 0 |     | Hours in Service: |     |     |     |     |     |     |     |     |     |                           |     |      |     | 672 |     |     |     |                 |               |                 |     |                  |  |
|---|-------------------------------|--|-----|----------|-----|-------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|---------------------------|-----|------|-----|-----|-----|-----|-----|-----------------|---------------|-----------------|-----|------------------|--|
| Maximum Value: 1.5 ppb on Feb 18 21:00          |                               | Maximum Daily Average: 0.3 ppb on Feb 10   |     |          |     |                   |     |     |     |     |     |     |     |     |     | Hours of Data:            |     | 636  |     |     |     |     |     |                 |               |                 |     |                  |  |
| Minimum Value: 0.0 ppb on Feb 1 09:00           |                               | Minimum Daily Average: 0.1 ppb on Feb 9  |     |          |     |                   |     |     |     |     |     |     |     |     |     | Hours of Missing Data:    |     | 36   |     |     |     |     |     |                 |               |                 |     |                  |  |
| Maximum Diurnal Average: 0.3 ppb at hour 21     |                               | Minimum Diurnal Average: 0.2 ppb at hour 3   |     |          |     |                   |     |     |     |     |     |     |     |     |     | Hours of Calibration:     |     | 33   |     |     |     |     |     |                 |               |                 |     |                  |  |
| Monthly Average: 0.20 ppb                       |                               | Percentiles: P <sub>1</sub> = 0.0 P <sub>10</sub> = 0.1 Q <sub>1</sub> = 0.1 Median = 0.2 Q <sub>3</sub> = 0.3 P <sub>90</sub> = 0.3 P <sub>99</sub> = 0.5 |     |          |     |                   |     |     |     |     |     |     |     |     |     | Percent Operational Time: |     | 99.6 |     |     |     |     |     |                 |               |                 |     |                  |  |
| Day   | Hourly Period Ending At (MST) |  |     |          |     |                   |     |     |     |     |     |     |     |     |     |                           |     |      |     |     |     |     |     |                 | Daily Average | Daily Maximum   |     |                  |  |
|   | 1                             | 2  | 3   | 4        | 5   | 6                 | 7   | 8   | 9   | 10  | 11  | 12  | 13  | 14  | 15  | 16                        | 17  | 18   | 19  | 20  | 21  | 22  | 23  | 24              |               |                 |     |                  |  |
| 1-Feb   | 0.2                           | 0.1  | 0.1 | Z        | 0.2 | 0.1               | 0.1 | 0.1 | 0.0 | 0.1 | 0.1 | 0.2 | 0.1 | 0.1 | 0.0 | 0.0                       | 0.0 | 0.0  | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 | 0.2             | 0.1           | 0.2             |     |                  |  |
| 2-Feb   | 0.1                           | 0.1  | 0.1 | 0.1      | Z   | 0.0               | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.0 | 0.1 | 0.1 | 0.1                       | 0.1 | 0.1  | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1             | 0.1           | 0.1             | 0.1 |                  |  |
| 3-Feb   | 0.2                           | 0.1  | 0.1 | 0.2      | 0.2 | Z                 | 0.1 | 0.2 | 0.3 | 0.3 | 0.2 | 0.2 | 0.3 | 0.3 | 0.3 | 0.2                       | 0.3 | 0.3  | 0.3 | 0.3 | 0.1 | 0.3 | 0.5 | 0.4             | 0.2           | 0.2             |     |                  |  |
| 4-Feb   | Z                             | 0.2  | 0.1 | 0.2      | 0.1 | 0.1               | 0.2 | 0.1 | 0.2 | 0.2 | 0.2 | 0.1 | 0.2 | 0.2 | 0.3 | 0.3                       | 0.3 | 0.3  | 0.3 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2             | DF            | 0.2             |     |                  |  |
| 5-Feb   | 0.2                           | Z  | 0.1 | 0.1      | 0.1 | 0.2               | 0.2 | 0.2 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3                       | 0.4 | 0.4  | 0.4 | 0.4 | 0.4 | 0.4 | 0.3 | 0.4             | 0.3           | 0.4             |     |                  |  |
| 6-Feb   | 0.3                           | 0.3  | Z   | 0.2      | 0.1 | 0.1               | 0.2 | 0.1 | 0.2 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1                       | 0.2 | 0.1  | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2             | 0.2           | 0.2             |     |                  |  |
| 7-Feb   | 0.2                           | 0.2  | 0.1 | Z        | 0.2 | 0.2               | 0.2 | 0.2 | 0.2 | C   | C   | C   | C   | C   | 0.3 | 0.2                       | 0.2 | 0.2  | 0.3 | 0.1 | 0.2 | 0.3 | 0.3 | 0.2             | 0.2           | 0.2             |     |                  |  |
| 8-Feb   | 0.3                           | 0.2  | 0.3 | 0.3      | Z   | 0.2               | 0.2 | 0.1 | 0.2 | 0.1 | 0.1 | 0.0 | 0.1 | 0.1 | 0.1 | 0.0                       | 0.0 | 0.0  | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.0           | 0.1             |     |                  |  |
| 9-Feb   | 0.0                           | 0.0  | 0.1 | 0.0      | 0.0 | Z                 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1                       | 0.1 | 0.0  | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2             | 0.2           | 0.1             |     |                  |  |
| 10-Feb  | Z                             | 0.2  | 0.2 | 0.2      | 0.2 | 0.3               | 0.3 | 0.2 | 0.3 | 0.3 | 0.3 | 0.4 | 0.4 | 0.4 | 0.4 | 0.5                       | 0.4 | 0.4  | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.3             | 0.3           | 0.3             |     |                  |  |
| 11-Feb  | 0.3                           | Z  | 0.1 | 0.2      | 0.2 | 0.3               | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.3 | 0.2 | 0.2 | 0.3                       | 0.3 | 0.3  | 0.2 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3             | 0.3           | 0.2             |     |                  |  |
| 12-Feb  | 0.2                           | 0.2  | Z   | 0.3      | 0.2 | 0.2               | 0.1 | 0.3 | 0.3 | 0.1 | 0.1 | 0.2 | 0.1 | 0.1 | 0.1 | 0.2                       | 0.1 | 0.2  | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.3             | 0.2           | 0.2             |     |                  |  |
| 13-Feb  | 0.2                           | 0.2  | 0.2 | Z        | 0.2 | 0.2               | 0.3 | 0.3 | DF  | 0.3 | 0.3 | 0.4 | 0.4 | 0.5 | 0.3 | 0.4                       | 0.3 | 0.3  | 0.2 | 0.3 | 0.3 | 0.2 | 0.2 | 0.2             | 0.2           | 0.3             |     |                  |  |
| 14-Feb  | 0.2                           | 0.2  | 0.2 | 0.2      | Z   | 0.2               | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | M   | 0.2 | 0.3 | 0.2 | 0.1                       | 0.1 | 0.1  | 0.2 | 0.2 | 0.1 | 0.2 | 0.1 | 0.2             | 0.1           | 0.2             |     |                  |  |
| 15-Feb  | 0.3                           | 0.3  | 0.4 | 0.3      | 0.2 | Z                 | 0.2 | 0.2 | 0.2 | 0.3 | 0.1 | 0.1 | 0.2 | 0.1 | 0.1 | 0.1                       | 0.2 | 0.2  | 0.2 | 0.2 | 0.2 | 0.1 | 0.2 | 0.2             | 0.2           | 0.2             |     |                  |  |
| 16-Feb  | Z                             | 0.1  | 0.2 | 0.2      | 0.2 | 0.3               | 0.3 | 0.3 | 0.2 | 0.3 | 0.3 | 0.4 | 0.4 | 0.3 | 0.3 | 0.3                       | 0.3 | 0.3  | 0.3 | 0.3 | 0.3 | 0.7 | 0.3 | 0.2             | 0.1           | 0.3             |     |                  |  |
| 17-Feb  | 0.1                           | Z  | 0.1 | 0.2      | 0.1 | 0.2               | 0.2 | 0.2 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.3                       | 0.2 | 0.2  | 0.3 | 0.4 | 0.4 | 0.3 | 0.3 | 0.3             | 0.2           | 0.2             |     |                  |  |
| 18-Feb  | 0.3                           | 0.3  | Z   | 0.3      | 0.4 | 0.3               | 0.2 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.1 | 0.0 | 0.1                       | 0.0 | 0.1  | 0.1 | 1.1 | 1.5 | 0.2 | 0.1 | 0.1             | 0.3           | 1.5             |     |                  |  |
| 19-Feb  | 0.1                           | 0.1  | 0.1 | Z        | 0.1 | 0.2               | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.3 | 0.2 | 0.3 | 0.3 | 0.3                       | 0.3 | 0.2  | 0.2 | 0.1 | 0.2 | 0.1 | 0.1 | 0.1             | 0.2           | 0.2             |     |                  |  |
| 20-Feb  | 0.1                           | 0.1  | 0.0 | 0.1      | Z   | 0.2               | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 | 0.1 | 0.1 | 0.1 | 0.2 | 0.1                       | 0.2 | 0.1  | 0.1 | 0.1 | 0.3 | 0.2 | 0.2 | 0.2             | 0.2           | 0.3             |     |                  |  |
| 21-Feb  | 0.2                           | 0.1  | 0.1 | 0.0      | 0.1 | Z                 | 0.1 | 0.1 | 0.2 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2                       | 0.2 | 0.2  | 0.3 | 0.2 | 0.2 | 0.3 | 0.3 | 0.3             | 0.3           | 0.2             |     |                  |  |
| 22-Feb  | Z                             | 0.3  | 0.3 | 0.3      | 0.3 | 0.3               | 0.4 | 0.4 | 0.5 | 0.3 | 0.3 | 0.2 | 0.3 | 0.2 | 0.2 | 0.2                       | 0.2 | 0.2  | 0.2 | 0.2 | 0.2 | 0.3 | 0.2 | 0.1             | 0.2           | 0.3             |     |                  |  |
| 23-Feb  | 0.1                           | Z  | 0.1 | 0.1      | 0.1 | 0.2               | 0.2 | 0.2 | 0.4 | 0.9 | 0.2 | 0.1 | 0.1 | 0.2 | 0.2 | 0.2                       | 0.1 | 0.1  | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2             | 0.2           | 0.2             |     |                  |  |
| 24-Feb  | 0.2                           | 0.1  | Z   | 0.2      | 0.0 | 0.2               | 0.1 | 0.2 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.3 | 0.2 | 0.2                       | 0.2 | 0.1  | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2             | 0.2           | 0.2             |     |                  |  |
| 25-Feb  | 0.2                           | 0.1  | 0.1 | Z        | 0.1 | 0.2               | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1                       | 0.1 | 0.1  | 0.1 | 0.1 | 0.2 | 0.2 | 0.1 | 0.1             | 0.1           | 0.1             |     |                  |  |
| 26-Feb  | 0.1                           | 0.1  | 0.2 | 0.2      | Z   | 0.2               | 0.0 | 0.1 | 0.2 | 0.3 | 0.4 | 0.2 | 0.2 | 0.2 | 0.3 | 0.2                       | 0.2 | 0.2  | 0.3 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2             | 0.3           | 0.2             |     |                  |  |
| 27-Feb  | 0.3                           | 0.2  | 0.2 | 0.2      | 0.1 | Z                 | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.1 | 0.2 | 0.2                       | 0.2 | 0.2  | 0.1 | 0.1 | 0.0 | 0.1 | 0.2 | 0.3             | 0.2           | 0.3             |     |                  |  |
| 28-Feb  | Z                             | 0.4  | 0.2 | 0.2      | 0.2 | 0.2               | 0.2 | 0.1 | 0.2 | 0.1 | 0.3 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2                       | 0.1 | 0.1  | 0.1 | 0.3 | 0.3 | 0.3 | 0.1 | 0.2             | 0.2           | 0.4             |     |                  |  |
|   |                               |  |     |          |     |                   |     |     |     |     |     |     |     |     |     |                           |     |      |     |     |     |     |     | Diurnal Average |               | 0.2             |     |                  |  |
|   |                               |  |     |          |     |                   |     |     |     |     |     |     |     |     |     |                           |     |      |     |     |     |     |     | Diurnal Maximum |               | 0.3             |     |                  |  |
| Z - zerospan                                    |                               |  |     |          |     |                   |     |     |     |     |     |     |     |     |     |                           |     |      |     |     |     |     |     | C - Calibration |               | M - Maintenance |     | DF - DAS Failure |  |
| Alberta Ambient Air Quality Objectives (AAAQO): |                               |  |     |          |     |                   |     |     |     |     |     |     |     |     |     |                           |     |      |     |     |     |     |     | 1-hr 10 ppb     |               | 24-hr 3 ppb     |     |                  |  |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Hydrogen Sulphide (H<sub>2</sub>S) - ppb**  
**Jackfish 2/3 - February 2023**





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Hydrogen Sulphide (H<sub>2</sub>S) - ppb**  
**Jackfish 2/3 - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 2                             | 636                    | 100.00   | 100.00              |
| 3 - 4                             | 0                      | 0.00     | 100.00              |
| 5 - 7                             | 0                      | 0.00     | 100.00              |
| 8 - 11                            | 0                      | 0.00     | 100.00              |
| > 11                              | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 636

Total Number of Hours: 672





**Wood Buffalo Environmental Association  
Frequency Distribution**

**Hydrogen Sulphide (H<sub>2</sub>S) - ppb  
Jackfish 2/3 - February 2023**

| Concentration<br>Ranges (ppb) | Wind Direction |     |    |     |    |     |    |     |    |     |    |     |    |     |    |     | Totals |
|-------------------------------|----------------|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|--------|
|                               | N              | NNE | NE | ENE | E  | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |        |
| 0 - 2                         | 19             | 47  | 44 | 29  | 14 | 11  | 10 | 17  | 44 | 69  | 73 | 109 | 42 | 26  | 36 | 45  | 635    |
| 3 - 4                         | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| 5 - 7                         | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| 8 - 11                        | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| > 11                          | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| <b>Totals</b>                 | 19             | 47  | 44 | 29  | 14 | 11  | 10 | 17  | 44 | 69  | 73 | 109 | 42 | 26  | 36 | 45  | 635    |

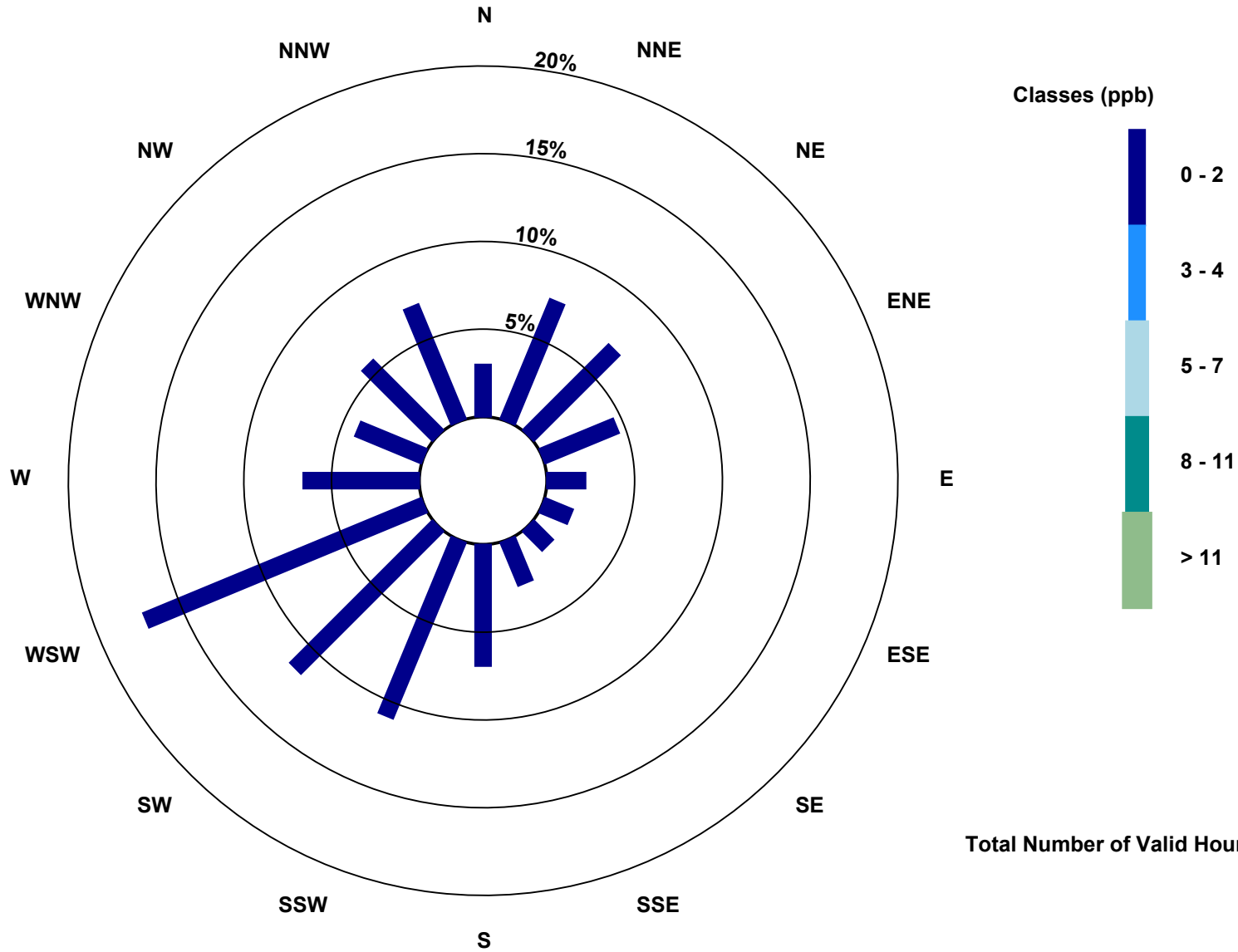
Total Number of Valid Hours: 635

Total Number of Hours: 672

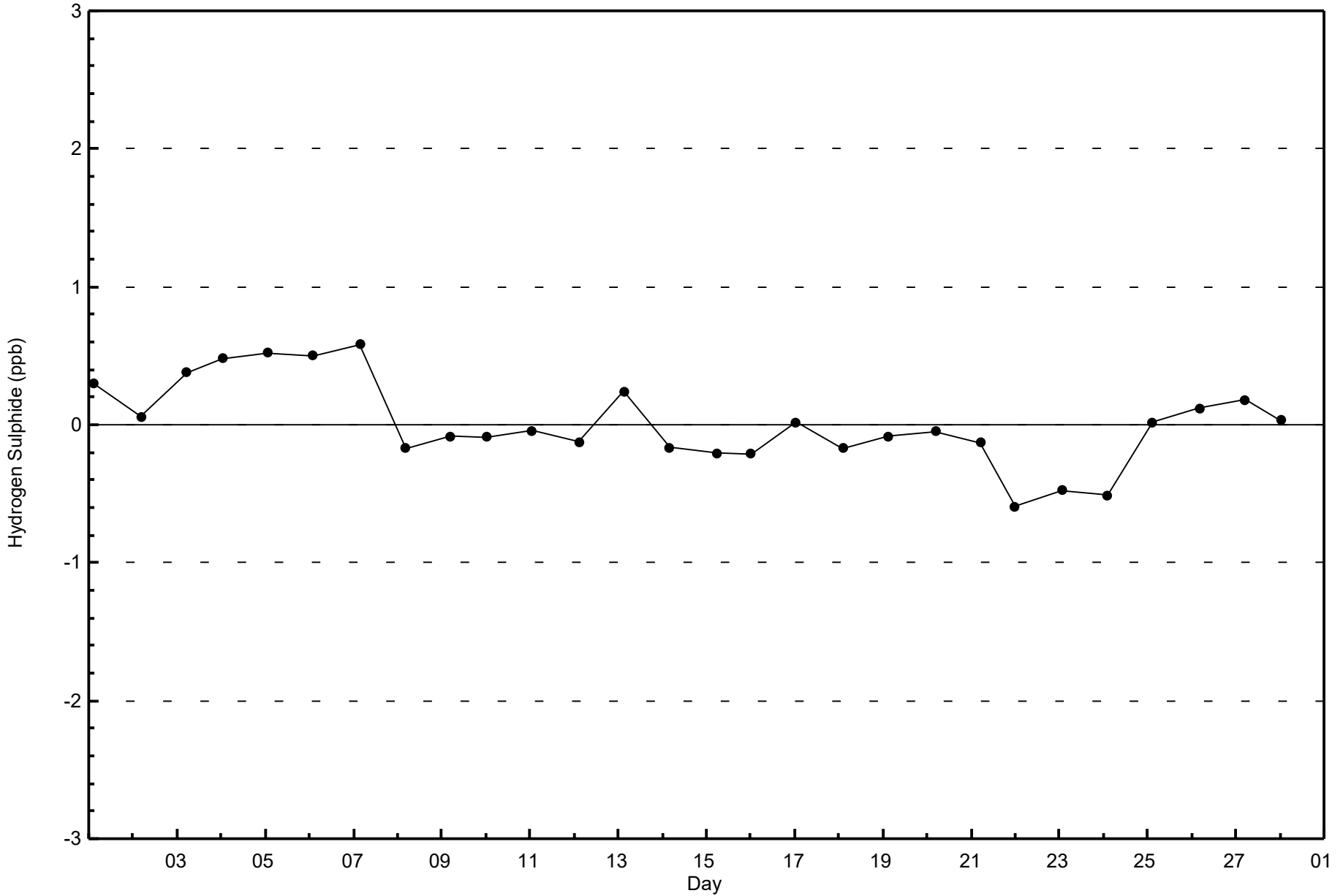


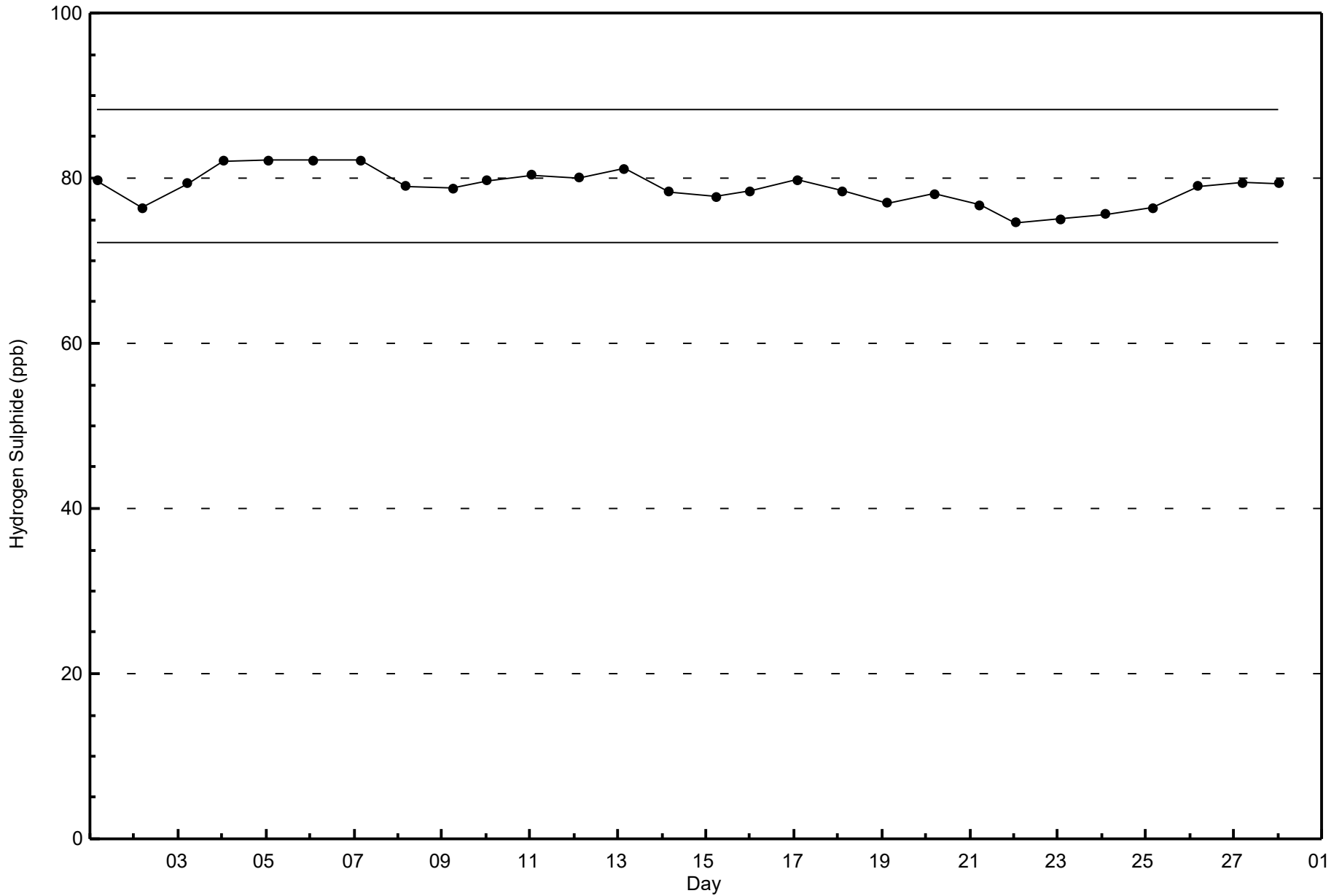
Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Hydrogen Sulphide (H<sub>2</sub>S) - ppb  
Jackfish 2/3



Total Number of Valid Hours: 635





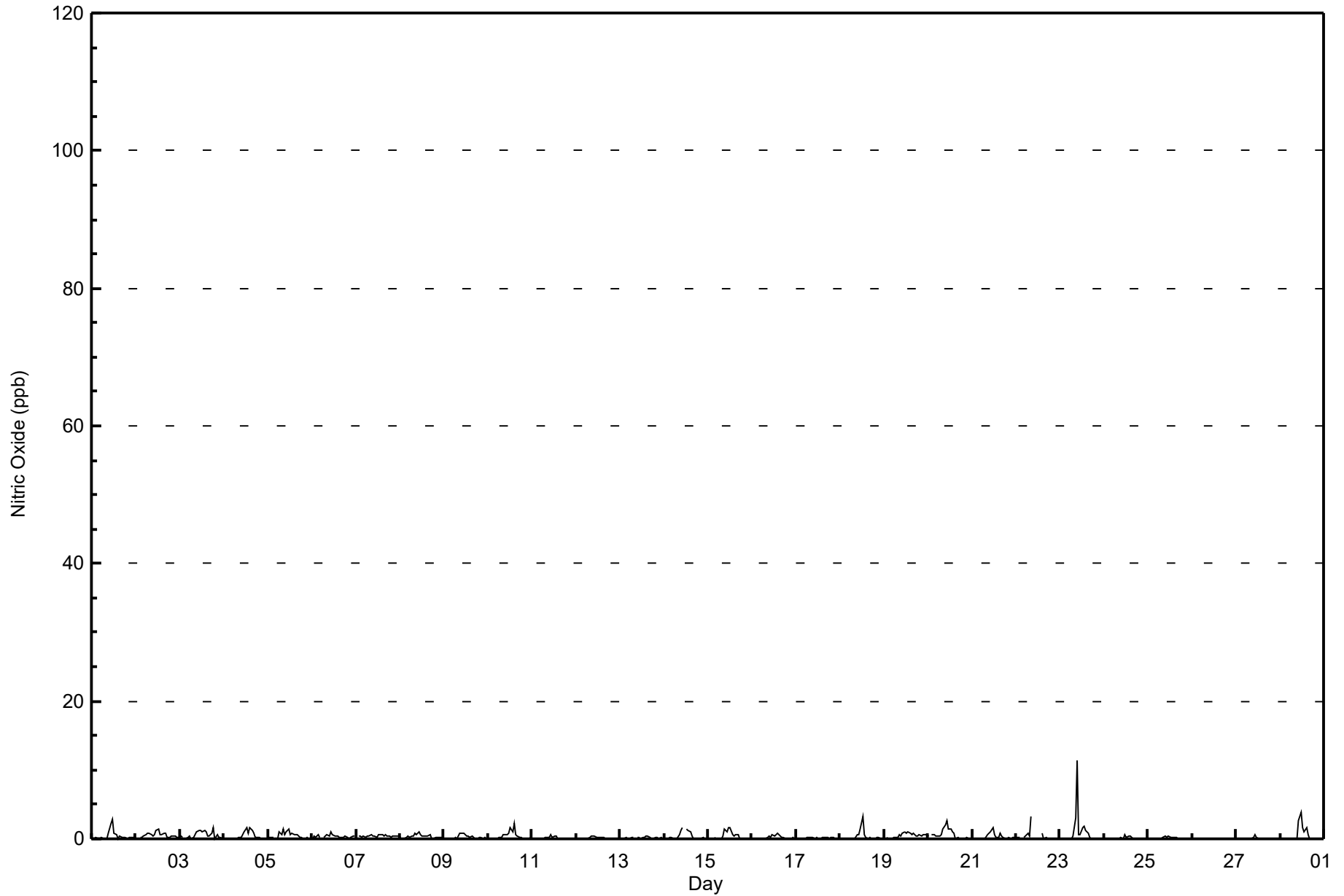


| Maximum Value: 11.4 ppb on Feb 23 10:00   |                               |     |     |     |     |     |     |     |     |      |     |     |     |     |     |     |     |     |     | Maximum Daily Average: 1.0 ppb on Feb 23   |     |     |     |                 | Hours in Service: 672          |               |
|---|-------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|-----|-----|-----|-----------------|--------------------------------|---------------|
| Minimum Value: 0.0 ppb on Feb 1 02:00   |                               |     |     |     |     |     |     |     |     |      |     |     |     |     |     |     |     |     |     | Minimum Daily Average: 0.0 ppb on Feb 26   |     |     |     |                 | Hours of Data: 636             |               |
| Maximum Diurnal Average: 1.0 ppb at hour 12   |                               |     |     |     |     |     |     |     |     |      |     |     |     |     |     |     |     |     |     | Minimum Diurnal Average: 0.1 ppb at hour 1   |     |     |     |                 | Hours of Missing Data: 36      |               |
| Monthly Average: 0.34 ppb   |                               |     |     |     |     |     |     |     |     |      |     |     |     |     |     |     |     |     |     | Percentiles: P <sub>1</sub> = 0.0 P <sub>10</sub> = 0.0 Q <sub>1</sub> = 0.0 Median = 0.1 Q <sub>3</sub> = 0.4 P <sub>90</sub> = 0.8 P <sub>99</sub> = 2.7 |     |     |     |                 | Hours of Calibration: 33       |               |
|   |                               |     |     |     |     |     |     |     |     |      |     |     |     |     |     |     |     |     |     |  |     |     |     |                 | Percent Operational Time: 99.6 |               |
| Day   | Hourly Period Ending At (MST) |     |     |     |     |     |     |     |     |      |     |     |     |     |     |     |     |     |     |  |     |     |     |                 | Daily Average                  | Daily Maximum |
|   | 1                             | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10   | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19  | 20   | 21  | 22  | 23  | 24              |                                |               |
| 1-Feb   | Z                             | 0.0 | 0.2 | 0.0 | 0.0 | 0.2 | 0.1 | 0.1 | 0.0 | 0.8  | 2.3 | 2.9 | 0.8 | 0.5 | 0.1 | 0.3 | 0.2 | 0.3 | 0.2 | 0.0  | 0.2 | 0.1 | 0.1 | 0.3             | 0.4                            | 2.9           |
| 2-Feb   | 0.1                           | Z   | 0.3 | 0.2 | 0.3 | 0.6 | 0.8 | 0.8 | 0.6 | 0.5  | 0.6 | 1.2 | 1.3 | 0.7 | 0.7 | 0.8 | 0.7 | 0.1 | 0.1 | 0.4  | 0.4 | 0.4 | 0.1 | 0.3             | 0.5                            | 1.3           |
| 3-Feb   | 0.3                           | 0.2 | Z   | 0.1 | 0.3 | 0.3 | 0.1 | 0.2 | 0.5 | 0.9  | 1.3 | 1.3 | 1.1 | 1.3 | 0.9 | 0.3 | 0.4 | 0.9 | 1.6 | 0.0  | 0.7 | 0.2 | 0.2 | 0.0             | 0.6                            | 1.6           |
| 4-Feb   | 0.0                           | 0.1 | 0.0 | Z   | 0.0 | 0.0 | 0.0 | 0.1 | 0.2 | 0.3  | 0.6 | 1.1 | 1.6 | 0.8 | 1.7 | 1.2 | 0.8 | 0.1 | 0.2 | 0.1  | 0.0 | 0.1 | 0.0 | DF              | 0.4                            | 1.7           |
| 5-Feb   | 0.3                           | 0.1 | 0.2 | 0.1 | Z   | 0.0 | 1.0 | 0.6 | 1.4 | 0.6  | 1.0 | 1.5 | 0.7 | 0.7 | 0.6 | 0.5 | 0.7 | 0.1 | 0.2 | 0.0  | 0.0 | 0.1 | 0.0 | 0.0             | 0.5                            | 1.5           |
| 6-Feb   | 0.0                           | 0.4 | 0.3 | 0.6 | 0.1 | Z   | 0.2 | 0.3 | 0.7 | 0.4  | 1.0 | 0.6 | 0.4 | 0.4 | 0.5 | 0.2 | 0.3 | 0.3 | 0.3 | 0.3  | 0.1 | 0.2 | 0.5 | 0.3             | 0.4                            | 1.0           |
| 7-Feb   | Z                             | 0.4 | 0.3 | 0.2 | 0.4 | 0.3 | 0.5 | 0.4 | 0.6 | 0.5  | 0.4 | 0.2 | 0.6 | 0.7 | 0.6 | 0.5 | 0.5 | 0.5 | 0.4 | 0.3  | 0.4 | 0.4 | 0.3 | 0.4             | 0.4                            | 0.7           |
| 8-Feb   | 0.2                           | Z   | 0.1 | 0.1 | 0.4 | 0.2 | 0.4 | 0.5 | 0.8 | 0.7  | 0.9 | 0.6 | 0.4 | 0.5 | 0.3 | 0.3 | 0.6 | 0.0 | 0.1 | 0.1  | 0.2 | 0.2 | 0.2 | 0.2             | 0.4                            | 0.9           |
| 9-Feb   | 0.0                           | 0.0 | Z   | 0.0 | 0.0 | 0.0 | 0.2 | 0.0 | 0.8 | 0.9  | 0.8 | 0.7 | 0.4 | 0.4 | 0.3 | 0.3 | 0.2 | 0.0 | 0.0 | 0.2  | 0.1 | 0.0 | 0.3 | 0.0             | 0.2                            | 0.9           |
| 10-Feb  | 0.1                           | 0.1 | 0.1 | Z   | 0.0 | 0.1 | 0.3 | 0.1 | 0.6 | 0.6  | 0.7 | 0.8 | 1.6 | 1.1 | 2.2 | 0.7 | 0.5 | 0.1 | 0.3 | 0.0  | 0.0 | 0.0 | 0.0 | 0.1             | 0.4                            | 2.2           |
| 11-Feb  | 0.0                           | 0.0 | 0.1 | 0.0 | Z   | 0.1 | 0.0 | 0.2 | 0.3 | 0.3  | 0.6 | 0.3 | 0.3 | 0.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0 | 0.1 | 0.0 | 0.0             | 0.1                            | 0.6           |
| 12-Feb  | 0.1                           | 0.0 | 0.0 | 0.0 | 0.0 | Z   | 0.0 | 0.3 | 0.3 | 0.4  | 0.3 | 0.2 | 0.2 | 0.1 | 0.3 | 0.2 | 0.1 | 0.0 | 0.0 | 0.0  | 0.0 | 0.0 | 0.0 | 0.0             | 0.1                            | 0.4           |
| 13-Feb  | Z                             | 0.0 | 0.0 | 0.2 | 0.0 | 0.1 | 0.2 | 0.1 | DF  | 0.2  | 0.3 | 0.1 | 0.2 | 0.1 | 0.3 | 0.3 | 0.2 | 0.0 | 0.1 | 0.2  | 0.2 | 0.0 | 0.2 | 0.0             | 0.1                            | 0.3           |
| 14-Feb  | 0.0                           | Z   | 0.0 | 0.2 | 0.1 | 0.0 | 0.1 | 0.0 | 0.7 | 1.2  | 1.6 | M   | 1.5 | 1.3 | 1.0 | 0.3 | 0.1 | 0.1 | 0.0 | 0.0  | 0.1 | 0.1 | 0.0 | 0.0             | 0.4                            | 1.6           |
| 15-Feb  | 0.0                           | 0.0 | Z   | 0.1 | 0.0 | 0.1 | 0.0 | 0.0 | 0.3 | 1.3  | 1.1 | 1.6 | 1.6 | 0.6 | 0.5 | 0.6 | 0.5 | 0.0 | 0.0 | 0.0  | 0.0 | 0.0 | 0.0 | 0.0             | 0.4                            | 1.6           |
| 16-Feb  | 0.0                           | 0.0 | 0.0 | Z   | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.4  | 0.3 | 0.5 | 0.4 | 0.6 | 0.8 | 0.4 | 0.2 | 0.1 | 0.1 | 0.0  | 0.0 | 0.1 | 0.1 | 0.0             | 0.2                            | 0.8           |
| 17-Feb  | 0.0                           | 0.0 | 0.0 | 0.0 | Z   | 0.0 | 0.1 | 0.3 | 0.2 | 0.2  | 0.0 | 0.2 | 0.1 | 0.1 | 0.2 | 0.1 | 0.2 | 0.1 | 0.0 | 0.1  | 0.1 | 0.0 | 0.0 | 0.0             | 0.1                            | 0.3           |
| 18-Feb  | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | Z   | 0.0 | 0.0 | 0.0 | 0.7  | 0.6 | 1.5 | 3.2 | 0.6 | 0.2 | 0.1 | 0.1 | 0.1 | 0.0 | 0.0  | 0.1 | 0.2 | 0.0 | 0.1             | 0.3                            | 3.2           |
| 19-Feb  | Z                             | 0.2 | 0.0 | 0.0 | 0.1 | 0.2 | 0.2 | 0.2 | 0.5 | 0.5  | 0.8 | 1.1 | 0.7 | 0.9 | 0.8 | 0.6 | 0.8 | 0.4 | 0.5 | 0.7  | 0.5 | 0.6 | 0.5 | 0.5             | 0.5                            | 1.1           |
| 20-Feb  | 0.4                           | Z   | 0.6 | 0.7 | 0.5 | 0.5 | 0.5 | 0.5 | 1.4 | 2.0  | 2.7 | 1.5 | 1.4 | 1.0 | 0.7 | 0.1 | 0.2 | 0.0 | 0.0 | 0.0  | 0.0 | 0.2 | 0.0 | 0.0             | 0.6                            | 2.7           |
| 21-Feb  | 0.0                           | 0.0 | Z   | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.6 | 0.8  | 1.0 | 1.6 | 0.6 | 0.3 | 0.1 | 0.7 | 0.5 | 0.3 | 0.0 | 0.1  | 0.2 | 0.0 | 0.1 | 0.2             | 0.3                            | 1.6           |
| 22-Feb  | 0.3                           | 0.2 | 0.1 | Z   | 0.2 | 0.3 | 0.8 | 0.5 | 3.3 | C    | C   | C   | C   | C   | 0.8 | 0.1 | 0.2 | 0.0 | 0.0 | 0.0  | 0.0 | 0.0 | 0.1 | 0.0             | 0.4                            | 3.3           |
| 23-Feb  | 0.0                           | 0.0 | 0.0 | 0.1 | Z   | 0.0 | 0.0 | 0.3 | 3.0 | 11.4 | 0.7 | 0.7 | 1.5 | 1.9 | 1.3 | 0.7 | 0.3 | 0.0 | 0.0 | 0.0  | 0.0 | 0.0 | 0.0 | 0.0             | 1.0                            | 11.4          |
| 24-Feb  | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | Z   | 0.0 | 0.0 | 0.0 | 0.1  | 0.0 | 0.7 | 0.2 | 0.4 | 0.5 | 0.3 | 0.0 | 0.0 | 0.0 | 0.0  | 0.1 | 0.0 | 0.1 | 0.0             | 0.1                            | 0.7           |
| 25-Feb  | Z                             | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.4  | 0.3 | 0.4 | 0.2 | 0.2 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0 | 0.0 | 0.0 | 0.0             | 0.1                            | 0.4           |
| 26-Feb  | 0.0                           | Z   | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0 | 0.0 | 0.0 | 0.0             | 0.0                            | 0.0           |
| 27-Feb  | 0.0                           | 0.0 | Z   | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.3  | 0.6 | 0.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0 | 0.0 | 0.0 | 0.0             | 0.0                            | 0.6           |
| 28-Feb  | 0.0                           | 0.0 | 0.0 | Z   | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 2.7 | 3.9 | 1.6 | 1.1 | 1.6 | 0.5 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0 | 0.0 | 0.0 | 0.0             | 0.5                            | 3.9           |
| 0.1 0.1 0.1 0.1 0.1 0.1 0.2 0.2 0.6 1.0 0.9 1.0 0.8 0.6 0.6 0.4 0.3 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 |                               |     |     |     |     |     |     |     |     |      |     |     |     |     |     |     |     |     |     |  |     |     |     | Diurnal Average |                                |               |
| 0.4 0.4 0.6 0.7 0.5 0.6 1.0 0.8 3.3 11.4 2.7 3.9 3.2 1.9 2.2 1.2 0.8 0.9 1.6 0.7 0.7 0.6 0.5 0.5        |                               |     |     |     |     |     |     |     |     |      |     |     |     |     |     |     |     |     |     |  |     |     |     | Diurnal Maximum |                                |               |
| Z - zerospan C - Calibration M - Maintenance DF - DAS Failure   |                               |     |     |     |     |     |     |     |     |      |     |     |     |     |     |     |     |     |     |  |     |     |     |                 |                                |               |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Nitric Oxide (NO) - ppb**  
**Jackfish 2/3 - February 2023**





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Nitric Oxide (NO) - ppb**  
**Jackfish 2/3 - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 20                            | 636                    | 100.00   | 100.00              |
| 21 - 40                           | 0                      | 0.00     | 100.00              |
| 41 - 80                           | 0                      | 0.00     | 100.00              |
| 81 - 159                          | 0                      | 0.00     | 100.00              |
| > 159                             | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 636

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Nitric Oxide (NO) - ppb  
Jackfish 2/3 - February 2023**

| <b>Concentration<br/>Ranges (ppb)</b> | <b>Wind Direction</b> |     |    |     |    |     |    |     |    |     |    |     |    |     |    |     | <b>Totals</b> |
|---------------------------------------|-----------------------|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|---------------|
|                                       | N                     | NNE | NE | ENE | E  | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |               |
| 0 - 20                                | 18                    | 47  | 41 | 28  | 13 | 11  | 10 | 18  | 43 | 68  | 74 | 108 | 47 | 27  | 37 | 45  | 635           |
| 21 - 40                               | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| 11 - 80                               | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| 81 - 159                              | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| > 159                                 | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| <b>Totals</b>                         | 18                    | 47  | 41 | 28  | 13 | 11  | 10 | 18  | 43 | 68  | 74 | 108 | 47 | 27  | 37 | 45  | 635           |

Total Number of Valid Hours: 635

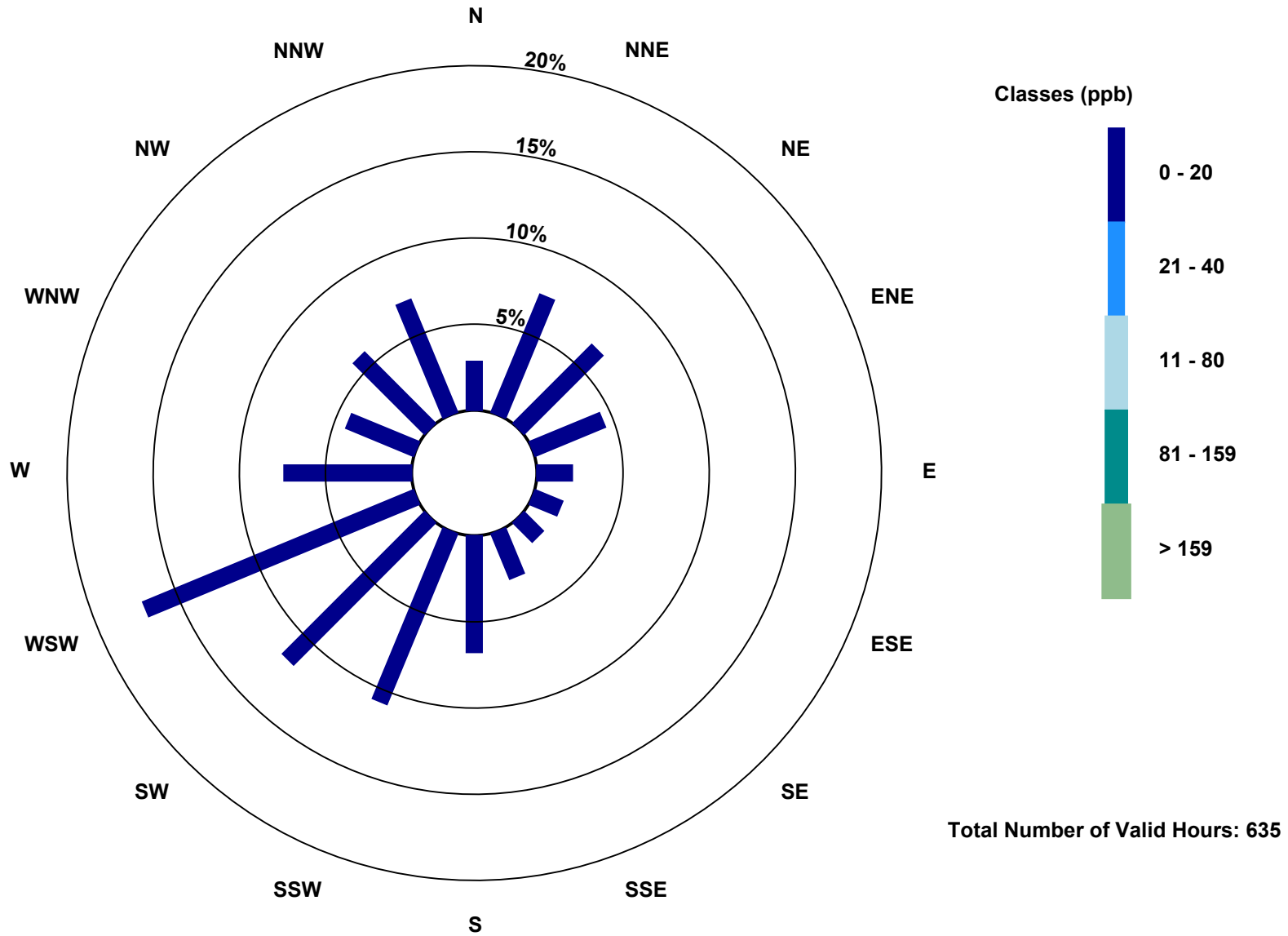
Total Number of Hours: 672

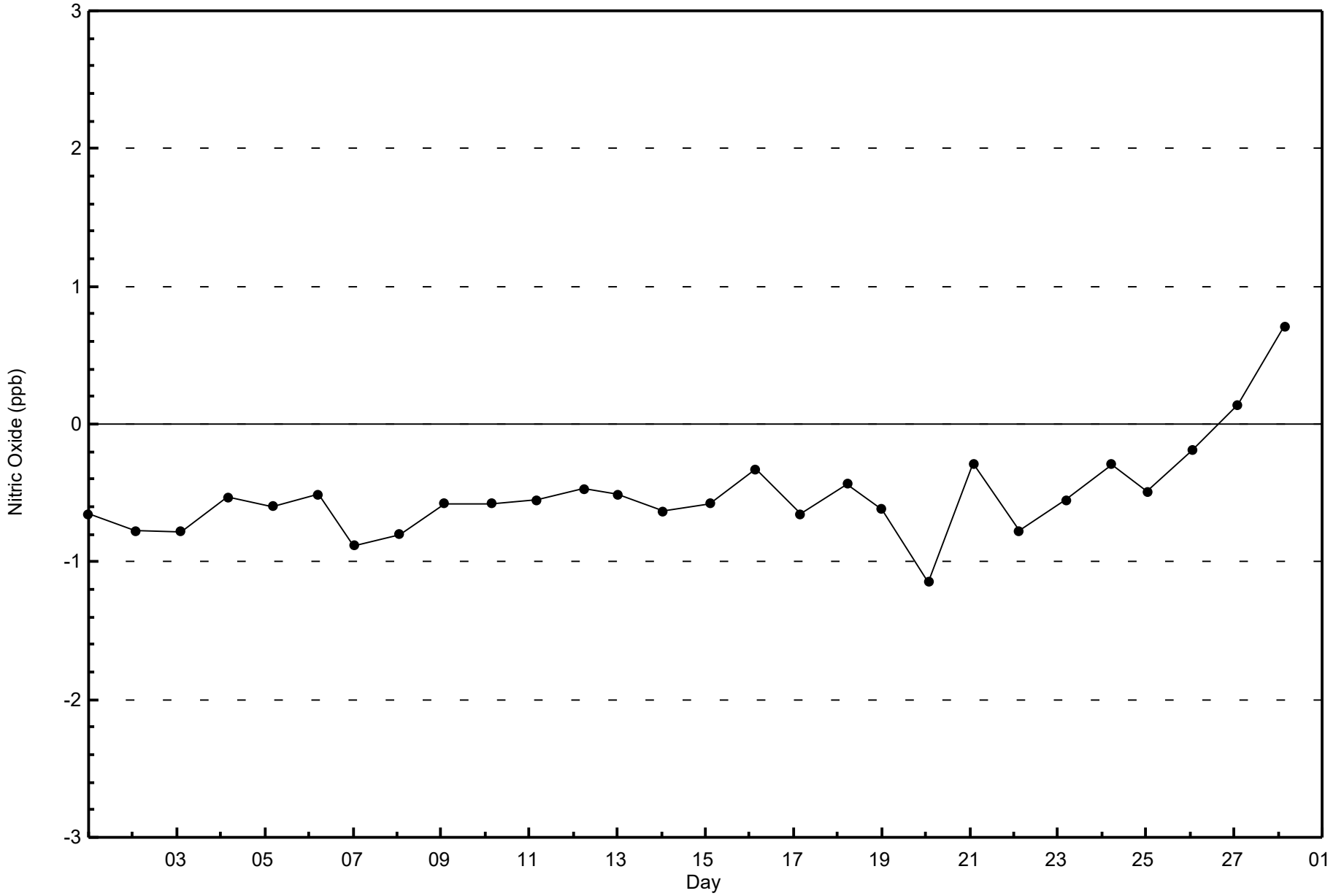


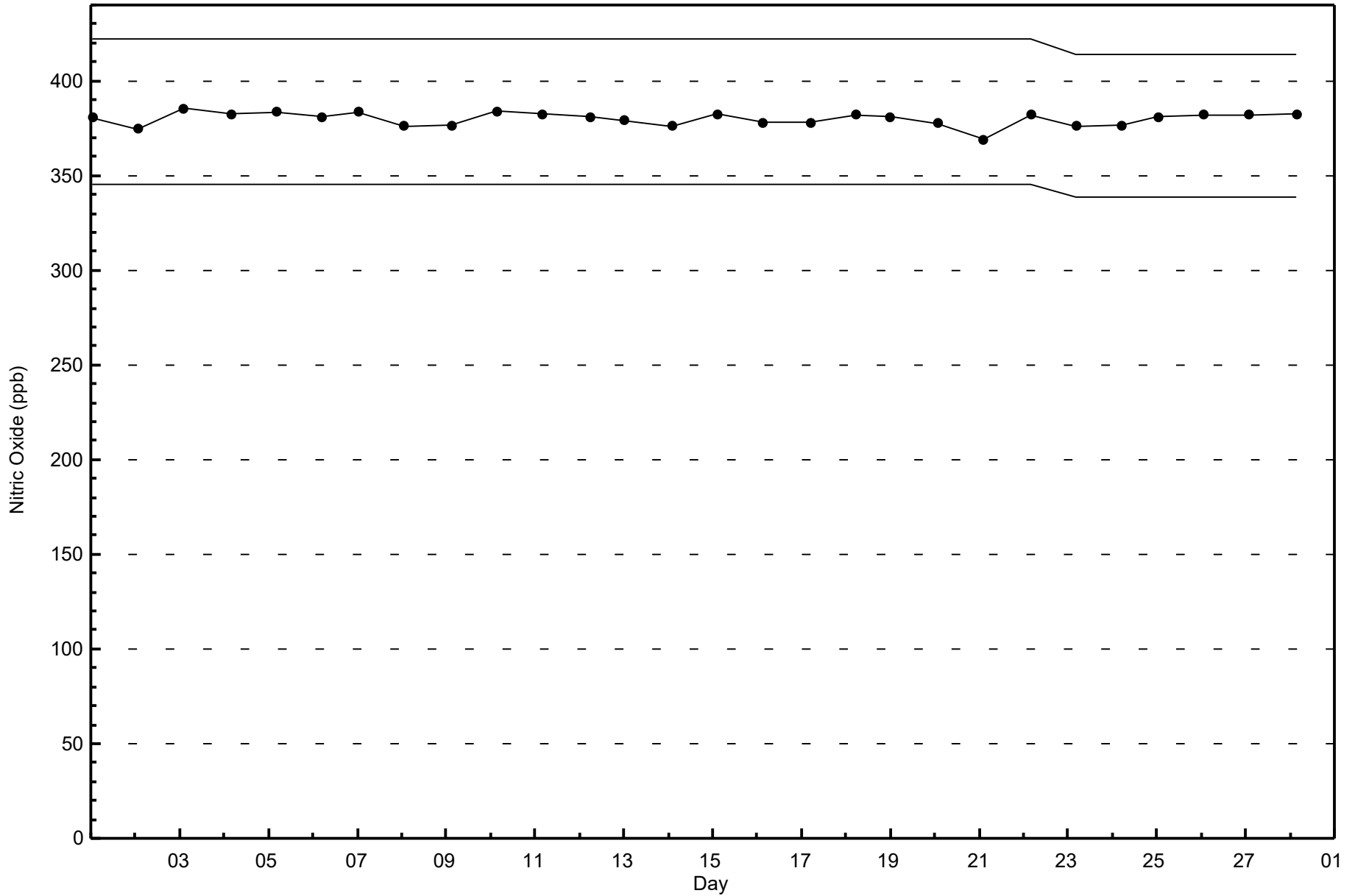


Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Nitric Oxide (NO) - ppb  
Jackfish 2/3









# Wood Buffalo Environmental Association

## Summary of Hour Averages

# Nitrogen Dioxide (NO<sub>2</sub>) - ppb

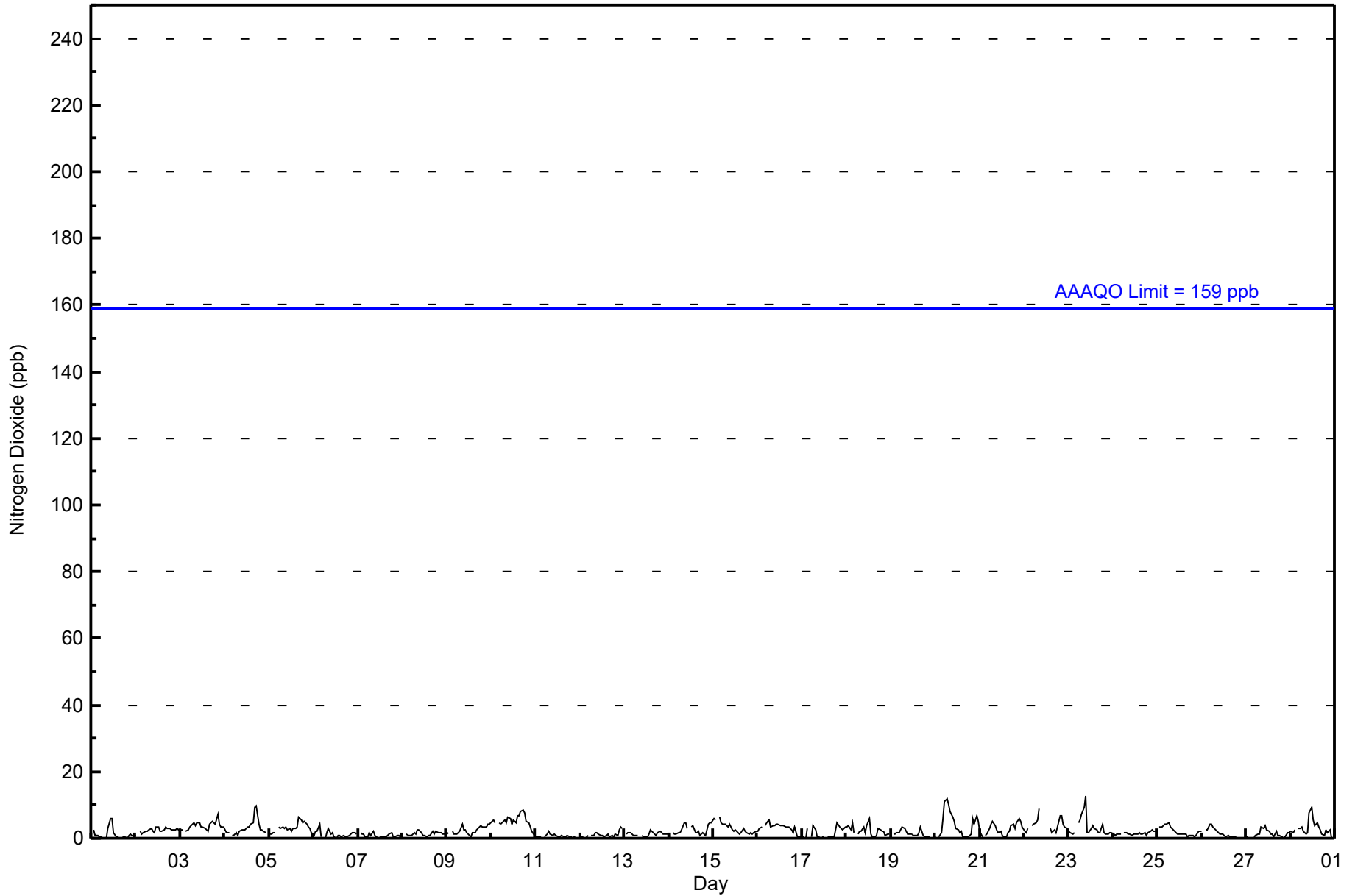
## Jackfish 2/3 - February 2023

| Number of Exceedences (AAAQO):  |                               | 1-hr: 0  |     | 24-hr: 0                  |     | Hours in Service: |      |      |     |      |     |     |     |     |     |     |     |      |     | 672 |     |     |     |                 |               |               |
|---|-------------------------------|--|-----|---------------------------|-----|-------------------|------|------|-----|------|-----|-----|-----|-----|-----|-----|-----|------|-----|-----|-----|-----|-----|-----------------|---------------|---------------|
| Maximum Value: 12.6 ppb on Feb 23 10:00   |                               | Maximum Daily Average: 5.2 ppb on Feb 10   |     | Hours of Data:            |     |                   |      |      |     |      |     |     |     |     |     |     |     | 636  |     |     |     |     |     |                 |               |               |
| Minimum Value: 0.0 ppb on Feb 11 04:00  |                               | Minimum Daily Average: 0.6 ppb on Feb 11   |     | Hours of Missing Data:    |     |                   |      |      |     |      |     |     |     |     |     |     |     | 36   |     |     |     |     |     |                 |               |               |
| Maximum Diurnal Average: 3.3 ppb at hour 9  |                               | Minimum Diurnal Average: 1.7 ppb at hour 14  |     | Hours of Calibration:     |     |                   |      |      |     |      |     |     |     |     |     |     |     | 33   |     |     |     |     |     |                 |               |               |
| Monthly Average: 2.30 ppb   |                               | Percentiles: P <sub>1</sub> = 0.0 P <sub>10</sub> = 0.4 Q <sub>1</sub> = 0.9 Median = 1.8 Q <sub>3</sub> = 3.2 P <sub>90</sub> = 4.6 P <sub>99</sub> = 9.3 |     | Percent Operational Time: |     |                   |      |      |     |      |     |     |     |     |     |     |     | 99.6 |     |     |     |     |     |                 |               |               |
| Day   | Hourly Period Ending At (MST) |  |     |                           |     |                   |      |      |     |      |     |     |     |     |     |     |     |      |     |     |     |     |     |                 | Daily Average | Daily Maximum |
|   | 1                             | 2  | 3   | 4                         | 5   | 6                 | 7    | 8    | 9   | 10   | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18   | 19  | 20  | 21  | 22  | 23  | 24              |               |               |
| 1-Feb   | Z                             | 2.7  | 0.9 | 0.9                       | 0.3 | 0.4               | 0.2  | 0.2  | 0.2 | 3.0  | 6.0 | 5.8 | 1.7 | 0.3 | 0.3 | 0.2 | 0.2 | 0.3  | 0.5 | 0.2 | 0.7 | 1.3 | 0.8 | 0.7             | 1.2           | 6.0           |
| 2-Feb   | 0.9                           | Z  | 2.0 | 1.4                       | 1.6 | 2.1               | 2.1  | 2.4  | 3.1 | 2.0  | 1.5 | 3.6 | 3.4 | 2.2 | 2.0 | 2.5 | 3.6 | 2.9  | 2.8 | 2.6 | 2.4 | 2.6 | 3.0 | 2.4             | 2.4           | 3.6           |
| 3-Feb   | 2.5                           | 2.4  | Z   | 2.3                       | 2.6 | 3.2               | 3.7  | 4.6  | 3.9 | 4.6  | 4.5 | 3.3 | 3.4 | 3.1 | 2.7 | 2.3 | 4.3 | 5.0  | 4.6 | 4.4 | 7.4 | 4.3 | 3.2 | 3.3             | 3.7           | 7.4           |
| 4-Feb   | 2.5                           | 1.8  | 1.6 | Z                         | 0.7 | 1.0               | 1.6  | 0.9  | 2.1 | 2.5  | 2.7 | 2.7 | 3.2 | 3.4 | 4.3 | 4.5 | 9.4 | 9.8  | 4.2 | 2.5 | 2.4 | 2.0 | 1.6 | DF              | 3.1           | 9.8           |
| 5-Feb   | 1.4                           | 1.4  | 1.6 | 1.8                       | Z   | 3.2               | 3.1  | 3.2  | 3.0 | 3.3  | 2.7 | 3.0 | 2.0 | 2.8 | 2.9 | 3.6 | 6.2 | 5.6  | 4.7 | 5.0 | 4.3 | 3.6 | 3.0 | 1.7             | 3.2           | 6.2           |
| 6-Feb   | 1.0                           | 2.1  | 2.2 | 4.2                       | 0.4 | Z                 | 0.1  | 1.8  | 2.9 | 1.3  | 1.7 | 0.6 | 0.2 | 0.7 | 1.0 | 0.6 | 0.9 | 0.4  | 0.6 | 0.9 | 1.4 | 1.6 | 1.8 | 1.4             | 1.3           | 4.2           |
| 7-Feb   | Z                             | 1.5  | 1.1 | 1.1                       | 0.5 | 0.5               | 1.8  | 0.7  | 2.1 | 0.9  | 0.3 | 0.2 | 0.4 | 0.5 | 0.5 | 0.3 | 0.7 | 1.1  | 1.6 | 0.4 | 0.6 | 0.7 | 1.0 | 0.4             | 0.8           | 2.1           |
| 8-Feb   | 0.9                           | Z  | 1.1 | 0.8                       | 0.7 | 0.8               | 1.5  | 1.1  | 2.5 | 2.4  | 1.7 | 0.8 | 0.9 | 0.5 | 0.8 | 1.0 | 2.3 | 1.1  | 2.2 | 1.5 | 1.8 | 1.6 | 1.2 | 1.2             | 1.3           | 2.5           |
| 9-Feb   | 1.2                           | 1.7  | Z   | 2.3                       | 1.4 | 1.3               | 1.7  | 2.3  | 4.4 | 2.5  | 2.4 | 1.9 | 1.0 | 0.6 | 1.5 | 1.8 | 2.4 | 3.0  | 3.9 | 3.4 | 3.2 | 3.5 | 4.1 | 4.4             | 2.4           | 4.4           |
| 10-Feb  | 5.0                           | 5.3  | 4.8 | Z                         | 4.7 | 4.2               | 4.7  | 5.3  | 4.7 | 6.4  | 6.0 | 4.4 | 5.5 | 4.8 | 6.8 | 6.6 | 8.0 | 8.5  | 7.7 | 5.1 | 4.8 | 3.5 | 2.2 | 0.8             | 5.2           | 8.5           |
| 11-Feb  | 0.4                           | 0.4  | 0.6 | 0.0                       | Z   | 0.6               | 1.2  | 2.0  | 1.2 | 1.0  | 1.3 | 0.8 | 0.6 | 0.4 | 0.7 | 0.4 | 0.3 | 0.8  | 0.6 | 0.4 | 0.0 | 0.3 | 0.0 | 0.0             | 0.6           | 2.0           |
| 12-Feb  | 0.6                           | 0.4  | 0.0 | 0.0                       | 0.9 | Z                 | 0.9  | 1.0  | 1.9 | 1.7  | 1.3 | 1.0 | 0.8 | 0.5 | 0.9 | 1.3 | 0.5 | 0.8  | 0.4 | 1.3 | 0.9 | 2.4 | 3.6 | 2.9             | 1.1           | 3.6           |
| 13-Feb  | Z                             | 1.4  | 1.5 | 1.8                       | 1.3 | 0.7               | 0.9  | 0.9  | DF  | 1.0  | 0.4 | 0.5 | 0.6 | 1.3 | 2.7 | 2.3 | 1.4 | 0.8  | 1.7 | 2.0 | 1.6 | 1.1 | 1.1 | 1.1             | 1.3           | 2.7           |
| 14-Feb  | 1.2                           | Z  | 1.8 | 1.4                       | 1.2 | 1.6               | 1.8  | 2.6  | 4.8 | 4.6  | 3.1 | M   | 3.4 | 3.7 | 1.7 | 1.6 | 2.1 | 0.8  | 1.8 | 1.4 | 0.8 | 4.2 | 4.7 | 4.7             | 2.5           | 4.8           |
| 15-Feb  | 6.0                           | 5.4  | Z   | 6.2                       | 4.7 | 4.2               | 4.4  | 3.9  | 3.2 | 4.1  | 2.7 | 2.1 | 2.5 | 1.6 | 1.2 | 1.8 | 2.8 | 2.2  | 1.5 | 1.3 | 1.5 | 1.3 | 1.6 | 2.1             | 3.0           | 6.2           |
| 16-Feb  | 2.3                           | 3.0  | 3.6 | Z                         | 4.0 | 5.0               | 5.3  | 3.3  | 3.8 | 4.0  | 4.4 | 4.4 | 3.9 | 3.7 | 3.7 | 3.5 | 3.5 | 3.6  | 2.4 | 1.7 | 3.4 | 0.6 | 0.4 | 0.3             | 3.2           | 5.3           |
| 17-Feb  | 0.3                           | 0.0  | 0.0 | 3.1                       | Z   | 0.3               | 3.9  | 2.6  | 0.5 | 0.4  | 0.2 | 0.5 | 0.2 | 0.2 | 0.3 | 0.3 | 0.5 | 0.5  | 2.7 | 4.5 | 3.4 | 2.8 | 2.6 | 3.2             | 1.4           | 4.5           |
| 18-Feb  | 3.6                           | 3.8  | 2.6 | 4.7                       | 1.9 | Z                 | 1.1  | 2.2  | 2.1 | 3.2  | 1.6 | 4.0 | 6.1 | 1.1 | 0.3 | 0.3 | 1.0 | 2.9  | 2.4 | 2.0 | 2.0 | 0.8 | 1.3 | 1.4             | 2.3           | 6.1           |
| 19-Feb  | Z                             | 1.5  | 1.4 | 1.8                       | 1.8 | 2.5               | 3.6  | 3.0  | 2.2 | 1.4  | 1.3 | 1.4 | 0.7 | 1.0 | 1.0 | 1.7 | 3.3 | 0.9  | 0.5 | 0.4 | 0.4 | 0.2 | 0.2 | 0.2             | 1.4           | 3.6           |
| 20-Feb  | 0.4                           | Z  | 0.6 | 1.9                       | 5.9 | 11.1              | 11.8 | 10.0 | 8.0 | 6.2  | 4.9 | 2.8 | 2.5 | 1.6 | 2.0 | 0.6 | 0.6 | 0.5  | 0.4 | 1.3 | 5.9 | 4.3 | 6.7 | 5.1             | 4.1           | 11.8          |
| 21-Feb  | 2.3                           | 0.5  | Z   | 1.0                       | 1.3 | 3.1               | 4.1  | 5.0  | 4.0 | 2.5  | 1.8 | 2.3 | 1.0 | 0.5 | 0.5 | 1.7 | 2.1 | 3.7  | 4.1 | 2.8 | 4.6 | 6.0 | 5.1 | 3.5             | 2.8           | 6.0           |
| 22-Feb  | 2.1                           | 1.8  | 3.0 | Z                         | 3.8 | 4.1               | 4.6  | 5.4  | 9.0 | C    | C   | C   | C   | C   | 2.9 | 1.6 | 2.6 | 1.9  | 3.4 | 6.7 | 6.6 | 4.3 | 3.5 | 3.0             | 3.9           | 9.0           |
| 23-Feb  | 2.3                           | 1.7  | 1.4 | 1.9                       | Z   | 4.6               | 5.7  | 7.0  | 9.2 | 12.6 | 1.6 | 1.5 | 2.9 | 3.7 | 3.1 | 2.4 | 1.7 | 1.6  | 4.4 | 1.7 | 1.3 | 1.2 | 1.7 | 1.5             | 3.3           | 12.6          |
| 24-Feb  | 1.4                           | 1.0  | 1.4 | 1.1                       | 1.1 | Z                 | 1.8  | 1.6  | 1.4 | 1.2  | 0.8 | 1.2 | 1.3 | 1.1 | 1.5 | 1.3 | 1.4 | 1.7  | 0.9 | 1.5 | 2.3 | 2.4 | 2.2 | 2.3             | 1.5           | 2.4           |
| 25-Feb  | Z                             | 3.2  | 3.5 | 3.9                       | 4.3 | 4.4               | 4.5  | 3.4  | 3.1 | 2.3  | 1.5 | 1.2 | 1.2 | 1.3 | 1.1 | 1.2 | 0.6 | 0.7  | 1.0 | 0.9 | 0.5 | 0.9 | 2.2 | 2.3             | 2.1           | 4.5           |
| 26-Feb  | 2.1                           | Z  | 2.5 | 2.5                       | 4.1 | 4.1               | 3.5  | 2.4  | 2.0 | 1.9  | 1.2 | 1.1 | 0.8 | 0.5 | 0.7 | 0.6 | 0.3 | 0.6  | 0.3 | 0.2 | 0.0 | 0.0 | 0.0 | 0.0             | 1.4           | 4.1           |
| 27-Feb  | 0.4                           | 0.6  | Z   | 0.0                       | 0.1 | 0.8               | 1.4  | 1.3  | 3.4 | 2.9  | 3.8 | 2.6 | 2.2 | 1.3 | 1.4 | 0.6 | 2.1 | 0.7  | 0.7 | 0.6 | 0.0 | 0.6 | 1.6 | 1.9             | 1.3           | 3.8           |
| 28-Feb  | 2.1                           | 1.7  | 2.4 | Z                         | 2.9 | 3.0               | 3.4  | 2.2  | 1.4 | 1.8  | 7.5 | 9.4 | 5.5 | 4.0 | 4.6 | 3.3 | 2.4 | 1.2  | 1.0 | 2.4 | 1.5 | 2.7 | 0.1 | 0.0             | 2.9           | 9.4           |
| 1.9 2.0 1.8 2.0 2.2 2.8 3.0 2.9 3.3 3.0 2.6 2.4 2.1 1.7 1.9 1.8 2.4 2.3 2.3 2.1 2.3 2.2 2.2 1.9     |                               |  |     |                           |     |                   |      |      |     |      |     |     |     |     |     |     |     |      |     |     |     |     |     | Diurnal Average |               |               |
| 6.0 5.4 4.8 6.2 5.9 11.1 11.8 10.0 9.2 12.6 7.5 9.4 6.1 4.8 6.8 6.6 9.4 9.8 7.7 6.7 7.4 6.0 6.7 5.1 |                               |  |     |                           |     |                   |      |      |     |      |     |     |     |     |     |     |     |      |     |     |     |     |     | Diurnal Maximum |               |               |
| Z - zerospan C - Calibration M - Maintenance DF - DAS Failure                                       |                               |  |     |                           |     |                   |      |      |     |      |     |     |     |     |     |     |     |      |     |     |     |     |     |                 |               |               |
| Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 159 ppb  |                               |  |     |                           |     |                   |      |      |     |      |     |     |     |     |     |     |     |      |     |     |     |     |     |                 |               |               |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Nitrogen Dioxide (NO<sub>2</sub>) - ppb**  
**Jackfish 2/3 - February 2023**





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Nitrogen Dioxide (NO<sub>2</sub>) - ppb**  
**Jackfish 2/3 - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 20                            | 636                    | 100.00   | 100.00              |
| 21 - 40                           | 0                      | 0.00     | 100.00              |
| 41 - 80                           | 0                      | 0.00     | 100.00              |
| 81 - 159                          | 0                      | 0.00     | 100.00              |
| > 159                             | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 636

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Nitrogen Dioxide (NO<sub>2</sub>) - ppb  
Jackfish 2/3 - February 2023**

| <b>Concentration<br/>Ranges (ppb)</b> | <b>Wind Direction</b> |     |    |     |    |     |    |     |    |     |    |     |    |     |    |     | <b>Totals</b> |
|---------------------------------------|-----------------------|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|---------------|
|                                       | N                     | NNE | NE | ENE | E  | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |               |
| 0 - 20                                | 18                    | 47  | 41 | 28  | 13 | 11  | 10 | 18  | 43 | 68  | 74 | 108 | 47 | 27  | 37 | 45  | 635           |
| 21 - 40                               | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| 11 - 80                               | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| 81 - 159                              | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| > 159                                 | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| <b>Totals</b>                         | 18                    | 47  | 41 | 28  | 13 | 11  | 10 | 18  | 43 | 68  | 74 | 108 | 47 | 27  | 37 | 45  | 635           |

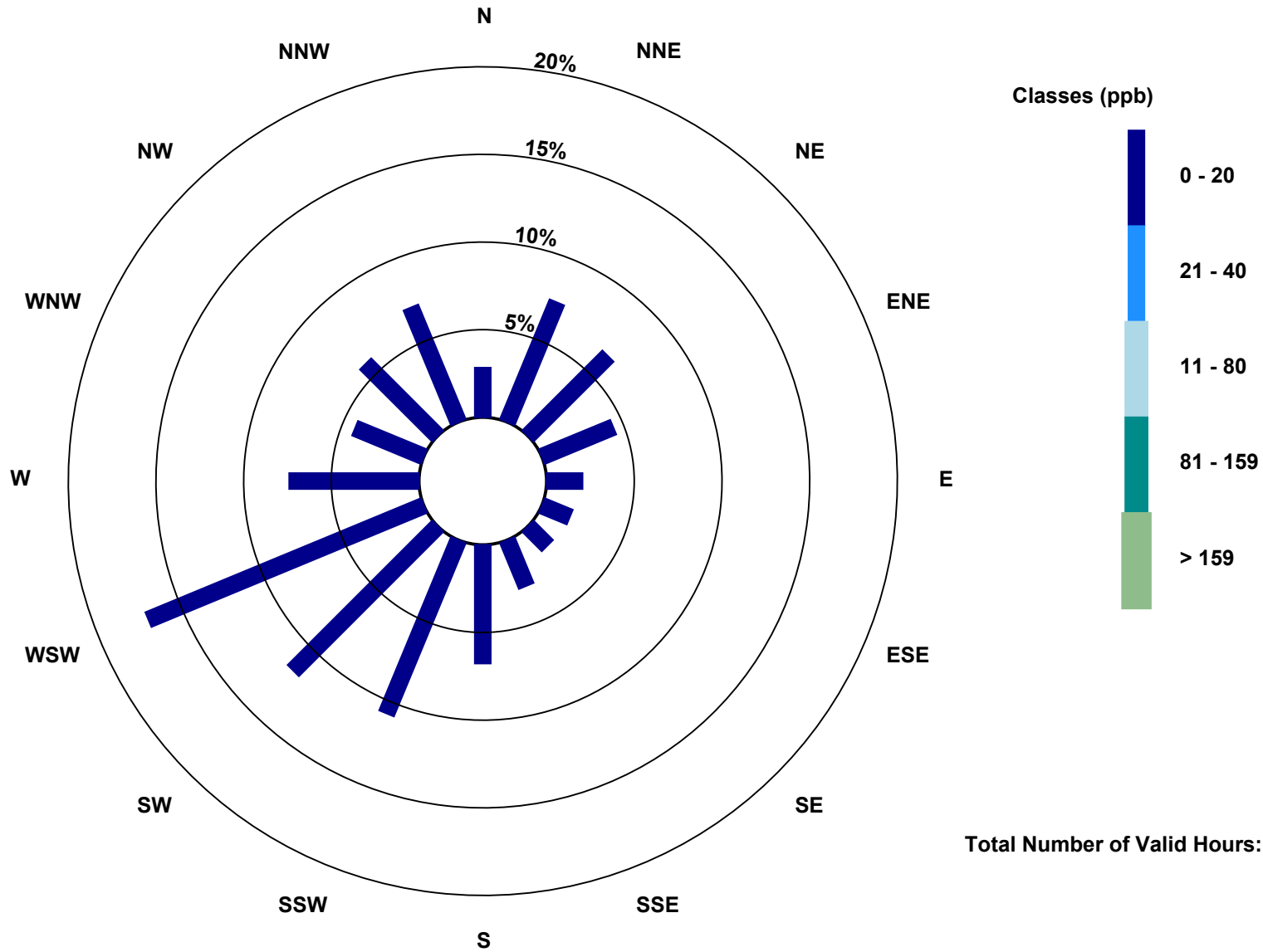
Total Number of Valid Hours: 635

Total Number of Hours: 672

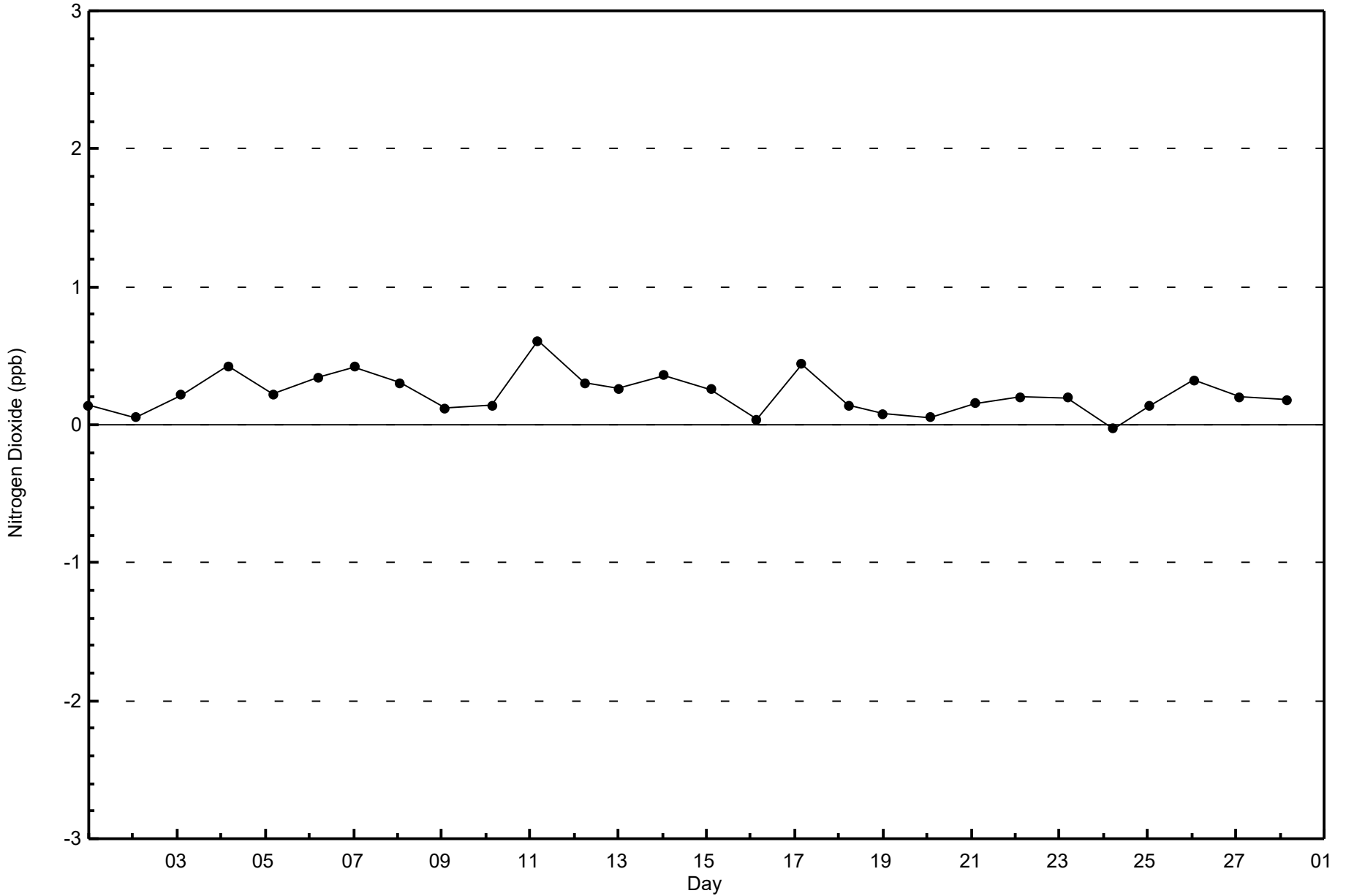


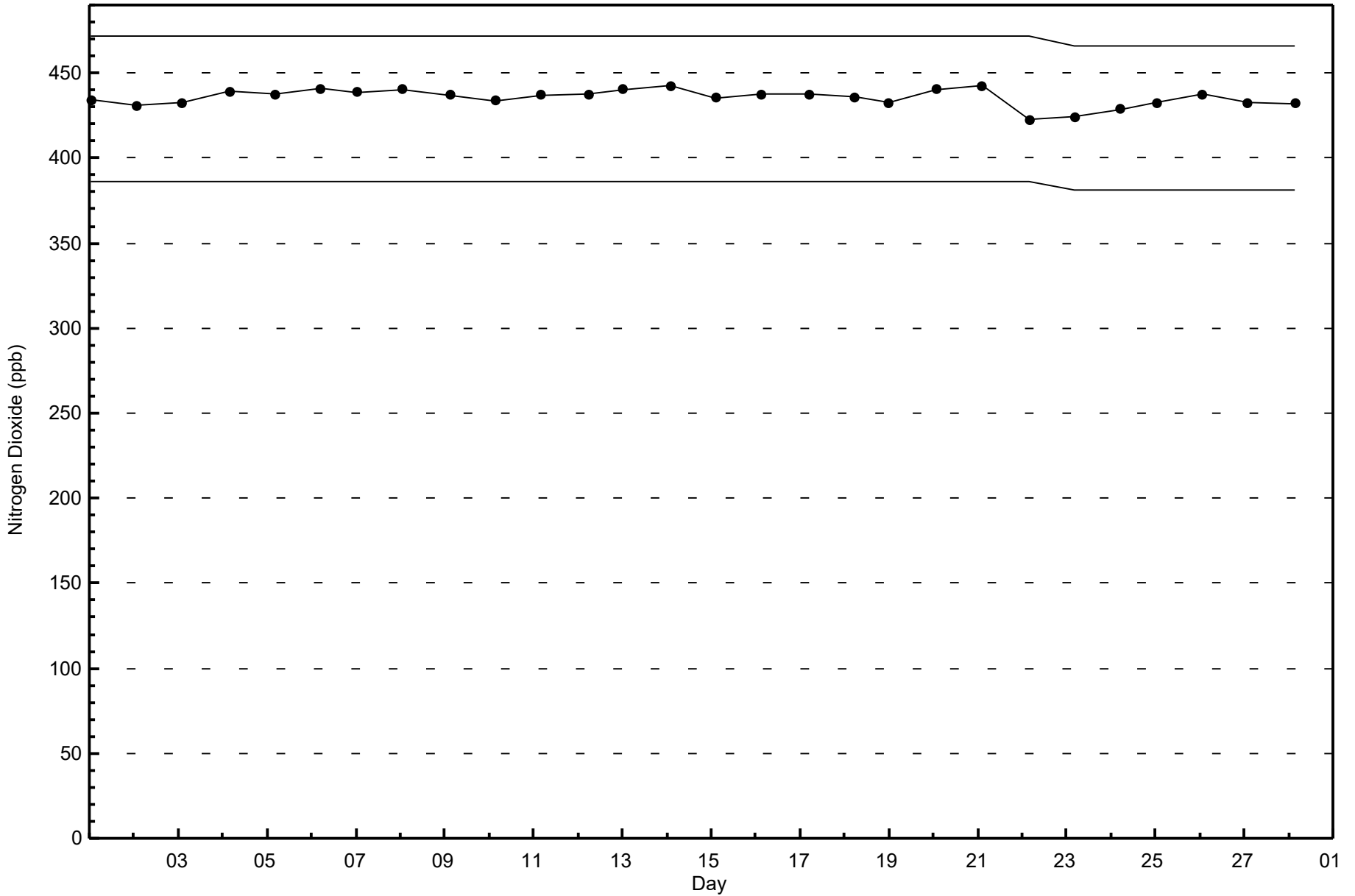
Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Nitrogen Dioxide (NO<sub>2</sub>) - ppb  
Jackfish 2/3











**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

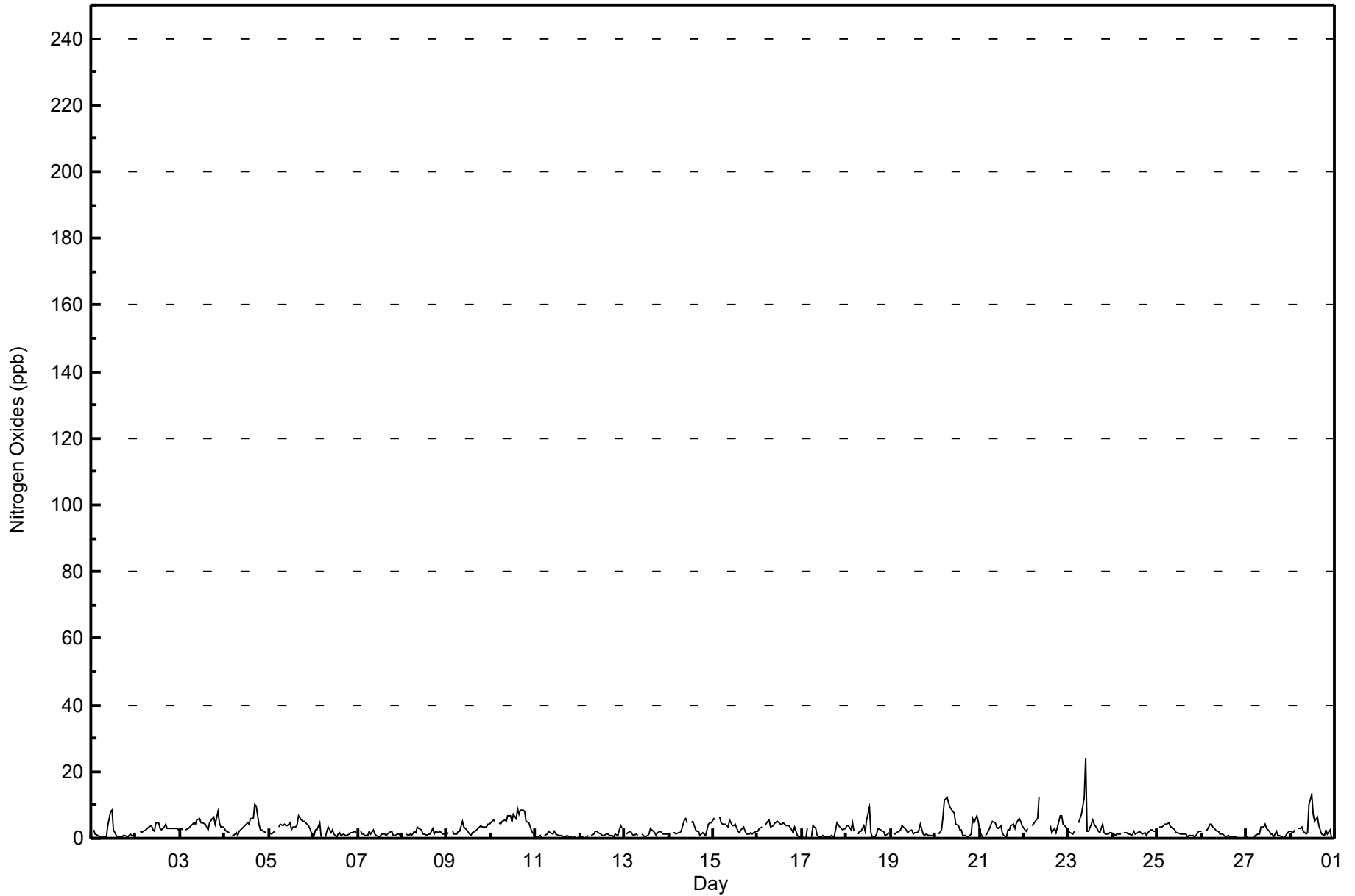
**Nitrogen Oxides (NO<sub>x</sub>) - ppb**  
**Jackfish 2/3 - February 2023**

| Maximum Value: 24.0 ppb on Feb 23 10:00   |                               |     |                 |     |     |      |                 |      |      |      |                  |      |     |     |     |     |      |     |     | Maximum Daily Average: 5.6 ppb on Feb 10  |     |     |     |                 | Hours in Service: 672          |               |
|---|-------------------------------|-----|-----------------|-----|-----|------|-----------------|------|------|------|------------------|------|-----|-----|-----|-----|------|-----|-----|---|-----|-----|-----|-----------------|--------------------------------|---------------|
| Minimum Value: 0.0 ppb on Feb 11 04:00  |                               |     |                 |     |     |      |                 |      |      |      |                  |      |     |     |     |     |      |     |     | Minimum Daily Average: 0.7 ppb on Feb 11  |     |     |     |                 | Hours of Data: 636             |               |
| Maximum Diurnal Average: 4.0 ppb at hour 10   |                               |     |                 |     |     |      |                 |      |      |      |                  |      |     |     |     |     |      |     |     | Minimum Diurnal Average: 1.9 ppb at hour 3  |     |     |     |                 | Hours of Missing Data: 36      |               |
| Monthly Average: 2.64 ppb   |                               |     |                 |     |     |      |                 |      |      |      |                  |      |     |     |     |     |      |     |     | Percentiles: P <sub>1</sub> = 0.0 P <sub>10</sub> = 0.6 Q <sub>1</sub> = 1.1 Median = 2.1 Q <sub>3</sub> = 3.7 P <sub>90</sub> = 5.1 P <sub>99</sub> = 10.4 |     |     |     |                 | Hours of Calibration: 33       |               |
|   |                               |     |                 |     |     |      |                 |      |      |      |                  |      |     |     |     |     |      |     |     |   |     |     |     |                 | Percent Operational Time: 99.6 |               |
| Day   | Hourly Period Ending At (MST) |     |                 |     |     |      |                 |      |      |      |                  |      |     |     |     |     |      |     |     |   |     |     |     |                 | Daily Average                  | Daily Maximum |
|   | 1                             | 2   | 3               | 4   | 5   | 6    | 7               | 8    | 9    | 10   | 11               | 12   | 13  | 14  | 15  | 16  | 17   | 18  | 19  | 20  | 21  | 22  | 23  | 24              |                                |               |
| 1-Feb   | Z                             | 2.7 | 1.1             | 0.9 | 0.3 | 0.6  | 0.3             | 0.3  | 0.2  | 3.8  | 8.3              | 8.7  | 2.5 | 0.8 | 0.4 | 0.5 | 0.4  | 0.6 | 0.7 | 0.2   | 0.9 | 1.4 | 0.9 | 1.0             | 1.6                            | 8.7           |
| 2-Feb   | 1.0                           | Z   | 2.3             | 1.6 | 1.9 | 2.7  | 2.9             | 3.2  | 3.7  | 2.5  | 2.1              | 4.8  | 4.7 | 2.9 | 2.7 | 3.3 | 4.3  | 3.0 | 2.9 | 3.0   | 2.8 | 3.0 | 3.1 | 2.7             | 2.9                            | 4.8           |
| 3-Feb   | 2.8                           | 2.6 | Z               | 2.4 | 2.9 | 3.5  | 3.8             | 4.8  | 4.4  | 5.5  | 5.8              | 4.6  | 4.5 | 4.4 | 3.6 | 2.6 | 4.7  | 5.9 | 6.2 | 4.4   | 8.1 | 4.5 | 3.4 | 3.3             | 4.3                            | 8.1           |
| 4-Feb   | 2.5                           | 1.9 | 1.6             | Z   | 0.7 | 1.0  | 1.6             | 1.0  | 2.3  | 2.8  | 3.3              | 3.8  | 4.8 | 4.2 | 6.0 | 5.7 | 10.2 | 9.9 | 4.4 | 2.6   | 2.4 | 2.1 | 1.6 | DF              | 3.5                            | 10.2          |
| 5-Feb   | 1.7                           | 1.5 | 1.8             | 1.9 | Z   | 3.2  | 4.1             | 3.8  | 4.4  | 3.9  | 3.7              | 4.5  | 2.7 | 3.5 | 3.5 | 4.1 | 6.9  | 5.7 | 4.9 | 5.0   | 4.3 | 3.7 | 3.0 | 1.7             | 3.6                            | 6.9           |
| 6-Feb   | 1.0                           | 2.5 | 2.5             | 4.8 | 0.5 | Z    | 0.3             | 2.1  | 3.6  | 1.7  | 2.7              | 1.2  | 0.6 | 1.1 | 1.5 | 0.8 | 1.2  | 0.7 | 0.9 | 1.2   | 1.5 | 1.8 | 2.3 | 1.7             | 1.7                            | 4.8           |
| 7-Feb   | Z                             | 1.9 | 1.4             | 1.3 | 0.9 | 0.8  | 2.3             | 1.1  | 2.7  | 1.4  | 0.7              | 0.4  | 1.0 | 1.2 | 1.1 | 0.8 | 1.2  | 1.6 | 2.0 | 0.7   | 1.0 | 1.1 | 1.3 | 0.8             | 1.3                            | 2.7           |
| 8-Feb   | 1.1                           | Z   | 1.2             | 0.9 | 1.1 | 1.0  | 1.9             | 1.6  | 3.3  | 3.1  | 2.6              | 1.4  | 1.3 | 1.0 | 1.1 | 1.3 | 2.9  | 1.1 | 2.3 | 1.6   | 2.0 | 1.8 | 1.4 | 1.4             | 1.7                            | 3.3           |
| 9-Feb   | 1.2                           | 1.7 | Z               | 2.3 | 1.4 | 1.3  | 1.9             | 2.3  | 5.2  | 3.4  | 3.2              | 2.6  | 1.4 | 1.0 | 1.8 | 2.1 | 2.6  | 3.0 | 3.9 | 3.6   | 3.3 | 3.5 | 4.4 | 4.4             | 2.7                            | 5.2           |
| 10-Feb  | 5.1                           | 5.4 | 4.9             | Z   | 4.7 | 4.3  | 5.0             | 5.4  | 5.3  | 7.0  | 6.7              | 5.2  | 7.1 | 5.9 | 9.0 | 7.3 | 8.5  | 8.6 | 8.0 | 5.1   | 4.8 | 3.5 | 2.2 | 0.9             | 5.6                            | 9.0           |
| 11-Feb  | 0.4                           | 0.4 | 0.7             | 0.0 | Z   | 0.7  | 1.2             | 2.2  | 1.5  | 1.3  | 1.9              | 1.1  | 0.9 | 0.8 | 0.7 | 0.4 | 0.3  | 0.8 | 0.6 | 0.4   | 0.0 | 0.4 | 0.0 | 0.0             | 0.7                            | 2.2           |
| 12-Feb  | 0.7                           | 0.4 | 0.0             | 0.0 | 0.9 | Z    | 0.9             | 1.3  | 2.2  | 2.1  | 1.6              | 1.2  | 1.0 | 0.6 | 1.2 | 1.5 | 0.6  | 0.8 | 0.4 | 1.3   | 0.9 | 2.4 | 3.6 | 2.9             | 1.2                            | 3.6           |
| 13-Feb  | Z                             | 1.4 | 1.5             | 2.0 | 1.3 | 0.8  | 1.1             | 1.0  | DF   | 1.2  | 0.7              | 0.6  | 0.8 | 1.4 | 3.0 | 2.6 | 1.6  | 0.8 | 1.8 | 2.2   | 1.8 | 1.1 | 1.3 | 1.1             | 1.4                            | 3.0           |
| 14-Feb  | 1.2                           | Z   | 1.8             | 1.6 | 1.3 | 1.6  | 1.9             | 2.6  | 5.5  | 5.8  | 4.7              | M    | 4.9 | 5.0 | 2.7 | 1.9 | 2.2  | 0.9 | 1.8 | 1.4   | 0.9 | 4.3 | 4.7 | 4.7             | 2.9                            | 5.8           |
| 15-Feb  | 6.0                           | 5.4 | Z               | 6.3 | 4.7 | 4.3  | 4.4             | 3.9  | 3.5  | 5.4  | 3.8              | 3.7  | 4.1 | 2.2 | 1.7 | 2.4 | 3.3  | 2.2 | 1.5 | 1.3   | 1.5 | 1.3 | 1.6 | 2.1             | 3.3                            | 6.3           |
| 16-Feb  | 2.3                           | 3.0 | 3.6             | Z   | 4.0 | 5.0  | 5.3             | 3.3  | 3.9  | 4.4  | 4.7              | 4.9  | 4.3 | 4.3 | 4.5 | 3.9 | 3.7  | 3.7 | 2.5 | 1.7   | 3.4 | 0.7 | 0.5 | 0.3             | 3.4                            | 5.3           |
| 17-Feb  | 0.3                           | 0.0 | 0.0             | 3.1 | Z   | 0.3  | 4.0             | 2.9  | 0.7  | 0.6  | 0.2              | 0.7  | 0.3 | 0.3 | 0.5 | 0.4 | 0.7  | 0.6 | 2.7 | 4.6   | 3.5 | 2.8 | 2.6 | 3.2             | 1.5                            | 4.6           |
| 18-Feb  | 3.6                           | 3.8 | 2.6             | 4.7 | 1.9 | Z    | 1.1             | 2.2  | 2.1  | 3.9  | 2.2              | 5.5  | 9.3 | 1.7 | 0.5 | 0.4 | 1.1  | 3.0 | 2.4 | 2.0   | 2.1 | 1.0 | 1.3 | 1.5             | 2.6                            | 9.3           |
| 19-Feb  | Z                             | 1.7 | 1.4             | 1.8 | 1.9 | 2.7  | 3.8             | 3.2  | 2.7  | 1.9  | 2.1              | 2.5  | 1.4 | 1.9 | 1.8 | 2.3 | 4.1  | 1.3 | 1.0 | 1.1   | 0.9 | 0.8 | 0.7 | 0.7             | 1.9                            | 4.1           |
| 20-Feb  | 0.8                           | Z   | 1.2             | 2.6 | 6.4 | 11.6 | 12.3            | 10.5 | 9.4  | 8.2  | 7.6              | 4.3  | 3.9 | 2.6 | 2.7 | 0.7 | 0.8  | 0.5 | 0.4 | 1.3   | 5.9 | 4.5 | 6.7 | 5.1             | 4.8                            | 12.3          |
| 21-Feb  | 2.3                           | 0.5 | Z               | 1.0 | 1.3 | 3.1  | 4.1             | 5.0  | 4.6  | 3.3  | 2.8              | 3.9  | 1.6 | 0.8 | 0.6 | 2.4 | 2.6  | 4.0 | 4.1 | 2.9   | 4.8 | 6.0 | 5.2 | 3.7             | 3.1                            | 6.0           |
| 22-Feb  | 2.4                           | 2.0 | 3.1             | Z   | 4.0 | 4.4  | 5.4             | 5.9  | 12.3 | C    | C                | C    | C   | C   | 3.7 | 1.7 | 2.8  | 1.9 | 3.4 | 6.7   | 6.6 | 4.3 | 3.6 | 3.0             | 4.3                            | 12.3          |
| 23-Feb  | 2.3                           | 1.7 | 1.4             | 2.0 | Z   | 4.6  | 5.7             | 7.3  | 12.2 | 24.0 | 2.3              | 2.2  | 4.4 | 5.6 | 4.4 | 3.1 | 2.0  | 1.6 | 4.4 | 1.7   | 1.3 | 1.2 | 1.7 | 1.5             | 4.3                            | 24.0          |
| 24-Feb  | 1.4                           | 1.0 | 1.4             | 1.1 | 1.1 | Z    | 1.8             | 1.6  | 1.4  | 1.3  | 0.8              | 1.9  | 1.5 | 1.5 | 2.0 | 1.6 | 1.4  | 1.7 | 0.9 | 1.5   | 2.4 | 2.4 | 2.3 | 2.3             | 1.6                            | 2.4           |
| 25-Feb  | Z                             | 3.3 | 3.6             | 3.9 | 4.3 | 4.4  | 4.5             | 3.4  | 3.2  | 2.7  | 1.8              | 1.6  | 1.4 | 1.5 | 1.2 | 1.3 | 0.6  | 0.7 | 1.0 | 0.9   | 0.5 | 0.9 | 2.2 | 2.3             | 2.2                            | 4.5           |
| 26-Feb  | 2.1                           | Z   | 2.5             | 2.5 | 4.1 | 4.1  | 3.5             | 2.4  | 2.0  | 1.9  | 1.2              | 1.1  | 0.8 | 0.5 | 0.7 | 0.6 | 0.3  | 0.6 | 0.3 | 0.2   | 0.0 | 0.0 | 0.0 | 0.0             | 1.4                            | 4.1           |
| 27-Feb  | 0.4                           | 0.6 | Z               | 0.0 | 0.1 | 0.8  | 1.4             | 1.3  | 3.4  | 3.2  | 4.4              | 2.9  | 2.2 | 1.3 | 1.4 | 0.6 | 2.1  | 0.7 | 0.7 | 0.6   | 0.0 | 0.6 | 1.6 | 1.9             | 1.4                            | 4.4           |
| 28-Feb  | 2.1                           | 1.7 | 2.4             | Z   | 2.9 | 3.0  | 3.4             | 2.2  | 1.4  | 1.8  | 10.2             | 13.3 | 7.1 | 5.1 | 6.2 | 3.8 | 2.4  | 1.2 | 1.0 | 2.4   | 1.5 | 2.7 | 0.1 | 0.0             | 3.4                            | 13.3          |
| 1.9 2.0 1.9 2.1 2.3 2.9 3.2 3.1 4.0 4.0 3.4 3.4 3.0 2.3 2.5 2.2 2.7 2.4 2.4 2.2 2.5 2.3 2.3 2.0         |                               |     |                 |     |     |      |                 |      |      |      |                  |      |     |     |     |     |      |     |     |   |     |     |     | Diurnal Average |                                |               |
| 6.0 5.4 4.9 6.3 6.4 11.6 12.3 10.5 12.3 24.0 10.2 13.3 9.3 5.9 9.0 7.3 10.2 9.9 8.0 6.7 8.1 6.0 6.7 5.1 |                               |     |                 |     |     |      |                 |      |      |      |                  |      |     |     |     |     |      |     |     |   |     |     |     | Diurnal Maximum |                                |               |
| Z - zerospan  |                               |     | C - Calibration |     |     |      | M - Maintenance |      |      |      | DF - DAS Failure |      |     |     |     |     |      |     |     |   |     |     |     |                 |                                |               |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Nitrogen Oxides (NO<sub>x</sub>) - ppb**  
**Jackfish 2/3 - February 2023**





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Nitrogen Oxides (NO<sub>x</sub>) - ppb  
Jackfish 2/3 - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 20                            | 635                    | 99.84    | 99.84               |
| 21 - 40                           | 1                      | 0.16     | 100.00              |
| 41 - 80                           | 0                      | 0.00     | 100.00              |
| 81 - 159                          | 0                      | 0.00     | 100.00              |
| > 159                             | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 636

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Nitrogen Oxides (NO<sub>x</sub>) - ppb  
Jackfish 2/3 - February 2023**

| Concentration<br>Ranges (ppb) | Wind Direction |     |    |     |    |     |    |     |    |     |    |     |    |     |    |     | Totals |
|-------------------------------|----------------|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|--------|
|                               | N              | NNE | NE | ENE | E  | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |        |
| 0 - 20                        | 18             | 47  | 41 | 28  | 13 | 11  | 10 | 18  | 43 | 68  | 74 | 108 | 47 | 26  | 37 | 45  | 634    |
| 21 - 40                       | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 1   | 0  | 0   | 1      |
| 11 - 80                       | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| 81 - 159                      | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| > 159                         | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| <b>Totals</b>                 | 18             | 47  | 41 | 28  | 13 | 11  | 10 | 18  | 43 | 68  | 74 | 108 | 47 | 27  | 37 | 45  | 635    |

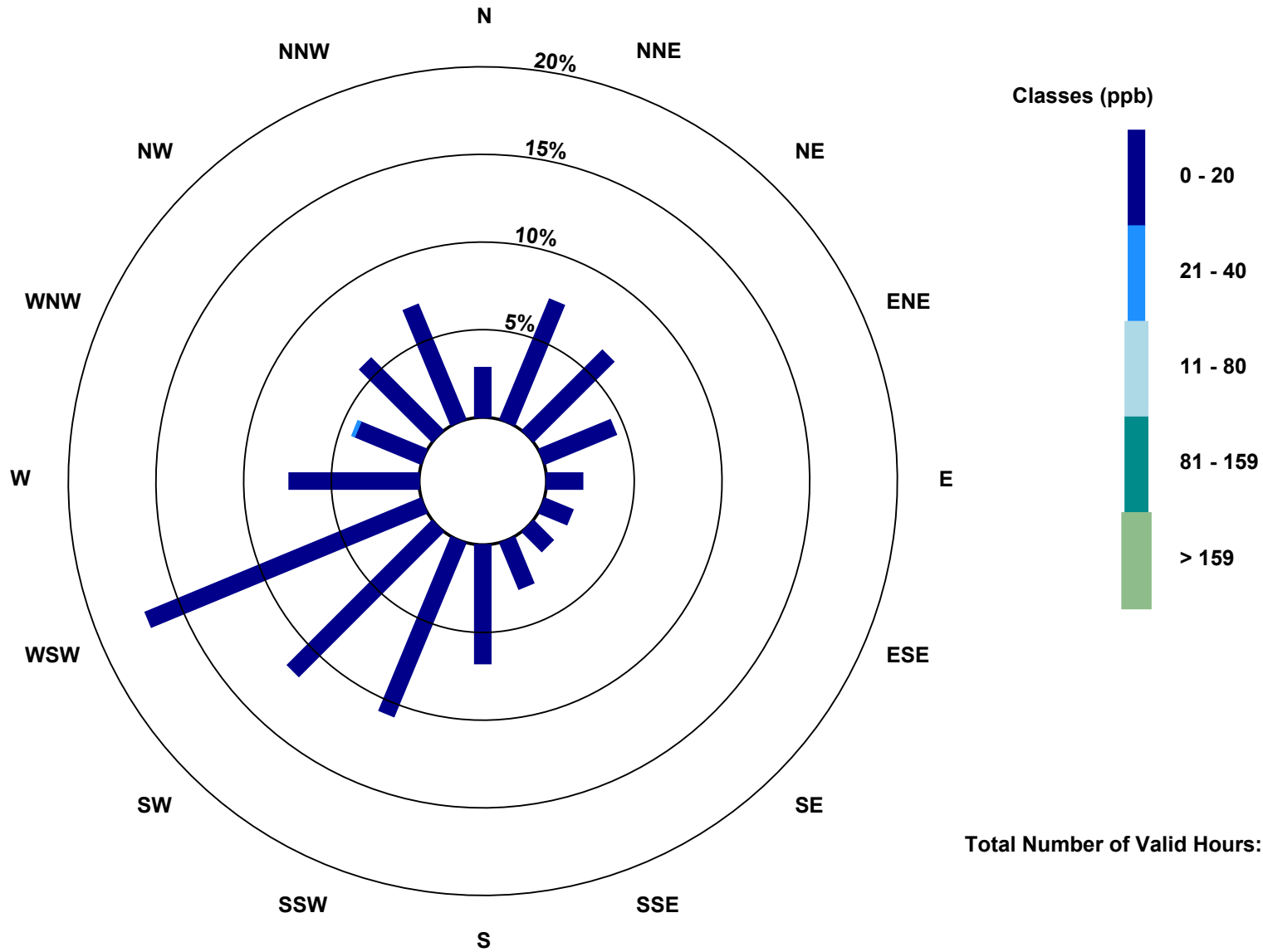
Total Number of Valid Hours: 635

Total Number of Hours: 672

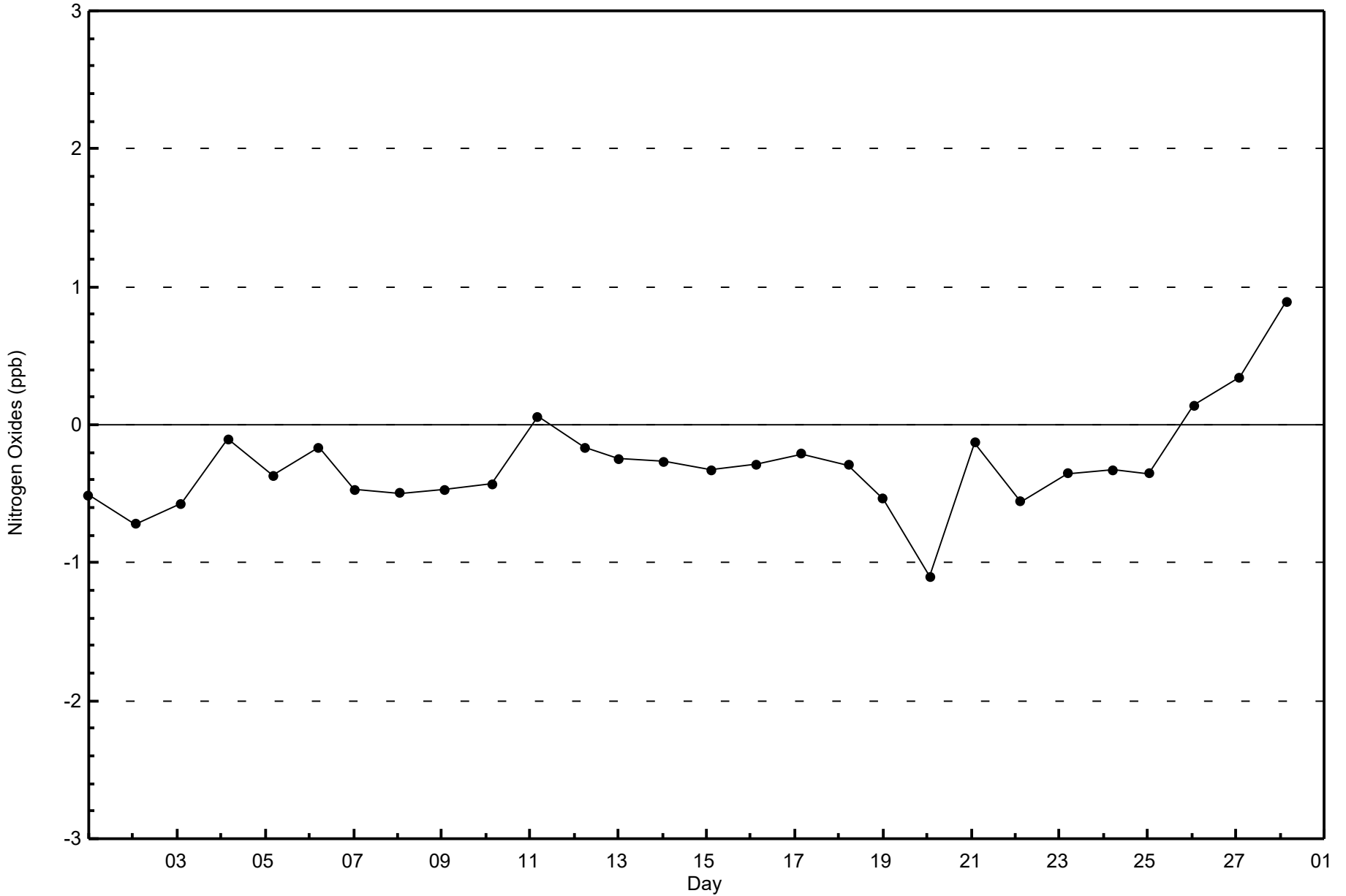


Wood Buffalo Environmental Association  
Wind Rose Feb 2023

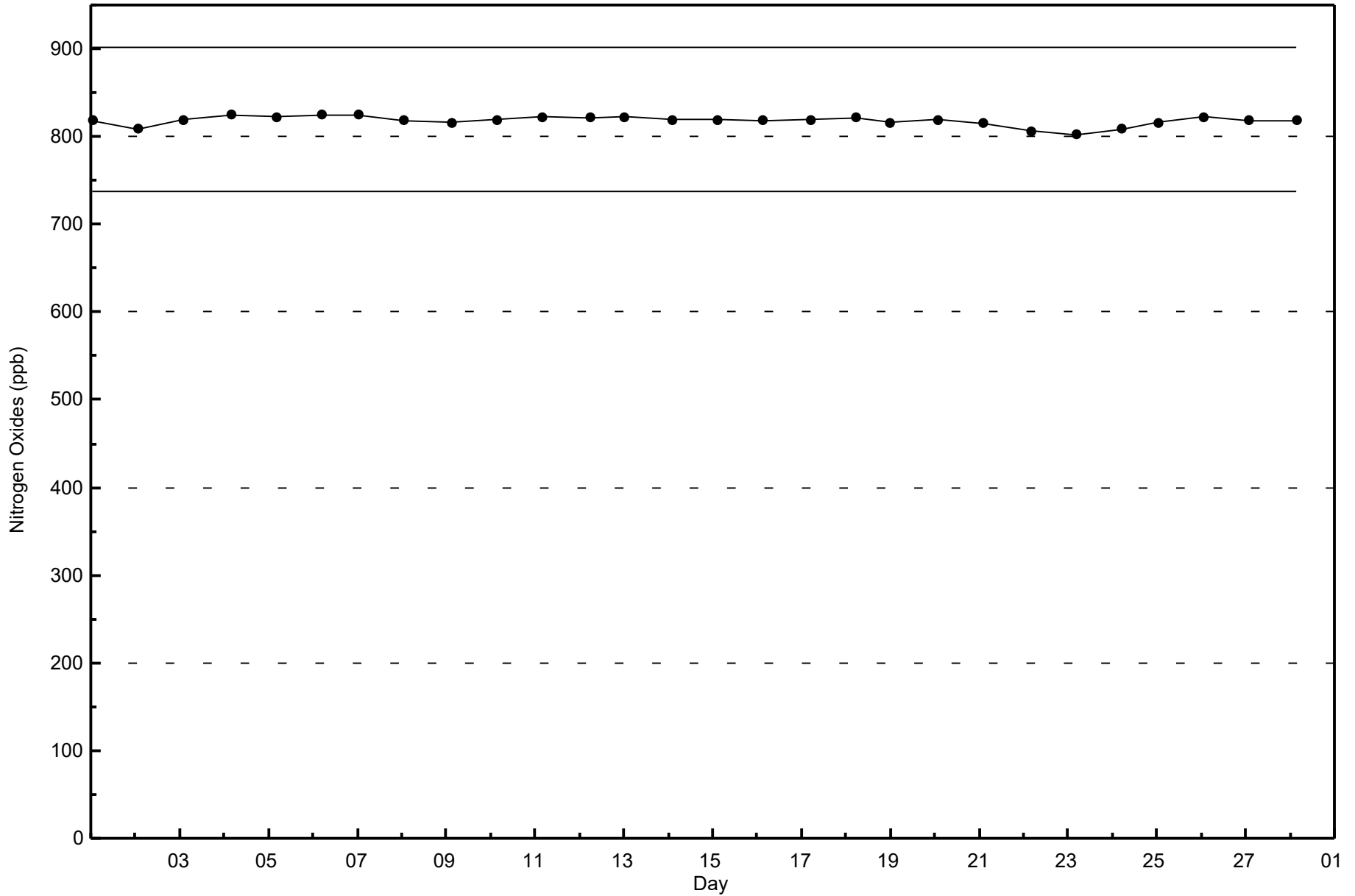
Nitrogen Oxides (NO<sub>x</sub>) - ppb  
Jackfish 2/3



Total Number of Valid Hours: 635









**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

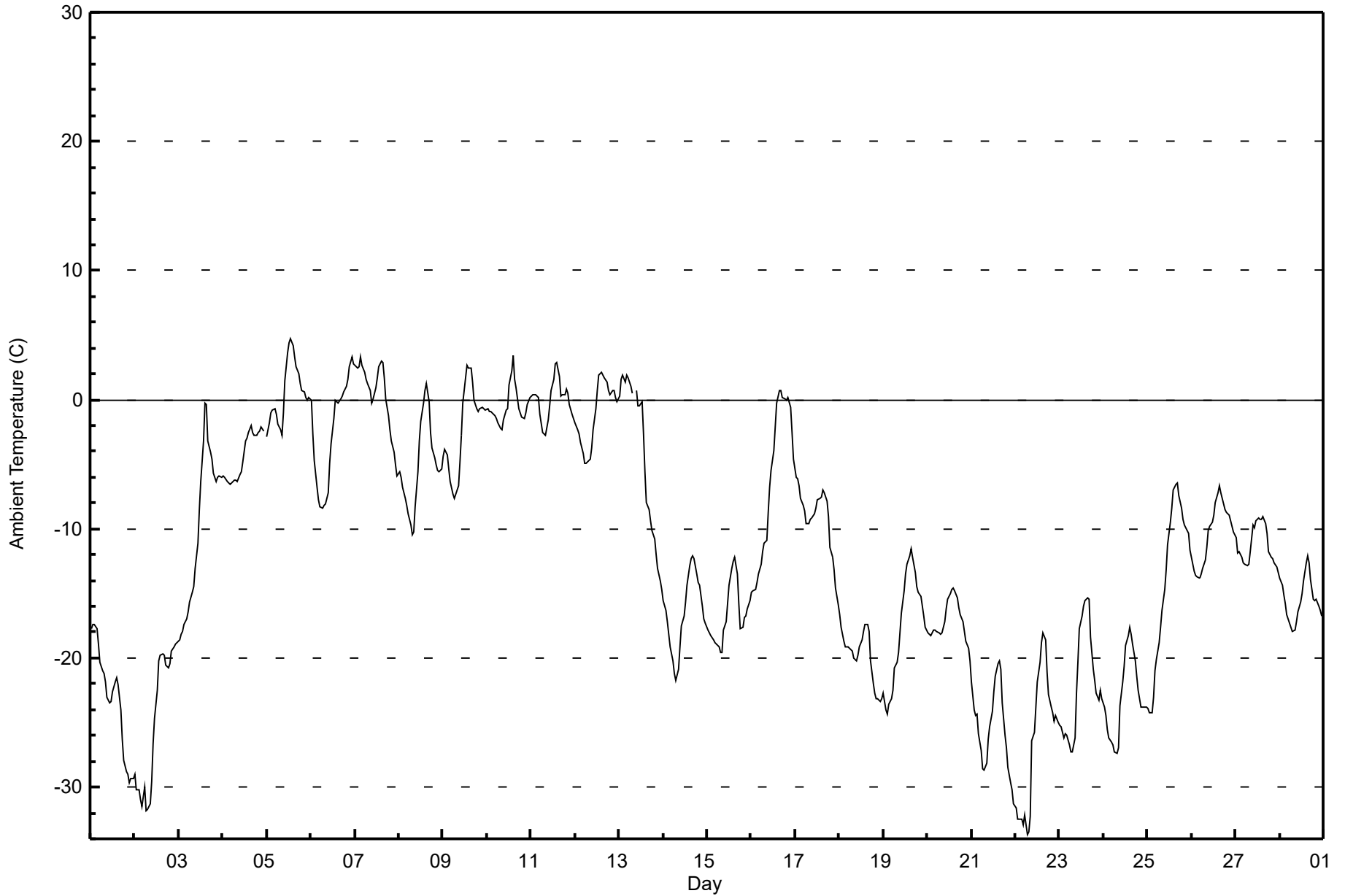
**Ambient Temperature (AT) - C**  
**Jackfish 2/3 - February 2023**

| Maximum Value: 4.7 C on Feb 5 14:00        |                               | Maximum Daily Average: 0.5 C on Feb 5   |       | Hours in Service: 672          |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |               |               |       |       |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |       |       |       |       |                 |
|--|-------------------------------|---|-------|--------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------------|---------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|------|------|------|------|------|-------|-------|-------|-------|-------|-------|-----------------|
| Minimum Value: -33.6 C on Feb 22 07:00     |                               | Minimum Daily Average: -26.4 C on Feb 22  |       | Hours of Data: 670             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |               |               |       |       |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |       |       |       |       |                 |
| Maximum Diurnal Average: -7.7 C at hour 15 |                               | Minimum Diurnal Average: -14.8 C at hour 9  |       | Hours of Missing Data: 2       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |               |               |       |       |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |       |       |       |       |                 |
| Monthly Average: -11.74 C                  |                               | Percentiles: P <sub>1</sub> = -32.2 P <sub>10</sub> = -24.2 Q <sub>1</sub> = -18.9 Median = -12.2 Q <sub>3</sub> = -2.6 P <sub>90</sub> = 0.6 P <sub>99</sub> = 3.3 |       | Hours of Calibration: 0        |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |               |               |       |       |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |       |       |       |       |                 |
|  |                               |   |       | Percent Operational Time: 99.7 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |               |               |       |       |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |       |       |       |       |                 |
| Day  | Hourly Period Ending At (MST) |   |       |                                |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Daily Average | Daily Maximum |       |       |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |       |       |       |       |                 |
|  | 1                             | 2   | 3     | 4                              | 5     | 6     | 7     | 8     | 9     | 10    | 11    | 12    | 13    | 14    | 15    | 16    | 17    | 18    | 19    | 20    | 21    | 22    | 23    | 24    |               |               |       |       |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |       |       |       |       |                 |
| 1-Feb                                      | -17.7                         | -17.4   | -17.4 | -17.8                          | -18.9 | -20.3 | -21.0 | -21.2 | -21.8 | -23.1 | -23.5 | -23.4 | -22.6 | -21.8 | -21.6 | -22.1 | -24.0 | -26.2 | -27.9 | -28.8 | -29.0 | -29.7 | -29.4 | -29.3 | -23.2         | -17.4         |       |       |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |       |       |       |       |                 |
| 2-Feb                                      | -29.0                         | -30.2   | -30.2 | -31.0                          | -31.5 | -30.0 | -31.9 | -31.8 | -31.3 | -29.6 | -26.6 | -24.7 | -22.5 | -20.2 | -19.8 | -19.6 | -19.8 | -20.6 | -20.8 | -20.4 | -19.4 | -19.1 | -18.9 | -18.8 | -24.9         | -18.8         |       |       |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |       |       |       |       |                 |
| 3-Feb                                      | -18.6                         | -18.2   | -17.9 | -17.4                          | -16.9 | -16.4 | -15.6 | -14.9 | -14.5 | -13.1 | -11.1 | -8.5  | -6.3  | -3.2  | -0.2  | -0.3  | -3.2  | -4.1  | -4.6  | -5.7  | -6.3  | -6.1  | -5.9  | -6.0  | -9.8          | -0.2          |       |       |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |       |       |       |       |                 |
| 4-Feb                                      | -5.9                          | -6.0  | -6.3  | -6.4                           | -6.6  | -6.5  | -6.2  | -6.2  | -6.4  | -5.8  | -5.6  | -4.8  | -3.1  | -3.0  | -2.5  | -2.0  | -2.5  | -2.8  | -2.7  | -2.5  | -2.4  | -2.1  | -2.5  | DF    | -4.4          | -2.0          |       |       |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |       |       |       |       |                 |
| 5-Feb                                      | -2.9                          | -1.7  | -1.1  | -0.8                           | -0.7  | -1.1  | -1.9  | -2.3  | -2.7  | -1.1  | 1.5   | 3.7   | 4.4   | 4.7   | 4.2   | 3.3   | 2.6   | 2.0   | 1.3   | 0.7   | 0.6   | 0.2   | -0.1  | 0.2   | 0.5           | 4.7           |       |       |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |       |       |       |       |                 |
| 6-Feb                                      | 0.0                           | -2.6  | -4.8  | -6.8                           | -7.8  | -8.3  | -8.5  | -8.2  | -8.1  | -7.2  | -4.9  | -3.5  | -1.4  | 0.0   | -0.1  | -0.2  | 0.0   | 0.2   | 0.6   | 1.1   | 1.6   | 2.6   | 3.3   | 2.7   | -2.5          | 3.3           |       |       |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |       |       |       |       |                 |
| 7-Feb                                      | 2.7                           | 2.5   | 2.5   | 3.3                            | 2.7   | 2.1   | 1.6   | 1.3   | 0.7   | -0.3  | 0.0   | 1.0   | 1.7   | 2.5   | 3.0   | 2.9   | 1.7   | 0.0   | -1.3  | -2.3  | -3.2  | -4.1  | -5.0  | -5.9  | 0.4           | 3.3           |       |       |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |       |       |       |       |                 |
| 8-Feb                                      | -5.6                          | -6.0  | -6.8  | -7.6                           | -8.2  | -8.8  | -9.7  | -10.5 | -10.3 | -8.3  | -5.6  | -3.2  | -1.6  | -0.3  | 0.7   | 1.3   | -0.2  | -2.6  | -3.7  | -4.5  | -5.0  | -5.5  | -5.5  | -5.4  | -5.1          | 1.3           |       |       |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |       |       |       |       |                 |
| 9-Feb                                      | -4.4                          | -3.8  | -4.3  | -5.4                           | -6.3  | -7.3  | -7.6  | -7.3  | -6.6  | -4.8  | -2.7  | -0.3  | 1.7   | 2.6   | 2.4   | 2.4   | 1.3   | -0.1  | -0.7  | -0.9  | -0.7  | -0.6  | -0.7  | -0.8  | -2.3          | 2.6           |       |       |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |       |       |       |       |                 |
| 10-Feb                                     | -0.7                          | -0.9  | -0.9  | -1.0                           | -1.2  | -1.5  | -1.8  | -2.2  | -2.3  | -1.5  | -0.8  | -0.7  | 1.2   | 2.2   | 3.4   | 1.5   | 0.9   | -0.7  | -1.0  | -1.4  | -1.4  | -1.0  | -0.4  | 0.2   | -0.5          | 3.4           |       |       |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |       |       |       |       |                 |
| 11-Feb                                     | 0.3                           | 0.4   | 0.4   | 0.3                            | 0.2   | -1.1  | -2.5  | -2.6  | -2.8  | -1.6  | -0.5  | 0.7   | 1.6   | 2.7   | 2.8   | 1.8   | 0.3   | 0.4   | 0.4   | 0.8   | 0.5   | -0.4  | -1.1  | -1.4  | 0.0           | 2.8           |       |       |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |       |       |       |       |                 |
| 12-Feb                                     | -1.8                          | -2.3  | -2.7  | -3.3                           | -4.2  | -4.9  | -5.0  | -4.7  | -4.6  | -3.7  | -2.3  | -0.7  | 0.8   | 1.9   | 2.2   | 1.9   | 1.7   | 1.3   | 0.7   | 0.4   | 0.8   | 0.7   | 0.2   | -0.1  | -1.2          | 2.2           |       |       |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |       |       |       |       |                 |
| 13-Feb                                     | 0.3                           | 1.6   | 1.9   | 1.4                            | 2.0   | 1.7   | 1.0   | 0.5   | DF    | 0.7   | -0.5  | -0.4  | -0.1  | -2.6  | -5.6  | -8.0  | -8.5  | -9.4  | -10.1 | -10.8 | -12.0 | -13.1 | -14.1 | -14.6 | -4.3          | 2.0           |       |       |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |       |       |       |       |                 |
| 14-Feb                                     | -15.5                         | -16.3   | -17.1 | -18.1                          | -19.1 | -20.3 | -21.2 | -21.8 | -20.9 | -19.2 | -17.5 | -16.7 | -15.6 | -14.4 | -12.9 | -12.4 | -12.1 | -12.3 | -13.5 | -14.1 | -14.4 | -16.0 | -17.0 | -17.3 | -16.5         | -12.1         |       |       |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |       |       |       |       |                 |
| 15-Feb                                     | -17.8                         | -18.1   | -18.3 | -18.6                          | -18.8 | -18.9 | -19.1 | -19.6 | -19.6 | -17.9 | -17.2 | -15.8 | -14.4 | -13.1 | -12.5 | -12.2 | -13.5 | -15.8 | -17.8 | -17.6 | -16.9 | -16.8 | -16.2 | -15.5 | -16.8         | -12.2         |       |       |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |       |       |       |       |                 |
| 16-Feb                                     | -14.9                         | -14.8   | -14.7 | -14.1                          | -13.5 | -12.7 | -11.8 | -11.1 | -10.9 | -8.7  | -6.8  | -5.5  | -3.9  | -2.1  | -0.3  | 0.7   | 0.7   | 0.2   | 0.1   | -0.1  | 0.2   | -0.6  | -2.6  | -4.6  | -6.3          | 0.7           |       |       |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |       |       |       |       |                 |
| 17-Feb                                     | -6.0                          | -6.2  | -6.6  | -7.6                           | -8.2  | -8.6  | -9.6  | -9.6  | -9.3  | -9.2  | -8.8  | -8.4  | -7.8  | -7.6  | -7.5  | -7.0  | -7.2  | -7.9  | -9.1  | -11.4 | -12.2 | -13.2 | -14.6 | -15.9 | -9.1          | -6.0          |       |       |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |       |       |       |       |                 |
| 18-Feb                                     | -16.6                         | -17.6   | -18.7 | -19.2                          | -19.1 | -19.2 | -19.3 | -19.5 | -20.0 | -20.2 | -19.8 | -19.1 | -18.6 | -17.9 | -17.4 | -17.4 | -17.9 | -20.3 | -21.9 | -22.7 | -23.2 | -23.2 | -23.4 | -23.2 | -19.8         | -16.6         |       |       |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |       |       |       |       |                 |
| 19-Feb                                     | -22.7                         | -24.0   | -24.3 | -23.6                          | -23.2 | -22.5 | -20.8 | -20.3 | -19.5 | -18.1 | -16.6 | -14.8 | -13.4 | -12.7 | -12.0 | -11.6 | -12.2 | -13.4 | -14.4 | -14.9 | -15.2 | -15.9 | -16.7 | -17.6 | -17.5         | -11.6         |       |       |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |       |       |       |       |                 |
| 20-Feb                                     | -18.1                         | -18.1   | -18.3 | -17.8                          | -17.9 | -17.9 | -18.1 | -18.2 | -18.1 | -17.2 | -16.2 | -15.4 | -15.0 | -14.7 | -14.6 | -14.8 | -15.3 | -16.1 | -16.7 | -17.2 | -17.9 | -18.7 | -19.3 | -20.2 | -17.2         | -14.6         |       |       |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |       |       |       |       |                 |
| 21-Feb                                     | -21.9                         | -24.0   | -24.4 | -24.3                          | -25.8 | -27.2 | -28.5 | -28.7 | -28.1 | -26.3 | -25.4 | -24.1 | -22.6 | -21.4 | -20.4 | -20.3 | -20.9 | -23.4 | -25.9 | -26.9 | -28.5 | -29.6 | -30.2 | -31.3 | -25.4         | -20.3         |       |       |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |       |       |       |       |                 |
| 22-Feb                                     | -31.6                         | -32.5   | -32.5 | -32.4                          | -32.9 | -32.1 | -33.6 | -33.5 | -32.3 | -26.4 | -25.8 | -23.9 | -21.9 | -20.3 | -18.8 | -18.1 | -18.6 | -21.1 | -22.8 | -23.8 | -24.2 | -24.9 | -24.5 | -25.0 | -26.4         | -18.1         |       |       |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |       |       |       |       |                 |
| 23-Feb                                     | -25.2                         | -25.3   | -26.2 | -25.9                          | -26.0 | -26.7 | -27.2 | -27.3 | -26.2 | -22.8 | -20.3 | -17.7 | -16.8 | -16.0 | -15.5 | -15.4 | -15.5 | -18.3 | -20.8 | -21.7 | -22.7 | -23.2 | -22.6 | -23.2 | -22.0         | -15.4         |       |       |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |       |       |       |       |                 |
| 24-Feb                                     | -23.8                         | -24.5   | -25.6 | -26.2                          | -26.5 | -26.7 | -27.2 | -27.4 | -27.0 | -23.7 | -21.8 | -20.7 | -19.0 | -18.3 | -17.7 | -18.1 | -18.9 | -20.2 | -21.4 | -22.5 | -23.8 | -23.8 | -23.8 | -23.8 | -23.0         | -17.7         |       |       |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |       |       |       |       |                 |
| 25-Feb                                     | -23.9                         | -24.2   | -24.2 | -23.1                          | -21.0 | -20.1 | -18.8 | -17.7 | -16.4 | -14.7 | -13.2 | -11.2 | -9.4  | -8.4  | -7.0  | -6.6  | -6.4  | -7.4  | -8.4  | -9.3  | -9.7  | -10.0 | -10.4 | -11.6 | -13.9         | -6.4          |       |       |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |       |       |       |       |                 |
| 26-Feb                                     | -12.2                         | -13.2   | -13.6 | -13.7                          | -13.8 | -13.5 | -13.1 | -12.5 | -11.5 | -10.2 | -9.8  | -9.5  | -8.9  | -8.0  | -7.2  | -6.6  | -7.2  | -8.1  | -8.5  | -8.7  | -8.9  | -9.3  | -9.8  | -10.2 | -10.3         | -6.6          |       |       |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |       |       |       |       |                 |
| 27-Feb                                     | -10.6                         | -11.9   | -11.8 | -12.2                          | -12.6 | -12.8 | -12.8 | -12.7 | -11.8 | -9.7  | -9.9  | -9.4  | -9.1  | -9.2  | -9.3  | -9.1  | -9.6  | -10.4 | -11.7 | -12.2 | -12.3 | -12.6 | -12.9 | -13.4 | -11.3         | -9.1          |       |       |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |       |       |       |       |                 |
| 28-Feb                                     | -13.8                         | -14.4   | -15.1 | -15.8                          | -16.7 | -17.3 | -17.7 | -17.9 | -17.8 | -17.2 | -16.4 | -15.6 | -15.0 | -14.0 | -12.6 | -12.1 | -12.6 | -14.0 | -15.5 | -15.6 | -15.4 | -16.0 | -16.3 | -16.8 | -15.5         | -12.1         |       |       |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |       |       |       |       |                 |
|  |                               |   |       |                                |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | -12.8 | -13.2         | -13.5         | -13.8 | -14.0 | -14.2 | -14.6 | -14.6 | -14.8 | -12.9 | -11.7 | -10.4 | -9.2 | -8.3 | -7.7 | -7.8 | -8.5 | -9.7 | -10.7 | -11.2 | -11.5 | -11.9 | -12.2 | -12.9 | Diurnal Average |
|  |                               |   |       |                                |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | 2.7   | 2.5           | 2.5           | 3.3   | 2.7   | 2.1   | 1.6   | 1.3   | 0.7   | 0.7   | 1.5   | 3.7   | 4.4  | 4.7  | 4.2  | 3.3  | 2.6  | 2.0  | 1.3   | 1.1   | 1.6   | 2.6   | 3.3   | 2.7   | Diurnal Maximum |
| DF - DAS Failure                           |                               |   |       |                                |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |               |               |       |       |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |       |       |       |       |                 |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Ambient Temperature (AT) - C**  
**Jackfish 2/3 - February 2023**





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Ambient Temperature (AT) - C  
Jackfish 2/3 - February 2023**

| <b>Concentration Ranges (C)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---------------------------------|------------------------|----------|---------------------|
| -50 - -20                       | 144                    | 21.49    | 21.49               |
| -20 - 0                         | 435                    | 64.93    | 86.42               |
| 0 - 10                          | 91                     | 13.58    | 100.00              |
| 10 - 20                         | 0                      | 0.00     | 100.00              |
| > 20                            | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 670

Total Number of Hours: 672



**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

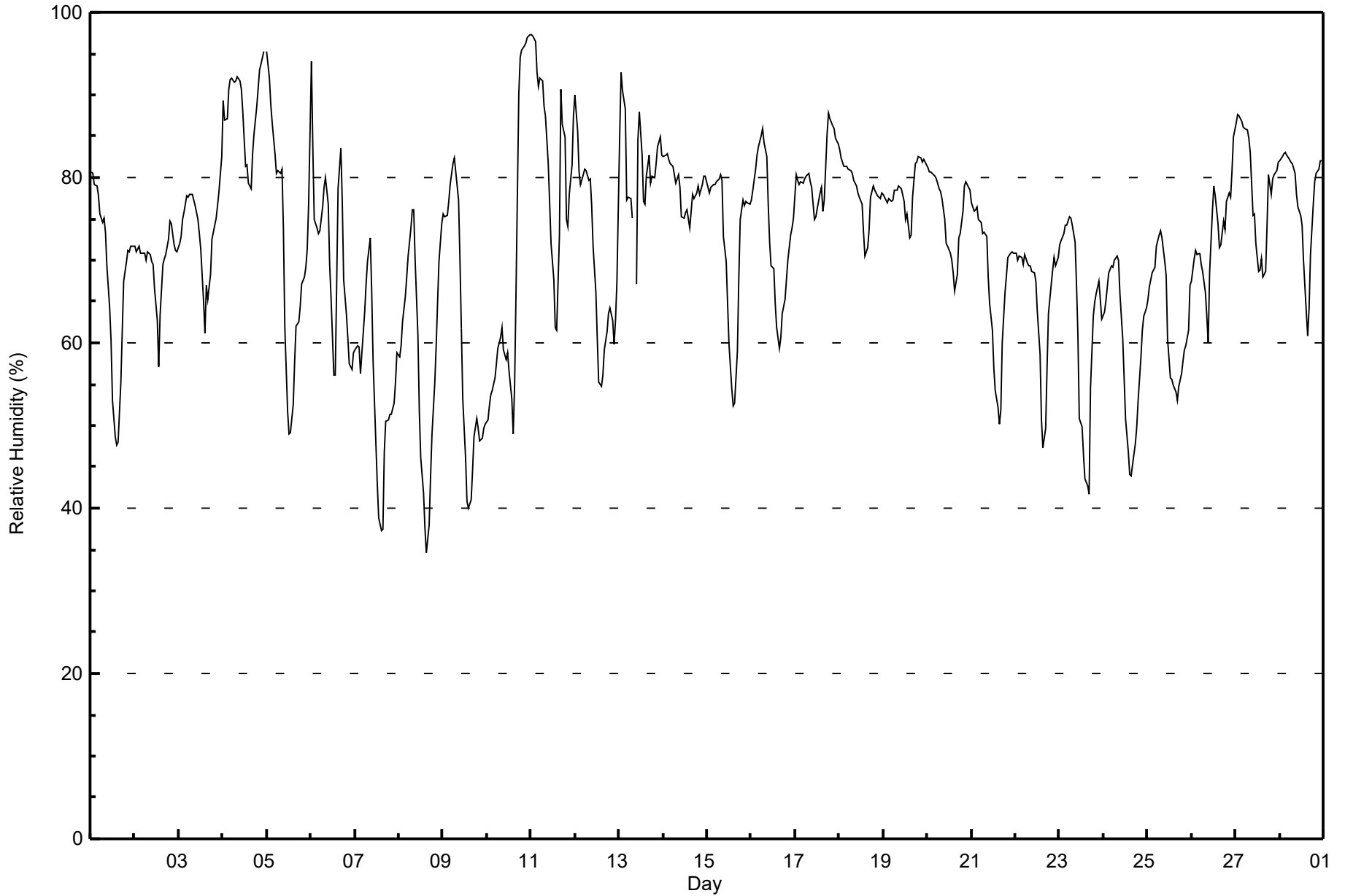
**Relative Humidity (RH) - %**  
**Jackfish 2/3 - February 2023**

| Maximum Value: 97.3 % on Feb 11 00:00<br>Minimum Value: 34.6 % on Feb 8 16:00<br>Maximum Diurnal Average: 77.3 % at hour 7<br>Monthly Average: 71.46 % |                               | Maximum Daily Average: 88.4 % on Feb 4<br>Minimum Daily Average: 54.7 % on Feb 7<br>Minimum Diurnal Average: 59.3 % at hour 15<br>Percentiles: P <sub>1</sub> = 40.6 P <sub>10</sub> = 53.6 Q <sub>1</sub> = 64.3 Median = 73.4 Q <sub>3</sub> = 79.6 P <sub>90</sub> = 84.7 P <sub>99</sub> = 95.6 |      | Hours in Service: 672<br>Hours of Data: 670<br>Hours of Missing Data: 2<br>Hours of Calibration: 0<br>Percent Operational Time: 99.7 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |               |               |
|--|-------------------------------|---|------|--|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----------------|---------------|---------------|
| Day  | Hourly Period Ending At (MST) |   |      |  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 | Daily Average | Daily Maximum |
|  | 1                             | 2   | 3    | 4  | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20   | 21   | 22   | 23   | 24              |               |               |
| 1-Feb  | 80.6                          | 80.6  | 79.1 | 78.9   | 77.8 | 75.5 | 74.6 | 75.0 | 73.4 | 69.3 | 64.2 | 60.1 | 53.1 | 48.6 | 47.6 | 48.0 | 55.2 | 61.5 | 67.4 | 69.9 | 71.2 | 71.1 | 71.7 | 71.7            | 67.8          | 80.6          |
| 2-Feb  | 71.6                          | 71.0  | 71.6 | 70.9   | 70.9 | 70.9 | 70.1 | 71.0 | 70.7 | 69.9 | 69.5 | 66.6 | 62.7 | 57.2 | 63.4 | 69.5 | 70.2 | 70.7 | 72.5 | 74.8 | 74.4 | 71.9 | 71.1 | 71.0            | 69.8          | 74.8          |
| 3-Feb  | 72.1                          | 72.9  | 74.9 | 75.7   | 77.9 | 77.6 | 78.0 | 78.0 | 77.4 | 76.5 | 74.9 | 73.3 | 71.4 | 65.1 | 61.2 | 67.0 | 65.2 | 68.4 | 72.5 | 73.4 | 75.0 | 76.7 | 78.4 | 82.6            | 73.6          | 82.6          |
| 4-Feb  | 89.4                          | 86.9  | 87.1 | 90.7   | 91.8 | 92.1 | 91.5 | 91.6 | 92.2 | 91.7 | 90.6 | 88.0 | 81.3 | 81.5 | 79.3 | 78.6 | 82.8 | 85.3 | 88.6 | 90.9 | 93.0 | 93.7 | 95.2 | DF              | 88.4          | 95.2          |
| 5-Feb  | 95.3                          | 92.0  | 88.8 | 86.6   | 82.9 | 80.5 | 80.8 | 80.6 | 81.1 | 73.7 | 61.9 | 51.7 | 49.0 | 49.2 | 52.6 | 57.7 | 62.1 | 62.6 | 64.4 | 67.1 | 68.0 | 69.1 | 71.4 | 76.8            | 71.1          | 95.3          |
| 6-Feb  | 94.1                          | 83.5  | 75.0 | 73.9   | 73.3 | 73.6 | 76.4 | 78.8 | 80.0 | 76.7 | 69.5 | 65.3 | 56.0 | 56.1 | 66.9 | 78.7 | 83.6 | 77.2 | 67.7 | 63.4 | 60.5 | 57.4 | 56.7 | 58.8            | 71.0          | 94.1          |
| 7-Feb  | 59.1                          | 59.7  | 59.5 | 56.2   | 58.8 | 63.7 | 67.2 | 69.9 | 72.7 | 66.2 | 57.7 | 47.8 | 42.9 | 38.8 | 37.3 | 37.5 | 46.8 | 50.4 | 50.6 | 51.3 | 51.4 | 52.6 | 55.3 | 58.7            | 54.7          | 72.7          |
| 8-Feb  | 58.4                          | 59.7  | 62.6 | 65.7   | 68.0 | 70.6 | 73.9 | 76.1 | 76.0 | 70.1 | 60.8 | 51.7 | 46.1 | 41.9 | 37.6 | 34.6 | 38.0 | 43.8 | 48.8 | 55.0 | 59.4 | 64.8 | 69.9 | 74.4            | 58.7          | 76.1          |
| 9-Feb  | 75.6                          | 75.2  | 75.4 | 77.1   | 79.2 | 81.7 | 82.3 | 80.7 | 77.3 | 70.0 | 61.6 | 53.2 | 46.1 | 40.8 | 40.1 | 41.1 | 44.5 | 48.6 | 50.9 | 49.7 | 48.1 | 48.5 | 49.7 | 50.2            | 60.3          | 82.3          |
| 10-Feb   | 50.7                          | 52.4  | 53.7 | 54.2   | 55.8 | 57.5 | 59.3 | 60.7 | 61.8 | 59.2 | 57.9 | 58.8 | 56.7 | 53.2 | 49.0 | 55.0 | 66.2 | 90.1 | 94.6 | 95.5 | 95.9 | 96.2 | 96.9 | 97.3            | 67.9          | 97.3          |
| 11-Feb   | 97.3                          | 97.1  | 96.4 | 92.7   | 91.0 | 92.0 | 91.7 | 88.6 | 87.5 | 81.7 | 77.0 | 72.1 | 67.7 | 61.8 | 61.5 | 73.0 | 90.7 | 86.5 | 84.9 | 74.9 | 74.1 | 78.0 | 81.4 | 87.4            | 82.8          | 97.3          |
| 12-Feb   | 90.0                          | 85.6  | 80.8 | 79.1   | 80.4 | 80.9 | 80.8 | 79.7 | 79.8 | 76.6 | 71.6 | 66.2 | 60.6 | 55.3 | 54.8 | 56.1 | 59.1 | 61.4 | 63.5 | 64.3 | 62.6 | 59.8 | 62.8 | 67.2            | 70.0          | 90.0          |
| 13-Feb   | 85.2                          | 92.7  | 90.5 | 88.3   | 77.3 | 77.7 | 77.4 | 75.1 | DF   | 67.2 | 84.5 | 87.9 | 82.7 | 77.2 | 76.7 | 80.2 | 82.8 | 79.3 | 80.1 | 80.0 | 81.7 | 83.7 | 84.9 | 82.7            | 81.5          | 92.7          |
| 14-Feb   | 82.6                          | 82.7  | 82.8 | 82.2   | 81.6 | 81.3 | 80.4 | 79.2 | 80.3 | 78.9 | 75.2 | 75.1 | 75.8 | 76.0 | 73.9 | 75.9 | 77.9 | 77.4 | 78.1 | 78.9 | 78.0 | 79.2 | 80.2 | 80.1            | 78.9          | 82.8          |
| 15-Feb   | 78.8                          | 78.2  | 78.8 | 79.1   | 79.2 | 79.6 | 79.9 | 80.3 | 79.7 | 72.9 | 69.9 | 64.8 | 59.9 | 54.4 | 52.4 | 52.8 | 59.0 | 67.9 | 75.0 | 77.2 | 76.7 | 77.1 | 76.9 | 76.8            | 72.0          | 80.3          |
| 16-Feb   | 77.3                          | 78.5  | 81.0 | 82.7   | 83.7 | 85.1 | 85.9 | 84.2 | 82.5 | 76.7 | 72.2 | 69.3 | 69.0 | 64.7 | 61.9 | 59.3 | 60.6 | 63.6 | 65.3 | 67.7 | 70.0 | 73.0 | 74.0 | 75.1            | 73.5          | 85.9          |
| 17-Feb   | 80.3                          | 79.6  | 79.2 | 79.5   | 79.3 | 79.8 | 80.2 | 80.5 | 79.5 | 78.8 | 74.9 | 75.2 | 76.3 | 78.1 | 78.8 | 76.0 | 77.4 | 85.2 | 87.8 | 87.1 | 86.3 | 85.9 | 84.7 | 84.0            | 80.6          | 87.8          |
| 18-Feb   | 83.3                          | 82.5  | 81.4 | 81.3   | 81.3 | 81.0 | 80.9 | 80.6 | 79.7 | 78.9 | 78.2 | 77.7 | 76.8 | 73.4 | 70.5 | 71.6 | 73.7 | 77.7 | 79.0 | 78.4 | 78.2 | 77.7 | 77.5 | 78.1            | 78.3          | 83.3          |
| 19-Feb   | 78.0                          | 77.2  | 77.0 | 77.4   | 77.2 | 77.3 | 78.5 | 78.5 | 79.0 | 78.8 | 78.7 | 77.1 | 74.9 | 75.6 | 72.7 | 73.1 | 77.6 | 81.7 | 81.8 | 82.6 | 82.5 | 81.8 | 82.1 | 81.8            | 78.5          | 82.6          |
| 20-Feb   | 81.2                          | 80.7  | 80.7 | 80.4   | 80.2 | 79.8 | 78.7 | 78.3 | 77.5 | 74.9 | 72.1 | 71.8 | 70.8 | 70.0 | 68.5 | 66.2 | 68.4 | 72.6 | 73.1 | 76.0 | 79.0 | 79.5 | 78.7 | 78.5            | 75.7          | 81.2          |
| 21-Feb   | 77.0                          | 76.0  | 76.1 | 76.4   | 75.0 | 74.5 | 73.2 | 73.4 | 72.9 | 67.9 | 64.8 | 61.5 | 56.9 | 54.3 | 52.2 | 50.2 | 51.9 | 60.1 | 66.1 | 68.1 | 70.3 | 70.9 | 70.9 | 70.9            | 67.1          | 77.0          |
| 22-Feb   | 70.9                          | 70.0  | 70.5 | 70.4   | 69.6 | 70.8 | 69.6 | 69.3 | 69.3 | 68.7 | 68.4 | 67.5 | 63.8 | 58.6 | 50.7 | 47.3 | 49.6 | 57.2 | 63.6 | 67.2 | 68.7 | 70.4 | 69.3 | 70.4            | 65.5          | 70.9          |
| 23-Feb   | 71.9                          | 72.3  | 73.2 | 74.2   | 74.3 | 75.3 | 75.1 | 74.3 | 72.2 | 67.1 | 61.0 | 50.9 | 49.8 | 46.5 | 43.6 | 42.7 | 41.8 | 54.6 | 63.3 | 65.0 | 66.0 | 67.4 | 65.2 | 62.9            | 62.9          | 75.3          |
| 24-Feb   | 63.7                          | 65.0  | 66.7 | 68.4   | 69.3 | 69.1 | 70.1 | 70.6 | 70.1 | 65.9 | 60.4 | 55.8 | 50.8 | 46.8 | 44.1 | 43.9 | 45.3 | 47.7 | 49.8 | 53.1 | 58.2 | 61.6 | 63.2 | 64.3            | 59.3          | 70.6          |
| 25-Feb   | 65.3                          | 66.8  | 68.4 | 68.9   | 69.1 | 71.8 | 73.1 | 73.5 | 72.7 | 69.9 | 68.1 | 60.6 | 55.8 | 55.6 | 55.0 | 54.0 | 53.1 | 54.7 | 56.3 | 57.8 | 59.2 | 59.7 | 61.6 | 67.0            | 63.2          | 73.5          |
| 26-Feb   | 67.5                          | 70.1  | 71.2 | 70.7   | 70.9 | 69.4 | 68.6 | 66.1 | 63.1 | 60.0 | 68.5 | 76.0 | 79.0 | 77.8 | 74.5 | 71.5 | 71.9 | 74.8 | 73.7 | 77.1 | 78.1 | 77.6 | 80.8 | 85.0            | 72.7          | 85.0          |
| 27-Feb   | 86.5                          | 87.6  | 87.5 | 86.7   | 86.2 | 85.9 | 85.7 | 84.7 | 83.0 | 75.5 | 75.6 | 72.0 | 68.7 | 68.8 | 70.2 | 67.9 | 68.6 | 74.3 | 80.4 | 78.0 | 79.9 | 80.4 | 80.8 | 81.8            | 79.0          | 87.6          |
| 28-Feb   | 82.1                          | 82.5  | 82.9 | 83.1   | 82.7 | 82.2 | 81.9 | 81.8 | 80.6 | 78.0 | 76.4 | 75.5 | 74.2 | 70.0 | 63.8 | 60.9 | 64.2 | 70.7 | 76.8 | 79.5 | 80.4 | 81.1 | 82.0 | 82.0            | 77.3          | 83.1          |
|  |                               |   |      |  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Diurnal Average |               |               |
|  |                               |   |      |  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Diurnal Maximum |               |               |
| 77.3 77.1 76.9 76.8 76.6 77.0 77.3 77.2 76.7 72.9 70.2 66.9 63.5 60.6 59.3 60.4 63.9 68.1 70.6 71.6 72.4 73.1 74.1 74.7                                |                               |   |      |  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |               |               |
| 97.3 97.1 96.4 92.7 91.8 92.1 91.7 91.6 92.2 91.7 90.6 88.0 82.7 81.5 79.3 80.2 90.7 90.1 94.6 95.5 95.9 96.2 96.9 97.3                                |                               |   |      |  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |               |               |
| DF - DAS Failure   |                               |   |      |  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |               |               |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Relative Humidity (RH) - %**  
**Jackfish 2/3 - February 2023**





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Relative Humidity (RH) - %  
Jackfish 2/3 - February 2023**

| <b>Concentration Ranges (%)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---------------------------------|------------------------|----------|---------------------|
| 0 - 20                          | 0                      | 0.00     | 0.00                |
| 20 - 40                         | 6                      | 0.90     | 0.90                |
| 40 - 60                         | 116                    | 17.31    | 18.21               |
| 60 - 80                         | 390                    | 58.21    | 76.42               |
| 80 - 100                        | 158                    | 23.58    | 100.00              |

Total Number of Valid Hours: 670

Total Number of Hours: 672



Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Speed (WS) - km/h

Jackfish 2/3 - February 2023

|  |   |                                |
|--|---|--------------------------------|
| Maximum Speed: 19 km/h on Feb 7 04:00              | Maximum Daily Speed Average: 12.7 km/h on Feb 7   | Hours in Service: 672          |
| Minimum Speed Value: 1 km/h on Feb 23 08:00        | Minimum Daily Speed Average: 0.4 km/h on Feb 23   | Hours of Data: 669             |
| Maximum Diurnal Speed Average: 5.0 km/h at hour 12 | Minimum Diurnal Speed Average: 2.7 km/h at hour 18  | Hours of Missing Data: 3       |
| Monthly Average Velocity: 3.8 km/h 246.3 deg       | Percentiles: P <sub>1</sub> = 1 P <sub>10</sub> = 3 Q <sub>1</sub> = 5 Median = 7 Q <sub>3</sub> = 10 P <sub>90</sub> = 13 P <sub>99</sub> = 17 | Percent Operational Time: 99.6 |

| Day    | Hourly Period Ending At (MST) |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |         | Daily Average | Daily Maximum |
|--------|-------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------|---------------|---------------|
|        | 1                             | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     | 10    | 11    | 12    | 13    | 14    | 15    | 16    | 17    | 18    | 19    | 20    | 21    | 22    | 23    | 24      |               |               |
| 1-Feb  | WNW5                          | NW5   | NW6   | NNW5  | NNW7  | N8    | N6    | NNW6  | NNW8  | NNW9  | NNW9  | NNW8  | NNW8  | NNW8  | NNW7  | NNW7  | NNW5  | NNW2  | SSW1  | SW1   | WSW2  | SW3   | WSW3  | WSW3    | NNW4.7        | NNW9          |
| 2-Feb  | WSW4                          | SSW4  | SSW5  | SSW5  | SSW7  | SSW7  | S6    | S7    | S8    | S8    | S8    | S9    | S9    | S9    | S10   | S10   | SSE11 | S10   | S9    | S9    | SSW12 | SSW14 | SSW12 | SSW12   | S8.2          | SSW14         |
| 3-Feb  | SSW13                         | SW15  | SSW15 | SW16  | SW18  | SW17  | SW16  | SW17  | SW17  | SW16  | SW17  | WSW17 | WSW15 | W10   | NW6   | NW5   | SW7   | WSW5  | WSW4  | SW4   | SW4   | WSW3  | NNE1  | ENE3    | SW9.8         | SW18          |
| 4-Feb  | SSE2                          | ENE3  | ENE3  | E3    | ESE4  | SE3   | SSE4  | SE4   | ENE4  | ESE2  | NNE3  | NE2   | NW1   | NNE2  | ENE3  | NNE2  | E3    | E1    | SSW4  | SSW6  | SSW7  | SSW6  | SSW5  | DF      | SE1.4         | SSW7          |
| 5-Feb  | SSW9                          | SW10  | SSW8  | SSW6  | SSW7  | SSW8  | SSW9  | SSW10 | SSW9  | SSW9  | SSW9  | SSW10 | SSW10 | SSW9  | SSW7  | SSW9  | SSW11 | SSW12 | SSW12 | SSW11 | SSW13 | W11   | W12   | SW9.0   | WSW13         |               |
| 6-Feb  | WNW11                         | NW15  | WNW14 | WNW13 | WNW11 | WNW9  | W11   | W11   | W8    | WSW10 | W11   | WSW12 | W11   | WSW13 | WSW13 | SW10  | SW8   | SW10  | SW11  | SW12  | SW12  | WSW14 | WSW14 | WSW14   | W10.4         | NW15          |
| 7-Feb  | WSW13                         | WSW12 | WSW14 | WSW19 | W18   | WSW18 | WSW16 | WSW17 | WNW13 | WNW13 | WNW10 | W13   | W15   | W17   | W16   | W16   | WSW16 | WSW11 | WSW9  | WSW9  | WSW8  | W7    | WSW6  | SW8     | W12.7         | WSW19         |
| 8-Feb  | WSW8                          | WSW8  | W6    | WSW7  | WSW7  | WSW8  | WSW7  | WSW10 | WSW9  | WSW9  | WSW8  | W7    | W8    | WNW8  | W9    | W6    | WSW6  | WSW8  | SW8   | SW8   | SW8   | SW9   | SSW9  | SW10    | WSW7.4        | WSW10         |
| 9-Feb  | SW9                           | SW9   | SW9   | SW8   | SW8   | SSW8  | SW8   | SW9   | SW10  | WSW11 | WSW11 | SW11  | SW10  | WSW12 | SW7   | SSW6  | S6    | S6    | SSW8  | SSW9  | SW11  | SW10  | SW10  | SW10    | SW8.8         | WSW12         |
| 10-Feb | SW9                           | SW9   | SW9   | SW8   | SSW7  | SSW6  | S5    | S5    | SSW7  | SSE1  | E3    | SW6   | SSW1  | W2    | W7    | W8    | WNW7  | NW5   | WNW7  | WNW6  | W5    | W6    | W7    | W7      | WSW4.5        | SW9           |
| 11-Feb | W8                            | W8    | WSW11 | W10   | W8    | WSW8  | WSW9  | WSW11 | WSW12 | WSW13 | WSW14 | WSW14 | WSW16 | WSW15 | WSW14 | W17   | WSW14 | WSW12 | WSW11 | W14   | WNW14 | WNW12 | W10   | W13     | W11.8         | W17           |
| 12-Feb | WSW13                         | WSW12 | W12   | WSW12 | WSW13 | WSW11 | WSW12 | WSW10 | WSW11 | WSW11 | WSW12 | WSW13 | WSW12 | WSW11 | WSW9  | SW8   | SW8   | SW8   | SSW7  | S7    | S8    | S9    | SSW10 | SSW10   | WSW9.6        | WSW13         |
| 13-Feb | SW13                          | SW14  | SW13  | SW10  | WSW15 | WSW17 | WSW17 | WSW18 | DF    | WSW19 | W16   | W14   | WNW12 | NW11  | NNW11 | NNW12 | N9    | N11   | N10   | N10   | NNW8  | NNW6  | NNW6  | NNW6    | W8.4          | WSW19         |
| 14-Feb | NNW6                          | NW5   | NNW5  | N4    | NNE4  | NNE3  | NE2   | ESE2  | E3    | ENE2  | SW2   | SW4   | M     | SW6   | WSW7  | WSW6  | W5    | NNW5  | NNW6  | NNW5  | NW5   | NNE6  | NE4   | NE5     | NNW2.2        | WSW7          |
| 15-Feb | NE6                           | NE5   | NE3   | ENE4  | ENE3  | NE3   | ENE3  | NE3   | ENE2  | E1    | NE5   | SE2   | E1    | S2    | WSW5  | WSW6  | SW5   | SW4   | S4    | S5    | S6    | S6    | S7    | SSW8    | SSE1.2        | SSW8          |
| 16-Feb | SSW7                          | S8    | S8    | S9    | S9    | S9    | S9    | SSW10 | SSW11 | SSW14 | SSW15 | SSW14 | SSW13 | SW13  | SW13  | WSW15 | WSW15 | WSW13 | WSW12 | W8    | WNW9  | NW8   | NW7   | NW7     | SW8.5         | WSW15         |
| 17-Feb | NW5                           | NNW6  | NNW7  | NNW6  | NNW6  | NW7   | NNE4  | NW4   | WSW5  | WSW7  | WSW9  | WSW9  | W7    | W7    | WSW8  | W7    | W6    | WNW4  | NNE5  | NE7   | NE7   | NE6   | ENE5  | NNE6    | NW3.3         | WSW9          |
| 18-Feb | NNE6                          | NNE7  | NNE5  | NE8   | NE7   | NE8   | NE7   | NE6   | NNE6  | NNE6  | NNE6  | NNE5  | NE6   | NNE6  | NNE5  | NNE5  | NE4   | ENE2  | ESE2  | SE2   | SSE2  | SE3   | SSE3  | S5      | NE4.0         | NE8           |
| 19-Feb | SSE7                          | S7    | S7    | SSE7  | SSE7  | SSE6  | SSE7  | SSE6  | SSE6  | SE6   | SE6   | ESE5  | E5    | E6    | E6    | NE5   | NNE5  | NNE5  | NNE4  | NNE4  | N4    | NNE5  | NNE4  | N4      | ESE2.8        | SSE7          |
| 20-Feb | NNW4                          | NNW4  | NNW3  | NNW4  | NW4   | NW4   | NW5   | NW5   | NW5   | WNW4  | W5    | W7    | WNW7  | W7    | WNW8  | NW5   | NNW5  | N4    | NNW3  | NNE4  | NE5   | NNE3  | NNE6  | NE6     | NW3.8         | WNW8          |
| 21-Feb | NNE6                          | N3    | N2    | NNW5  | NW3   | W2    | WSW1  | NW3   | NW4   | NNW7  | N8    | NNW8  | NNW7  | NNW8  | NNW7  | NW7   | NW6   | NNW7  | N6    | N5    | NNE4  | N5    | NNE5  | NNE3    | NNW4.7        | NNW8          |
| 22-Feb | NNE3                          | NNE2  | NNW2  | SW2   | NNW2  | W2    | WSW4  | WSW4  | WSW2  | NNE4  | NE7   | NNE5  | NNE5  | NE6   | NNE4  | NNE6  | NE6   | NE5   | NE4   | NE3   | NNE4  | NE4   | ENE4  | NE4     | NNE2.7        | NE7           |
| 23-Feb | NE4                           | NE5   | NE4   | ENE4  | ENE3  | ENE3  | NE3   | S1    | N1    | WNW1  | S3    | SW2   | WNW3  | NE2   | N4    | NE5   | NE2   | ESE1  | S2    | SSW3  | S3    | S3    | SW6   | SW8     | E0.4          | SW8           |
| 24-Feb | SW8                           | SSW7  | SSW8  | SSW8  | SSW8  | SSW8  | SSW9  | SSW8  | SSW8  | SSW9  | SSW13 | SSW13 | S12   | S13   | SSW13 | SSW13 | S10   | S9    | SSW11 | SSW11 | SSW14 | SSW15 | SSW14 | SSW14   | SSW10.6       | SSW15         |
| 25-Feb | SW14                          | SW14  | SW14  | WSW15 | WSW16 | SW16  | WSW16 | WSW15 | WSW13 | WSW10 | WSW10 | WSW11 | WSW10 | WSW9  | WSW10 | WSW8  | SSW5  | SW8   | SSW6  | SSW5  | SSW6  | S6    | S6    | SSW10.0 | WSW16         |               |
| 26-Feb | SSE7                          | SSE7  | SSE7  | SSE6  | SSE6  | SE6   | SE6   | SE7   | ESE5  | E5    | ENE6  | ENE7  | ENE9  | ENE11 | ENE12 | ENE11 | NE9   | ENE8  | E7    | E6    | ESE5  | ESE4  | ESE3  | ENE2    | E5.3          | ENE12         |
| 27-Feb | NNE3                          | N3    | N3    | NW4   | NW4   | NW5   | NW6   | NW7   | WNW7  | NW7   | NW7   | WNW7  | WNW7  | NW6   | WNW8  | NW7   | WNW8  | WNW5  | NW5   | NW4   | NNW3  | NNW3  | NNW3  | N3      | NW5.0         | WNW8          |
| 28-Feb | N4                            | NNE5  | NE5   | NE5   | NE5   | NE4   | NNE3  | NNE4  | NNE4  | NNE5  | NNE6  | ENE7  | NE6   | NNE5  | NE6   | ENE6  | NE5   | ENE5  | ENE4  | E4    | E5    | ESE4  | SSE4  | SSE6    | NE3.9         | ENE7          |

|        |        |        |        |        |        |       |        |        |        |        |        |        |      |      |      |        |        |        |        |        |        |        |        |                 |
|--------|--------|--------|--------|--------|--------|-------|--------|--------|--------|--------|--------|--------|------|------|------|--------|--------|--------|--------|--------|--------|--------|--------|-----------------|
| WSW3.7 | WSW3.8 | WSW3.9 | WSW3.7 | WSW3.9 | WSW4.1 | SW4.4 | WSW5.0 | WSW4.1 | WSW4.5 | WSW4.3 | WSW5.0 | WSW4.7 | W4.2 | W4.3 | W3.9 | WSW3.2 | WSW2.7 | WSW2.8 | WSW2.7 | WSW3.0 | WSW3.0 | WSW3.1 | WSW3.3 | Diurnal Average |
| SSW14  | NW15   | SSW15  | WSW19  | W18    | WSW18  | WSW17 | WSW18  | SW17   | WSW19  | SW17   | WSW17  | WSW16  | W17  | W16  | W17  | WSW16  | WSW13  | WSW12  | W14    | SSW14  | SSW15  | SSW14  | SSW14  | Diurnal Maximum |

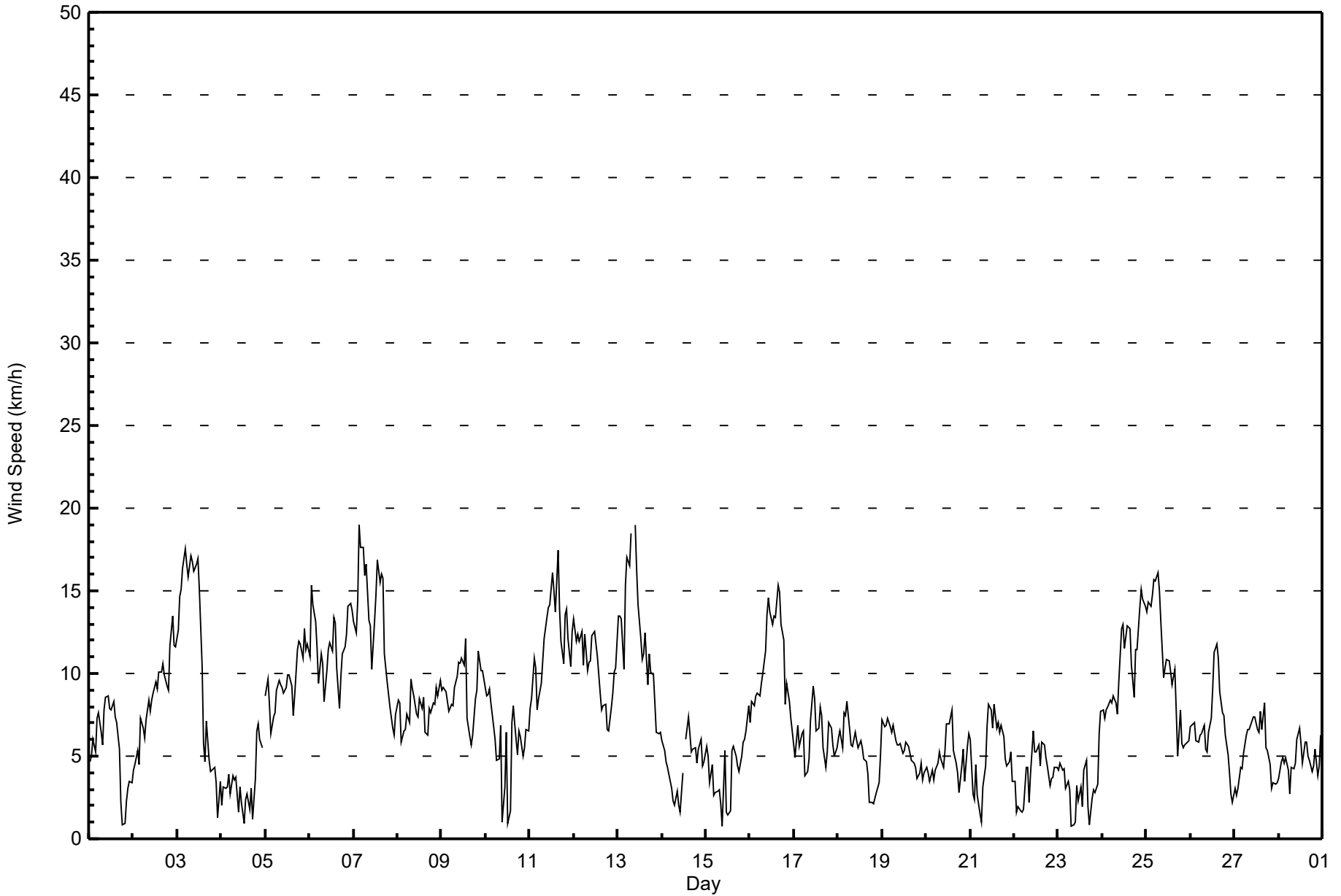
M - Maintenance      DF - DAS Failure  
 All monthly, daily, and diurnal averages have been calculated using vector methods





**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Wind Speed (WS) - km/h**  
**Jackfish 2/3 - February 2023**





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Wind Speed (WS) - km/h**  
**Jackfish 2/3 - February 2023**

| <b>Wind Speed Ranges (km/h)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---------------------------------|------------------------|----------|---------------------|
| 0 - 5                           | 228                    | 34.08    | 34.08               |
| 6 - 11                          | 327                    | 48.88    | 82.96               |
| 12 - 19                         | 114                    | 17.04    | 100.00              |
| 20 - 28                         | 0                      | 0.00     | 100.00              |
| 29 - 38                         | 0                      | 0.00     | 100.00              |
| > 38                            | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 669

Total Number of Hours: 672



**Wood Buffalo Environmental Association**  
**Frequency Distribution**

**Wind Speed (WS) - km/h**  
**Jackfish 2/3 - February 2023**

| <b>Wind Speed</b><br><b>Ranges (km/h)</b> | <b>Wind Direction</b> |     |    |     |    |     |    |     |    |     |    |     |    |     |    |     | <b>Totals</b> |
|---|-----------------------|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|---------------|
|   | N                     | NNE | NE | ENE | E  | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |               |
| 0 - 5                                     | 13                    | 38  | 29 | 20  | 10 | 11  | 5  | 6   | 11 | 10  | 10 | 13  | 6  | 6   | 22 | 18  | 228           |
| 6 - 11                                    | 7                     | 12  | 17 | 8   | 4  | 0   | 5  | 14  | 31 | 45  | 48 | 47  | 30 | 16  | 15 | 28  | 327           |
| 12 - 19                                   | 0                     | 0   | 0  | 1   | 0  | 0   | 0  | 0   | 2  | 18  | 21 | 51  | 12 | 7   | 1  | 1   | 114           |
| 20 - 28                                   | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| 29 - 38                                   | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| > 38                                      | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| <b>Totals</b>                             | 20                    | 50  | 46 | 29  | 14 | 11  | 10 | 20  | 44 | 73  | 79 | 111 | 48 | 29  | 38 | 47  | 669           |

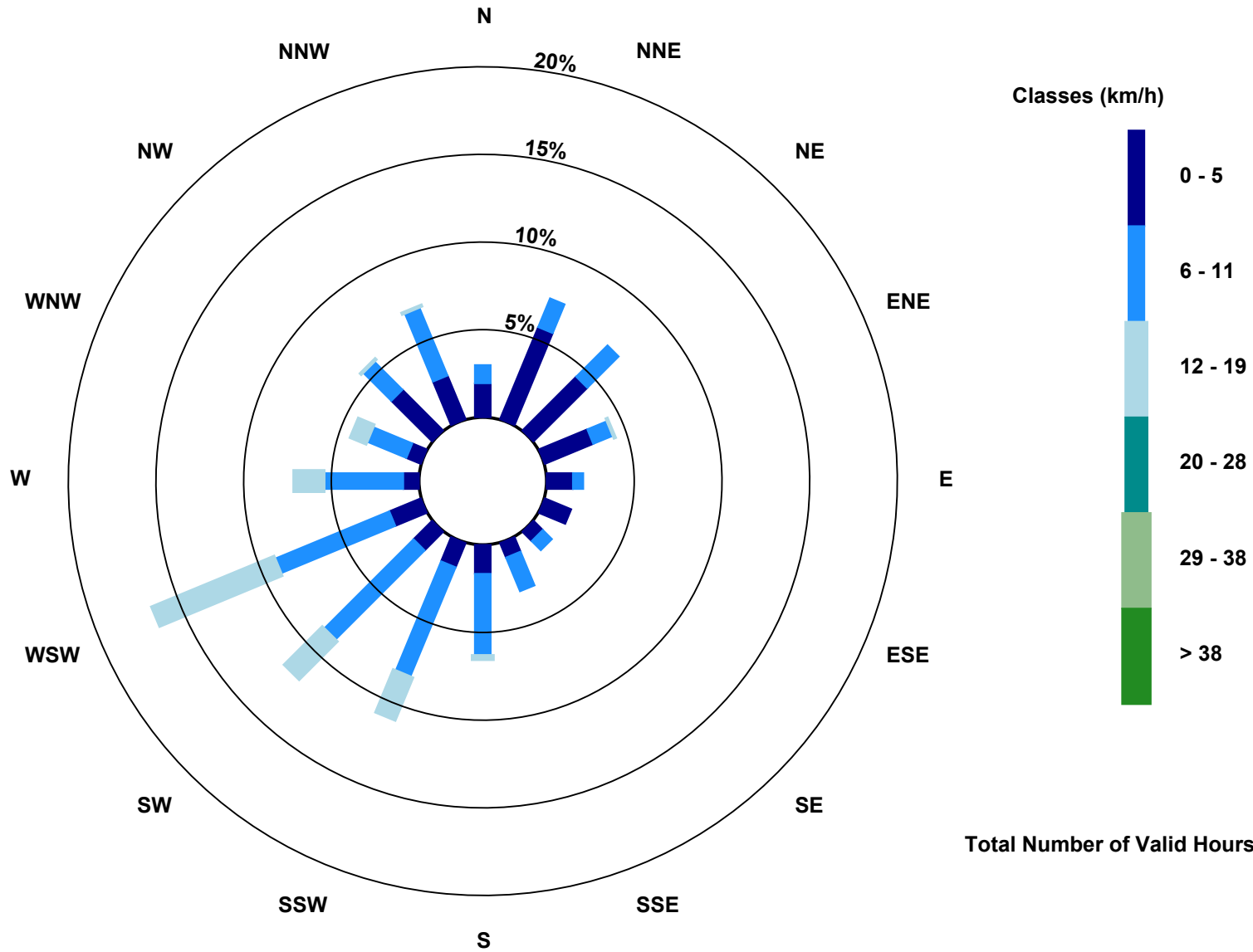
Total Number of Valid Hours: 669

Total Number of Hours: 672



Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Wind Speed (WS) - km/h  
Jackfish 2/3





**Wood Buffalo Environmental Association**  
**Summary of Hour Standard Deviations**

**Wind Speed (WS) - km/h**  
**Jackfish 2/3 - February 2023**

| Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0<br>Maximum Value: 6 km/h on Feb 6 03:00<br>Minimum Value: 0 km/h on Feb 23 22:00<br>Percentiles: P <sub>1</sub> = 1 P <sub>10</sub> = 1 Q <sub>1</sub> = 2 Median = 2 Q <sub>3</sub> = 3 P <sub>90</sub> = 4 P <sub>99</sub> = 5 |                               |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    | Hours in Service: 672<br>Hours of Data: 669<br>Hours of Missing Data: 3<br>Hours of Calibration: 0<br>Percent Operational Time: 99.6 |    |    |    |    |    |    |    |               |   |
|--|-------------------------------|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|--|----|----|----|----|----|----|----|---------------|---|
| Day  | Hourly Period Ending At (MST) |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |  |    |    |    |    |    |    |    | Daily Maximum |   |
|  | 1                             | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9  | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17   | 18 | 19 | 20 | 21 | 22 | 23 | 24 |               |   |
| 1-Feb  | 2                             | 2 | 2 | 2 | 3 | 3 | 3 | 2 | 4  | 4  | 4  | 3  | 3  | 4  | 3  | 3  | 2  | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 1             | 4 |
| 2-Feb  | 1                             | 1 | 2 | 1 | 2 | 2 | 2 | 2 | 3  | 3  | 3  | 3  | 4  | 4  | 4  | 4  | 4  | 4  | 3  | 3  | 5  | 5  | 5  | 4  | 5             |   |
| 3-Feb  | 4                             | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4  | 4  | 3  | 4  | 3  | 4  | 2  | 2  | 2  | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 4             |   |
| 4-Feb  | 1                             | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1  | 1  | 2  | 1  | 1  | 1  | 2  | 1  | 1  | 1  | 1  | 2  | 2  | 2  | 1  | 1  | 2             |   |
| 5-Feb  | 2                             | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2  | 2  | 3  | 3  | 3  | 3  | 3  | 2  | 2  | 2  | 2  | 2  | 3  | 2  | 3  | 3  | DF            |   |
| 6-Feb  | 5                             | 6 | 6 | 5 | 4 | 3 | 3 | 3 | 3  | 2  | 3  | 3  | 4  | 4  | 4  | 3  | 2  | 3  | 3  | 3  | 3  | 4  | 4  | 3  | 6             |   |
| 7-Feb  | 4                             | 3 | 4 | 5 | 5 | 5 | 4 | 5 | 5  | 5  | 4  | 4  | 4  | 6  | 6  | 5  | 5  | 3  | 2  | 2  | 1  | 2  | 2  | 2  | 6             |   |
| 8-Feb  | 1                             | 2 | 2 | 2 | 1 | 1 | 2 | 2 | 2  | 2  | 2  | 2  | 3  | 3  | 3  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 3             |   |
| 9-Feb  | 2                             | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2  | 2  | 3  | 3  | 3  | 4  | 3  | 2  | 2  | 2  | 3  | 3  | 3  | 3  | 2  | 2  | 4             |   |
| 10-Feb   | 2                             | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1  | 2  | 1  | 4  | 1  | 2  | 3  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 4             |   |
| 11-Feb   | 3                             | 2 | 3 | 3 | 3 | 2 | 2 | 2 | 3  | 3  | 4  | 4  | 5  | 4  | 4  | 5  | 3  | 4  | 4  | 5  | 6  | 5  | 4  | 3  | 6             |   |
| 12-Feb   | 3                             | 3 | 3 | 2 | 2 | 2 | 3 | 3 | 2  | 2  | 3  | 3  | 3  | 3  | 2  | 3  | 2  | 2  | 2  | 2  | 3  | 3  | 3  | 3  | 3             |   |
| 13-Feb   | 5                             | 5 | 4 | 3 | 4 | 5 | 4 | 5 | DF | 5  | 5  | 4  | 5  | 5  | 5  | 5  | 4  | 5  | 5  | 4  | 3  | 2  | 2  | 2  | 5             |   |
| 14-Feb   | 2                             | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1  | 1  | 1  | 1  | 2  | M  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 1  | 1  | 2             |   |
| 15-Feb   | 2                             | 2 | 1 | 2 | 1 | 1 | 1 | 1 | 1  | 1  | 1  | 1  | 1  | 1  | 2  | 2  | 2  | 1  | 1  | 1  | 1  | 2  | 2  | 2  | 2             |   |
| 16-Feb   | 2                             | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 3  | 4  | 4  | 4  | 4  | 4  | 4  | 4  | 4  | 3  | 3  | 3  | 4  | 3  | 4  | 3  | 4             |   |
| 17-Feb   | 2                             | 3 | 3 | 2 | 3 | 3 | 2 | 2 | 2  | 2  | 2  | 3  | 2  | 2  | 2  | 3  | 2  | 2  | 3  | 2  | 2  | 2  | 2  | 1  | 3             |   |
| 18-Feb   | 2                             | 2 | 1 | 2 | 2 | 2 | 2 | 2 | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 1  | 1  | 1  | 0  | 0  | 1  | 1  | 1  | 2             |   |
| 19-Feb   | 2                             | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 1  | 2  | 2  | 1  | 1  | 2  | 1  | 1  | 2             |   |
| 20-Feb   | 1                             | 1 | 1 | 2 | 1 | 2 | 2 | 2 | 2  | 2  | 2  | 3  | 2  | 3  | 3  | 2  | 2  | 2  | 1  | 2  | 2  | 1  | 2  | 2  | 3             |   |
| 21-Feb   | 3                             | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 2  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 2  | 2  | 2  | 2  | 1  | 3             |   |
| 22-Feb   | 1                             | 1 | 1 | 1 | 1 | 2 | 1 | 0 | 1  | 2  | 2  | 2  | 3  | 2  | 2  | 2  | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 3             |   |
| 23-Feb   | 1                             | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1  | 1  | 1  | 2  | 2  | 2  | 2  | 2  | 1  | 1  | 0  | 0  | 1  | 0  | 2  | 2  | 2             |   |
| 24-Feb   | 2                             | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2  | 4  | 4  | 4  | 4  | 4  | 5  | 4  | 4  | 3  | 4  | 4  | 4  | 5  | 4  | 4  | 5             |   |
| 25-Feb   | 4                             | 3 | 3 | 3 | 3 | 3 | 4 | 3 | 3  | 3  | 3  | 4  | 3  | 3  | 3  | 3  | 2  | 1  | 3  | 1  | 2  | 2  | 2  | 2  | 4             |   |
| 26-Feb   | 2                             | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 2  | 2  | 2  | 2  | 3  | 4  | 4  | 4  | 3  | 3  | 2  | 2  | 2  | 1  | 1  | 1  | 4             |   |
| 27-Feb   | 1                             | 1 | 1 | 2 | 1 | 2 | 3 | 3 | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 4  | 2  | 2  | 2  | 1  | 1  | 1  | 1  | 4             |   |
| 28-Feb   | 1                             | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1  | 2  | 2  | 2  | 3  | 2  | 2  | 2  | 2  | 1  | 1  | 1  | 1  | 1  | 2  | 2  | 3             |   |
| 5 6 6 5 5 5 4 5 5 5 5 4 5 6 6 5 5 5 5 5 6 5 5 4  |                               |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |  |    |    |    |    |    |    |    |               |   |
| Diurnal Maximum  |                               |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |  |    |    |    |    |    |    |    |               |   |
| M - Maintenance      DF - DAS Failure  |                               |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |  |    |    |    |    |    |    |    |               |   |



**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

**Wind Direction (WD) - deg**  
**Jackfish 2/3 - February 2023**

|  |                                |
|--|--------------------------------|
| Direction of Maximum Speed: 257 deg on Feb 7 04:00           | Hours in Service: 672          |
| Direction of Maximum Daily Speed Average: 259.8 deg on Feb 7 | Hours of Data: 669             |
| Direction of Minimum Speed: 183 deg on Feb 23 08:00          | Hours of Missing Data: 3       |
| Direction of Minimum Daily Speed Average: 0.4 deg on Feb 23  | Percent Operational Time: 99.6 |
| Monthly Average Direction: 246.3 deg                         |                                |

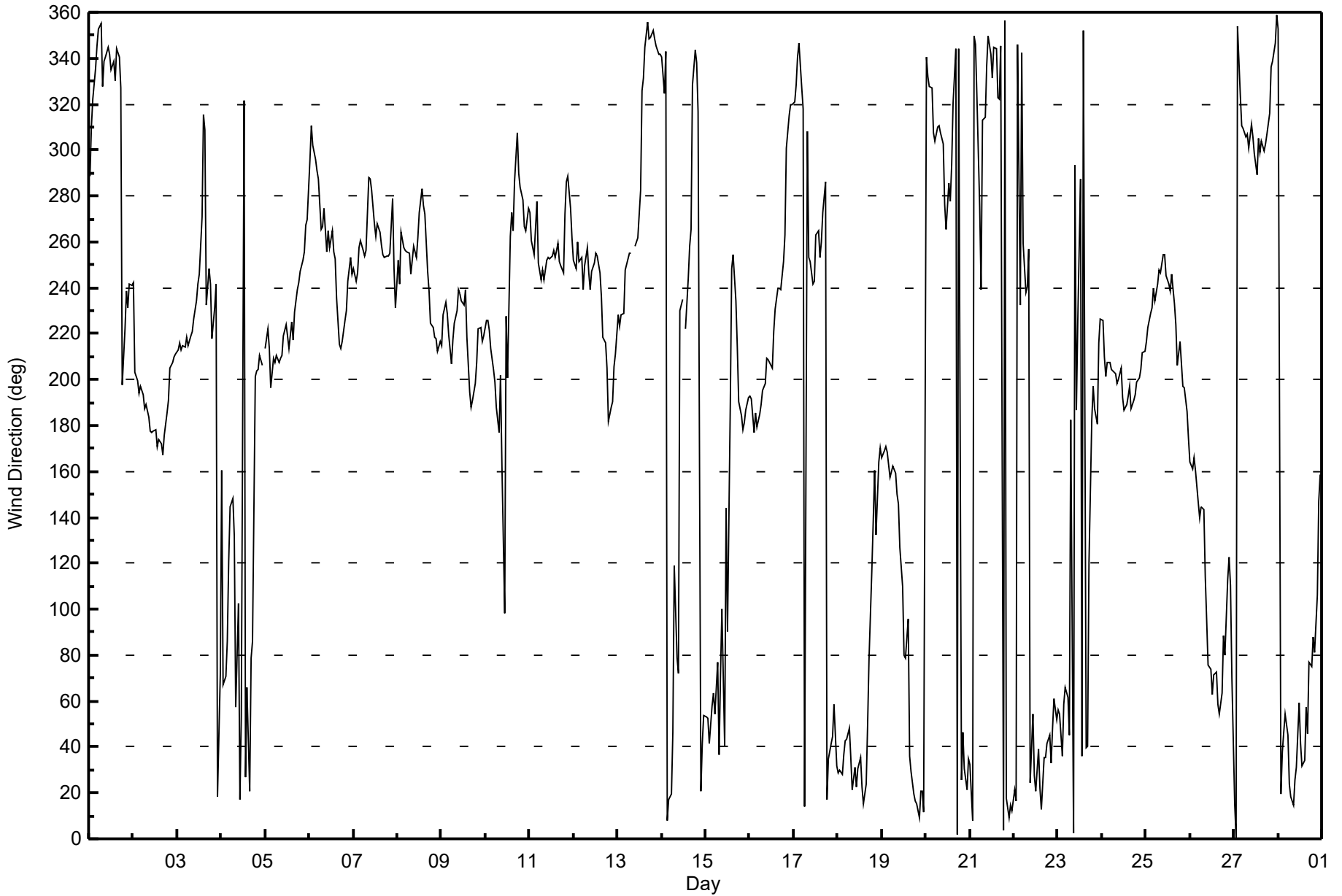
| Day             | Hourly Period Ending At (MST) |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |     | Daily Average |
|-----------------|-------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-----|---------------|
|                 | 1                             | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     | 10    | 11    | 12    | 13    | 14    | 15    | 16    | 17    | 18    | 19    | 20    | 21    | 22    | 23    | 24  |               |
| 1-Feb           | 289                           | 310   | 322   | 335   | 346   | 353   | 355   | 328   | 339   | 341   | 345   | 342   | 335   | 338   | 330   | 344   | 340   | 327   | 198   | 222   | 238   | 231   | 242   | 241 | 329.9         |
| 2-Feb           | 242                           | 203   | 199   | 194   | 197   | 194   | 187   | 189   | 183   | 177   | 177   | 178   | 178   | 171   | 174   | 172   | 167   | 176   | 185   | 191   | 205   | 207   | 210   | 211 | 189.2         |
| 3-Feb           | 213                           | 216   | 213   | 215   | 214   | 218   | 215   | 219   | 221   | 226   | 234   | 242   | 246   | 271   | 315   | 309   | 232   | 248   | 242   | 218   | 231   | 241   | 18    | 71  | 228.2         |
| 4-Feb           | 161                           | 67    | 71    | 86    | 121   | 145   | 148   | 132   | 58    | 103   | 17    | 53    | 322   | 27    | 66    | 21    | 79    | 86    | 201   | 204   | 204   | 211   | 206   | DF  | 136.0         |
| 5-Feb           | 213                           | 222   | 213   | 197   | 209   | 207   | 210   | 208   | 210   | 211   | 219   | 224   | 219   | 214   | 225   | 217   | 230   | 239   | 242   | 247   | 252   | 256   | 267   | 270 | 228.4         |
| 6-Feb           | 296                           | 310   | 302   | 296   | 291   | 288   | 266   | 267   | 275   | 256   | 265   | 258   | 265   | 256   | 253   | 235   | 215   | 214   | 216   | 226   | 230   | 243   | 253   | 246 | 260.4         |
| 7-Feb           | 248                           | 243   | 247   | 257   | 261   | 256   | 254   | 257   | 288   | 287   | 282   | 268   | 262   | 268   | 264   | 259   | 254   | 253   | 254   | 254   | 255   | 279   | 248   | 231 | 259.8         |
| 8-Feb           | 252                           | 241   | 264   | 258   | 257   | 256   | 255   | 246   | 252   | 258   | 253   | 262   | 273   | 283   | 276   | 272   | 247   | 238   | 224   | 223   | 218   | 218   | 213   | 217 | 247.2         |
| 9-Feb           | 215                           | 228   | 234   | 229   | 220   | 207   | 217   | 225   | 230   | 239   | 238   | 234   | 232   | 239   | 218   | 195   | 188   | 191   | 198   | 208   | 222   | 223   | 216   | 219 | 221.6         |
| 10-Feb          | 226                           | 226   | 221   | 214   | 204   | 199   | 188   | 177   | 202   | 163   | 99    | 228   | 200   | 262   | 273   | 265   | 286   | 308   | 290   | 284   | 278   | 267   | 265   | 274 | 241.5         |
| 11-Feb          | 273                           | 260   | 254   | 266   | 278   | 251   | 243   | 247   | 243   | 252   | 253   | 253   | 254   | 256   | 253   | 259   | 251   | 250   | 246   | 272   | 286   | 289   | 274   | 262 | 259.0         |
| 12-Feb          | 252                           | 248   | 260   | 251   | 253   | 239   | 250   | 257   | 247   | 239   | 247   | 251   | 255   | 254   | 246   | 236   | 218   | 216   | 205   | 182   | 188   | 190   | 205   | 211 | 237.6         |
| 13-Feb          | 228                           | 223   | 228   | 229   | 248   | 250   | 255   | 255   | DF    | 258   | 260   | 262   | 283   | 326   | 331   | 345   | 356   | 349   | 349   | 352   | 348   | 346   | 342   | 342 | 280.7         |
| 14-Feb          | 341                           | 325   | 343   | 8     | 17    | 19    | 46    | 119   | 79    | 72    | 230   | 235   | M     | 222   | 244   | 258   | 266   | 328   | 344   | 338   | 317   | 21    | 42    | 54  | 332.4         |
| 15-Feb          | 53                            | 53    | 41    | 58    | 64    | 54    | 77    | 37    | 71    | 100   | 41    | 144   | 91    | 189   | 248   | 254   | 234   | 214   | 190   | 184   | 178   | 181   | 187   | 192 | 155.7         |
| 16-Feb          | 193                           | 191   | 177   | 185   | 180   | 185   | 189   | 195   | 198   | 209   | 208   | 207   | 205   | 221   | 231   | 240   | 240   | 239   | 252   | 263   | 301   | 315   | 320   | 320 | 222.0         |
| 17-Feb          | 321                           | 328   | 340   | 346   | 327   | 318   | 14    | 308   | 253   | 251   | 242   | 243   | 263   | 265   | 253   | 260   | 273   | 286   | 17    | 35    | 42    | 45    | 59    | 32  | 307.4         |
| 18-Feb          | 28                            | 30    | 28    | 37    | 43    | 44    | 48    | 35    | 21    | 31    | 23    | 30    | 35    | 22    | 15    | 24    | 50    | 78    | 117   | 138   | 161   | 133   | 164   | 170 | 42.6          |
| 19-Feb          | 166                           | 169   | 171   | 168   | 158   | 160   | 162   | 159   | 150   | 146   | 127   | 110   | 80    | 79    | 96    | 36    | 29    | 19    | 17    | 15    | 9     | 21    | 21    | 11  | 116.2         |
| 20-Feb          | 340                           | 332   | 328   | 327   | 308   | 304   | 310   | 311   | 308   | 303   | 276   | 266   | 285   | 278   | 294   | 321   | 344   | 2     | 344   | 26    | 46    | 30    | 22    | 35  | 323.3         |
| 21-Feb          | 32                            | 8     | 350   | 346   | 323   | 275   | 239   | 313   | 314   | 337   | 350   | 341   | 331   | 345   | 344   | 323   | 322   | 345   | 4     | 356   | 18    | 9     | 15    | 12  | 346.1         |
| 22-Feb          | 21                            | 16    | 346   | 232   | 342   | 259   | 238   | 240   | 257   | 24    | 55    | 27    | 21    | 39    | 22    | 13    | 35    | 35    | 42    | 45    | 33    | 48    | 61    | 52  | 26.8          |
| 23-Feb          | 56                            | 54    | 36    | 59    | 66    | 61    | 45    | 183   | 2     | 294   | 187   | 225   | 288   | 36    | 352   | 40    | 40    | 120   | 182   | 197   | 187   | 181   | 216   | 227 | 85.7          |
| 24-Feb          | 226                           | 210   | 201   | 208   | 207   | 204   | 204   | 202   | 198   | 200   | 205   | 192   | 187   | 189   | 193   | 197   | 187   | 191   | 193   | 199   | 201   | 205   | 212   | 212 | 200.6         |
| 25-Feb          | 217                           | 223   | 229   | 231   | 240   | 234   | 241   | 248   | 246   | 254   | 255   | 245   | 242   | 239   | 246   | 233   | 224   | 206   | 217   | 207   | 197   | 197   | 186   | 174 | 231.5         |
| 26-Feb          | 164                           | 161   | 166   | 161   | 147   | 139   | 145   | 144   | 114   | 95    | 76    | 74    | 63    | 72    | 73    | 59    | 54    | 63    | 89    | 80    | 113   | 122   | 111   | 70  | 100.2         |
| 27-Feb          | 15                            | 1     | 354   | 324   | 311   | 309   | 305   | 307   | 301   | 311   | 306   | 298   | 289   | 305   | 299   | 304   | 300   | 303   | 307   | 316   | 336   | 339   | 346   | 359 | 312.2         |
| 28-Feb          | 353                           | 20    | 38    | 46    | 54    | 45    | 24    | 18    | 15    | 26    | 31    | 59    | 42    | 31    | 34    | 57    | 46    | 77    | 75    | 88    | 81    | 106   | 147   | 159 | 52.4          |
| 243.7           | 242.9                         | 245.0 | 243.8 | 242.7 | 237.5 | 234.2 | 239.0 | 242.0 | 249.9 | 251.4 | 247.1 | 256.6 | 262.1 | 264.7 | 267.0 | 254.3 | 250.9 | 238.3 | 238.8 | 238.7 | 238.9 | 236.4 | 235.2 |     |               |
| Diurnal Average |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |     |               |

M - Maintenance      DF - DAS Failure  
 All monthly, daily, and diurnal averages have been calculated using vector methods



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Wind Direction (WD) - deg**  
**Jackfish 2/3 - February 2023**





**Wood Buffalo Environmental Association**  
**Summary of Hour Standard Deviations**

**Wind Direction (WD) - deg**  
**Jackfish 2/3 - February 2023**

| Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0<br>Maximum Value: 103 deg on Feb 10 10:00<br>Minimum Value: 6 deg on Feb 23 22:00<br>Percentiles: P <sub>1</sub> = 12 P <sub>10</sub> = 16 Q <sub>1</sub> = 19 Median = 28 Q <sub>3</sub> = 39 P <sub>90</sub> = 46 P <sub>99</sub> = 91 |                               |    |    |    |    |    |    |    |    |     |    |    |    |    |    |    |    | Hours in Service: 672<br>Hours of Data: 669<br>Hours of Missing Data: 3<br>Hours of Calibration: 0<br>Percent Operational Time: 99.6 |    |    |    |    |    |    |               |
|--|-------------------------------|----|----|----|----|----|----|----|----|-----|----|----|----|----|----|----|----|--|----|----|----|----|----|----|---------------|
| Day  | Hourly Period Ending At (MST) |    |    |    |    |    |    |    |    |     |    |    |    |    |    |    |    |  |    |    |    |    |    |    | Daily Maximum |
|  | 1                             | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10  | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18   | 19 | 20 | 21 | 22 | 23 | 24 |               |
| 1-Feb  | 30                            | 37 | 39 | 38 | 39 | 42 | 43 | 44 | 42 | 41  | 46 | 50 | 51 | 47 | 45 | 38 | 43 | 77   | 92 | 66 | 22 | 12 | 13 | 14 | 92            |
| 2-Feb  | 15                            | 16 | 14 | 11 | 12 | 18 | 20 | 21 | 22 | 29  | 30 | 34 | 37 | 41 | 38 | 38 | 39 | 46   | 37 | 34 | 31 | 27 | 28 | 29 | 46            |
| 3-Feb  | 23                            | 22 | 20 | 18 | 18 | 18 | 18 | 18 | 16 | 17  | 16 | 15 | 17 | 30 | 45 | 42 | 22 | 18   | 26 | 13 | 21 | 21 | 76 | 31 | 76            |
| 4-Feb  | 42                            | 28 | 26 | 33 | 31 | 40 | 39 | 48 | 34 | 73  | 36 | 70 | 85 | 63 | 55 | 46 | 33 | 73   | 24 | 21 | 19 | 22 | 20 | DF | 85            |
| 5-Feb  | 18                            | 19 | 21 | 19 | 20 | 19 | 15 | 13 | 13 | 16  | 18 | 20 | 24 | 23 | 20 | 21 | 19 | 16   | 14 | 16 | 14 | 17 | 21 | 25 | 25            |
| 6-Feb  | 42                            | 37 | 35 | 33 | 31 | 30 | 20 | 25 | 27 | 13  | 23 | 21 | 29 | 23 | 21 | 24 | 22 | 26   | 23 | 21 | 21 | 20 | 19 | 17 | 42            |
| 7-Feb  | 17                            | 19 | 17 | 17 | 19 | 16 | 16 | 19 | 35 | 33  | 35 | 27 | 23 | 27 | 29 | 22 | 16 | 15   | 13 | 12 | 12 | 23 | 27 | 18 | 35            |
| 8-Feb  | 14                            | 17 | 15 | 17 | 15 | 12 | 14 | 13 | 13 | 17  | 20 | 25 | 31 | 35 | 31 | 32 | 22 | 16   | 18 | 18 | 17 | 18 | 18 | 19 | 35            |
| 9-Feb  | 18                            | 19 | 17 | 20 | 19 | 18 | 18 | 19 | 18 | 17  | 18 | 22 | 25 | 23 | 30 | 36 | 34 | 34   | 28 | 24 | 20 | 19 | 18 | 19 | 36            |
| 10-Feb   | 19                            | 19 | 16 | 16 | 18 | 18 | 57 | 31 | 15 | 103 | 46 | 28 | 92 | 83 | 43 | 23 | 33 | 36   | 36 | 32 | 35 | 25 | 22 | 35 | 103           |
| 11-Feb   | 31                            | 19 | 17 | 26 | 37 | 16 | 15 | 16 | 17 | 16  | 16 | 18 | 18 | 19 | 19 | 20 | 18 | 17   | 18 | 33 | 35 | 33 | 30 | 16 | 37            |
| 12-Feb   | 15                            | 15 | 16 | 14 | 13 | 15 | 16 | 14 | 14 | 16  | 16 | 17 | 21 | 21 | 24 | 22 | 24 | 23   | 28 | 30 | 31 | 28 | 25 | 23 | 31            |
| 13-Feb   | 21                            | 25 | 23 | 27 | 17 | 18 | 16 | 16 | DF | 19  | 18 | 21 | 39 | 45 | 45 | 42 | 45 | 41   | 38 | 43 | 39 | 33 | 30 | 42 | 45            |
| 14-Feb   | 34                            | 40 | 40 | 44 | 39 | 38 | 36 | 37 | 21 | 80  | 70 | 33 | M  | 27 | 25 | 30 | 36 | 50   | 43 | 47 | 44 | 42 | 25 | 21 | 80            |
| 15-Feb   | 22                            | 24 | 32 | 27 | 33 | 30 | 25 | 40 | 55 | 93  | 35 | 79 | 94 | 91 | 47 | 32 | 21 | 16   | 15 | 18 | 18 | 20 | 20 | 19 | 94            |
| 16-Feb   | 22                            | 25 | 26 | 26 | 25 | 29 | 28 | 22 | 21 | 21  | 21 | 22 | 24 | 21 | 19 | 18 | 17 | 19   | 20 | 29 | 41 | 42 | 50 | 44 | 50            |
| 17-Feb   | 40                            | 50 | 39 | 44 | 44 | 43 | 47 | 53 | 28 | 28  | 22 | 25 | 34 | 32 | 24 | 29 | 39 | 42   | 45 | 23 | 23 | 22 | 23 | 20 | 53            |
| 18-Feb   | 22                            | 20 | 21 | 19 | 23 | 21 | 25 | 32 | 38 | 34  | 42 | 45 | 41 | 51 | 53 | 41 | 25 | 35   | 28 | 30 | 21 | 24 | 19 | 17 | 53            |
| 19-Feb   | 19                            | 18 | 19 | 22 | 31 | 32 | 30 | 33 | 36 | 40  | 40 | 47 | 43 | 39 | 40 | 37 | 32 | 30   | 33 | 33 | 36 | 31 | 34 | 34 | 47            |
| 20-Feb   | 34                            | 40 | 33 | 37 | 44 | 37 | 43 | 42 | 44 | 43  | 43 | 40 | 40 | 40 | 37 | 46 | 52 | 41   | 40 | 36 | 26 | 36 | 40 | 35 | 52            |
| 21-Feb   | 28                            | 25 | 44 | 37 | 59 | 85 | 96 | 53 | 44 | 44  | 40 | 41 | 50 | 42 | 52 | 43 | 39 | 42   | 39 | 36 | 28 | 34 | 37 | 28 | 96            |
| 22-Feb   | 28                            | 49 | 44 | 28 | 62 | 62 | 11 | 8  | 52 | 58  | 25 | 45 | 56 | 55 | 54 | 41 | 31 | 22   | 20 | 15 | 17 | 18 | 16 | 11 | 62            |
| 23-Feb   | 15                            | 23 | 14 | 14 | 17 | 14 | 13 | 67 | 53 | 62  | 53 | 78 | 85 | 93 | 62 | 44 | 74 | 82   | 22 | 13 | 36 | 6  | 17 | 15 | 93            |
| 24-Feb   | 14                            | 19 | 17 | 16 | 18 | 18 | 20 | 21 | 23 | 26  | 27 | 32 | 32 | 31 | 33 | 29 | 31 | 31   | 30 | 27 | 23 | 22 | 21 | 20 | 33            |
| 25-Feb   | 19                            | 19 | 17 | 16 | 15 | 15 | 15 | 15 | 16 | 25  | 28 | 28 | 26 | 25 | 25 | 22 | 26 | 24   | 22 | 19 | 23 | 23 | 26 | 23 | 28            |
| 26-Feb   | 24                            | 25 | 25 | 36 | 33 | 37 | 37 | 39 | 37 | 38  | 31 | 31 | 28 | 26 | 27 | 29 | 27 | 29   | 26 | 30 | 35 | 44 | 44 | 39 | 44            |
| 27-Feb   | 23                            | 38 | 36 | 35 | 41 | 43 | 38 | 42 | 42 | 46  | 43 | 42 | 43 | 43 | 37 | 46 | 41 | 42   | 41 | 38 | 43 | 48 | 44 | 36 | 48            |
| 28-Feb   | 39                            | 34 | 32 | 22 | 23 | 25 | 32 | 30 | 31 | 41  | 38 | 33 | 51 | 55 | 47 | 42 | 34 | 27   | 19 | 17 | 20 | 21 | 35 | 28 | 55            |
| Diurnal Maximum  |                               |    |    |    |    |    |    |    |    |     |    |    |    |    |    |    |    |  |    |    |    |    |    |    |               |
| M - Maintenance      DF - DAS Failure  |                               |    |    |    |    |    |    |    |    |     |    |    |    |    |    |    |    |  |    |    |    |    |    |    |               |





## WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY  
MONITORING PROGRAM  
MONTHLY REPORT

### **AMS29 SURMONT 2 FEBRUARY 2023**

Operations, Data Collection,  
QA/QC, Data Validation and Reporting by:  
Wood Buffalo Environmental Association  
Fort McMurray, Alberta

March 31, 2023

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - SURMONT2 (AMS29)  
FEBRUARY 2023

MONTHLY SUMMARY

| Parameter                         | Hours of<br>Data | Hours of<br>Calibration | Hours<br>without Data | Operational<br>Time | Maximum<br>1-Hour Value | 1-Hour<br>Exceedances | Maximum<br>24-Hour Value | 24-Hour<br>Exceedances |
|-----------------------------------|------------------|-------------------------|-----------------------|---------------------|-------------------------|-----------------------|--------------------------|------------------------|
| SO2 (ppb) Average                 | 639              | 33                      | 33                    | 100                 | 21.5                    | 0                     | 7.1                      | 0                      |
| H2S (ppb) Average                 | 638              | 34                      | 34                    | 100                 | 1.1                     | 0                     | 0.5                      | 0                      |
| THC(ppm) Average                  | 639              | 33                      | 33                    | 100                 | 3.4                     | -                     | 2.4                      | -                      |
| NO2 (ppb) Average                 | 635              | 34                      | 37                    | 99.55               | 28.4                    | 0                     | 11.1                     | -                      |
| NO (ppb) Average                  | 635              | 34                      | 37                    | 99.55               | 8.3                     | -                     | 2.8                      | -                      |
| NOX (ppb) Average                 | 635              | 34                      | 37                    | 99.55               | 31.4                    | -                     | 13.5                     | -                      |
| PM2.5 (ug/m3) Average             | 670              | 2                       | 2                     | 100                 | 13.9                    | 0                     | 8.8                      | 0                      |
| Temperature 2 m (C) Average       | 672              | 0                       | 0                     | 100                 | 5.2                     | -                     | 1.1                      | -                      |
| Relative Humidity (%) Average     | 672              | 0                       | 0                     | 100                 | 98.1                    | -                     | 90.7                     | -                      |
| Wind Speed 10 m (km/h) Average    | 664              | 0                       | 8                     | 98.81               | 19                      | -                     | 11                       | -                      |
| Wind Direction 10 m (deg) Average | 664              | 0                       | 8                     | 98.81               | -                       | -                     | -                        | -                      |

Note : Operational time includes periods of data collection and instrument calibration

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - SURMONT 2 (AMS29)  
 FEBRUARY 2023

MONTHLY SUMMARY FOR AIR QUALITY/ METEOROLOGICAL MONITORING MEASUREMENTS

| Parameter                         | Number | Mean   | StnDev | Total | Percentile |       |       |        |      |      |      |
|-----------------------------------|--------|--------|--------|-------|------------|-------|-------|--------|------|------|------|
|                                   |        |        |        |       | Min        | P10   | Q1    | Median | Q3   | P90  | Max  |
| SO2 (ppb) Average                 | 639    | 1.19   | 2.3    | -     | 0          | 0     | 0.2   | 0.4    | 0.9  | 3.2  | 21.5 |
| H2S (ppb) Average                 | 638    | 0.14   | 0.1    | -     | 0          | 0     | 0     | 0.1    | 0.2  | 0.3  | 1.1  |
| THC (ppm) Average                 | 639    | 2.29   | 0.1    | -     | 2.1        | 2.2   | 2.2   | 2.3    | 2.3  | 2.4  | 3.4  |
| NO2 (ppb) Average                 | 635    | 3.9    | 4.1    | -     | 0.3        | 0.6   | 1.1   | 2.5    | 5    | 9.3  | 28.4 |
| NO (ppb) Average                  | 635    | 0.46   | 1.1    | -     | 0          | 0     | 0     | 0.1    | 0.3  | 1.3  | 8.3  |
| NOX (ppb) Average                 | 635    | 4.35   | 4.6    | -     | 0.3        | 0.7   | 1.2   | 2.7    | 5.8  | 10.3 | 31.4 |
| PM2.5 (ug/m3) Average             | 670    | 2.89   | 2.2    | -     | 0.4        | 0.8   | 1.4   | 2.4    | 3.6  | 5.4  | 13.9 |
| Temperature 2 m (C) Average       | 672    | -13.06 | 10.3   | -     | -35.8      | -27.4 | -20.5 | -13.4  | -3.6 | 0.8  | 5.2  |
| Relative Humidity (%) Average     | 672    | 73.04  | 12.2   | -     | 39.7       | 55.2  | 66.2  | 74.5   | 80.7 | 89.1 | 98.1 |
| Wind Speed 10 m (km/h) Average    | 664    | 5.5    | 4      | -     | 0          | 2     | 3     | 5      | 8    | 11   | 19   |
| Wind Direction 10 m (deg) Average | 664    | -      | -      | -     | -          | -     | -     | -      | -    | -    | -    |

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - SURMONT 2 (AMS29)  
FEBRUARY 2023

OPERATIONAL NOTES

| Parameter                  | Period<br>Start   | Period<br>End     | Duration<br>(Hours) | Notes   |
|----------------------------|-------------------|-------------------|---------------------|---|
| NO2                        | 17 Feb 2023 12:00 | 17 Feb 2023 14:00 | 3                   | Maintenance - station calibrator replaced         |
| Wind Speed, Wind Direction | 17 Feb 2023 13:00 | 17 Feb 2023 14:00 | 2                   | Maintenance - station operator activities         |
| Wind Speed, Wind Direction | 23 Feb 2023 01:00 | 23 Feb 2023 04:00 | 4                   | Flat line in sensor output signal - Sensor frozen |
| Wind Speed, Wind Direction | 23 Feb 2023 08:00 | 23 Feb 2023 08:00 | 1                   | Flat line in sensor output signal - Sensor frozen |
| Wind Speed, Wind Direction | 28 Feb 2023 07:00 | 28 Feb 2023 07:00 | 1                   | Flat line in sensor output signal - Sensor frozen |



# Wood Buffalo Environmental Association

## Summary of Hour Averages

# Sulphur Dioxide (SO<sub>2</sub>) - ppb

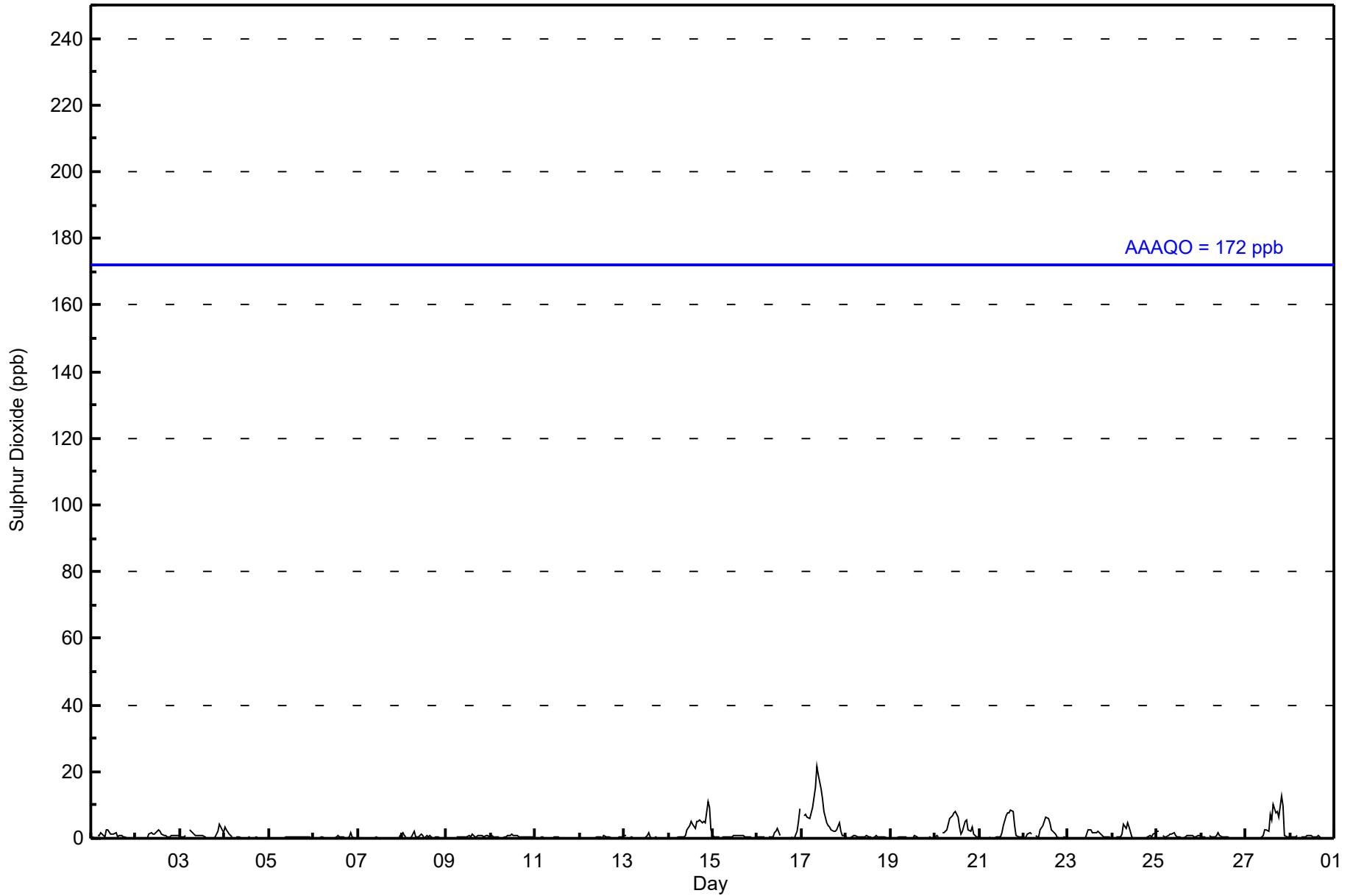
## Surmont 2 - February 2023

| Number of Exceedences (AAAQO):   |                               | 1-hr: 0 |     | 24-hr: 0  |     | Hours in Service:         |     |      |      |      |      |      |     |     |     |      |     |     |     | 672   |     |      |     |     |               |               |     |     |     |     |      |      |      |      |      |     |     |     |      |     |     |     |      |     |      |     |     |                 |
|--|-------------------------------|---------|-----|---|-----|---------------------------|-----|------|------|------|------|------|-----|-----|-----|------|-----|-----|-----|-------|-----|------|-----|-----|---------------|---------------|-----|-----|-----|-----|------|------|------|------|------|-----|-----|-----|------|-----|-----|-----|------|-----|------|-----|-----|-----------------|
| Maximum Value: 21.5 ppb on Feb 17 09:00                                      |                               |         |     | Maximum Daily Average: 7.1 ppb on Feb 17  |     | Hours of Data:            |     |      |      |      |      |      |     |     |     |      |     |     |     | 639   |     |      |     |     |               |               |     |     |     |     |      |      |      |      |      |     |     |     |      |     |     |     |      |     |      |     |     |                 |
| Minimum Value: 0.0 ppb on Feb 4 20:00  |                               |         |     | Minimum Daily Average: 0.1 ppb on Feb 11  |     | Hours of Missing Data:    |     |      |      |      |      |      |     |     |     |      |     |     |     | 33    |     |      |     |     |               |               |     |     |     |     |      |      |      |      |      |     |     |     |      |     |     |     |      |     |      |     |     |                 |
| Maximum Diurnal Average: 1.7 ppb at hour 12                                  |                               |         |     | Minimum Diurnal Average: 0.6 ppb at hour 1  |     | Hours of Calibration:     |     |      |      |      |      |      |     |     |     |      |     |     |     | 33    |     |      |     |     |               |               |     |     |     |     |      |      |      |      |      |     |     |     |      |     |     |     |      |     |      |     |     |                 |
| Monthly Average: 1.19 ppb  |                               |         |     | Percentiles: P <sub>1</sub> = 0.0 P <sub>10</sub> = 0.0 Q <sub>1</sub> = 0.2 Median = 0.4 Q <sub>3</sub> = 0.9 P <sub>90</sub> = 3.2 P <sub>99</sub> = 10.8 |     | Percent Operational Time: |     |      |      |      |      |      |     |     |     |      |     |     |     | 100.0 |     |      |     |     |               |               |     |     |     |     |      |      |      |      |      |     |     |     |      |     |     |     |      |     |      |     |     |                 |
| Day  | Hourly Period Ending At (MST) |         |     |   |     |                           |     |      |      |      |      |      |     |     |     |      |     |     |     |       |     |      |     |     | Daily Average | Daily Maximum |     |     |     |     |      |      |      |      |      |     |     |     |      |     |     |     |      |     |      |     |     |                 |
|  | 1                             | 2       | 3   | 4   | 5   | 6                         | 7   | 8    | 9    | 10   | 11   | 12   | 13  | 14  | 15  | 16   | 17  | 18  | 19  | 20    | 21  | 22   | 23  | 24  |               |               |     |     |     |     |      |      |      |      |      |     |     |     |      |     |     |     |      |     |      |     |     |                 |
| 1-Feb  | 0.3                           | 0.4     | Z   | 1.0   | 1.0 | 1.5                       | 0.9 | 0.3  | 2.5  | 2.4  | 1.4  | 1.4  | 1.3 | 1.5 | 0.6 | 0.7  | 0.9 | 0.4 | 0.2 | 0.1   | 0.1 | 0.1  | 0.1 | 0.0 | 0.8           | 2.5           |     |     |     |     |      |      |      |      |      |     |     |     |      |     |     |     |      |     |      |     |     |                 |
| 2-Feb  | 0.1                           | 0.0     | 0.1 | Z   | 0.1 | 0.0                       | 0.0 | 1.3  | 1.6  | 1.5  | 1.2  | 1.9  | 2.6 | 2.0 | 1.3 | 0.8  | 1.0 | 0.6 | 0.5 | 0.7   | 0.8 | 0.9  | 1.0 | 0.7 | 0.9           | 2.6           |     |     |     |     |      |      |      |      |      |     |     |     |      |     |     |     |      |     |      |     |     |                 |
| 3-Feb  | 0.4                           | 0.3     | 0.4 | 0.7   | Z   | 2.6                       | 2.3 | 1.1  | 1.0  | 0.8  | 0.7  | 0.8  | 0.8 | 0.4 | 0.1 | 0.1  | 0.0 | 0.1 | 0.2 | 0.5   | 2.1 | 4.4  | 3.2 | 1.6 | 1.1           | 4.4           |     |     |     |     |      |      |      |      |      |     |     |     |      |     |     |     |      |     |      |     |     |                 |
| 4-Feb  | 3.2                           | 2.4     | 1.5 | 0.6   | 0.5 | Z                         | 0.4 | 0.2  | 0.3  | 0.2  | 0.1  | 0.1  | 0.2 | 0.2 | 0.1 | 0.2  | 0.3 | 0.1 | 0.0 | 0.1   | 0.1 | 0.0  | 0.0 | 0.0 | 0.5           | 3.2           |     |     |     |     |      |      |      |      |      |     |     |     |      |     |     |     |      |     |      |     |     |                 |
| 5-Feb  | Z                             | 0.2     | 0.2 | 0.2   | 0.0 | 0.1                       | 0.2 | 0.2  | 0.2  | 0.3  | 0.4  | 0.4  | 0.3 | 0.5 | 0.5 | 0.2  | 0.3 | 0.3 | 0.4 | 0.5   | 0.4 | 0.6  | 0.6 | 0.0 | 0.3           | 0.6           |     |     |     |     |      |      |      |      |      |     |     |     |      |     |     |     |      |     |      |     |     |                 |
| 6-Feb  | 0.0                           | Z       | 0.0 | 0.0   | 0.5 | 0.2                       | 0.0 | 0.0  | 0.0  | 0.0  | 0.0  | 0.1  | 0.3 | 0.9 | 0.6 | 0.2  | 0.3 | 0.2 | 0.1 | 0.5   | 1.9 | 0.3  | 0.2 | 0.2 | 0.3           | 1.9           |     |     |     |     |      |      |      |      |      |     |     |     |      |     |     |     |      |     |      |     |     |                 |
| 7-Feb  | 0.2                           | 0.2     | Z   | 0.2   | 0.1 | 0.1                       | 0.1 | 0.1  | 0.1  | 0.1  | 0.4  | 0.0  | 0.1 | 0.0 | 0.1 | 0.0  | 0.0 | 0.0 | 0.0 | 0.0   | 0.0 | 0.0  | 0.2 | 0.9 | 0.1           | 0.9           |     |     |     |     |      |      |      |      |      |     |     |     |      |     |     |     |      |     |      |     |     |                 |
| 8-Feb  | 1.6                           | 0.9     | 0.4 | Z   | 0.1 | 0.3                       | 2.0 | 0.6  | 0.4  | 0.5  | 1.2  | 0.8  | 0.2 | 0.7 | 0.2 | 0.7  | 0.0 | 0.0 | 0.2 | 0.4   | 0.2 | 0.1  | 0.0 | 0.0 | 0.5           | 2.0           |     |     |     |     |      |      |      |      |      |     |     |     |      |     |     |     |      |     |      |     |     |                 |
| 9-Feb  | 0.0                           | 0.0     | 0.0 | 0.0   | Z   | 0.2                       | 0.2 | 0.4  | 0.4  | 0.5  | 0.6  | 0.3  | 1.0 | 0.2 | 1.2 | 0.4  | 0.3 | 0.8 | 0.8 | 0.7   | 0.6 | 0.7  | 0.7 | 0.6 | 0.5           | 1.2           |     |     |     |     |      |      |      |      |      |     |     |     |      |     |     |     |      |     |      |     |     |                 |
| 10-Feb   | 0.8                           | 0.4     | 0.4 | 0.2   | 0.4 | Z                         | 0.2 | 0.4  | 0.4  | 0.7  | 1.0  | 1.1  | 1.0 | 0.8 | 0.7 | 0.5  | 0.4 | 0.5 | 0.3 | 0.2   | 0.5 | 0.5  | 0.5 | 0.4 | 0.5           | 1.1           |     |     |     |     |      |      |      |      |      |     |     |     |      |     |     |     |      |     |      |     |     |                 |
| 11-Feb   | Z                             | 0.1     | 0.1 | 0.2   | 0.4 | 0.1                       | 0.0 | 0.0  | 0.0  | 0.1  | 0.3  | 0.3  | 0.3 | 0.2 | 0.1 | 0.0  | 0.0 | 0.0 | 0.0 | 0.0   | 0.0 | 0.0  | 0.2 | 0.0 | 0.1           | 0.4           |     |     |     |     |      |      |      |      |      |     |     |     |      |     |     |     |      |     |      |     |     |                 |
| 12-Feb   | 0.1                           | Z       | 0.2 | 0.1   | 0.0 | 0.0                       | 0.2 | 0.1  | 0.2  | 0.3  | 0.3  | 0.4  | 0.2 | 0.7 | 0.2 | 0.5  | 0.2 | 0.2 | 0.1 | 0.1   | 0.1 | 0.3  | 0.3 | 0.3 | 0.2           | 0.7           |     |     |     |     |      |      |      |      |      |     |     |     |      |     |     |     |      |     |      |     |     |                 |
| 13-Feb   | 0.9                           | 0.8     | Z   | 0.3   | 0.3 | 0.1                       | 0.2 | 0.1  | 0.1  | 0.2  | 0.2  | 0.2  | 1.0 | 1.5 | 0.4 | 0.1  | 0.0 | 0.3 | 0.1 | 0.0   | 0.0 | 0.0  | 0.0 | 0.0 | 0.3           | 1.5           |     |     |     |     |      |      |      |      |      |     |     |     |      |     |     |     |      |     |      |     |     |                 |
| 14-Feb   | 0.0                           | 0.0     | 0.0 | Z   | 0.1 | 0.5                       | 0.3 | 0.3  | 0.4  | 0.9  | 2.5  | 3.9  | 5.1 | 4.3 | 3.0 | 5.1  | 5.1 | 5.4 | 4.7 | 5.2   | 4.8 | 11.2 | 9.3 | 2.6 | 3.3           | 11.2          |     |     |     |     |      |      |      |      |      |     |     |     |      |     |     |     |      |     |      |     |     |                 |
| 15-Feb   | 0.6                           | 0.5     | 0.3 | 0.5   | Z   | 0.4                       | 0.3 | 0.5  | 0.3  | 0.4  | 0.5  | 0.9  | 0.8 | 0.9 | 1.0 | 0.6  | 0.7 | 0.4 | 0.4 | 0.3   | 0.3 | 0.1  | 0.1 | 0.3 | 0.5           | 1.0           |     |     |     |     |      |      |      |      |      |     |     |     |      |     |     |     |      |     |      |     |     |                 |
| 16-Feb   | 0.5                           | 0.5     | 0.2 | 0.3   | 0.3 | Z                         | 0.4 | 0.5  | 0.5  | 1.6  | 2.3  | 2.9  | 0.8 | C   | C   | C    | C   | C   | 0.3 | 0.1   | 0.1 | 2.2  | 5.1 | 8.9 | 1.5           | 8.9           |     |     |     |     |      |      |      |      |      |     |     |     |      |     |     |     |      |     |      |     |     |                 |
| 17-Feb   | Z                             | 6.9     | 7.1 | 6.3   | 5.7 | 7.6                       | 9.2 | 15.4 | 21.5 | 19.2 | 14.7 | 11.8 | 8.0 | 4.9 | 3.9 | 3.2  | 2.6 | 2.3 | 2.2 | 2.7   | 4.7 | 2.3  | 0.9 | 0.6 | 7.1           | 21.5          |     |     |     |     |      |      |      |      |      |     |     |     |      |     |     |     |      |     |      |     |     |                 |
| 18-Feb   | 0.5                           | Z       | 0.5 | 0.4   | 0.7 | 0.8                       | 0.4 | 0.3  | 0.3  | 0.3  | 0.6  | 0.7  | 0.6 | 0.4 | 0.1 | 0.3  | 0.8 | 0.4 | 0.6 | 0.4   | 0.3 | 0.3  | 0.1 | 0.0 | 0.4           | 0.8           |     |     |     |     |      |      |      |      |      |     |     |     |      |     |     |     |      |     |      |     |     |                 |
| 19-Feb   | 0.0                           | 0.1     | Z   | 0.2   | 0.2 | 0.3                       | 0.3 | 0.5  | 0.3  | 0.2  | 0.1  | 0.1  | 0.1 | 0.8 | 0.3 | 0.2  | 0.1 | 0.1 | 0.2 | 0.2   | 0.1 | 0.2  | 0.1 | 0.1 | 0.2           | 0.8           |     |     |     |     |      |      |      |      |      |     |     |     |      |     |     |     |      |     |      |     |     |                 |
| 20-Feb   | 0.6                           | 0.9     | 0.6 | Z   | 1.6 | 1.6                       | 2.5 | 4.2  | 5.8  | 6.9  | 7.5  | 8.2  | 6.3 | 3.6 | 1.4 | 2.1  | 5.0 | 5.5 | 2.7 | 2.1   | 3.2 | 1.2  | 0.4 | 0.3 | 3.2           | 8.2           |     |     |     |     |      |      |      |      |      |     |     |     |      |     |     |     |      |     |      |     |     |                 |
| 21-Feb   | 0.3                           | 0.2     | 0.2 | 0.2   | Z   | 0.3                       | 0.2 | 0.1  | 0.2  | 0.3  | 0.3  | 0.4  | 1.9 | 4.0 | 6.8 | 7.8  | 7.7 | 8.6 | 8.3 | 3.8   | 1.0 | 0.4  | 0.3 | 0.2 | 2.3           | 8.6           |     |     |     |     |      |      |      |      |      |     |     |     |      |     |     |     |      |     |      |     |     |                 |
| 22-Feb   | 0.2                           | 0.2     | 1.2 | 1.6   | 1.3 | Z                         | 1.0 | 0.4  | 0.5  | 2.7  | 3.9  | 4.9  | 6.4 | 6.0 | 4.5 | 2.5  | 1.6 | 1.3 | 0.5 | 0.2   | 0.1 | 0.1  | 0.2 | 0.2 | 1.8           | 6.4           |     |     |     |     |      |      |      |      |      |     |     |     |      |     |     |     |      |     |      |     |     |                 |
| 23-Feb   | Z                             | 0.0     | 0.0 | 0.0   | 0.0 | 0.1                       | 0.0 | 0.0  | 0.0  | 0.1  | 1.5  | 2.6  | 2.7 | 1.8 | 1.8 | 1.9  | 2.0 | 1.5 | 0.9 | 0.5   | 0.3 | 0.4  | 0.3 | 0.2 | 0.8           | 2.7           |     |     |     |     |      |      |      |      |      |     |     |     |      |     |     |     |      |     |      |     |     |                 |
| 24-Feb   | 0.1                           | Z       | 0.3 | 0.4   | 0.3 | 1.2                       | 4.3 | 3.2  | 4.9  | 3.5  | 0.4  | 0.2  | 0.1 | 0.1 | 0.0 | 0.0  | 0.0 | 0.0 | 0.2 | 0.5   | 1.0 | 0.4  | 1.1 | 1.6 | 1.0           | 4.9           |     |     |     |     |      |      |      |      |      |     |     |     |      |     |     |     |      |     |      |     |     |                 |
| 25-Feb   | 2.0                           | 2.2     | Z   | 0.7   | 0.6 | 0.5                       | 0.8 | 1.4  | 1.3  | 1.5  | 1.0  | 0.5  | 0.2 | 0.1 | 0.2 | 0.3  | 0.7 | 0.8 | 0.8 | 0.8   | 0.6 | 0.6  | 1.1 | 0.8 | 0.8           | 2.2           |     |     |     |     |      |      |      |      |      |     |     |     |      |     |     |     |      |     |      |     |     |                 |
| 26-Feb   | 0.4                           | 0.3     | 0.4 | Z   | 0.7 | 0.6                       | 0.5 | 0.6  | 0.8  | 1.6  | 0.9  | 0.5  | 0.4 | 0.3 | 0.2 | 0.2  | 0.2 | 0.2 | 0.2 | 0.2   | 0.1 | 0.2  | 0.2 | 0.1 | 0.4           | 1.6           |     |     |     |     |      |      |      |      |      |     |     |     |      |     |     |     |      |     |      |     |     |                 |
| 27-Feb   | 0.1                           | 0.0     | 0.1 | 0.1   | Z   | 0.1                       | 0.1 | 0.1  | 0.2  | 0.7  | 2.5  | 2.4  | 2.1 | 7.1 | 5.7 | 10.1 | 7.8 | 8.1 | 6.2 | 12.6  | 9.7 | 0.9  | 0.4 | 0.3 | 3.4           | 12.6          |     |     |     |     |      |      |      |      |      |     |     |     |      |     |     |     |      |     |      |     |     |                 |
| 28-Feb   | 0.3                           | 0.2     | 0.2 | 0.5   | 0.8 | Z                         | 0.4 | 0.3  | 0.3  | 0.7  | 0.9  | 0.8  | 0.5 | 0.6 | 0.6 | 0.7  | 0.5 | 0.2 | 0.1 | 0.1   | 0.1 | 0.1  | 0.0 | 0.0 | 0.4           | 0.9           |     |     |     |     |      |      |      |      |      |     |     |     |      |     |     |     |      |     |      |     |     |                 |
|  |                               |         |     |   |     |                           |     |      |      |      |      |      |     |     |     |      |     |     |     |       |     |      |     | 0.6 | 0.7           | 0.6           | 0.6 | 0.7 | 0.8 | 1.0 | 1.2  | 1.6  | 1.7  | 1.7  | 1.7  | 1.6 | 1.7 | 1.3 | 1.5  | 1.4 | 1.4 | 1.1 | 1.2  | 1.2 | 1.0  | 1.0 | 0.8 | Diurnal Average |
|  |                               |         |     |   |     |                           |     |      |      |      |      |      |     |     |     |      |     |     |     |       |     |      |     | 3.2 | 6.9           | 7.1           | 6.3 | 5.7 | 7.6 | 9.2 | 15.4 | 21.5 | 19.2 | 14.7 | 11.8 | 8.0 | 7.1 | 6.8 | 10.1 | 7.8 | 8.6 | 8.3 | 12.6 | 9.7 | 11.2 | 9.3 | 8.9 | Diurnal Maximum |
| Z - zerospan      C - Calibration  |                               |         |     |   |     |                           |     |      |      |      |      |      |     |     |     |      |     |     |     |       |     |      |     |     |               |               |     |     |     |     |      |      |      |      |      |     |     |     |      |     |     |     |      |     |      |     |     |                 |
| Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 172 ppb    24-hr 48 ppb |                               |         |     |   |     |                           |     |      |      |      |      |      |     |     |     |      |     |     |     |       |     |      |     |     |               |               |     |     |     |     |      |      |      |      |      |     |     |     |      |     |     |     |      |     |      |     |     |                 |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Sulphur Dioxide (SO<sub>2</sub>) - ppb**  
**Surmont 2 - February 2023**





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Sulphur Dioxide (SO<sub>2</sub>) - ppb**  
**Surmont 2 - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 10                            | 632                    | 98.90    | 98.90               |
| 11 - 20                           | 6                      | 0.94     | 99.84               |
| 21 - 60                           | 1                      | 0.16     | 100.00              |
| 61 - 110                          | 0                      | 0.00     | 100.00              |
| 111 - 172                         | 0                      | 0.00     | 100.00              |
| > 172                             | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 639

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Sulphur Dioxide (SO<sub>2</sub>) - ppb  
Surmont 2 - February 2023**

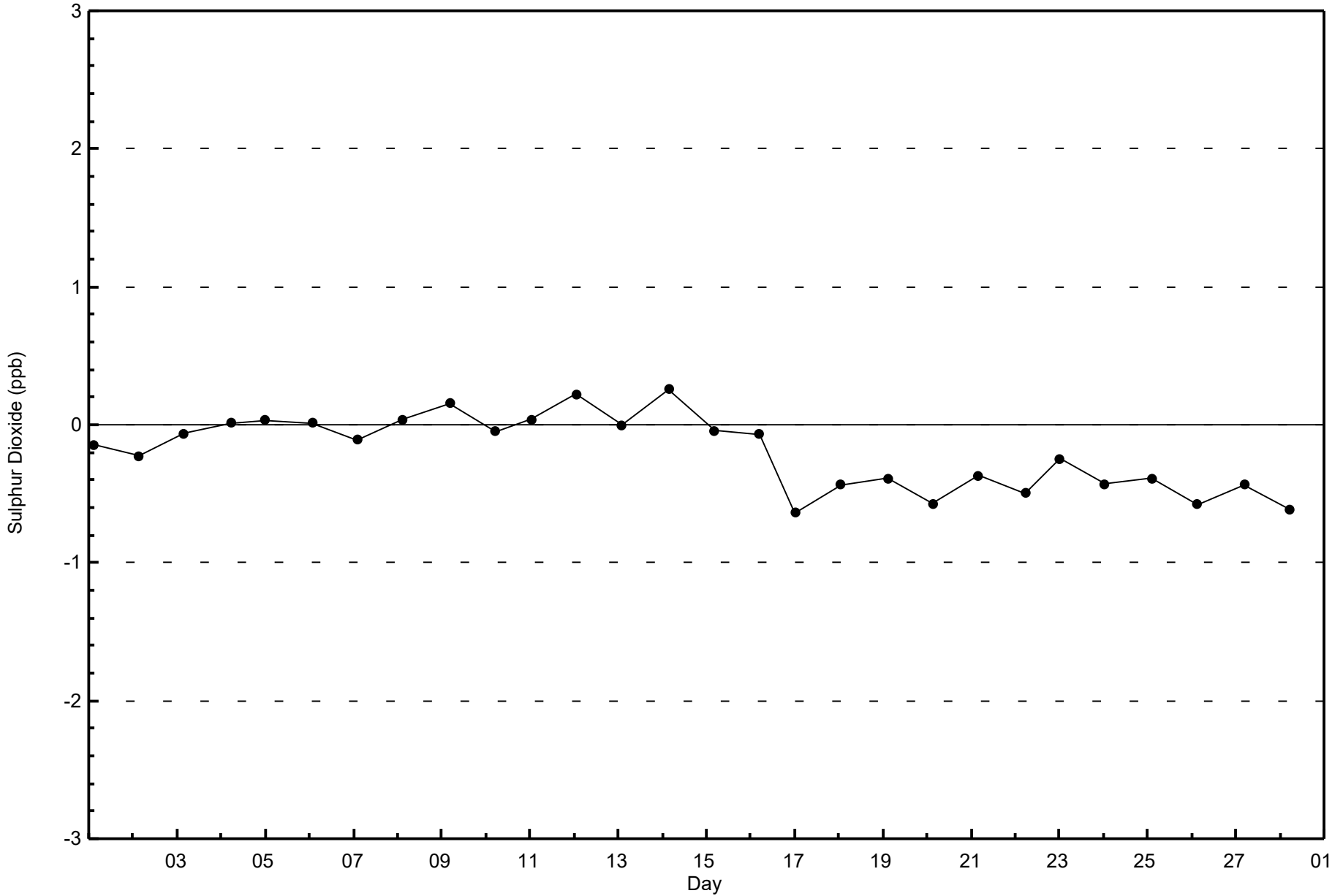
| Concentration<br>Ranges (ppb) | Wind Direction |     |    |     |    |     |    |     |    |     |    |     |    |     |    |     | Totals |
|-------------------------------|----------------|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|--------|
|                               | N              | NNE | NE | ENE | E  | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |        |
| 0 - 10                        | 39             | 34  | 14 | 8   | 18 | 23  | 57 | 25  | 18 | 11  | 12 | 79  | 94 | 67  | 42 | 84  | 625    |
| 11 - 20                       | 1              | 2   | 0  | 0   | 0  | 1   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 2   | 6      |
| 21 - 60                       | 0              | 1   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 1      |
| 61 - 110                      | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| 111 - 172                     | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| > 172                         | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| <b>Totals</b>                 | 40             | 37  | 14 | 8   | 18 | 24  | 57 | 25  | 18 | 11  | 12 | 79  | 94 | 67  | 42 | 86  | 632    |

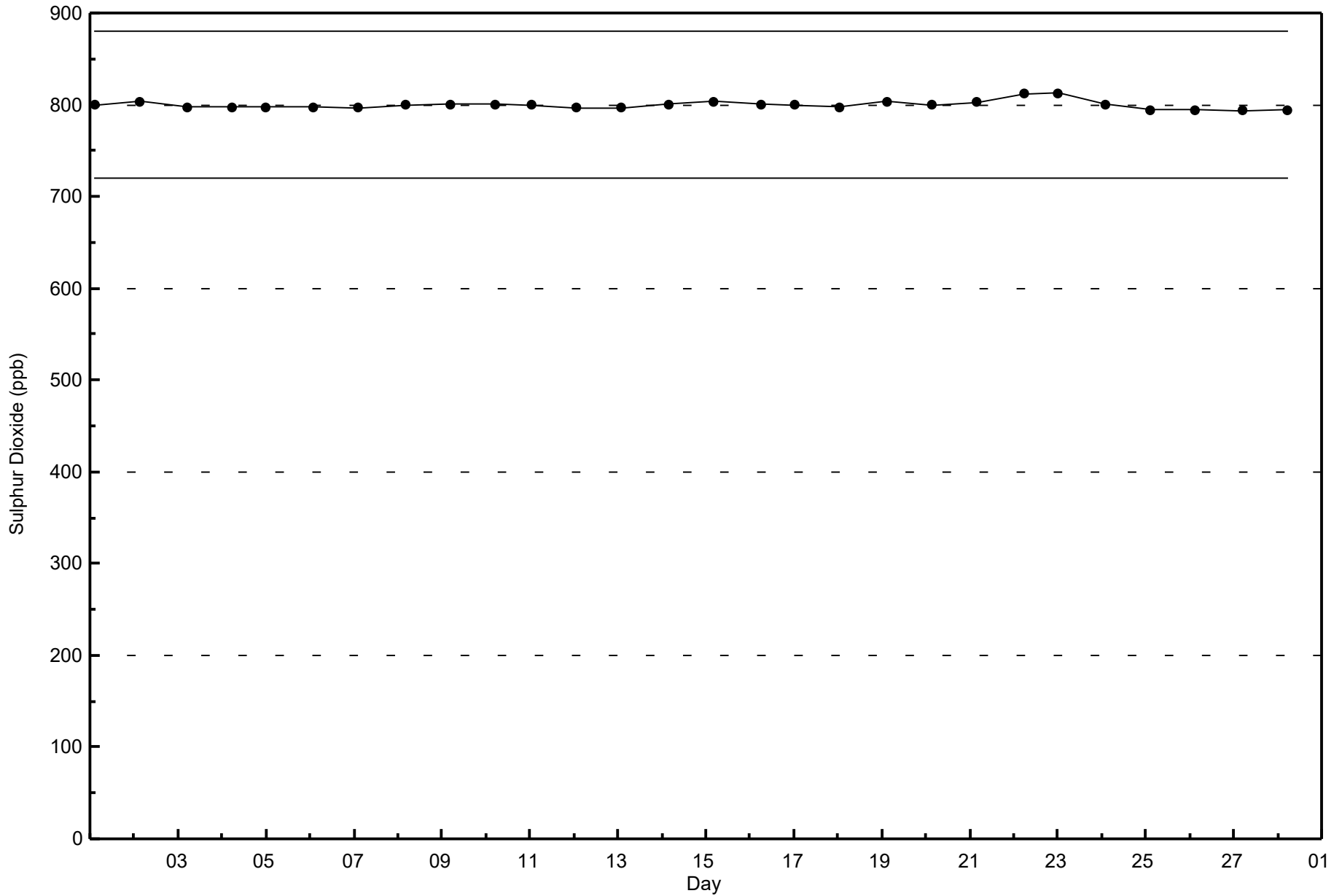
Total Number of Valid Hours: 632

Total Number of Hours: 672



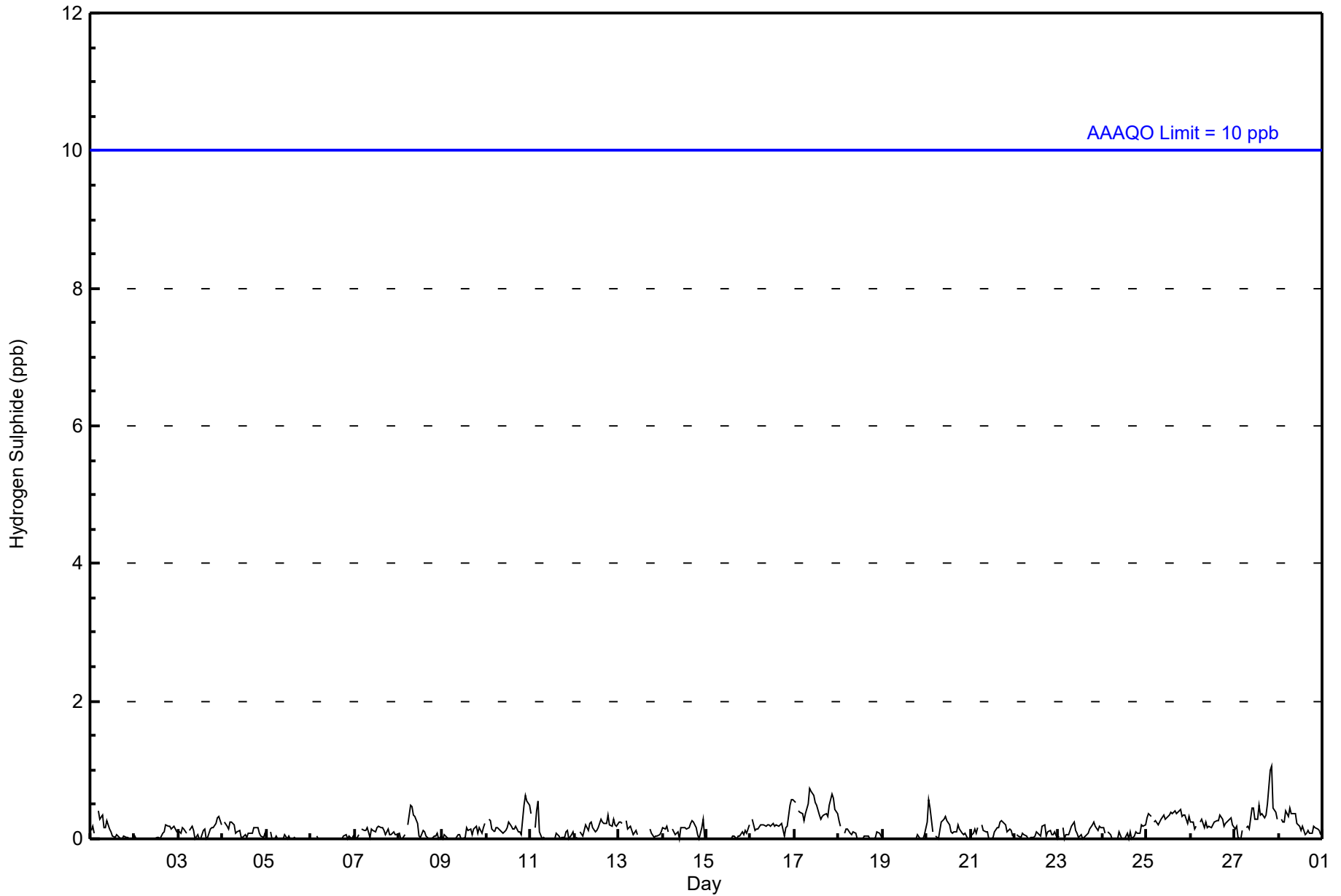








| Number of Exceedences (AAAQO):  |                               | 1-hr: 0  |     | 24-hr: 0 |     | Hours in Service: 672 |     |     |     |     |     |     |     |     |     |                                 |     |     |     | 638 |     |     |     |                 |               |               |
|---|-------------------------------|--|-----|----------|-----|-----------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|---------------------------------|-----|-----|-----|-----|-----|-----|-----|-----------------|---------------|---------------|
| Maximum Value: 1.1 ppb on Feb 27 21:00  |                               | Maximum Daily Average: 0.5 ppb on Feb 17   |     |          |     |                       |     |     |     |     |     |     |     |     |     | Hours of Data: 638              |     |     |     |     |     |     |     |                 |               |               |
| Minimum Value: 0.0 ppb on Feb 1 17:00   |                               | Minimum Daily Average: 0.0 ppb on Feb 19   |     |          |     |                       |     |     |     |     |     |     |     |     |     | Hours of Missing Data: 34       |     |     |     |     |     |     |     |                 |               |               |
| Maximum Diurnal Average: 0.2 ppb at hour 22   |                               | Minimum Diurnal Average: 0.1 ppb at hour 12  |     |          |     |                       |     |     |     |     |     |     |     |     |     | Hours of Calibration: 34        |     |     |     |     |     |     |     |                 |               |               |
| Monthly Average: 0.14 ppb   |                               | Percentiles: P <sub>1</sub> = 0.0 P <sub>10</sub> = 0.0 Q <sub>1</sub> = 0.0 Median = 0.1 Q <sub>3</sub> = 0.2 P <sub>90</sub> = 0.3 P <sub>99</sub> = 0.6 |     |          |     |                       |     |     |     |     |     |     |     |     |     | Percent Operational Time: 100.0 |     |     |     |     |     |     |     |                 |               |               |
| Day   | Hourly Period Ending At (MST) |  |     |          |     |                       |     |     |     |     |     |     |     |     |     |                                 |     |     |     |     |     |     |     |                 | Daily Average | Daily Maximum |
|   | 1                             | 2  | 3   | 4        | 5   | 6                     | 7   | 8   | 9   | 10  | 11  | 12  | 13  | 14  | 15  | 16                              | 17  | 18  | 19  | 20  | 21  | 22  | 23  | 24              |               |               |
| 1-Feb   | 0.1                           | 0.2  | 0.1 | Z        | 0.4 | 0.3                   | 0.3 | 0.2 | 0.2 | 0.3 | 0.1 | 0.1 | 0.0 | 0.0 | 0.1 | 0.0                             | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.1           | 0.4           |
| 2-Feb   | 0.0                           | 0.0  | 0.0 | 0.0      | Z   | 0.0                   | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1                             | 0.1 | 0.2 | 0.2 | 0.2 | 0.1 | 0.2 | 0.1 | 0.1             | 0.1           | 0.2           |
| 3-Feb   | 0.1                           | 0.1  | 0.2 | 0.1      | 0.1 | Z                     | 0.1 | 0.2 | 0.1 | 0.0 | 0.1 | 0.0 | 0.0 | 0.1 | 0.1 | 0.0                             | 0.0 | 0.1 | 0.2 | 0.2 | 0.2 | 0.3 | 0.3 | 0.2             | 0.1           | 0.3           |
| 4-Feb   | Z                             | 0.2  | 0.2 | 0.1      | 0.2 | 0.3                   | 0.2 | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 | 0.1 | 0.0 | 0.1 | 0.1                             | 0.1 | 0.2 | 0.2 | 0.2 | 0.1 | 0.0 | 0.0 | 0.1             | 0.1           | 0.3           |
| 5-Feb   | 0.0                           | Z  | 0.1 | 0.0      | 0.0 | 0.0                   | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0                             | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.0           | 0.1           |
| 6-Feb   | 0.0                           | 0.0  | Z   | 0.0      | 0.0 | 0.0                   | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0                             | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0             | 0.0           | 0.1           |
| 7-Feb   | 0.0                           | 0.0  | 0.1 | Z        | 0.2 | 0.1                   | 0.1 | 0.2 | 0.0 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2                             | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1             | 0.1           | 0.2           |
| 8-Feb   | 0.1                           | 0.0  | 0.0 | 0.1      | Z   | 0.2                   | 0.5 | 0.5 | 0.4 | 0.3 | 0.2 | 0.0 | 0.0 | 0.1 | 0.1 | 0.0                             | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0             | 0.1           | 0.5           |
| 9-Feb   | 0.0                           | 0.1  | 0.0 | 0.0      | 0.0 | Z                     | 0.0 | 0.0 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.2 | 0.1 | 0.1                             | 0.1 | 0.1 | 0.2 | 0.1 | 0.2 | 0.1 | 0.2 | 0.2             | 0.1           | 0.2           |
| 10-Feb  | Z                             | 0.3  | 0.3 | 0.1      | 0.1 | 0.2                   | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.3 | 0.2 | 0.1 | 0.2                             | 0.2 | 0.1 | 0.1 | 0.1 | 0.5 | 0.6 | 0.5 | 0.5             | 0.2           | 0.6           |
| 11-Feb  | 0.4                           | Z  | 0.2 | 0.4      | 0.5 | 0.1                   | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0                             | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.0 | 0.1 | 0.1             | 0.1           | 0.5           |
| 12-Feb  | 0.0                           | 0.0  | Z   | 0.1      | 0.0 | 0.1                   | 0.2 | 0.1 | 0.2 | 0.2 | 0.2 | 0.1 | 0.1 | 0.2 | 0.3 | 0.2                             | 0.2 | 0.2 | 0.3 | 0.2 | 0.2 | 0.3 | 0.2 | 0.2             | 0.2           | 0.3           |
| 13-Feb  | 0.2                           | 0.2  | 0.2 | Z        | 0.3 | 0.1                   | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | C   | C   | C   | C   | C                               | C   | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1             | 0.3           |               |
| 14-Feb  | 0.2                           | 0.1  | 0.2 | 0.1      | Z   | 0.1                   | 0.1 | 0.1 | 0.1 | 0.0 | 0.2 | 0.2 | 0.2 | 0.1 | 0.2 | 0.2                             | 0.3 | 0.2 | 0.2 | 0.1 | 0.0 | 0.2 | 0.3 | 0.0             | 0.1           | 0.3           |
| 15-Feb  | 0.0                           | 0.0  | 0.0 | 0.0      | 0.0 | Z                     | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0                             | 0.0 | 0.1 | 0.0 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2             | 0.0           | 0.2           |
| 16-Feb  | Z                             | 0.3  | 0.1 | 0.1      | 0.1 | 0.2                   | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2                             | 0.2 | 0.2 | 0.0 | 0.2 | 0.2 | 0.5 | 0.6 | 0.6             | 0.2           | 0.6           |
| 17-Feb  | 0.5                           | Z  | 0.4 | 0.4      | 0.4 | 0.3                   | 0.4 | 0.5 | 0.7 | 0.7 | 0.6 | 0.5 | 0.5 | 0.4 | 0.3 | 0.3                             | 0.3 | 0.4 | 0.3 | 0.5 | 0.7 | 0.6 | 0.4 | 0.4             | 0.5           | 0.7           |
| 18-Feb  | 0.3                           | 0.2  | Z   | 0.1      | 0.1 | 0.1                   | 0.1 | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0                             | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.1 | 0.1             | 0.1           | 0.3           |
| 19-Feb  | 0.0                           | 0.0  | 0.0 | Z        | 0.0 | 0.0                   | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0                             | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.1             | 0.0           | 0.1           |
| 20-Feb  | 0.2                           | 0.6  | 0.4 | 0.1      | Z   | 0.0                   | 0.0 | 0.1 | 0.2 | 0.3 | 0.3 | 0.3 | 0.2 | 0.1 | 0.1 | 0.1                             | 0.1 | 0.2 | 0.2 | 0.1 | 0.1 | 0.1 | 0.0 | 0.0             | 0.2           | 0.6           |
| 21-Feb  | 0.0                           | 0.1  | 0.1 | 0.1      | 0.2 | Z                     | 0.2 | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.1 | 0.2 | 0.2                             | 0.3 | 0.3 | 0.2 | 0.2 | 0.1 | 0.1 | 0.1 | 0.0             | 0.1           | 0.3           |
| 22-Feb  | Z                             | 0.1  | 0.0 | 0.0      | 0.1 | 0.1                   | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.0 | 0.2                             | 0.2 | 0.0 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.0             | 0.1           | 0.2           |
| 23-Feb  | 0.0                           | Z  | 0.2 | 0.0      | 0.1 | 0.1                   | 0.1 | 0.2 | 0.2 | 0.1 | 0.1 | 0.0 | 0.1 | 0.0 | 0.1 | 0.1                             | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.1 | 0.2 | 0.2             | 0.1           | 0.2           |
| 24-Feb  | 0.2                           | 0.1  | Z   | 0.1      | 0.1 | 0.0                   | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.1                             | 0.0 | 0.0 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.2             | 0.1           | 0.2           |
| 25-Feb  | 0.3                           | 0.4  | 0.3 | Z        | 0.2 | 0.3                   | 0.2 | 0.2 | 0.3 | 0.3 | 0.3 | 0.3 | 0.4 | 0.4 | 0.4 | 0.4                             | 0.4 | 0.4 | 0.4 | 0.3 | 0.3 | 0.3 | 0.2 | 0.3             | 0.3           | 0.4           |
| 26-Feb  | 0.2                           | 0.2  | 0.1 | 0.2      | Z   | 0.2                   | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.3 | 0.3                             | 0.3 | 0.3 | 0.2 | 0.2 | 0.3 | 0.3 | 0.3 | 0.2             | 0.2           | 0.3           |
| 27-Feb  | 0.1                           | 0.2  | 0.0 | 0.0      | 0.1 | Z                     | 0.2 | 0.2 | 0.1 | 0.4 | 0.5 | 0.3 | 0.3 | 0.5 | 0.4 | 0.4                             | 0.3 | 0.3 | 0.5 | 1.0 | 1.1 | 0.4 | 0.4 | 0.3             | 0.3           | 1.1           |
| 28-Feb  | Z                             | 0.3  | 0.2 | 0.2      | 0.4 | 0.3                   | 0.4 | 0.4 | 0.4 | 0.4 | 0.2 | 0.2 | 0.1 | 0.2 | 0.1 | 0.1                             | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.1 | 0.1 | 0.1             | 0.2           | 0.4           |
| 0.1 0.2 0.1 0.1 0.2 0.1 0.1 0.1 0.1 0.2 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.2 0.2 0.2 0.2 0.1 0.1 |                               |  |     |          |     |                       |     |     |     |     |     |     |     |     |     |                                 |     |     |     |     |     |     |     | Diurnal Average |               |               |
| 0.5 0.6 0.4 0.4 0.5 0.3 0.5 0.5 0.7 0.7 0.6 0.5 0.5 0.5 0.4 0.4 0.4 0.4 0.4 0.5 1.0 1.1 0.6 0.6 0.6     |                               |  |     |          |     |                       |     |     |     |     |     |     |     |     |     |                                 |     |     |     |     |     |     |     | Diurnal Maximum |               |               |
| Z - zerospan C - Calibration  |                               |  |     |          |     |                       |     |     |     |     |     |     |     |     |     |                                 |     |     |     |     |     |     |     |                 |               |               |
| Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 10 ppb 24-hr 3 ppb                                 |                               |  |     |          |     |                       |     |     |     |     |     |     |     |     |     |                                 |     |     |     |     |     |     |     |                 |               |               |





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Hydrogen Sulphide (H<sub>2</sub>S) - ppb  
Surmont 2 - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 2                             | 638                    | 100.00   | 100.00              |
| 3 - 4                             | 0                      | 0.00     | 100.00              |
| 5 - 7                             | 0                      | 0.00     | 100.00              |
| 8 - 11                            | 0                      | 0.00     | 100.00              |
| > 11                              | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 638

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Hydrogen Sulphide (H<sub>2</sub>S) - ppb  
Surmont 2 - February 2023**

| Concentration<br>Ranges (ppb) | Wind Direction |     |    |     |    |     |    |     |    |     |    |     |    |     |    |     | Totals |
|-------------------------------|----------------|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|--------|
|                               | N              | NNE | NE | ENE | E  | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |        |
| 0 - 2                         | 43             | 37  | 14 | 8   | 17 | 25  | 60 | 24  | 18 | 11  | 11 | 83  | 96 | 66  | 41 | 77  | 631    |
| 3 - 4                         | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| 5 - 7                         | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| 8 - 11                        | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| > 11                          | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| <b>Totals</b>                 | 43             | 37  | 14 | 8   | 17 | 25  | 60 | 24  | 18 | 11  | 11 | 83  | 96 | 66  | 41 | 77  | 631    |

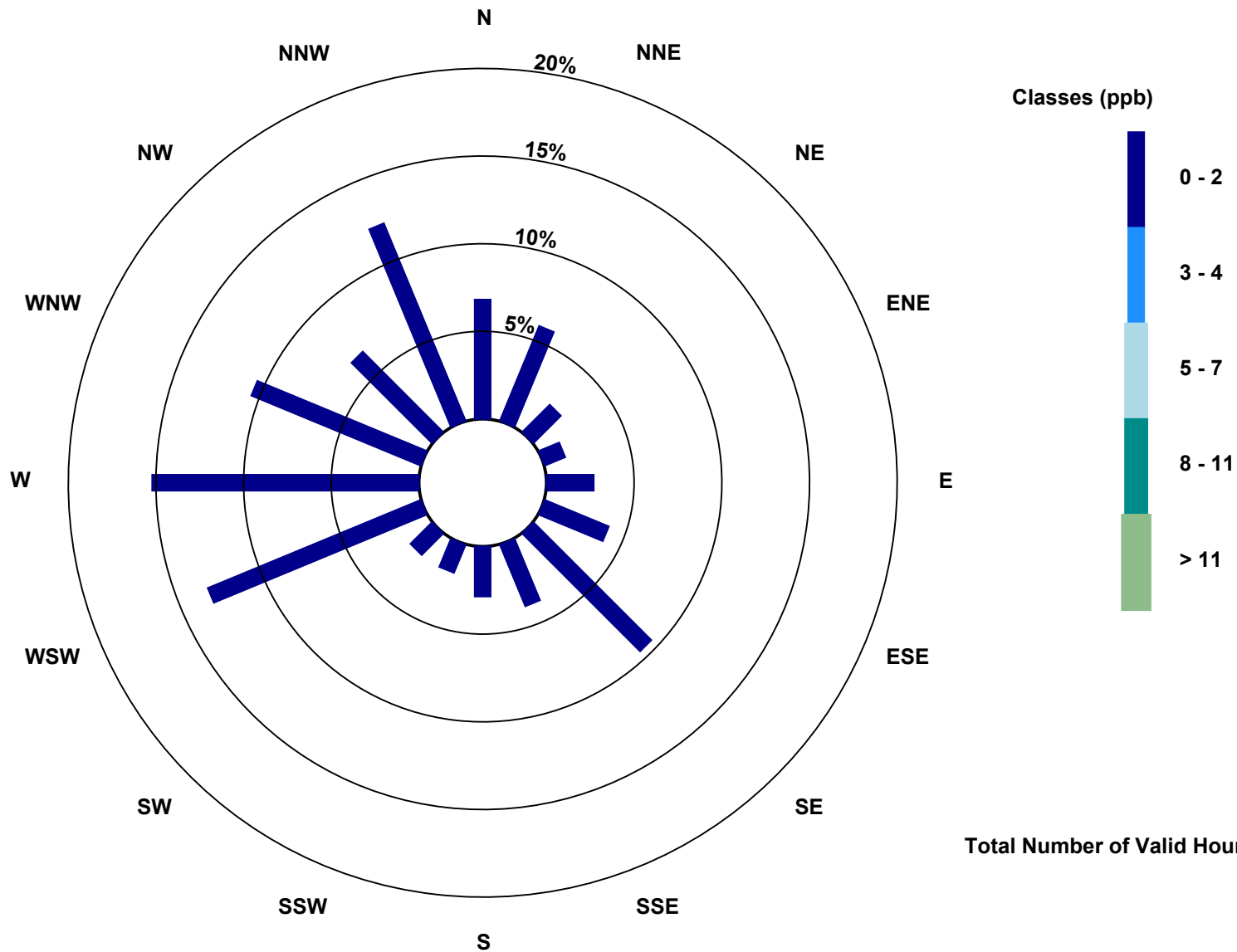
Total Number of Valid Hours: 631

Total Number of Hours: 672



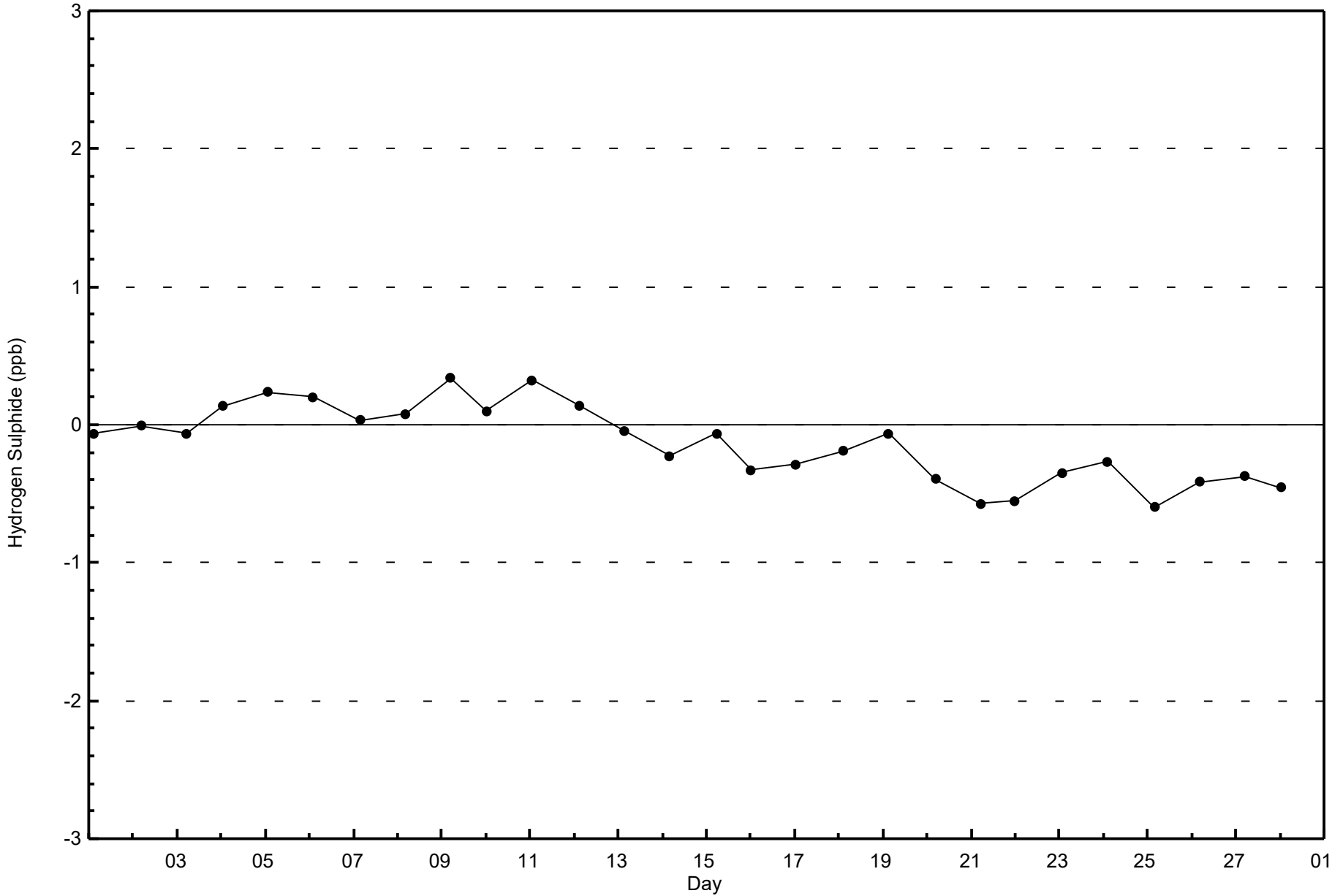
Wood Buffalo Environmental Association  
Wind Rose Feb 2023

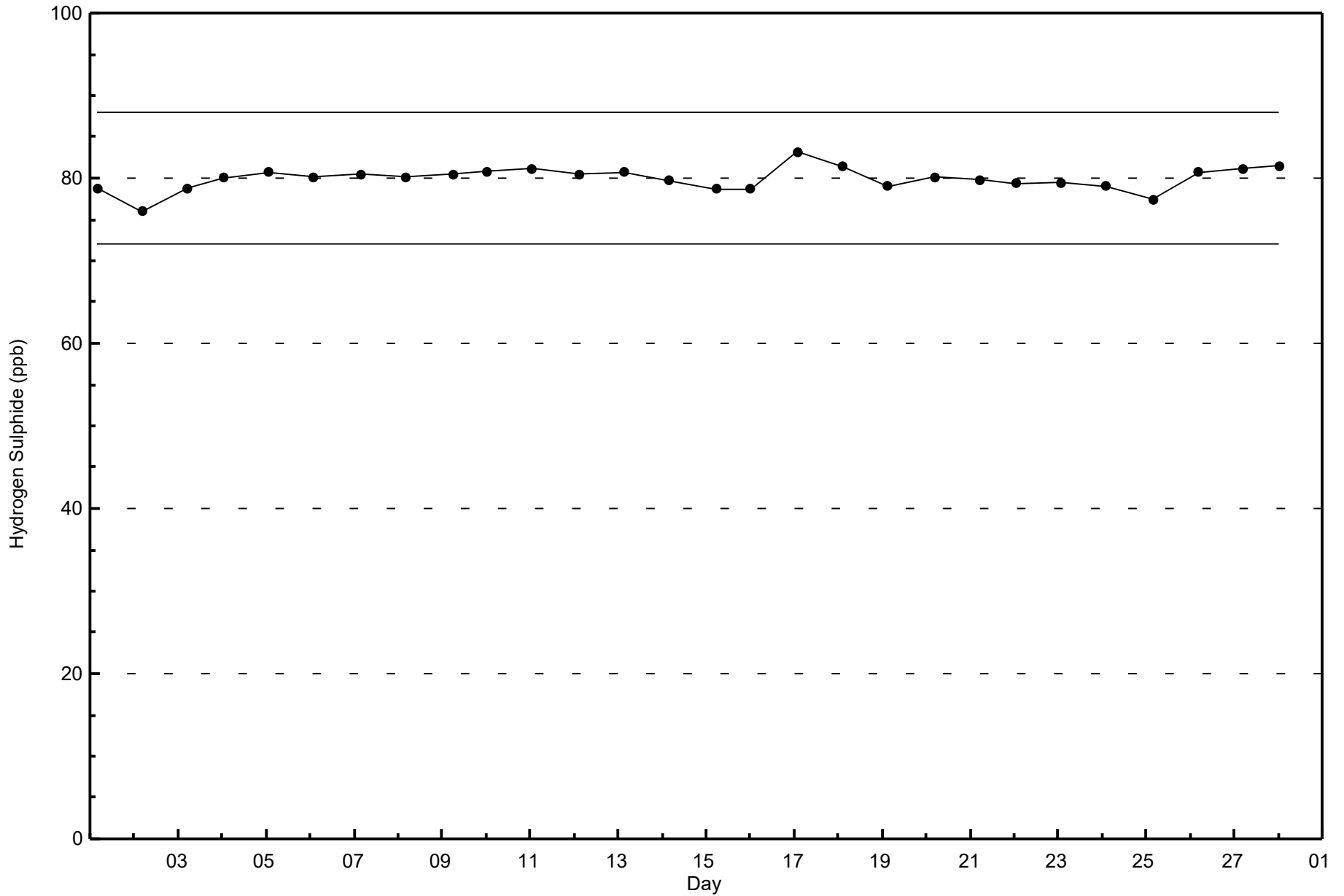
Hydrogen Sulphide (H<sub>2</sub>S) - ppb  
Surmont 2



Total Number of Valid Hours: 631





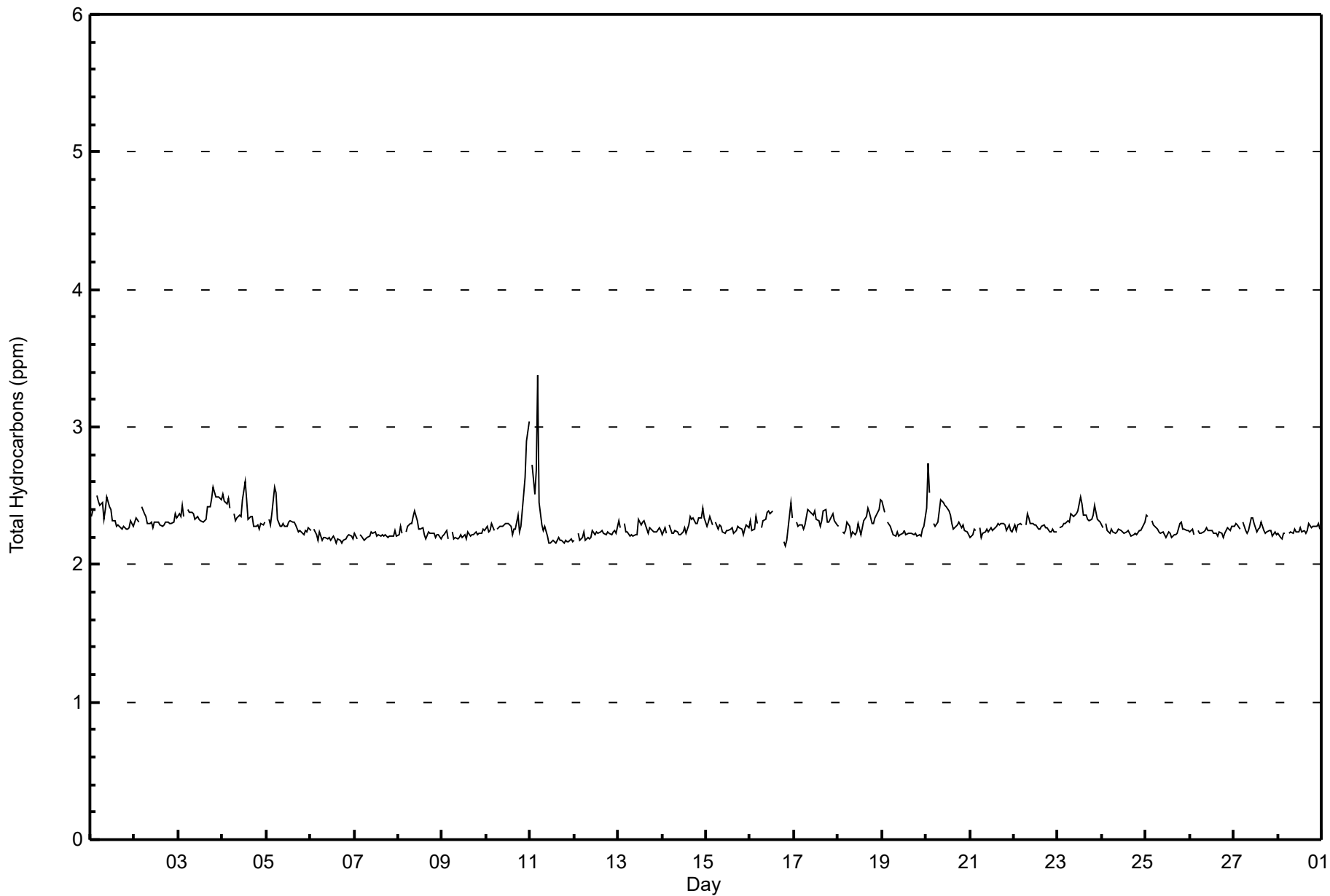






**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Total Hydrocarbons (THC) - ppm**  
**Surmont 2 - February 2023**





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Total Hydrocarbons (THC) - ppm**  
**Surmont 2 - February 2023**

| <b>Concentration Ranges (ppm)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 2.0                           | 0                      | 0.00     | 0.00                |
| 2.1 - 3.0                         | 638                    | 99.84    | 99.84               |
| 3.1 - 10.0                        | 1                      | 0.16     | 100.00              |
| > 10.0                            | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 639

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Total Hydrocarbons (THC) - ppm  
Surmont 2 - February 2023**

| <b>Concentration<br/>Ranges (ppm)</b> | <b>Wind Direction</b> |     |    |     |    |     |    |     |    |     |    |     |    |     |    |     | <b>Totals</b> |
|---------------------------------------|-----------------------|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|---------------|
|                                       | N                     | NNE | NE | ENE | E  | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |               |
| 0 - 2.0                               | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| 2.1 - 3.0                             | 40                    | 37  | 14 | 8   | 18 | 24  | 57 | 25  | 18 | 11  | 12 | 79  | 93 | 67  | 42 | 86  | 631           |
| 3.1 - 10.0                            | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 1  | 0   | 0  | 0   | 1             |
| > 10.0                                | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| <b>Totals</b>                         | 40                    | 37  | 14 | 8   | 18 | 24  | 57 | 25  | 18 | 11  | 12 | 79  | 94 | 67  | 42 | 86  | 632           |

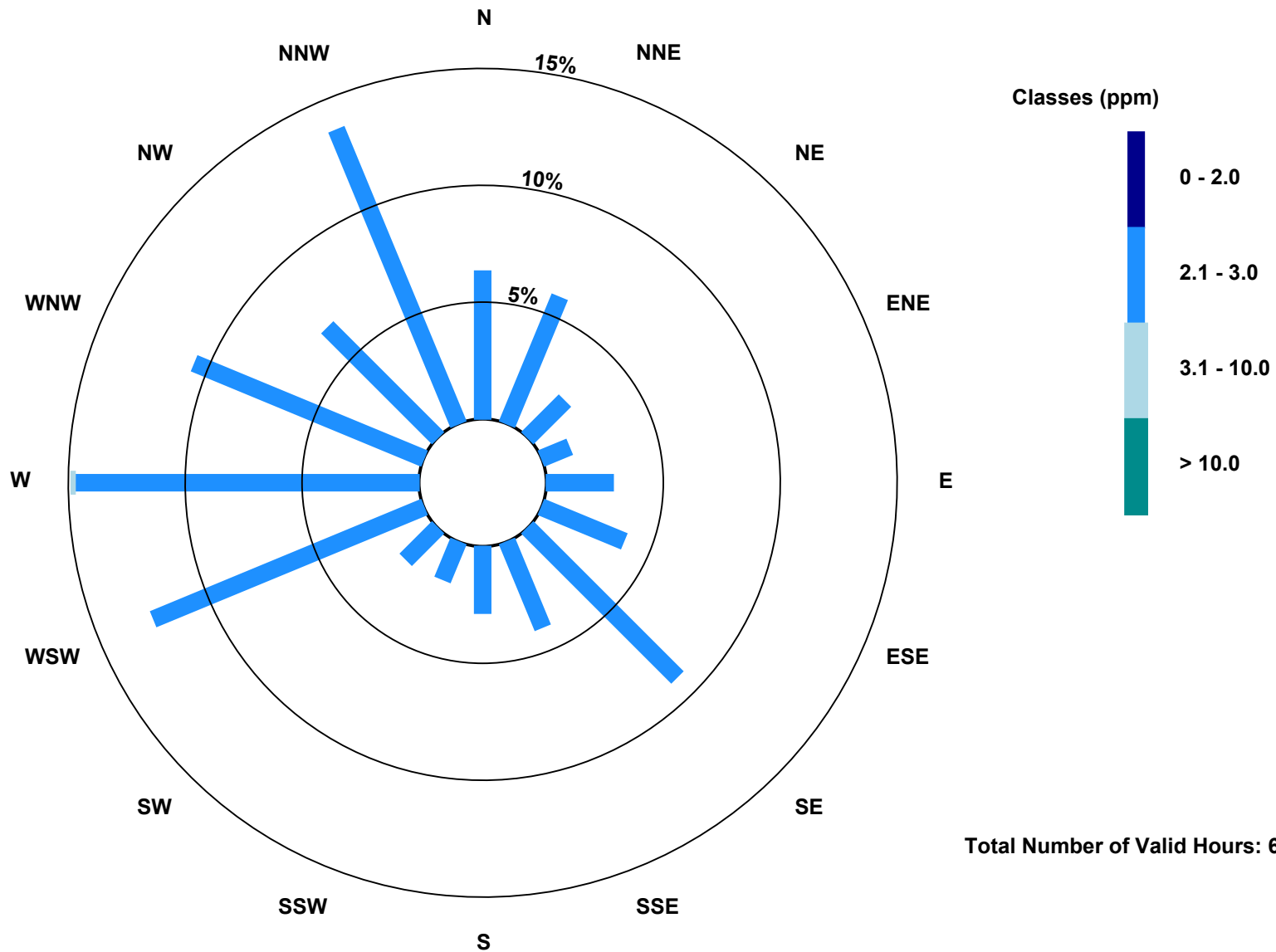
Total Number of Valid Hours: 632

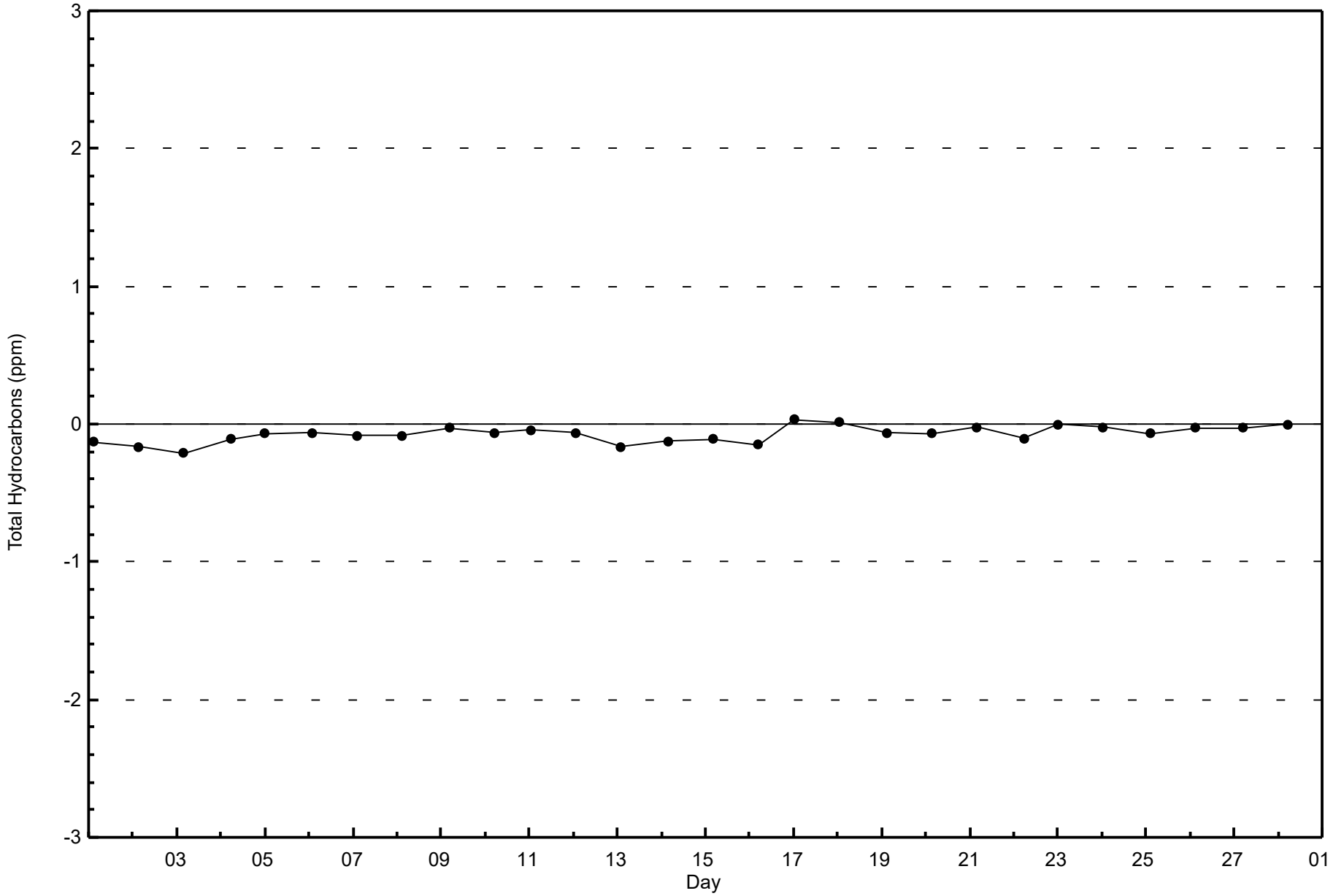
Total Number of Hours: 672



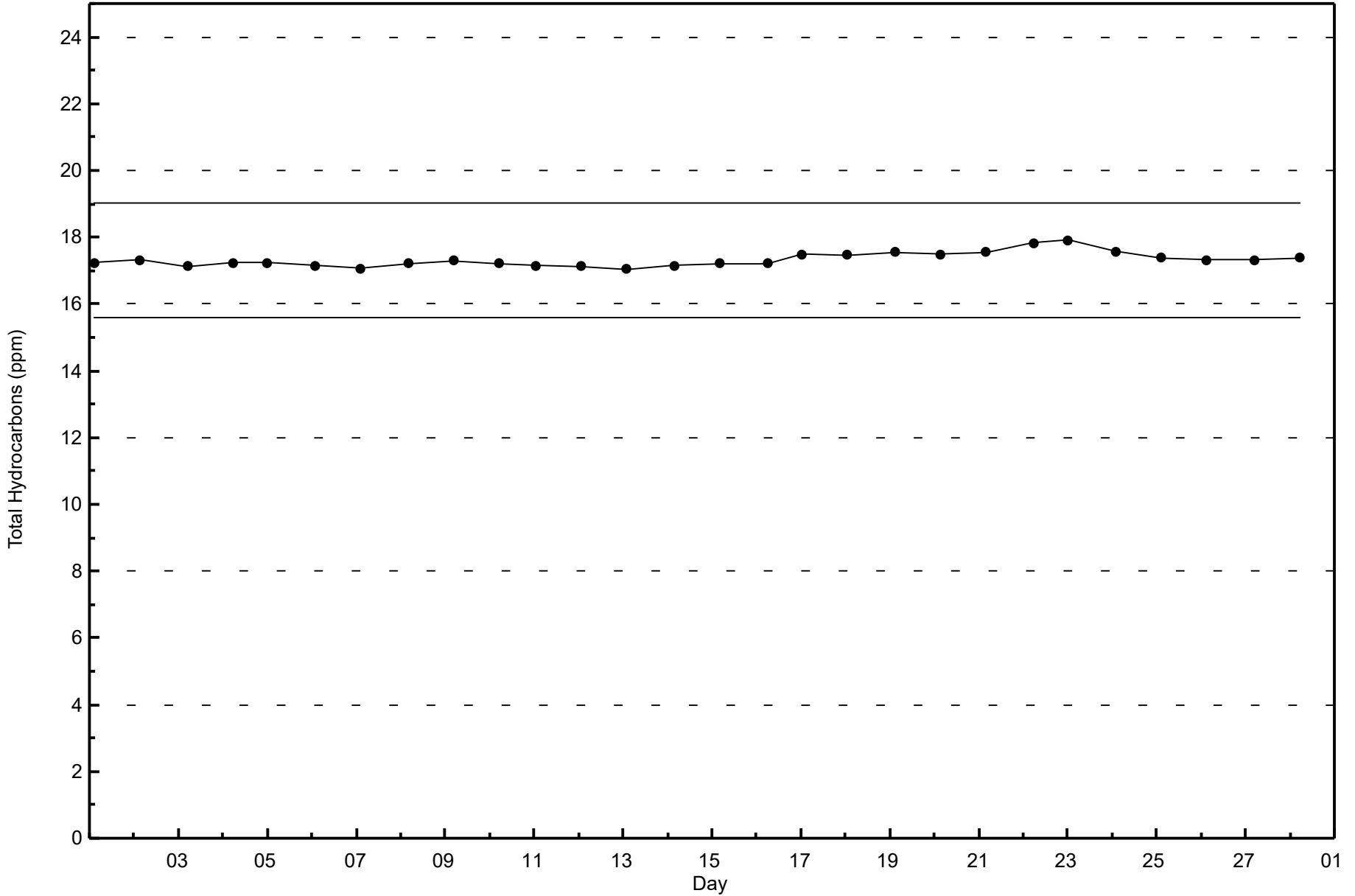
Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Total Hydrocarbons (THC) - ppm  
Surmont 2











Wood Buffalo Environmental Association

Summary of Hour Averages

Nitric Oxide (NO) - ppb

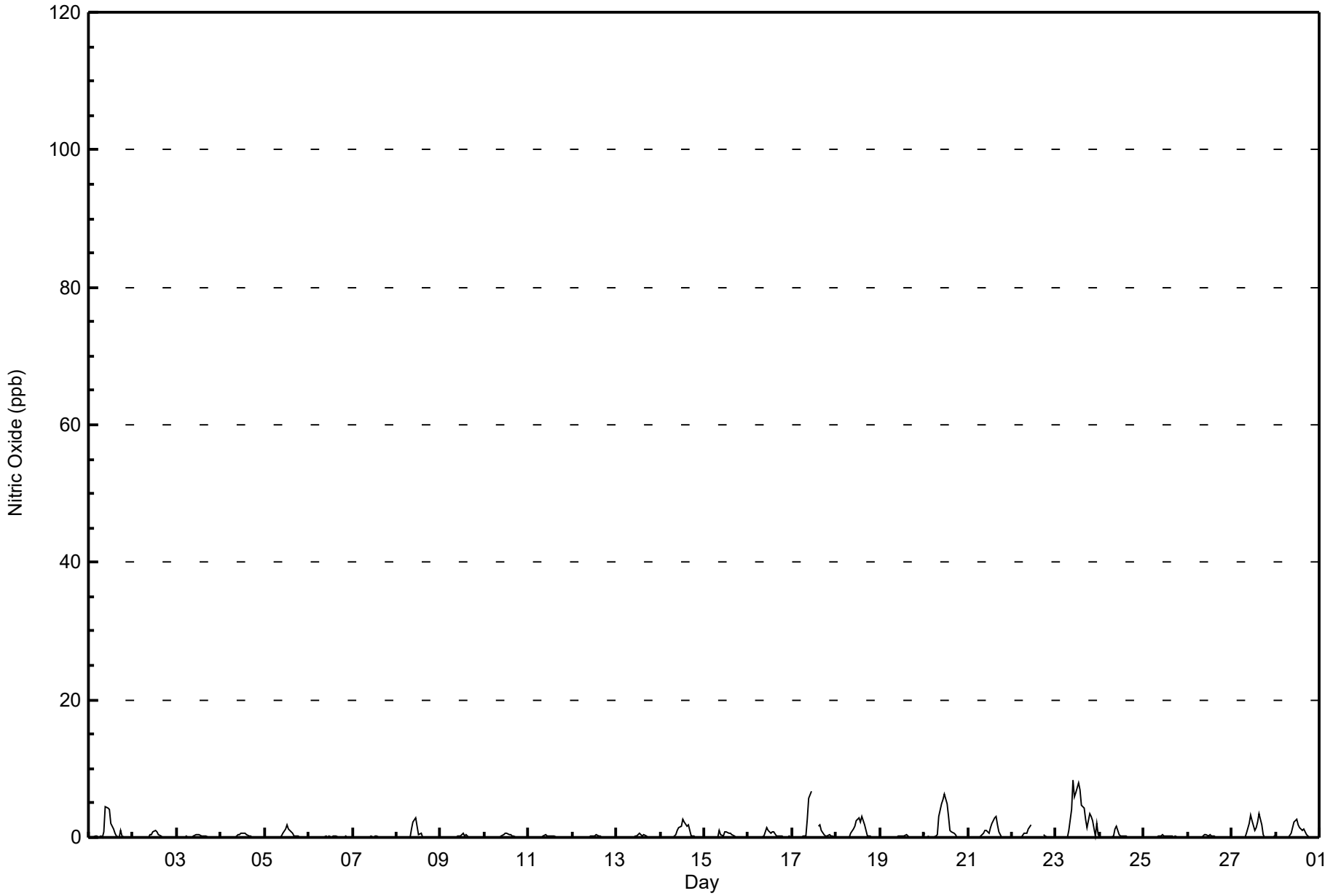
Surmont 2 - February 2023

| Number of Exceedences (AAAQO):                         |                               | 1-hr: 0  |     | 24-hr: 0                       |     | Hours in Service: 672 |     |     |     |     |     |     |     |     |     |     |     |      |     | 672 |     |     |     |                 |               |               |     |
|--|-------------------------------|--|-----|--------------------------------|-----|-----------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|-----|-----|-----|-----|-----|-----------------|---------------|---------------|-----|
| Maximum Value: 8.3 ppb on Feb 23 10:00                 |                               | Maximum Daily Average: 2.8 ppb on Feb 23   |     | Hours of Data: 635             |     |                       |     |     |     |     |     |     |     |     |     |     |     | 635  |     |     |     |     |     |                 |               |               |     |
| Minimum Value: 0.0 ppb on Feb 4 08:00                  |                               | Minimum Daily Average: 0.1 ppb on Feb 19   |     | Hours of Missing Data: 37      |     |                       |     |     |     |     |     |     |     |     |     |     |     | 37   |     |     |     |     |     |                 |               |               |     |
| Maximum Diurnal Average: 1.5 ppb at hour 11            |                               | Minimum Diurnal Average: 0.0 ppb at hour 5   |     | Hours of Calibration: 34       |     |                       |     |     |     |     |     |     |     |     |     |     |     | 34   |     |     |     |     |     |                 |               |               |     |
| Monthly Average: 0.46 ppb                              |                               | Percentiles: P <sub>1</sub> = 0.0 P <sub>10</sub> = 0.0 Q <sub>1</sub> = 0.0 Median = 0.1 Q <sub>3</sub> = 0.3 P <sub>90</sub> = 1.3 P <sub>99</sub> = 5.8 |     | Percent Operational Time: 99.6 |     |                       |     |     |     |     |     |     |     |     |     |     |     | 99.6 |     |     |     |     |     |                 |               |               |     |
| Day  | Hourly Period Ending At (MST) |  |     |                                |     |                       |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |     |     |                 | Daily Average | Daily Maximum |     |
|  | 1                             | 2  | 3   | 4                              | 5   | 6                     | 7   | 8   | 9   | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18   | 19  | 20  | 21  | 22  | 23  | 24              |               |               |     |
| 1-Feb  | Z                             | 0.0  | 0.0 | 0.2                            | 0.1 | 0.1                   | 0.1 | 0.1 | 0.9 | 4.4 | 4.2 | 4.0 | 2.0 | 1.2 | 0.6 | 0.1 | 0.1 | 1.0  | 0.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.9           | 4.4           |     |
| 2-Feb  | 0.0                           | Z  | 0.0 | 0.0                            | 0.0 | 0.0                   | 0.0 | 0.0 | 0.1 | 0.4 | 0.5 | 0.7 | 0.9 | 0.8 | 0.4 | 0.2 | 0.1 | 0.0  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.2           | 0.9           |     |
| 3-Feb  | 0.0                           | 0.0  | Z   | 0.0                            | 0.0 | 0.1                   | 0.1 | 0.0 | 0.1 | 0.2 | 0.4 | 0.4 | 0.3 | 0.2 | 0.2 | 0.1 | 0.1 | 0.1  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.1           | 0.4           |     |
| 4-Feb  | 0.0                           | 0.0  | 0.0 | Z                              | 0.0 | 0.0                   | 0.0 | 0.0 | 0.1 | 0.3 | 0.3 | 0.6 | 0.6 | 0.7 | 0.3 | 0.2 | 0.1 | 0.0  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.2           | 0.7           |     |
| 5-Feb  | 0.0                           | 0.0  | 0.0 | 0.0                            | Z   | 0.0                   | 0.0 | 0.0 | 0.1 | 0.3 | 0.6 | 1.2 | 1.9 | 1.3 | 0.8 | 0.5 | 0.3 | 0.1  | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1             | 0.3           | 1.9           |     |
| 6-Feb  | 0.1                           | 0.0  | 0.0 | 0.0                            | 0.0 | Z                     | 0.0 | 0.0 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.1 | 0.1 | 0.0  | 0.0 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1             | 0.1           | 0.2           | 0.2 |
| 7-Feb  | Z                             | 0.1  | 0.1 | 0.1                            | 0.1 | 0.1                   | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.1 | 0.1 | 0.0 | 0.1 | 0.0  | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.1           | 0.2           |     |
| 8-Feb  | 0.0                           | Z  | 0.0 | 0.1                            | 0.0 | 0.0                   | 0.1 | 0.1 | 1.1 | 2.2 | 2.8 | 1.7 | 0.3 | 0.5 | 0.1 | 0.1 | 0.0 | 0.0  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.4           | 2.8           |     |
| 9-Feb  | 0.0                           | 0.0  | Z   | 0.0                            | 0.0 | 0.0                   | 0.0 | 0.0 | 0.0 | 0.2 | 0.2 | 0.3 | 0.6 | 0.2 | 0.4 | 0.1 | 0.0 | 0.0  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.1           | 0.6           |     |
| 10-Feb   | 0.0                           | 0.0  | 0.0 | Z                              | 0.0 | 0.0                   | 0.1 | 0.1 | 0.1 | 0.3 | 0.5 | 0.6 | 0.5 | 0.5 | 0.3 | 0.2 | 0.2 | 0.0  | 0.1 | 0.0 | 0.1 | 0.1 | 0.1 | 0.1             | 0.2           | 0.6           |     |
| 11-Feb   | 0.0                           | 0.0  | 0.0 | 0.1                            | Z   | 0.0                   | 0.0 | 0.0 | 0.2 | 0.3 | 0.2 | 0.2 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.0  | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.1           | 0.3           |     |
| 12-Feb   | 0.0                           | 0.0  | 0.0 | 0.0                            | 0.0 | Z                     | 0.0 | 0.0 | 0.0 | 0.1 | 0.2 | 0.1 | 0.2 | 0.3 | 0.2 | 0.2 | 0.0 | 0.0  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.1           | 0.3           |     |
| 13-Feb   | Z                             | 0.1  | 0.1 | 0.1                            | 0.1 | 0.0                   | 0.0 | 0.1 | 0.1 | 0.1 | 0.1 | 0.3 | 0.5 | 0.4 | 0.3 | 0.4 | 0.2 | 0.1  | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.1           | 0.5           |     |
| 14-Feb   | 0.0                           | Z  | 0.0 | 0.0                            | 0.0 | 0.0                   | 0.0 | 0.0 | 0.3 | 1.0 | 1.4 | 1.7 | 2.6 | 2.2 | 1.6 | 1.8 | 1.0 | 0.2  | 0.1 | 0.1 | 0.0 | 0.1 | 0.1 | 0.1             | 0.6           | 2.6           |     |
| 15-Feb   | 0.0                           | 0.0  | Z   | 0.0                            | 0.0 | 0.0                   | 0.0 | 0.1 | 0.9 | 0.3 | 0.3 | 0.8 | 0.8 | 0.7 | 0.5 | 0.3 | 0.2 | 0.0  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.2           | 0.9           |     |
| 16-Feb   | 0.0                           | 0.0  | 0.0 | Z                              | 0.0 | 0.0                   | 0.0 | 0.0 | 0.2 | 0.7 | 1.4 | 1.1 | 0.7 | 0.9 | 0.8 | 0.3 | 0.2 | 0.2  | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1             | 0.3           | 1.4           |     |
| 17-Feb   | 0.1                           | 0.1  | 0.1 | 0.1                            | Z   | 0.1                   | 0.1 | 0.3 | 2.6 | 5.6 | 6.8 | M   | M   | M   | 1.7 | 1.9 | 1.1 | 0.4  | 0.1 | 0.2 | 0.3 | 0.2 | 0.1 | 0.0             | 1.1           | 6.8           |     |
| 18-Feb   | 0.0                           | 0.0  | 0.0 | 0.0                            | 0.0 | Z                     | 0.0 | 0.0 | 0.6 | 1.2 | 1.7 | 2.4 | 2.9 | 2.3 | 3.0 | 1.8 | 1.0 | 0.3  | 0.2 | 0.0 | 0.0 | 0.1 | 0.1 | 0.0             | 0.8           | 3.0           |     |
| 19-Feb   | Z                             | 0.0  | 0.0 | 0.0                            | 0.0 | 0.0                   | 0.0 | 0.0 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.4 | 0.1 | 0.1 | 0.0  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.1           | 0.4           |     |
| 20-Feb   | 0.6                           | Z  | 0.1 | 0.0                            | 0.0 | 0.0                   | 0.1 | 0.3 | 3.1 | 4.9 | 5.4 | 6.3 | 4.8 | 3.1 | 1.0 | 0.8 | 0.6 | 0.3  | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0             | 1.4           | 6.3           |     |
| 21-Feb   | 0.0                           | 0.0  | Z   | 0.0                            | 0.0 | 0.0                   | 0.1 | 0.1 | 0.5 | 1.0 | 1.1 | 0.7 | 1.3 | 2.0 | 2.9 | 3.1 | 1.8 | 0.8  | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.7           | 3.1           |     |
| 22-Feb   | 0.0                           | 0.0  | 0.0 | Z                              | 0.0 | 0.0                   | 0.5 | 0.6 | 0.7 | 1.2 | 1.8 | C   | C   | C   | C   | C   | C   | 0.5  | 0.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | --            | 1.8           |     |
| 23-Feb   | 0.0                           | 0.0  | 0.0 | 0.0                            | Z   | 0.0                   | 0.0 | 0.9 | 4.0 | 8.3 | 5.9 | 6.4 | 8.0 | 6.9 | 4.8 | 4.2 | 2.7 | 1.3  | 3.5 | 3.0 | 2.4 | 0.1 | 2.1 | 0.3             | 2.8           | 8.3           |     |
| 24-Feb   | 0.0                           | 0.0  | 0.0 | 0.0                            | 0.0 | Z                     | 0.1 | 0.1 | 1.2 | 1.7 | 0.5 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.0  | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0             | 0.2           | 1.7           |     |
| 25-Feb   | Z                             | 0.1  | 0.0 | 0.0                            | 0.0 | 0.0                   | 0.0 | 0.1 | 0.2 | 0.3 | 0.3 | 0.3 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1  | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.1           | 0.3           |     |
| 26-Feb   | 0.0                           | Z  | 0.0 | 0.0                            | 0.0 | 0.0                   | 0.0 | 0.0 | 0.1 | 0.3 | 0.3 | 0.3 | 0.3 | 0.2 | 0.1 | 0.1 | 0.1 | 0.0  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.1           | 0.3           |     |
| 27-Feb   | 0.0                           | 0.0  | Z   | 0.0                            | 0.0 | 0.0                   | 0.0 | 0.1 | 0.5 | 2.1 | 3.2 | 2.4 | 1.0 | 1.5 | 2.3 | 3.4 | 1.8 | 0.5  | 0.1 | 0.0 | 0.1 | 0.0 | 0.0 | 0.1             | 0.8           | 3.4           |     |
| 28-Feb   | 0.0                           | 0.0  | 0.0 | Z                              | 0.0 | 0.0                   | 0.0 | 0.1 | 0.5 | 1.3 | 2.2 | 2.5 | 1.7 | 1.5 | 1.1 | 1.3 | 0.8 | 0.3  | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.0             | 0.6           | 2.5           |     |
|  |                               |  |     |                                |     |                       |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |     |     | Diurnal Average |               |               |     |
|  |                               |  |     |                                |     |                       |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |     |     | Diurnal Maximum |               |               |     |
| Z - zerospan      C - Calibration      M - Maintenance |                               |  |     |                                |     |                       |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |     |     |                 |               |               |     |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Nitric Oxide (NO) - ppb**  
**Surmont 2 - February 2023**





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Nitric Oxide (NO) - ppb  
Surmont 2 - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 20                            | 635                    | 100.00   | 100.00              |
| 21 - 40                           | 0                      | 0.00     | 100.00              |
| 41 - 80                           | 0                      | 0.00     | 100.00              |
| 81 - 159                          | 0                      | 0.00     | 100.00              |
| > 159                             | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 635

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Nitric Oxide (NO) - ppb  
Surmont 2 - February 2023**

| Concentration<br>Ranges (ppb) | Wind Direction |     |    |     |    |     |    |     |    |     |    |     |    |     |    |     | Totals |
|-------------------------------|----------------|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|--------|
|                               | N              | NNE | NE | ENE | E  | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |        |
| 0 - 20                        | 42             | 32  | 13 | 8   | 18 | 25  | 58 | 25  | 18 | 10  | 10 | 83  | 93 | 69  | 42 | 83  | 629    |
| 21 - 40                       | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| 11 - 80                       | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| 81 - 159                      | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| > 159                         | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| <b>Totals</b>                 | 42             | 32  | 13 | 8   | 18 | 25  | 58 | 25  | 18 | 10  | 10 | 83  | 93 | 69  | 42 | 83  | 629    |

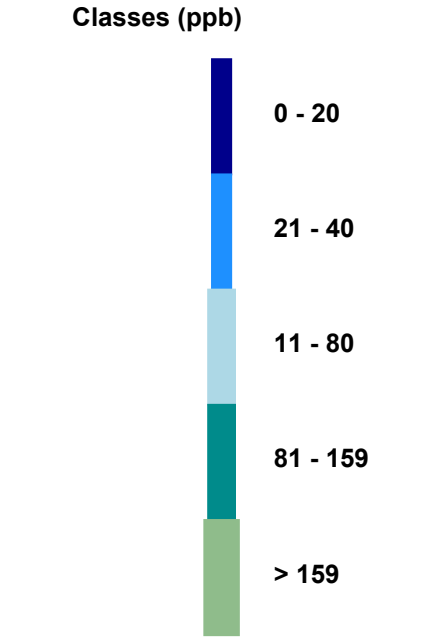
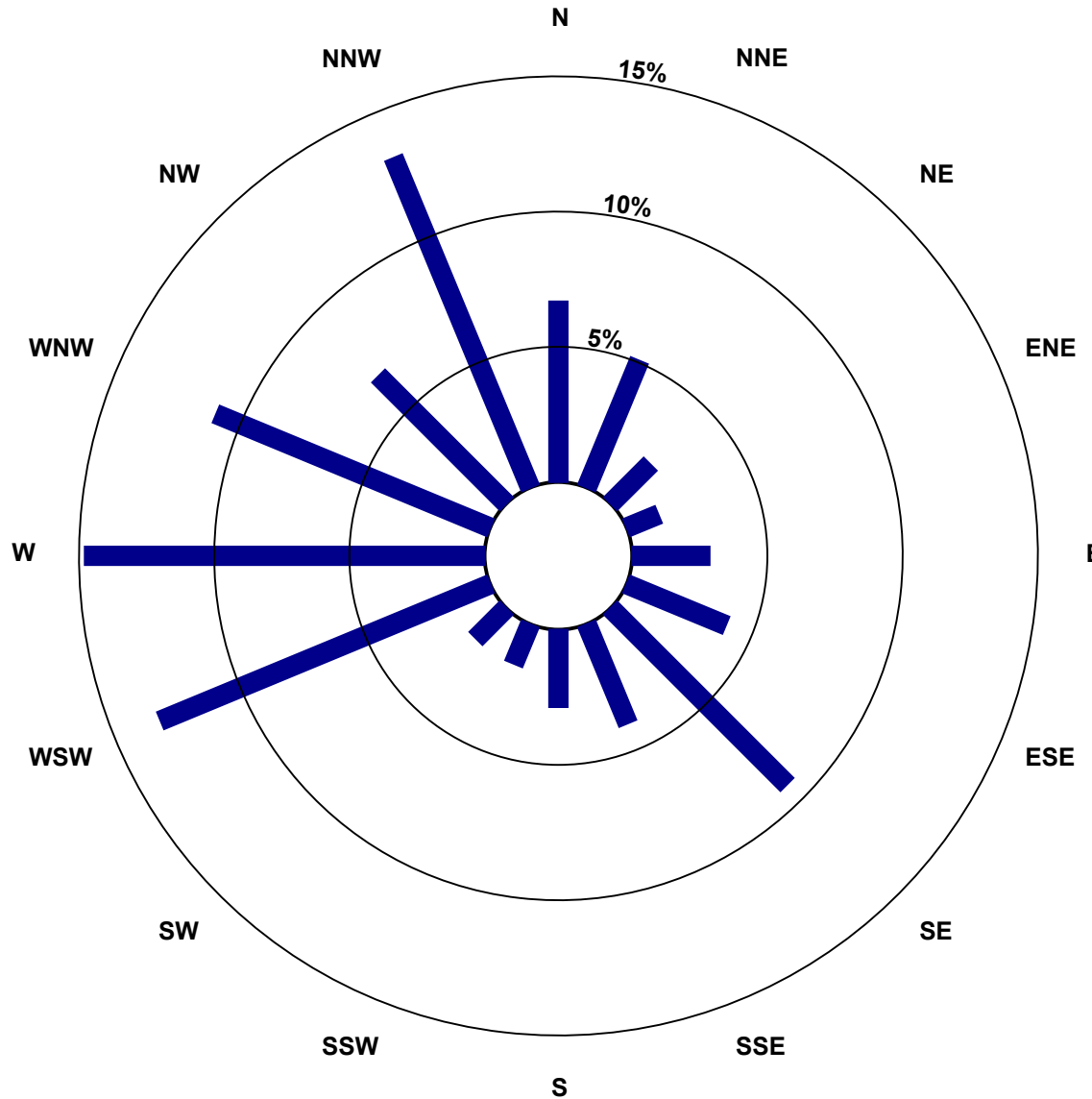
Total Number of Valid Hours: 629

Total Number of Hours: 672

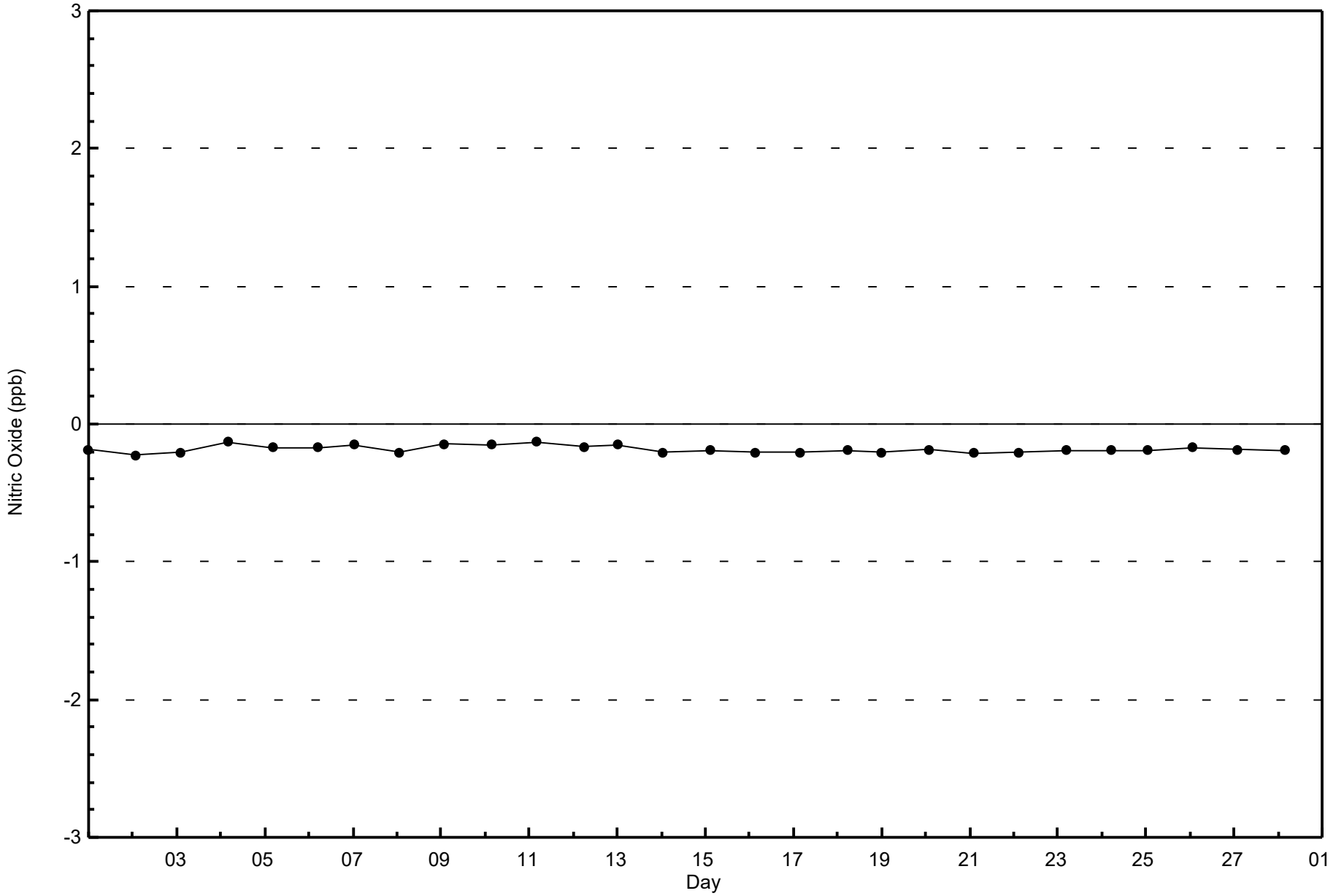


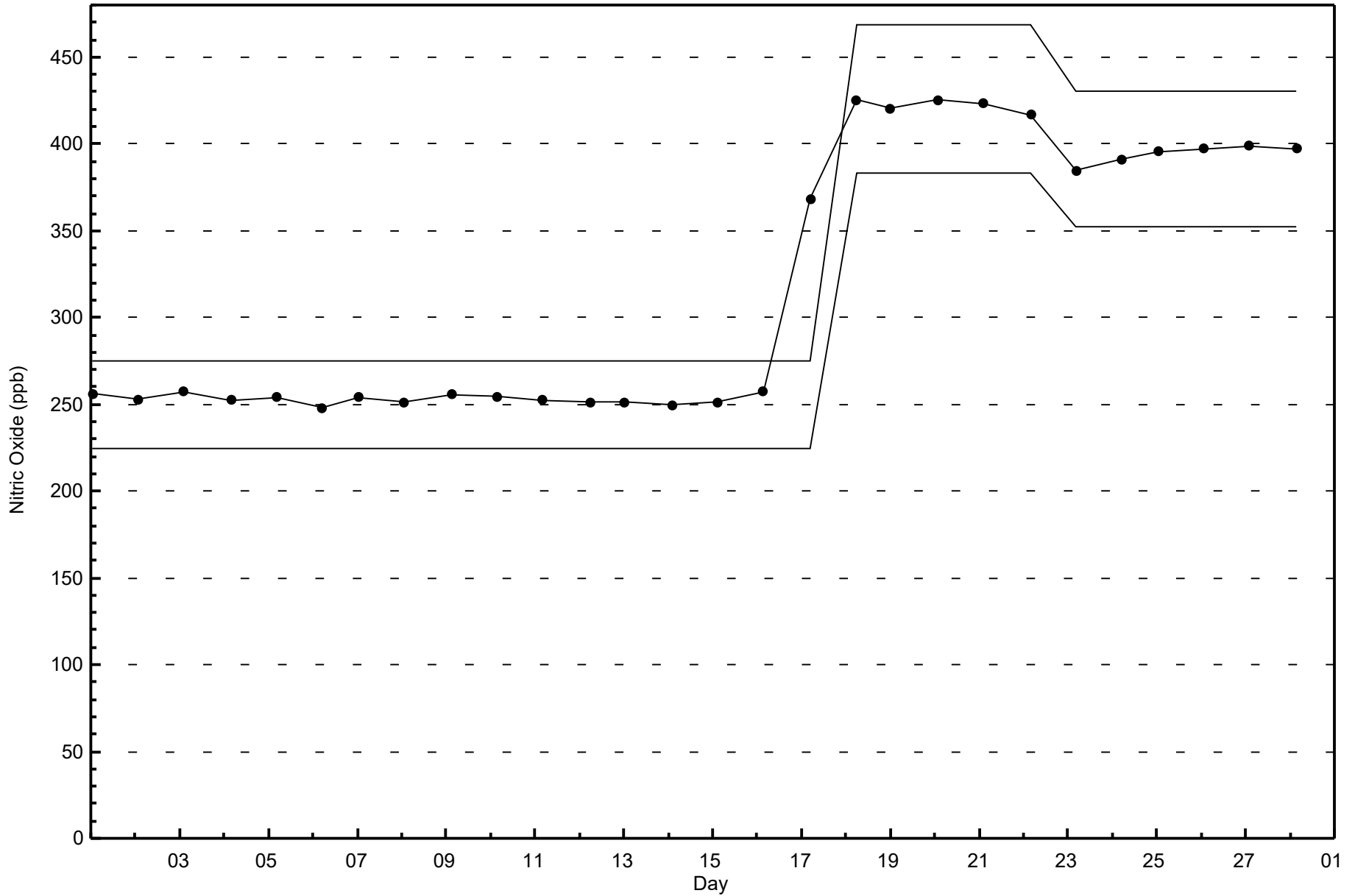
Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Nitric Oxide (NO) - ppb  
Surmont 2



Total Number of Valid Hours: 629









Wood Buffalo Environmental Association

Summary of Hour Averages

Nitrogen Dioxide (NO<sub>2</sub>) - ppb

Surmont 2 - February 2023

|   |   |          |                           |      |
|---|---|----------|---------------------------|------|
| Number of Exceedences (AAAQO):              | 1-hr: 0   | 24-hr: 0 | Hours in Service:         | 672  |
| Maximum Value: 28.4 ppb on Feb 23 20:00     | Maximum Daily Average: 11.1 ppb on Feb 17   |          | Hours of Data:            | 635  |
| Minimum Value: 0.3 ppb on Feb 6 07:00       | Minimum Daily Average: 0.6 ppb on Feb 7   |          | Hours of Missing Data:    | 37   |
| Maximum Diurnal Average: 5.5 ppb at hour 22 | Minimum Diurnal Average: 2.5 ppb at hour 14   |          | Hours of Calibration:     | 34   |
| Monthly Average: 3.90 ppb                   | Percentiles: P <sub>1</sub> = 0.4 P <sub>10</sub> = 0.6 Q <sub>1</sub> = 1.1 Median = 2.5 Q <sub>3</sub> = 5.0 P <sub>90</sub> = 9.3 P <sub>99</sub> = 20.0 |          | Percent Operational Time: | 99.6 |

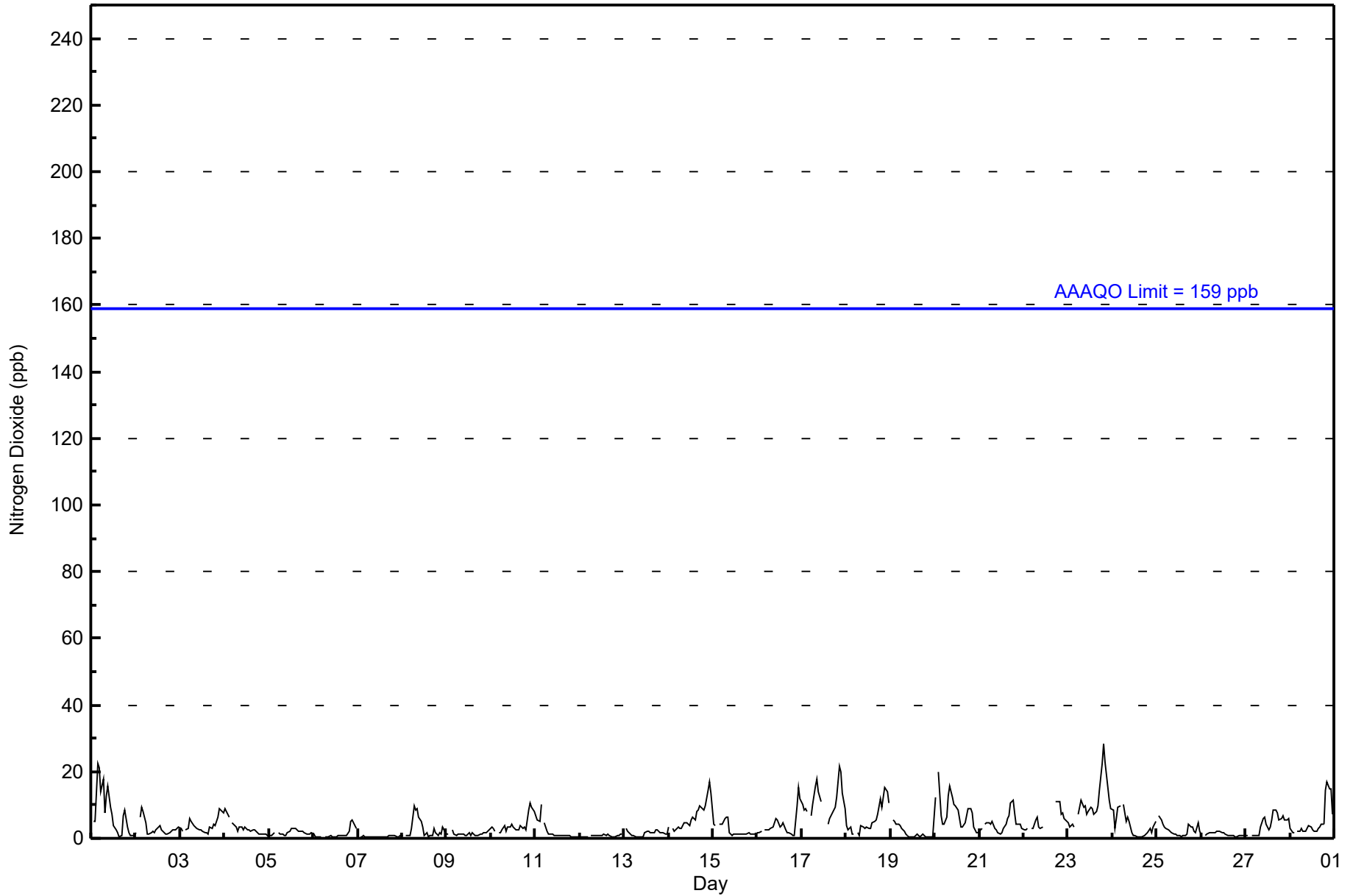
| Day    | Hourly Period Ending At (MST) |     |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |      |      |      |      |      |      |      | Daily Average | Daily Maximum |      |      |      |      |      |      |      |      |     |     |     |     |     |     |      |      |      |      |      |      |                 |                 |  |
|--------|-------------------------------|-----|------|------|------|------|------|------|------|------|------|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|------|---------------|---------------|------|------|------|------|------|------|------|------|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|-----------------|-----------------|--|
|        | 1                             | 2   | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12  | 13  | 14  | 15  | 16  | 17  | 18   | 19   | 20   | 21   | 22   | 23   | 24   |               |               |      |      |      |      |      |      |      |      |     |     |     |     |     |     |      |      |      |      |      |      |                 |                 |  |
| 1-Feb  | Z                             | 5.0 | 5.2  | 22.6 | 21.0 | 13.9 | 17.6 | 7.8  | 12.5 | 15.6 | 9.2  | 7.1 | 3.8 | 2.5 | 1.7 | 0.6 | 1.0 | 6.6  | 8.3  | 3.6  | 1.5  | 1.0  | 0.8  | 1.0  | 7.4           | 22.6          |      |      |      |      |      |      |      |      |     |     |     |     |     |     |      |      |      |      |      |      |                 |                 |  |
| 2-Feb  | 1.7                           | Z   | 6.2  | 9.3  | 8.2  | 4.7  | 1.3  | 1.2  | 1.5  | 2.0  | 1.7  | 2.7 | 3.4 | 3.8 | 2.4 | 1.6 | 1.3 | 1.2  | 1.5  | 2.2  | 2.6  | 2.7  | 3.0  | 3.2  | 3.0           | 9.3           |      |      |      |      |      |      |      |      |     |     |     |     |     |     |      |      |      |      |      |      |                 |                 |  |
| 3-Feb  | 3.0                           | 2.2 | Z    | 2.7  | 2.9  | 6.0  | 5.0  | 3.7  | 3.6  | 3.0  | 2.6  | 2.5 | 2.0 | 1.6 | 1.6 | 1.4 | 3.3 | 2.8  | 4.1  | 3.8  | 6.2  | 8.9  | 8.5  | 7.5  | 3.9           | 8.9           |      |      |      |      |      |      |      |      |     |     |     |     |     |     |      |      |      |      |      |      |                 |                 |  |
| 4-Feb  | 8.8                           | 8.0 | 6.2  | Z    | 4.6  | 4.4  | 3.3  | 2.2  | 3.2  | 3.3  | 2.5  | 3.2 | 2.7 | 2.5 | 2.0 | 2.4 | 2.6 | 2.2  | 1.3  | 1.1  | 1.2  | 1.2  | 1.1  | 1.0  | 3.1           | 8.8           |      |      |      |      |      |      |      |      |     |     |     |     |     |     |      |      |      |      |      |      |                 |                 |  |
| 5-Feb  | 0.9                           | 0.9 | 1.1  | 1.5  | Z    | 1.8  | 1.3  | 1.1  | 1.0  | 1.0  | 1.6  | 2.0 | 3.1 | 2.9 | 2.8 | 2.6 | 2.3 | 2.3  | 2.0  | 1.5  | 1.2  | 1.1  | 1.1  | 1.6  | 1.7           | 3.1           |      |      |      |      |      |      |      |      |     |     |     |     |     |     |      |      |      |      |      |      |                 |                 |  |
| 6-Feb  | 1.1                           | 0.5 | 0.4  | 0.4  | 0.4  | Z    | 0.3  | 0.4  | 0.6  | 0.8  | 0.4  | 0.5 | 0.3 | 0.7 | 1.0 | 1.0 | 1.0 | 0.7  | 0.7  | 2.0  | 4.9  | 5.4  | 3.8  | 2.8  | 1.3           | 5.4           |      |      |      |      |      |      |      |      |     |     |     |     |     |     |      |      |      |      |      |      |                 |                 |  |
| 7-Feb  | Z                             | 0.5 | 0.6  | 0.7  | 0.6  | 0.6  | 0.5  | 0.4  | 0.4  | 0.3  | 0.6  | 0.4 | 0.6 | 0.5 | 0.4 | 0.4 | 0.4 | 0.7  | 0.9  | 0.8  | 0.7  | 0.5  | 0.5  | 0.7  | 0.6           | 0.9           |      |      |      |      |      |      |      |      |     |     |     |     |     |     |      |      |      |      |      |      |                 |                 |  |
| 8-Feb  | 0.9                           | Z   | 0.7  | 0.8  | 0.9  | 3.0  | 9.6  | 8.4  | 9.1  | 6.2  | 5.0  | 3.2 | 1.0 | 1.6 | 0.5 | 0.7 | 0.7 | 3.0  | 1.8  | 1.0  | 1.5  | 1.4  | 3.3  | 1.9  | 2.9           | 9.6           |      |      |      |      |      |      |      |      |     |     |     |     |     |     |      |      |      |      |      |      |                 |                 |  |
| 9-Feb  | 1.2                           | 1.2 | Z    | 2.4  | 1.3  | 1.0  | 1.1  | 1.2  | 1.1  | 1.1  | 1.0  | 1.0 | 1.5 | 0.8 | 1.9 | 0.7 | 0.7 | 1.0  | 1.3  | 1.4  | 1.5  | 1.9  | 2.3  | 2.6  | 1.4           | 2.6           |      |      |      |      |      |      |      |      |     |     |     |     |     |     |      |      |      |      |      |      |                 |                 |  |
| 10-Feb | 3.4                           | 3.1 | 2.3  | Z    | 1.7  | 1.9  | 2.5  | 3.7  | 2.2  | 3.3  | 3.6  | 4.3 | 3.3 | 2.7 | 2.5 | 2.6 | 3.8 | 3.1  | 3.5  | 2.4  | 8.3  | 10.6 | 9.3  | 8.0  | 4.0           | 10.6          |      |      |      |      |      |      |      |      |     |     |     |     |     |     |      |      |      |      |      |      |                 |                 |  |
| 11-Feb | 6.6                           | 5.4 | 5.2  | 10.1 | Z    | 4.5  | 2.0  | 1.4  | 1.2  | 1.3  | 0.8  | 0.8 | 0.8 | 0.7 | 0.8 | 0.9 | 0.8 | 1.0  | 0.7  | 0.6  | 0.5  | 0.5  | 0.5  | 0.4  | 2.1           | 10.1          |      |      |      |      |      |      |      |      |     |     |     |     |     |     |      |      |      |      |      |      |                 |                 |  |
| 12-Feb | 0.4                           | 0.6 | 0.6  | 0.6  | 0.6  | Z    | 0.7  | 0.7  | 0.8  | 0.7  | 0.7  | 0.7 | 0.7 | 1.1 | 1.0 | 1.4 | 0.8 | 0.6  | 0.6  | 0.6  | 0.8  | 1.0  | 1.1  | 1.1  | 0.8           | 1.4           |      |      |      |      |      |      |      |      |     |     |     |     |     |     |      |      |      |      |      |      |                 |                 |  |
| 13-Feb | Z                             | 2.9 | 2.3  | 1.3  | 0.8  | 0.7  | 0.6  | 0.5  | 0.5  | 0.5  | 0.6  | 1.5 | 2.0 | 2.3 | 1.6 | 1.8 | 1.9 | 2.4  | 2.5  | 1.7  | 1.7  | 1.9  | 1.2  | 1.4  | 1.5           | 2.9           |      |      |      |      |      |      |      |      |     |     |     |     |     |     |      |      |      |      |      |      |                 |                 |  |
| 14-Feb | 3.5                           | Z   | 3.1  | 2.1  | 2.4  | 3.3  | 3.1  | 3.0  | 4.6  | 4.6  | 4.6  | 3.9 | 5.5 | 6.2 | 5.7 | 7.9 | 8.6 | 9.6  | 9.1  | 8.3  | 9.7  | 14.2 | 16.9 | 13.7 | 6.7           | 16.9          |      |      |      |      |      |      |      |      |     |     |     |     |     |     |      |      |      |      |      |      |                 |                 |  |
| 15-Feb | 4.3                           | 3.7 | Z    | 4.1  | 4.2  | 4.4  | 5.8  | 6.2  | 6.2  | 1.7  | 0.8  | 1.3 | 1.4 | 1.3 | 1.2 | 1.2 | 1.2 | 1.3  | 1.4  | 1.6  | 1.4  | 1.2  | 1.2  | 1.2  | 2.5           | 6.2           |      |      |      |      |      |      |      |      |     |     |     |     |     |     |      |      |      |      |      |      |                 |                 |  |
| 16-Feb | 1.5                           | 1.9 | 2.1  | Z    | 2.5  | 2.7  | 2.7  | 2.8  | 3.2  | 4.7  | 5.9  | 5.5 | 3.6 | 3.7 | 4.5 | 2.4 | 1.6 | 1.8  | 1.4  | 0.8  | 0.7  | 9.6  | 15.2 | 12.0 | 4.0           | 15.2          |      |      |      |      |      |      |      |      |     |     |     |     |     |     |      |      |      |      |      |      |                 |                 |  |
| 17-Feb | 10.3                          | 8.4 | 8.7  | 8.1  | Z    | 6.9  | 10.3 | 15.7 | 17.8 | 14.1 | 11.1 | M   | M   | M   | 4.4 | 5.8 | 6.8 | 8.6  | 9.4  | 12.3 | 21.5 | 20.1 | 13.5 | 9.1  | 11.1          | 21.5          |      |      |      |      |      |      |      |      |     |     |     |     |     |     |      |      |      |      |      |      |                 |                 |  |
| 18-Feb | 3.9                           | 2.7 | 3.3  | 1.2  | 1.4  | Z    | 1.7  | 1.0  | 3.7  | 3.5  | 3.0  | 3.2 | 3.0 | 2.9 | 4.8 | 5.0 | 5.7 | 7.3  | 12.0 | 9.4  | 12.1 | 15.1 | 13.9 | 10.7 | 5.7           | 15.1          |      |      |      |      |      |      |      |      |     |     |     |     |     |     |      |      |      |      |      |      |                 |                 |  |
| 19-Feb | Z                             | 5.5 | 5.0  | 4.3  | 4.1  | 4.0  | 2.8  | 2.0  | 1.3  | 0.7  | 0.6  | 0.6 | 0.6 | 0.6 | 1.3 | 0.7 | 0.5 | 1.2  | 0.9  | 0.5  | 0.3  | 0.3  | 0.6  | 0.6  | 1.7           | 5.5           |      |      |      |      |      |      |      |      |     |     |     |     |     |     |      |      |      |      |      |      |                 |                 |  |
| 20-Feb | 12.1                          | Z   | 19.9 | 6.7  | 4.3  | 4.2  | 6.2  | 12.5 | 15.7 | 12.1 | 10.3 | 9.7 | 8.6 | 6.1 | 3.2 | 3.3 | 4.6 | 6.8  | 9.1  | 8.8  | 7.8  | 3.3  | 1.8  | 1.7  | 7.8           | 19.9          |      |      |      |      |      |      |      |      |     |     |     |     |     |     |      |      |      |      |      |      |                 |                 |  |
| 21-Feb | 2.1                           | 3.1 | Z    | 4.3  | 4.5  | 4.5  | 4.3  | 5.0  | 2.8  | 2.4  | 1.8  | 1.2 | 1.9 | 2.8 | 4.3 | 5.9 | 6.9 | 10.7 | 11.4 | 7.5  | 4.4  | 4.2  | 4.1  | 2.9  | 4.5           | 11.4          |      |      |      |      |      |      |      |      |     |     |     |     |     |     |      |      |      |      |      |      |                 |                 |  |
| 22-Feb | 2.6                           | 2.7 | 2.9  | Z    | 3.0  | 3.0  | 5.7  | 6.4  | 3.3  | 3.0  | 3.3  | C   | C   | C   | C   | C   | C   | 10.9 | 11.0 | 11.2 | 7.1  | 7.5  | 6.0  | 5.0  | --            | 11.2          |      |      |      |      |      |      |      |      |     |     |     |     |     |     |      |      |      |      |      |      |                 |                 |  |
| 23-Feb | 4.6                           | 3.5 | 4.1  | 3.6  | Z    | 7.3  | 9.3  | 11.5 | 9.5  | 9.7  | 7.4  | 8.0 | 9.5 | 8.9 | 7.3 | 8.2 | 9.8 | 14.2 | 22.6 | 28.4 | 23.0 | 15.2 | 11.4 | 8.7  | 10.7          | 28.4          |      |      |      |      |      |      |      |      |     |     |     |     |     |     |      |      |      |      |      |      |                 |                 |  |
| 24-Feb | 8.4                           | 2.9 | 6.0  | 9.3  | 9.6  | Z    | 10.0 | 4.9  | 6.3  | 5.1  | 1.5  | 0.7 | 0.7 | 0.6 | 0.6 | 0.6 | 0.6 | 0.9  | 1.2  | 1.5  | 2.9  | 1.8  | 3.6  | 5.0  | 3.7           | 10.0          |      |      |      |      |      |      |      |      |     |     |     |     |     |     |      |      |      |      |      |      |                 |                 |  |
| 25-Feb | Z                             | 6.9 | 5.3  | 4.2  | 3.6  | 3.1  | 2.6  | 2.1  | 1.9  | 1.4  | 1.1  | 0.9 | 0.7 | 0.6 | 0.7 | 0.8 | 1.2 | 4.1  | 3.5  | 3.6  | 2.2  | 1.8  | 4.7  | 2.3  | 2.6           | 6.9           |      |      |      |      |      |      |      |      |     |     |     |     |     |     |      |      |      |      |      |      |                 |                 |  |
| 26-Feb | 1.4                           | Z   | 1.0  | 1.3  | 1.6  | 1.7  | 1.6  | 1.8  | 2.0  | 2.3  | 2.0  | 1.5 | 1.5 | 1.2 | 1.0 | 0.8 | 0.9 | 0.8  | 0.6  | 0.6  | 0.7  | 0.8  | 0.7  | 0.8  | 1.2           | 2.3           |      |      |      |      |      |      |      |      |     |     |     |     |     |     |      |      |      |      |      |      |                 |                 |  |
| 27-Feb | 0.8                           | 0.8 | Z    | 0.9  | 0.9  | 0.9  | 0.7  | 1.0  | 3.3  | 6.1  | 6.4  | 4.4 | 2.4 | 3.6 | 5.7 | 8.5 | 8.5 | 7.5  | 5.7  | 5.9  | 6.6  | 5.3  | 5.4  | 5.9  | 4.2           | 8.5           |      |      |      |      |      |      |      |      |     |     |     |     |     |     |      |      |      |      |      |      |                 |                 |  |
| 28-Feb | 3.0                           | 1.7 | 1.5  | Z    | 2.0  | 2.3  | 3.0  | 2.0  | 2.0  | 3.0  | 3.8  | 3.4 | 2.5 | 2.1 | 2.0 | 2.8 | 3.5 | 4.1  | 4.4  | 14.3 | 17.1 | 15.0 | 14.9 | 7.1  | 5.1           | 17.1          |      |      |      |      |      |      |      |      |     |     |     |     |     |     |      |      |      |      |      |      |                 |                 |  |
|        |                               |     |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |      |      |      |      |      |      | 3.8  | 3.2           | 4.1           | 4.5  | 3.6  | 3.8  | 4.1  | 4.0  | 4.3  | 4.1  | 3.4  | 2.9 | 2.6 | 2.5 | 2.7 | 3.0 | 4.2 | 4.7  | 4.9  | 5.4  | 5.5  | 5.4  | 4.3  | Diurnal Average |                 |  |
|        |                               |     |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |      |      |      |      |      |      | 12.1 | 8.4           | 19.9          | 22.6 | 21.0 | 13.9 | 17.6 | 15.7 | 17.8 | 15.6 | 11.1 | 9.7 | 9.5 | 8.9 | 7.3 | 8.5 | 9.8 | 14.2 | 22.6 | 28.4 | 23.0 | 20.1 | 16.9 | 13.7            | Diurnal Maximum |  |

Z - zerospan      C - Calibration      M - Maintenance  
 Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 159 ppb



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Nitrogen Dioxide (NO<sub>2</sub>) - ppb**  
**Surmont 2 - February 2023**





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Nitrogen Dioxide (NO<sub>2</sub>) - ppb  
Surmont 2 - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 20                            | 629                    | 99.06    | 99.06               |
| 21 - 40                           | 6                      | 0.94     | 100.00              |
| 41 - 80                           | 0                      | 0.00     | 100.00              |
| 81 - 159                          | 0                      | 0.00     | 100.00              |
| > 159                             | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 635

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

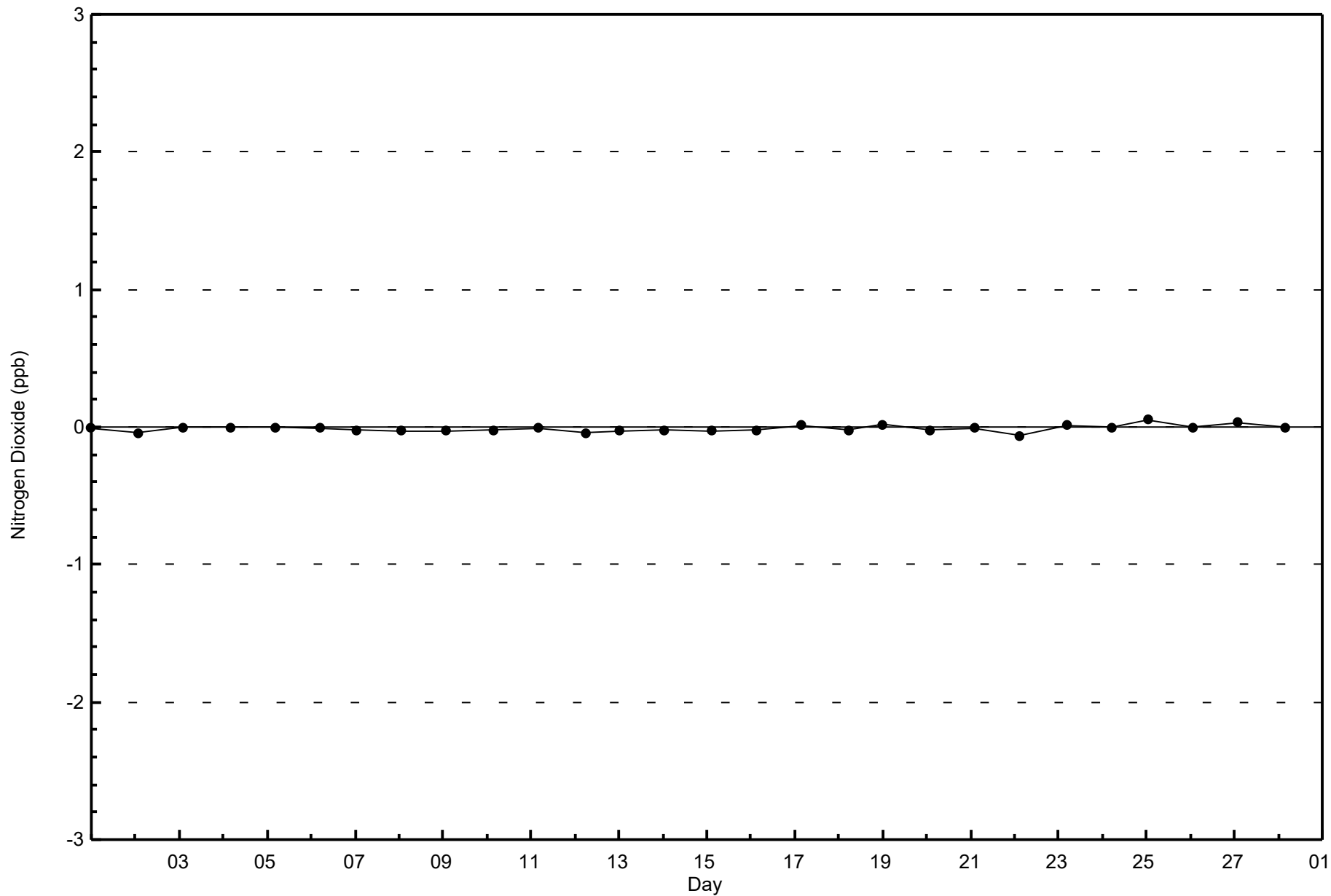
**Nitrogen Dioxide (NO<sub>2</sub>) - ppb  
Surmont 2 - February 2023**

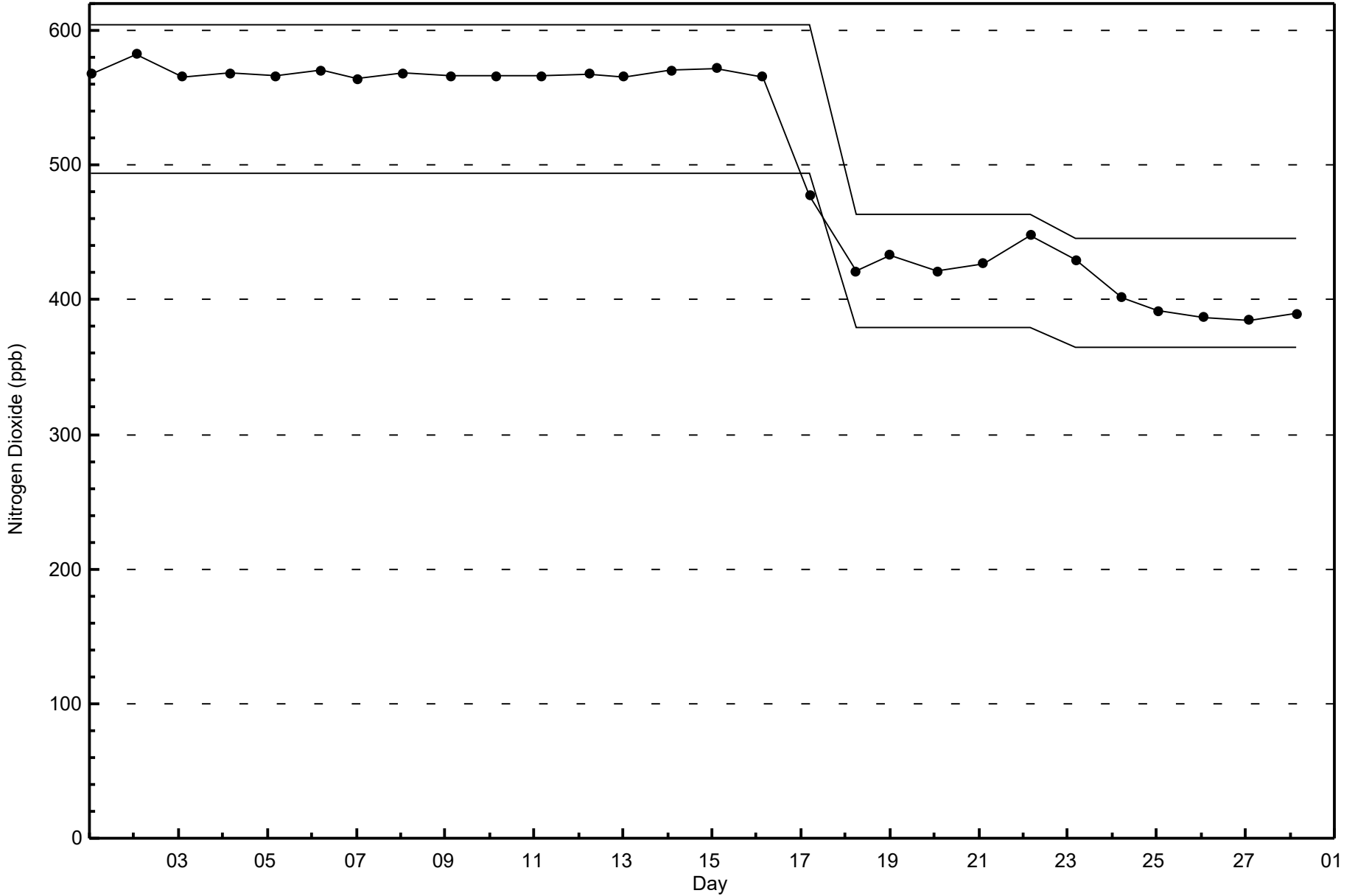
| Concentration<br>Ranges (ppb) | Wind Direction |     |    |     |    |     |    |     |    |     |    |     |    |     |    |     | Totals |
|-------------------------------|----------------|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|--------|
|                               | N              | NNE | NE | ENE | E  | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |        |
| 0 - 20                        | 42             | 32  | 13 | 8   | 18 | 25  | 58 | 25  | 18 | 10  | 10 | 80  | 93 | 69  | 41 | 81  | 623    |
| 21 - 40                       | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 3   | 0  | 0   | 1  | 2   | 6      |
| 11 - 80                       | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| 81 - 159                      | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| > 159                         | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| <b>Totals</b>                 | 42             | 32  | 13 | 8   | 18 | 25  | 58 | 25  | 18 | 10  | 10 | 83  | 93 | 69  | 42 | 83  | 629    |

Total Number of Valid Hours: 629

Total Number of Hours: 672









**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

**Nitrogen Oxides (NO<sub>x</sub>) - ppb**  
**Surmont 2 - February 2023**

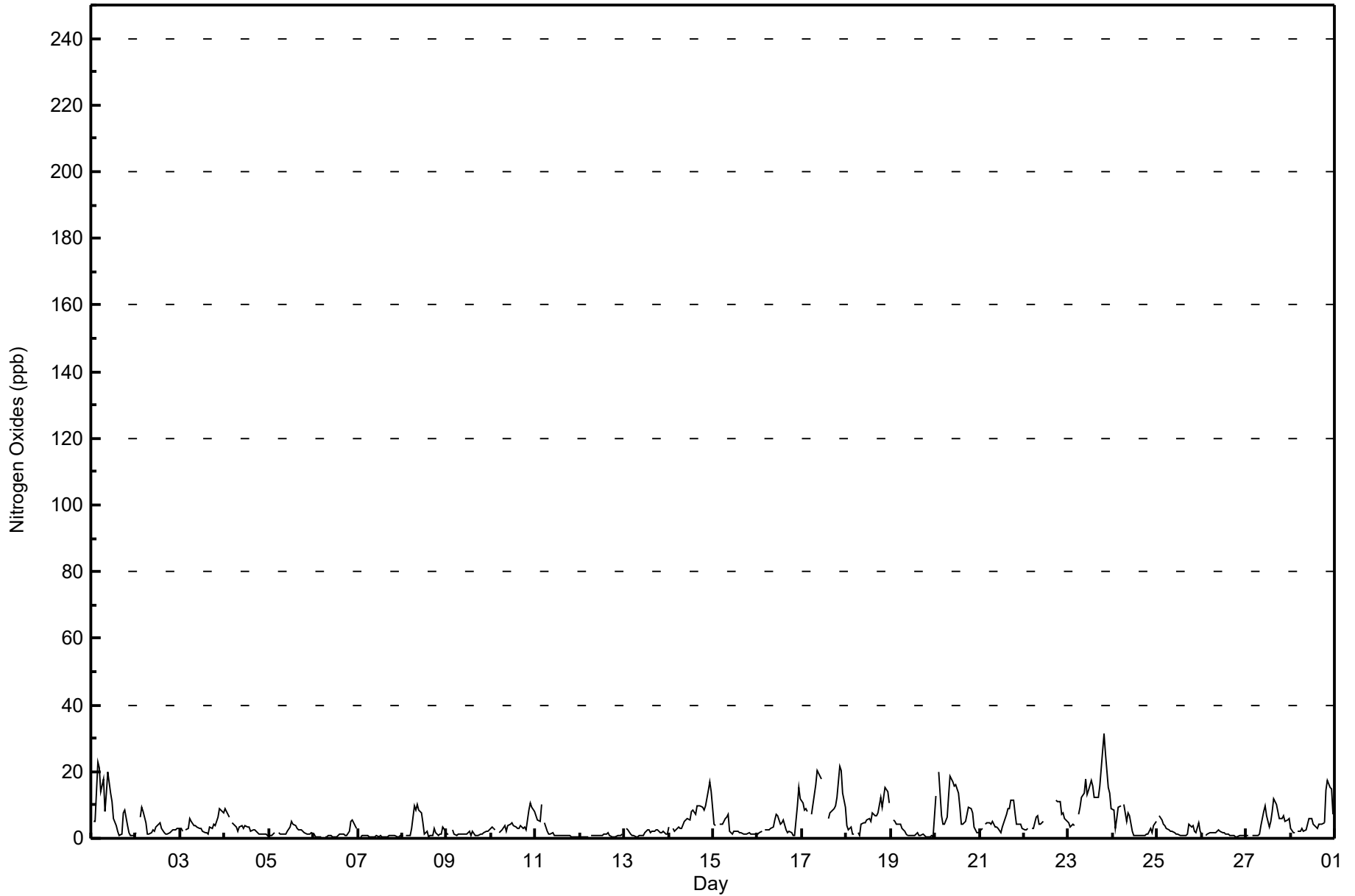
| Number of Exceedences (AAAQO):   |                               | 1-hr: 0  | 24-hr: 0 | Hours in Service: 672 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                                |      | 635  |      |      |                 |               |               |
|--|-------------------------------|--|----------|-----------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|--------------------------------|------|------|------|------|-----------------|---------------|---------------|
| Maximum Value: 31.4 ppb on Feb 23 20:00  |                               | Maximum Daily Average: 13.5 ppb on Feb 23  |          |                       |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Hours of Data: 635             |      |      |      |      |                 |               |               |
| Minimum Value: 0.3 ppb on Feb 6 07:00  |                               | Minimum Daily Average: 0.6 ppb on Feb 7  |          |                       |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Hours of Missing Data: 37      |      |      |      |      |                 |               |               |
| Maximum Diurnal Average: 5.5 ppb at hour 22  |                               | Minimum Diurnal Average: 3.2 ppb at hour 2   |          |                       |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Hours of Calibration: 34       |      |      |      |      |                 |               |               |
| Monthly Average: 4.35 ppb  |                               | Percentiles: P <sub>1</sub> = 0.4 P <sub>10</sub> = 0.7 Q <sub>1</sub> = 1.2 Median = 2.7 Q <sub>3</sub> = 5.8 P <sub>90</sub> = 10.3 P <sub>99</sub> = 20.4 |          |                       |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Percent Operational Time: 99.6 |      |      |      |      |                 |               |               |
| Day  | Hourly Period Ending At (MST) |  |          |                       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                                |      |      |      |      |                 | Daily Average | Daily Maximum |
|  | 1                             | 2  | 3        | 4                     | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19                             | 20   | 21   | 22   | 23   | 24              |               |               |
| 1-Feb  | Z                             | 5.0  | 5.2      | 22.8                  | 21.1 | 14.0 | 17.7 | 7.9  | 13.4 | 20.0 | 13.4 | 11.1 | 5.8  | 3.7  | 2.3  | 0.7  | 1.1  | 7.6  | 8.5                            | 3.6  | 1.5  | 1.0  | 0.8  | 1.0             | 8.2           | 22.8          |
| 2-Feb  | 1.7                           | Z  | 6.2      | 9.3                   | 8.2  | 4.7  | 1.3  | 1.2  | 1.6  | 2.4  | 2.2  | 3.4  | 4.3  | 4.6  | 2.8  | 1.8  | 1.4  | 1.2  | 1.5                            | 2.2  | 2.6  | 2.7  | 3.0  | 3.2             | 3.2           | 9.3           |
| 3-Feb  | 3.0                           | 2.2  | Z        | 2.7                   | 2.9  | 6.1  | 5.1  | 3.7  | 3.7  | 3.2  | 3.0  | 2.9  | 2.3  | 1.8  | 1.5  | 3.4  | 2.9  | 4.1  | 3.8                            | 6.2  | 8.9  | 8.5  | 7.5  | 4.0             | 8.9           |               |
| 4-Feb  | 8.8                           | 8.0  | 6.2      | Z                     | 4.6  | 4.4  | 3.3  | 2.2  | 3.3  | 3.6  | 2.8  | 3.8  | 3.3  | 3.2  | 2.3  | 2.6  | 2.7  | 2.2  | 1.3                            | 1.1  | 1.2  | 1.1  | 1.0  | 3.2             | 8.8           |               |
| 5-Feb  | 0.9                           | 0.9  | 1.1      | 1.5                   | Z    | 1.8  | 1.3  | 1.1  | 1.1  | 1.3  | 2.2  | 3.2  | 5.0  | 4.2  | 3.6  | 3.1  | 2.6  | 2.4  | 2.1                            | 1.6  | 1.3  | 1.2  | 1.2  | 2.0             | 5.0           |               |
| 6-Feb  | 1.2                           | 0.5  | 0.4      | 0.4                   | 0.4  | Z    | 0.3  | 0.4  | 0.7  | 0.9  | 0.5  | 0.6  | 0.4  | 0.8  | 1.2  | 1.1  | 1.1  | 0.7  | 0.7                            | 2.1  | 5.0  | 5.5  | 3.9  | 2.9             | 1.4           | 5.5           |
| 7-Feb  | Z                             | 0.6  | 0.7      | 0.8                   | 0.7  | 0.7  | 0.6  | 0.5  | 0.5  | 0.4  | 0.7  | 0.5  | 0.8  | 0.6  | 0.5  | 0.4  | 0.5  | 0.7  | 1.0                            | 0.8  | 0.7  | 0.5  | 0.5  | 0.7             | 0.6           | 1.0           |
| 8-Feb  | 0.9                           | Z  | 0.7      | 0.9                   | 0.9  | 3.0  | 9.7  | 8.5  | 10.2 | 8.4  | 7.8  | 4.9  | 1.3  | 2.1  | 0.6  | 0.8  | 0.7  | 3.0  | 1.8                            | 1.0  | 1.5  | 1.4  | 3.3  | 1.9             | 3.3           | 10.2          |
| 9-Feb  | 1.2                           | 1.2  | Z        | 2.4                   | 1.3  | 1.0  | 1.1  | 1.2  | 1.1  | 1.3  | 1.2  | 1.3  | 2.1  | 1.0  | 2.3  | 0.8  | 0.7  | 1.0  | 1.3                            | 1.4  | 1.5  | 1.9  | 2.3  | 2.6             | 1.4           | 2.6           |
| 10-Feb   | 3.4                           | 3.1  | 2.3      | Z                     | 1.7  | 1.9  | 2.6  | 3.8  | 2.3  | 3.6  | 4.1  | 4.9  | 3.8  | 3.2  | 2.8  | 2.8  | 4.0  | 3.1  | 3.6                            | 2.4  | 8.4  | 10.7 | 9.4  | 8.1             | 4.2           | 10.7          |
| 11-Feb   | 6.6                           | 5.4  | 5.2      | 10.2                  | Z    | 4.5  | 2.0  | 1.4  | 1.4  | 1.6  | 1.0  | 1.0  | 1.0  | 0.8  | 0.9  | 1.0  | 0.9  | 1.0  | 0.8                            | 0.6  | 0.5  | 0.5  | 0.5  | 0.4             | 2.1           | 10.2          |
| 12-Feb   | 0.4                           | 0.6  | 0.6      | 0.6                   | 0.6  | Z    | 0.7  | 0.7  | 0.8  | 0.8  | 0.9  | 0.8  | 0.9  | 1.4  | 1.2  | 1.6  | 0.8  | 0.6  | 0.6                            | 0.6  | 0.8  | 1.0  | 1.1  | 1.1             | 0.8           | 1.6           |
| 13-Feb   | Z                             | 3.0  | 2.4      | 1.4                   | 0.9  | 0.7  | 0.6  | 0.6  | 0.6  | 0.6  | 0.7  | 1.8  | 2.5  | 2.7  | 1.9  | 2.2  | 2.1  | 2.5  | 2.6                            | 1.7  | 1.7  | 1.9  | 1.2  | 1.4             | 1.6           | 3.0           |
| 14-Feb   | 3.5                           | Z  | 3.1      | 2.1                   | 2.4  | 3.3  | 3.1  | 3.0  | 4.9  | 5.6  | 6.0  | 5.6  | 8.1  | 8.4  | 7.3  | 9.7  | 9.6  | 9.8  | 9.2                            | 8.4  | 9.7  | 14.3 | 17.0 | 13.8            | 7.3           | 17.0          |
| 15-Feb   | 4.3                           | 3.7  | Z        | 4.1                   | 4.2  | 4.4  | 5.8  | 6.3  | 7.1  | 2.0  | 1.1  | 2.1  | 2.2  | 2.0  | 1.7  | 1.5  | 1.4  | 1.3  | 1.4                            | 1.6  | 1.4  | 1.2  | 1.2  | 1.2             | 2.8           | 7.1           |
| 16-Feb   | 1.5                           | 1.9  | 2.1      | Z                     | 2.5  | 2.7  | 2.7  | 2.8  | 3.4  | 5.4  | 7.3  | 6.6  | 4.3  | 4.6  | 5.3  | 2.7  | 1.8  | 2.0  | 1.5                            | 0.9  | 0.8  | 9.7  | 15.3 | 12.1            | 4.3           | 15.3          |
| 17-Feb   | 10.4                          | 8.5  | 8.8      | 8.2                   | Z    | 7.0  | 10.4 | 16.0 | 20.4 | 19.7 | 17.9 | M    | M    | M    | 6.1  | 7.7  | 7.9  | 9.0  | 9.5                            | 12.5 | 21.8 | 20.3 | 13.6 | 9.1             | 12.2          | 21.8          |
| 18-Feb   | 3.9                           | 2.7  | 3.3      | 1.2                   | 1.4  | Z    | 1.7  | 1.0  | 4.3  | 4.7  | 4.7  | 5.6  | 5.9  | 5.2  | 7.8  | 6.8  | 6.7  | 7.6  | 12.2                           | 9.4  | 12.1 | 15.2 | 14.0 | 10.7            | 6.4           | 15.2          |
| 19-Feb   | Z                             | 5.5  | 5.0      | 4.3                   | 4.1  | 4.0  | 2.8  | 2.0  | 1.4  | 0.8  | 0.7  | 0.7  | 0.8  | 0.8  | 1.7  | 0.8  | 0.6  | 1.2  | 0.9                            | 0.5  | 0.3  | 0.3  | 0.6  | 0.6             | 1.8           | 5.5           |
| 20-Feb   | 12.7                          | Z  | 20.0     | 6.7                   | 4.3  | 4.2  | 6.3  | 12.8 | 18.8 | 17.0 | 15.7 | 16.0 | 13.4 | 9.2  | 4.2  | 4.1  | 5.2  | 7.1  | 9.2                            | 8.9  | 7.8  | 3.3  | 1.8  | 1.7             | 9.1           | 20.0          |
| 21-Feb   | 2.1                           | 3.1  | Z        | 4.3                   | 4.5  | 4.5  | 4.4  | 5.1  | 3.3  | 3.4  | 2.9  | 1.9  | 3.2  | 4.8  | 7.2  | 9.0  | 8.7  | 11.5 | 11.5                           | 7.5  | 4.4  | 4.2  | 4.1  | 2.9             | 5.2           | 11.5          |
| 22-Feb   | 2.6                           | 2.7  | 2.9      | Z                     | 3.0  | 3.0  | 6.2  | 7.0  | 4.0  | 4.2  | 5.1  | C    | C    | C    | C    | C    | C    | 11.4 | 11.2                           | 11.2 | 7.1  | 7.5  | 6.0  | 5.0             | --            | 11.4          |
| 23-Feb   | 4.6                           | 3.5  | 4.1      | 3.6                   | Z    | 7.3  | 9.3  | 12.4 | 13.5 | 18.0 | 13.3 | 14.4 | 17.5 | 15.8 | 12.1 | 12.4 | 12.5 | 15.5 | 26.1                           | 31.4 | 25.4 | 15.3 | 13.5 | 9.0             | 13.5          | 31.4          |
| 24-Feb   | 8.4                           | 2.9  | 6.0      | 9.3                   | 9.6  | Z    | 10.1 | 5.0  | 7.5  | 6.8  | 2.0  | 0.8  | 0.8  | 0.7  | 0.7  | 0.7  | 0.7  | 0.9  | 1.2                            | 1.5  | 3.0  | 1.8  | 3.6  | 5.0             | 3.9           | 10.1          |
| 25-Feb   | Z                             | 7.0  | 5.3      | 4.2                   | 3.6  | 3.1  | 2.6  | 2.2  | 2.1  | 1.7  | 1.4  | 1.2  | 0.9  | 0.7  | 0.8  | 0.9  | 1.3  | 4.2  | 3.5                            | 3.6  | 2.2  | 1.8  | 4.7  | 2.3             | 2.7           | 7.0           |
| 26-Feb   | 1.4                           | Z  | 1.0      | 1.3                   | 1.6  | 1.7  | 1.6  | 1.8  | 2.1  | 2.6  | 2.3  | 1.8  | 1.8  | 1.4  | 1.1  | 0.9  | 1.0  | 0.8  | 0.6                            | 0.6  | 0.7  | 0.8  | 0.7  | 0.8             | 1.3           | 2.6           |
| 27-Feb   | 0.8                           | 0.8  | Z        | 0.9                   | 0.9  | 0.9  | 0.7  | 1.1  | 3.8  | 8.2  | 9.6  | 6.8  | 3.4  | 5.1  | 8.0  | 11.9 | 10.3 | 8.0  | 5.8                            | 5.9  | 6.7  | 5.3  | 5.4  | 6.0             | 5.1           | 11.9          |
| 28-Feb   | 3.0                           | 1.7  | 1.5      | Z                     | 2.0  | 2.3  | 3.0  | 2.1  | 2.5  | 4.3  | 6.0  | 5.9  | 4.2  | 3.6  | 3.1  | 4.1  | 4.3  | 4.4  | 4.5                            | 14.4 | 17.2 | 15.1 | 15.0 | 7.1             | 5.7           | 17.2          |
| 3.8 3.2 4.1 4.5 3.7 3.8 4.2 4.1 5.0 5.4 4.9 4.2 3.8 3.6 3.4 3.5 3.5 4.4 4.9 5.0 5.5 5.5 5.5 4.3                        |                               |  |          |                       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                                |      |      |      |      | Diurnal Average |               |               |
| 12.7 8.5 20.0 22.8 21.1 14.0 17.7 16.0 20.4 20.0 17.9 16.0 17.5 15.8 12.1 12.4 12.5 15.5 26.1 31.4 25.4 20.3 17.0 13.8 |                               |  |          |                       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                                |      |      |      |      | Diurnal Maximum |               |               |
| Z - zerospan C - Calibration M - Maintenance   |                               |  |          |                       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                                |      |      |      |      |                 |               |               |





**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Nitrogen Oxides (NO<sub>x</sub>) - ppb**  
**Surmont 2 - February 2023**





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Nitrogen Oxides (NO<sub>x</sub>) - ppb  
Surmont 2 - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 20                            | 629                    | 99.06    | 99.06               |
| 21 - 40                           | 6                      | 0.94     | 100.00              |
| 41 - 80                           | 0                      | 0.00     | 100.00              |
| 81 - 159                          | 0                      | 0.00     | 100.00              |
| > 159                             | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 635

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Nitrogen Oxides (NO<sub>x</sub>) - ppb  
Surmont 2 - February 2023**

| Concentration<br>Ranges (ppb) | Wind Direction |     |    |     |    |     |    |     |    |     |    |     |    |     |    |     | Totals |
|-------------------------------|----------------|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|--------|
|                               | N              | NNE | NE | ENE | E  | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |        |
| 0 - 20                        | 42             | 32  | 13 | 8   | 18 | 25  | 58 | 25  | 18 | 10  | 10 | 80  | 93 | 69  | 41 | 81  | 623    |
| 21 - 40                       | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 3   | 0  | 0   | 1  | 2   | 6      |
| 11 - 80                       | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| 81 - 159                      | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| > 159                         | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| <b>Totals</b>                 | 42             | 32  | 13 | 8   | 18 | 25  | 58 | 25  | 18 | 10  | 10 | 83  | 93 | 69  | 42 | 83  | 629    |

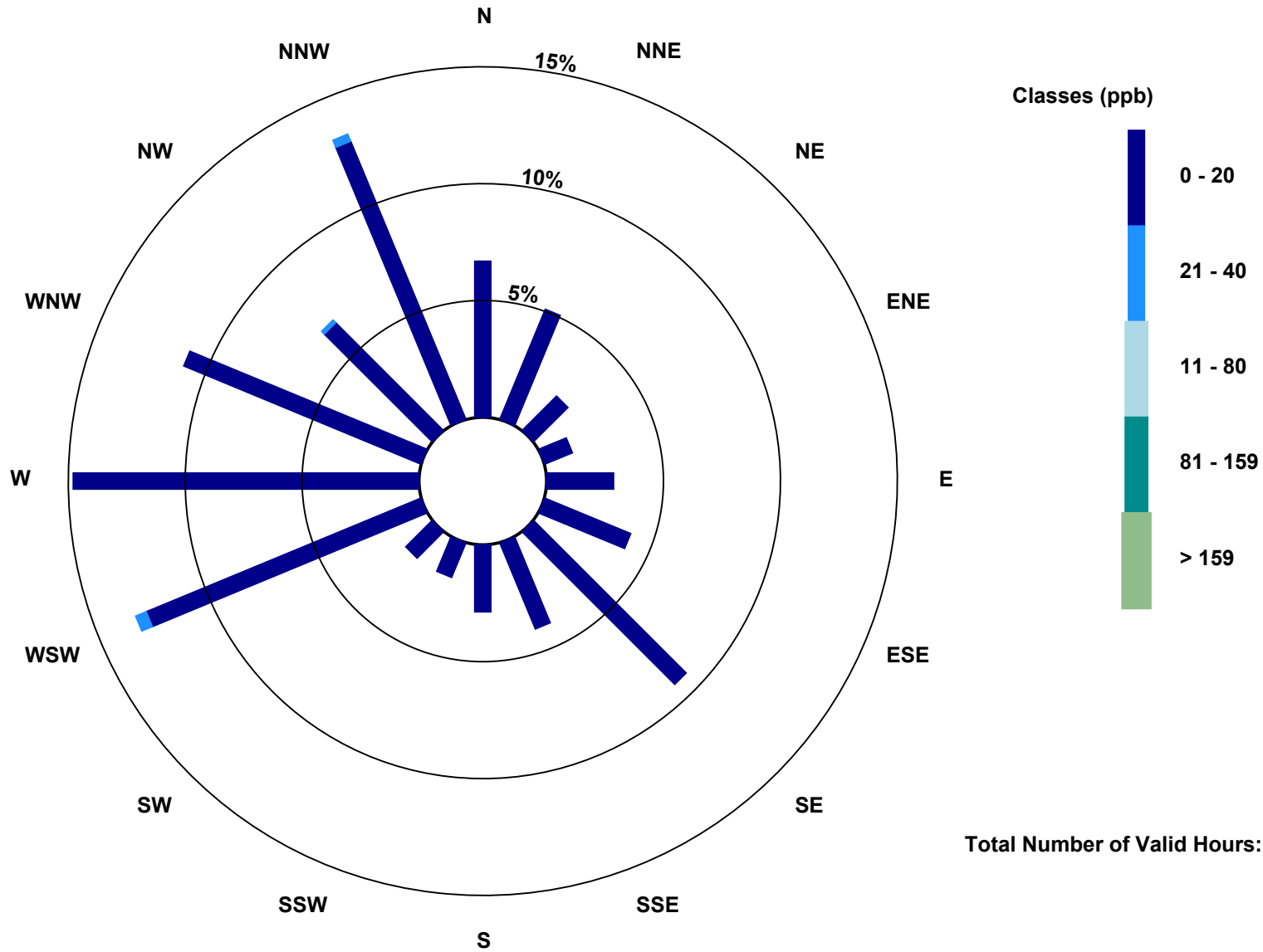
Total Number of Valid Hours: 629

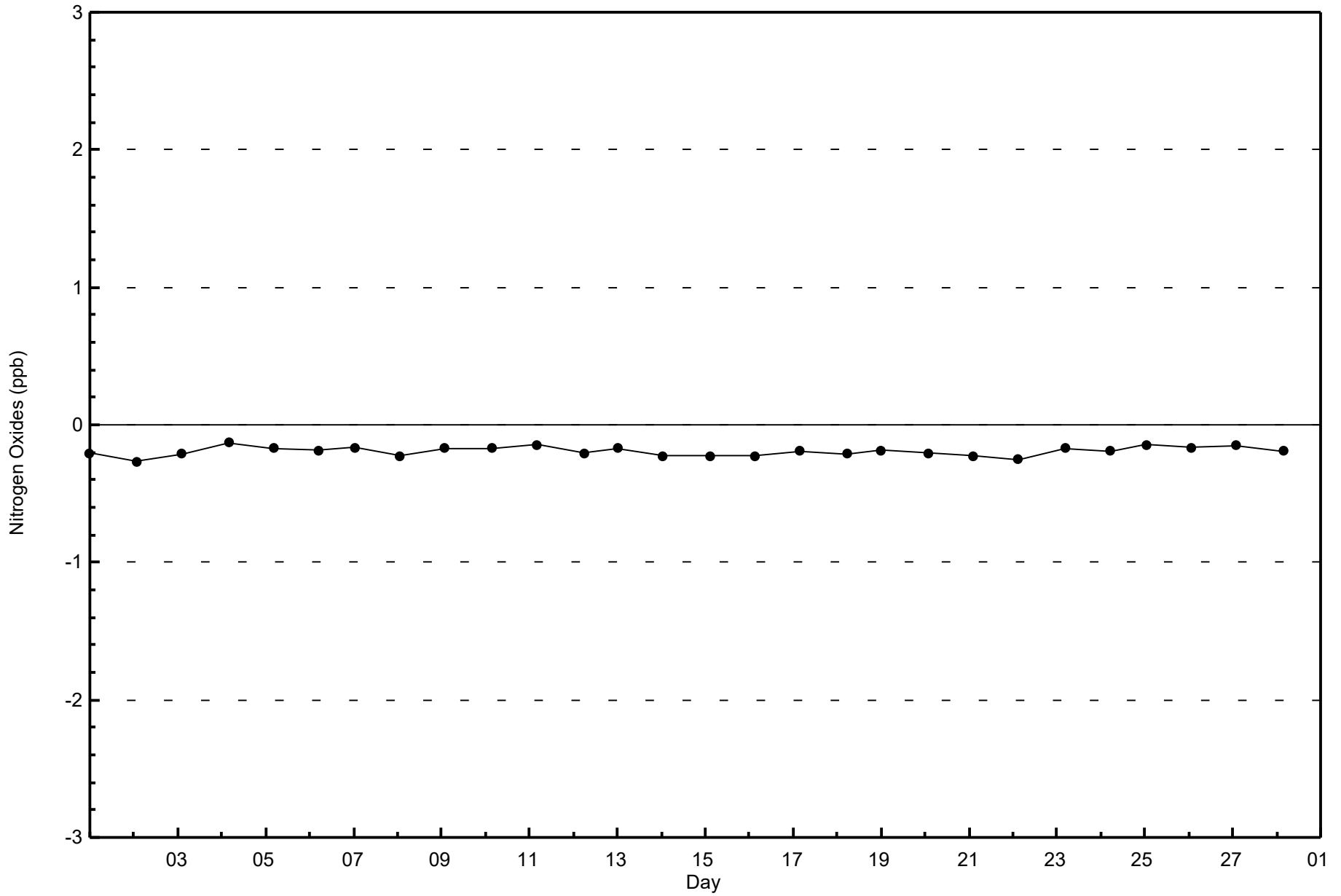
Total Number of Hours: 672

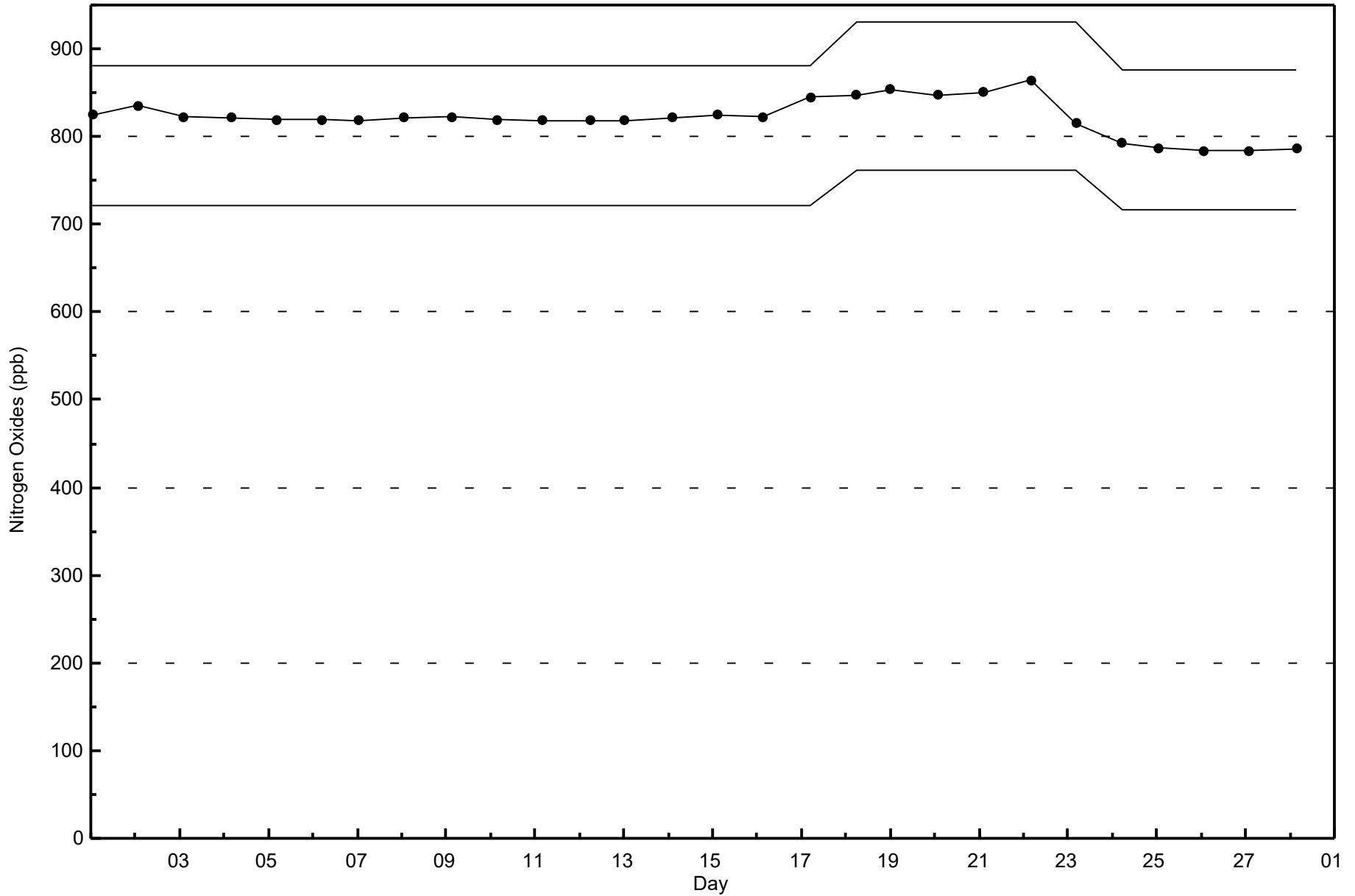


Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Nitrogen Oxides (NO<sub>x</sub>) - ppb  
Surmont 2

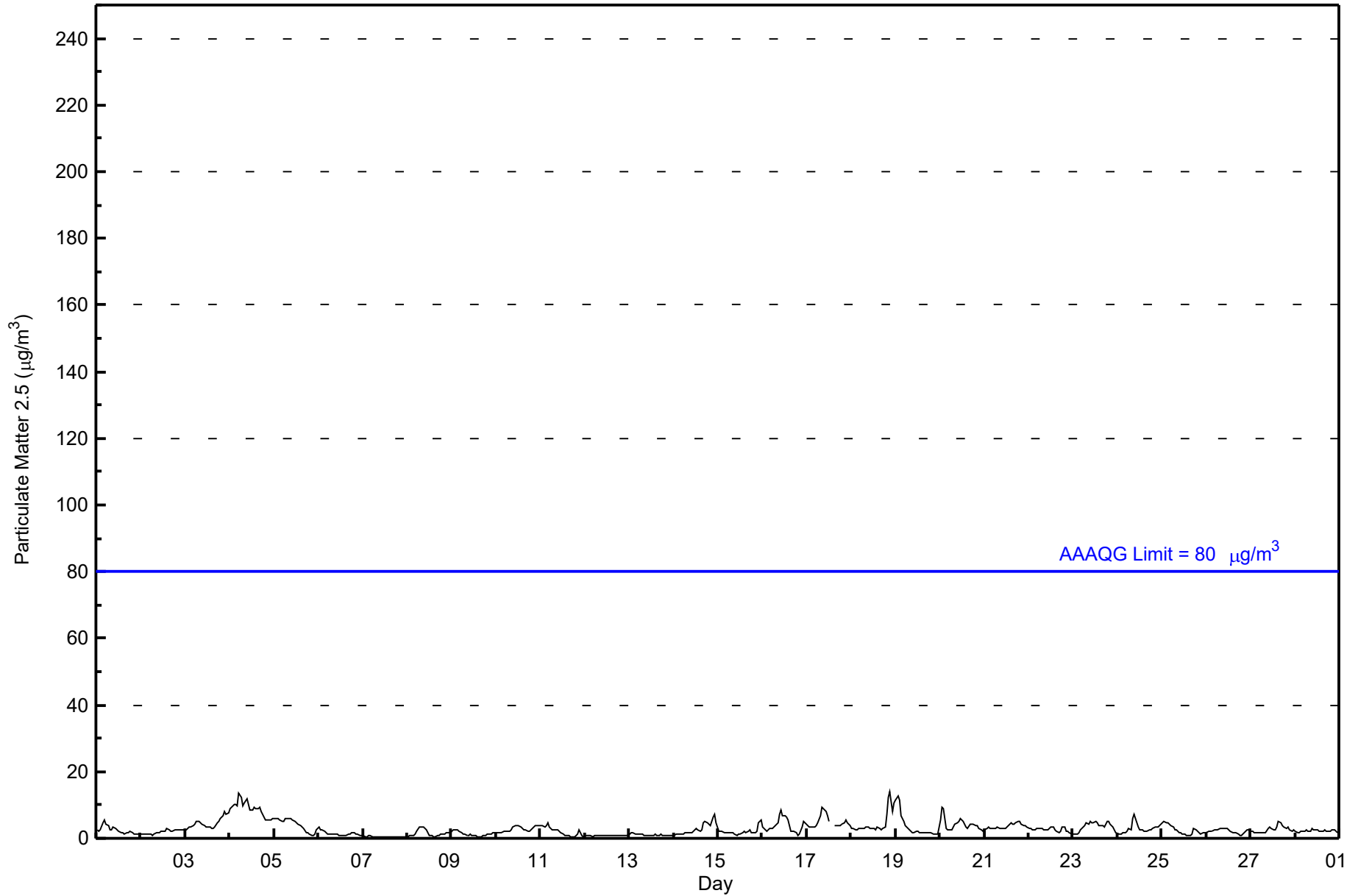








| Number of Exceedences (AAAQO):  |                               | 1-hr: 0   |      | 24-hr: 0 |     | Hours in Service: |      |     |      |      |      |     |     |     |     |                           |     |       |     | 672 |      |      |     |                 |               |               |
|---|-------------------------------|---|------|----------|-----|-------------------|------|-----|------|------|------|-----|-----|-----|-----|---------------------------|-----|-------|-----|-----|------|------|-----|-----------------|---------------|---------------|
| Maximum Value: 13.9 µg/m <sup>3</sup> on Feb 18 22:00   |                               | Maximum Daily Average: 8.8 µg/m <sup>3</sup> on Feb 4   |      |          |     |                   |      |     |      |      |      |     |     |     |     | Hours of Data:            |     | 670   |     |     |      |      |     |                 |               |               |
| Minimum Value: 0.4 µg/m <sup>3</sup> on Feb 7 16:00   |                               | Minimum Daily Average: 0.5 µg/m <sup>3</sup> on Feb 7   |      |          |     |                   |      |     |      |      |      |     |     |     |     | Hours of Missing Data:    |     | 2     |     |     |      |      |     |                 |               |               |
| Maximum Diurnal Average: 3.5 µg/m <sup>3</sup> at hour 10   |                               | Minimum Diurnal Average: 2.4 µg/m <sup>3</sup> at hour 16   |      |          |     |                   |      |     |      |      |      |     |     |     |     | Hours of Calibration:     |     | 2     |     |     |      |      |     |                 |               |               |
| Monthly Average: 2.89 µg/m <sup>3</sup>   |                               | Percentiles: P <sub>1</sub> = 0.4 P <sub>10</sub> = 0.8 Q <sub>1</sub> = 1.4 Median = 2.4 Q <sub>3</sub> = 3.6 P <sub>90</sub> = 5.4 P <sub>99</sub> = 11.3 |      |          |     |                   |      |     |      |      |      |     |     |     |     | Percent Operational Time: |     | 100.0 |     |     |      |      |     |                 |               |               |
| Day   | Hourly Period Ending At (MST) |   |      |          |     |                   |      |     |      |      |      |     |     |     |     |                           |     |       |     |     |      |      |     |                 | Daily Average | Daily Maximum |
|   | 1                             | 2   | 3    | 4        | 5   | 6                 | 7    | 8   | 9    | 10   | 11   | 12  | 13  | 14  | 15  | 16                        | 17  | 18    | 19  | 20  | 21   | 22   | 23  | 24              |               |               |
| 1-Feb   | 2.5                           | 2.2   | 2.5  | 4.8      | 5.6 | 4.0               | 3.9  | 2.3 | 2.6  | 3.5  | 2.9  | 2.7 | 2.3 | 1.8 | 1.5 | 1.4                       | 1.6 | 1.7   | 2.1 | 1.8 | 1.3  | 1.3  | 1.2 | 1.3             | 2.4           | 5.6           |
| 2-Feb   | 1.3                           | 1.4   | 1.3  | 1.4      | 1.3 | 1.2               | 1.0  | 1.4 | 1.6  | 1.5  | 1.7  | 2.0 | 2.3 | 2.3 | 2.8 | 2.6                       | 2.1 | 2.2   | 2.5 | 2.5 | 2.5  | 2.4  | 2.4 | 2.5             | 1.9           | 2.8           |
| 3-Feb   | 2.7                           | 3.0   | 3.3  | 3.6      | 3.7 | 4.2               | 5.0  | 5.2 | 4.8  | 4.3  | 3.8  | 3.5 | 3.4 | 3.2 | 2.8 | 3.1                       | 3.6 | 4.8   | 5.3 | 5.7 | 6.9  | 7.9  | 7.4 | 7.5             | 4.5           | 7.9           |
| 4-Feb   | 8.7                           | 9.3   | 10.1 | 10.1     | 9.8 | 13.5              | 12.3 | 9.9 | 10.6 | 11.9 | 10.1 | 8.6 | 8.4 | 9.1 | 8.9 | 8.9                       | 9.3 | 8.0   | 6.2 | 5.4 | 5.4  | 5.6  | 5.5 | 5.8             | 8.8           | 13.5          |
| 5-Feb   | 5.7                           | 5.9   | 5.8  | 5.5      | 5.2 | 5.3               | 5.9  | 5.9 | 5.9  | 5.9  | 5.7  | 5.1 | 4.6 | 4.1 | 3.6 | 3.3                       | 3.0 | 1.7   | 1.7 | 1.3 | 1.0  | 1.0  | 1.1 | 2.5             | 4.0           | 5.9           |
| 6-Feb   | 3.2                           | 2.7   | 2.4  | 2.1      | 1.8 | 1.3               | 1.2  | 1.4 | 1.2  | 1.3  | 1.1  | 1.0 | 0.8 | 0.9 | 0.9 | 0.9                       | 1.2 | 1.4   | 1.5 | 1.6 | 1.5  | 1.3  | 1.0 | 0.9             | 1.4           | 3.2           |
| 7-Feb   | 0.7                           | 0.5   | 0.6  | 0.9      | 0.9 | 0.6               | 0.5  | 0.4 | 0.4  | 0.5  | 0.5  | 0.5 | 0.4 | 0.4 | 0.4 | 0.4                       | 0.4 | 0.4   | 0.5 | 0.4 | 0.4  | 0.4  | 0.4 | 0.4             | 0.5           | 0.9           |
| 8-Feb   | 0.5                           | 0.6   | 0.7  | 0.7      | 1.4 | 2.1               | 3.5  | 3.3 | 3.2  | 3.2  | 2.7  | 1.7 | 0.8 | 0.9 | 0.5 | 0.5                       | 0.7 | 0.9   | 1.1 | 1.2 | 1.5  | 1.6  | 1.7 | 1.8             | 1.5           | 3.5           |
| 9-Feb   | 2.3                           | 2.5   | 2.6  | 2.5      | 2.0 | 1.5               | 1.2  | 1.1 | 1.0  | 1.0  | 1.1  | 1.0 | 0.9 | 0.7 | 0.5 | 0.6                       | 0.6 | 0.7   | 1.0 | 1.2 | 1.2  | 1.3  | 1.6 | 1.7             | 1.3           | 2.6           |
| 10-Feb  | 1.7                           | 1.9   | 1.8  | 1.9      | 2.0 | 2.0               | 2.1  | 2.3 | 2.7  | 3.5  | 3.9  | 4.0 | 3.7 | 3.3 | 2.8 | 2.4                       | 2.5 | 2.3   | 2.3 | 2.4 | 3.5  | 3.7  | 3.8 | 4.0             | 2.8           | 4.0           |
| 11-Feb  | 3.8                           | 3.7   | 3.5  | 3.9      | 4.6 | 3.3               | 2.7  | 2.7 | 2.6  | 2.5  | 2.1  | 1.6 | 1.3 | 1.0 | 0.7 | 0.7                       | 0.5 | 0.5   | 0.6 | 0.7 | 1.1  | 2.4  | 0.9 | 0.6             | 2.0           | 4.6           |
| 12-Feb  | 0.7                           | 0.8   | 0.7  | 0.7      | 0.6 | 0.7               | 0.7  | 0.7 | 0.8  | 0.7  | 0.8  | 0.8 | 0.8 | 0.7 | 0.7 | 0.7                       | 0.7 | 0.7   | 0.7 | 0.7 | 0.8  | 0.8  | 1.0 | 1.0             | 0.7           | 1.0           |
| 13-Feb  | 1.3                           | 1.6   | 1.5  | 1.2      | 1.3 | 1.4               | 1.4  | 1.3 | 1.0  | 0.8  | 0.7  | 0.9 | 0.8 | 1.1 | 1.1 | 1.0                       | 1.0 | 1.2   | 0.9 | 0.8 | 0.7  | 0.8  | 0.7 | 0.8             | 1.0           | 1.6           |
| 14-Feb  | 1.0                           | 1.1   | 1.2  | 1.2      | 1.2 | 1.4               | 1.6  | 1.7 | 1.7  | 1.5  | 1.9  | 2.4 | 3.0 | 2.5 | 2.1 | 2.6                       | 4.5 | 5.0   | 4.6 | 4.0 | 4.0  | 6.2  | 7.0 | 4.6             | 2.8           | 7.0           |
| 15-Feb  | 2.0                           | 2.2   | 2.1  | 1.9      | 1.7 | 1.5               | 1.7  | 1.6 | 1.7  | 1.2  | 1.0  | 1.2 | 1.2 | 1.6 | 2.3 | 1.8                       | 2.2 | 2.5   | 1.6 | 1.8 | 1.7  | 2.3  | 4.7 | 5.5             | 2.0           | 5.5           |
| 16-Feb  | 3.4                           | 2.8   | 2.2  | 2.4      | 2.9 | 2.9               | 3.2  | 3.7 | 4.6  | 7.3  | 8.3  | 6.9 | 6.9 | 6.5 | 5.4 | 2.1                       | 2.0 | 2.3   | 1.7 | 0.8 | 1.1  | 3.4  | 5.2 | 4.7             | 3.9           | 8.3           |
| 17-Feb  | 4.0                           | 3.4   | 3.5  | 3.6      | 3.6 | 3.6               | 4.5  | 6.6 | 9.2  | 9.0  | 8.1  | 6.8 | 5.0 | C   | C   | 3.9                       | 3.8 | 3.8   | 3.8 | 4.1 | 4.8  | 5.3  | 4.5 | 3.9             | 4.9           | 9.2           |
| 18-Feb  | 3.0                           | 2.8   | 2.7  | 2.7      | 2.8 | 3.1               | 3.0  | 3.0 | 3.4  | 3.2  | 3.1  | 3.1 | 3.2 | 2.6 | 3.2 | 3.0                       | 2.6 | 2.8   | 3.2 | 7.2 | 12.1 | 13.9 | 7.9 | 10.6            | 4.5           | 13.9          |
| 19-Feb  | 11.3                          | 12.9  | 11.4 | 6.7      | 4.9 | 3.9               | 3.2  | 2.4 | 2.3  | 1.9  | 1.9  | 1.9 | 2.0 | 1.8 | 1.8 | 1.8                       | 1.7 | 1.7   | 1.7 | 1.6 | 1.3  | 1.2  | 1.3 | 1.2             | 3.5           | 12.9          |
| 20-Feb  | 5.4                           | 9.2   | 9.0  | 2.9      | 2.4 | 2.3               | 2.5  | 3.6 | 4.4  | 4.7  | 5.1  | 6.0 | 5.3 | 4.2 | 3.2 | 3.2                       | 4.2 | 4.3   | 4.0 | 3.7 | 3.6  | 3.0  | 2.4 | 2.1             | 4.2           | 9.2           |
| 21-Feb  | 2.6                           | 3.0   | 3.3  | 3.1      | 2.9 | 2.9               | 3.0  | 3.3 | 3.1  | 3.2  | 3.1  | 2.9 | 3.3 | 3.7 | 4.6 | 4.4                       | 4.1 | 4.5   | 4.9 | 5.1 | 4.0  | 3.8  | 3.8 | 3.3             | 3.6           | 5.1           |
| 22-Feb  | 2.9                           | 2.8   | 2.7  | 2.6      | 2.8 | 3.0               | 2.8  | 3.0 | 2.5  | 2.4  | 2.5  | 2.9 | 3.3 | 3.2 | 2.6 | 1.9                       | 1.7 | 2.1   | 3.4 | 3.6 | 2.2  | 2.0  | 1.6 | 1.4             | 2.6           | 3.6           |
| 23-Feb  | 1.4                           | 1.4   | 1.4  | 1.9      | 2.5 | 3.2               | 4.0  | 4.5 | 4.3  | 5.2  | 4.6  | 4.9 | 5.2 | 4.7 | 3.9 | 4.0                       | 3.7 | 3.5   | 5.3 | 5.0 | 4.2  | 3.4  | 2.4 | 1.7             | 3.6           | 5.3           |
| 24-Feb  | 1.4                           | 1.1   | 1.2  | 1.5      | 1.8 | 2.2               | 2.8  | 2.4 | 6.0  | 7.1  | 4.8  | 3.4 | 2.7 | 2.4 | 2.0 | 1.9                       | 2.1 | 2.6   | 2.7 | 3.1 | 3.3  | 3.4  | 3.6 | 4.1             | 2.9           | 7.1           |
| 25-Feb  | 4.7                           | 4.9   | 4.8  | 4.5      | 4.2 | 3.9               | 3.2  | 2.7 | 2.3  | 1.9  | 1.5  | 1.4 | 1.2 | 0.9 | 0.9 | 0.9                       | 1.2 | 3.1   | 2.4 | 2.2 | 1.6  | 1.4  | 1.6 | 1.8             | 2.5           | 4.9           |
| 26-Feb  | 1.7                           | 1.9   | 2.2  | 2.2      | 2.5 | 2.7               | 2.6  | 2.9 | 3.0  | 3.0  | 3.1  | 3.1 | 2.7 | 2.1 | 1.6 | 1.5                       | 1.5 | 1.3   | 1.0 | 1.1 | 1.6  | 2.1  | 2.6 | 2.4             | 2.2           | 3.1           |
| 27-Feb  | 2.2                           | 2.0   | 1.9  | 1.8      | 1.7 | 1.7               | 1.6  | 1.6 | 1.9  | 3.0  | 3.2  | 3.1 | 2.5 | 2.7 | 3.4 | 5.2                       | 4.6 | 4.0   | 3.5 | 3.0 | 3.2  | 2.3  | 2.2 | 2.4             | 2.7           | 5.2           |
| 28-Feb  | 2.2                           | 1.8   | 1.8  | 2.0      | 1.9 | 1.9               | 2.5  | 2.1 | 2.0  | 2.8  | 2.7  | 2.5 | 2.4 | 2.3 | 2.1 | 2.1                       | 2.3 | 2.1   | 2.0 | 2.3 | 2.6  | 2.4  | 2.3 | 1.9             | 2.2           | 2.8           |
| 3.0 3.2 3.1 2.9 2.9 2.9 3.0 3.0 3.2 3.5 3.3 3.1 2.9 2.6 2.5 2.4 2.5 2.6 2.6 2.7 2.8 3.1 2.9 2.9             |                               |   |      |          |     |                   |      |     |      |      |      |     |     |     |     |                           |     |       |     |     |      |      |     | Diurnal Average |               |               |
| 11.3 12.9 11.4 10.1 9.8 13.5 12.3 9.9 10.6 11.9 10.1 8.6 8.4 9.1 8.9 8.9 9.3 8.0 6.2 7.2 12.1 13.9 7.9 10.6 |                               |   |      |          |     |                   |      |     |      |      |      |     |     |     |     |                           |     |       |     |     |      |      |     | Diurnal Maximum |               |               |
| C - Calibration   |                               |   |      |          |     |                   |      |     |      |      |      |     |     |     |     |                           |     |       |     |     |      |      |     |                 |               |               |
| Alberta Ambient Air Quality Guideline/Objectives: 1-hr 80 µg/m <sup>3</sup> 24-hr 29 µg/m <sup>3</sup>      |                               |   |      |          |     |                   |      |     |      |      |      |     |     |     |     |                           |     |       |     |     |      |      |     |                 |               |               |







**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Particulate Matter 2.5 (PM<sub>2.5</sub>) -  $\mu\text{g}/\text{m}^3$**   
**Surmont 2 - February 2023**

| <b>Concentration Ranges (<math>\mu\text{g}/\text{m}^3</math>)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---|------------------------|----------|---------------------|
| 0 - 5   | 607                    | 90.60    | 90.60               |
| 6 - 15  | 63                     | 9.40     | 100.00              |
| 16 - 25   | 0                      | 0.00     | 100.00              |
| 26 - 80   | 0                      | 0.00     | 100.00              |
| > 81.0  | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 670

Total Number of Hours: 672



**Wood Buffalo Environmental Association**  
**Frequency Distribution**

**Particulate Matter 2.5 (PM<sub>2.5</sub>) - μg/m<sup>3</sup>**  
**Surmont 2 - February 2023**

| Concentration<br>Ranges (μg/m <sup>3</sup> ) | Wind Direction |     |    |     |    |     |    |     |    |     |    |     |     |     |    |     | Totals |
|--|----------------|-----|----|-----|----|-----|----|-----|----|-----|----|-----|-----|-----|----|-----|--------|
|  | N              | NNE | NE | ENE | E  | ESE | SE | SSE | S  | SSW | SW | WSW | W   | WNW | NW | NNW |        |
| 0 - 5  | 40             | 26  | 12 | 6   | 15 | 19  | 51 | 23  | 17 | 9   | 9  | 79  | 99  | 70  | 40 | 85  | 600    |
| 6 - 15                                       | 3              | 10  | 2  | 2   | 3  | 6   | 10 | 2   | 2  | 2   | 3  | 8   | 1   | 1   | 4  | 4   | 63     |
| 16 - 25                                      | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0   | 0   | 0  | 0   | 0      |
| 26 - 80                                      | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0   | 0   | 0  | 0   | 0      |
| > 81.0                                       | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0   | 0   | 0  | 0   | 0      |
| <b>Totals</b>                                | 43             | 36  | 14 | 8   | 18 | 25  | 61 | 25  | 19 | 11  | 12 | 87  | 100 | 71  | 44 | 89  | 663    |

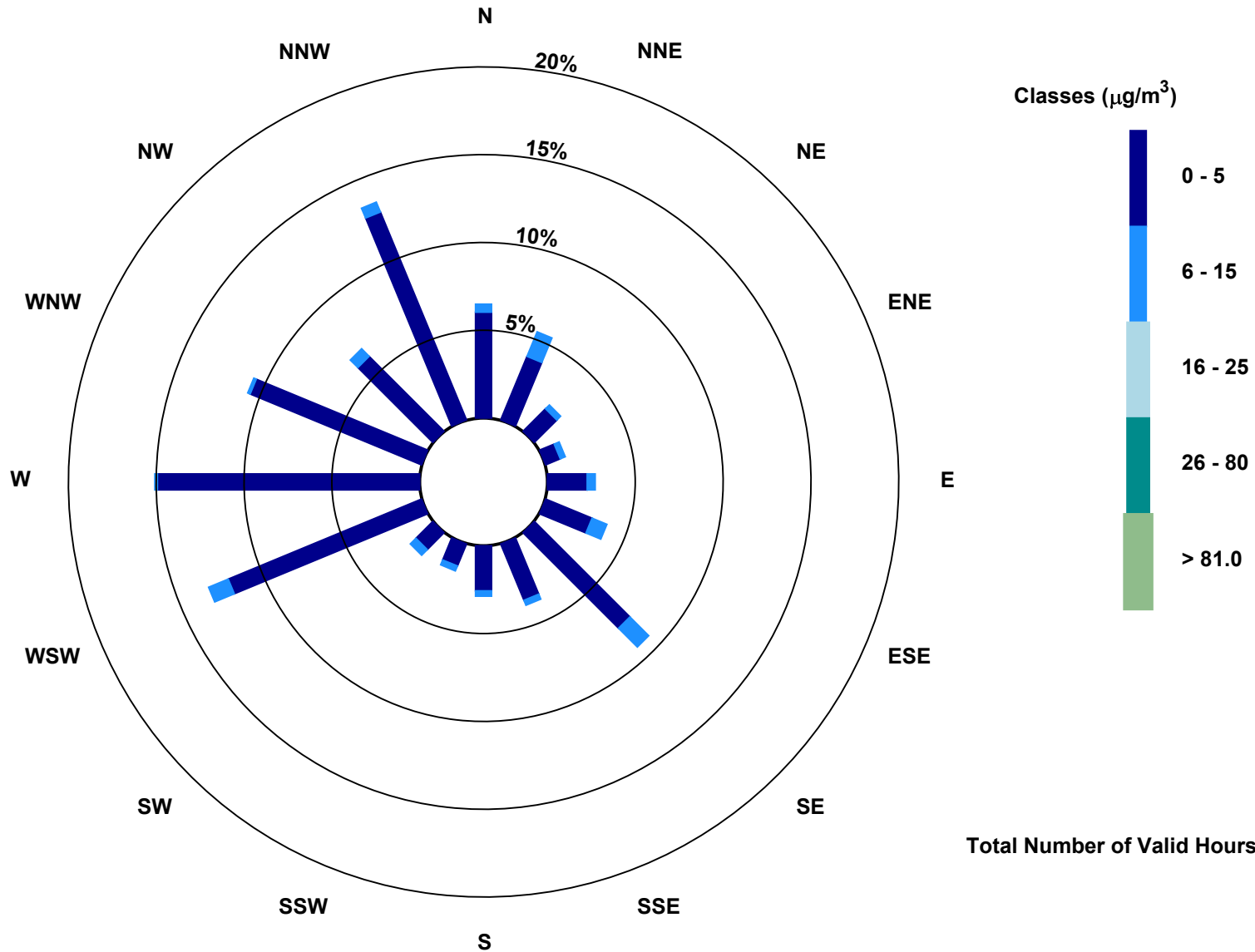
Total Number of Valid Hours: 663

Total Number of Hours: 672



Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Particulate Matter 2.5 (PM<sub>2.5</sub>) -  $\mu\text{g}/\text{m}^3$   
Surmont 2

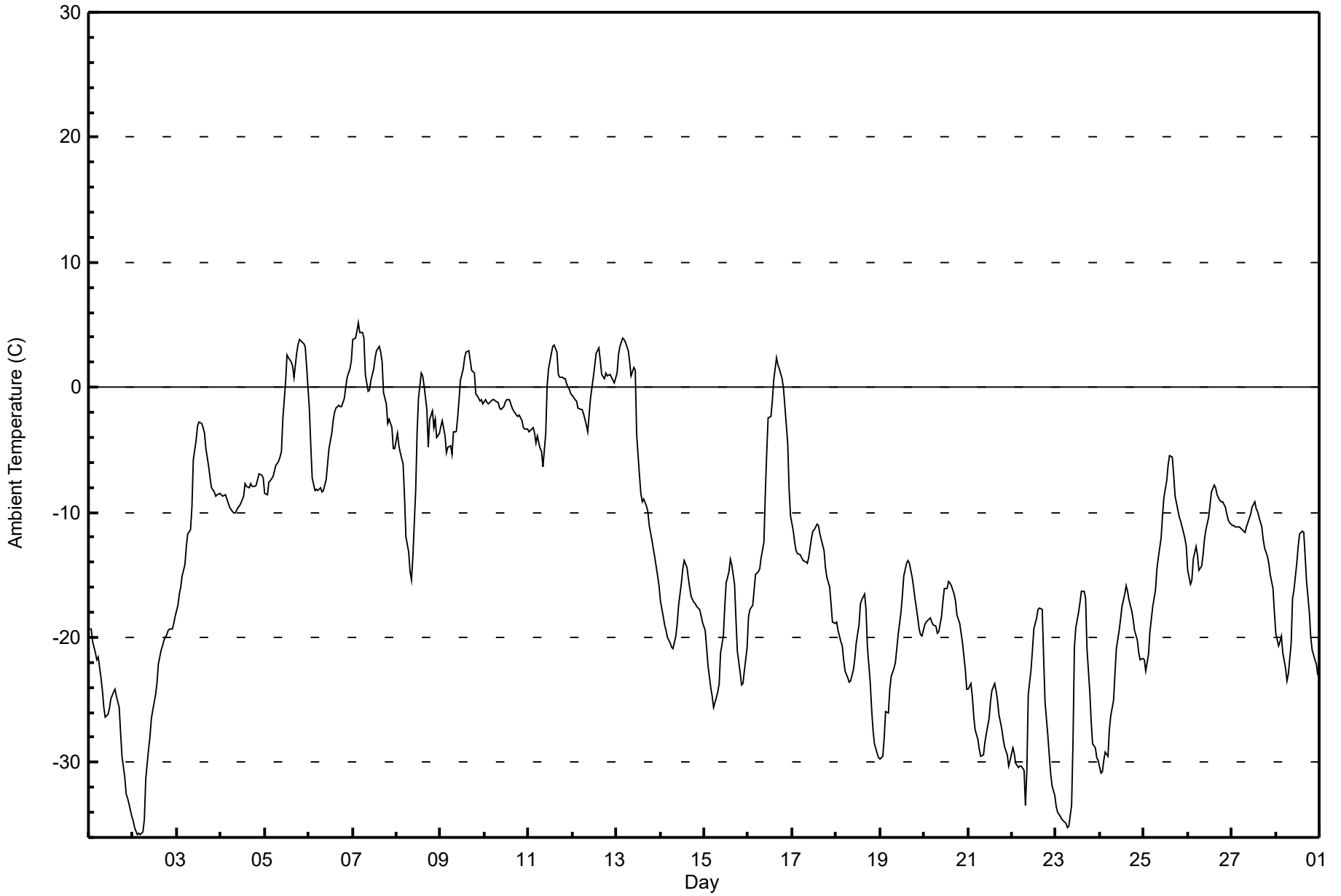




**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

**Ambient Temperature (AT) - C**  
**Surmont 2 - February 2023**

| Maximum Value: 5.2 C on Feb 7 04:00        |                               | Maximum Daily Average: 1.1 C on Feb 7   |       | Hours in Service: 672           |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |                 |
|--|-------------------------------|---|-------|---------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-----------------|-----------------|
| Minimum Value: -35.8 C on Feb 2 05:00      |                               | Minimum Daily Average: -27.1 C on Feb 23  |       | Hours of Data: 672              |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |                 |
| Maximum Diurnal Average: -8.9 C at hour 15 |                               | Minimum Diurnal Average: -15.7 C at hour 8  |       | Hours of Missing Data: 0        |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |                 |
| Monthly Average: -13.06 C                  |                               | Percentiles: P <sub>1</sub> = -34.9 P <sub>10</sub> = -27.4 Q <sub>1</sub> = -20.5 Median = -13.4 Q <sub>3</sub> = -3.6 P <sub>90</sub> = 0.8 P <sub>99</sub> = 3.9 |       | Hours of Calibration: 0         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |                 |
|  |                               |   |       | Percent Operational Time: 100.0 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |                 |
| Day  | Hourly Period Ending At (MST) |   |       |                                 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Daily Average   | Daily Maximum   |
|  | 1                             | 2   | 3     | 4                               | 5     | 6     | 7     | 8     | 9     | 10    | 11    | 12    | 13    | 14    | 15    | 16    | 17    | 18    | 19    | 20    | 21    | 22    | 23    | 24    |                 |                 |
| 1-Feb                                      | -19.3                         | -19.4   | -20.4 | -21.2                           | -21.8 | -21.6 | -23.2 | -24.3 | -25.5 | -26.4 | -26.2 | -25.7 | -24.9 | -24.4 | -24.1 | -24.7 | -25.5 | -27.6 | -29.5 | -31.2 | -32.5 | -32.9 | -33.3 | -34.3 | -25.8           | -19.3           |
| 2-Feb                                      | -34.7                         | -35.2   | -35.7 | -35.7                           | -35.8 | -35.6 | -34.5 | -31.3 | -29.0 | -27.9 | -26.5 | -25.8 | -24.6 | -23.7 | -22.1 | -21.0 | -20.7 | -20.3 | -19.7 | -19.4 | -19.3 | -19.4 | -18.9 | -18.3 | -26.5           | -18.3           |
| 3-Feb                                      | -17.4                         | -16.6   | -16.0 | -15.0                           | -14.1 | -12.7 | -11.7 | -11.4 | -9.6  | -5.8  | -4.3  | -3.1  | -2.8  | -2.9  | -3.2  | -3.7  | -4.9  | -6.4  | -7.3  | -8.1  | -8.4  | -8.7  | -8.6  | -8.5  | -8.8            | -2.8            |
| 4-Feb                                      | -8.6                          | -8.7  | -8.6  | -8.9                            | -9.3  | -9.6  | -9.9  | -10.1 | -10.1 | -9.6  | -9.5  | -9.3  | -8.7  | -7.7  | -7.9  | -8.1  | -7.7  | -7.9  | -7.9  | -7.8  | -7.4  | -6.9  | -7.0  | -7.2  | -8.5            | -6.9            |
| 5-Feb                                      | -8.5                          | -8.6  | -7.6  | -7.5                            | -7.1  | -6.7  | -6.2  | -5.9  | -5.6  | -5.1  | -2.6  | 0.5   | 2.6   | 2.4   | 2.0   | 1.7   | 0.8   | 2.8   | 3.4   | 3.8   | 3.6   | 3.5   | 3.3   | 1.7   | -1.6            | 3.8             |
| 6-Feb                                      | -1.8                          | -4.7  | -7.2  | -8.2                            | -8.2  | -8.2  | -8.0  | -8.3  | -8.3  | -7.4  | -6.1  | -5.0  | -3.7  | -2.6  | -2.0  | -1.6  | -1.4  | -1.5  | -1.5  | -0.9  | 0.1   | 0.8   | 1.5   | 2.2   | -3.8            | 2.2             |
| 7-Feb                                      | 3.8                           | 4.0   | 4.5   | 5.2                             | 4.4   | 4.3   | 3.9   | 1.1   | -0.3  | -0.2  | 0.6   | 1.5   | 2.4   | 3.0   | 3.2   | 2.8   | 2.0   | -0.4  | -1.3  | -2.9  | -2.5  | -3.2  | -4.9  | -4.9  | 1.1             | 5.2             |
| 8-Feb                                      | -3.6                          | -4.6  | -5.2  | -6.1                            | -8.7  | -12.0 | -13.2 | -14.8 | -15.4 | -13.5 | -8.2  | -3.7  | -0.9  | 1.1   | 0.9   | 0.1   | -1.8  | -4.8  | -2.6  | -1.9  | -3.2  | -2.6  | -4.0  | -3.6  | -5.5            | 1.1             |
| 9-Feb                                      | -3.1                          | -2.7  | -3.9  | -5.3                            | -4.8  | -4.7  | -5.4  | -3.6  | -3.6  | -2.4  | -1.0  | 0.6   | 1.5   | 2.4   | 2.9   | 2.9   | 2.1   | 1.4   | 1.1   | -0.5  | -0.6  | -1.1  | -0.9  | -1.4  | -1.3            | 2.9             |
| 10-Feb                                     | -1.0                          | -1.2  | -1.3  | -1.2                            | -1.0  | -1.0  | -1.1  | -1.2  | -1.7  | -1.8  | -1.5  | -1.2  | -0.9  | -1.0  | -1.3  | -1.7  | -1.9  | -2.2  | -2.3  | -2.3  | -2.7  | -3.2  | -3.4  | -3.4  | -1.7            | -0.9            |
| 11-Feb                                     | -3.6                          | -3.5  | -3.2  | -3.7                            | -4.4  | -3.9  | -4.9  | -5.1  | -6.4  | -3.6  | 0.2   | 1.5   | 2.7   | 3.2   | 3.4   | 2.8   | 1.1   | 0.8   | 0.8   | 0.7   | 0.7   | 0.2   | -0.2  | -0.6  | -1.0            | 3.4             |
| 12-Feb                                     | -0.7                          | -1.0  | -1.1  | -1.7                            | -1.8  | -1.8  | -2.1  | -3.0  | -3.5  | -2.2  | -0.9  | 0.8   | 1.7   | 2.7   | 3.1   | 2.2   | 1.0   | 0.7   | 1.2   | 1.0   | 1.0   | 0.8   | 0.6   | 0.3   | -0.1            | 3.1             |
| 13-Feb                                     | 1.1                           | 2.6   | 3.3   | 3.9                             | 3.8   | 3.6   | 3.0   | 2.0   | 0.9   | 1.6   | 1.3   | -3.8  | -7.0  | -8.5  | -9.1  | -9.0  | -9.5  | -9.9  | -11.1 | -12.3 | -13.0 | -13.7 | -15.1 | -15.9 | -4.6            | 3.9             |
| 14-Feb                                     | -17.1                         | -18.3   | -19.0 | -19.5                           | -20.0 | -20.4 | -20.8 | -20.9 | -19.9 | -18.9 | -17.4 | -15.6 | -14.5 | -13.8 | -14.4 | -15.3 | -16.0 | -16.8 | -17.2 | -17.4 | -17.5 | -17.8 | -18.2 | -18.8 | -17.7           | -13.8           |
| 15-Feb                                     | -19.4                         | -20.8   | -22.2 | -24.0                           | -24.7 | -25.6 | -24.9 | -24.4 | -23.7 | -21.3 | -19.9 | -17.6 | -15.7 | -14.8 | -13.7 | -14.1 | -15.8 | -18.6 | -21.2 | -22.8 | -23.8 | -23.7 | -22.7 | -20.8 | -20.7           | -13.7           |
| 16-Feb                                     | -18.3                         | -17.8   | -17.4 | -16.2                           | -15.0 | -14.7 | -14.5 | -13.7 | -12.4 | -8.5  | -5.2  | -2.5  | -2.4  | -1.1  | 0.6   | 2.3   | 1.8   | 1.5   | 0.7   | -0.1  | -1.5  | -4.5  | -8.1  | -10.3 | -7.4            | 2.3             |
| 17-Feb                                     | -11.6                         | -12.4   | -13.0 | -13.3                           | -13.4 | -13.6 | -13.8 | -14.0 | -14.1 | -13.6 | -12.1 | -11.4 | -11.3 | -11.0 | -11.0 | -11.8 | -12.2 | -13.1 | -14.4 | -15.1 | -16.0 | -17.3 | -18.8 | -18.8 | -13.6           | -11.0           |
| 18-Feb                                     | -18.7                         | -19.4   | -20.3 | -20.7                           | -21.8 | -22.7 | -23.3 | -23.6 | -23.4 | -22.6 | -21.7 | -20.5 | -18.9 | -17.3 | -17.0 | -16.6 | -17.8 | -20.8 | -23.6 | -25.7 | -27.4 | -28.5 | -29.3 | -29.7 | -22.1           | -16.6           |
| 19-Feb                                     | -29.7                         | -29.5   | -28.1 | -25.9                           | -26.0 | -24.2 | -23.1 | -22.4 | -22.0 | -20.9 | -19.8 | -17.9 | -16.7 | -15.0 | -14.1 | -13.8 | -14.1 | -15.2 | -15.9 | -16.8 | -18.4 | -19.4 | -19.8 | -19.9 | -20.4           | -13.8           |
| 20-Feb                                     | -19.0                         | -18.7   | -18.6 | -18.4                           | -18.8 | -18.9 | -19.1 | -19.6 | -19.6 | -18.3 | -17.2 | -16.1 | -16.1 | -15.5 | -15.6 | -15.9 | -16.6 | -17.1 | -18.3 | -18.9 | -19.7 | -20.4 | -22.6 | -24.1 | -18.5           | -15.5           |
| 21-Feb                                     | -24.1                         | -23.7   | -24.7 | -26.3                           | -27.4 | -28.1 | -28.9 | -29.5 | -29.4 | -28.4 | -27.8 | -26.5 | -25.1 | -24.2 | -23.7 | -24.3 | -25.0 | -26.2 | -27.3 | -28.1 | -28.7 | -29.4 | -30.3 | -29.9 | -27.0           | -23.7           |
| 22-Feb                                     | -28.9                         | -29.3   | -30.0 | -30.4                           | -30.3 | -30.3 | -30.6 | -33.5 | -30.7 | -24.6 | -22.6 | -21.1 | -19.4 | -18.4 | -17.8 | -17.6 | -17.8 | -21.6 | -25.2 | -27.8 | -29.4 | -30.8 | -31.8 | -32.7 | -26.4           | -17.6           |
| 23-Feb                                     | -33.5                         | -34.0   | -34.3 | -34.5                           | -34.6 | -34.9 | -35.2 | -35.1 | -33.4 | -28.4 | -20.8 | -19.2 | -18.0 | -17.3 | -16.3 | -16.3 | -16.9 | -20.9 | -24.4 | -26.7 | -28.5 | -28.8 | -29.6 | -29.9 | -27.1           | -16.3           |
| 24-Feb                                     | -30.9                         | -30.7   | -29.9 | -29.2                           | -29.5 | -27.3 | -26.3 | -25.0 | -22.9 | -20.9 | -19.5 | -18.6 | -17.5 | -16.6 | -15.9 | -16.3 | -16.9 | -17.9 | -18.6 | -19.4 | -20.2 | -21.2 | -21.8 | -21.6 | -22.3           | -15.9           |
| 25-Feb                                     | -21.8                         | -22.7   | -21.4 | -19.6                           | -18.6 | -17.5 | -16.2 | -14.5 | -13.6 | -12.0 | -10.3 | -8.9  | -7.4  | -6.2  | -5.5  | -5.5  | -7.0  | -8.7  | -9.9  | -10.4 | -10.8 | -11.2 | -12.0 | -12.8 | -12.7           | -5.5            |
| 26-Feb                                     | -14.7                         | -15.7   | -15.4 | -13.7                           | -12.7 | -13.4 | -14.6 | -14.2 | -13.4 | -12.2 | -11.4 | -10.4 | -9.4  | -8.4  | -7.8  | -8.0  | -8.6  | -9.0  | -9.2  | -9.2  | -9.6  | -10.2 | -10.6 | -10.8 | -11.4           | -7.8            |
| 27-Feb                                     | -11.0                         | -11.1   | -11.1 | -11.2                           | -11.2 | -11.3 | -11.5 | -11.6 | -11.2 | -10.5 | -10.1 | -9.6  | -9.2  | -9.7  | -10.0 | -10.4 | -11.2 | -12.1 | -12.8 | -13.5 | -14.1 | -15.0 | -16.1 | -18.0 | -11.8           | -9.2            |
| 28-Feb                                     | -19.7                         | -20.7   | -20.3 | -19.9                           | -21.3 | -22.5 | -23.4 | -22.9 | -20.4 | -16.9 | -16.2 | -14.0 | -12.7 | -11.7 | -11.5 | -11.7 | -13.5 | -15.6 | -17.9 | -20.0 | -21.0 | -21.8 | -22.1 | -23.0 | -18.4           | -11.5           |
|  | -14.8                         | -15.2   | -15.3 | -15.3                           | -15.5 | -15.5 | -15.7 | -15.3 | -13.7 | -12.0 | -10.8 | -9.9  | -9.2  | -8.9  | -9.0  | -9.8  | -11.0 | -11.9 | -12.6 | -13.2 | -13.8 | -14.5 | -14.8 |       | Diurnal Average |                 |
|  | 3.8                           | 4.0   | 4.5   | 5.2                             | 4.4   | 4.3   | 3.9   | 2.0   | 0.9   | 1.6   | 1.3   | 1.5   | 2.7   | 3.2   | 3.4   | 2.9   | 2.1   | 2.8   | 3.4   | 3.8   | 3.6   | 3.5   | 3.3   | 2.2   |                 | Diurnal Maximum |





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Ambient Temperature (AT) - C  
Surmont 2 - February 2023**

| <b>Concentration Ranges (C)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---------------------------------|------------------------|----------|---------------------|
| -50 - -20                       | 177                    | 26.34    | 26.34               |
| -20 - 0                         | 411                    | 61.16    | 87.50               |
| 0 - 10                          | 84                     | 12.50    | 100.00              |
| 10 - 20                         | 0                      | 0.00     | 100.00              |
| > 20                            | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 672

Total Number of Hours: 672



**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

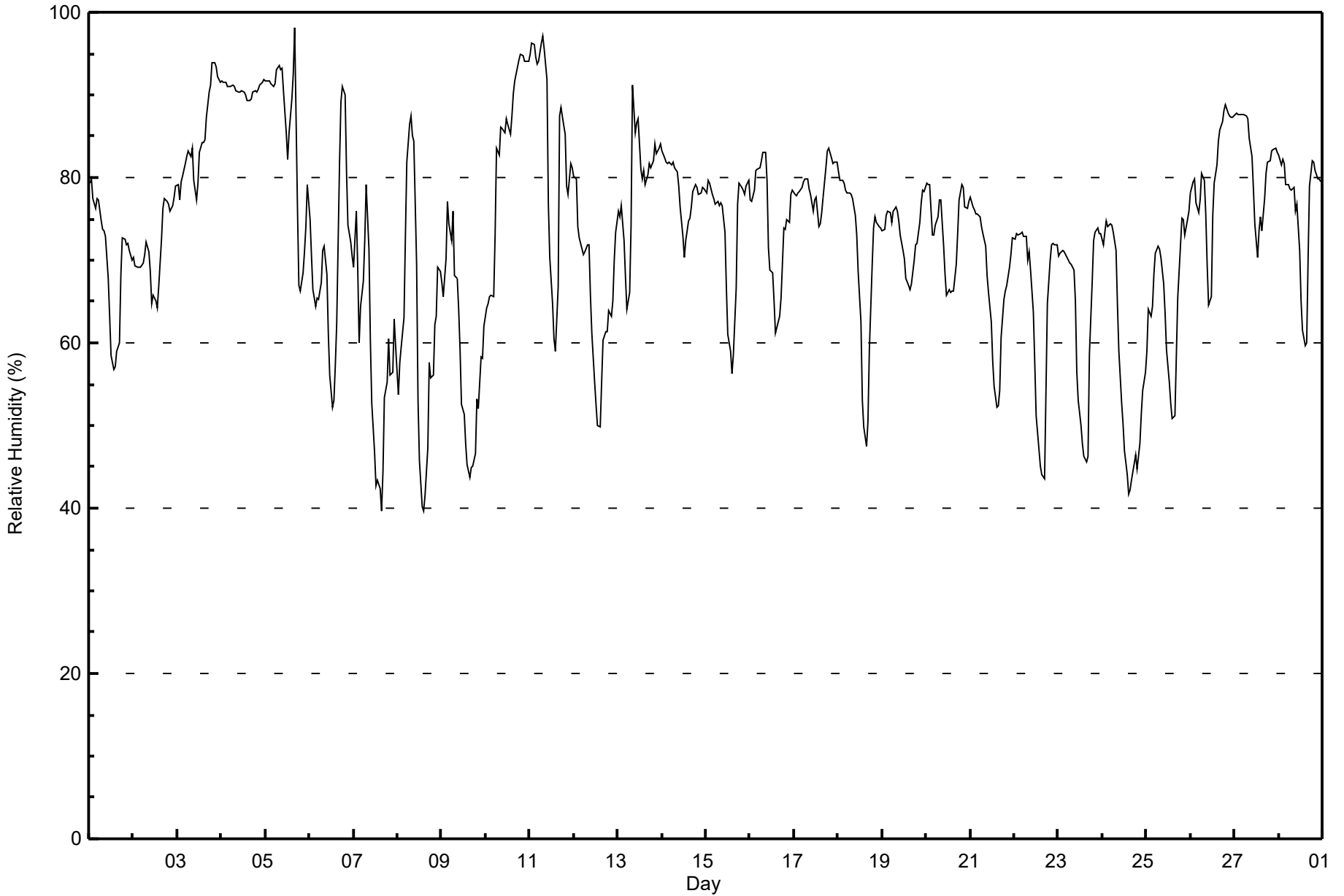
**Relative Humidity (RH) - %**  
**Surmont 2 - February 2023**

| Maximum Value: 98.1 % on Feb 5 17:00      Maximum Daily Average: 90.7 % on Feb 4  |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Hours in Service: 672<br>Hours of Data: 672  |      |                 |               |               |
|---|-------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|--|------|-----------------|---------------|---------------|
| Minimum Value: 39.7 % on Feb 8 15:00      Minimum Daily Average: 57.4 % on Feb 24<br>Maximum Diurnal Average: 78.5 % at hour 8      Minimum Diurnal Average: 62.5 % at hour 15<br>Monthly Average: 73.04 %      Percentiles: P <sub>1</sub> = 42.6 P <sub>10</sub> = 55.2 Q <sub>1</sub> = 66.2 Median = 74.5 Q <sub>3</sub> = 80.7 P <sub>90</sub> = 89.1 P <sub>99</sub> = 94.9 |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Hours of Missing Data: 0<br>Hours of Calibration: 0<br>Percent Operational Time: 100.0 |      |                 |               |               |
| Day   | Hourly Period Ending At (MST) |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |      |                 | Daily Average | Daily Maximum |
|   | 1                             | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20   | 21   | 22   | 23   | 24              |               |               |
| 1-Feb   | 79.3                          | 79.8 | 77.5 | 76.3 | 77.4 | 77.2 | 74.8 | 73.7 | 73.5 | 72.9 | 67.8 | 63.1 | 58.5 | 56.8 | 57.0 | 59.0 | 60.1 | 68.2 | 72.8 | 72.6 | 71.8 | 72.0   | 71.2 | 70.0            | 70.1          | 79.8          |
| 2-Feb   | 70.3                          | 69.3 | 69.1 | 69.2 | 69.2 | 69.7 | 70.7 | 72.2 | 71.1 | 68.6 | 64.8 | 65.7 | 65.1 | 64.3 | 66.7 | 72.5 | 76.3 | 77.5 | 77.2 | 76.7 | 76.0 | 76.5   | 77.5 | 79.0            | 71.5          | 79.0          |
| 3-Feb   | 79.2                          | 77.2 | 79.5 | 80.2 | 81.7 | 82.6 | 83.2 | 82.6 | 83.5 | 79.7 | 77.3 | 79.3 | 83.1 | 84.3 | 84.3 | 84.6 | 87.3 | 90.3 | 91.2 | 93.9 | 94.0 | 93.3   | 92.3 | 91.6            | 84.8          | 94.0          |
| 4-Feb   | 91.7                          | 91.6 | 91.6 | 91.0 | 91.0 | 91.1 | 91.2 | 91.0 | 90.4 | 90.4 | 90.5 | 90.4 | 90.1 | 89.4 | 89.3 | 89.4 | 90.4 | 90.5 | 90.4 | 90.8 | 91.2 | 91.6   | 91.9 | 91.9            | 90.7          | 91.9          |
| 5-Feb   | 91.7                          | 91.7 | 91.8 | 91.4 | 91.0 | 91.4 | 93.1 | 93.5 | 93.1 | 93.2 | 90.4 | 85.4 | 82.2 | 85.4 | 89.5 | 92.6 | 98.1 | 76.3 | 66.9 | 66.3 | 68.5 | 71.0   | 74.2 | 79.1            | 85.3          | 98.1          |
| 6-Feb   | 74.9                          | 70.5 | 66.4 | 64.4 | 65.5 | 65.3 | 67.3 | 71.2 | 71.6 | 68.3 | 61.1 | 56.2 | 52.2 | 53.1 | 57.3 | 62.5 | 81.6 | 89.2 | 91.1 | 89.9 | 80.7 | 74.2   | 72.2 | 70.5            | 69.9          | 91.1          |
| 7-Feb   | 69.2                          | 75.9 | 69.0 | 60.0 | 64.5 | 67.4 | 72.4 | 79.2 | 71.4 | 60.4 | 52.7 | 46.8 | 42.7 | 43.5 | 42.3 | 39.7 | 44.4 | 53.5 | 55.2 | 60.6 | 56.1 | 56.5   | 62.8 | 59.6            | 58.6          | 79.2          |
| 8-Feb   | 53.8                          | 57.6 | 59.6 | 63.1 | 72.9 | 81.8 | 86.4 | 87.4 | 85.1 | 84.3 | 69.5 | 53.1 | 45.7 | 40.2 | 39.7 | 41.5 | 47.3 | 57.7 | 55.8 | 56.1 | 62.2 | 63.2   | 69.1 | 68.6            | 62.6          | 87.4          |
| 9-Feb   | 67.3                          | 65.7 | 70.2 | 77.0 | 74.5 | 72.4 | 76.0 | 68.2 | 67.8 | 64.1 | 59.1 | 52.6 | 51.4 | 47.8 | 45.3 | 43.8 | 44.9 | 45.1 | 46.7 | 53.3 | 52.0 | 58.4   | 58.1 | 62.1            | 59.3          | 77.0          |
| 10-Feb  | 64.3                          | 64.7 | 65.6 | 65.8 | 65.5 | 73.1 | 83.6 | 82.7 | 86.1 | 86.0 | 85.5 | 87.0 | 86.5 | 85.3 | 87.5 | 90.2 | 91.8 | 93.3 | 94.3 | 95.0 | 94.8 | 94.0   | 94.0 | 94.2            | 83.8          | 95.0          |
| 11-Feb  | 94.9                          | 96.3 | 96.1 | 94.6 | 93.7 | 94.1 | 96.2 | 97.1 | 95.6 | 91.9 | 76.8 | 70.3 | 64.8 | 60.5 | 59.0 | 66.7 | 87.5 | 88.5 | 86.3 | 85.2 | 79.0 | 78.0   | 81.7 | 81.2            | 84.0          | 97.1          |
| 12-Feb  | 80.1                          | 79.8 | 74.0 | 72.6 | 71.4 | 70.7 | 70.9 | 71.9 | 71.9 | 65.8 | 61.2 | 55.2 | 52.5 | 50.1 | 49.9 | 55.3 | 60.4 | 61.3 | 61.4 | 64.0 | 63.3 | 65.1   | 69.9 | 73.3            | 65.5          | 80.1          |
| 13-Feb  | 75.9                          | 75.3 | 76.6 | 72.3 | 68.0 | 64.1 | 66.0 | 74.3 | 91.2 | 85.4 | 86.5 | 87.2 | 81.0 | 79.9 | 80.8 | 79.1 | 80.3 | 81.7 | 81.2 | 82.1 | 84.0 | 82.9   | 83.5 | 84.0            | 79.3          | 91.2          |
| 14-Feb  | 83.2                          | 82.4 | 81.9 | 81.7 | 81.9 | 81.6 | 81.8 | 81.2 | 80.6 | 79.0 | 76.5 | 72.9 | 70.4 | 72.4 | 74.8 | 75.2 | 76.4 | 78.3 | 79.1 | 78.8 | 78.0 | 78.1   | 78.8 | 78.6            | 78.5          | 83.2          |
| 15-Feb  | 78.1                          | 79.6 | 79.4 | 78.0 | 77.4 | 76.9 | 77.2 | 76.5 | 77.0 | 76.6 | 73.3 | 66.7 | 61.0 | 58.9 | 56.3 | 58.6 | 66.7 | 76.8 | 79.3 | 78.9 | 78.4 | 78.0   | 78.9 | 79.7            | 73.7          | 79.7          |
| 16-Feb  | 77.3                          | 77.1 | 78.4 | 80.8 | 81.1 | 81.1 | 82.0 | 83.0 | 83.1 | 79.7 | 71.6 | 68.8 | 68.5 | 65.1 | 61.2 | 62.6 | 63.2 | 65.5 | 73.8 | 73.7 | 75.0 | 74.6   | 77.9 | 78.5            | 74.3          | 83.1          |
| 17-Feb  | 77.9                          | 77.8 | 78.1 | 78.3 | 78.8 | 79.4 | 79.9 | 79.8 | 78.6 | 77.9 | 76.0 | 77.3 | 77.6 | 74.0 | 74.4 | 75.8 | 77.6 | 81.2 | 83.2 | 83.5 | 82.4 | 81.7   | 81.9 | 81.9            | 79.0          | 83.5          |
| 18-Feb  | 80.7                          | 79.7 | 79.7 | 79.2 | 78.4 | 78.1 | 78.2 | 78.0 | 77.5 | 75.4 | 73.0 | 68.6 | 62.5 | 53.1 | 49.8 | 47.5 | 50.5 | 59.2 | 69.3 | 73.9 | 75.2 | 74.6   | 74.1 | 73.8            | 70.4          | 80.7          |
| 19-Feb  | 73.5                          | 73.8 | 75.3 | 75.9 | 75.7 | 74.5 | 76.0 | 76.5 | 76.0 | 74.7 | 73.1 | 71.2 | 70.2 | 67.7 | 66.9 | 66.4 | 67.1 | 70.0 | 71.9 | 72.0 | 74.6 | 76.9   | 78.5 | 78.2            | 73.2          | 78.5          |
| 20-Feb  | 79.3                          | 79.1 | 79.1 | 73.1 | 73.0 | 74.3 | 75.3 | 77.2 | 77.2 | 71.7 | 68.3 | 65.8 | 66.4 | 66.1 | 66.3 | 66.2 | 69.5 | 73.2 | 77.3 | 79.2 | 78.8 | 76.5   | 76.3 | 77.2            | 73.6          | 79.3          |
| 21-Feb  | 77.5                          | 76.4 | 76.1 | 75.6 | 75.5 | 75.2 | 74.1 | 73.2 | 71.7 | 68.1 | 66.2 | 62.5 | 57.8 | 54.8 | 52.2 | 52.5 | 54.3 | 60.7 | 65.2 | 66.2 | 67.0 | 69.1   | 70.7 | 72.7            | 67.3          | 77.5          |
| 22-Feb  | 72.5                          | 73.2 | 73.1 | 73.2 | 73.4 | 72.8 | 72.8 | 69.9 | 71.0 | 68.8 | 63.7 | 57.7 | 51.2 | 47.2 | 45.0 | 44.1 | 43.6 | 54.1 | 64.7 | 70.0 | 71.9 | 72.0   | 71.9 | 71.9            | 64.6          | 73.4          |
| 23-Feb  | 70.5                          | 70.8 | 71.1 | 71.0 | 70.6 | 70.1 | 69.6 | 69.6 | 68.9 | 65.1 | 56.4 | 53.1 | 50.0 | 47.8 | 46.2 | 45.6 | 46.2 | 58.6 | 67.5 | 72.4 | 73.5 | 73.9   | 73.1 | 73.2            | 63.9          | 73.9          |
| 24-Feb  | 71.9                          | 73.4 | 74.7 | 74.1 | 74.4 | 74.2 | 73.4 | 71.2 | 64.6 | 58.9 | 52.7 | 50.1 | 46.9 | 44.1 | 41.7 | 42.2 | 43.3 | 45.4 | 46.5 | 44.8 | 47.7 | 51.3   | 54.2 | 56.5            | 57.4          | 74.7          |
| 25-Feb  | 59.0                          | 64.0 | 63.3 | 64.5 | 68.4 | 70.8 | 71.7 | 71.3 | 70.3 | 67.2 | 63.5 | 59.1 | 55.3 | 52.7 | 50.9 | 51.2 | 58.4 | 65.3 | 71.9 | 75.0 | 74.9 | 73.1   | 75.0 | 75.9            | 65.5          | 75.9          |
| 26-Feb  | 78.2                          | 79.5 | 79.8 | 76.9 | 75.8 | 77.3 | 80.6 | 79.7 | 75.6 | 69.5 | 64.6 | 65.7 | 75.4 | 79.3 | 81.5 | 84.5 | 85.7 | 86.8 | 88.1 | 88.9 | 87.8 | 87.4   | 87.2 | 87.3            | 80.1          | 88.9          |
| 27-Feb  | 87.7                          | 87.8 | 87.7 | 87.6 | 87.6 | 87.6 | 87.4 | 87.2 | 84.8 | 82.5 | 78.6 | 74.4 | 70.4 | 73.5 | 75.3 | 73.6 | 77.4 | 80.5 | 81.9 | 82.1 | 83.3 | 83.3   | 83.6 | 83.1            | 82.0          | 87.8          |
| 28-Feb  | 82.7                          | 81.5 | 82.2 | 81.7 | 79.2 | 79.1 | 78.7 | 78.5 | 78.7 | 76.0 | 76.9 | 71.2 | 65.0 | 61.6 | 59.7 | 60.0 | 69.9 | 79.1 | 82.1 | 81.8 | 80.8 | 79.8   | 79.8 | 79.5            | 76.1          | 82.7          |
| 76.5 76.8 76.7 76.1 76.3 76.9 78.2 78.5 78.1 75.1 70.6 67.1 64.4 62.8 62.5 63.7 67.8 71.7 74.0 75.3 75.1 75.2 76.4 76.9   |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |      | Diurnal Average |               |               |
| 94.9 96.3 96.1 94.6 93.7 94.1 96.2 97.1 95.6 93.2 90.4 90.5 90.4 90.1 89.5 92.6 98.1 93.3 94.3 95.0 94.8 94.0 94.0 94.2   |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |      | Diurnal Maximum |               |               |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Relative Humidity (RH) - %**  
**Surmont 2 - February 2023**







**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Relative Humidity (RH) - %**  
**Surmont 2 - February 2023**

| <b>Concentration Ranges (%)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---------------------------------|------------------------|----------|---------------------|
| 0 - 20                          | 0                      | 0.00     | 0.00                |
| 20 - 40                         | 2                      | 0.30     | 0.30                |
| 40 - 60                         | 102                    | 15.18    | 15.48               |
| 60 - 80                         | 392                    | 58.33    | 73.81               |
| 80 - 100                        | 176                    | 26.19    | 100.00              |

Total Number of Valid Hours: 672

Total Number of Hours: 672



|   |  |                                |
|---|--|--------------------------------|
| Maximum Speed: 19 km/h on Feb 6 01:00             | Maximum Daily Speed Average: 10.9 km/h on Feb 7  | Hours in Service: 672          |
| Minimum Speed Value: 0 km/h on Feb 11 02:00       | Minimum Daily Speed Average: 1.0 km/h on Feb 16  | Hours of Data: 664             |
| Maximum Diurnal Speed Average: 3.4 km/h at hour 4 | Minimum Diurnal Speed Average: 1.4 km/h at hour 18   | Hours of Missing Data: 8       |
| Monthly Average Velocity: 2.2 km/h 298.3 deg      | Percentiles: P <sub>1</sub> = 1 P <sub>10</sub> = 2 Q <sub>1</sub> = 3 Median = 5 Q <sub>3</sub> = 8 P <sub>90</sub> = 11 P <sub>99</sub> = 15 | Percent Operational Time: 98.8 |

| Day    | Hourly Period Ending At (MST) |                          |      |      |               |                         |           |       |       |          |           |      |           |       |                         |       |       |                         |        |        |       |          |      |        | Daily Average | Daily Maximum |
|--------|-------------------------------|--------------------------|------|------|---------------|-------------------------|-----------|-------|-------|----------|-----------|------|-----------|-------|-------------------------|-------|-------|-------------------------|--------|--------|-------|----------|------|--------|---------------|---------------|
|        | 1                             | 2                        | 3    | 4    | 5             | 6                       | 7         | 8     | 9     | 10       | 11        | 12   | 13        | 14    | 15                      | 16    | 17    | 18                      | 19     | 20     | 21    | 22       | 23   | 24     |               |               |
| 1-Feb  | NNW3                          | N5                       | N6   | NNW5 | NW3           | N5                      | N8        | NNW8  | NNW10 | NNW9     | N10       | NNW9 | NNW10     | NNW10 | NNW9                    | NNW8  | NW4   | W3                      | W2     | WSW2   | WSW1  | WSW1     | WSW3 | W2     | NNW5.1        | N10           |
| 2-Feb  | WSW2                          | WSW2                     | WSW2 | WSW2 | WSW1          | WSW2                    | SW2       | S4    | SE5   | SE6      | SE8       | SE9  | SE9       | SE10  | SE12                    | SE10  | ESE11 | SE10                    | SE12   | SE10   | SE10  | SE9      | SE8  | SE7    | SE5.9         | SE12          |
| 3-Feb  | SE7                           | SSE7                     | SE5  | SE6  | S5            | S6                      | SSE7      | SE6   | SSE1  | W11WNW10 | WNW9WNW11 | WNW9 | NW9       | NW8   | NNE4                    | NNE5  | NNE4  | NNE3                    | NNE4   | NNE2   | ESE1  | ENE3     | ENE3 | W1.1   | W11           |               |
| 4-Feb  | E2                            | SE2                      | ESE3 | NNW1 | NW1           | N3                      | NNE2      | E2    | ESE1  | NE2      | N3        | NNE3 | E2        | ENE2  | NNE4                    | NE2   | SE4   | SE5                     | SE5    | SE6    | SE5   | ESE4     | SE5  | E1.9   | SE6           |               |
| 5-Feb  | SE2                           | WNW2                     | SE1  | NNW2 | SSW1          | SSE1                    | SE5       | SE3   | SSE1  | W1       | SSW1      | E1   | SSE3      | SSE3  | SSW3                    | S1    | WSW2  | WSW9                    | W9     | W10    | W9    | W10WNW11 | NW13 | W2.6   | NW13          |               |
| 6-Feb  | WNW19WNW18WNW16               | NW13WNW14WNW14WNW12WNW11 | WNW9 | NW8  | NW8           | NW6                     | WNW7      | W2    | SSE2  | SSE4     | S5        | SE4  | SE4       | S5    | WSW5                    | WSW6  | WSW6  | WSW5                    | WNW6.4 | WNW19  |       |          |      |        |               |               |
| 7-Feb  | W8                            | W9                       | W10  | W16  | W15           | W14WNW15WNW14WNW15WNW16 | W14       | W13   | W18   | W16      | W13WNW12  | W10  | W7        | W6    | W4                      | WNW5  | WNW5  | WNW3                    | W7     | W10.9  | W18   |          |      |        |               |               |
| 8-Feb  | W7                            | W6                       | W7   | W7   | WNW3          | NNW1                    | WNW2      | W1    | W2    | WSW2     | ESE4      | WSW1 | WNW3      | NNW1  | WNW8                    | W5    | W4    | WSW2                    | W8     | W8     | W6    | WSW9     | WSW6 | W8     | W4.1          | WSW9          |
| 9-Feb  | W8                            | W9                       | W7   | WSW3 | W5            | W5                      | W4        | WNW9  | W9    | W8       | W8        | WSW8 | WSW9WSW11 | WSW5  | SSW4                    | S5    | SSE5  | SE5                     | ESE1   | S3     | SSE1  | SSE2     | WNW1 | WSW4.3 | WSW11         |               |
| 10-Feb | WSW0                          | SE2                      | W1   | S1   | SW2           | WSW1                    | NW1       | N2    | ENE2  | ESE5     | ESE4      | ESE6 | E4        | ENE4  | E4                      | NNE3  | N3    | NNW3                    | NW2    | NNW2   | NNE3  | NNE2     | ENE1 | W0     | ENE1.1        | ESE6          |
| 11-Feb | WSW0                          | NNW0                     | NW1  | N2   | W1            | WNW2                    | W1        | WSW1  | SW1   | W4       | W12       | W9   | W8        | W9    | W10WSW10                | W9    | W11   | W11WNW13WNW15WNW13WNW11 | W12    | W6.7   | WNW15 |          |      |        |               |               |
| 12-Feb | W12                           | W9                       | W11  | W12  | W14           | W13                     | W11       | W12   | NW6   | WNW6     | W7        | WNW7 | W6        | W6    | WSW6                    | WSW3  | S2    | SSE3                    | SSE4   | SE5    | SE6   | SE7      | SE6  | ESE4   | WSW4.8        | W14           |
| 13-Feb | SE6                           | SW6WSW13WSW14            | W13  | W15  | W14WNW10WNW11 | W11WNW10                | NNW13     | NNW14 | NNW13 | NNW13    | NNW14     | N14  | NNW14     | NNW11 | NNW10                   | NNW10 | NNW9  | NNW8                    | NNW9   | NNW8.5 | W15   |          |      |        |               |               |
| 14-Feb | N9                            | NNW7                     | NNW7 | NNW6 | NNW6          | NNW5                    | NW4       | WNW3  | NW4   | NW4      | NNW3      | E1   | SE4       | E3    | NNE6                    | N4    | NNE5  | N5                      | NW4    | NNW4   | NNW4  | NNW5     | N4   | NNW3.9 | N9            |               |
| 15-Feb | N3                            | WNW2                     | W2   | WSW2 | W1            | W2                      | WSW2      | W1    | W1    | SSE3     | SE4       | SE5  | ESE6      | ESE6  | SSE5                    | SE5   | SE4   | WSW2                    | WSW2   | WSW3   | WSW3  | WSW3     | W3   | WSW1   | S1.1          | ESE6          |
| 16-Feb | SSE4                          | SE6                      | SE4  | SE4  | SSE5          | SE6                     | SE7       | SSE7  | SSE6  | SSW5     | S6        | S5   | SSE5      | ESE5  | SE3WNW11WNW11WNW11WNW13 | NW12  | NW11  | N11                     | N9     | N9     | W1.0  | WNW13    |      |        |               |               |
| 17-Feb | N8                            | NNW7                     | NNW6 | N6   | NNW4          | NNW4                    | NNW4      | NE2   | NNE3  | N1       | ESE3      | NNE1 | M         | M     | NNE4                    | NNE5  | NNE4  | NNE4                    | NNW4   | NNW4   | NNW4  | NNW5     | NW4  | NNW4   | N3.7          | N8            |
| 18-Feb | NNW5                          | NNW4                     | NNW3 | N5   | N5            | N4                      | N4        | N5    | NNW5  | N5       | N5        | NNE5 | NNW6      | N5    | N5                      | NE5   | NE4   | NW2                     | W4     | WSW3   | WSW2  | WSW3     | WSW3 | WSW3   | NNW3.2        | NNW6          |
| 19-Feb | WSW3                          | WSW3                     | WSW2 | SW2  | S2            | SE4                     | ESE5      | ESE5  | SE6   | SE6      | SE7       | SE8  | SE7       | ESE5  | ESE5                    | E5    | ENE4  | NE3                     | NE3    | E3     | NW2   | WNW2     | W2   | WNW1   | SE2.3         | SE8           |
| 20-Feb | NW3                           | NW3                      | NW4  | NW6  | NW6           | NNW4                    | NW4       | NW3   | NNW2  | NNE1     | NNE3      | NNE5 | NNE6      | N5    | NNE7                    | N6    | NNE5  | NNW3                    | WNW2   | WNW2   | N4    | NNE4     | NNW3 | W3     | NNW3.1        | NNE7          |
| 21-Feb | NW4                           | NNW6                     | NNW7 | NNW8 | NNW6          | NNW7                    | NNW7      | NNW7  | NNW9  | NNW9     | NNW10     | N11  | NNW9      | N10   | N11                     | NNW11 | N11   | NNW7                    | NNW6   | NNW7   | NNW6  | NW5      | NNW4 | NNW5   | NNW7.4        | NNW11         |
| 22-Feb | NW5                           | NNW4                     | NNW3 | W3   | WNW3          | W4                      | W4        | W3    | W4    | NNW5     | N7        | NNW6 | NNE6      | NE7   | NNE5                    | NNE5  | NNE4  | WNW3                    | WSW3   | WSW3   | WSW2  | WSW2     | WSW1 | WSW1   | NNW2.7        | NE7           |
| 23-Feb | UO                            | UO                       | UO   | UO   | WSW1          | WSW1                    | W1        | UO    | WSW1  | W1       | NE3       | NE5  | NE4       | NNE6  | NNE5                    | N5    | N4    | WNW2                    | WSW4   | WSW2   | WSW3  | WSW4     | WSW3 | WSW3   | NNW1.2        | NNE6          |
| 24-Feb | WSW2                          | WSW2                     | WSW2 | WSW2 | WSW2          | SW2                     | SSW1      | SSW3  | SW5   | SW6      | SSE8      | S10  | S9        | SSE10 | SSE10                   | SSW9  | S8    | SSE9                    | S9     | S10    | SSW7  | SSW7     | S5   | SSW6   | S5.5          | S10           |
| 25-Feb | SW6                           | SW4                      | WSW6 | WNW6 | W9            | W9                      | WNW9WNW10 | WNW8  | WNW7  | WNW8     | WNW9      | W9   | WNW9      | W8    | WSW8                    | W4    | W2    | WSW1                    | WSW1   | WSW2   | WSW3  | WSW3     | WSW1 | SW2    | W5.6          | WNW10         |
| 26-Feb | WSW3                          | WSW2                     | W1   | SE4  | SE4           | SE4                     | SW1       | SE3   | SE4   | SE5      | ESE5      | ESE6 | ESE6      | E7    | E7                      | E6    | ENE6  | E5                      | E4     | E3     | E6    | E4       | ENE3 | N1     | ESE3.3        | E7            |
| 27-Feb | NW1                           | NW2                      | NW2  | NW2  | NW3           | NW3                     | NW3       | NW3   | NW2   | N5       | N7        | NNW7 | NNW7      | N8    | N8                      | NNW7  | NNW7  | NNW6                    | NNW5   | NNW5   | NNW5  | NNW5     | NW4  | NW3    | NNW4.5        | N8            |
| 28-Feb | WNW2                          | WNW2                     | WNW3 | WNW4 | W2            | W1                      | UO        | WNW1  | NE1   | NNW4     | NW5       | NE2  | NE2       | NE3   | NNE4                    | N2    | ESE2  | WNW0                    | WSW1   | WSW2   | WSW2  | WSW2     | WSW3 | WSW3   | NNW1.3        | NW5           |

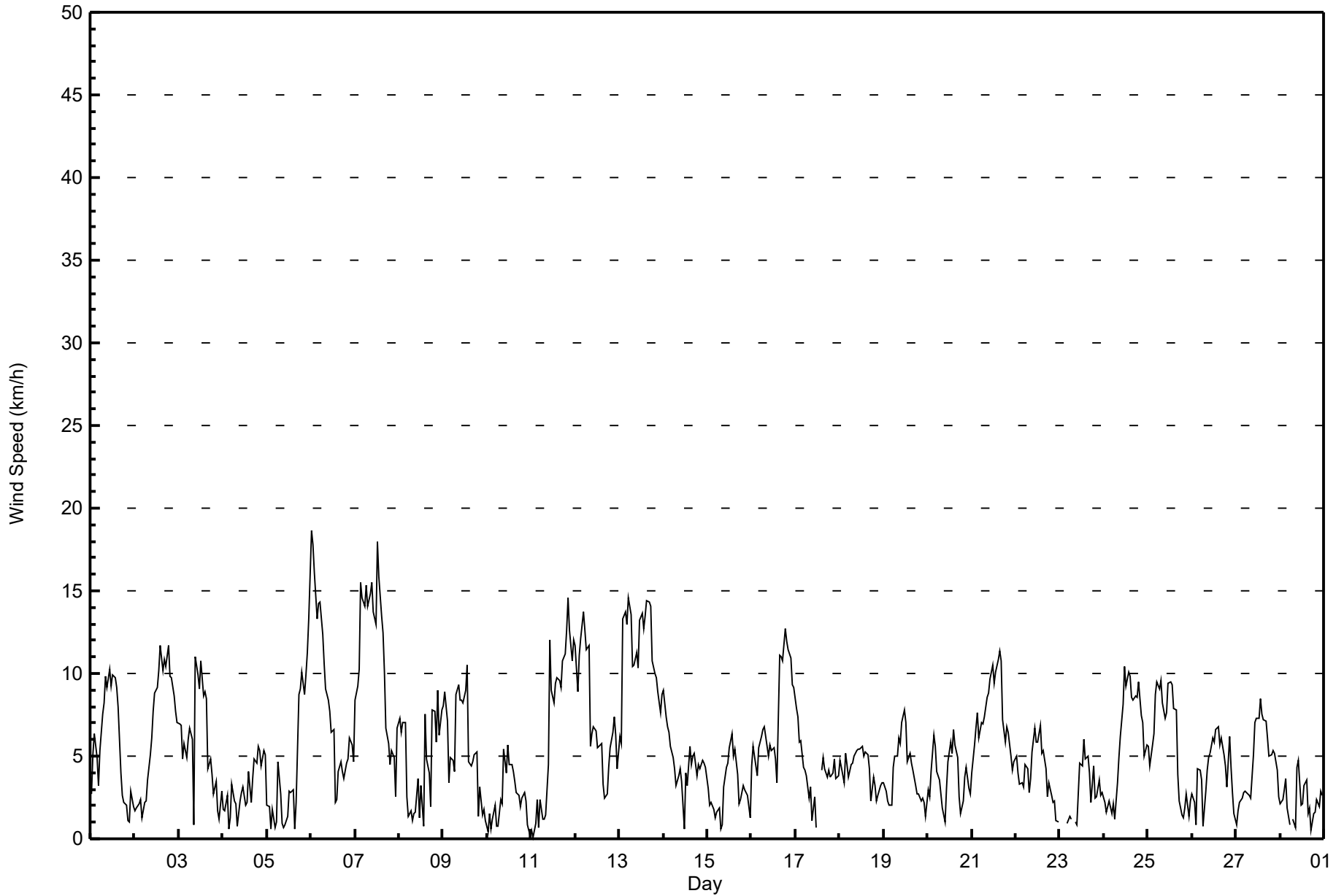
|  |       |       |                         |        |        |        |        |       |       |       |        |        |        |        |                 |       |                 |  |
|--|-------|-------|-------------------------|--------|--------|--------|--------|-------|-------|-------|--------|--------|--------|--------|-----------------|-------|-----------------|--|
| WNW2.7WNW2.9WNW3.4WNW3.4WNW3.3WNW3.0WNW2.9WNW2.4WNW2.3WNW2.8 | NW2.3 | NW1.8 | NW1.9                   | NNW1.9 | NNW1.9 | NNW2.4 | NNW1.4 | NW1.4 | W1.8  | W1.9  | NNW1.9 | NNW2.0 | NNW1.7 | NNW2.2 | Diurnal Average |       |                 |  |
| WNW19WNW18WNW16  | W16   | W15   | W15WNW15WNW14WNW15WNW16 | W14    | NNW13  | W18    | W16    | NNW13 | NNW14 | NNW14 | NNW14  | NNW14  | WNW13  | WNW13  | WNW15           | NNW13 | Diurnal Maximum |  |

M - Maintenance UO - Unstable Operation  
 All monthly, daily, and diurnal averages have been calculated using vector methods



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Wind Speed (WS) - km/h**  
**Surmont 2 - February 2023**





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Wind Speed (WS) - km/h  
Surmont 2 - February 2023**

| <b>Wind Speed Ranges (km/h)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---------------------------------|------------------------|----------|---------------------|
| 0 - 5                           | 397                    | 59.79    | 59.79               |
| 6 - 11                          | 220                    | 33.13    | 92.92               |
| 12 - 19                         | 47                     | 7.08     | 100.00              |
| 20 - 28                         | 0                      | 0.00     | 100.00              |
| 29 - 38                         | 0                      | 0.00     | 100.00              |
| > 38                            | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 664

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Wind Speed (WS) - km/h  
Surmont 2 - February 2023**

| <b>Wind Speed<br/>Ranges (km/h)</b> | <b>Wind Direction</b> |     |    |     |    |     |    |     |    |     |    |     |     |     |    |     | <b>Totals</b> |
|-------------------------------------|-----------------------|-----|----|-----|----|-----|----|-----|----|-----|----|-----|-----|-----|----|-----|---------------|
|                                     | N                     | NNE | NE | ENE | E  | ESE | SE | SSE | S  | SSW | SW | WSW | W   | WNW | NW | NNW |               |
| 0 - 5                               | 27                    | 32  | 13 | 7   | 14 | 18  | 32 | 17  | 12 | 7   | 9  | 73  | 38  | 29  | 32 | 37  | 397           |
| 6 - 11                              | 16                    | 5   | 1  | 1   | 4  | 7   | 27 | 8   | 7  | 4   | 3  | 12  | 44  | 27  | 9  | 45  | 220           |
| 12 - 19                             | 0                     | 0   | 0  | 0   | 0  | 0   | 2  | 0   | 0  | 0   | 0  | 2   | 18  | 15  | 3  | 7   | 47            |
| 20 - 28                             | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0   | 0   | 0  | 0   | 0             |
| 29 - 38                             | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0   | 0   | 0  | 0   | 0             |
| > 38                                | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0   | 0   | 0  | 0   | 0             |
| <b>Totals</b>                       | 43                    | 37  | 14 | 8   | 18 | 25  | 61 | 25  | 19 | 11  | 12 | 87  | 100 | 71  | 44 | 89  | 664           |

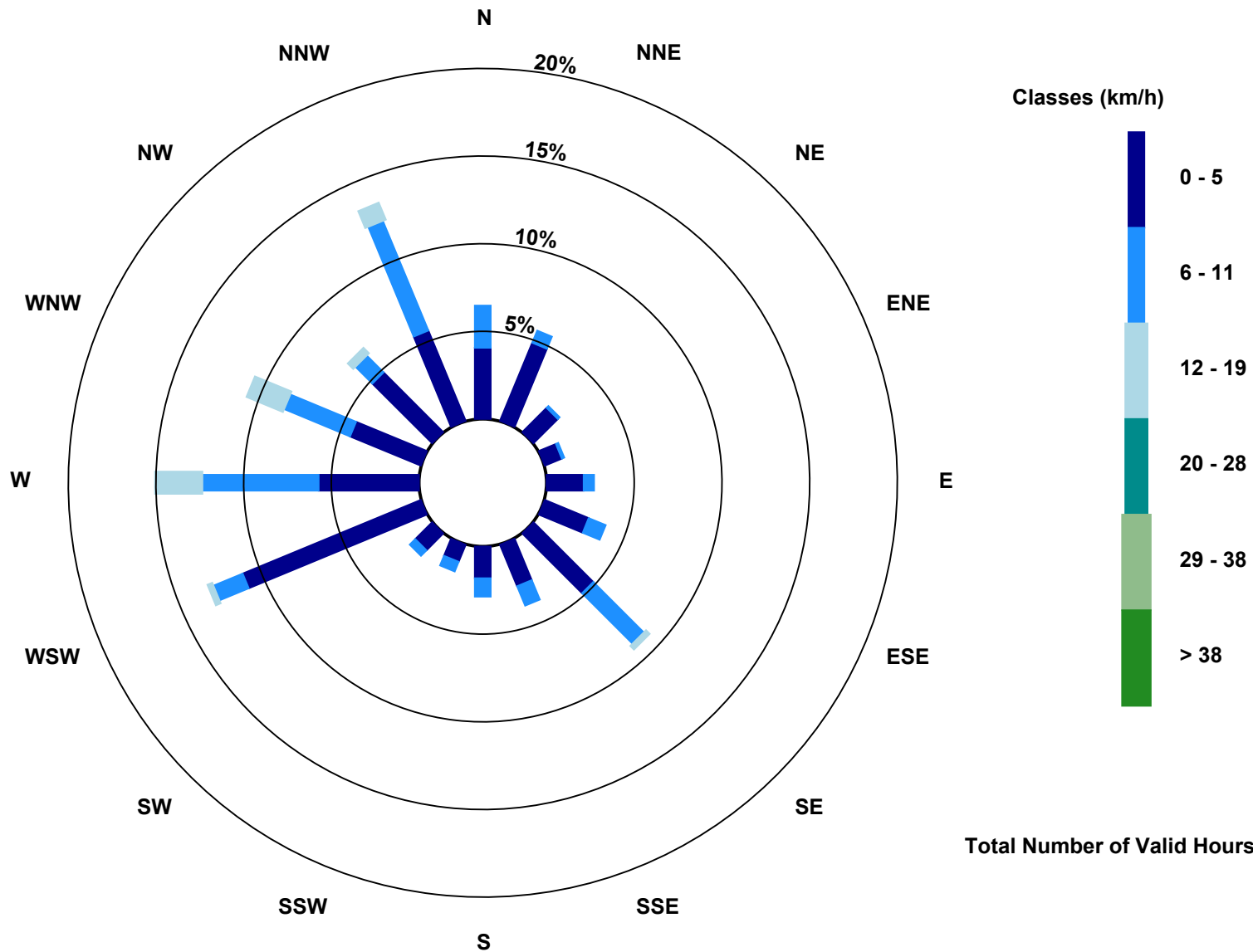
Total Number of Valid Hours: 664

Total Number of Hours: 672



Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Wind Speed (WS) - km/h  
Surmont 2





**Wood Buffalo Environmental Association**  
**Summary of Hour Standard Deviations**

**Wind Speed (WS) - km/h**  
**Surmont 2 - February 2023**

| Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0<br>Maximum Value: 7 km/h on Feb 7 13:00<br>Minimum Value: 1 km/h on Feb 4 03:00<br>Percentiles: P <sub>1</sub> = 1 P <sub>10</sub> = 1 Q <sub>1</sub> = 1 Median = 2 Q <sub>3</sub> = 3 P <sub>90</sub> = 4 P <sub>99</sub> = 6 |                               |    |    |    |   |   |    |    |   |    |    |    |    |    |    |    | Hours in Service: 672<br>Hours of Data: 664<br>Hours of Missing Data: 8<br>Hours of Calibration: 0<br>Percent Operational Time: 98.8 |    |    |    |    |    |    |    |               |
|---|-------------------------------|----|----|----|---|---|----|----|---|----|----|----|----|----|----|----|--|----|----|----|----|----|----|----|---------------|
| Day   | Hourly Period Ending At (MST) |    |    |    |   |   |    |    |   |    |    |    |    |    |    |    |  |    |    |    |    |    |    |    | Daily Maximum |
|   | 1                             | 2  | 3  | 4  | 5 | 6 | 7  | 8  | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17   | 18 | 19 | 20 | 21 | 22 | 23 | 24 |               |
| 1-Feb   | 2                             | 3  | 2  | 3  | 1 | 3 | 3  | 4  | 4 | 4  | 4  | 4  | 4  | 4  | 3  | 2  | 1  | 1  | 1  | 1  | 2  | 2  | 1  | 4  |               |
| 2-Feb   | 1                             | 1  | 1  | 2  | 1 | 1 | 1  | 2  | 2 | 2  | 2  | 3  | 3  | 4  | 4  | 3  | 3  | 3  | 4  | 4  | 3  | 3  | 2  | 2  |               |
| 3-Feb   | 3                             | 3  | 2  | 2  | 2 | 3 | 3  | 2  | 2 | 5  | 3  | 3  | 4  | 3  | 3  | 2  | 2  | 1  | 1  | 1  | 2  | 1  | 1  | 5  |               |
| 4-Feb   | 1                             | 1  | 1  | 1  | 1 | 1 | 1  | 1  | 1 | 1  | 1  | 1  | 1  | 1  | 2  | 2  | 1  | 1  | 1  | 2  | 2  | 1  | 1  | 2  |               |
| 5-Feb   | 2                             | 1  | 1  | 1  | 1 | 1 | 1  | 2  | 2 | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 3  | 3  | 3  | 2  | 3  | 5  | 5  | 5  |               |
| 6-Feb   | 6                             | 6  | 6  | 5  | 5 | 5 | 4  | 3  | 3 | 3  | 3  | 3  | 2  | 2  | 1  | 2  | 1  | 2  | 2  | 3  | 2  | 2  | 2  | 6  |               |
| 7-Feb   | 4                             | 4  | 4  | 5  | 5 | 5 | 5  | 6  | 6 | 6  | 5  | 4  | 7  | 5  | 4  | 4  | 4  | 2  | 2  | 1  | 2  | 2  | 2  | 7  |               |
| 8-Feb   | 2                             | 2  | 1  | 1  | 2 | 1 | 1  | 1  | 1 | 1  | 1  | 2  | 2  | 2  | 3  | 2  | 2  | 1  | 3  | 3  | 2  | 3  | 2  | 3  |               |
| 9-Feb   | 3                             | 3  | 3  | 1  | 2 | 2 | 3  | 3  | 3 | 3  | 3  | 3  | 4  | 4  | 2  | 2  | 2  | 2  | 2  | 1  | 2  | 1  | 1  | 4  |               |
| 10-Feb  | 1                             | 1  | 1  | 1  | 1 | 1 | 1  | 2  | 2 | 2  | 2  | 2  | 2  | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 2  |               |
| 11-Feb  | 1                             | 1  | 1  | 1  | 1 | 2 | 1  | 1  | 1 | 4  | 4  | 3  | 3  | 3  | 4  | 5  | 3  | 4  | 4  | 4  | 5  | 5  | 4  | 4  | 5             |
| 12-Feb  | 4                             | 3  | 4  | 4  | 4 | 4 | 4  | 3  | 2 | 3  | 2  | 2  | 2  | 2  | 2  | 2  | 1  | 1  | 2  | 2  | 2  | 2  | 2  | 4  |               |
| 13-Feb  | 2                             | 4  | 5  | 5  | 5 | 5 | 5  | 5  | 3 | 4  | 4  | 5  | 6  | 6  | 6  | 6  | 6  | 6  | 5  | 4  | 4  | 4  | 3  | 6  |               |
| 14-Feb  | 3                             | 3  | 3  | 2  | 2 | 2 | 2  | 1  | 1 | 2  | 1  | 1  | 2  | 2  | 2  | 2  | 2  | 2  | 1  | 2  | 2  | 2  | 1  | 3  |               |
| 15-Feb  | 1                             | 1  | 1  | 1  | 1 | 1 | 1  | 1  | 1 | 1  | 2  | 2  | 2  | 2  | 2  | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 2  |               |
| 16-Feb  | 2                             | 2  | 1  | 1  | 2 | 2 | 2  | 2  | 2 | 3  | 3  | 3  | 2  | 2  | 2  | 4  | 4  | 4  | 4  | 5  | 5  | 4  | 3  | 5  |               |
| 17-Feb  | 3                             | 3  | 3  | 2  | 2 | 2 | 1  | 1  | 1 | 1  | 1  | M  | M  | 2  | 2  | 2  | 2  | 2  | 1  | 2  | 2  | 1  | 1  | 3  |               |
| 18-Feb  | 2                             | 2  | 1  | 2  | 2 | 1 | 2  | 2  | 2 | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 1  | 1  | 1  | 1  | 2  | 1  | 2  |               |
| 19-Feb  | 2                             | 1  | 1  | 1  | 1 | 2 | 1  | 1  | 2 | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 1  | 1  | 1  | 2  | 1  | 1  | 1  | 2  |               |
| 20-Feb  | 1                             | 1  | 3  | 3  | 2 | 2 | 1  | 1  | 1 | 1  | 1  | 2  | 2  | 2  | 3  | 2  | 2  | 1  | 1  | 2  | 2  | 2  | 1  | 3  |               |
| 21-Feb  | 1                             | 2  | 3  | 3  | 2 | 3 | 3  | 3  | 3 | 4  | 4  | 4  | 4  | 4  | 4  | 5  | 4  | 3  | 2  | 2  | 2  | 2  | 1  | 5  |               |
| 22-Feb  | 2                             | 1  | 1  | 1  | 1 | 2 | 1  | 1  | 1 | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 2  |               |
| 23-Feb  | UO                            | UO | UO | UO | 1 | 1 | 1  | UO | 1 | 1  | 2  | 2  | 2  | 2  | 2  | 2  | 1  | 1  | 1  | 2  | 1  | 1  | 1  | 2  |               |
| 24-Feb  | 1                             | 1  | 1  | 1  | 1 | 2 | 1  | 2  | 3 | 3  | 4  | 5  | 4  | 4  | 4  | 4  | 4  | 4  | 4  | 4  | 3  | 3  | 2  | 5  |               |
| 25-Feb  | 3                             | 3  | 3  | 3  | 3 | 3 | 3  | 3  | 3 | 2  | 3  | 3  | 4  | 3  | 3  | 3  | 3  | 1  | 1  | 1  | 1  | 1  | 1  | 4  |               |
| 26-Feb  | 1                             | 1  | 1  | 2  | 2 | 2 | 1  | 1  | 1 | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 1  | 2  | 2  | 2  | 2  | 2  |               |
| 27-Feb  | 1                             | 1  | 1  | 1  | 1 | 1 | 1  | 1  | 1 | 2  | 2  | 3  | 3  | 3  | 3  | 3  | 3  | 2  | 2  | 2  | 2  | 2  | 2  | 3  |               |
| 28-Feb  | 1                             | 1  | 1  | 1  | 2 | 1 | UO | 1  | 1 | 2  | 1  | 2  | 2  | 2  | 2  | 2  | 2  | 1  | 1  | 1  | 2  | 1  | 1  | 2  |               |
|   |                               |    |    |    |   |   |    |    |   |    |    |    |    |    |    |    | Diurnal Maximum  |    |    |    |    |    |    |    |               |
|   |                               |    |    |    |   |   |    |    |   |    |    |    |    |    |    |    |  |    |    |    |    |    |    |    |               |
| M - Maintenance UO - Unstable Operation   |                               |    |    |    |   |   |    |    |   |    |    |    |    |    |    |    |  |    |    |    |    |    |    |    |               |



**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

**Wind Direction (WD) - deg**  
**Surmont 2 - February 2023**

|  |                                |
|--|--------------------------------|
| Direction of Maximum Speed: 302 deg on Feb 6 01:00           | Hours in Service: 672          |
| Direction of Maximum Daily Speed Average: 280.2 deg on Feb 7 | Hours of Data: 664             |
| Direction of Minimum Speed: 341 deg on Feb 11 02:00          | Hours of Missing Data: 8       |
| Direction of Minimum Daily Speed Average: 1.0 deg on Feb 16  | Percent Operational Time: 98.8 |
| Monthly Average Direction: 298.3 deg                         |                                |

| Day    | Hourly Period Ending At (MST) |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Daily Average |
|--------|-------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------------|
|        | 1                             | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     | 10    | 11    | 12    | 13    | 14    | 15    | 16    | 17    | 18    | 19    | 20    | 21    | 22    | 23    | 24    |               |
| 1-Feb  | 339                           | 7     | 359   | 340   | 323   | 359   | 353   | 346   | 346   | 346   | 350   | 348   | 345   | 341   | 343   | 335   | 318   | 276   | 264   | 257   | 249   | 252   | 256   | 260   | 339.3         |
| 2-Feb  | 257                           | 253   | 240   | 246   | 245   | 239   | 225   | 176   | 135   | 124   | 124   | 132   | 135   | 140   | 134   | 126   | 122   | 125   | 137   | 137   | 139   | 139   | 132   | 128   | 138.1         |
| 3-Feb  | 141                           | 160   | 140   | 133   | 178   | 173   | 150   | 131   | 158   | 269   | 283   | 292   | 293   | 302   | 310   | 313   | 16    | 12    | 31    | 28    | 24    | 16    | 108   | 60    | 281.1         |
| 4-Feb  | 97                            | 143   | 120   | 348   | 311   | 6     | 13    | 100   | 106   | 34    | 5     | 21    | 89    | 61    | 18    | 36    | 143   | 132   | 126   | 132   | 125   | 116   | 132   | 142   | 98.9          |
| 5-Feb  | 144                           | 292   | 127   | 337   | 198   | 164   | 146   | 134   | 153   | 271   | 211   | 101   | 164   | 161   | 198   | 173   | 252   | 258   | 270   | 272   | 276   | 280   | 295   | 312   | 266.7         |
| 6-Feb  | 302                           | 299   | 300   | 308   | 301   | 301   | 303   | 294   | 303   | 312   | 314   | 310   | 290   | 266   | 153   | 156   | 174   | 129   | 129   | 188   | 241   | 249   | 242   | 257   | 290.9         |
| 7-Feb  | 272                           | 275   | 272   | 277   | 281   | 279   | 284   | 301   | 289   | 293   | 280   | 272   | 275   | 274   | 278   | 293   | 278   | 260   | 275   | 268   | 293   | 283   | 294   | 261   | 280.2         |
| 8-Feb  | 278                           | 278   | 269   | 271   | 291   | 327   | 298   | 276   | 266   | 239   | 105   | 247   | 303   | 341   | 300   | 280   | 264   | 251   | 268   | 265   | 272   | 258   | 253   | 263   | 271.7         |
| 9-Feb  | 268                           | 263   | 260   | 242   | 259   | 259   | 280   | 292   | 279   | 280   | 268   | 254   | 253   | 254   | 237   | 196   | 169   | 161   | 129   | 123   | 188   | 150   | 162   | 301   | 251.5         |
| 10-Feb | 255                           | 135   | 275   | 189   | 235   | 242   | 315   | 354   | 76    | 120   | 112   | 112   | 89    | 70    | 95    | 17    | 350   | 336   | 318   | 343   | 17    | 12    | 75    | 265   | 64.4          |
| 11-Feb | 251                           | 341   | 321   | 6     | 277   | 297   | 270   | 248   | 233   | 270   | 271   | 276   | 271   | 274   | 263   | 258   | 266   | 270   | 281   | 287   | 297   | 300   | 283   | 269   | 277.9         |
| 12-Feb | 268                           | 276   | 266   | 263   | 267   | 267   | 269   | 270   | 307   | 294   | 275   | 284   | 260   | 260   | 247   | 242   | 173   | 163   | 163   | 138   | 138   | 130   | 126   | 123   | 255.1         |
| 13-Feb | 144                           | 235   | 257   | 258   | 261   | 261   | 276   | 282   | 282   | 280   | 293   | 348   | 345   | 346   | 339   | 347   | 349   | 346   | 338   | 341   | 346   | 343   | 343   | 345   | 312.9         |
| 14-Feb | 350                           | 346   | 343   | 341   | 338   | 341   | 323   | 303   | 307   | 313   | 344   | 88    | 138   | 100   | 15    | 10    | 27    | 359   | 326   | 329   | 336   | 343   | 342   | 356   | 346.7         |
| 15-Feb | 9                             | 287   | 266   | 249   | 272   | 259   | 253   | 273   | 263   | 159   | 133   | 126   | 106   | 106   | 147   | 132   | 129   | 258   | 247   | 248   | 250   | 255   | 259   | 248   | 177.3         |
| 16-Feb | 147                           | 136   | 133   | 127   | 157   | 143   | 134   | 147   | 162   | 196   | 189   | 175   | 148   | 104   | 134   | 284   | 283   | 294   | 297   | 310   | 323   | 349   | 360   | 353   | 267.8         |
| 17-Feb | 349                           | 348   | 335   | 352   | 342   | 340   | 330   | 34    | 31    | 359   | 103   | 13    | M     | M     | 33    | 13    | 21    | 25    | 348   | 345   | 340   | 346   | 325   | 331   | 355.0         |
| 18-Feb | 346                           | 347   | 338   | 353   | 350   | 355   | 3     | 0     | 345   | 7     | 351   | 13    | 338   | 358   | 11    | 41    | 39    | 319   | 264   | 251   | 251   | 248   | 248   | 249   | 345.2         |
| 19-Feb | 248                           | 247   | 242   | 235   | 170   | 124   | 116   | 123   | 135   | 143   | 134   | 136   | 135   | 108   | 114   | 86    | 70    | 48    | 44    | 79    | 323   | 286   | 278   | 289   | 126.3         |
| 20-Feb | 305                           | 307   | 306   | 325   | 323   | 333   | 314   | 315   | 344   | 13    | 26    | 29    | 18    | 2     | 33    | 3     | 32    | 330   | 293   | 299   | 11    | 12    | 295   | 273   | 346.3         |
| 21-Feb | 311                           | 331   | 339   | 341   | 347   | 342   | 340   | 339   | 340   | 346   | 340   | 350   | 337   | 349   | 356   | 348   | 350   | 343   | 341   | 333   | 338   | 324   | 295   | 302   | 340.1         |
| 22-Feb | 307                           | 301   | 298   | 280   | 294   | 278   | 276   | 270   | 276   | 331   | 349   | 339   | 20    | 34    | 23    | 16    | 25    | 301   | 255   | 257   | 254   | 251   | 250   | 258   | 320.5         |
| 23-Feb | UO                            | UO    | UO    | UO    | 257   | 256   | 259   | UO    | 253   | 262   | 39    | 39    | 38    | 27    | 27    | 3     | 10    | 289   | 255   | 243   | 245   | 246   | 246   | 246   | 331.5         |
| 24-Feb | 244                           | 257   | 249   | 251   | 249   | 216   | 198   | 196   | 220   | 226   | 164   | 179   | 186   | 159   | 165   | 192   | 173   | 166   | 182   | 191   | 197   | 201   | 173   | 201   | 188.0         |
| 25-Feb | 230                           | 232   | 258   | 299   | 277   | 276   | 286   | 300   | 303   | 289   | 292   | 285   | 270   | 288   | 266   | 257   | 266   | 260   | 258   | 251   | 242   | 242   | 258   | 233   | 275.5         |
| 26-Feb | 254                           | 243   | 264   | 135   | 140   | 130   | 228   | 142   | 138   | 125   | 115   | 122   | 115   | 95    | 86    | 83    | 70    | 86    | 92    | 85    | 93    | 98    | 70    | 353   | 106.3         |
| 27-Feb | 316                           | 318   | 310   | 320   | 312   | 311   | 314   | 305   | 307   | 351   | 356   | 347   | 347   | 355   | 352   | 341   | 344   | 339   | 328   | 330   | 336   | 330   | 321   | 306   | 336.4         |
| 28-Feb | 288                           | 294   | 300   | 287   | 260   | 272   | UO    | 283   | 35    | 335   | 323   | 42    | 42    | 36    | 14    | 356   | 113   | 287   | 253   | 250   | 246   | 246   | 246   | 246   | 306.6         |
|        | 288.3                         | 287.8 | 286.4 | 293.1 | 282.9 | 285.6 | 291.1 | 294.7 | 297.6 | 297.8 | 307.3 | 319.6 | 307.7 | 339.2 | 341.8 | 329.9 | 347.6 | 306.4 | 279.5 | 280.4 | 297.1 | 294.1 | 282.9 | 286.1 |               |

Diurnal Average

M - Maintenance

UO - Unstable Operation

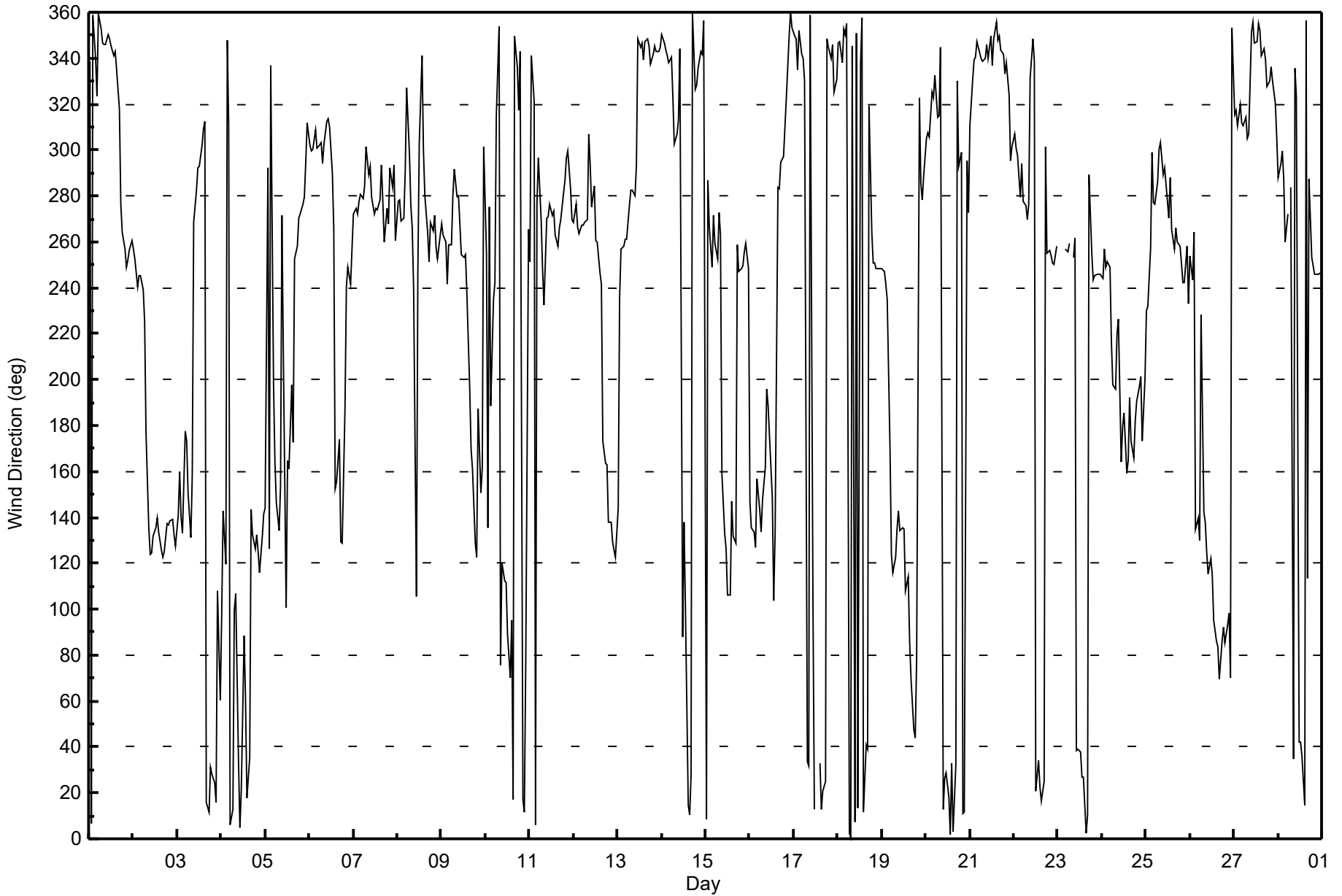
All monthly, daily, and diurnal averages have been calculated using vector methods





**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Wind Direction (WD) - deg**  
**Surmont 2 - February 2023**





**Wood Buffalo Environmental Association**  
**Summary of Hour Standard Deviations**

**Wind Direction (WD) - deg**  
**Surmont 2 - February 2023**

| Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0<br>Maximum Value: 110 deg on Feb 14 12:00<br>Minimum Value: 9 deg on Feb 28 21:00<br>Percentiles: P <sub>1</sub> = 11 P <sub>10</sub> = 23 Q <sub>1</sub> = 29 Median = 35 Q <sub>3</sub> = 47 P <sub>90</sub> = 66 P <sub>99</sub> = 98 |                               |    |    |    |    |    |     |    |     |    |    |     |    |     |    |    |    |    | Hours in Service: 672<br>Hours of Data: 664<br>Hours of Missing Data: 8<br>Hours of Calibration: 0<br>Percent Operational Time: 98.8 |     |    |    |    |    |               |
|--|-------------------------------|----|----|----|----|----|-----|----|-----|----|----|-----|----|-----|----|----|----|----|--|-----|----|----|----|----|---------------|
| Day  | Hourly Period Ending At (MST) |    |    |    |    |    |     |    |     |    |    |     |    |     |    |    |    |    |  |     |    |    |    |    | Daily Maximum |
|  | 1                             | 2  | 3  | 4  | 5  | 6  | 7   | 8  | 9   | 10 | 11 | 12  | 13 | 14  | 15 | 16 | 17 | 18 | 19   | 20  | 21 | 22 | 23 | 24 |               |
| 1-Feb  | 42                            | 37 | 32 | 38 | 31 | 45 | 34  | 37 | 33  | 36 | 35 | 36  | 34 | 37  | 36 | 38 | 35 | 19 | 14   | 45  | 45 | 45 | 16 | 49 | 49            |
| 2-Feb  | 66                            | 15 | 41 | 38 | 17 | 36 | 50  | 61 | 47  | 40 | 31 | 36  | 37 | 39  | 36 | 28 | 25 | 31 | 36   | 44  | 41 | 45 | 41 | 31 | 66            |
| 3-Feb  | 49                            | 55 | 50 | 48 | 52 | 57 | 49  | 35 | 105 | 28 | 26 | 27  | 29 | 35  | 34 | 34 | 55 | 37 | 47   | 76  | 39 | 81 | 85 | 34 | 105           |
| 4-Feb  | 73                            | 89 | 45 | 78 | 51 | 33 | 49  | 52 | 92  | 67 | 32 | 42  | 77 | 77  | 45 | 72 | 43 | 36 | 40   | 41  | 41 | 42 | 24 | 30 | 92            |
| 5-Feb  | 69                            | 32 | 95 | 32 | 73 | 97 | 29  | 73 | 87  | 66 | 74 | 80  | 57 | 54  | 45 | 96 | 28 | 20 | 23   | 25  | 22 | 22 | 31 | 34 | 97            |
| 6-Feb  | 32                            | 29 | 31 | 35 | 31 | 30 | 30  | 29 | 30  | 38 | 40 | 46  | 36 | 81  | 80 | 54 | 57 | 49 | 58   | 70  | 44 | 32 | 34 | 34 | 81            |
| 7-Feb  | 40                            | 29 | 32 | 28 | 28 | 27 | 29  | 32 | 29  | 30 | 28 | 26  | 28 | 28  | 26 | 30 | 25 | 20 | 25   | 23  | 28 | 46 | 51 | 17 | 51            |
| 8-Feb  | 23                            | 21 | 19 | 19 | 45 | 22 | 31  | 42 | 42  | 42 | 35 | 84  | 56 | 105 | 33 | 29 | 19 | 34 | 27   | 22  | 25 | 18 | 25 | 24 | 105           |
| 9-Feb  | 26                            | 21 | 26 | 37 | 39 | 49 | 65  | 31 | 28  | 28 | 27 | 27  | 32 | 31  | 57 | 52 | 59 | 59 | 48   | 100 | 60 | 86 | 83 | 53 | 100           |
| 10-Feb   | 100                           | 74 | 78 | 70 | 28 | 48 | 52  | 41 | 79  | 31 | 57 | 27  | 41 | 42  | 38 | 45 | 33 | 22 | 24   | 36  | 53 | 35 | 98 | 62 | 100           |
| 11-Feb   | 67                            | 94 | 35 | 42 | 83 | 59 | 69  | 46 | 33  | 51 | 24 | 29  | 31 | 34  | 34 | 34 | 27 | 27 | 28   | 28  | 30 | 32 | 29 | 25 | 94            |
| 12-Feb   | 25                            | 27 | 24 | 23 | 24 | 24 | 25  | 25 | 39  | 39 | 22 | 33  | 33 | 34  | 44 | 47 | 69 | 74 | 60   | 50  | 49 | 45 | 41 | 71 | 74            |
| 13-Feb   | 55                            | 74 | 33 | 30 | 28 | 29 | 30  | 28 | 26  | 26 | 33 | 38  | 34 | 38  | 38 | 33 | 33 | 34 | 36   | 32  | 35 | 35 | 37 | 29 | 74            |
| 14-Feb   | 31                            | 31 | 38 | 31 | 34 | 29 | 32  | 30 | 29  | 33 | 45 | 110 | 46 | 64  | 31 | 44 | 35 | 29 | 35   | 37  | 38 | 34 | 32 | 30 | 110           |
| 15-Feb   | 50                            | 28 | 18 | 26 | 21 | 41 | 23  | 35 | 61  | 51 | 39 | 44  | 35 | 39  | 44 | 30 | 32 | 15 | 18   | 19  | 15 | 19 | 21 | 48 | 61            |
| 16-Feb   | 49                            | 46 | 53 | 60 | 49 | 46 | 38  | 44 | 34  | 51 | 65 | 64  | 40 | 50  | 81 | 33 | 29 | 27 | 30   | 34  | 37 | 36 | 32 | 34 | 81            |
| 17-Feb   | 35                            | 31 | 37 | 36 | 35 | 31 | 29  | 59 | 38  | 89 | 72 | 96  | M  | M   | 54 | 41 | 45 | 47 | 40   | 40  | 27 | 26 | 24 | 28 | 96            |
| 18-Feb   | 27                            | 30 | 29 | 28 | 38 | 39 | 39  | 33 | 30  | 32 | 31 | 43  | 37 | 58  | 47 | 47 | 56 | 40 | 14   | 14  | 12 | 11 | 12 | 11 | 58            |
| 19-Feb   | 11                            | 18 | 28 | 35 | 75 | 42 | 33  | 33 | 35  | 39 | 34 | 34  | 39 | 61  | 33 | 46 | 43 | 45 | 61   | 67  | 31 | 18 | 9  | 29 | 75            |
| 20-Feb   | 24                            | 29 | 33 | 38 | 36 | 32 | 32  | 25 | 53  | 89 | 60 | 38  | 44 | 40  | 39 | 34 | 45 | 38 | 25   | 29  | 61 | 41 | 32 | 15 | 89            |
| 21-Feb   | 30                            | 33 | 32 | 32 | 36 | 35 | 34  | 41 | 38  | 39 | 41 | 34  | 39 | 37  | 31 | 34 | 33 | 31 | 34   | 33  | 30 | 35 | 25 | 28 | 41            |
| 22-Feb   | 30                            | 27 | 23 | 24 | 20 | 26 | 24  | 20 | 26  | 37 | 39 | 44  | 47 | 36  | 47 | 44 | 39 | 37 | 24   | 24  | 15 | 18 | 35 | 40 | 47            |
| 23-Feb   | UO                            | UO | UO | UO | 39 | 12 | 24  | UO | 32  | 35 | 84 | 51  | 73 | 39  | 58 | 36 | 44 | 39 | 14   | 15  | 12 | 12 | 11 | 13 | 84            |
| 24-Feb   | 11                            | 33 | 24 | 16 | 27 | 88 | 106 | 61 | 71  | 64 | 55 | 57  | 55 | 52  | 53 | 54 | 59 | 52 | 53   | 55  | 61 | 50 | 59 | 55 | 106           |
| 25-Feb   | 63                            | 61 | 64 | 54 | 26 | 27 | 29  | 30 | 31  | 31 | 40 | 31  | 30 | 31  | 29 | 32 | 21 | 30 | 21   | 18  | 30 | 36 | 32 | 29 | 64            |
| 26-Feb   | 19                            | 40 | 90 | 54 | 53 | 61 | 83  | 66 | 44  | 36 | 37 | 28  | 31 | 30  | 32 | 39 | 35 | 37 | 31   | 63  | 31 | 43 | 63 | 55 | 90            |
| 27-Feb   | 26                            | 23 | 21 | 28 | 24 | 30 | 30  | 25 | 32  | 28 | 31 | 38  | 38 | 28  | 29 | 34 | 34 | 34 | 36   | 30  | 31 | 33 | 32 | 39 | 39            |
| 28-Feb   | 31                            | 18 | 27 | 28 | 52 | 38 | UO  | 78 | 88  | 38 | 34 | 82  | 87 | 79  | 60 | 88 | 82 | 81 | 34   | 32  | 9  | 34 | 11 | 10 | 88            |
|  |                               |    |    |    |    |    |     |    |     |    |    |     |    |     |    |    |    |    | Diurnal Maximum  |     |    |    |    |    |               |
|  |                               |    |    |    |    |    |     |    |     |    |    |     |    |     |    |    |    |    | 100 94 95 78 83 97 106 78 105 89 84 110 87 105 81 96 82 81 61 100 61 86 98 71  |     |    |    |    |    |               |
| M - Maintenance  |                               |    |    |    |    |    |     |    |     |    |    |     |    |     |    |    |    |    | UO - Unstable Operation  |     |    |    |    |    |               |



## WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY  
MONITORING PROGRAM  
MONTHLY REPORT

### **AMS30 ELLS RIVER FEBRUARY 2023**

Operations, Data Collection,  
QA/QC, Data Validation and Reporting by:  
Wood Buffalo Environmental Association  
Fort McMurray, Alberta

March 31, 2023

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - ELLS RIVER (AMS30)  
 FEBRUARY 2023

MONTHLY SUMMARY for  
 AMD SECTION III.B.1(c)

| Parameter                             | Hours of Data | Hours of Calibration | Hours without Data | Operational Time | Maximum 1-Hour Value | 1-Hour Exceedances | Maximum 24-Hour Value | 24-Hour Exceedances |
|---------------------------------------|---------------|----------------------|--------------------|------------------|----------------------|--------------------|-----------------------|---------------------|
| SO2 (ppb) Average                     | 639           | 31                   | 33                 | 99.7             | 14.8                 | 0                  | 2.9                   | 0                   |
| TRS (ppb) Average                     | 633           | 33                   | 39                 | 99.11            | 2.2                  | 0                  | 1                     | 0                   |
| THC (ppm) Average                     | 544           | 33                   | 128                | 85.86            | 5.7                  | -                  | 3.2                   | -                   |
| NMHC (ppm) Average                    | 544           | 33                   | 128                | 85.86            | 0.833                | -                  | 0.291                 | -                   |
| CH4 (ppm) Average                     | 544           | 33                   | 128                | 85.86            | 5.2                  | -                  | 2.9                   | -                   |
| NO2 (ppb) Average                     | 632           | 33                   | 40                 | 98.96            | 41                   | 0                  | 23.6                  | -                   |
| NO (ppb) Average                      | 632           | 33                   | 40                 | 98.96            | 128.3                | -                  | 39.3                  | -                   |
| NOX (ppb) Average                     | 632           | 33                   | 40                 | 98.96            | 169.3                | -                  | 62.9                  | -                   |
| PM2.5 (ug/m3) Average                 | 670           | 0                    | 2                  | 99.7             | 14.5                 | 0                  | 9.5                   | 0                   |
| Temperature 2 m (C) Average           | 672           | 0                    | 0                  | 100              | 3.6                  | -                  | -2.1                  | -                   |
| Relative Humidity (%) Average         | 672           | 0                    | 0                  | 100              | 93.8                 | -                  | 89.6                  | -                   |
| Wind Speed 10 m (km/h) Average        | 662           | 0                    | 10                 | 98.51            | 41                   | -                  | 19                    | -                   |
| Wind Direction 10 m (deg) Average     | 662           | 0                    | 10                 | 98.51            | -                    | -                  | -                     | -                   |
| Global Solar Radiation (W/m2) Average | 672           | 0                    | 0                  | 100              | 515.5                | -                  | 128.1                 | -                   |

Note : Operational time includes periods of data collection and instrument calibration

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - ELLS RIVER (AMS30)  
 FEBRUARY 2023

MONTHLY SUMMARY FOR AIR QUALITY/ METEOROLOGICAL MONITORING MEASUREMENTS

| Parameter                             | Number | Mean  | StnDev | Total | Percentile |     |       |        |      |       |       |
|---------------------------------------|--------|-------|--------|-------|------------|-----|-------|--------|------|-------|-------|
|                                       |        |       |        |       | Min        | P10 | Q1    | Median | Q3   | P90   | Max   |
| SO2 (ppb) Average                     | 639    | 0.66  | 1.6    | -     | 0          | 0   | 0     | 0.2    | 0.5  | 1.3   | 14.8  |
| TRS (ppb) Average                     | 633    | 0.61  | 0.3    | -     | 0.4        | 0.4 | 0.5   | 0.5    | 0.6  | 0.9   | 2.2   |
| THC (ppm) Average                     | 544    | 2.25  | 0.5    | -     | 2          | 2   | 2     | 2.1    | 2.2  | 2.5   | 5.7   |
| NMHC(ppm) Average                     | 544    | 0.029 | 0.088  | -     | 0          | 0   | 0     | 0      | 0    | 0.1   | 0.833 |
| CH4(ppm) Average                      | 544    | 2.22  | 0.4    | -     | 2          | 2   | 2     | 2.1    | 2.2  | 2.4   | 5.2   |
| NO2 (ppb) Average                     | 632    | 12.58 | 9.5    | -     | 0.2        | 1.2 | 4.2   | 11.2   | 19   | 26.7  | 41    |
| NO (ppb) Average                      | 632    | 5.89  | 13.6   | -     | 0          | 0   | 0.1   | 0.5    | 5.2  | 15.4  | 128.3 |
| NOX (ppb) Average                     | 632    | 18.47 | 20.7   | -     | 0.3        | 1.3 | 5.2   | 13.2   | 23.5 | 39.2  | 169.3 |
| PM2.5 (ug/m3) Average                 | 670    | 4.24  | 2.7    | -     | 0.3        | 1.5 | 2.4   | 3.6    | 5.3  | 7.6   | 14.5  |
| Temperature 2 m (C) Average           | 672    | -16.8 | 9.5    | -     | -38.8      | -31 | -23.2 | -16.3  | -9.6 | -5.5  | 3.6   |
| Relative Humidity (%) Average         | 672    | 71.8  | 10.9   | -     | 40.9       | 57  | 65.9  | 71.8   | 79.8 | 85.6  | 93.8  |
| Wind Speed 10 m (km/h) Average        | 662    | 7.9   | 6      | -     | 0          | 2   | 3     | 7      | 11   | 16    | 41    |
| Wind Direction 10 m (deg) Average     | 662    | 291.8 | -      | -     | -          | -   | -     | -      | -    | -     | -     |
| Global Solar Radiation (W/m2) Average | 672    | 64.14 | 112.1  | -     | 0          | 0   | 0     | 0.2    | 92.6 | 241.4 | 515.5 |

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - ELLS RIVER (AMS30)  
FEBRUARY 2023

OPERATIONAL NOTES

| Parameter                  | Period Start      | Period End        | Duration (Hours) | Notes   |
|----------------------------|-------------------|-------------------|------------------|---|
| SO2,TRS, NO2, PM2.5        | 10 Feb 2023 16:00 | 10 Feb 2023 16:00 | 1                | Station power failure                             |
| THC/NMHC/CH4               | 10 Feb 2023 16:00 | 10 Feb 2023 17:00 | 2                | Station power failure                             |
| TRS, THC/NMHC/CH4, NO2     | 15 Feb 2023 11:00 | 15 Feb 2023 12:00 | 2                | Maintenance - sample manifold cleaned             |
| SO2,TRS,THC,NO2,PM2.5      | 14 Feb 2023 11:00 | 14 Feb 2023 14:00 | 4                | Maintenance - WBEA internal audit                 |
| THC/NMHC/CH4               | 08 Feb 2023 05:00 | 09 Feb 2023 04:00 | 24               | Unstable Operation - excessive baseline noise     |
| THC/NMHC/CH4               | 09 Feb 2023 06:00 | 10 Feb 2023 05:00 | 24               | Unstable Operation - excessive baseline noise     |
| THC/NMHC/CH4               | 10 Feb 2023 07:00 | 10 Feb 2023 10:00 | 4                | Unstable Operation - excessive baseline noise     |
| THC/NMHC/CH4               | 10 Feb 2023 22:00 | 11 Feb 2023 00:00 | 3                | Unstable Operation - excessive baseline noise     |
| THC/NMHC/CH4               | 11 Feb 2023 02:00 | 11 Feb 2023 10:00 | 9                | Unstable Operation - excessive baseline noise     |
| THC/NMHC/CH4               | 11 Feb 2023 11:00 | 12 Feb 2023 12:00 | 26               | Maintenance - replaced analyzer                   |
| Wind Speed, Wind Direction | 15 Feb 2023 12:00 | 15 Feb 2023 13:00 | 2                | Maintenance - tower brought down                  |
| Wind Speed, Wind Direction | 19 Feb 2023 05:00 | 19 Feb 2023 06:00 | 2                | Flat line in sensor output signal - Sensor frozen |
| Wind Speed, Wind Direction | 23 Feb 2023 07:00 | 23 Feb 2023 08:00 | 2                | Flat line in sensor output signal - Sensor frozen |
| Wind Speed, Wind Direction | 23 Feb 2023 20:00 | 23 Feb 2023 21:00 | 2                | Flat line in sensor output signal - Sensor frozen |
| Wind Speed, Wind Direction | 26 Feb 2023 00:00 | 26 Feb 2023 01:00 | 2                | Flat line in sensor output signal - Sensor frozen |



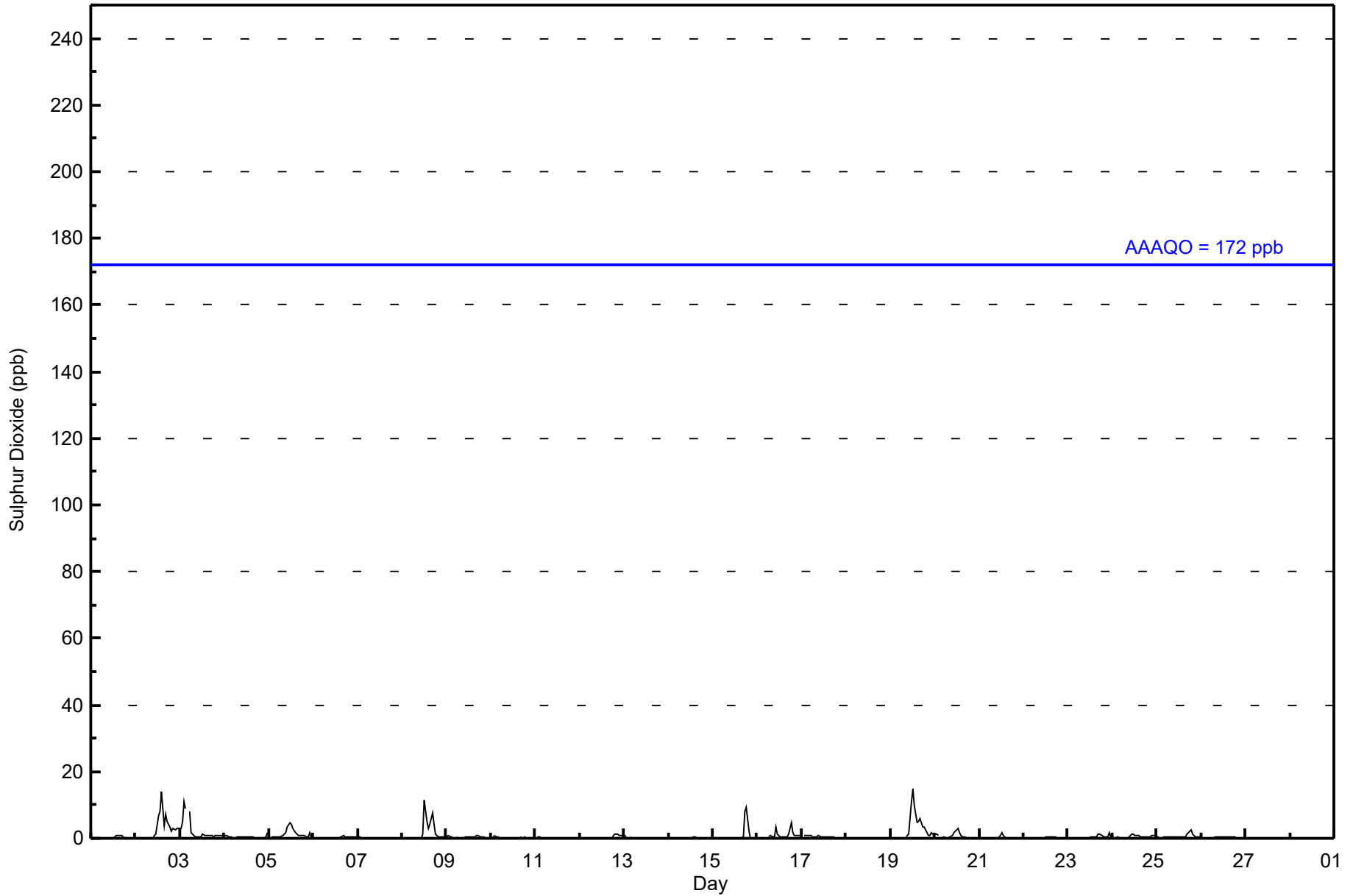
# Wood Buffalo Environmental Association

## Summary of Hour Averages

# Sulphur Dioxide (SO<sub>2</sub>) - ppb

## Ells River - February 2023

| Number of Exceedences (AAAQO):                  |                               | 1-hr: 0  |      | 24-hr: 0                  |     | Hours in Service: |     |     |     |                    |     |      |      |      |      |      |     |     |     |      |     | 672 |     |     |               |                 |     |      |  |
|---|-------------------------------|--|------|---------------------------|-----|-------------------|-----|-----|-----|--------------------|-----|------|------|------|------|------|-----|-----|-----|------|-----|-----|-----|-----|---------------|-----------------|-----|------|--|
| Maximum Value: 14.8 ppb on Feb 19 13:00         |                               | Maximum Daily Average: 2.9 ppb on Feb 19   |      | Hours of Data:            |     |                   |     |     |     |                    |     |      |      |      |      |      |     |     |     | 639  |     |     |     |     |               |                 |     |      |  |
| Minimum Value: 0.0 ppb on Feb 1 08:00           |                               | Minimum Daily Average: 0.0 ppb on Feb 27   |      | Hours of Missing Data:    |     |                   |     |     |     |                    |     |      |      |      |      |      |     |     |     | 33   |     |     |     |     |               |                 |     |      |  |
| Maximum Diurnal Average: 1.8 ppb at hour 13     |                               | Minimum Diurnal Average: 0.2 ppb at hour 7   |      | Hours of Calibration:     |     |                   |     |     |     |                    |     |      |      |      |      |      |     |     |     | 31   |     |     |     |     |               |                 |     |      |  |
| Monthly Average: 0.66 ppb                       |                               | Percentiles: P <sub>1</sub> = 0.0 P <sub>10</sub> = 0.0 Q <sub>1</sub> = 0.0 Median = 0.2 Q <sub>3</sub> = 0.5 P <sub>90</sub> = 1.3 P <sub>99</sub> = 9.2 |      | Percent Operational Time: |     |                   |     |     |     |                    |     |      |      |      |      |      |     |     |     | 99.7 |     |     |     |     |               |                 |     |      |  |
| Day   | Hourly Period Ending At (MST) |  |      |                           |     |                   |     |     |     |                    |     |      |      |      |      |      |     |     |     |      |     |     |     |     | Daily Average | Daily Maximum   |     |      |  |
|   | 1                             | 2  | 3    | 4                         | 5   | 6                 | 7   | 8   | 9   | 10                 | 11  | 12   | 13   | 14   | 15   | 16   | 17  | 18  | 19  | 20   | 21  | 22  | 23  | 24  |               |                 |     |      |  |
| 1-Feb   | 0.2                           | 0.2  | Z    | 0.2                       | 0.2 | 0.1               | 0.0 | 0.0 | 0.0 | 0.0                | 0.1 | 0.0  | 0.0  | 0.9  | 0.6  | 0.8  | 0.8 | 0.3 | 0.1 | 0.0  | 0.1 | 0.0 | 0.0 | 0.1 | 0.2           | 0.9             | 0.2 | 0.9  |  |
| 2-Feb   | 0.0                           | 0.1  | 0.1  | Z                         | 0.1 | 0.1               | 0.1 | 0.0 | 0.1 | 0.0                | 1.0 | 1.4  | 7.0  | 8.2  | 14.0 | 3.7  | 7.0 | 4.9 | 3.4 | 2.0  | 3.0 | 2.4 | 2.8 | 2.9 | 2.8           | 14.0            | 2.8 | 14.0 |  |
| 3-Feb   | 2.9                           | 4.9  | 11.1 | 8.9                       | Z   | 8.1               | 1.5 | 0.7 | 0.6 | 0.5                | 0.4 | 0.3  | 1.2  | 0.8  | 0.8  | 0.8  | 0.6 | 0.7 | 0.6 | 0.8  | 1.0 | 0.9 | 0.8 | 0.7 | 2.2           | 11.1            | 2.2 | 11.1 |  |
| 4-Feb   | 0.7                           | 0.7  | 0.6  | 0.6                       | 0.6 | Z                 | 0.5 | 0.4 | 0.3 | 0.3                | 0.3 | 0.3  | 0.3  | 0.2  | 0.2  | 0.2  | 0.2 | 0.2 | 0.1 | 0.2  | 0.2 | 0.2 | 0.4 | 1.7 | 0.4           | 1.7             | 0.4 | 1.7  |  |
| 5-Feb   | Z                             | 0.4  | 0.3  | 0.5                       | 0.6 | 0.5               | 0.5 | 0.8 | 1.2 | 1.8                | 3.3 | 4.9  | 4.1  | 2.8  | 1.8  | 1.2  | 1.0 | 1.0 | 0.9 | 0.7  | 0.5 | 0.5 | 1.7 | 0.2 | 1.3           | 4.9             | 1.3 | 4.9  |  |
| 6-Feb   | 0.1                           | Z  | 0.0  | 0.0                       | 0.0 | 0.0               | 0.0 | 0.0 | 0.1 | 0.1                | 0.2 | 0.1  | 0.2  | 0.2  | 0.1  | 0.3  | 0.7 | 0.3 | 0.4 | 0.3  | 0.3 | 0.3 | 0.4 | 0.3 | 0.2           | 0.7             | 0.2 | 0.7  |  |
| 7-Feb   | 0.4                           | 0.3  | Z    | 0.2                       | 0.2 | 0.2               | 0.2 | 0.1 | 0.1 | 0.2                | 0.1 | 0.2  | 0.1  | 0.1  | 0.1  | 0.1  | 0.1 | 0.1 | 0.1 | 0.0  | 0.0 | 0.0 | 0.0 | 0.0 | 0.1           | 0.4             | 0.1 | 0.4  |  |
| 8-Feb   | 0.0                           | 0.0  | 0.0  | Z                         | 0.0 | 0.0               | 0.0 | 0.0 | 0.0 | 0.1                | 0.2 | 1.5  | 11.3 | 5.0  | 3.2  | 4.0  | 7.7 | 4.3 | 1.3 | 0.6  | 0.3 | 0.4 | 0.4 | 0.3 | 1.8           | 11.3            | 1.8 | 11.3 |  |
| 9-Feb   | 0.4                           | 0.7  | 0.5  | 0.3                       | Z   | 0.2               | 0.2 | 0.2 | 0.2 | 0.2                | 0.3 | 0.4  | 0.4  | 0.4  | 0.6  | 0.6  | 0.8 | 0.7 | 0.5 | 0.3  | 0.2 | 0.2 | 0.2 | 0.2 | 0.4           | 0.8             | 0.4 | 0.8  |  |
| 10-Feb  | 0.1                           | 0.4  | 0.6  | 0.6                       | 0.6 | Z                 | 0.2 | 0.1 | 0.2 | 0.1                | 0.1 | 0.1  | 0.1  | 0.2  | 0.1  | PF   | 0.3 | 0.2 | 0.2 | 0.2  | 0.2 | 0.2 | 0.2 | 0.2 | 0.2           | 0.2             | 0.2 | 0.6  |  |
| 11-Feb  | Z                             | 0.3  | 0.3  | 0.1                       | 0.1 | 0.2               | 0.1 | 0.2 | 0.1 | 0.2                | 0.1 | 0.1  | 0.1  | 0.2  | 0.2  | 0.2  | 0.1 | 0.0 | 0.1 | 0.0  | 0.0 | 0.0 | 0.0 | 0.0 | 0.1           | 0.3             | 0.1 | 0.3  |  |
| 12-Feb  | 0.0                           | Z  | 0.0  | 0.0                       | 0.0 | 0.0               | 0.0 | 0.0 | 0.2 | 0.1                | 0.1 | 0.0  | 0.0  | 0.1  | 0.1  | 0.0  | 0.1 | 0.2 | 1.0 | 1.5  | 1.2 | 0.8 | 0.8 | 1.0 | 0.3           | 1.5             | 0.3 | 1.5  |  |
| 13-Feb  | 0.7                           | 0.5  | Z    | 0.2                       | 0.0 | 0.0               | 0.0 | 0.1 | 0.1 | 0.0                | 0.0 | 0.0  | 0.0  | 0.1  | 0.0  | 0.0  | 0.0 | 0.0 | 0.0 | 0.0  | 0.1 | 0.0 | 0.0 | 0.0 | 0.1           | 0.7             | 0.1 | 0.7  |  |
| 14-Feb  | 0.0                           | 0.0  | 0.0  | Z                         | 0.1 | 0.0               | 0.0 | 0.0 | 0.0 | 0.1                | 0.1 | 0.1  | M    | 0.3  | 0.3  | 0.2  | 0.1 | 0.1 | 0.1 | 0.0  | 0.1 | 0.1 | 0.0 | 0.1 | 0.1           | 0.3             | 0.1 | 0.3  |  |
| 15-Feb  | 0.1                           | 0.1  | 0.0  | 0.0                       | Z   | 0.1               | 0.0 | 0.0 | 0.0 | 0.0                | C   | C    | C    | 0.0  | 0.0  | 0.0  | 0.4 | 8.2 | 9.4 | 2.1  | 0.1 | 0.2 | 0.0 | 0.1 | 1.0           | 9.4             | 1.0 | 9.4  |  |
| 16-Feb  | 0.0                           | 0.0  | 0.0  | 0.1                       | 0.1 | Z                 | 0.4 | 1.0 | 0.4 | 0.4                | 3.3 | 1.3  | 0.6  | 0.4  | 0.3  | 0.3  | 0.4 | 1.1 | 4.6 | 1.5  | 0.9 | 0.8 | 0.8 | 0.7 | 0.8           | 4.6             | 0.8 | 4.6  |  |
| 17-Feb  | Z                             | 0.9  | 0.8  | 0.8                       | 0.7 | 0.7               | 0.5 | 0.5 | 0.6 | 0.6                | 0.6 | 0.6  | 0.6  | 0.5  | 0.6  | 0.5  | 0.3 | 0.2 | 0.2 | 0.1  | 0.0 | 0.1 | 0.1 | 0.1 | 0.5           | 0.9             | 0.5 | 0.9  |  |
| 18-Feb  | 0.0                           | Z  | 0.0  | 0.0                       | 0.0 | 0.0               | 0.0 | 0.1 | 0.1 | 0.2                | 0.2 | 0.1  | 0.2  | 0.1  | 0.2  | 0.1  | 0.2 | 0.2 | 0.1 | 0.1  | 0.1 | 0.1 | 0.1 | 0.1 | 0.1           | 0.2             | 0.1 | 0.2  |  |
| 19-Feb  | 0.1                           | 0.1  | Z    | 0.1                       | 0.1 | 0.1               | 0.1 | 0.1 | 0.2 | 0.9                | 1.3 | 10.8 | 14.8 | 9.5  | 4.5  | 5.2  | 6.0 | 3.3 | 3.5 | 2.5  | 0.7 | 0.9 | 1.5 | 1.3 | 2.9           | 14.8            | 2.9 | 14.8 |  |
| 20-Feb  | 1.4                           | 1.1  | 0.8  | Z                         | 0.5 | 0.3               | 0.2 | 0.2 | 0.4 | 0.8                | 1.5 | 2.1  | 3.1  | 1.9  | 0.7  | 0.5  | 0.5 | 0.1 | 0.1 | 0.0  | 0.0 | 0.0 | 0.0 | 0.0 | 0.7           | 3.1             | 0.7 | 3.1  |  |
| 21-Feb  | 0.0                           | 0.0  | 0.1  | 0.0                       | Z   | 0.0               | 0.0 | 0.0 | 0.0 | 0.0                | 0.1 | 0.6  | 1.6  | 0.9  | 0.0  | 0.1  | 0.1 | 0.1 | 0.0 | 0.0  | 0.0 | 0.0 | 0.0 | 0.0 | 0.2           | 1.6             | 0.2 | 1.6  |  |
| 22-Feb  | 0.0                           | 0.0  | 0.0  | 0.0                       | 0.0 | Z                 | 0.0 | 0.0 | 0.0 | 0.1                | 0.0 | 0.1  | 0.4  | 0.3  | 0.3  | 0.3  | 0.3 | 0.2 | 0.1 | 0.0  | 0.0 | 0.0 | 0.0 | 0.0 | 0.1           | 0.4             | 0.1 | 0.4  |  |
| 23-Feb  | Z                             | 0.0  | 0.0  | 0.0                       | 0.0 | 0.0               | 0.0 | 0.0 | 0.0 | 0.0                | 0.1 | 0.2  | 0.4  | 0.4  | 0.4  | 0.4  | 1.2 | 1.5 | 1.0 | 0.4  | 0.2 | 0.3 | 1.6 | 0.6 | 0.4           | 1.6             | 0.4 | 1.6  |  |
| 24-Feb  | 0.8                           | Z  | 0.5  | 0.3                       | 0.1 | 0.1               | 0.1 | 0.1 | 0.1 | 0.5                | 1.4 | 1.4  | 0.7  | 0.7  | 0.9  | 0.4  | 0.2 | 0.2 | 0.3 | 0.4  | 0.5 | 0.7 | 0.7 | 0.7 | 0.5           | 1.4             | 0.5 | 1.4  |  |
| 25-Feb  | 0.5                           | 0.4  | Z    | 0.4                       | 0.3 | 0.3               | 0.3 | 0.2 | 0.3 | 0.3                | 0.2 | 0.2  | 0.2  | 0.2  | 0.2  | 0.6  | 1.1 | 1.9 | 2.5 | 1.3  | 0.9 | 0.4 | 0.3 | 0.3 | 0.6           | 2.5             | 0.6 | 2.5  |  |
| 26-Feb  | 0.2                           | 0.2  | 0.2  | Z                         | 0.1 | 0.1               | 0.1 | 0.4 | 0.5 | 0.5                | 0.5 | 0.5  | 0.4  | 0.4  | 0.4  | 0.3  | 0.4 | 0.3 | 0.3 | 0.2  | 0.2 | 0.1 | 0.1 | 0.1 | 0.3           | 0.5             | 0.3 | 0.5  |  |
| 27-Feb  | 0.2                           | 0.1  | 0.1  | 0.0                       | Z   | 0.1               | 0.0 | 0.1 | 0.0 | 0.0                | 0.0 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0 | 0.0 | 0.0 | 0.0  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0           | 0.2             | 0.0 | 0.2  |  |
| 28-Feb  | 0.0                           | 0.0  | 0.0  | 0.0                       | 0.0 | Z                 | 0.1 | 0.0 | 0.0 | 0.0                | 0.1 | 0.1  | 0.1  | 0.1  | 0.1  | 0.0  | 0.0 | 0.0 | 0.0 | 0.0  | 0.0 | 0.0 | 0.0 | 0.1 | 0.0           | 0.1             | 0.0 | 0.1  |  |
|   |                               | 0.4  | 0.5  | 0.7                       | 0.6 | 0.2               | 0.5 | 0.2 | 0.2 | 0.2                | 0.3 | 0.6  | 1.0  | 1.8  | 1.2  | 1.1  | 0.8 | 1.1 | 1.1 | 1.1  | 0.6 | 0.4 | 0.3 | 0.5 | 0.4           | Diurnal Average |     |      |  |
|   |                               | 2.9  | 4.9  | 11.1                      | 8.9 | 0.7               | 8.1 | 1.5 | 1.0 | 1.2                | 1.8 | 3.3  | 10.8 | 14.8 | 9.5  | 14.0 | 5.2 | 7.7 | 8.2 | 9.4  | 2.5 | 3.0 | 2.4 | 2.8 | 2.9           | Diurnal Maximum |     |      |  |
| Z - zerospan                                    |                               | C - Calibration  |      |                           |     | M - Maintenance   |     |     |     | PF - Power Failure |     |      |      |      |      |      |     |     |     |      |     |     |     |     |               |                 |     |      |  |
| Alberta Ambient Air Quality Objectives (AAAQO): |                               | 1-hr 172 ppb   |      |                           |     | 24-hr 48 ppb      |     |     |     |                    |     |      |      |      |      |      |     |     |     |      |     |     |     |     |               |                 |     |      |  |







**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Sulphur Dioxide (SO<sub>2</sub>) - ppb**  
**Ells River - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 10                            | 634                    | 99.22    | 99.22               |
| 11 - 20                           | 5                      | 0.78     | 100.00              |
| 21 - 60                           | 0                      | 0.00     | 100.00              |
| 61 - 110                          | 0                      | 0.00     | 100.00              |
| 111 - 172                         | 0                      | 0.00     | 100.00              |
| > 172                             | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 639

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Sulphur Dioxide (SO<sub>2</sub>) - ppb  
Ells River - February 2023**

| <b>Concentration<br/>Ranges (ppb)</b> | <b>Wind Direction</b> |     |    |     |    |     |    |     |    |     |    |     |    |     |    |     | <b>Totals</b> |
|---------------------------------------|-----------------------|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|---------------|
|                                       | N                     | NNE | NE | ENE | E  | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |               |
| 0 - 10                                | 42                    | 126 | 41 | 26  | 12 | 7   | 13 | 30  | 68 | 75  | 22 | 40  | 41 | 35  | 31 | 17  | 626           |
| 11 - 20                               | 0                     | 1   | 1  | 0   | 0  | 0   | 0  | 0   | 3  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 5             |
| 21 - 60                               | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| 61 - 110                              | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| 111 - 172                             | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| > 172                                 | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| <b>Totals</b>                         | 42                    | 127 | 42 | 26  | 12 | 7   | 13 | 30  | 71 | 75  | 22 | 40  | 41 | 35  | 31 | 17  | 631           |

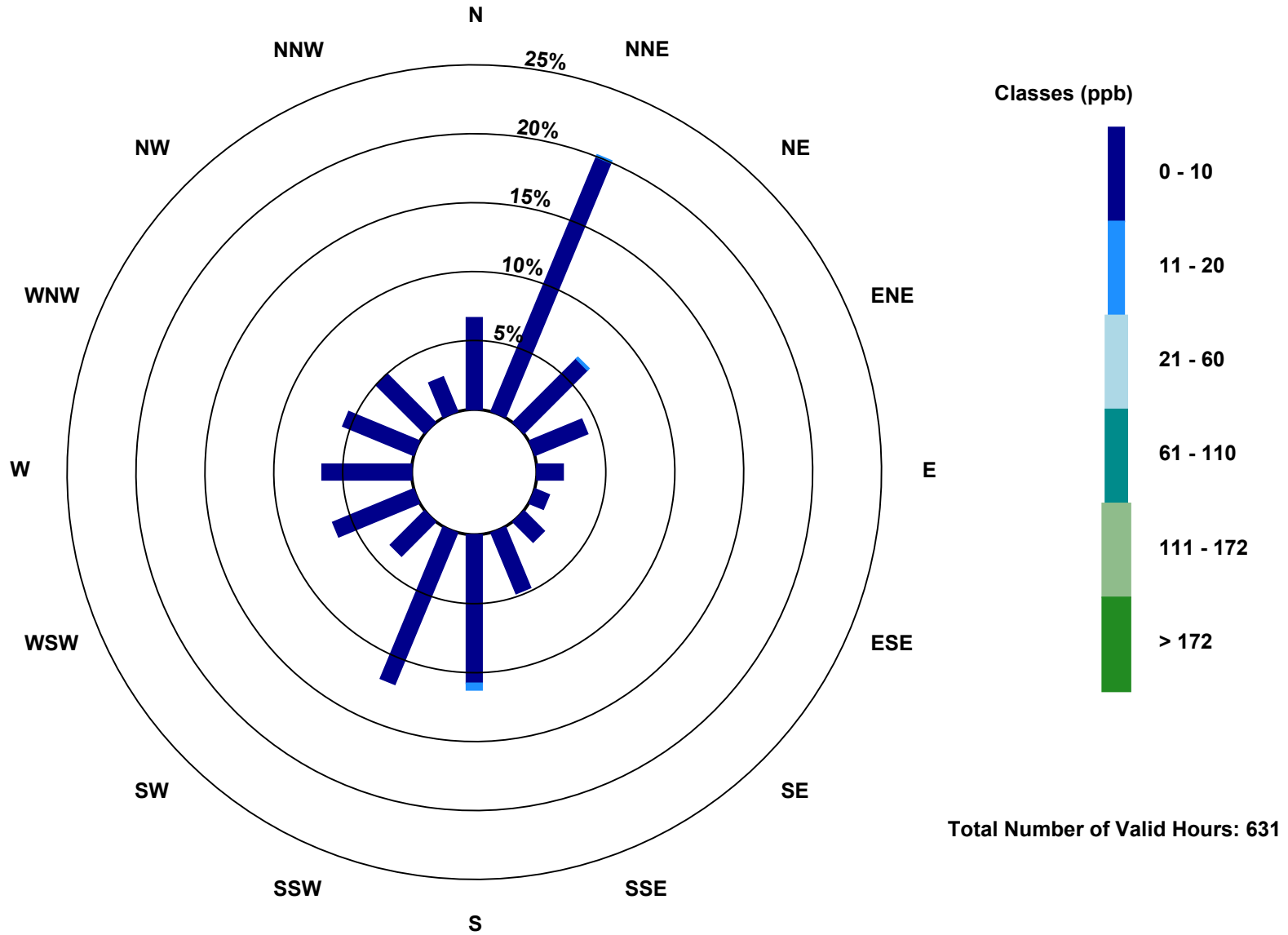
Total Number of Valid Hours: 631

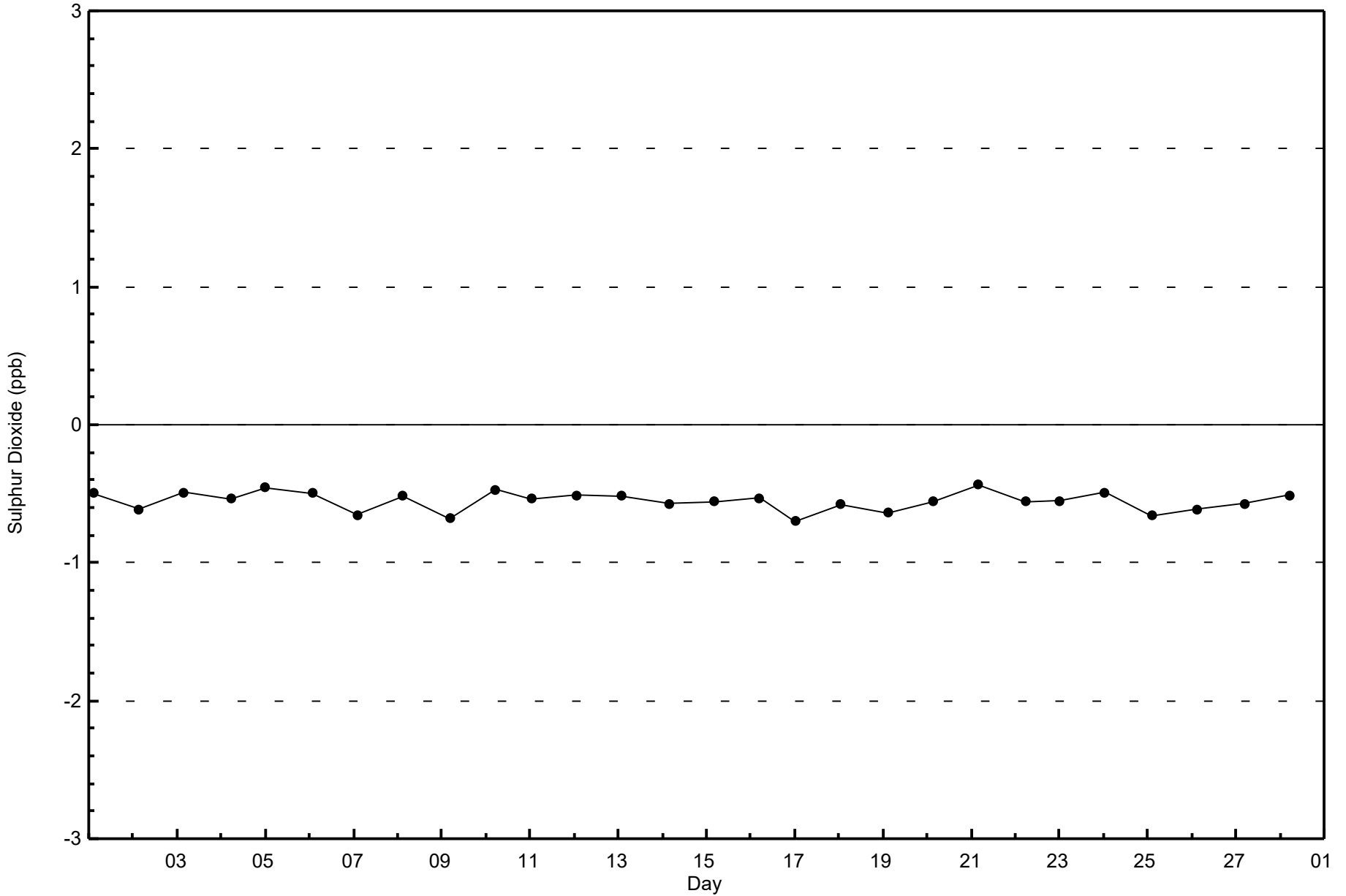
Total Number of Hours: 672

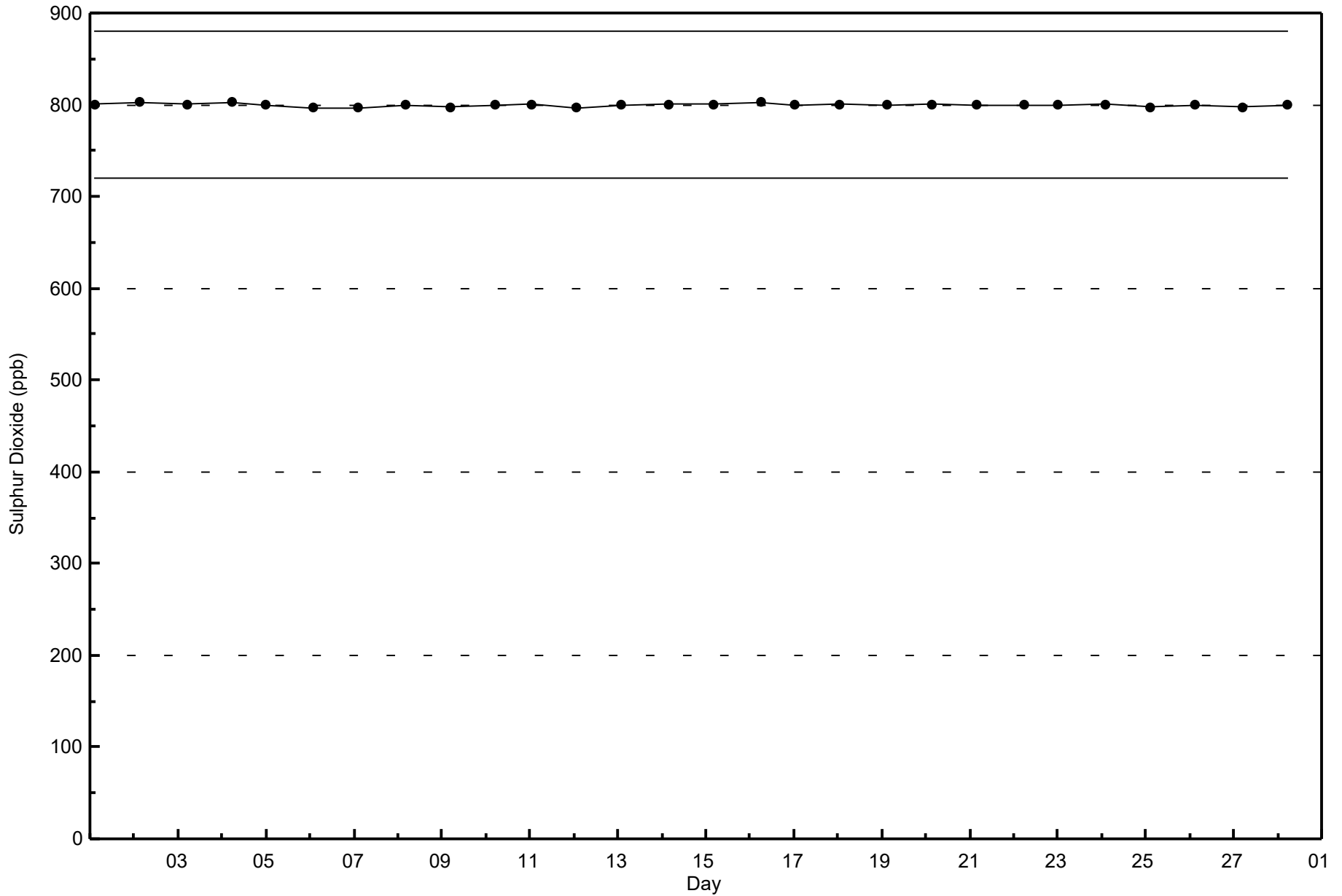


Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Sulphur Dioxide (SO<sub>2</sub>) - ppb  
Ells River

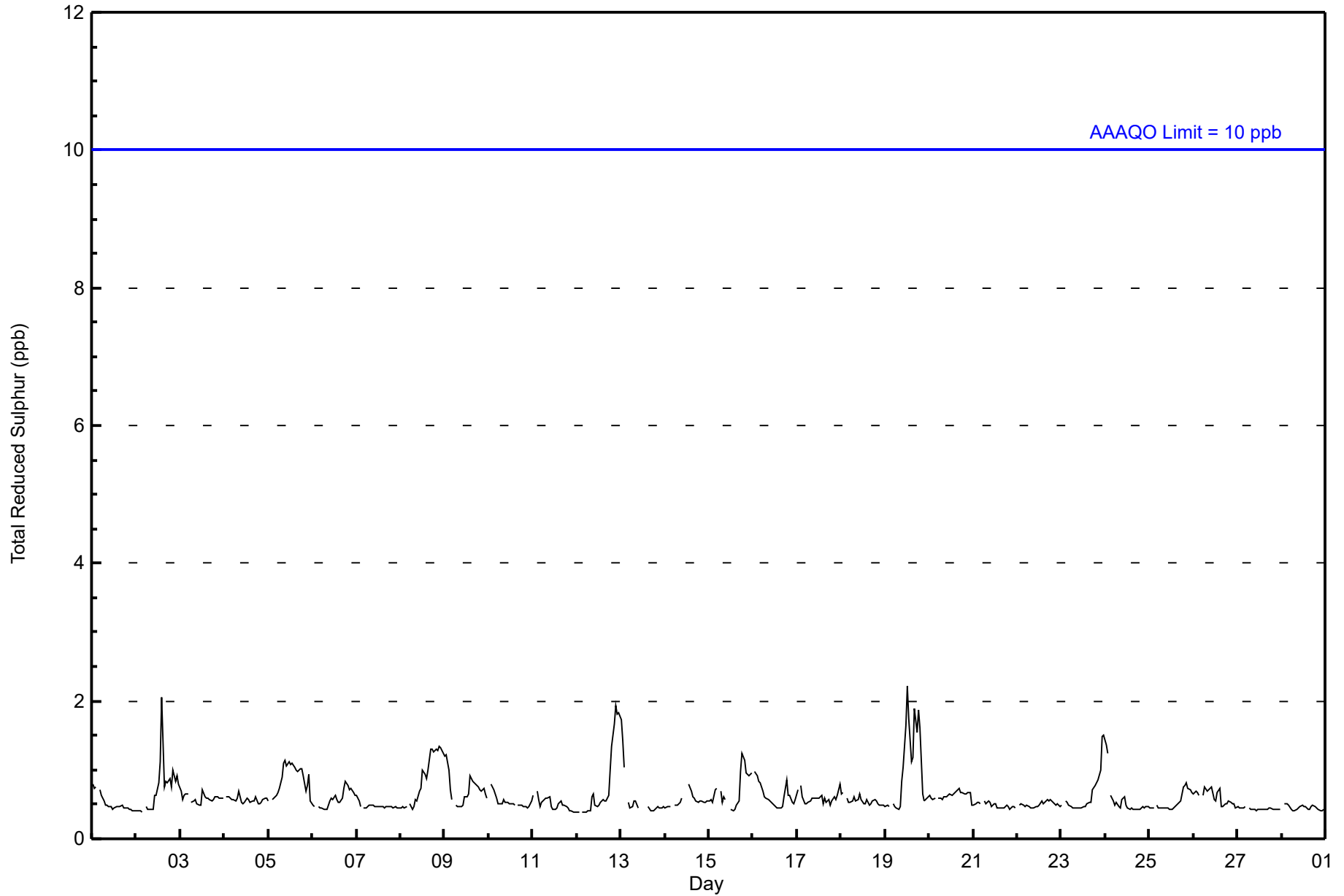








| Number of Exceedences (AAAQO):  |                               | 1-hr: 0  |     | 24-hr: 0                  |     | Hours in Service: |     |     |     |     |     |     |     |     |     |     |     |      |     | 672 |     |     |     |                 |               |               |
|---|-------------------------------|--|-----|---------------------------|-----|-------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|-----|-----|-----|-----|-----|-----------------|---------------|---------------|
| Maximum Value: 2.2 ppb on Feb 19 13:00  |                               | Maximum Daily Average: 1.0 ppb on Feb 19   |     | Hours of Data:            |     |                   |     |     |     |     |     |     |     |     |     |     |     | 633  |     |     |     |     |     |                 |               |               |
| Minimum Value: 0.4 ppb on Feb 12 00:00  |                               | Minimum Daily Average: 0.4 ppb on Feb 27   |     | Hours of Missing Data:    |     |                   |     |     |     |     |     |     |     |     |     |     |     | 39   |     |     |     |     |     |                 |               |               |
| Maximum Diurnal Average: 0.7 ppb at hour 19   |                               | Minimum Diurnal Average: 0.5 ppb at hour 6   |     | Hours of Calibration:     |     |                   |     |     |     |     |     |     |     |     |     |     |     | 33   |     |     |     |     |     |                 |               |               |
| Monthly Average: 0.61 ppb   |                               | Percentiles: P <sub>1</sub> = 0.4 P <sub>10</sub> = 0.4 Q <sub>1</sub> = 0.5 Median = 0.5 Q <sub>3</sub> = 0.6 P <sub>90</sub> = 0.9 P <sub>99</sub> = 1.8 |     | Percent Operational Time: |     |                   |     |     |     |     |     |     |     |     |     |     |     | 99.1 |     |     |     |     |     |                 |               |               |
| Day   | Hourly Period Ending At (MST) |  |     |                           |     |                   |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |     |     |                 | Daily Average | Daily Maximum |
|   | 1                             | 2  | 3   | 4                         | 5   | 6                 | 7   | 8   | 9   | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18   | 19  | 20  | 21  | 22  | 23  | 24              |               |               |
| 1-Feb   | 0.8                           | 0.7  | 0.8 | Z                         | 0.7 | 0.6               | 0.6 | 0.5 | 0.5 | 0.5 | 0.5 | 0.4 | 0.4 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5  | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4             | 0.5           | 0.8           |
| 2-Feb   | 0.4                           | 0.4  | 0.4 | 0.4                       | Z   | 0.5               | 0.4 | 0.4 | 0.4 | 0.4 | 0.6 | 0.6 | 0.8 | 1.1 | 2.1 | 0.7 | 0.8 | 0.8  | 0.9 | 0.8 | 1.0 | 0.8 | 0.9 | 0.8             | 0.7           | 2.1           |
| 3-Feb   | 0.7                           | 0.6  | 0.6 | 0.6                       | 0.6 | Z                 | 0.5 | 0.6 | 0.6 | 0.5 | 0.5 | 0.5 | 0.7 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6  | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6             | 0.6           | 0.7           |
| 4-Feb   | Z                             | 0.6  | 0.6 | 0.6                       | 0.6 | 0.6               | 0.5 | 0.6 | 0.7 | 0.5 | 0.5 | 0.5 | 0.6 | 0.6 | 0.5 | 0.5 | 0.6 | 0.6  | 0.5 | 0.5 | 0.5 | 0.6 | 0.6 | 0.6             | 0.6           | 0.7           |
| 5-Feb   | 0.5                           | Z  | 0.6 | 0.6                       | 0.6 | 0.7               | 0.7 | 0.9 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.0 | 1.0 | 1.0 | 1.0  | 1.0 | 0.9 | 0.7 | 0.8 | 0.9 | 0.6             | 0.9           | 1.1           |
| 6-Feb   | 0.5                           | 0.5  | Z   | 0.5                       | 0.5 | 0.4               | 0.4 | 0.4 | 0.4 | 0.5 | 0.6 | 0.6 | 0.6 | 0.6 | 0.5 | 0.5 | 0.6 | 0.7  | 0.8 | 0.8 | 0.7 | 0.7 | 0.7 | 0.6             | 0.6           | 0.8           |
| 7-Feb   | 0.6                           | 0.6  | 0.5 | Z                         | 0.4 | 0.5               | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5  | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5             | 0.5           | 0.6           |
| 8-Feb   | 0.4                           | 0.5  | 0.4 | 0.5                       | Z   | 0.5               | 0.4 | 0.5 | 0.6 | 0.6 | 0.7 | 0.7 | 1.0 | 0.9 | 0.9 | 1.0 | 1.3 | 1.3  | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.2             | 0.9           | 1.3           |
| 9-Feb   | 1.2                           | 1.2  | 1.0 | 0.7                       | 0.6 | Z                 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.6 | 0.6 | 0.6 | 0.9 | 0.8 | 0.8 | 0.8  | 0.8 | 0.7 | 0.7 | 0.7 | 0.6 | 0.6             | 0.7           | 1.2           |
| 10-Feb  | Z                             | 0.8  | 0.8 | 0.7                       | 0.6 | 0.5               | 0.5 | 0.5 | 0.6 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | PF  | 0.5 | 0.5  | 0.5 | 0.5 | 0.5 | 0.4 | 0.5 | 0.6             | 0.5           | 0.8           |
| 11-Feb  | 0.6                           | Z  | 0.7 | 0.6                       | 0.5 | 0.5               | 0.6 | 0.6 | 0.6 | 0.6 | 0.5 | 0.4 | 0.4 | 0.4 | 0.5 | 0.5 | 0.5 | 0.5  | 0.5 | 0.5 | 0.4 | 0.4 | 0.4 | 0.4             | 0.5           | 0.7           |
| 12-Feb  | 0.4                           | 0.4  | Z   | 0.4                       | 0.4 | 0.4               | 0.4 | 0.4 | 0.6 | 0.6 | 0.5 | 0.5 | 0.5 | 0.5 | 0.6 | 0.6 | 0.6 | 0.6  | 1.0 | 1.3 | 1.7 | 1.9 | 1.8 | 1.8             | 0.8           | 1.9           |
| 13-Feb  | 1.7                           | 1.4  | 1.0 | Z                         | 0.5 | 0.5               | 0.5 | 0.6 | 0.5 | 0.5 | C   | C   | C   | C   | C   | 0.5 | 0.4 | 0.4  | 0.4 | 0.4 | 0.5 | 0.5 | 0.5 | 0.5             | 0.6           | 1.7           |
| 14-Feb  | 0.5                           | 0.5  | 0.5 | 0.5                       | Z   | 0.5               | 0.5 | 0.5 | 0.5 | 0.6 | M   | M   | M   | 0.8 | 0.7 | 0.6 | 0.6 | 0.6  | 0.5 | 0.5 | 0.6 | 0.5 | 0.5 | 0.6             | 0.5           | 0.8           |
| 15-Feb  | 0.5                           | 0.6  | 0.5 | 0.7                       | 0.7 | Z                 | 0.7 | 0.5 | 0.6 | 0.6 | M   | M   | 0.4 | 0.4 | 0.4 | 0.5 | 0.6 | 1.0  | 1.2 | 1.1 | 1.0 | 0.9 | 0.9 | 1.0             | 0.7           | 1.2           |
| 16-Feb  | Z                             | 1.0  | 0.9 | 0.8                       | 0.8 | 0.7               | 0.6 | 0.6 | 0.6 | 0.6 | 0.5 | 0.5 | 0.5 | 0.4 | 0.4 | 0.4 | 0.5 | 0.6  | 0.8 | 0.6 | 0.6 | 0.5 | 0.5 | 0.6             | 0.6           | 1.0           |
| 17-Feb  | 0.7                           | Z  | 0.8 | 0.6                       | 0.5 | 0.5               | 0.5 | 0.5 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.5 | 0.6 | 0.5 | 0.6  | 0.5 | 0.5 | 0.6 | 0.6 | 0.6 | 0.8             | 0.6           | 0.8           |
| 18-Feb  | 0.7                           | 0.7  | Z   | 0.6                       | 0.5 | 0.5               | 0.6 | 0.6 | 0.5 | 0.6 | 0.6 | 0.6 | 0.5 | 0.5 | 0.6 | 0.5 | 0.5 | 0.5  | 0.6 | 0.6 | 0.5 | 0.5 | 0.5 | 0.5             | 0.6           | 0.7           |
| 19-Feb  | 0.5                           | 0.5  | 0.5 | Z                         | 0.5 | 0.5               | 0.5 | 0.4 | 0.5 | 0.8 | 1.0 | 1.7 | 2.2 | 1.7 | 1.1 | 1.2 | 1.9 | 1.5  | 1.9 | 1.6 | 0.6 | 0.6 | 0.6 | 0.6             | 1.0           | 2.2           |
| 20-Feb  | 0.6                           | 0.6  | 0.6 | 0.6                       | Z   | 0.6               | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.7 | 0.6 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7  | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.5             | 0.6           | 0.7           |
| 21-Feb  | 0.5                           | 0.5  | 0.5 | 0.5                       | 0.5 | Z                 | 0.5 | 0.5 | 0.6 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.4 | 0.4 | 0.5  | 0.5 | 0.5 | 0.4 | 0.5 | 0.5 | 0.4             | 0.5           | 0.6           |
| 22-Feb  | Z                             | 0.5  | 0.5 | 0.5                       | 0.5 | 0.5               | 0.5 | 0.4 | 0.4 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.6 | 0.6  | 0.6 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5             | 0.5           | 0.6           |
| 23-Feb  | 0.5                           | Z  | 0.5 | 0.5                       | 0.5 | 0.5               | 0.4 | 0.4 | 0.5 | 0.4 | 0.4 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.7 | 0.8  | 0.8 | 0.8 | 1.0 | 1.5 | 1.5 | 0.6             | 1.5           |               |
| 24-Feb  | 1.4                           | 1.2  | Z   | 0.6                       | 0.6 | 0.5               | 0.5 | 0.4 | 0.6 | 0.6 | 0.5 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4  | 0.4 | 0.4 | 0.5 | 0.5 | 0.5 | 0.5             | 0.6           | 1.4           |
| 25-Feb  | 0.5                           | 0.5  | 0.4 | Z                         | 0.5 | 0.5               | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.5 | 0.5 | 0.5 | 0.6  | 0.8 | 0.8 | 0.8 | 0.7 | 0.7 | 0.7             | 0.5           | 0.8           |
| 26-Feb  | 0.6                           | 0.7  | 0.7 | 0.6                       | Z   | 0.6               | 0.7 | 0.7 | 0.7 | 0.7 | 0.8 | 0.6 | 0.5 | 0.7 | 0.7 | 0.5 | 0.5 | 0.5  | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5             | 0.6           | 0.8           |
| 27-Feb  | 0.5                           | 0.4  | 0.5 | 0.4                       | 0.5 | Z                 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4  | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4             | 0.4           | 0.5           |
| 28-Feb  | Z                             | 0.5  | 0.5 | 0.5                       | 0.5 | 0.4               | 0.4 | 0.4 | 0.4 | 0.4 | 0.5 | 0.5 | 0.5 | 0.5 | 0.4 | 0.4 | 0.5 | 0.5  | 0.5 | 0.5 | 0.4 | 0.4 | 0.4 | 0.4             | 0.5           | 0.5           |
|   |                               |  |     |                           |     |                   |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |     |     | Diurnal Average |               |               |
|   |                               |  |     |                           |     |                   |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |     |     | Diurnal Maximum |               |               |
| 0.7 0.7 0.6 0.6 0.5 0.5 0.5 0.5 0.5 0.6 0.6 0.6 0.6 0.6 0.6 0.6 0.6 0.6 0.7 0.7 0.7 0.7 0.7 0.7 0.7 0.7 0.7 |                               |  |     |                           |     |                   |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |     |     |                 |               |               |
| 1.7 1.4 1.0 0.8 0.8 0.7 0.7 0.9 1.1 1.1 1.1 1.7 2.2 1.7 2.1 1.2 1.9 1.5 1.9 1.6 1.7 1.9 1.8 1.8             |                               |  |     |                           |     |                   |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |     |     |                 |               |               |
| Z - zerospan C - Calibration M - Maintenance PF - Power Failure   |                               |  |     |                           |     |                   |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |     |     |                 |               |               |
| Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 10 ppb 24-hr 3 ppb                                     |                               |  |     |                           |     |                   |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |     |     |                 |               |               |





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Total Reduced Sulphur (TRS) - ppb**  
**Ells River - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 2                             | 633                    | 100.00   | 100.00              |
| 3 - 4                             | 0                      | 0.00     | 100.00              |
| 5 - 7                             | 0                      | 0.00     | 100.00              |
| 8 - 11                            | 0                      | 0.00     | 100.00              |
| > 11                              | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 633

Total Number of Hours: 672





**Wood Buffalo Environmental Association  
Frequency Distribution**

**Total Reduced Sulphur (TRS) - ppb  
Ells River - February 2023**

| <b>Concentration<br/>Ranges (ppb)</b> | <b>Wind Direction</b> |     |    |     |    |     |    |     |    |     |    |     |    |     |    |     | <b>Totals</b> |
|---------------------------------------|-----------------------|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|---------------|
|                                       | N                     | NNE | NE | ENE | E  | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |               |
| 0 - 2                                 | 39                    | 127 | 41 | 25  | 11 | 7   | 12 | 30  | 69 | 76  | 22 | 36  | 44 | 37  | 31 | 17  | 624           |
| 3 - 4                                 | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| 5 - 7                                 | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| 8 - 11                                | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| > 11                                  | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| <b>Totals</b>                         | 39                    | 127 | 41 | 25  | 11 | 7   | 12 | 30  | 69 | 76  | 22 | 36  | 44 | 37  | 31 | 17  | 624           |

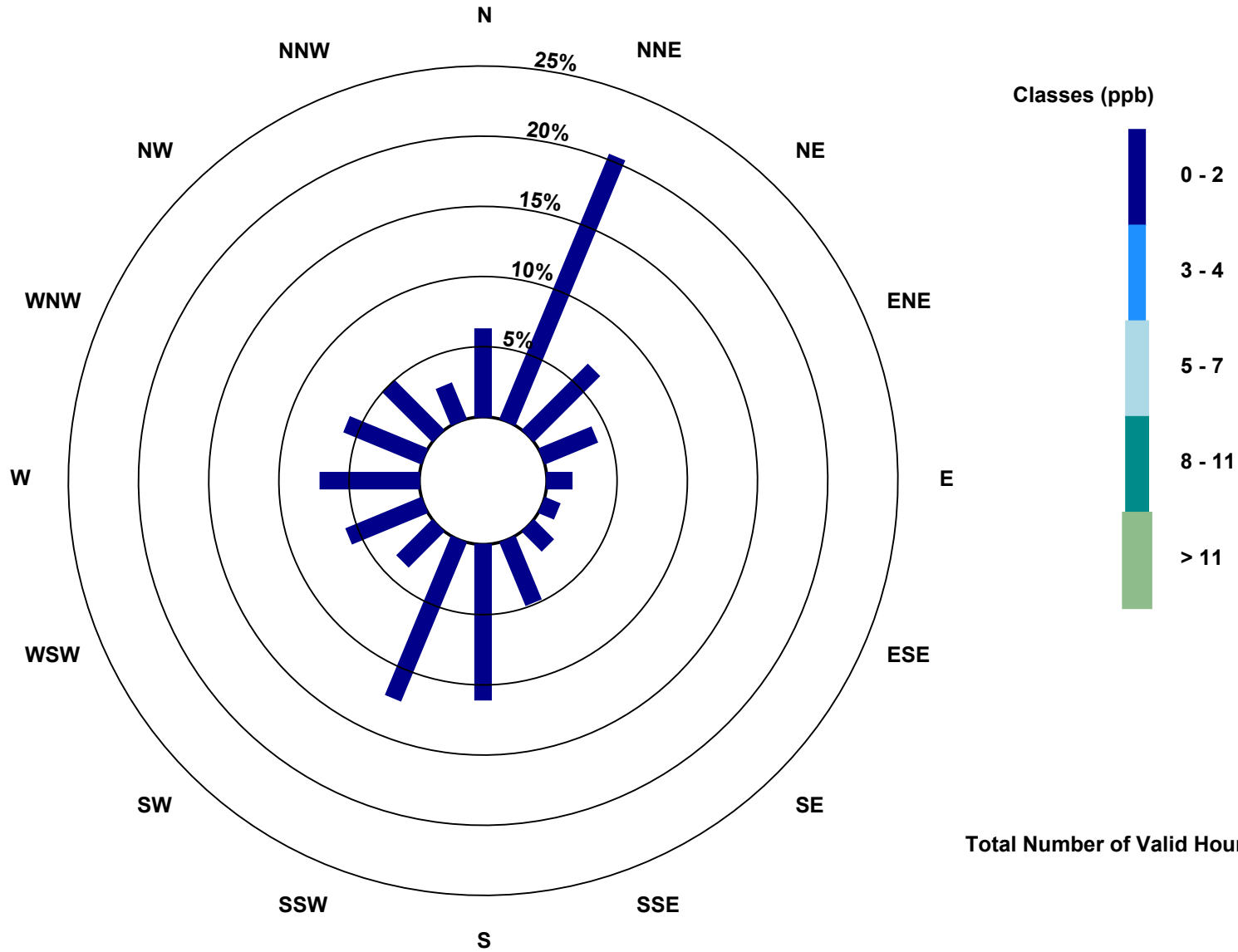
Total Number of Valid Hours: 624

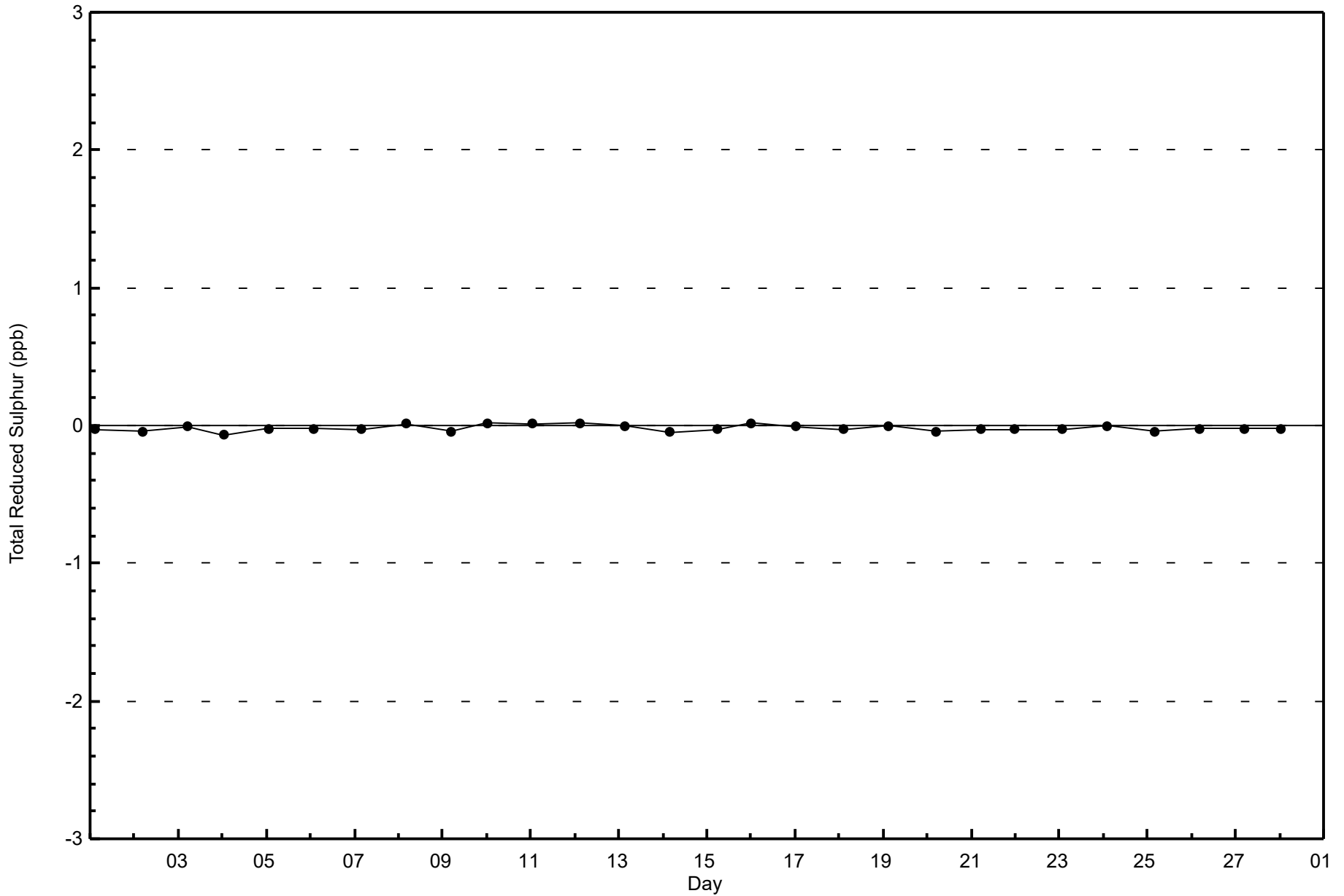
Total Number of Hours: 672

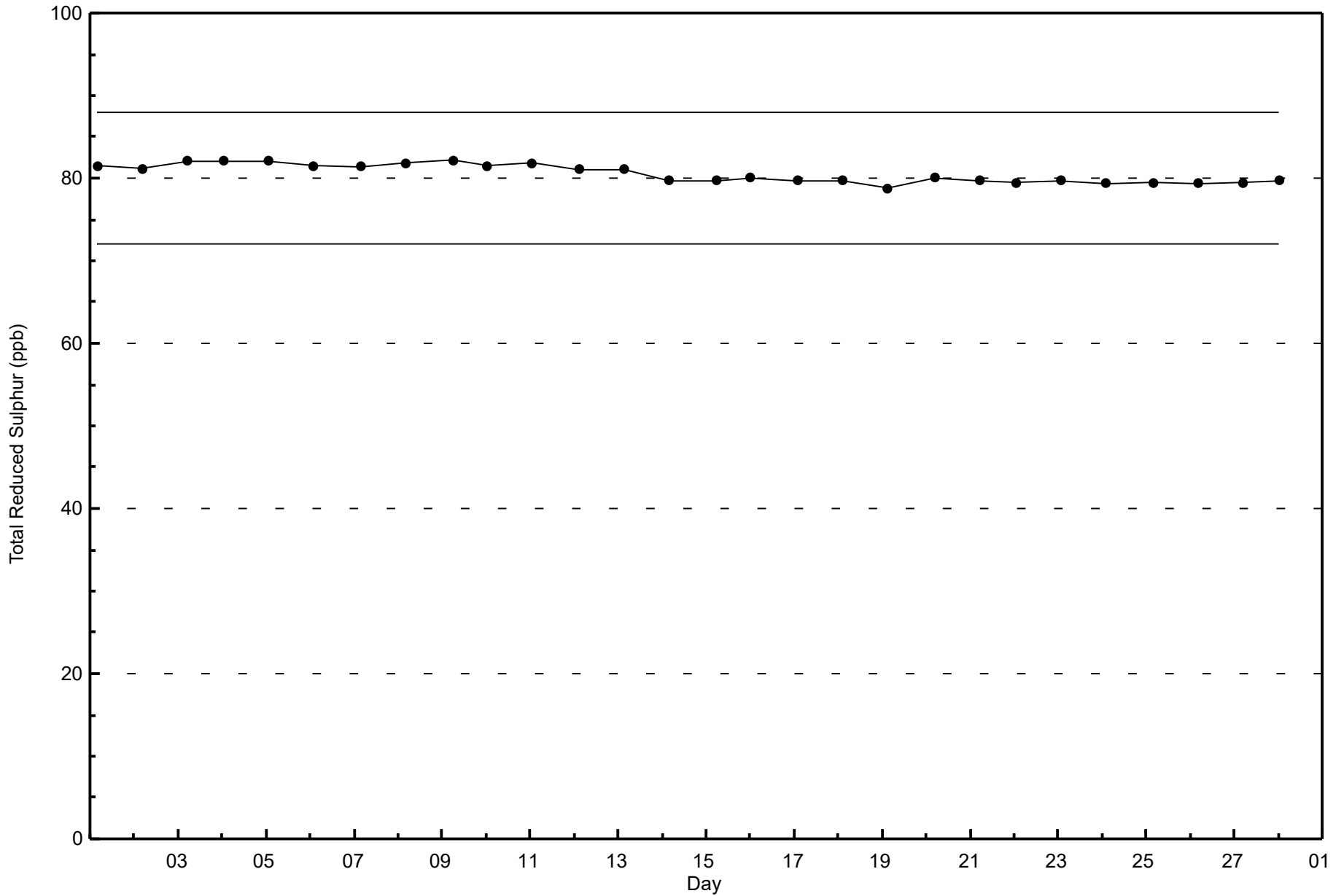


Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Total Reduced Sulphur (TRS) - ppb  
Ells River







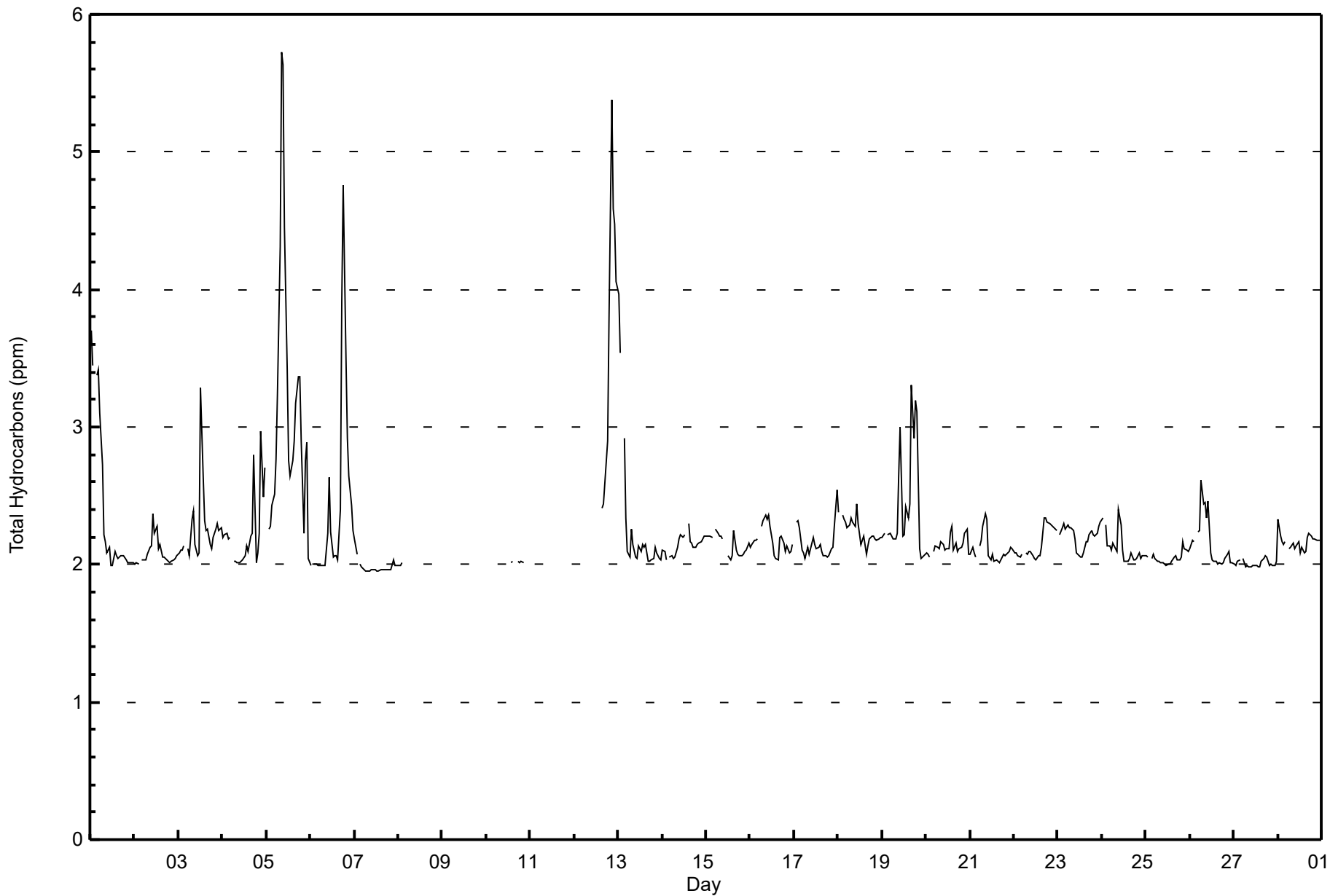


| Maximum Value: 5.7 ppm on Feb 5 09:00       |                               | Maximum Daily Average: 3.2 ppm on Feb 5  |                 | Hours in Service: 672          |     |     |                 |     |     |     |                         |     |     |     |                    |     |     |     |     |     |     |     |     |                 |               |               |
|---|-------------------------------|--|-----------------|--------------------------------|-----|-----|-----------------|-----|-----|-----|-------------------------|-----|-----|-----|--------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----------------|---------------|---------------|
| Minimum Value: 2.0 ppm on Feb 7 07:00       |                               | Minimum Daily Average: 2.0 ppm on Feb 7  |                 | Hours of Data: 544             |     |     |                 |     |     |     |                         |     |     |     |                    |     |     |     |     |     |     |     |     |                 |               |               |
| Maximum Diurnal Average: 2.3 ppm at hour 10 |                               | Minimum Diurnal Average: 2.1 ppm at hour 15  |                 | Hours of Missing Data: 128     |     |     |                 |     |     |     |                         |     |     |     |                    |     |     |     |     |     |     |     |     |                 |               |               |
| Monthly Average: 2.25 ppm                   |                               | Percentiles: P <sub>1</sub> = 2.0 P <sub>10</sub> = 2.0 Q <sub>1</sub> = 2.0 Median = 2.1 Q <sub>3</sub> = 2.2 P <sub>90</sub> = 2.5 P <sub>99</sub> = 4.5 |                 | Hours of Calibration: 33       |     |     |                 |     |     |     |                         |     |     |     |                    |     |     |     |     |     |     |     |     |                 |               |               |
|   |                               |  |                 | Percent Operational Time: 85.9 |     |     |                 |     |     |     |                         |     |     |     |                    |     |     |     |     |     |     |     |     |                 |               |               |
| Day   | Hourly Period Ending At (MST) |  |                 |                                |     |     |                 |     |     |     |                         |     |     |     |                    |     |     |     |     |     |     |     |     |                 | Daily Average | Daily Maximum |
|   | 1                             | 2  | 3               | 4                              | 5   | 6   | 7               | 8   | 9   | 10  | 11                      | 12  | 13  | 14  | 15                 | 16  | 17  | 18  | 19  | 20  | 21  | 22  | 23  | 24              |               |               |
| 1-Feb                                       | 3.7                           | 3.4  | Z               | 3.4                            | 3.4 | 3.1 | 2.7             | 2.2 | 2.2 | 2.1 | 2.1                     | 2.0 | 2.0 | 2.1 | 2.1                | 2.0 | 2.1 | 2.1 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0             | 2.4           | 3.7           |
| 2-Feb                                       | 2.0                           | 2.0  | 2.0             | Z                              | 2.0 | 2.0 | 2.0             | 2.1 | 2.1 | 2.1 | 2.4                     | 2.2 | 2.3 | 2.1 | 2.1                | 2.1 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1             | 2.1           | 2.4           |
| 3-Feb                                       | 2.1                           | 2.1  | 2.1             | 2.1                            | Z   | 2.1 | 2.1             | 2.3 | 2.4 | 2.1 | 2.1                     | 3.3 | 2.6 | 2.3 | 2.2                | 2.3 | 2.1 | 2.1 | 2.2 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3             | 2.3           | 3.3           |
| 4-Feb                                       | 2.2                           | 2.2  | 2.2             | 2.2                            | 2.2 | Z   | 2.0             | 2.0 | 2.0 | 2.0 | 2.0                     | 2.1 | 2.1 | 2.1 | 2.2                | 2.2 | 2.8 | 2.0 | 2.1 | 2.2 | 3.0 | 2.5 | 2.7 | 2.2             | 3.0           | 3.0           |
| 5-Feb                                       | Z                             | 2.3  | 2.3             | 2.4                            | 2.5 | 2.8 | 3.2             | 4.3 | 5.7 | 5.6 | 4.5                     | 3.4 | 2.8 | 2.6 | 2.8                | 2.9 | 3.2 | 3.4 | 3.4 | 2.9 | 2.2 | 2.8 | 2.9 | 2.0             | 3.2           | 5.7           |
| 6-Feb                                       | 2.0                           | Z  | 2.0             | 2.0                            | 2.0 | 2.0 | 2.0             | 2.0 | 2.0 | 2.2 | 2.6                     | 2.2 | 2.1 | 2.1 | 2.1                | 2.0 | 2.4 | 3.9 | 4.8 | 3.5 | 2.9 | 2.6 | 2.4 | 2.2             | 2.4           | 4.8           |
| 7-Feb                                       | 2.2                           | 2.1  | Z               | 2.0                            | 2.0 | 2.0 | 2.0             | 2.0 | 2.0 | 2.0 | 2.0                     | 2.0 | 2.0 | 2.0 | 2.0                | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0             | 2.0           | 2.2           |
| 8-Feb                                       | 2.0                           | 2.0  | 2.0             | Z                              | UO  | UO  | UO              | UO  | UO  | UO  | UO                      | UO  | UO  | UO  | UO                 | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO              | UO            | 2.0           |
| 9-Feb                                       | UO                            | UO   | UO              | UO                             | Z   | UO  | UO              | UO  | UO  | UO  | UO                      | UO  | UO  | UO  | UO                 | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO  | UO              | UO            | --            |
| 10-Feb                                      | UO                            | UO   | UO              | UO                             | UO  | Z   | UO              | UO  | UO  | UO  | C                       | C   | C   | 2.0 | 2.0                | PF  | PF  | 2.0 | 2.0 | 2.0 | 2.0 | UO  | UO  | UO              | 2.0           |               |
| 11-Feb                                      | Z                             | UO   | UO              | UO                             | UO  | UO  | UO              | UO  | UO  | UO  | M                       | M   | M   | M   | M                  | M   | M   | M   | M   | M   | M   | M   | M   | M               | M             | --            |
| 12-Feb                                      | M                             | M  | M               | M                              | M   | M   | M               | M   | M   | M   | M                       | M   | C   | C   | C                  | 2.4 | 2.4 | 2.7 | 2.9 | 3.8 | 5.4 | 4.6 | 4.5 | 4.1             | --            | 5.4           |
| 13-Feb                                      | 4.0                           | 3.5  | Z               | 2.9                            | 2.3 | 2.1 | 2.1             | 2.3 | 2.2 | 2.1 | 2.0                     | 2.1 | 2.1 | 2.1 | 2.1                | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1 | 2.1 | 2.0 | 2.0             | 2.3           | 4.0           |
| 14-Feb                                      | 2.1                           | 2.1  | 2.0             | Z                              | 2.1 | 2.1 | 2.0             | 2.1 | 2.1 | 2.2 | 2.2                     | 2.2 | 2.2 | M   | 2.3                | 2.2 | 2.2 | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | 2.2 | 2.2             | 2.2           | 2.3           |
| 15-Feb                                      | 2.2                           | 2.2  | 2.2             | 2.2                            | Z   | 2.3 | 2.2             | 2.2 | 2.2 | 2.2 | M                       | M   | 2.1 | 2.0 | 2.1                | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1             | 2.1           | 2.3           |
| 16-Feb                                      | 2.1                           | 2.1  | 2.2             | 2.2                            | 2.2 | Z   | 2.3             | 2.3 | 2.4 | 2.3 | 2.4                     | 2.3 | 2.2 | 2.1 | 2.0                | 2.0 | 2.2 | 2.2 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1             | 2.2           | 2.4           |
| 17-Feb                                      | Z                             | 2.3  | 2.3             | 2.3                            | 2.1 | 2.1 | 2.0             | 2.1 | 2.1 | 2.1 | 2.2                     | 2.1 | 2.1 | 2.1 | 2.1                | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.3 | 2.5             | 2.2           | 2.5           |
| 18-Feb                                      | 2.4                           | Z  | 2.4             | 2.3                            | 2.3 | 2.3 | 2.3             | 2.3 | 2.3 | 2.3 | 2.4                     | 2.3 | 2.1 | 2.2 | 2.2                | 2.1 | 2.1 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2             | 2.2           | 2.4           |
| 19-Feb                                      | 2.2                           | 2.2  | Z               | 2.2                            | 2.2 | 2.2 | 2.2             | 2.2 | 2.2 | 2.6 | 3.0                     | 2.2 | 2.2 | 2.4 | 2.3                | 2.4 | 3.3 | 2.9 | 3.2 | 3.1 | 2.1 | 2.0 | 2.1 | 2.1             | 2.4           | 3.3           |
| 20-Feb                                      | 2.1                           | 2.1  | 2.1             | Z                              | 2.1 | 2.1 | 2.1             | 2.1 | 2.2 | 2.1 | 2.1                     | 2.1 | 2.1 | 2.2 | 2.3                | 2.1 | 2.2 | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | 2.3 | 2.1             | 2.1           | 2.3           |
| 21-Feb                                      | 2.1                           | 2.1  | 2.1             | 2.1                            | Z   | 2.1 | 2.2             | 2.3 | 2.4 | 2.3 | 2.1                     | 2.0 | 2.1 | 2.0 | 2.0                | 2.0 | 2.0 | 2.0 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1             | 2.1           | 2.4           |
| 22-Feb                                      | 2.1                           | 2.1  | 2.1             | 2.1                            | 2.1 | Z   | 2.1             | 2.1 | 2.1 | 2.1 | 2.1                     | 2.0 | 2.0 | 2.1 | 2.1                | 2.1 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.2             | 2.2           | 2.3           |
| 23-Feb                                      | Z                             | 2.2  | 2.3             | 2.3                            | 2.3 | 2.3 | 2.3             | 2.3 | 2.3 | 2.2 | 2.1                     | 2.1 | 2.1 | 2.1 | 2.1                | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.3 | 2.3             | 2.2           | 2.3           |
| 24-Feb                                      | 2.3                           | Z  | 2.3             | 2.1                            | 2.1 | 2.1 | 2.2             | 2.1 | 2.1 | 2.4 | 2.3                     | 2.1 | 2.0 | 2.0 | 2.0                | 2.0 | 2.1 | 2.0 | 2.0 | 2.0 | 2.1 | 2.0 | 2.1 | 2.1             | 2.1           | 2.4           |
| 25-Feb                                      | 2.1                           | 2.1  | Z               | 2.0                            | 2.1 | 2.0 | 2.0             | 2.0 | 2.0 | 2.0 | 2.0                     | 2.0 | 2.0 | 2.0 | 2.0                | 2.1 | 2.1 | 2.0 | 2.0 | 2.0 | 2.2 | 2.1 | 2.1 | 2.1             | 2.0           | 2.2           |
| 26-Feb                                      | 2.1                           | 2.2  | 2.2             | Z                              | 2.2 | 2.2 | 2.6             | 2.4 | 2.5 | 2.3 | 2.5                     | 2.1 | 2.0 | 2.0 | 2.0                | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1 | 2.1 | 2.0 | 2.0             | 2.2           | 2.6           |
| 27-Feb                                      | 2.0                           | 2.0  | 2.0             | 2.0                            | Z   | 2.0 | 2.0             | 2.0 | 2.0 | 2.0 | 2.0                     | 2.0 | 2.0 | 2.0 | 2.0                | 2.0 | 2.0 | 2.1 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0             | 2.0           | 2.1           |
| 28-Feb                                      | 2.3                           | 2.2  | 2.2             | 2.1                            | 2.2 | Z   | 2.1             | 2.1 | 2.2 | 2.1 | 2.1                     | 2.2 | 2.1 | 2.1 | 2.1                | 2.1 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2             | 2.2           | 2.3           |
|   |                               |  |                 |                                |     |     |                 |     |     |     |                         |     |     |     |                    |     |     |     |     |     |     |     |     | Diurnal Average |               |               |
|   |                               |  |                 |                                |     |     |                 |     |     |     |                         |     |     |     |                    |     |     |     |     |     |     |     |     | Diurnal Maximum |               |               |
|   |                               |  |                 |                                |     |     |                 |     |     |     |                         |     |     |     |                    |     |     |     |     |     |     |     |     | 2.2             |               |               |
|   |                               |  |                 |                                |     |     |                 |     |     |     |                         |     |     |     |                    |     |     |     |     |     |     |     |     | 4.1             |               |               |
| Z - zerospan                                |                               |  | C - Calibration |                                |     |     | M - Maintenance |     |     |     | UO - Unstable Operation |     |     |     | PF - Power Failure |     |     |     |     |     |     |     |     |                 |               |               |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Total Hydrocarbons (THC) - ppm**  
**Ells River - February 2023**





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Total Hydrocarbons (THC) - ppm**  
**Ells River - February 2023**

| <b>Concentration Ranges (ppm)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 2.0                           | 142                    | 26.10    | 26.10               |
| 2.1 - 3.0                         | 374                    | 68.75    | 94.85               |
| 3.1 - 10.0                        | 28                     | 5.15     | 100.00              |
| > 10.0                            | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 544

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Total Hydrocarbons (THC) - ppm  
Ells River - February 2023**

| Concentration<br>Ranges (ppm) | Wind Direction |     |    |     |    |     |    |     |    |     |    |     |    |     |    |     | Totals |
|-------------------------------|----------------|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|--------|
|                               | N              | NNE | NE | ENE | E  | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |        |
| 0 - 2.0                       | 2              | 53  | 11 | 2   | 0  | 1   | 1  | 6   | 12 | 13  | 6  | 17  | 10 | 2   | 5  | 1   | 142    |
| 2.1 - 3.0                     | 33             | 57  | 28 | 23  | 11 | 3   | 11 | 14  | 42 | 42  | 11 | 15  | 20 | 27  | 16 | 12  | 365    |
| 3.1 - 10.0                    | 4              | 0   | 0  | 0   | 0  | 0   | 0  | 1   | 4  | 1   | 0  | 3   | 2  | 2   | 8  | 3   | 28     |
| > 10.0                        | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| <b>Totals</b>                 | 39             | 110 | 39 | 25  | 11 | 4   | 12 | 21  | 58 | 56  | 17 | 35  | 32 | 31  | 29 | 16  | 535    |

Total Number of Valid Hours: 535

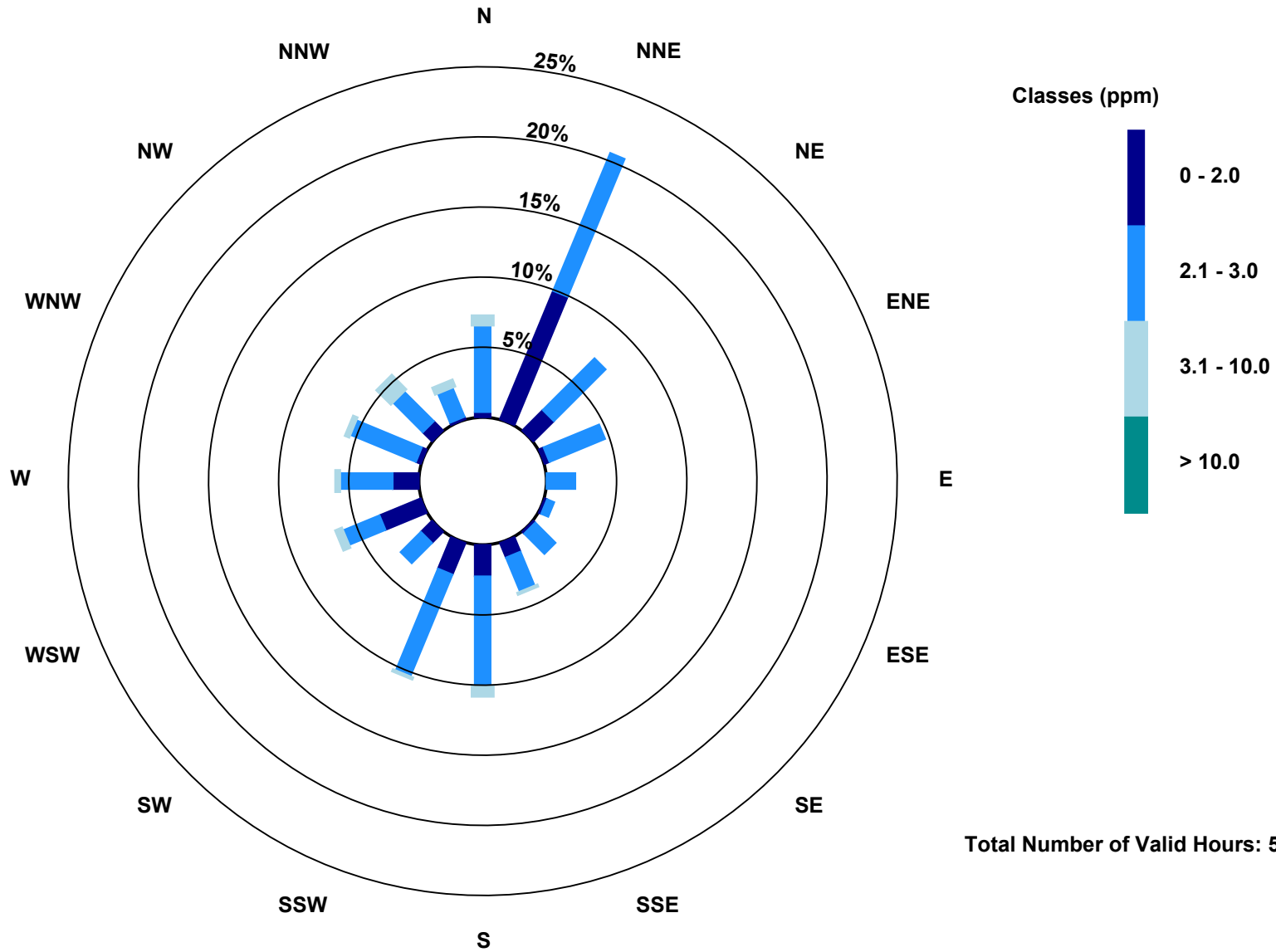
Total Number of Hours: 672

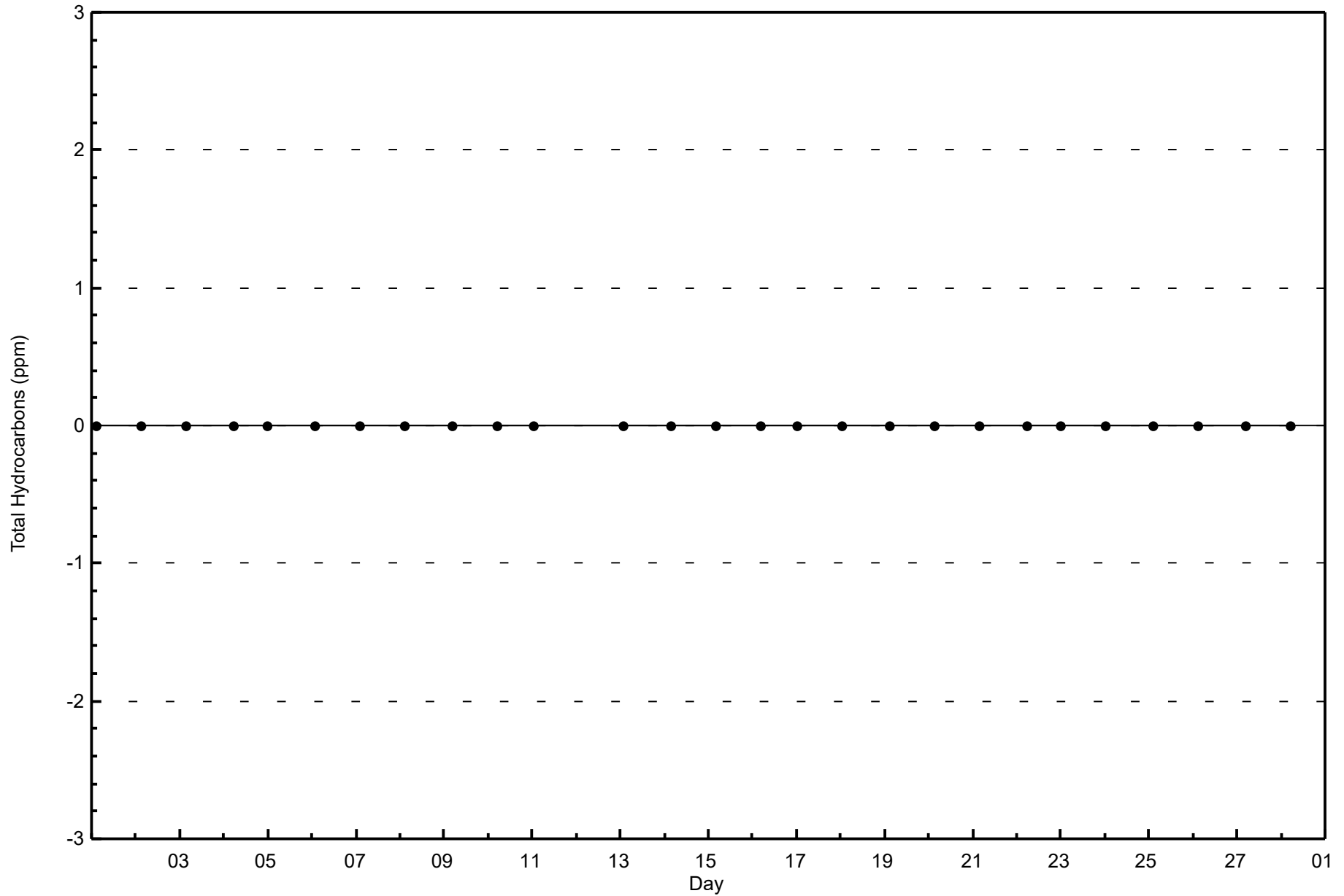


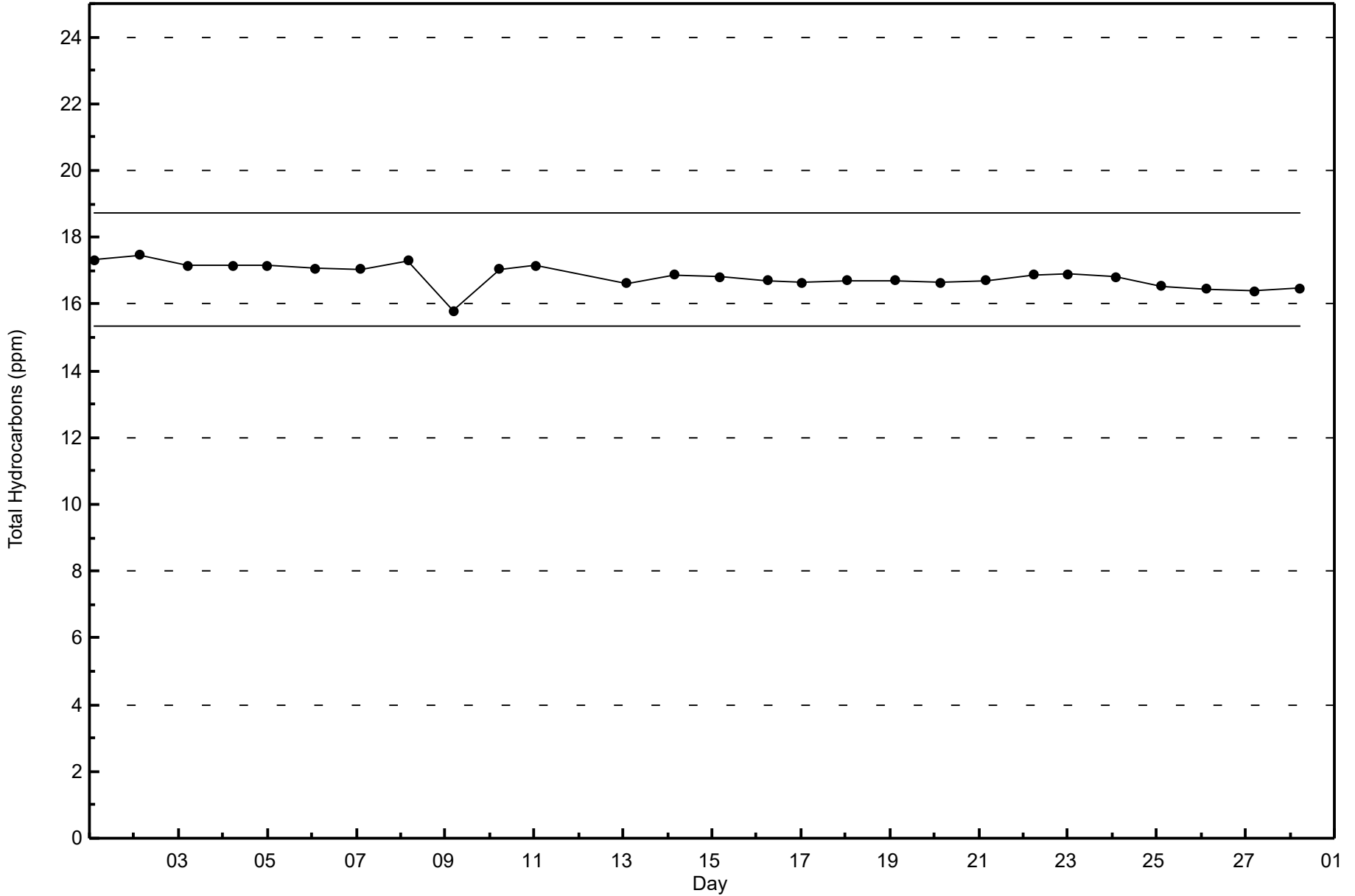


Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Total Hydrocarbons (THC) - ppm  
Ells River







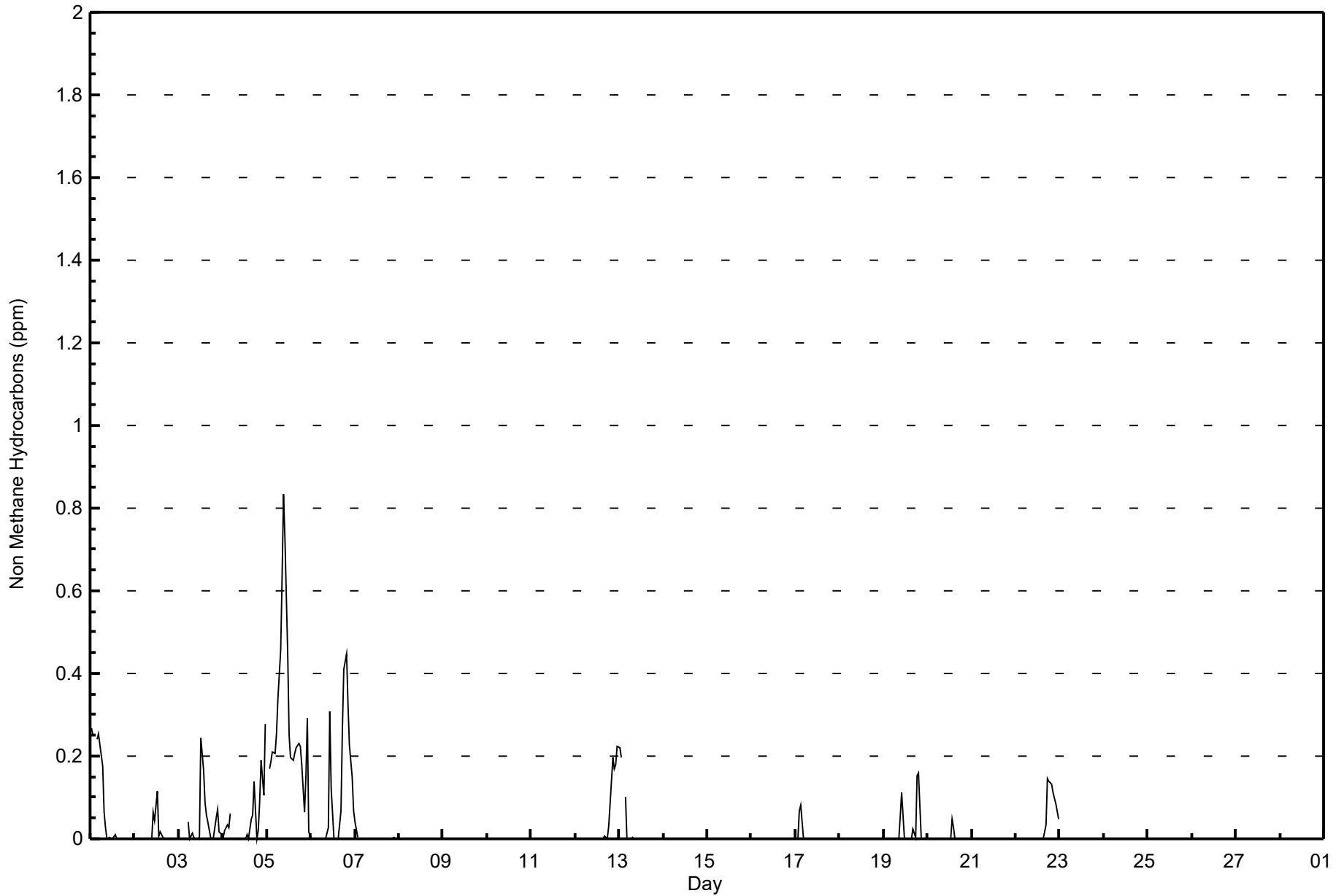


Summary of Hour Averages

Ells River - February 2023

| Maximum Value: 0.833 ppm on Feb 5 10:00       |                               | Maximum Daily Average: 0.291 ppm on Feb 5  |       | Hours in Service: 672          |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |   |               |               |
|---|-------------------------------|--|-------|--------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---|---------------|---------------|
| Minimum Value: 0.000 ppm on Feb 1 12:00       |                               | Minimum Daily Average: 0.000 ppm on Feb 14   |       | Hours of Data: 544             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |   |               |               |
| Maximum Diurnal Average: 0.055 ppm at hour 11 |                               | Minimum Diurnal Average: 0.013 ppm at hour 16  |       | Hours of Missing Data: 128     |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |   |               |               |
| Monthly Average: 0.029 ppm                    |                               | Percentiles: P <sub>1</sub> = 0.0 P <sub>10</sub> = 0.0 Q <sub>1</sub> = 0.0 Median = 0.0 Q <sub>3</sub> = 0.0 P <sub>90</sub> = 0.1 P <sub>99</sub> = 0.4 |       | Hours of Calibration: 33       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |   |               |               |
|   |                               |  |       | Percent Operational Time: 85.9 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |   |               |               |
| Day   | Hourly Period Ending At (MST) |  |       |                                |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |   | Daily Average | Daily Maximum |
|   | 1                             | 2  | 3     | 4                              | 5     | 6     | 7     | 8     | 9     | 10    | 11    | 12    | 13    | 14    | 15    | 16    | 17    | 18    | 19    | 20    | 21    | 22    | 23    | 24  |               |               |
| 1-Feb   | 0.266                         | 0.252  | Z     | 0.240                          | 0.254 | 0.227 | 0.175 | 0.065 | 0.027 | 0.001 | 0.002 | 0.000 | 0.000 | 0.009 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000   | 0.066         | 0.266         |
| 2-Feb   | 0.000                         | 0.000  | 0.000 | Z                              | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.063 | 0.045 | 0.116 | 0.008 | 0.017 | 0.002 | 0.001 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000   | 0.011         | 0.116         |
| 3-Feb   | 0.000                         | 0.000  | 0.000 | 0.000                          | Z     | 0.041 | 0.000 | 0.013 | 0.003 | 0.000 | 0.000 | 0.003 | 0.244 | 0.167 | 0.088 | 0.059 | 0.040 | 0.003 | 0.000 | 0.004 | 0.050 | 0.071 | 0.017 | 0.011   | 0.035         | 0.244         |
| 4-Feb   | 0.002                         | 0.020  | 0.033 | 0.026                          | 0.062 | Z     | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.009 | 0.001 | 0.048 | 0.059 | 0.138 | 0.000 | 0.019 | 0.090 | 0.190 | 0.106 | 0.278   | 0.047         | 0.278         |
| 5-Feb   | Z                             | 0.169  | 0.187 | 0.209                          | 0.205 | 0.255 | 0.338 | 0.456 | 0.634 | 0.833 | 0.728 | 0.447 | 0.251 | 0.198 | 0.191 | 0.206 | 0.220 | 0.231 | 0.223 | 0.179 | 0.064 | 0.154 | 0.292 | 0.018   | 0.291         | 0.833         |
| 6-Feb   | 0.000                         | Z  | 0.000 | 0.000                          | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.027 | 0.310 | 0.123 | 0.000 | 0.000 | 0.000 | 0.069 | 0.264 | 0.410 | 0.446 | 0.325 | 0.226 | 0.148 | 0.068 | 0.105   | 0.446         |               |
| 7-Feb   | 0.040                         | 0.003  | Z     | 0.000                          | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.002   | 0.040         |               |
| 8-Feb   | 0.000                         | 0.000  | 0.000 | Z                              | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO  | --            | 0.000         |
| 9-Feb   | UO                            | UO   | UO    | UO                             | Z     | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO  | --            | --            |
| 10-Feb  | UO                            | UO   | UO    | UO                             | UO    | Z     | UO    | UO    | UO    | UO    | C     | C     | C     | 0.000 | 0.000 | PF    | PF    | 0.000 | 0.000 | 0.000 | 0.000 | UO    | UO    | UO  | --            | 0.000         |
| 11-Feb  | Z                             | UO   | UO    | UO                             | UO    | UO    | UO    | UO    | UO    | UO    | M     | M     | M     | M     | M     | M     | M     | M     | M     | M     | M     | M     | M     | M   | --            | --            |
| 12-Feb  | M                             | M  | M     | M                              | M     | M     | M     | M     | M     | M     | M     | M     | C     | C     | C     | 0.000 | 0.008 | 0.000 | 0.031 | 0.083 | 0.196 | 0.171 | 0.181 | 0.223   | --            | 0.223         |
| 13-Feb  | 0.222                         | 0.198  | Z     | 0.102                          | 0.000 | 0.000 | 0.000 | 0.004 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.023   | 0.222         |               |
| 14-Feb  | 0.000                         | 0.000  | 0.000 | Z                              | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | M     | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000   | 0.000         | 0.000         |
| 15-Feb  | 0.000                         | 0.000  | 0.000 | 0.000                          | Z     | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | M     | M     | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.001 | 0.000   | 0.001         |               |
| 16-Feb  | 0.000                         | 0.000  | 0.000 | 0.000                          | 0.000 | Z     | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000   | 0.000         | 0.000         |
| 17-Feb  | Z                             | 0.000  | 0.068 | 0.082                          | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.007   | 0.082         |               |
| 18-Feb  | 0.000                         | Z  | 0.000 | 0.000                          | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000   | 0.000         | 0.000         |
| 19-Feb  | 0.000                         | 0.000  | Z     | 0.000                          | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.054 | 0.113 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.025 | 0.004 | 0.152 | 0.161 | 0.000 | 0.000 | 0.000 | 0.022   | 0.161         |               |
| 20-Feb  | 0.000                         | 0.000  | 0.000 | Z                              | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.048 | 0.027 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.003   | 0.048         |               |
| 21-Feb  | 0.000                         | 0.000  | 0.000 | 0.000                          | Z     | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000   | 0.000         | 0.000         |
| 22-Feb  | 0.000                         | 0.000  | 0.000 | 0.000                          | 0.000 | Z     | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.034 | 0.146 | 0.138 | 0.131 | 0.111 | 0.100 | 0.085 | 0.034   | 0.146         |               |
| 23-Feb  | Z                             | 0.000  | 0.000 | 0.000                          | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000   | 0.000         | 0.000         |
| 24-Feb  | 0.000                         | Z  | 0.000 | 0.000                          | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000   | 0.000         | 0.000         |
| 25-Feb  | 0.000                         | 0.000  | Z     | 0.000                          | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000   | 0.000         | 0.000         |
| 26-Feb  | 0.000                         | 0.000  | 0.000 | Z                              | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000   | 0.000         | 0.000         |
| 27-Feb  | 0.000                         | 0.000  | 0.000 | 0.000                          | Z     | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000   | 0.000         | 0.000         |
| 28-Feb  | 0.000                         | 0.000  | 0.000 | 0.000                          | 0.000 | Z     | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000   | 0.000         | 0.000         |
|   |                               |  |       |                                |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Diurnal Average   |               |               |
|   |                               |  |       |                                |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Diurnal Maximum   |               |               |
|   |                               |  |       |                                |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | 0.025 0.031 0.015 0.035 0.027 0.028 0.022 0.023 0.029 0.040 0.055 0.028 0.027 0.019 0.013 0.013 0.019 0.031 0.038 0.041 0.033 0.038 0.035 0.027 |               |               |
|   |                               |  |       |                                |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | 0.266 0.252 0.187 0.240 0.254 0.255 0.338 0.456 0.634 0.833 0.728 0.447 0.251 0.198 0.191 0.206 0.220 0.264 0.410 0.446 0.325 0.226 0.292 0.278 |               |               |

Z - zerospan                      C - Calibration                      M - Maintenance                      UO - Unstable Operation                      PF - Power Failure





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Non Methane Hydrocarbons (NMHC) - ppm**  
**Ells River - February 2023**

| <b>Concentration Ranges (ppm)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 0.005                         | 444                    | 81.62    | 81.62               |
| 0.006 - 0.05                      | 28                     | 5.15     | 86.76               |
| 0.06 - 0.1                        | 27                     | 4.96     | 91.73               |
| > 0.1                             | 45                     | 8.27     | 100.00              |

Total Number of Valid Hours: 544

Total Number of Hours: 672



**Wood Buffalo Environmental Association**  
**Frequency Distribution**

**Non Methane Hydrocarbons (NMHC) - ppm**  
**Ells River - February 2023**

| Concentration<br>Ranges (ppm) | Wind Direction |     |    |     |    |     |    |     |    |     |    |     |    |     |    |     | Totals |
|-------------------------------|----------------|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|--------|
|                               | N              | NNE | NE | ENE | E  | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |        |
| 0 - 0.005                     | 26             | 99  | 37 | 21  | 5  | 2   | 11 | 18  | 44 | 51  | 15 | 31  | 25 | 25  | 17 | 8   | 435    |
| 0.006 - 0.05                  | 4              | 7   | 1  | 4   | 2  | 0   | 0  | 0   | 5  | 1   | 0  | 1   | 0  | 1   | 2  | 0   | 28     |
| 0.06 - 0.1                    | 3              | 3   | 1  | 0   | 3  | 2   | 0  | 0   | 2  | 1   | 2  | 0   | 4  | 3   | 0  | 3   | 27     |
| > 0.1                         | 6              | 1   | 0  | 0   | 1  | 0   | 1  | 3   | 7  | 3   | 0  | 3   | 3  | 2   | 10 | 5   | 45     |
| <b>Totals</b>                 | 39             | 110 | 39 | 25  | 11 | 4   | 12 | 21  | 58 | 56  | 17 | 35  | 32 | 31  | 29 | 16  | 535    |

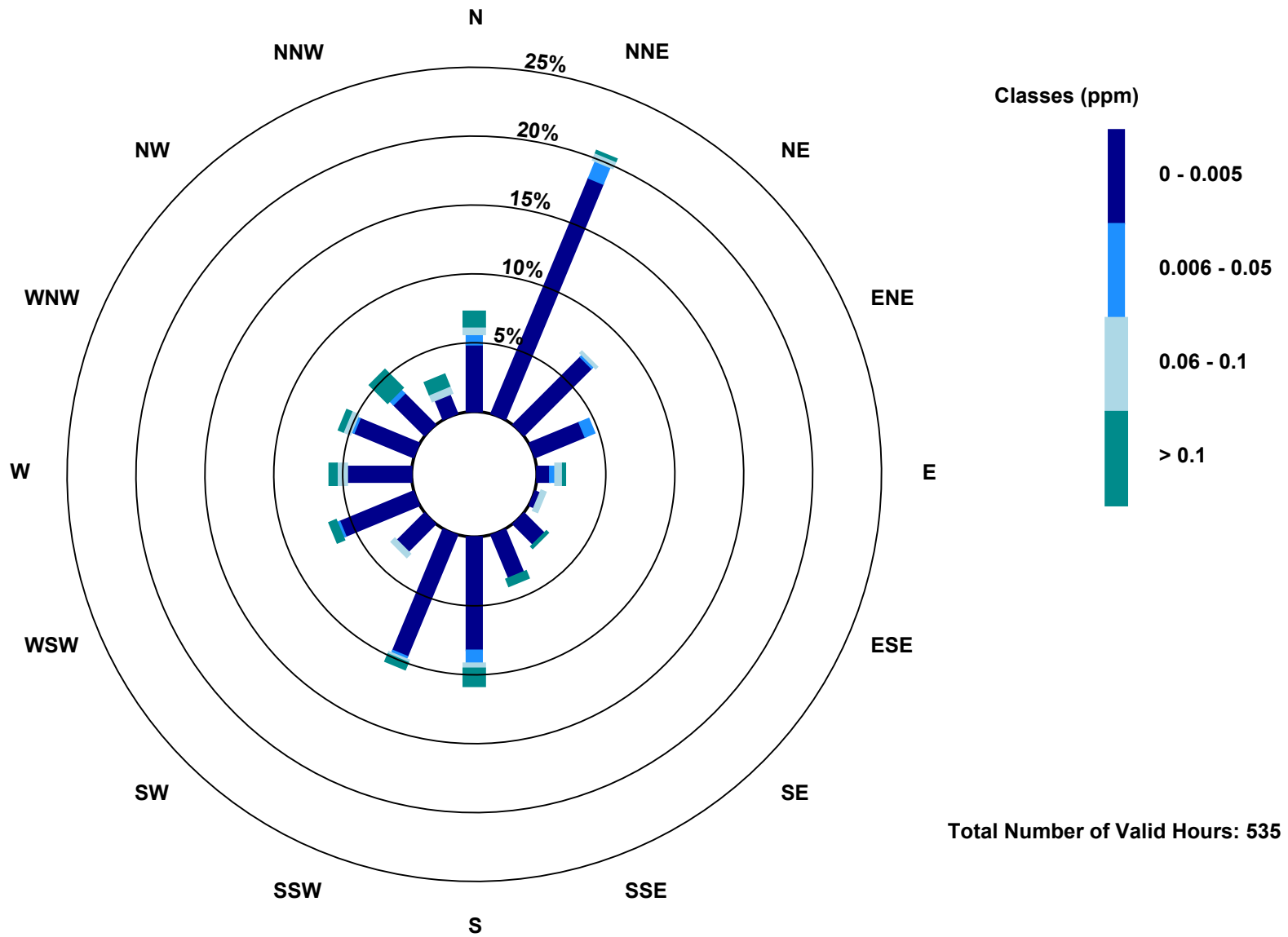
Total Number of Valid Hours: 535

Total Number of Hours: 672

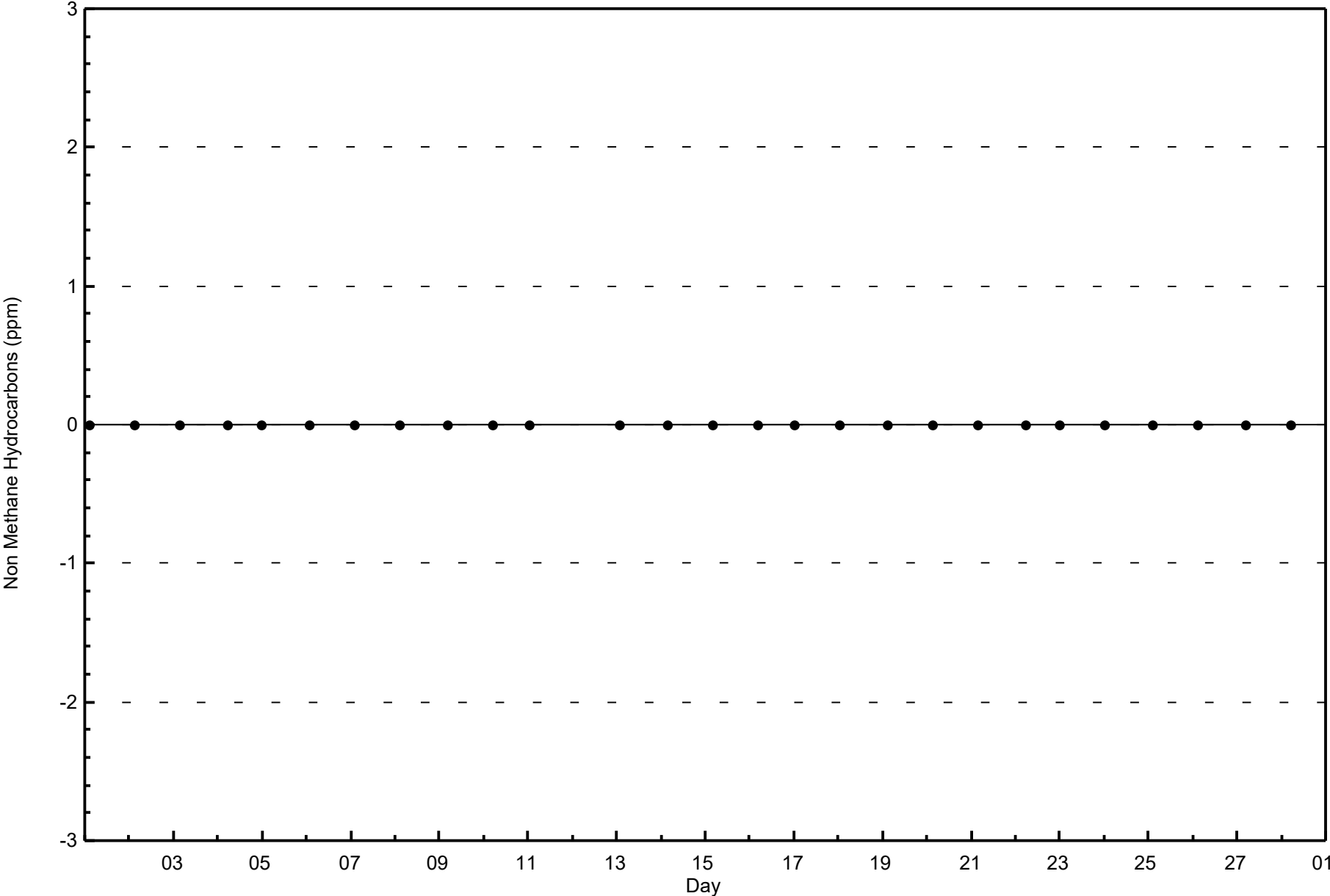


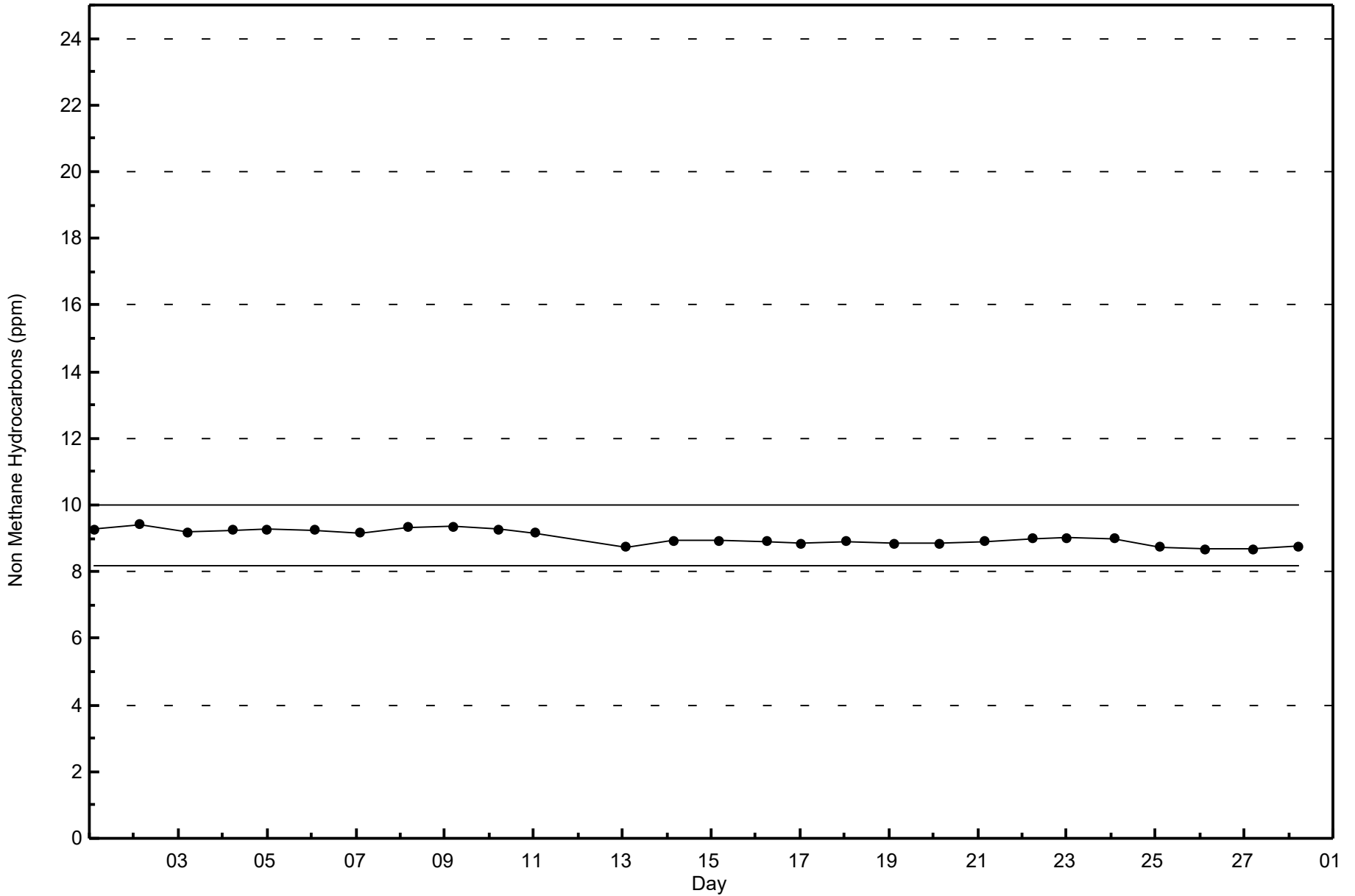
Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Non Methane Hydrocarbons (NMHC) - ppm  
Ells River











Wood Buffalo Environmental Association

Summary of Hour Averages

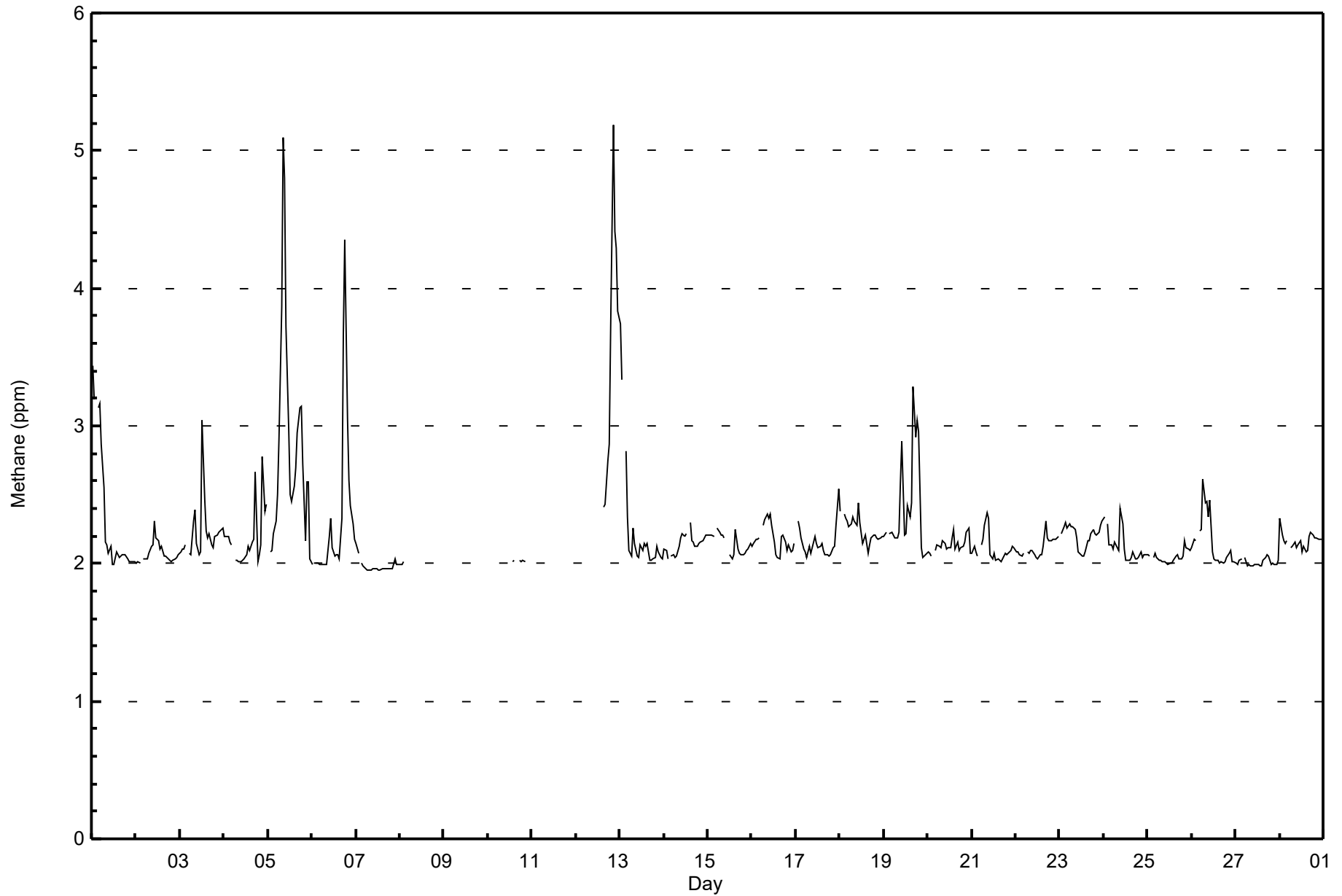
Methane (CH<sub>4</sub>) - ppm  
Ells River - February 2023

| Number of Exceedences (AAAQO):             |                               | 1-hr: 0                                     |     | 24-hr: 0   |     | Hours in Service: |                 | 672                            |     |     |     |                         |     |     |     |     |                    |     |     |     |     |     |     |     |               |               |                 |
|--|-------------------------------|---|-----|--|-----|-------------------|-----------------|--------------------------------|-----|-----|-----|-------------------------|-----|-----|-----|-----|--------------------|-----|-----|-----|-----|-----|-----|-----|---------------|---------------|-----------------|
| Maximum Value: 5.2 ppm on Feb 12 21:00     |                               | Maximum Daily Average: 2.9 ppm on Feb 5     |     | Hours of Data:   |     | 544               |                 | Hours of Missing Data: 128     |     |     |     |                         |     |     |     |     |                    |     |     |     |     |     |     |     |               |               |                 |
| Minimum Value: 2.0 ppm on Feb 7 07:00      |                               | Minimum Daily Average: 2.0 ppm on Feb 7     |     | Hours of Calibration:  |     | 33                |                 | Percent Operational Time: 85.9 |     |     |     |                         |     |     |     |     |                    |     |     |     |     |     |     |     |               |               |                 |
| Maximum Diurnal Average: 2.3 ppm at hour 9 |                               | Minimum Diurnal Average: 2.1 ppm at hour 14 |     | Percentiles: P <sub>1</sub> = 2.0 P <sub>10</sub> = 2.0 Q <sub>1</sub> = 2.0 Median = 2.1 Q <sub>3</sub> = 2.2 P <sub>90</sub> = 2.4 P <sub>99</sub> = 4.1 |     |                   |                 |                                |     |     |     |                         |     |     |     |     |                    |     |     |     |     |     |     |     |               |               |                 |
| Monthly Average: 2.22 ppm                  |                               |   |     |  |     |                   |                 |                                |     |     |     |                         |     |     |     |     |                    |     |     |     |     |     |     |     |               |               |                 |
| Day  | Hourly Period Ending At (MST) |   |     |  |     |                   |                 |                                |     |     |     |                         |     |     |     |     |                    |     |     |     |     |     |     |     | Daily Average | Daily Maximum |                 |
|  | 1                             | 2   | 3   | 4  | 5   | 6                 | 7               | 8                              | 9   | 10  | 11  | 12                      | 13  | 14  | 15  | 16  | 17                 | 18  | 19  | 20  | 21  | 22  | 23  | 24  |               |               |                 |
| 1-Feb                                      | 3.4                           | 3.2   | Z   | 3.1  | 3.2 | 2.9               | 2.6             | 2.2                            | 2.1 | 2.1 | 2.1 | 2.0                     | 2.0 | 2.1 | 2.1 | 2.0 | 2.1                | 2.1 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.3           | 3.4           |                 |
| 2-Feb                                      | 2.0                           | 2.0   | 2.0 | Z  | 2.0 | 2.0               | 2.0             | 2.1                            | 2.1 | 2.1 | 2.3 | 2.2                     | 2.2 | 2.1 | 2.1 | 2.1 | 2.0                | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1 | 2.1           | 2.3           |                 |
| 3-Feb                                      | 2.1                           | 2.1   | 2.1 | 2.1  | Z   | 2.1               | 2.1             | 2.3                            | 2.4 | 2.1 | 2.1 | 3.0                     | 2.5 | 2.2 | 2.2 | 2.2 | 2.1                | 2.1 | 2.2 | 2.2 | 2.2 | 2.2 | 2.3 | 2.2 | 3.0           |               |                 |
| 4-Feb                                      | 2.2                           | 2.2   | 2.2 | 2.2  | 2.1 | Z                 | 2.0             | 2.0                            | 2.0 | 2.0 | 2.0 | 2.1                     | 2.1 | 2.1 | 2.2 | 2.2 | 2.2                | 2.7 | 2.0 | 2.1 | 2.1 | 2.8 | 2.4 | 2.4 | 2.2           | 2.8           |                 |
| 5-Feb                                      | Z                             | 2.1   | 2.1 | 2.2  | 2.3 | 2.5               | 2.9             | 3.9                            | 5.1 | 4.8 | 3.7 | 3.0                     | 2.5 | 2.4 | 2.6 | 2.7 | 3.0                | 3.1 | 3.1 | 2.7 | 2.2 | 2.6 | 2.6 | 2.0 | 2.9           | 5.1           |                 |
| 6-Feb                                      | 2.0                           | Z   | 2.0 | 2.0  | 2.0 | 2.0               | 2.0             | 2.0                            | 2.0 | 2.2 | 2.3 | 2.1                     | 2.1 | 2.1 | 2.1 | 2.0 | 2.3                | 3.7 | 4.4 | 3.1 | 2.6 | 2.4 | 2.3 | 2.2 | 2.3           | 4.4           |                 |
| 7-Feb                                      | 2.1                           | 2.1   | Z   | 2.0  | 2.0 | 2.0               | 2.0             | 2.0                            | 2.0 | 2.0 | 2.0 | 2.0                     | 2.0 | 2.0 | 2.0 | 2.0 | 2.0                | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0           | 2.1           |                 |
| 8-Feb                                      | 2.0                           | 2.0   | 2.0 | Z  | UO  | UO                | UO              | UO                             | UO  | UO  | UO  | UO                      | UO  | UO  | UO  | UO  | UO                 | UO  | UO  | UO  | UO  | UO  | UO  | UO  | --            | 2.0           |                 |
| 9-Feb                                      | UO                            | UO  | UO  | UO   | Z   | UO                | UO              | UO                             | UO  | UO  | UO  | UO                      | UO  | UO  | UO  | UO  | UO                 | UO  | UO  | UO  | UO  | UO  | UO  | UO  | --            | --            |                 |
| 10-Feb                                     | UO                            | UO  | UO  | UO   | UO  | Z                 | UO              | UO                             | UO  | UO  | UO  | C                       | C   | C   | 2.0 | 2.0 | PF                 | PF  | 2.0 | 2.0 | 2.0 | 2.0 | UO  | UO  | --            | 2.0           |                 |
| 11-Feb                                     | Z                             | UO  | UO  | UO   | UO  | UO                | UO              | UO                             | UO  | UO  | M   | M                       | M   | M   | M   | M   | M                  | M   | M   | M   | M   | M   | M   | M   | --            | --            |                 |
| 12-Feb                                     | M                             | M   | M   | M  | M   | M                 | M               | M                              | M   | M   | M   | M                       | C   | C   | C   | 2.4 | 2.4                | 2.7 | 2.9 | 3.7 | 5.2 | 4.4 | 4.3 | 3.8 | --            | 5.2           |                 |
| 13-Feb                                     | 3.7                           | 3.3   | Z   | 2.8  | 2.3 | 2.1               | 2.1             | 2.3                            | 2.2 | 2.1 | 2.0 | 2.1                     | 2.1 | 2.1 | 2.1 | 2.1 | 2.0                | 2.0 | 2.0 | 2.0 | 2.1 | 2.1 | 2.0 | 2.0 | 2.3           | 3.7           |                 |
| 14-Feb                                     | 2.1                           | 2.1   | 2.0 | Z  | 2.1 | 2.1               | 2.0             | 2.1                            | 2.1 | 2.2 | 2.2 | 2.2                     | 2.2 | M   | 2.3 | 2.2 | 2.2                | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | 2.2 | 2.2 | 2.1           | 2.3           |                 |
| 15-Feb                                     | 2.2                           | 2.2   | 2.2 | 2.2  | Z   | 2.3               | 2.2             | 2.2                            | 2.2 | 2.2 | M   | M                       | 2.1 | 2.0 | 2.1 | 2.2 | 2.1                | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1           | 2.3           |                 |
| 16-Feb                                     | 2.1                           | 2.1   | 2.2 | 2.2  | 2.2 | Z                 | 2.3             | 2.3                            | 2.4 | 2.3 | 2.4 | 2.3                     | 2.2 | 2.1 | 2.0 | 2.0 | 2.2                | 2.2 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.2           | 2.4           |                 |
| 17-Feb                                     | Z                             | 2.3   | 2.3 | 2.2  | 2.1 | 2.1               | 2.0             | 2.1                            | 2.1 | 2.1 | 2.2 | 2.1                     | 2.1 | 2.1 | 2.1 | 2.1 | 2.1                | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.3 | 2.5 | 2.1           | 2.5           |                 |
| 18-Feb                                     | 2.4                           | Z   | 2.4 | 2.3  | 2.3 | 2.3               | 2.3             | 2.3                            | 2.3 | 2.3 | 2.4 | 2.3                     | 2.1 | 2.2 | 2.2 | 2.1 | 2.1                | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2           | 2.4           |                 |
| 19-Feb                                     | 2.2                           | 2.2   | Z   | 2.2  | 2.2 | 2.2               | 2.2             | 2.2                            | 2.2 | 2.6 | 2.9 | 2.2                     | 2.2 | 2.4 | 2.3 | 2.4 | 3.3                | 2.9 | 3.0 | 3.0 | 2.1 | 2.0 | 2.1 | 2.1 | 2.4           | 3.3           |                 |
| 20-Feb                                     | 2.1                           | 2.1   | 2.1 | Z  | 2.1 | 2.1               | 2.1             | 2.1                            | 2.2 | 2.1 | 2.1 | 2.1                     | 2.1 | 2.2 | 2.2 | 2.1 | 2.2                | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | 2.3 | 2.1 | 2.1           | 2.3           |                 |
| 21-Feb                                     | 2.1                           | 2.1   | 2.1 | 2.1  | Z   | 2.1               | 2.2             | 2.3                            | 2.4 | 2.3 | 2.1 | 2.0                     | 2.1 | 2.0 | 2.0 | 2.0 | 2.0                | 2.0 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1           | 2.4           |                 |
| 22-Feb                                     | 2.1                           | 2.1   | 2.1 | 2.1  | 2.1 | Z                 | 2.1             | 2.1                            | 2.1 | 2.1 | 2.1 | 2.0                     | 2.0 | 2.1 | 2.1 | 2.1 | 2.3                | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2           | 2.3           |                 |
| 23-Feb                                     | Z                             | 2.2   | 2.3 | 2.3  | 2.3 | 2.3               | 2.3             | 2.3                            | 2.3 | 2.2 | 2.1 | 2.1                     | 2.1 | 2.1 | 2.1 | 2.2 | 2.2                | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.3 | 2.3 | 2.2           | 2.3           |                 |
| 24-Feb                                     | 2.3                           | Z   | 2.3 | 2.1  | 2.1 | 2.1               | 2.2             | 2.1                            | 2.1 | 2.4 | 2.3 | 2.1                     | 2.0 | 2.0 | 2.0 | 2.0 | 2.1                | 2.0 | 2.0 | 2.0 | 2.1 | 2.0 | 2.1 | 2.1 | 2.1           | 2.4           |                 |
| 25-Feb                                     | 2.1                           | 2.1   | Z   | 2.0  | 2.1 | 2.0               | 2.0             | 2.0                            | 2.0 | 2.0 | 2.0 | 2.0                     | 2.0 | 2.0 | 2.0 | 2.1 | 2.1                | 2.0 | 2.0 | 2.0 | 2.2 | 2.1 | 2.1 | 2.1 | 2.0           | 2.2           |                 |
| 26-Feb                                     | 2.1                           | 2.2   | 2.2 | Z  | 2.2 | 2.2               | 2.6             | 2.4                            | 2.5 | 2.3 | 2.5 | 2.1                     | 2.0 | 2.0 | 2.0 | 2.0 | 2.0                | 2.0 | 2.0 | 2.0 | 2.1 | 2.1 | 2.0 | 2.0 | 2.2           | 2.6           |                 |
| 27-Feb                                     | 2.0                           | 2.0   | 2.0 | 2.0  | Z   | 2.0               | 2.0             | 2.0                            | 2.0 | 2.0 | 2.0 | 2.0                     | 2.0 | 2.0 | 2.0 | 2.0 | 2.0                | 2.1 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0           | 2.1           |                 |
| 28-Feb                                     | 2.3                           | 2.2   | 2.2 | 2.1  | 2.2 | Z                 | 2.1             | 2.1                            | 2.2 | 2.1 | 2.1 | 2.2                     | 2.1 | 2.1 | 2.1 | 2.1 | 2.2                | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2           | 2.3           |                 |
|  |                               | 2.3   | 2.2 | 2.1  | 2.2 | 2.2               | 2.2             | 2.2                            | 2.3 | 2.3 | 2.3 | 2.1                     | 2.1 | 2.1 | 2.1 | 2.1 | 2.2                | 2.3 | 2.3 | 2.2 | 2.3 | 2.3 | 2.2 | 2.2 | 2.2           | 2.2           | Diurnal Average |
|  |                               | 3.7   | 3.3 | 2.4  | 3.1 | 3.2               | 2.9             | 2.9                            | 3.9 | 5.1 | 4.8 | 3.7                     | 3.0 | 3.0 | 2.5 | 2.6 | 2.7                | 3.3 | 3.7 | 4.4 | 3.7 | 5.2 | 4.4 | 4.3 | 3.8           | 2.2           | Diurnal Maximum |
| Z - zerspan                                |                               | C - Calibration                             |     |  |     |                   | M - Maintenance |                                |     |     |     | UO - Unstable Operation |     |     |     |     | PF - Power Failure |     |     |     |     |     |     |     |               |               |                 |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Methane (CH<sub>4</sub>) - ppm**  
**Ells River - February 2023**





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Methane (CH<sub>4</sub>) - ppm**  
**Ells River - February 2023**

| <b>Concentration Ranges (ppm)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 2.0                           | 143                    | 26.29    | 26.29               |
| 2.1 - 3.0                         | 380                    | 69.85    | 96.14               |
| 3.1 - 10.0                        | 21                     | 3.86     | 100.00              |
| > 10.0                            | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 544

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Methane (CH<sub>4</sub>) - ppm  
Ells River - February 2023**

| <b>Concentration<br/>Ranges (ppm)</b> | <b>Wind Direction</b> |            |           |            |           |            |           |            |           |            |           |            |           |            |           |            | <b>Totals</b> |
|---------------------------------------|-----------------------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|---------------|
|                                       | <b>N</b>              | <b>NNE</b> | <b>NE</b> | <b>ENE</b> | <b>E</b>  | <b>ESE</b> | <b>SE</b> | <b>SSE</b> | <b>S</b>  | <b>SSW</b> | <b>SW</b> | <b>WSW</b> | <b>W</b>  | <b>WNW</b> | <b>NW</b> | <b>NNW</b> |               |
| 0 - 2.0                               | 2                     | 53         | 11        | 2          | 0         | 1          | 1         | 7          | 12        | 13         | 6         | 17         | 10        | 2          | 5         | 1          | 143           |
| 2.1 - 3.0                             | 36                    | 57         | 28        | 23         | 11        | 3          | 11        | 13         | 44        | 42         | 11        | 15         | 20        | 27         | 18        | 12         | 371           |
| 3.1 - 10.0                            | 1                     | 0          | 0         | 0          | 0         | 0          | 0         | 1          | 2         | 1          | 0         | 3          | 2         | 2          | 6         | 3          | 21            |
| > 10.0                                | 0                     | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0             |
| <b>Totals</b>                         | <b>39</b>             | <b>110</b> | <b>39</b> | <b>25</b>  | <b>11</b> | <b>4</b>   | <b>12</b> | <b>21</b>  | <b>58</b> | <b>56</b>  | <b>17</b> | <b>35</b>  | <b>32</b> | <b>31</b>  | <b>29</b> | <b>16</b>  | <b>535</b>    |

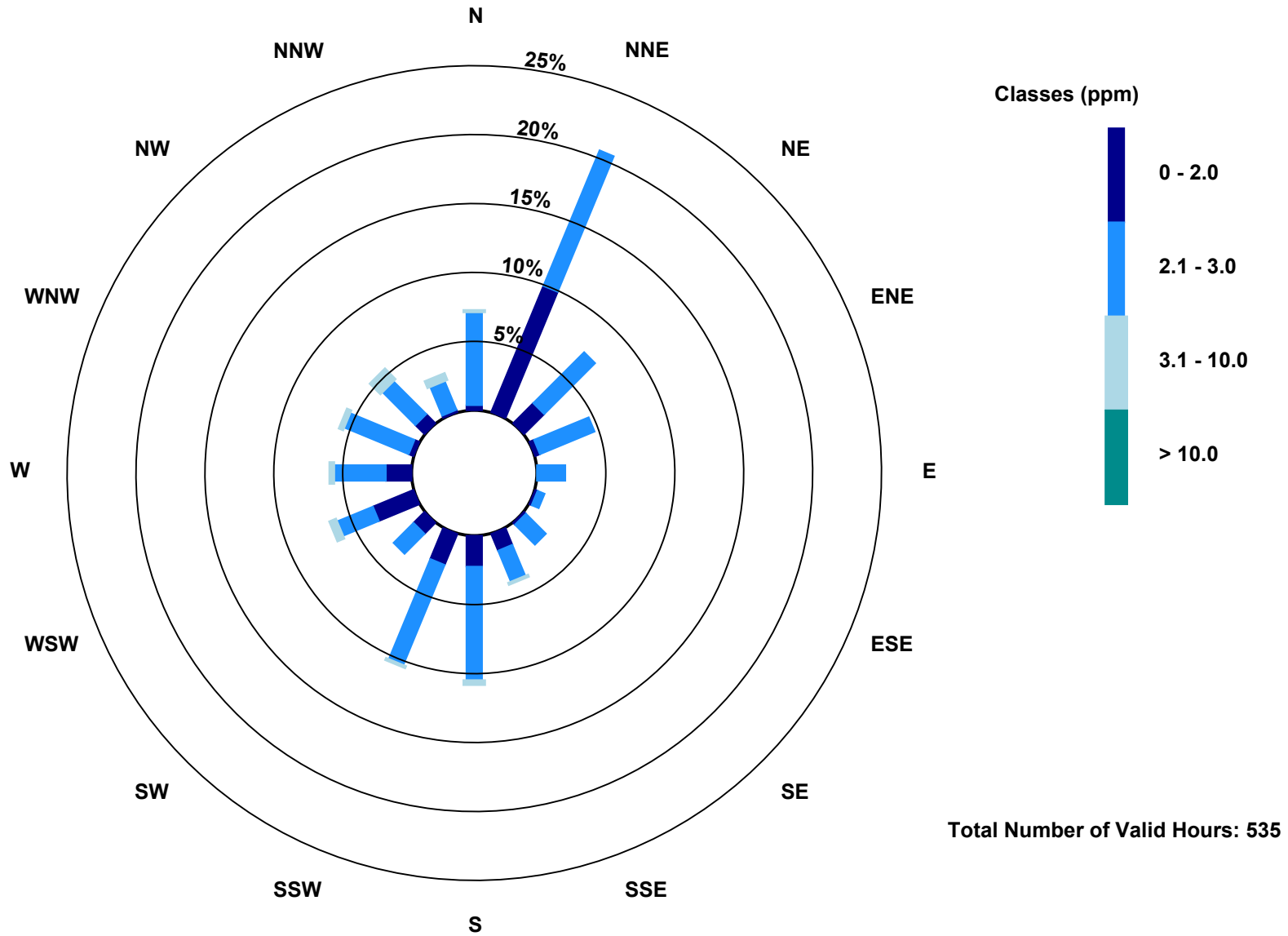
Total Number of Valid Hours: 535

Total Number of Hours: 672

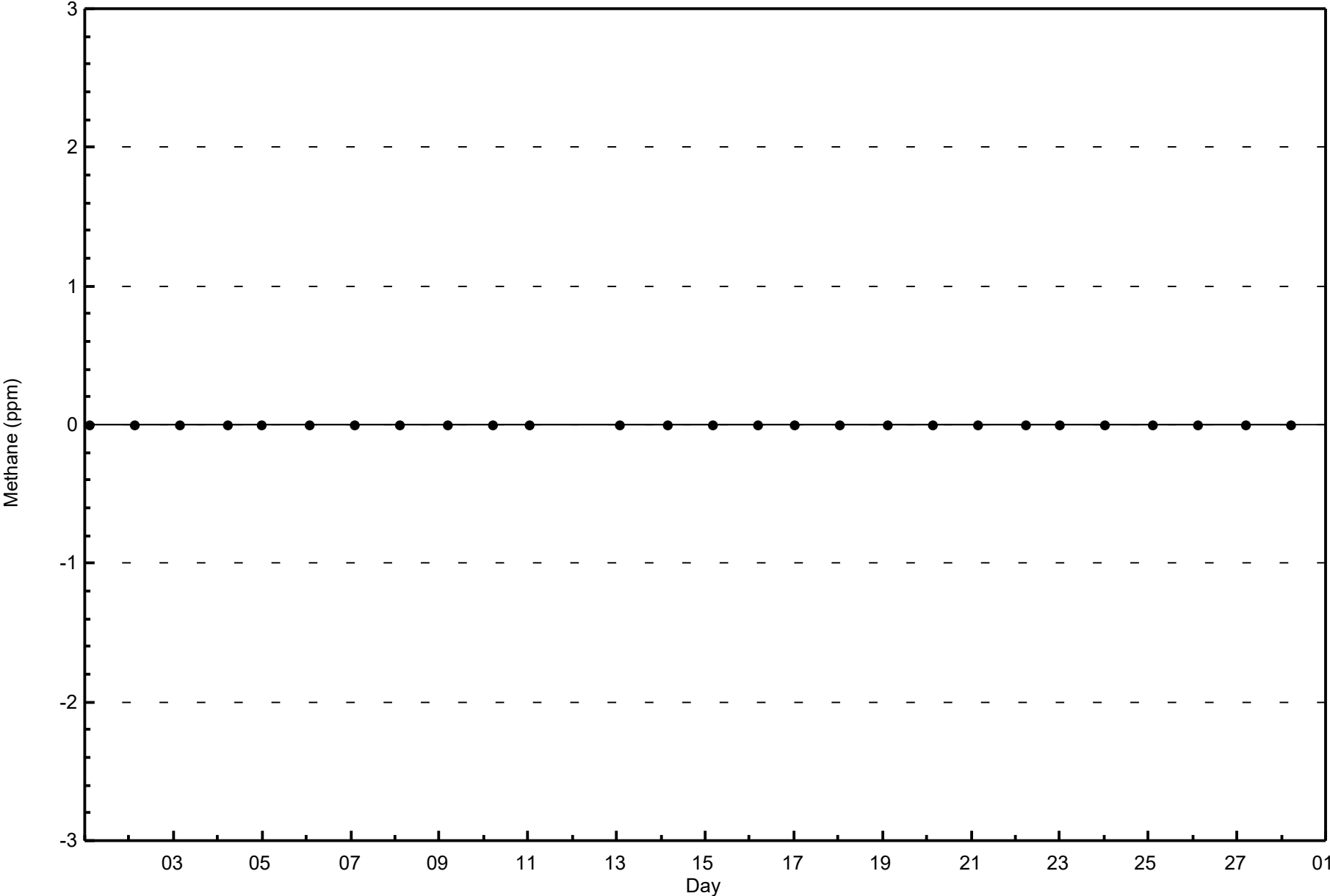


Wood Buffalo Environmental Association  
Wind Rose Feb 2023

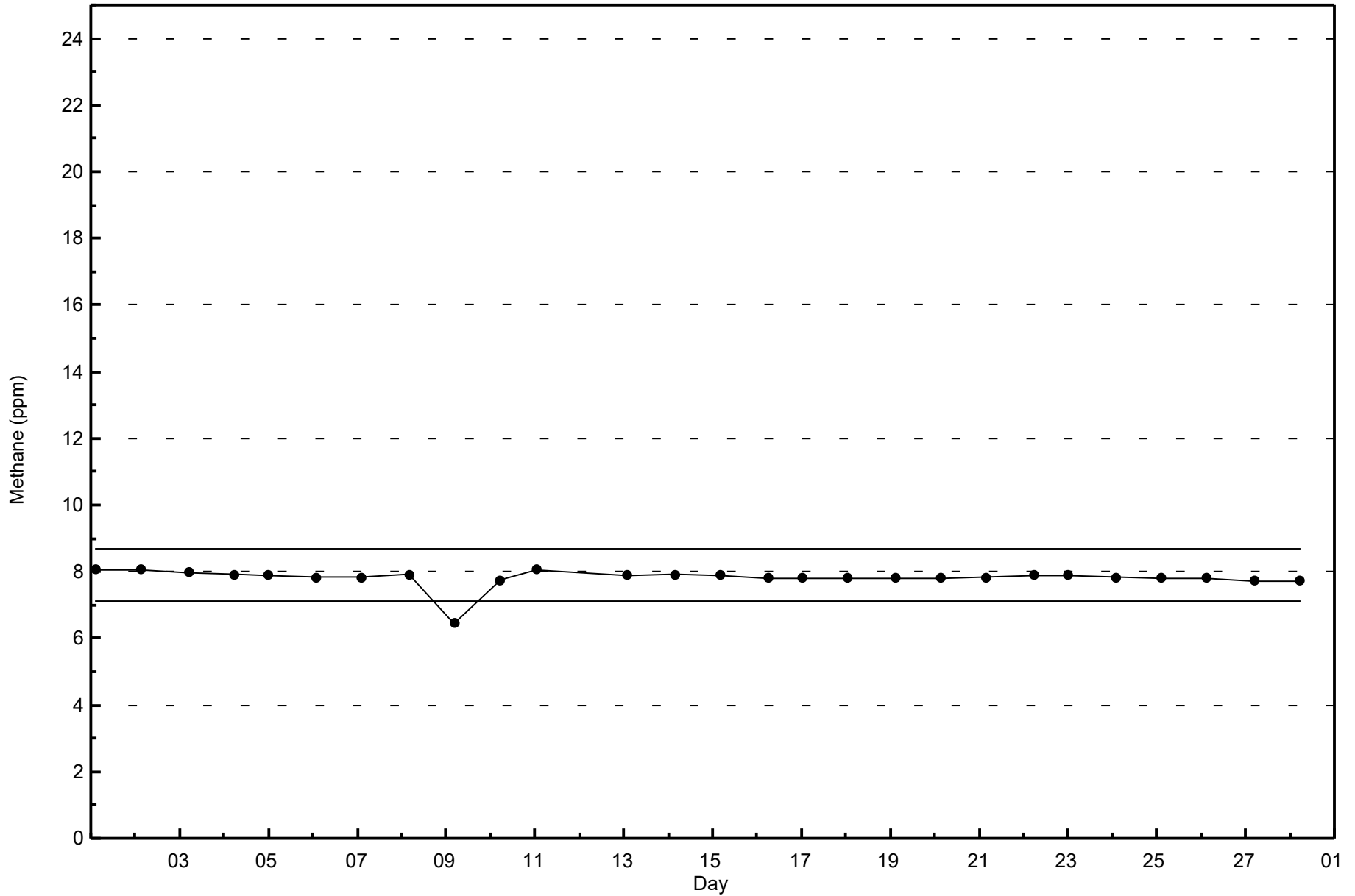
Methane (CH<sub>4</sub>) - ppm  
Ells River



Total Number of Valid Hours: 535





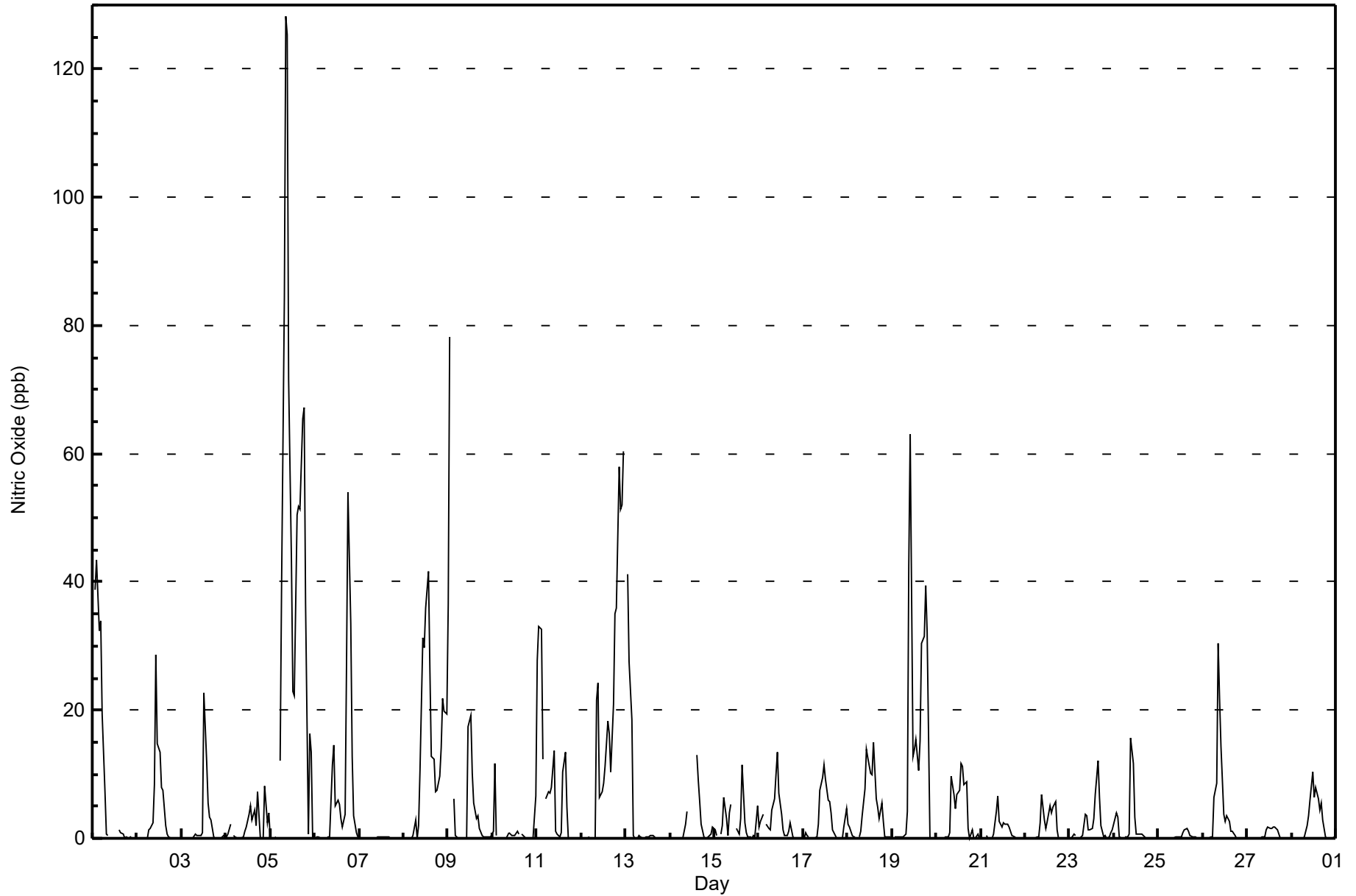




**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

**Nitric Oxide (NO) - ppb**  
**Ells River - February 2023**

| Maximum Value: 128.3 ppb on Feb 5 09:00  |                               |                 |      |      |      |                 |      |      |       |                    |      |      |      |      |      |      |      |      |      |      |      | Maximum Daily Average: 39.3 ppb on Feb 5   |      |      |               |               |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | Hours in Service: 672     |  |
|--|-------------------------------|-----------------|------|------|------|-----------------|------|------|-------|--------------------|------|------|------|------|------|------|------|------|------|------|------|--|------|------|---------------|---------------|------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|---------------------------|--|
| Minimum Value: 0.0 ppb on Feb 1 18:00  |                               |                 |      |      |      |                 |      |      |       |                    |      |      |      |      |      |      |      |      |      |      |      | Minimum Daily Average: 0.1 ppb on Feb 7  |      |      |               |               |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | Hours of Data: 632        |  |
| Maximum Diurnal Average: 12.5 ppb at hour 10   |                               |                 |      |      |      |                 |      |      |       |                    |      |      |      |      |      |      |      |      |      |      |      | Minimum Diurnal Average: 1.7 ppb at hour 5   |      |      |               |               |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | Hours of Missing Data: 40 |  |
| Monthly Average: 5.89 ppb  |                               |                 |      |      |      |                 |      |      |       |                    |      |      |      |      |      |      |      |      |      |      |      | Percentiles: P <sub>1</sub> = 0.0 P <sub>10</sub> = 0.0 Q <sub>1</sub> = 0.1 Median = 0.5 Q <sub>3</sub> = 5.2 P <sub>90</sub> = 15.4 P <sub>99</sub> = 64.7 |      |      |               |               |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | Hours of Calibration: 33  |  |
| Percentiles: P <sub>1</sub> = 0.0 P <sub>10</sub> = 0.0 Q <sub>1</sub> = 0.1 Median = 0.5 Q <sub>3</sub> = 5.2 P <sub>90</sub> = 15.4 P <sub>99</sub> = 64.7 |                               |                 |      |      |      |                 |      |      |       |                    |      |      |      |      |      |      |      |      |      |      |      | Percent Operational Time: 99.0   |      |      |               |               |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                           |  |
| Day  | Hourly Period Ending At (MST) |                 |      |      |      |                 |      |      |       |                    |      |      |      |      |      |      |      |      |      |      |      |  |      |      | Daily Average | Daily Maximum |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                           |  |
|  | 1                             | 2               | 3    | 4    | 5    | 6               | 7    | 8    | 9     | 10                 | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20   | 21   | 22   | 23   | 24   |               |               |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                           |  |
| 1-Feb  | Z                             | 38.7            | 43.3 | 32.3 | 33.9 | 19.4            | 7.2  | 0.7  | 0.5   | C                  | C    | C    | C    | C    | 1.4  | 1.0  | 0.6  | 0.0  | 0.3  | 0.1  | 0.3  | 0.1  | 0.0  | 0.0  | 10.0          | 43.3          |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                           |  |
| 2-Feb  | 0.0                           | Z               | 0.0  | 0.0  | 0.0  | 0.0             | 1.4  | 1.4  | 2.3   | 8.3                | 28.7 | 14.8 | 13.5 | 7.9  | 7.5  | 1.9  | 0.7  | 0.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 3.9           | 28.7          |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                           |  |
| 3-Feb  | 0.0                           | 0.0             | Z    | 0.0  | 0.0  | 0.0             | 0.0  | 0.7  | 0.5   | 0.5                | 0.4  | 0.8  | 22.6 | 11.8 | 5.6  | 3.4  | 2.8  | 0.3  | 0.0  | 0.0  | 0.1  | 0.0  | 0.2  | 0.6  | 2.2           | 22.6          |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                           |  |
| 4-Feb  | 0.3                           | 0.7             | 2.1  | Z    | 0.4  | 0.2             | 0.1  | 0.0  | 0.1   | 0.3                | 1.1  | 1.7  | 3.7  | 5.2  | 2.9  | 4.3  | 2.0  | 7.3  | 0.0  | 0.0  | 0.1  | 8.1  | 2.4  | 3.9  | 2.0           | 8.1           |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                           |  |
| 5-Feb  | 0.0                           | 0.0             | 0.0  | 0.2  | Z    | 12.2            | 39.1 | 84.4 | 128.3 | 125.3              | 71.6 | 43.1 | 22.9 | 22.3 | 50.4 | 51.8 | 51.4 | 65.4 | 67.3 | 36.6 | 0.8  | 16.3   | 13.5 | 0.1  | 39.3          | 128.3         |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                           |  |
| 6-Feb  | 0.1                           | 0.1             | 0.1  | 0.1  | 0.1  | Z               | 0.0  | 0.2  | 0.2   | 11.5               | 14.6 | 5.1  | 6.1  | 5.2  | 3.2  | 1.7  | 3.8  | 27.4 | 54.0 | 33.5 | 12.8 | 3.5  | 0.9  | 0.1  | 8.0           | 54.0          |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                           |  |
| 7-Feb  | Z                             | 0.1             | 0.1  | 0.1  | 0.1  | 0.1             | 0.1  | 0.1  | 0.1   | 0.1                | 0.1  | 0.1  | 0.1  | 0.1  | 0.1  | 0.1  | 0.1  | 0.1  | 0.1  | 0.1  | 0.1  | 0.1  | 0.0  | 0.0  | 0.1           | 0.1           |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                           |  |
| 8-Feb  | 0.0                           | Z               | 0.0  | 0.0  | 0.0  | 0.4             | 2.8  | 0.0  | 1.9   | 10.5               | 31.3 | 29.7 | 35.9 | 41.7 | 26.5 | 12.9 | 12.3 | 7.3  | 7.4  | 9.8  | 14.2 | 21.8   | 19.9 | 19.5 | 13.3          | 41.7          |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                           |  |
| 9-Feb  | 36.6                          | 78.2            | Z    | 6.2  | 0.5  | 0.0             | 0.0  | 0.0  | 0.0   | 0.0                | 0.1  | 17.5 | 19.1 | 10.2 | 5.5  | 3.0  | 3.5  | 1.4  | 0.5  | 0.2  | 0.3  | 0.3  | 0.2  | 0.2  | 8.0           | 78.2          |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                           |  |
| 10-Feb   | 1.1                           | 11.8            | 0.4  | Z    | 0.1  | 0.1             | 0.1  | 0.1  | 0.4   | 0.8                | 0.5  | 0.4  | 0.5  | 1.0  | 0.8  | PF   | 0.8  | 0.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.1  | 6.7  | 1.2           | 11.8          |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                           |  |
| 11-Feb   | 27.9                          | 33.0            | 32.5 | 12.4 | Z    | 6.2             | 7.2  | 7.0  | 7.9   | 13.8               | 1.0  | 0.6  | 0.1  | 0.8  | 10.3 | 13.4 | 4.7  | 0.1  | 0.1  | 0.1  | 0.1  | 0.1  | 0.1  | 0.1  | 7.8           | 33.0          |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                           |  |
| 12-Feb   | 0.1                           | 0.1             | 0.1  | 0.1  | 0.1  | Z               | 0.1  | 0.1  | 21.7  | 24.2               | 6.5  | 7.2  | 8.7  | 11.3 | 18.3 | 16.3 | 10.3 | 20.8 | 35.1 | 36.0 | 57.9 | 51.4   | 52.1 | 60.5 | 19.1          | 60.5          |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                           |  |
| 13-Feb   | Z                             | 41.2            | 27.5 | 18.5 | 0.4  | 0.0             | 0.0  | 0.4  | 0.2   | 0.0                | 0.0  | 0.1  | 0.2  | 0.5  | 0.3  | 0.5  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 3.9           | 41.2          |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                           |  |
| 14-Feb   | 0.0                           | Z               | 0.0  | 0.0  | 0.0  | 0.0             | 0.0  | 0.0  | 2.1   | 4.1                | 4.1  | M    | M    | M    | M    | 13.0 | 9.0  | 5.7  | 2.1  | 0.1  | 0.1  | 0.1  | 0.5  | 0.6  | 1.8           | 2.1           | 13.0 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                           |  |
| 15-Feb   | 1.4                           | 0.5             | Z    | 0.6  | 2.0  | 6.4             | 3.0  | 0.5  | 4.1   | 5.4                | M    | M    | M    | 1.5  | 0.6  | 3.0  | 11.5 | 2.5  | 0.9  | 0.3  | 0.1  | 0.1  | 0.4  | 0.3  | 5.2           | 2.4           | 11.5 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                           |  |
| 16-Feb   | 1.7                           | 2.6             | 3.7  | Z    | 2.1  | 1.5             | 1.3  | 4.4  | 6.3   | 9.9                | 13.5 | 7.1  | 3.8  | 1.2  | 0.5  | 0.4  | 1.1  | 2.4  | 0.3  | 0.1  | 0.1  | 0.1  | 0.1  | 0.1  | 2.8           | 13.5          |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                           |  |
| 17-Feb   | 0.1                           | 0.8             | 0.3  | 0.1  | Z    | 0.1             | 0.0  | 0.3  | 2.1   | 7.4                | 9.4  | 11.5 | 9.2  | 5.9  | 5.6  | 3.9  | 1.2  | 0.3  | 0.1  | 0.1  | 0.1  | 0.0  | 1.8  | 4.7  | 2.8           | 11.5          |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                           |  |
| 18-Feb   | 2.3                           | 1.8             | 0.5  | 0.2  | 0.1  | Z               | 0.3  | 1.0  | 3.6   | 7.7                | 13.9 | 12.6 | 10.1 | 10.0 | 15.0 | 6.1  | 4.7  | 3.0  | 5.5  | 2.6  | 0.3  | 0.2  | 0.2  | 0.1  | 4.4           | 15.0          |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                           |  |
| 19-Feb   | Z                             | 0.2             | 0.2  | 0.2  | 0.2  | 0.2             | 0.1  | 0.6  | 4.2   | 42.5               | 63.1 | 12.9 | 13.9 | 15.4 | 10.7 | 15.1 | 30.4 | 31.5 | 39.4 | 32.3 | 0.1  | 0.0  | 0.0  | 0.0  | 13.6          | 63.1          |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                           |  |
| 20-Feb   | 0.1                           | Z               | 0.0  | 0.1  | 0.1  | 0.1             | 0.2  | 1.0  | 9.6   | 6.9                | 4.5  | 6.9  | 7.5  | 11.6 | 11.3 | 8.5  | 8.7  | 1.6  | 0.0  | 1.2  | 0.0  | 0.0  | 0.7  | 0.0  | 3.5           | 11.6          |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                           |  |
| 21-Feb   | 0.0                           | 0.0             | Z    | 0.3  | 0.0  | 0.1             | 0.0  | 0.6  | 4.2   | 6.6                | 2.6  | 1.7  | 2.5  | 2.3  | 2.2  | 1.8  | 1.0  | 0.5  | 0.1  | 0.1  | 0.0  | 0.0  | 0.1  | 0.0  | 1.2           | 6.6           |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                           |  |
| 22-Feb   | 0.0                           | 0.0             | 0.0  | Z    | 0.1  | 0.1             | 0.3  | 0.3  | 2.5   | 6.8                | 2.8  | 1.5  | 2.6  | 5.1  | 4.0  | 4.9  | 5.8  | 1.2  | 0.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 1.7           | 6.8           |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                           |  |
| 23-Feb   | 0.0                           | 0.0             | 0.6  | 0.4  | Z    | 0.1             | 0.1  | 0.5  | 3.7   | 3.5                | 1.3  | 1.3  | 1.6  | 3.0  | 6.9  | 12.0 | 6.5  | 1.9  | 0.1  | 0.3  | 0.1  | 0.3  | 0.8  | 1.3  | 2.0           | 12.0          |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                           |  |
| 24-Feb   | 3.1                           | 3.9             | 3.3  | 0.3  | 0.1  | Z               | 0.1  | 0.2  | 0.7   | 15.6               | 11.6 | 3.3  | 0.6  | 0.6  | 0.6  | 0.7  | 0.4  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 2.0           | 15.6          |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                           |  |
| 25-Feb   | Z                             | 0.0             | 0.0  | 0.0  | 0.0  | 0.0             | 0.0  | 0.0  | 0.1   | 0.2                | 0.2  | 0.2  | 0.1  | 0.9  | 1.4  | 1.6  | 1.2  | 0.3  | 0.2  | 0.2  | 0.2  | 0.0  | 0.0  | 0.0  | 0.3           | 1.6           |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                           |  |
| 26-Feb   | 0.0                           | Z               | 0.1  | 0.1  | 0.1  | 0.1             | 6.5  | 8.6  | 30.4  | 21.9               | 14.3 | 3.7  | 2.5  | 3.6  | 2.8  | 1.2  | 1.2  | 0.4  | 0.1  | 0.1  | 0.1  | 0.1  | 0.1  | 0.0  | 4.3           | 30.4          |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                           |  |
| 27-Feb   | 0.0                           | 0.0             | Z    | 0.1  | 0.0  | 0.0             | 0.0  | 0.0  | 0.2   | 0.2                | 1.3  | 1.8  | 1.4  | 1.6  | 1.7  | 1.8  | 1.3  | 0.6  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.5           | 1.8           |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                           |  |
| 28-Feb   | 0.0                           | 0.0             | 0.0  | Z    | 0.0  | 0.1             | 0.0  | 0.3  | 1.9   | 3.5                | 6.0  | 10.3 | 6.3  | 8.0  | 6.2  | 4.4  | 5.6  | 3.0  | 0.2  | 0.0  | 0.0  | 0.1  | 0.1  | 0.2  | 2.4           | 10.3          |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                           |  |
| 3.3 9.3 5.0 3.1 1.7 2.0 2.5 4.1 8.6 12.5 12.0 7.8 7.6 7.2 7.8 7.2 6.1 6.4 7.5 5.5 3.1 3.7 3.4 3.8  |                               |                 |      |      |      |                 |      |      |       |                    |      |      |      |      |      |      |      |      |      |      |      | Diurnal Average  |      |      |               |               |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                           |  |
| 36.6 78.2 43.3 32.3 33.9 19.4 39.1 84.4 128.3 125.3 71.6 43.1 35.9 41.7 50.4 51.8 51.4 65.4 67.3 36.6 57.9 51.4 52.1 60.5                                    |                               |                 |      |      |      |                 |      |      |       |                    |      |      |      |      |      |      |      |      |      |      |      | Diurnal Maximum  |      |      |               |               |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                           |  |
| Z - zerospan   |                               | C - Calibration |      |      |      | M - Maintenance |      |      |       | PF - Power Failure |      |      |      |      |      |      |      |      |      |      |      |  |      |      |               |               |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                           |  |





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Nitric Oxide (NO) - ppb**  
**Ells River - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 20                            | 579                    | 91.61    | 91.61               |
| 21 - 40                           | 32                     | 5.06     | 96.68               |
| 41 - 80                           | 18                     | 2.85     | 99.53               |
| 81 - 159                          | 3                      | 0.47     | 100.00              |
| > 159                             | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 632

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Nitric Oxide (NO) - ppb  
Ells River - February 2023**

| <b>Concentration<br/>Ranges (ppb)</b> | <b>Wind Direction</b> |     |    |     |    |     |    |     |    |     |    |     |    |     |    |     | <b>Totals</b> |
|---------------------------------------|-----------------------|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|---------------|
|                                       | N                     | NNE | NE | ENE | E  | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |               |
| 0 - 20                                | 34                    | 123 | 41 | 26  | 10 | 6   | 12 | 24  | 58 | 72  | 22 | 36  | 41 | 31  | 22 | 12  | 570           |
| 21 - 40                               | 7                     | 3   | 1  | 0   | 0  | 1   | 0  | 2   | 5  | 3   | 0  | 3   | 1  | 2   | 2  | 2   | 32            |
| 11 - 80                               | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 3   | 6  | 1   | 0  | 0   | 1  | 2   | 5  | 0   | 18            |
| 81 - 159                              | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 1  | 0   | 1  | 1   | 3             |
| > 159                                 | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| <b>Totals</b>                         | 41                    | 126 | 42 | 26  | 10 | 7   | 12 | 29  | 69 | 76  | 22 | 39  | 44 | 35  | 30 | 15  | 623           |

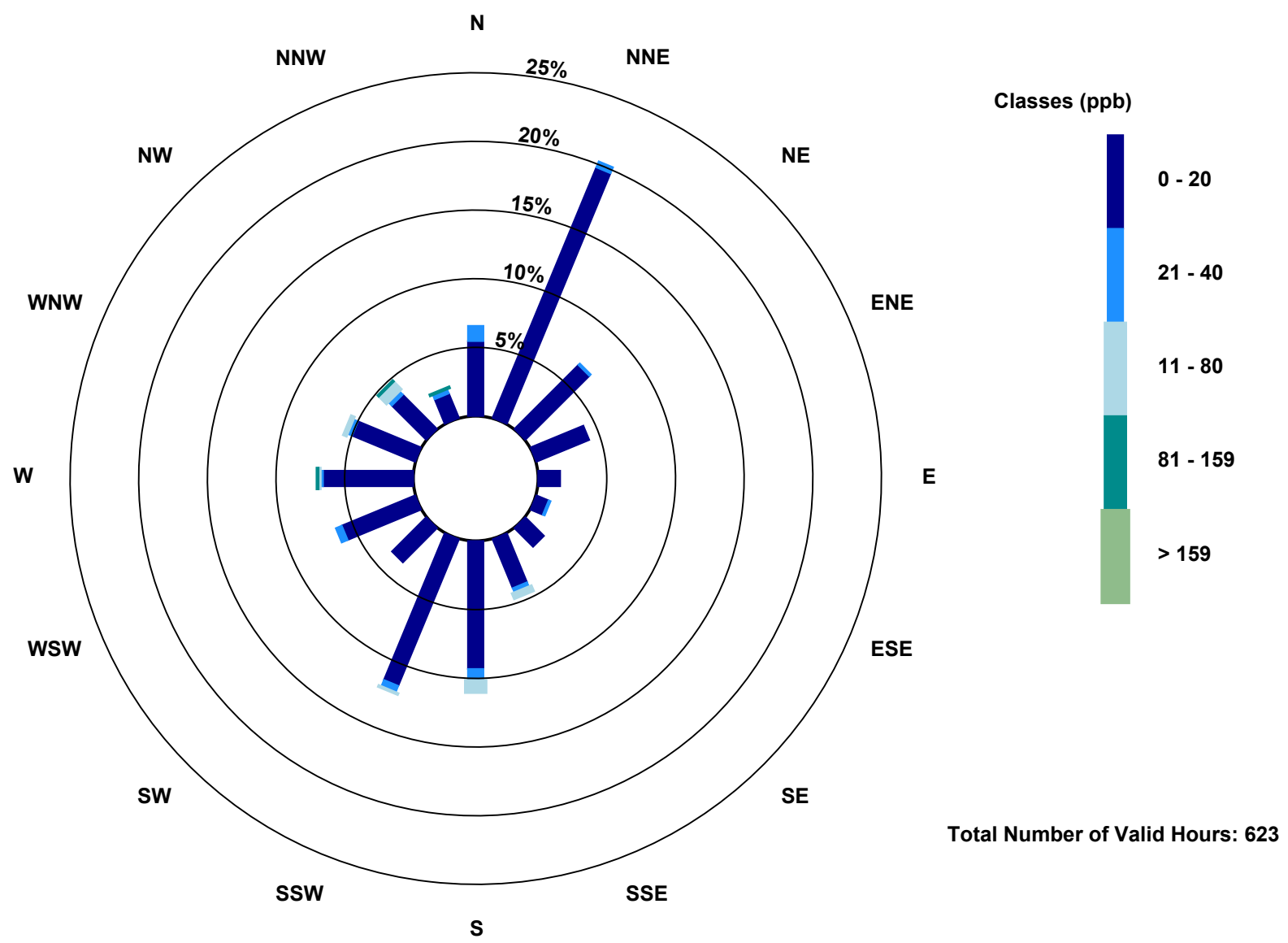
Total Number of Valid Hours: 623

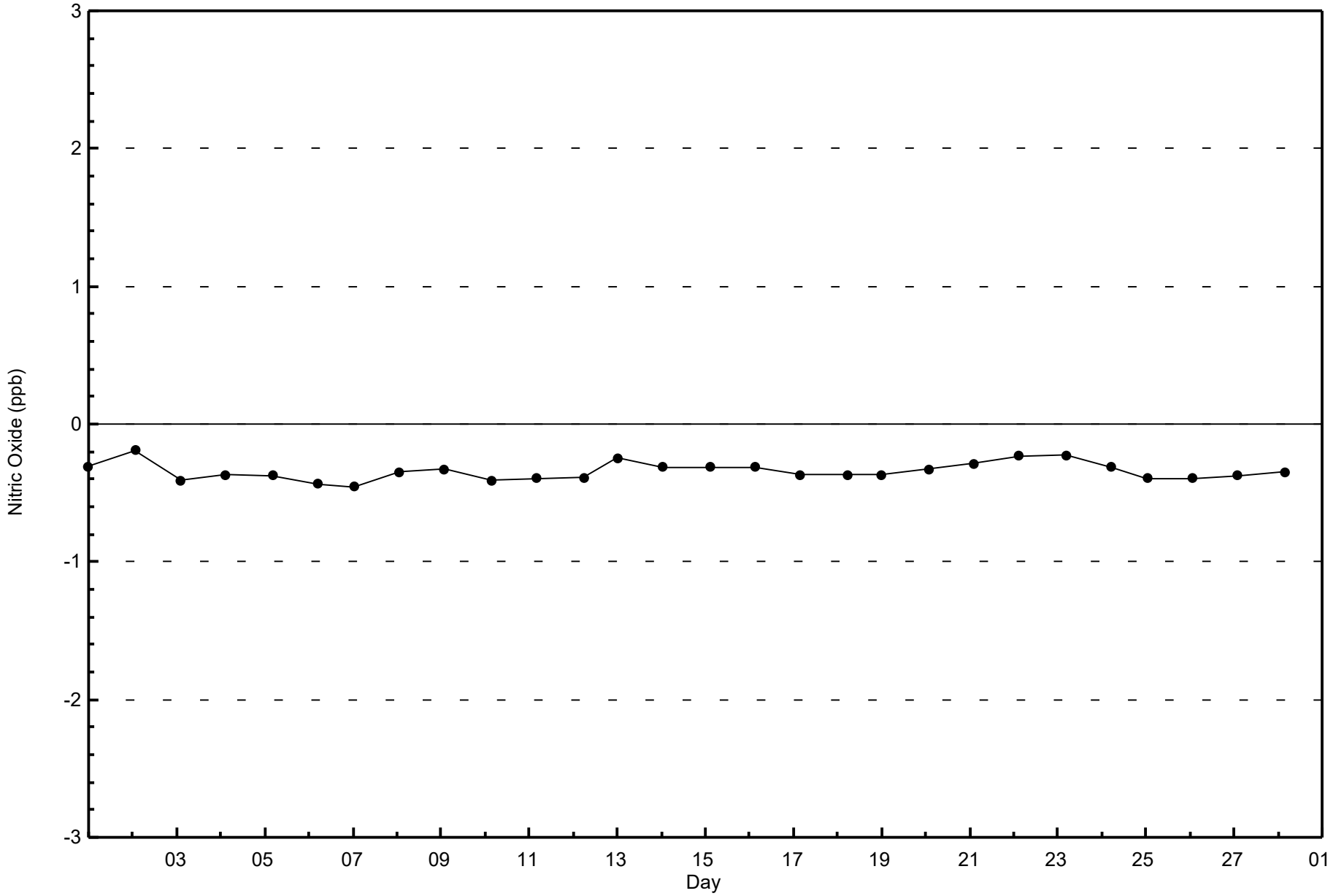
Total Number of Hours: 672

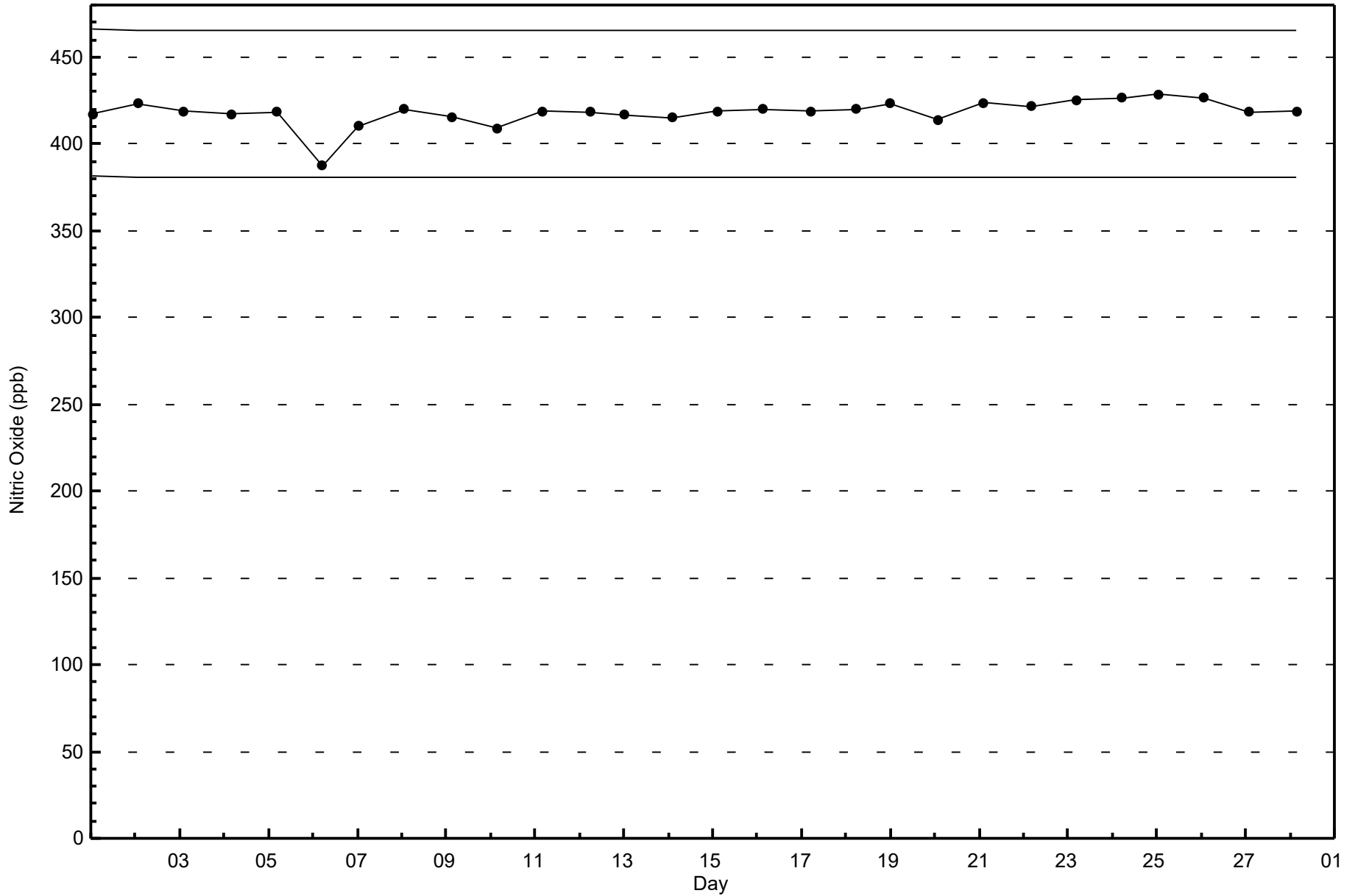


Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Nitric Oxide (NO) - ppb  
Ells River











**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

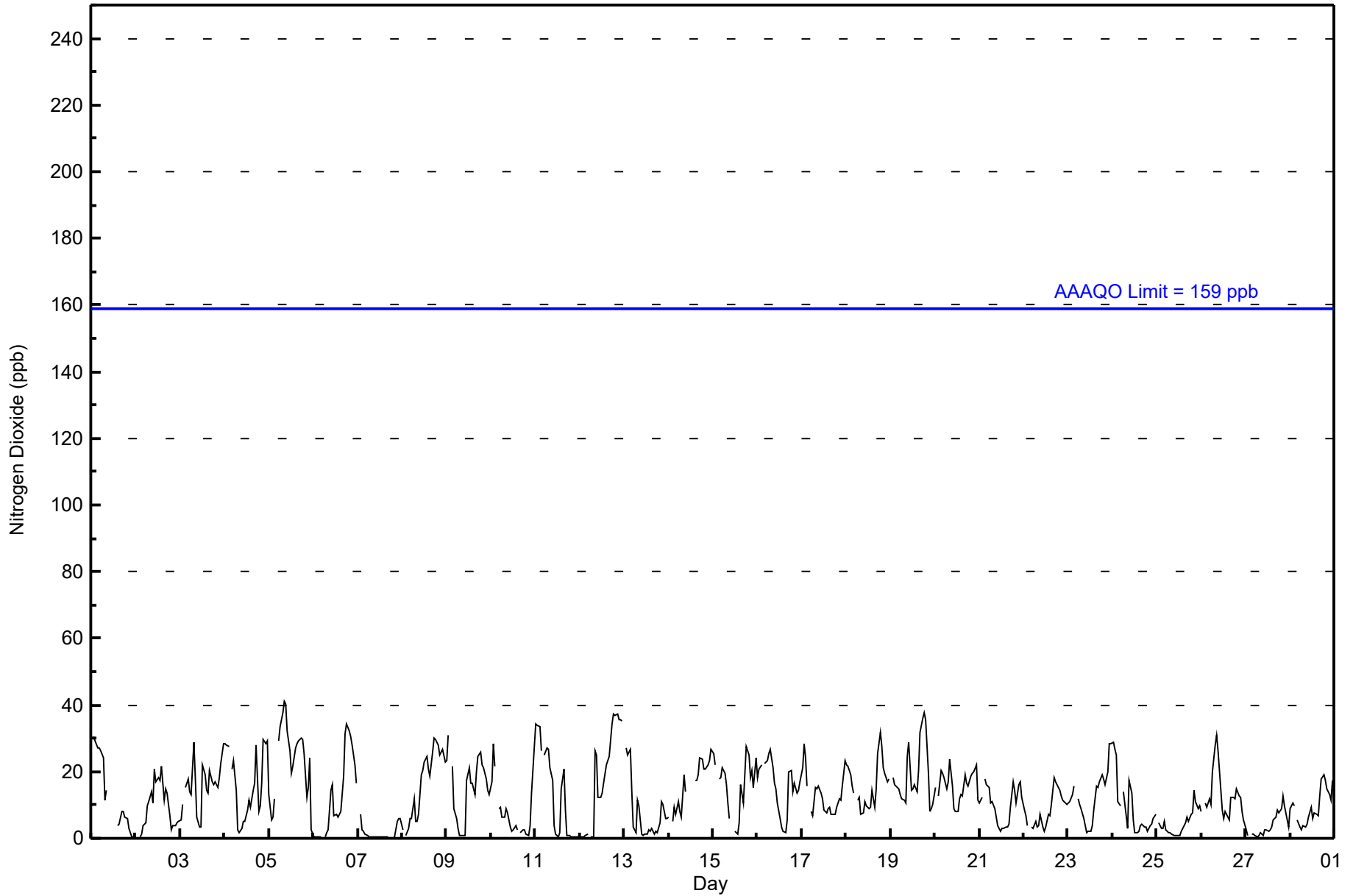
**Nitrogen Dioxide (NO<sub>2</sub>) - ppb**  
**Ells River - February 2023**

| Number of Exceedences (AAAQO):                  |                               | 1-hr: 0  |      | 24-hr: 0 |      | Hours in Service:         |      | 672  |      |                    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |               |                 |      |
|---|-------------------------------|--|------|----------|------|---------------------------|------|------|------|--------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|---------------|-----------------|------|
| Maximum Value: 41.0 ppb on Feb 5 09:00          |                               | Maximum Daily Average: 23.6 ppb on Feb 5   |      |          |      | Hours of Data:            |      | 632  |      |                    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |               |                 |      |
| Minimum Value: 0.2 ppb on Feb 7 18:00           |                               | Minimum Daily Average: 1.5 ppb on Feb 7  |      |          |      | Hours of Missing Data:    |      | 40   |      |                    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |               |                 |      |
| Maximum Diurnal Average: 16.8 ppb at hour 2     |                               | Minimum Diurnal Average: 8.1 ppb at hour 12  |      |          |      | Hours of Calibration:     |      | 33   |      |                    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |               |                 |      |
| Monthly Average: 12.58 ppb                      |                               | Percentiles: P <sub>1</sub> = 0.3 P <sub>10</sub> = 1.2 Q <sub>1</sub> = 4.2 Median = 11.2 Q <sub>3</sub> = 19.0 P <sub>90</sub> = 26.7 P <sub>99</sub> = 36.8 |      |          |      | Percent Operational Time: |      | 99.0 |      |                    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |               |                 |      |
| Day   | Hourly Period Ending At (MST) |  |      |          |      |                           |      |      |      |                    |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Daily Average | Daily Maximum   |      |
|   | 1                             | 2  | 3    | 4        | 5    | 6                         | 7    | 8    | 9    | 10                 | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20   | 21   | 22   | 23   | 24   |               |                 |      |
| 1-Feb   | Z                             | 30.6   | 29.4 | 27.0     | 27.0 | 26.2                      | 24.0 | 11.3 | 14.2 | C                  | C    | C    | C    | C    | 3.7  | 4.4  | 7.9  | 7.9  | 6.4  | 5.9  | 2.8  | 1.7  | 0.6  | 0.3  | 12.9          | 30.6            |      |
| 2-Feb   | 0.3                           | Z  | 0.3  | 1.3      | 3.7  | 4.5                       | 9.9  | 11.2 | 14.1 | 10.4               | 20.9 | 17.1 | 18.4 | 17.2 | 21.8 | 11.6 | 14.8 | 13.5 | 6.8  | 2.7  | 3.9  | 3.9  | 4.5  | 5.2  | 9.5           | 21.8            |      |
| 3-Feb   | 5.7                           | 10.3   | Z    | 15.1     | 17.6 | 13.8                      | 13.0 | 28.7 | 18.3 | 6.5                | 3.2  | 3.4  | 22.1 | 19.0 | 14.2 | 13.5 | 20.2 | 16.9 | 16.0 | 16.9 | 15.1 | 18.4 | 22.5 | 28.5 | 15.6          | 28.7            |      |
| 4-Feb   | 28.2                          | 27.9   | 27.5 | Z        | 20.6 | 23.3                      | 14.2 | 2.4  | 1.9  | 3.0                | 4.9  | 5.1  | 8.3  | 11.4 | 9.2  | 14.6 | 16.4 | 28.0 | 8.1  | 9.8  | 16.4 | 29.7 | 28.2 | 29.2 | 16.0          | 29.7            |      |
| 5-Feb   | 13.2                          | 5.7  | 6.3  | 11.9     | Z    | 29.1                      | 33.3 | 37.9 | 41.0 | 40.3               | 32.4 | 26.4 | 19.5 | 21.4 | 27.2 | 28.5 | 29.3 | 30.2 | 29.8 | 25.3 | 12.4 | 15.2 | 24.1 | 2.5  | 23.6          | 41.0            |      |
| 6-Feb   | 0.5                           | 0.5  | 0.4  | 0.4      | 0.3  | Z                         | 0.5  | 1.6  | 2.5  | 14.5               | 16.1 | 6.6  | 7.1  | 6.5  | 7.0  | 7.9  | 18.5 | 31.4 | 34.3 | 32.4 | 30.4 | 27.9 | 21.9 | 16.5 | 12.4          | 34.3            |      |
| 7-Feb   | Z                             | 7.0  | 2.6  | 2.1      | 1.2  | 0.7                       | 0.4  | 0.3  | 0.3  | 0.3                | 0.3  | 0.4  | 0.4  | 0.3  | 0.3  | 0.3  | 0.3  | 0.2  | 0.2  | 0.2  | 0.3  | 5.2  | 6.0  | 5.8  | 1.5           | 7.0             |      |
| 8-Feb   | 2.4                           | Z  | 1.0  | 2.8      | 5.9  | 5.8                       | 12.0 | 5.2  | 5.2  | 7.3                | 19.1 | 20.4 | 22.9 | 24.7 | 20.8 | 18.6 | 25.9 | 30.2 | 29.6 | 27.9 | 25.0 | 26.0 | 26.6 | 22.7 | 16.9          | 30.2            |      |
| 9-Feb   | 23.4                          | 31.0   | Z    | 21.5     | 8.8  | 5.9                       | 3.0  | 0.9  | 0.7  | 0.8                | 0.8  | 17.2 | 21.1 | 16.5 | 16.7 | 13.1 | 20.0 | 24.6 | 25.7 | 22.2 | 21.3 | 17.7 | 14.3 | 13.0 | 14.8          | 31.0            |      |
| 10-Feb  | 17.0                          | 28.5   | 21.7 | Z        | 8.7  | 9.3                       | 6.4  | 6.3  | 8.7  | 7.7                | 3.4  | 2.3  | 2.6  | 3.7  | 2.7  | PF   | 1.6  | 2.7  | 2.4  | 1.2  | 1.0  | 4.0  | 13.6 | 27.5 | 8.3           | 28.5            |      |
| 11-Feb  | 34.2                          | 34.1   | 33.3 | 26.2     | Z    | 25.1                      | 27.1 | 26.5 | 21.3 | 17.2               | 3.7  | 1.2  | 0.6  | 1.7  | 14.9 | 20.6 | 8.6  | 0.9  | 0.8  | 0.6  | 0.4  | 0.3  | 0.3  | 0.3  | 13.0          | 34.2            |      |
| 12-Feb  | 0.3                           | 0.3  | 0.3  | 1.0      | 1.1  | Z                         | 0.5  | 0.4  | 26.3 | 25.2               | 12.3 | 12.3 | 13.6 | 16.4 | 21.9 | 23.2 | 24.7 | 34.3 | 37.3 | 37.0 | 37.2 | 35.8 | 35.4 | 35.2 | 18.8          | 37.3            |      |
| 13-Feb  | Z                             | 27.1   | 25.1 | 26.8     | 14.0 | 3.2                       | 1.5  | 11.3 | 9.6  | 1.3                | 0.8  | 1.4  | 1.4  | 2.7  | 2.1  | 3.0  | 1.2  | 2.0  | 1.5  | 4.6  | 11.0 | 10.2 | 5.9  | 6.0  | 7.6           | 27.1            |      |
| 14-Feb  | 6.4                           | Z  | 4.9  | 9.2      | 7.3  | 11.1                      | 8.1  | 6.4  | 19.1 | 13.8               | 18.8 | M    | M    | M    | M    | 17.2 | 17.3 | 18.9 | 24.2 | 23.9 | 20.9 | 20.7 | 22.1 | 23.1 | 26.7          | 15.9            | 26.7 |
| 15-Feb  | 25.4                          | 22.2   | Z    | 17.9     | 18.3 | 21.1                      | 19.5 | 16.1 | 10.6 | 6.1                | M    | M    | M    | 2.1  | 1.2  | 4.5  | 16.2 | 10.7 | 19.1 | 27.4 | 25.2 | 18.3 | 20.5 | 15.2 | 24.1          | 16.3            | 27.4 |
| 16-Feb  | 18.3                          | 20.6   | 22.2 | Z        | 22.4 | 23.4                      | 25.6 | 26.6 | 21.2 | 16.7               | 15.0 | 10.6 | 6.1  | 3.2  | 2.0  | 1.9  | 5.3  | 19.8 | 20.2 | 13.8 | 16.4 | 13.4 | 14.5 | 16.9 | 15.5          | 26.6            |      |
| 17-Feb  | 21.0                          | 28.2   | 24.1 | 15.8     | Z    | 8.1                       | 6.9  | 15.3 | 14.8 | 15.8               | 13.7 | 12.0 | 8.6  | 7.8  | 8.9  | 9.2  | 7.2  | 7.0  | 7.4  | 9.5  | 11.7 | 11.5 | 15.7 | 23.1 | 13.2          | 28.2            |      |
| 18-Feb  | 22.0                          | 21.7   | 19.1 | 15.7     | 13.6 | Z                         | 11.3 | 12.1 | 7.4  | 7.8                | 11.0 | 9.9  | 9.0  | 9.2  | 14.3 | 9.5  | 14.9 | 25.5 | 31.9 | 27.6 | 21.2 | 19.7 | 17.1 | 18.0 | 16.1          | 31.9            |      |
| 19-Feb  | Z                             | 18.3   | 16.3 | 15.8     | 15.0 | 13.3                      | 11.9 | 11.4 | 10.5 | 24.4               | 28.8 | 14.6 | 14.7 | 16.2 | 14.1 | 20.5 | 31.8 | 36.2 | 37.7 | 35.4 | 19.6 | 7.9  | 8.9  | 10.2 | 18.8          | 37.7            |      |
| 20-Feb  | 15.2                          | Z  | 12.6 | 20.2     | 19.7 | 18.4                      | 14.7 | 17.1 | 23.6 | 15.8               | 8.8  | 8.2  | 8.1  | 11.9 | 13.1 | 12.9 | 19.2 | 16.4 | 15.7 | 18.5 | 19.5 | 20.0 | 22.2 | 11.4 | 15.8          | 23.6            |      |
| 21-Feb  | 10.8                          | 12.1   | Z    | 17.6     | 15.9 | 15.4                      | 10.7 | 11.2 | 8.8  | 6.3                | 3.7  | 2.2  | 2.9  | 3.0  | 3.3  | 3.5  | 4.2  | 9.3  | 16.9 | 14.2 | 10.6 | 16.1 | 17.0 | 12.4 | 9.9           | 17.6            |      |
| 22-Feb  | 8.6                           | 6.6  | 3.8  | Z        | 3.5  | 2.9                       | 4.9  | 3.4  | 3.7  | 7.1                | 3.2  | 2.1  | 3.6  | 7.3  | 6.7  | 10.3 | 18.3 | 17.1 | 16.3 | 14.5 | 12.6 | 11.5 | 11.0 | 10.2 | 8.2           | 18.3            |      |
| 23-Feb  | 10.5                          | 11.0   | 13.0 | 15.7     | Z    | 11.8                      | 10.1 | 8.9  | 6.1  | 3.8                | 1.7  | 2.0  | 2.0  | 3.8  | 8.3  | 15.7 | 15.3 | 17.1 | 18.9 | 17.9 | 16.0 | 20.1 | 28.5 | 28.5 | 12.5          | 28.5            |      |
| 24-Feb  | 28.7                          | 26.9   | 25.2 | 11.2     | 9.6  | Z                         | 14.0 | 6.7  | 3.1  | 17.2               | 13.4 | 5.3  | 1.8  | 1.8  | 2.2  | 3.9  | 4.2  | 3.2  | 3.4  | 2.2  | 3.9  | 4.4  | 6.1  | 7.0  | 8.9           | 28.7            |      |
| 25-Feb  | Z                             | 4.7  | 3.0  | 3.0      | 4.9  | 2.7                       | 1.7  | 1.6  | 1.3  | 1.0                | 0.8  | 0.7  | 0.7  | 2.0  | 3.1  | 4.6  | 6.2  | 5.1  | 7.0  | 7.7  | 14.3 | 11.0 | 8.8  | 9.6  | 4.6           | 14.3            |      |
| 26-Feb  | 8.0                           | Z  | 10.8 | 9.5      | 11.9 | 10.3                      | 20.1 | 28.1 | 31.1 | 26.3               | 20.4 | 8.6  | 6.0  | 8.0  | 6.3  | 5.5  | 12.2 | 12.3 | 11.9 | 14.8 | 12.9 | 12.1 | 7.9  | 5.7  | 13.1          | 31.1            |      |
| 27-Feb  | 2.7                           | 1.0  | Z    | 1.2      | 1.1  | 0.8                       | 0.5  | 0.9  | 1.5  | 0.7                | 2.5  | 2.6  | 2.2  | 2.5  | 3.2  | 5.3  | 6.2  | 8.5  | 7.5  | 9.0  | 12.6 | 9.7  | 5.6  | 3.2  | 4.0           | 12.6            |      |
| 28-Feb  | 8.8                           | 10.5   | 9.9  | Z        | 5.3  | 3.5                       | 2.4  | 3.7  | 3.2  | 4.2                | 6.2  | 9.4  | 6.1  | 7.7  | 7.0  | 6.7  | 12.5 | 17.9 | 19.0 | 17.3 | 14.8 | 13.2 | 11.4 | 17.4 | 9.5           | 19.0            |      |
|   |                               | 13.5   | 16.8 | 13.6     | 12.6 | 10.7                      | 12.1 | 11.0 | 11.2 | 11.8               | 11.2 | 9.9  | 8.1  | 8.2  | 8.7  | 9.9  | 11.2 | 13.4 | 16.5 | 16.6 | 15.5 | 14.4 | 14.6 | 14.9 | 14.9          | Diurnal Average |      |
|   |                               | 34.2   | 34.1 | 33.3     | 27.0 | 27.0                      | 29.1 | 33.3 | 37.9 | 41.0               | 40.3 | 32.4 | 26.4 | 22.9 | 24.7 | 27.2 | 28.5 | 31.8 | 36.2 | 37.7 | 37.0 | 37.2 | 35.8 | 35.4 | 35.2          | Diurnal Maximum |      |
| Z - zerospan                                    |                               | C - Calibration  |      |          |      | M - Maintenance           |      |      |      | PF - Power Failure |      |      |      |      |      |      |      |      |      |      |      |      |      |      |               |                 |      |
| Alberta Ambient Air Quality Objectives (AAAQO): |                               | 1-hr   |      | 159 ppb  |      |                           |      |      |      |                    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |               |                 |      |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Nitrogen Dioxide (NO<sub>2</sub>) - ppb**  
**Ells River - February 2023**





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Nitrogen Dioxide (NO<sub>2</sub>) - ppb**  
**Ells River - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 20                            | 496                    | 78.48    | 78.48               |
| 21 - 40                           | 135                    | 21.36    | 99.84               |
| 41 - 80                           | 1                      | 0.16     | 100.00              |
| 81 - 159                          | 0                      | 0.00     | 100.00              |
| > 159                             | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 632

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Nitrogen Dioxide (NO<sub>2</sub>) - ppb  
Ells River - February 2023**

| <b>Concentration<br/>Ranges (ppb)</b> | <b>Wind Direction</b> |            |           |            |          |            |           |            |          |            |           |            |          |            |           |            | <b>Totals</b> |
|---------------------------------------|-----------------------|------------|-----------|------------|----------|------------|-----------|------------|----------|------------|-----------|------------|----------|------------|-----------|------------|---------------|
|                                       | <b>N</b>              | <b>NNE</b> | <b>NE</b> | <b>ENE</b> | <b>E</b> | <b>ESE</b> | <b>SE</b> | <b>SSE</b> | <b>S</b> | <b>SSW</b> | <b>SW</b> | <b>WSW</b> | <b>W</b> | <b>WNW</b> | <b>NW</b> | <b>NNW</b> |               |
| 0 - 20                                | 27                    | 113        | 39        | 21         | 8        | 4          | 10        | 22         | 51       | 57         | 16        | 34         | 35       | 24         | 18        | 8          | 487           |
| 21 - 40                               | 14                    | 13         | 3         | 5          | 2        | 3          | 2         | 7          | 18       | 19         | 6         | 5          | 9        | 11         | 12        | 6          | 135           |
| 41 - 80                               | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 1          | 1             |
| 81 - 159                              | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0             |
| > 159                                 | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0             |
| <b>Totals</b>                         | 41                    | 126        | 42        | 26         | 10       | 7          | 12        | 29         | 69       | 76         | 22        | 39         | 44       | 35         | 30        | 15         | 623           |

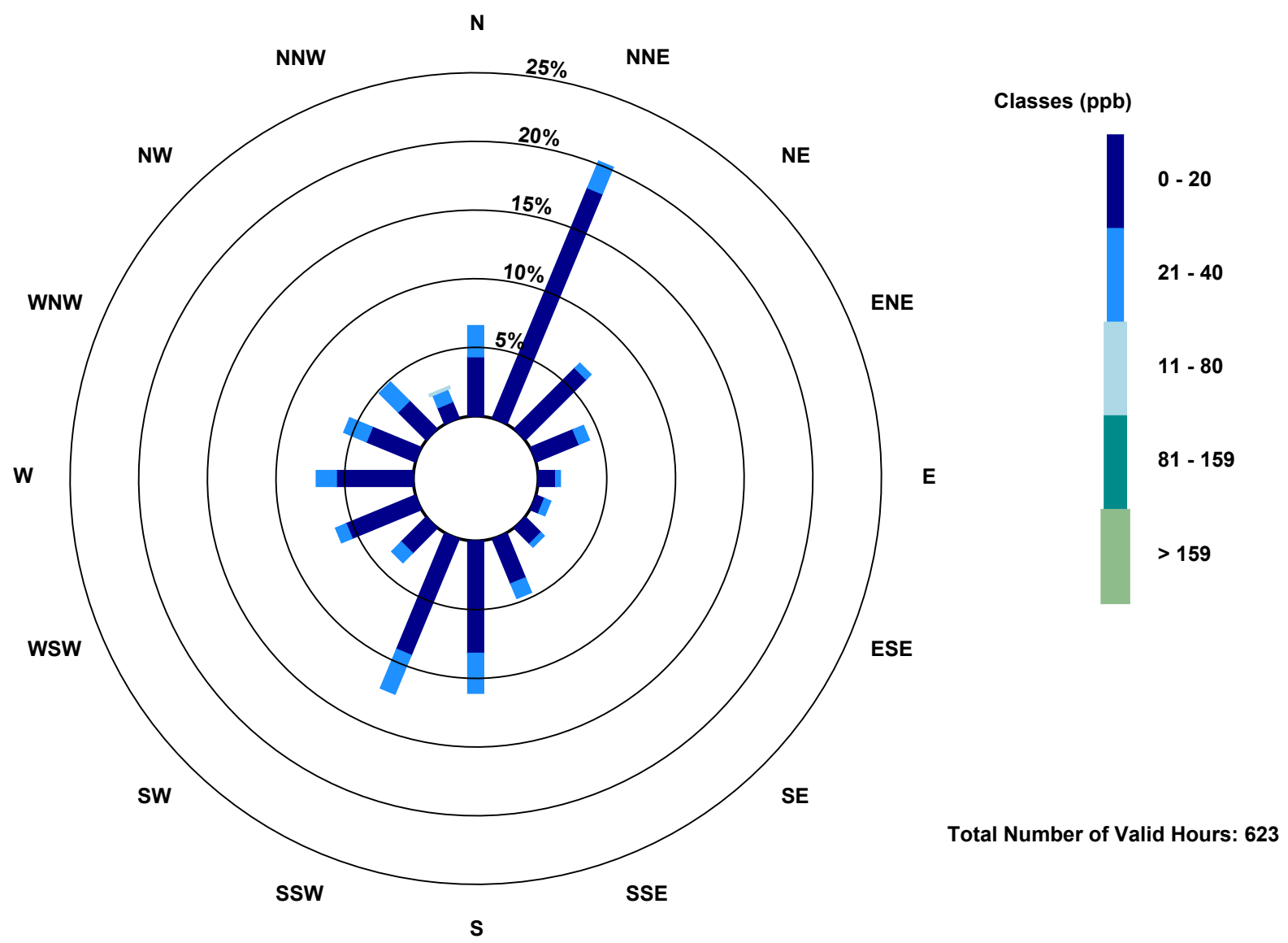
Total Number of Valid Hours: 623

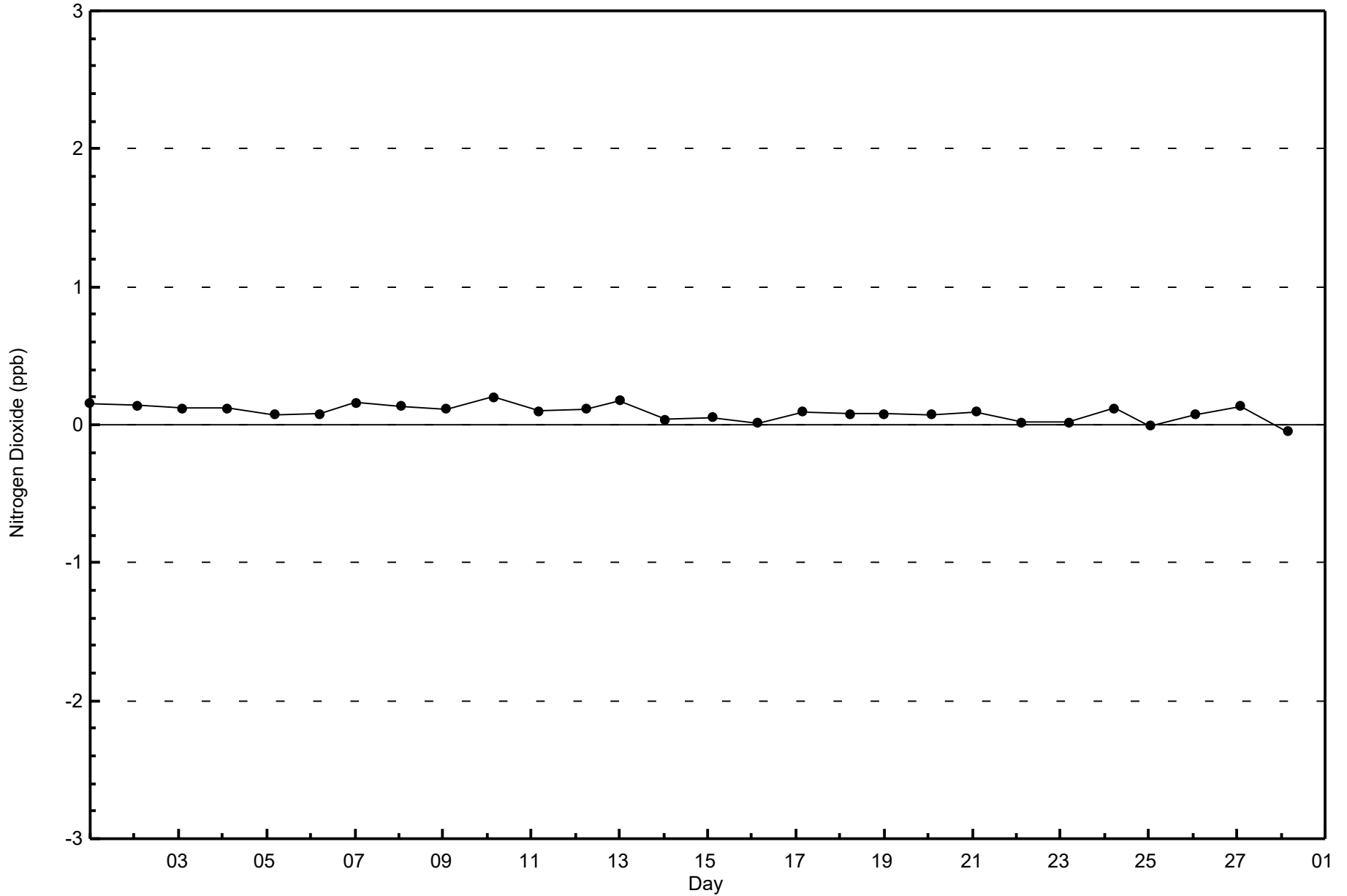
Total Number of Hours: 672

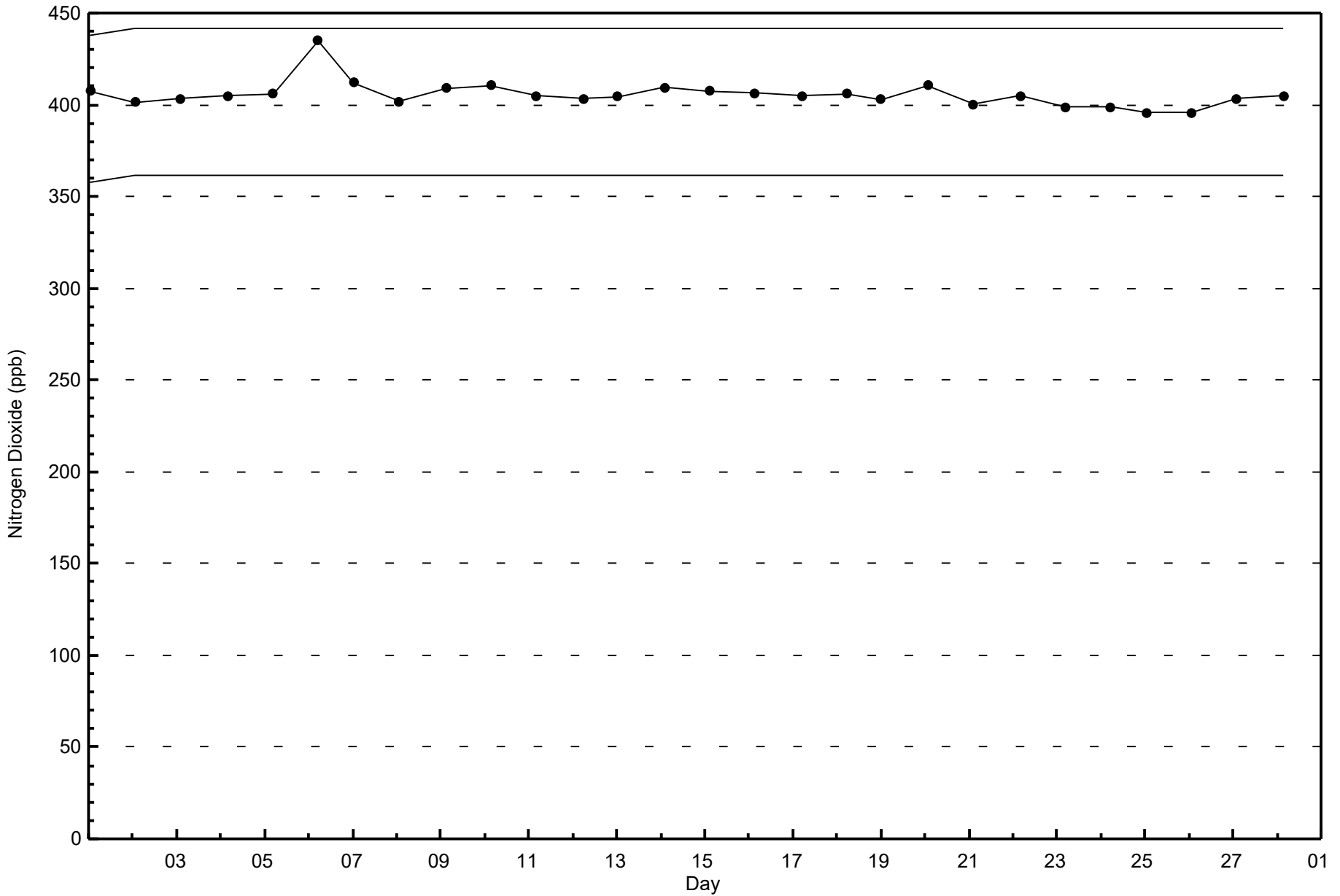


Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Nitrogen Dioxide (NO<sub>2</sub>) - ppb  
Ells River







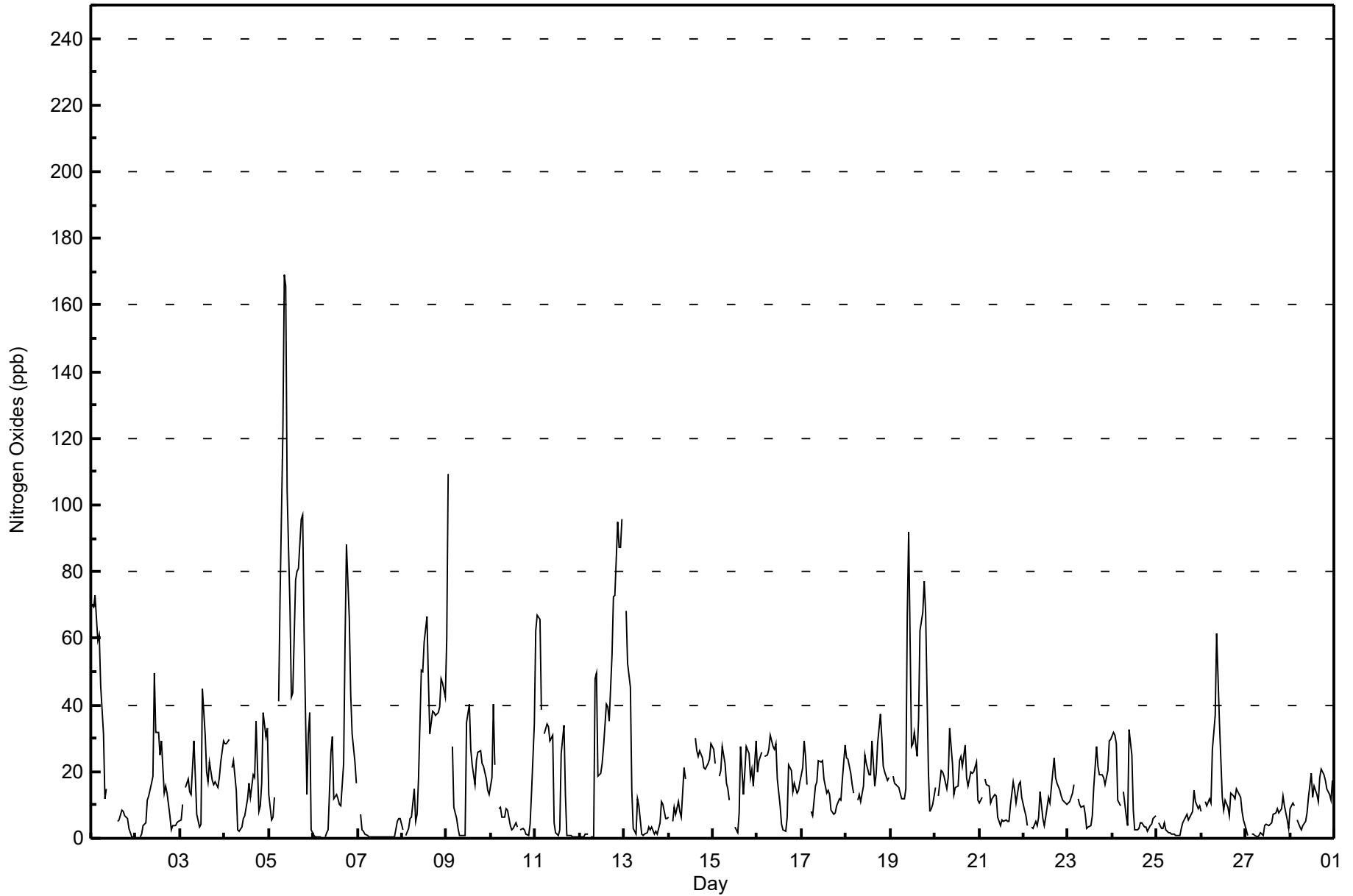


**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

**Nitrogen Oxides (NO<sub>x</sub>) - ppb**  
**Ells River - February 2023**

| Maximum Value: 169.3 ppb on Feb 5 09:00      Maximum Daily Average: 62.9 ppb on Feb 5  |                               |       |                 |      |      |      |                 |       |       |       |                    |      |      |      |      |      |      |      |      |      |      | Hours in Service: 672<br>Hours of Data: 632           |      |      |               |               |      |
|--|-------------------------------|-------|-----------------|------|------|------|-----------------|-------|-------|-------|--------------------|------|------|------|------|------|------|------|------|------|------|---|------|------|---------------|---------------|------|
| Minimum Value: 0.3 ppb on Feb 2 01:00      Minimum Daily Average: 1.6 ppb on Feb 7   |                               |       |                 |      |      |      |                 |       |       |       |                    |      |      |      |      |      |      |      |      |      |      | Hours of Missing Data: 40<br>Hours of Calibration: 33 |      |      |               |               |      |
| Maximum Diurnal Average: 26.1 ppb at hour 2      Minimum Diurnal Average: 12.4 ppb at hour 5   |                               |       |                 |      |      |      |                 |       |       |       |                    |      |      |      |      |      |      |      |      |      |      | Percent Operational Time: 99.0                        |      |      |               |               |      |
| Monthly Average: 18.47 ppb      Percentiles: P <sub>1</sub> = 0.4 P <sub>10</sub> = 1.3 Q <sub>1</sub> = 5.2 Median = 13.2 Q <sub>3</sub> = 23.5 P <sub>90</sub> = 39.2 P <sub>99</sub> = 95.7 |                               |       |                 |      |      |      |                 |       |       |       |                    |      |      |      |      |      |      |      |      |      |      |   |      |      |               |               |      |
| Day  | Hourly Period Ending At (MST) |       |                 |      |      |      |                 |       |       |       |                    |      |      |      |      |      |      |      |      |      |      |   |      |      | Daily Average | Daily Maximum |      |
|  | 1                             | 2     | 3               | 4    | 5    | 6    | 7               | 8     | 9     | 10    | 11                 | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20   | 21   | 22  | 23   | 24   |               |               |      |
| 1-Feb  | Z                             | 69.3  | 72.7            | 59.3 | 60.9 | 45.6 | 31.2            | 12.0  | 14.7  | C     | C                  | C    | C    | C    | 5.1  | 5.4  | 8.5  | 7.9  | 6.7  | 6.0  | 3.1  | 1.8   | 0.6  | 0.3  | 22.8          | 72.7          |      |
| 2-Feb  | 0.3                           | Z     | 0.3             | 1.3  | 3.7  | 4.5  | 11.3            | 12.6  | 16.4  | 18.7  | 49.6               | 31.9 | 31.9 | 25.1 | 29.3 | 13.5 | 15.5 | 13.6 | 6.8  | 2.7  | 3.9  | 3.9   | 4.5  | 5.2  | 13.3          | 49.6          |      |
| 3-Feb  | 5.7                           | 10.3  | Z               | 15.1 | 17.6 | 13.8 | 13.0            | 29.4  | 18.8  | 7.0   | 3.6                | 4.2  | 44.7 | 30.8 | 19.8 | 16.9 | 23.0 | 17.2 | 16.0 | 16.9 | 15.2 | 18.4  | 22.7 | 29.1 | 17.8          | 44.7          |      |
| 4-Feb  | 28.5                          | 28.6  | 29.6            | Z    | 21.0 | 23.5 | 14.3            | 2.4   | 2.0   | 3.3   | 6.0                | 6.8  | 12.0 | 16.6 | 12.1 | 18.9 | 18.4 | 35.3 | 8.1  | 9.8  | 16.5 | 37.8  | 30.6 | 33.1 | 18.1          | 37.8          |      |
| 5-Feb  | 13.2                          | 5.7   | 6.3             | 12.1 | Z    | 41.3 | 72.4            | 122.3 | 169.3 | 165.6 | 104.0              | 69.5 | 42.4 | 43.7 | 77.6 | 80.3 | 80.7 | 95.6 | 97.1 | 61.9 | 13.2 | 31.5  | 37.6 | 2.6  | 62.9          | 169.3         |      |
| 6-Feb  | 0.6                           | 0.6   | 0.5             | 0.5  | 0.4  | Z    | 0.5             | 1.8   | 2.7   | 26.0  | 30.7               | 11.7 | 13.2 | 11.7 | 10.2 | 9.6  | 22.3 | 58.8 | 88.3 | 65.9 | 43.2 | 31.4  | 22.8 | 16.6 | 20.4          | 88.3          |      |
| 7-Feb  | Z                             | 7.1   | 2.7             | 2.2  | 1.3  | 0.8  | 0.5             | 0.4   | 0.4   | 0.4   | 0.4                | 0.5  | 0.5  | 0.4  | 0.4  | 0.4  | 0.4  | 0.3  | 0.3  | 0.3  | 0.4  | 5.3   | 6.0  | 5.8  | 1.6           | 7.1           |      |
| 8-Feb  | 2.4                           | Z     | 1.0             | 2.8  | 5.9  | 6.2  | 14.8            | 5.2   | 7.1   | 17.8  | 50.4               | 50.1 | 58.8 | 66.4 | 47.3 | 31.5 | 38.2 | 37.5 | 37.0 | 37.7 | 39.2 | 47.8  | 46.5 | 42.2 | 30.2          | 66.4          |      |
| 9-Feb  | 60.0                          | 109.2 | Z               | 27.7 | 9.3  | 5.9  | 3.0             | 0.9   | 0.7   | 0.8   | 0.9                | 34.7 | 40.2 | 26.7 | 22.2 | 16.1 | 23.5 | 26.0 | 26.2 | 22.4 | 21.6 | 18.0  | 14.5 | 13.2 | 22.8          | 109.2         |      |
| 10-Feb   | 18.1                          | 40.3  | 22.1            | Z    | 8.8  | 9.4  | 6.5             | 6.4   | 9.1   | 8.5   | 3.9                | 2.7  | 3.1  | 4.7  | 3.5  | PF   | 2.4  | 2.8  | 2.4  | 1.2  | 1.0  | 4.0   | 13.7 | 34.2 | 9.5           | 40.3          |      |
| 11-Feb   | 62.1                          | 67.1  | 65.8            | 38.6 | Z    | 31.3 | 34.3            | 33.5  | 29.2  | 31.0  | 4.7                | 1.8  | 0.7  | 2.5  | 25.2 | 34.0 | 13.3 | 1.0  | 0.9  | 0.7  | 0.5  | 0.4   | 0.4  | 0.4  | 20.8          | 67.1          |      |
| 12-Feb   | 0.4                           | 0.4   | 0.4             | 1.1  | 1.2  | Z    | 0.6             | 0.5   | 48.0  | 49.4  | 18.8               | 19.5 | 22.3 | 27.7 | 40.2 | 39.5 | 35.0 | 55.1 | 72.4 | 73.0 | 95.1 | 87.2  | 87.5 | 95.7 | 37.9          | 95.7          |      |
| 13-Feb   | Z                             | 68.3  | 52.6            | 45.3 | 14.4 | 3.2  | 1.5             | 11.7  | 9.8   | 1.3   | 0.8                | 1.5  | 1.6  | 3.2  | 2.4  | 3.5  | 1.2  | 2.0  | 1.5  | 4.6  | 11.0 | 10.2  | 5.9  | 6.0  | 11.5          | 68.3          |      |
| 14-Feb   | 6.4                           | Z     | 4.9             | 9.2  | 7.3  | 11.1 | 8.1             | 6.4   | 21.2  | 17.9  | M                  | M    | M    | M    | 30.2 | 26.3 | 24.6 | 26.3 | 24.0 | 21.0 | 20.8 | 22.6  | 23.7 | 28.5 | 17.9          | 30.2          |      |
| 15-Feb   | 26.8                          | 22.7  | Z               | 18.5 | 20.3 | 27.5 | 22.5            | 16.6  | 14.7  | 11.5  | M                  | M    | M    | 3.6  | 1.8  | 7.5  | 27.7 | 13.2 | 20.0 | 27.7 | 25.3 | 18.4  | 20.9 | 15.5 | 29.3          | 18.7          | 29.3 |
| 16-Feb   | 20.0                          | 23.2  | 25.9            | Z    | 24.5 | 24.9 | 26.9            | 31.0  | 27.5  | 26.6  | 28.5               | 17.7 | 9.9  | 4.4  | 2.5  | 2.3  | 6.4  | 22.2 | 20.5 | 13.9 | 16.5 | 13.5  | 14.6 | 16.9 | 18.3          | 31.0          |      |
| 17-Feb   | 21.1                          | 29.0  | 24.4            | 15.9 | Z    | 8.2  | 6.9             | 15.6  | 16.9  | 23.2  | 23.1               | 23.5 | 17.8 | 13.7 | 14.5 | 13.1 | 8.4  | 7.3  | 7.5  | 9.6  | 11.8 | 11.5  | 17.5 | 27.8 | 16.0          | 29.0          |      |
| 18-Feb   | 24.3                          | 23.5  | 19.6            | 15.9 | 13.7 | Z    | 11.6            | 13.1  | 11.0  | 15.5  | 24.9               | 22.5 | 19.1 | 19.2 | 29.3 | 15.6 | 19.6 | 28.5 | 37.4 | 30.2 | 21.5 | 19.9  | 17.3 | 18.1 | 20.5          | 37.4          |      |
| 19-Feb   | Z                             | 18.5  | 16.5            | 16.0 | 15.2 | 13.5 | 12.0            | 12.0  | 14.7  | 66.9  | 91.9               | 27.5 | 28.6 | 31.6 | 24.8 | 35.6 | 62.2 | 67.7 | 77.1 | 67.7 | 19.7 | 7.9   | 8.9  | 10.2 | 32.5          | 91.9          |      |
| 20-Feb   | 15.3                          | Z     | 12.6            | 20.3 | 19.8 | 18.5 | 14.9            | 18.1  | 33.2  | 22.7  | 13.3               | 15.1 | 15.6 | 23.5 | 24.4 | 21.4 | 27.9 | 18.0 | 15.7 | 19.7 | 19.5 | 20.0  | 22.9 | 11.4 | 19.3          | 33.2          |      |
| 21-Feb   | 10.8                          | 12.1  | Z               | 17.9 | 15.9 | 15.5 | 10.7            | 11.8  | 13.0  | 12.9  | 6.3                | 3.9  | 5.4  | 5.3  | 5.5  | 5.3  | 5.2  | 9.8  | 17.0 | 14.3 | 10.6 | 16.1  | 17.1 | 12.4 | 11.1          | 17.9          |      |
| 22-Feb   | 8.6                           | 6.6   | 3.8             | Z    | 3.6  | 3.0  | 5.2             | 3.7   | 6.2   | 13.9  | 6.0                | 3.6  | 6.2  | 12.4 | 10.7 | 15.2 | 24.1 | 18.3 | 16.4 | 14.5 | 12.6 | 11.5  | 11.0 | 10.2 | 9.9           | 24.1          |      |
| 23-Feb   | 10.5                          | 11.0  | 13.6            | 16.1 | Z    | 11.9 | 10.2            | 9.4   | 9.8   | 7.3   | 3.0                | 3.3  | 3.6  | 6.8  | 15.2 | 27.7 | 21.8 | 19.0 | 19.0 | 18.2 | 16.1 | 20.4  | 29.3 | 29.8 | 14.5          | 29.8          |      |
| 24-Feb   | 31.8                          | 30.8  | 28.5            | 11.5 | 9.7  | Z    | 14.1            | 6.9   | 3.8   | 32.8  | 25.0               | 8.6  | 2.4  | 2.4  | 2.8  | 4.6  | 4.6  | 3.2  | 3.4  | 2.2  | 3.9  | 4.4   | 6.1  | 7.0  | 10.9          | 32.8          |      |
| 25-Feb   | Z                             | 4.7   | 3.0             | 3.0  | 4.9  | 2.7  | 1.7             | 1.6   | 1.4   | 1.2   | 1.0                | 0.9  | 0.8  | 2.9  | 4.5  | 6.2  | 7.4  | 5.4  | 7.2  | 7.9  | 14.5 | 11.0  | 8.8  | 9.6  | 4.9           | 14.5          |      |
| 26-Feb   | 8.0                           | Z     | 10.9            | 9.6  | 12.0 | 10.4 | 26.6            | 36.7  | 61.5  | 48.2  | 34.7               | 12.3 | 8.5  | 11.6 | 9.1  | 6.7  | 13.4 | 12.7 | 12.0 | 14.9 | 13.0 | 12.2  | 8.0  | 5.7  | 17.3          | 61.5          |      |
| 27-Feb   | 2.7                           | 1.0   | Z               | 1.3  | 1.1  | 0.8  | 0.5             | 0.9   | 1.7   | 0.9   | 3.8                | 4.4  | 3.6  | 4.1  | 4.9  | 7.1  | 7.5  | 9.1  | 7.5  | 9.0  | 12.6 | 9.7   | 5.6  | 3.2  | 4.5           | 12.6          |      |
| 28-Feb   | 8.8                           | 10.5  | 9.9             | Z    | 5.3  | 3.6  | 2.4             | 4.0   | 5.1   | 7.7   | 12.2               | 19.7 | 12.4 | 15.7 | 13.2 | 11.1 | 18.1 | 20.9 | 19.2 | 17.3 | 14.8 | 13.3  | 11.5 | 17.6 | 11.9          | 20.9          |      |
| 16.8   26.1   18.6   15.7   12.4   14.0   13.5   15.2   20.4   23.7   21.9   15.9   15.7   15.9   17.7   18.4   19.5   22.9   24.1   21.0   17.5   18.3   18.3   18.6                          |                               |       |                 |      |      |      |                 |       |       |       |                    |      |      |      |      |      |      |      |      |      |      | Diurnal Average                                       |      |      |               |               |      |
| 62.1   109.2   72.7   59.3   60.9   45.6   72.4   122.3   169.3   165.6   104.0   69.5   58.8   66.4   77.6   80.3   80.7   95.6   97.1   73.0   95.1   87.2   87.5   95.7                     |                               |       |                 |      |      |      |                 |       |       |       |                    |      |      |      |      |      |      |      |      |      |      | Diurnal Maximum                                       |      |      |               |               |      |
| Z - zerspan  |                               |       | C - Calibration |      |      |      | M - Maintenance |       |       |       | PF - Power Failure |      |      |      |      |      |      |      |      |      |      |   |      |      |               |               |      |







**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Nitrogen Oxides (NO<sub>x</sub>) - ppb  
Ells River - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 20                            | 442                    | 69.94    | 69.94               |
| 21 - 40                           | 131                    | 20.73    | 90.66               |
| 41 - 80                           | 45                     | 7.12     | 97.78               |
| 81 - 159                          | 11                     | 1.74     | 99.53               |
| > 159                             | 2                      | 0.32     | 99.84               |

Total Number of Valid Hours: 632

Total Number of Hours: 672



**Wood Buffalo Environmental Association**  
**Frequency Distribution**

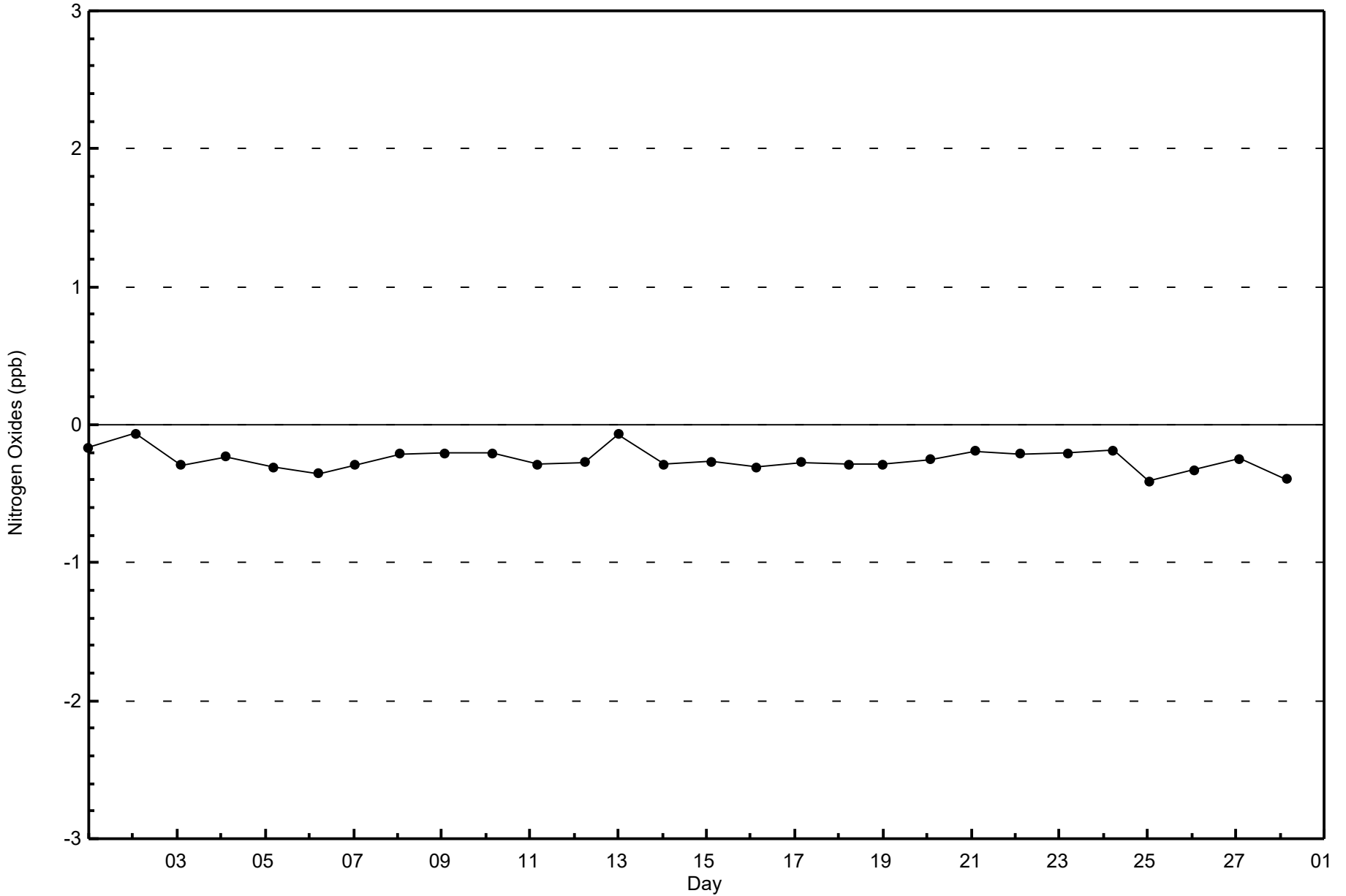
**Nitrogen Oxides (NO<sub>x</sub>) - ppb**  
**Ells River - February 2023**

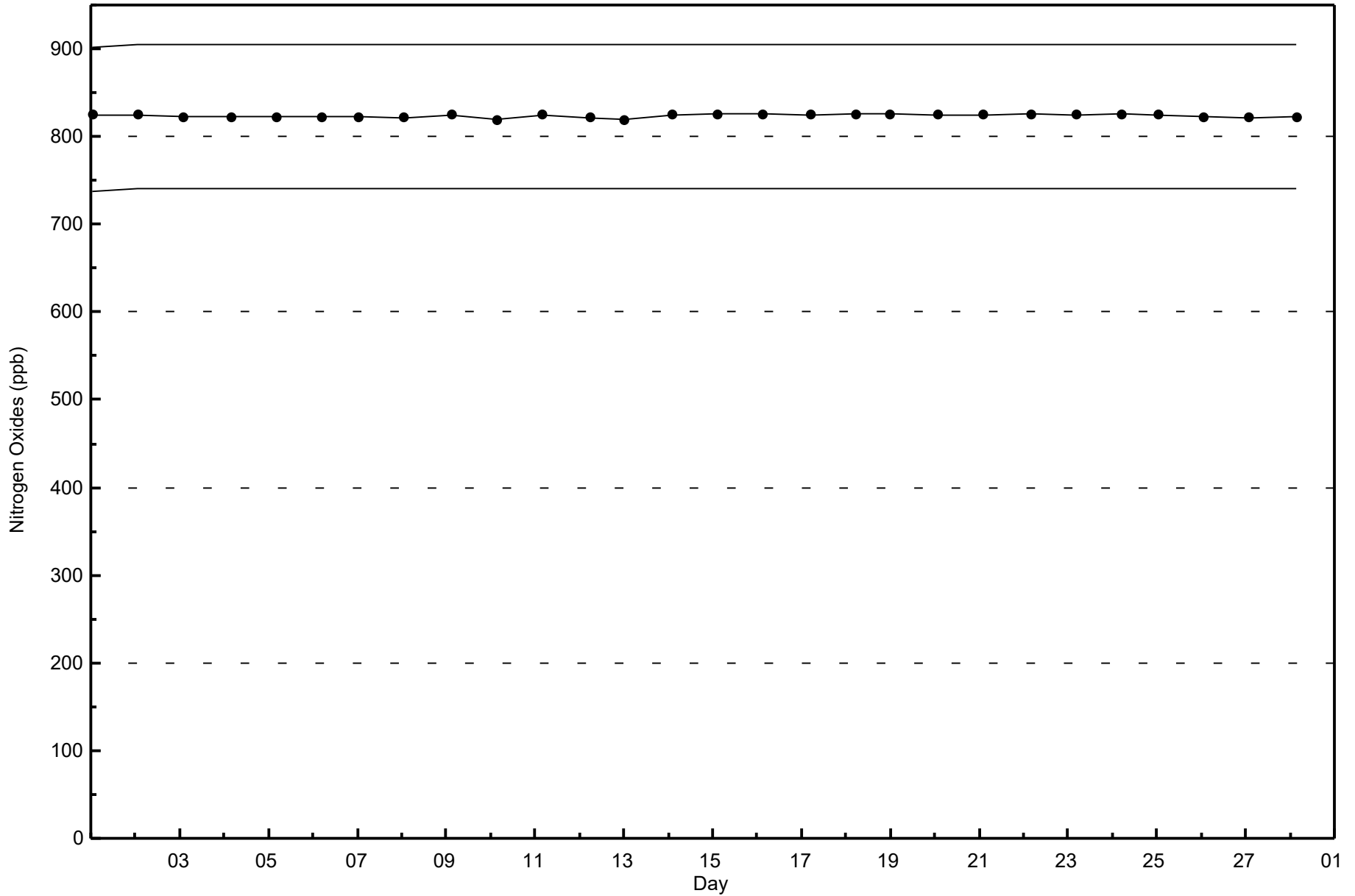
| Concentration<br>Ranges (ppb) | Wind Direction |     |    |     |    |     |    |     |    |     |    |     |    |     |    |     | Totals |
|-------------------------------|----------------|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|--------|
|                               | N              | NNE | NE | ENE | E  | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |        |
| 0 - 20                        | 19             | 105 | 35 | 10  | 7  | 4   | 10 | 17  | 40 | 53  | 16 | 34  | 34 | 24  | 18 | 7   | 433    |
| 21 - 40                       | 14             | 18  | 6  | 16  | 3  | 2   | 2  | 7   | 18 | 17  | 5  | 2   | 6  | 7   | 3  | 5   | 131    |
| 11 - 80                       | 8              | 3   | 1  | 0   | 0  | 1   | 0  | 4   | 7  | 5   | 1  | 3   | 3  | 3   | 4  | 2   | 45     |
| 81 - 159                      | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 1   | 3  | 1   | 0  | 0   | 0  | 1   | 5  | 0   | 11     |
| > 159                         | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 1  | 0   | 0  | 1   | 2      |
| <b>Totals</b>                 | 41             | 126 | 42 | 26  | 10 | 7   | 12 | 29  | 68 | 76  | 22 | 39  | 44 | 35  | 30 | 15  | 622    |

Total Number of Valid Hours: 623

Total Number of Hours: 672









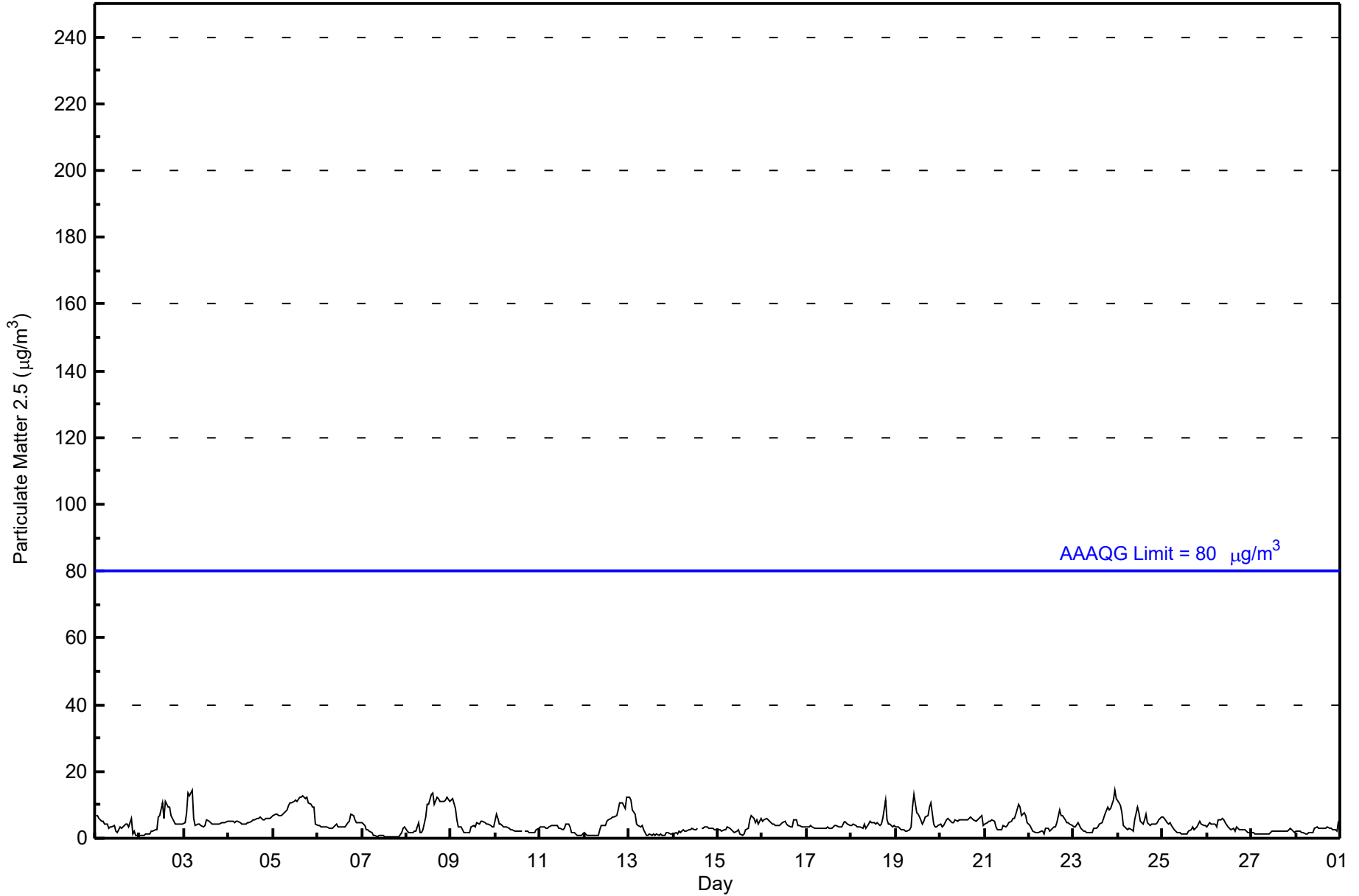
Wood Buffalo Environmental Association

Summary of Hour Averages

Particulate Matter 2.5 (PM<sub>2.5</sub>) - µg/m<sup>3</sup>

Ells River - February 2023

| Number of Exceedences (AAAQO):  |                               | 1-hr: 0   | 24-hr: 0 | Hours in Service: 672 |      |     |     |     |     |      |      |      |      |      |      |      |      |      |                                |      | 672  |      |      |                 |               |               |     |
|---|-------------------------------|---|----------|-----------------------|------|-----|-----|-----|-----|------|------|------|------|------|------|------|------|------|--------------------------------|------|------|------|------|-----------------|---------------|---------------|-----|
| Maximum Value: 14.5 µg/m <sup>3</sup> on Feb 23 23:00   |                               | Maximum Daily Average: 9.5 µg/m <sup>3</sup> on Feb 5   |          |                       |      |     |     |     |     |      |      |      |      |      |      |      |      |      | Hours of Data: 670             |      |      |      |      |                 |               |               |     |
| Minimum Value: 0.3 µg/m <sup>3</sup> on Feb 7 18:00   |                               | Minimum Daily Average: 1.4 µg/m <sup>3</sup> on Feb 7   |          |                       |      |     |     |     |     |      |      |      |      |      |      |      |      |      | Hours of Missing Data: 2       |      |      |      |      |                 |               |               |     |
| Maximum Diurnal Average: 5.5 µg/m <sup>3</sup> at hour 19   |                               | Minimum Diurnal Average: 3.0 µg/m <sup>3</sup> at hour 8  |          |                       |      |     |     |     |     |      |      |      |      |      |      |      |      |      | Hours of Calibration: 0        |      |      |      |      |                 |               |               |     |
| Monthly Average: 4.24 µg/m <sup>3</sup>   |                               | Percentiles: P <sub>1</sub> = 0.5 P <sub>10</sub> = 1.5 Q <sub>1</sub> = 2.4 Median = 3.6 Q <sub>3</sub> = 5.3 P <sub>90</sub> = 7.6 P <sub>99</sub> = 12.7 |          |                       |      |     |     |     |     |      |      |      |      |      |      |      |      |      | Percent Operational Time: 99.7 |      |      |      |      |                 |               |               |     |
| Day   | Hourly Period Ending At (MST) |   |          |                       |      |     |     |     |     |      |      |      |      |      |      |      |      |      |                                |      |      |      |      |                 | Daily Average | Daily Maximum |     |
|   | 1                             | 2   | 3        | 4                     | 5    | 6   | 7   | 8   | 9   | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19                             | 20   | 21   | 22   | 23   | 24              |               |               |     |
| 1-Feb   | 6.9                           | 6.7   | 5.9      | 5.1                   | 4.9  | 4.3 | 4.0 | 2.8 | 3.6 | 3.5  | 3.7  | 2.2  | 1.6  | 3.2  | 3.1  | 3.4  | 4.2  | 4.0  | 3.4                            | 6.0  | 1.5  | 1.9  | 1.0  | 1.0             | 3.7           | 6.9           |     |
| 2-Feb   | 1.0                           | 1.0   | 1.0      | 1.1                   | 1.3  | 1.3 | 2.1 | 2.0 | 2.5 | 2.7  | 6.4  | 6.7  | 10.4 | 6.0  | 11.0 | 9.1  | 9.5  | 6.7  | 4.9                            | 4.2  | 4.2  | 4.0  | 4.2  | 4.4             | 4.5           | 11.0          |     |
| 3-Feb   | 4.6                           | 7.7   | 13.7     | 12.7                  | 14.4 | 5.7 | 3.9 | 4.4 | 4.4 | 3.9  | 3.6  | 3.7  | 5.7  | 5.3  | 4.7  | 4.4  | 4.3  | 4.2  | 4.3                            | 4.4  | 4.7  | 4.8  | 4.8  | 5.1             | 5.8           | 14.4          |     |
| 4-Feb   | 5.1                           | 5.2   | 5.3      | 4.9                   | 5.0  | 4.9 | 4.5 | 4.3 | 4.3 | 4.2  | 4.5  | 4.6  | 4.9  | 5.3  | 5.5  | 6.0  | 6.1  | 6.4  | 5.6                            | 5.4  | 5.8  | 6.1  | 6.1  | 6.5             | 5.3           | 6.5           |     |
| 5-Feb   | 6.9                           | 7.0   | 7.0      | 6.7                   | 6.8  | 7.3 | 7.6 | 8.6 | 9.6 | 10.6 | 10.7 | 10.8 | 11.2 | 11.0 | 12.3 | 12.2 | 12.7 | 12.1 | 12.3                           | 10.7 | 10.3 | 9.4  | 9.3  | 4.3             | 9.5           | 12.7          |     |
| 6-Feb   | 3.8                           | 3.7   | 3.6      | 3.4                   | 3.2  | 3.2 | 3.1 | 2.9 | 2.8 | 3.7  | 4.1  | 3.2  | 3.3  | 3.3  | 3.2  | 3.4  | 4.7  | 5.3  | 7.0                            | 6.7  | 5.5  | 4.8  | 4.5  | 4.7             | 4.1           | 7.0           |     |
| 7-Feb   | 4.7                           | 3.6   | 2.6      | 2.5                   | 2.3  | 1.6 | 0.9 | 0.7 | 0.6 | 0.6  | 0.7  | 0.7  | 0.6  | 0.5  | 0.4  | 0.4  | 0.4  | 0.3  | 0.4                            | 0.3  | 0.4  | 1.9  | 2.9  | 3.2             | 1.4           | 4.7           |     |
| 8-Feb   | 2.1                           | 1.8   | 1.7      | 1.7                   | 2.2  | 2.1 | 4.8 | 1.8 | 1.5 | 2.7  | 6.5  | 10.3 | 10.0 | 13.3 | 13.4 | 10.1 | 12.1 | 12.0 | 10.9                           | 10.9 | 11.0 | 11.6 | 12.3 | 11.1            | 7.4           | 13.4          |     |
| 9-Feb   | 11.6                          | 12.1  | 8.9      | 5.4                   | 3.5  | 3.2 | 2.6 | 1.7 | 1.5 | 1.6  | 1.9  | 3.3  | 3.7  | 3.4  | 4.7  | 4.2  | 5.1  | 4.9  | 4.8                            | 4.3  | 4.2  | 3.7  | 3.2  | 3.3             | 4.4           | 12.1          |     |
| 10-Feb  | 7.4                           | 6.0   | 4.4      | 4.1                   | 3.4  | 3.5 | 3.3 | 3.0 | 2.5 | 2.5  | 2.1  | 2.0  | 2.2  | 2.2  | 2.2  | PF   | 1.9  | 1.9  | 1.8                            | 1.8  | 1.7  | 1.8  | 2.4  | 3.0             | 2.9           | 7.4           |     |
| 11-Feb  | 3.3                           | 3.4   | 3.4      | 3.1                   | 2.8  | 3.3 | 3.8 | 4.0 | 4.0 | 4.0  | 2.8  | 2.9  | 2.7  | 2.8  | 4.2  | 4.4  | 3.2  | 1.9  | 1.6                            | 1.2  | 0.8  | 0.8  | 0.8  | 1.4             | 2.8           | 4.4           |     |
| 12-Feb  | 1.6                           | 1.0   | 0.8      | 0.8                   | 0.8  | 0.7 | 0.7 | 0.8 | 2.7 | 3.7  | 3.8  | 4.0  | 5.0  | 5.3  | 5.9  | 6.4  | 6.6  | 6.9  | 8.5                            | 10.5 | 10.5 | 9.6  | 8.9  | 12.2            | 4.9           | 12.2          |     |
| 13-Feb  | 12.3                          | 11.3  | 8.4      | 7.2                   | 4.2  | 3.9 | 3.5 | 3.8 | 2.4 | 1.0  | 0.9  | 1.4  | 0.9  | 1.1  | 1.0  | 1.2  | 0.8  | 1.1  | 0.7                            | 1.1  | 1.7  | 1.7  | 1.4  | 1.2             | 3.1           | 12.3          |     |
| 14-Feb  | 1.4                           | 1.5   | 1.4      | 1.9                   | 1.6  | 2.4 | 2.0 | 2.0 | 2.3 | 2.6  | 2.8  | 2.5  | 2.7  | 2.9  | M    | 2.9  | 3.1  | 3.2  | 3.2                            | 2.9  | 2.9  | 3.0  | 2.6  | 2.7             | 2.5           | 3.2           |     |
| 15-Feb  | 2.5                           | 2.4   | 2.1      | 2.4                   | 2.6  | 3.2 | 2.9 | 2.5 | 2.2 | 1.8  | 2.0  | 2.3  | 1.2  | 1.0  | 1.2  | 2.5  | 2.5  | 2.8  | 5.3                            | 6.7  | 6.0  | 4.9  | 5.6  | 4.3             | 6.0           | 3.2           | 6.7 |
| 16-Feb  | 5.2                           | 5.5   | 5.8      | 5.5                   | 5.0  | 4.2 | 4.1 | 4.0 | 3.7 | 3.9  | 4.4  | 4.7  | 5.2  | 4.3  | 3.6  | 3.3  | 3.2  | 5.6  | 5.6                            | 4.0  | 4.0  | 3.6  | 3.5  | 3.4             | 4.4           | 5.8           |     |
| 17-Feb  | 3.4                           | 3.6   | 3.9      | 3.4                   | 3.1  | 2.9 | 2.8 | 3.1 | 3.0 | 2.9  | 2.8  | 3.3  | 3.1  | 3.1  | 3.4  | 3.7  | 3.7  | 3.5  | 3.4                            | 3.5  | 5.1  | 4.5  | 4.1  | 3.9             | 3.5           | 5.1           |     |
| 18-Feb  | 3.9                           | 4.3   | 3.9      | 3.6                   | 3.3  | 3.2 | 3.2 | 4.1 | 3.0 | 4.1  | 5.0  | 4.7  | 4.5  | 4.2  | 4.6  | 3.9  | 4.3  | 5.8  | 11.5                           | 5.4  | 4.3  | 4.3  | 3.6  | 3.6             | 4.4           | 11.5          |     |
| 19-Feb  | 3.6                           | 3.5   | 3.1      | 2.6                   | 2.6  | 2.3 | 2.2 | 2.4 | 3.3 | 9.2  | 13.2 | 7.5  | 7.1  | 6.2  | 4.3  | 5.1  | 6.5  | 6.6  | 9.5                            | 10.7 | 4.3  | 3.4  | 3.6  | 3.6             | 5.3           | 13.2          |     |
| 20-Feb  | 4.1                           | 3.6   | 3.8      | 5.7                   | 5.9  | 5.4 | 4.6 | 4.8 | 5.6 | 5.2  | 5.4  | 5.4  | 5.3  | 5.4  | 5.6  | 5.5  | 6.2  | 6.0  | 5.6                            | 5.1  | 5.5  | 5.9  | 6.7  | 3.9             | 5.3           | 6.7           |     |
| 21-Feb  | 4.4                           | 4.8   | 4.9      | 5.3                   | 5.6  | 5.1 | 3.5 | 2.6 | 2.5 | 2.7  | 3.8  | 3.5  | 3.9  | 4.5  | 5.2  | 5.8  | 6.0  | 7.1  | 10.0                           | 9.4  | 6.9  | 7.7  | 6.9  | 4.8             | 5.3           | 10.0          |     |
| 22-Feb  | 3.8                           | 2.9   | 2.2      | 1.6                   | 1.9  | 1.7 | 2.2 | 2.0 | 1.4 | 3.0  | 3.1  | 2.2  | 2.4  | 3.6  | 3.5  | 4.9  | 8.6  | 6.7  | 6.7                            | 5.7  | 4.8  | 4.5  | 4.2  | 3.8             | 3.6           | 8.6           |     |
| 23-Feb  | 3.4                           | 3.4   | 4.5      | 3.8                   | 3.0  | 2.3 | 2.0 | 1.7 | 1.7 | 1.6  | 1.8  | 2.9  | 3.2  | 3.5  | 4.1  | 4.8  | 5.8  | 7.1  | 9.1                            | 8.5  | 8.9  | 11.4 | 14.5 | 11.8            | 5.2           | 14.5          |     |
| 24-Feb  | 10.7                          | 9.7   | 7.5      | 3.8                   | 3.0  | 2.3 | 3.1 | 2.5 | 2.3 | 5.5  | 9.4  | 7.6  | 5.0  | 4.4  | 5.5  | 7.2  | 4.6  | 4.0  | 4.3                            | 4.1  | 4.4  | 4.9  | 5.7  | 6.5             | 5.3           | 10.7          |     |
| 25-Feb  | 6.6                           | 5.9   | 4.8      | 4.3                   | 4.5  | 3.6 | 2.3 | 2.0 | 1.8 | 1.6  | 1.4  | 1.2  | 1.1  | 1.3  | 2.2  | 2.6  | 3.2  | 2.6  | 3.3                            | 4.1  | 5.0  | 4.4  | 3.9  | 3.8             | 3.2           | 6.6           |     |
| 26-Feb  | 3.4                           | 4.8   | 4.4      | 4.0                   | 4.4  | 3.6 | 5.3 | 5.6 | 6.0 | 5.4  | 4.5  | 3.5  | 3.0  | 2.7  | 2.8  | 2.3  | 3.2  | 2.7  | 2.5                            | 2.6  | 2.7  | 2.1  | 1.8  | 1.6             | 3.5           | 6.0           |     |
| 27-Feb  | 1.6                           | 1.6   | 1.4      | 1.3                   | 1.3  | 1.4 | 1.4 | 1.3 | 1.4 | 1.5  | 1.8  | 2.1  | 2.1  | 2.2  | 2.1  | 2.2  | 2.2  | 2.1  | 2.1                            | 2.2  | 2.4  | 2.8  | 2.0  | 1.7             | 1.8           | 2.8           |     |
| 28-Feb  | 2.1                           | 2.2   | 2.3      | 1.8                   | 1.5  | 1.3 | 1.2 | 1.5 | 1.5 | 1.9  | 3.1  | 3.5  | 3.1  | 3.2  | 3.1  | 2.9  | 3.2  | 3.3  | 3.1                            | 3.0  | 2.6  | 2.4  | 2.2  | 4.9             | 2.5           | 4.9           |     |
| 4.7 4.6 4.4 3.9 3.7 3.2 3.1 3.0 3.0 3.5 4.1 4.0 4.1 4.1 4.5 4.6 4.9 5.0 5.5 5.2 4.7 4.7 4.7 4.6                     |                               |   |          |                       |      |     |     |     |     |      |      |      |      |      |      |      |      |      |                                |      |      |      |      | Diurnal Average |               |               |     |
| 12.3 12.1 13.7 12.7 14.4 7.3 7.6 8.6 9.6 10.6 13.2 10.8 11.2 13.3 13.4 12.2 12.7 12.1 12.3 10.9 11.0 11.6 14.5 12.2 |                               |   |          |                       |      |     |     |     |     |      |      |      |      |      |      |      |      |      |                                |      |      |      |      | Diurnal Maximum |               |               |     |
| M - Maintenance PF - Power Failure  |                               |   |          |                       |      |     |     |     |     |      |      |      |      |      |      |      |      |      |                                |      |      |      |      |                 |               |               |     |
| Alberta Ambient Air Quality Guideline/Objectives: 1-hr 80 µg/m <sup>3</sup> 24-hr 29 µg/m <sup>3</sup>              |                               |   |          |                       |      |     |     |     |     |      |      |      |      |      |      |      |      |      |                                |      |      |      |      |                 |               |               |     |







**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Particulate Matter 2.5 (PM<sub>2.5</sub>) -  $\mu\text{g}/\text{m}^3$**   
**Ells River - February 2023**

| <b>Concentration Ranges (<math>\mu\text{g}/\text{m}^3</math>)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---|------------------------|----------|---------------------|
| 0 - 5   | 523                    | 78.06    | 78.06               |
| 6 - 15  | 147                    | 21.94    | 100.00              |
| 16 - 25   | 0                      | 0.00     | 100.00              |
| 26 - 80   | 0                      | 0.00     | 100.00              |
| > 81.0  | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 670

Total Number of Hours: 672



**Wood Buffalo Environmental Association**  
**Frequency Distribution**

**Particulate Matter 2.5 (PM<sub>2.5</sub>) -  $\mu\text{g}/\text{m}^3$**   
**Ells River - February 2023**

| Concentration<br>Ranges ( $\mu\text{g}/\text{m}^3$ ) | Wind Direction |     |    |     |    |     |    |     |    |     |    |     |    |     |    |     | Totals |
|--|----------------|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|--------|
|  | N              | NNE | NE | ENE | E  | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |        |
| 0 - 5  | 31             | 119 | 34 | 23  | 12 | 6   | 11 | 19  | 45 | 62  | 19 | 37  | 36 | 30  | 20 | 11  | 515    |
| 6 - 15   | 11             | 14  | 8  | 5   | 0  | 1   | 2  | 11  | 29 | 18  | 5  | 3   | 9  | 9   | 14 | 6   | 145    |
| 16 - 25  | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| 26 - 80  | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| > 81.0   | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| <b>Totals</b>  | 42             | 133 | 42 | 28  | 12 | 7   | 13 | 30  | 74 | 80  | 24 | 40  | 45 | 39  | 34 | 17  | 660    |

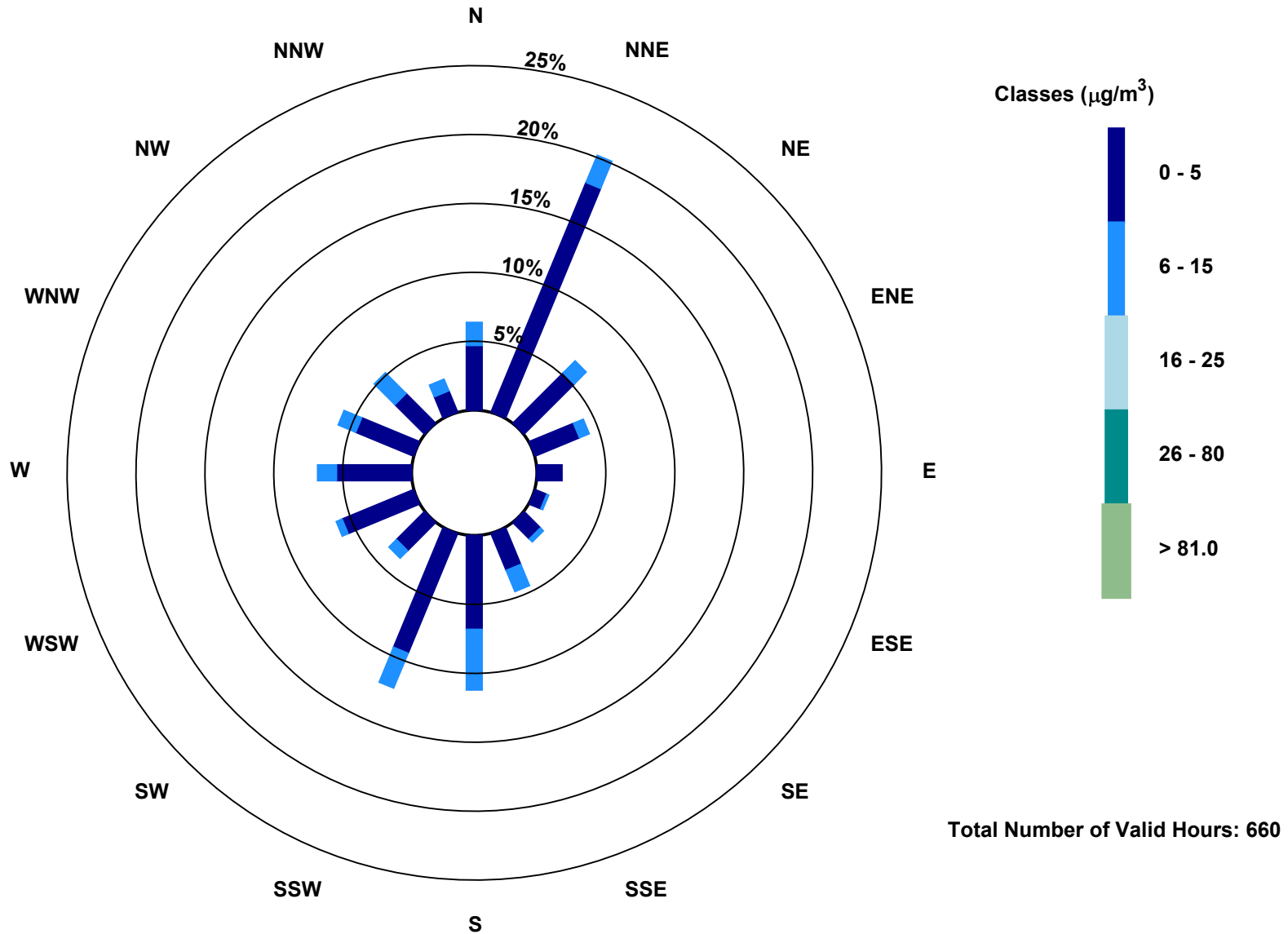
Total Number of Valid Hours: 660

Total Number of Hours: 672



Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Particulate Matter 2.5 (PM<sub>2.5</sub>) -  $\mu\text{g}/\text{m}^3$   
Ells River





**Wood Buffalo Environmental Association**

**Summary of Hour Averages**

**Ambient Temperature (AT) - C**

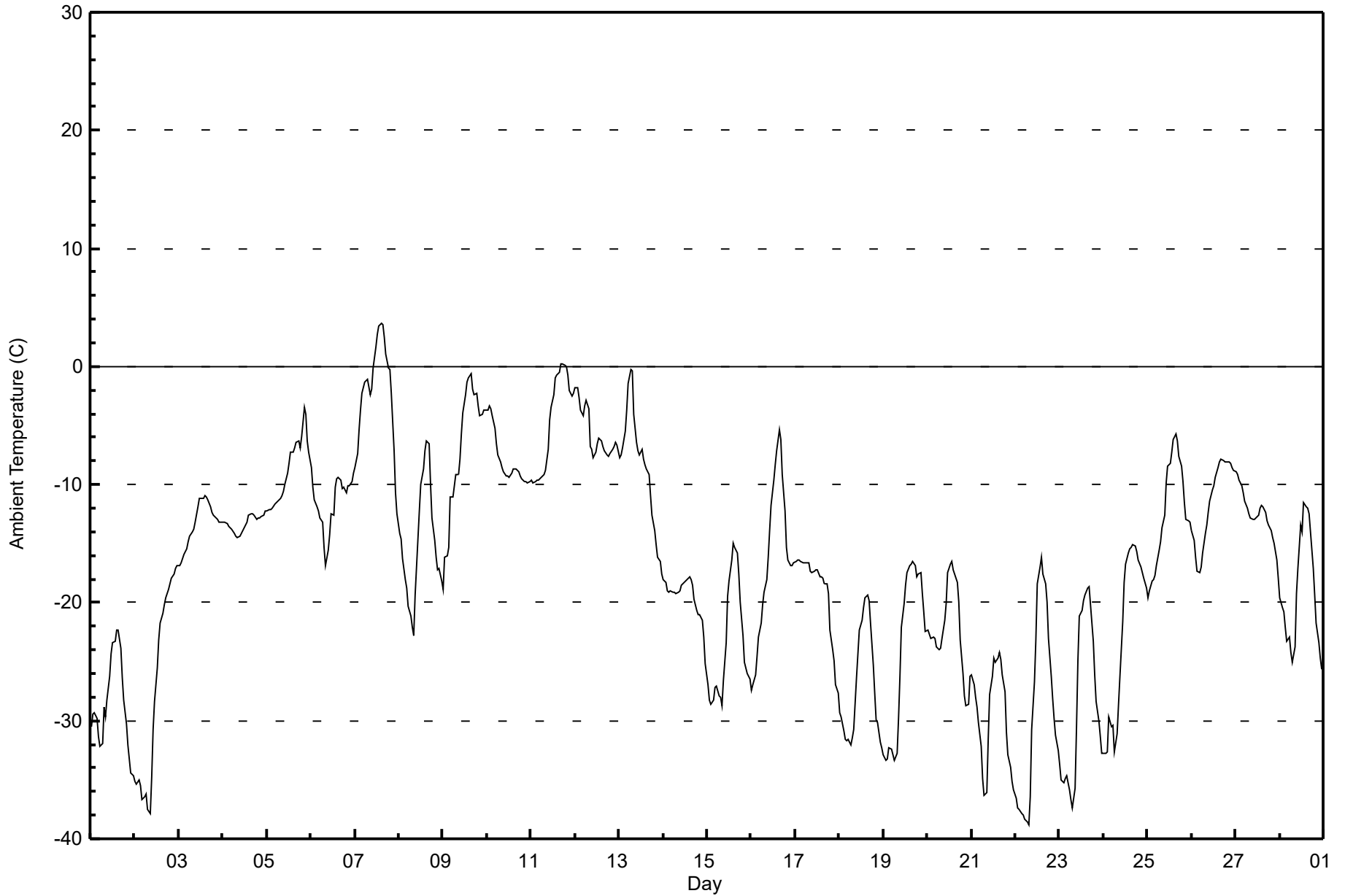
**Ells River - February 2023**

| Maximum Value: 3.6 C on Feb 7 15:00      Maximum Daily Average: -2.1 C on Feb 7  |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Hours in Service: 672<br>Hours of Data: 672  |       |       |                 |               |
|--|-------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--|-------|-------|-----------------|---------------|
| Minimum Value: -38.8 C on Feb 22 08:00      Minimum Daily Average: -29.6 C on Feb 21<br>Maximum Diurnal Average: -12.0 C at hour 16      Minimum Diurnal Average: -19.9 C at hour 7<br>Monthly Average: -16.80 C      Percentiles: P <sub>1</sub> = -37.5 P <sub>10</sub> = -31.0 Q <sub>1</sub> = -23.2 Median = -16.3 Q <sub>3</sub> = -9.6 P <sub>90</sub> = -5.5 P <sub>99</sub> = 0.5 |                               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Hours of Missing Data: 0<br>Hours of Calibration: 0<br>Percent Operational Time: 100.0 |       |       |                 |               |
| Day  | Hourly Period Ending At (MST) |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |  |       |       | Daily Average   | Daily Maximum |
|  | 1                             | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     | 10    | 11    | 12    | 13    | 14    | 15    | 16    | 17    | 18    | 19    | 20    | 21    | 22   | 23    | 24    |                 |               |
| 1-Feb  | -30.5                         | -29.4 | -29.4 | -29.8 | -31.3 | -32.2 | -31.9 | -28.9 | -29.7 | -28.2 | -26.3 | -24.4 | -23.3 | -23.3 | -22.3 | -22.3 | -23.8 | -26.4 | -28.2 | -30.3 | -32.1 | -33.3  | -34.4 | -34.6 | -28.6           | -22.3         |
| 2-Feb  | -35.1                         | -35.4 | -35.0 | -35.5 | -36.7 | -36.4 | -36.2 | -37.5 | -37.9 | -34.8 | -30.8 | -28.3 | -25.5 | -23.1 | -21.8 | -20.9 | -20.2 | -19.6 | -18.9 | -18.4 | -17.9 | -17.5  | -17.1 | -16.8 | -27.4           | -16.8         |
| 3-Feb  | -16.9                         | -16.7 | -16.2 | -15.9 | -15.4 | -14.8 | -14.4 | -14.0 | -13.8 | -13.1 | -11.9 | -11.2 | -11.2 | -11.1 | -10.9 | -11.1 | -11.3 | -11.9 | -12.3 | -12.6 | -12.8 | -13.0  | -13.2 | -13.2 | -13.3           | -10.9         |
| 4-Feb  | -13.1                         | -13.2 | -13.3 | -13.5 | -13.6 | -13.8 | -14.1 | -14.4 | -14.4 | -14.4 | -14.2 | -14.0 | -13.4 | -13.2 | -12.6 | -12.5 | -12.4 | -12.6 | -12.9 | -12.9 | -12.8 | -12.7  | -12.6 | -12.3 | -13.3           | -12.3         |
| 5-Feb  | -12.2                         | -12.1 | -12.2 | -12.0 | -11.6 | -11.6 | -11.4 | -11.1 | -11.0 | -10.6 | -10.2 | -9.0  | -8.2  | -7.2  | -7.2  | -6.9  | -6.5  | -6.3  | -6.9  | -5.9  | -3.4  | -4.0   | -6.3  | -7.3  | -8.8            | -3.4          |
| 6-Feb  | -8.6                          | -10.2 | -11.3 | -11.9 | -12.2 | -12.9 | -13.2 | -15.3 | -16.9 | -15.6 | -14.2 | -12.4 | -12.5 | -10.2 | -9.6  | -9.4  | -9.6  | -10.4 | -10.2 | -10.7 | -10.0 | -10.1  | -9.8  | -9.0  | -11.5           | -8.6          |
| 7-Feb  | -8.5                          | -7.4  | -5.4  | -3.7  | -2.3  | -1.4  | -1.2  | -1.1  | -2.3  | -1.9  | -0.1  | 1.6   | 2.7   | 3.5   | 3.6   | 3.5   | 2.5   | 1.1   | -0.2  | -0.3  | -2.2  | -7.1   | -10.6 | -12.5 | -2.1            | 3.6           |
| 8-Feb  | -14.2                         | -14.6 | -16.3 | -18.1 | -18.8 | -20.3 | -21.1 | -22.1 | -22.8 | -19.3 | -14.6 | -12.3 | -10.0 | -8.6  | -7.1  | -6.3  | -6.5  | -9.9  | -12.8 | -14.7 | -16.2 | -17.2  | -17.1 | -18.2 | -15.0           | -6.3          |
| 9-Feb  | -18.9                         | -16.2 | -16.0 | -15.3 | -11.0 | -11.0 | -10.1 | -9.1  | -9.1  | -7.9  | -5.7  | -4.0  | -2.4  | -1.3  | -0.9  | -0.7  | -1.9  | -2.4  | -2.3  | -3.3  | -4.2  | -4.1   | -3.7  | -3.7  | -6.9            | -0.7          |
| 10-Feb   | -3.7                          | -3.4  | -3.5  | -4.1  | -5.2  | -6.5  | -7.5  | -8.1  | -8.6  | -8.9  | -9.2  | -9.3  | -9.4  | -9.1  | -8.7  | -8.7  | -8.7  | -8.9  | -9.2  | -9.5  | -9.7  | -9.8   | -9.8  | -9.7  | -7.9            | -3.4          |
| 11-Feb   | -9.6                          | -9.9  | -9.8  | -9.6  | -9.7  | -9.5  | -9.3  | -9.2  | -8.8  | -7.0  | -4.5  | -3.4  | -2.3  | -1.0  | -0.7  | -0.5  | 0.2   | 0.2   | 0.1   | -0.1  | -0.7  | -2.1   | -2.5  | -2.3  | -4.7            | 0.2           |
| 12-Feb   | -1.8                          | -1.8  | -2.6  | -3.7  | -4.1  | -3.3  | -2.9  | -3.6  | -6.8  | -7.0  | -7.8  | -7.2  | -6.5  | -6.1  | -6.3  | -6.8  | -7.1  | -7.5  | -7.7  | -7.4  | -7.0  | -6.8   | -6.4  | -6.7  | -5.6            | -1.8          |
| 13-Feb   | -7.8                          | -7.5  | -6.8  | -5.5  | -3.7  | -1.4  | -0.3  | -0.4  | -4.1  | -6.4  | -7.1  | -7.5  | -7.0  | -7.8  | -8.3  | -8.7  | -9.1  | -10.9 | -12.6 | -13.9 | -15.1 | -16.2  | -16.5 | -17.6 | -8.4            | -0.3          |
| 14-Feb   | -18.0                         | -18.2 | -19.0 | -19.2 | -19.0 | -19.1 | -19.1 | -19.3 | -19.2 | -19.0 | -18.6 | -18.3 | -18.2 | -18.0 | -17.8 | -18.1 | -18.5 | -19.7 | -20.7 | -21.0 | -21.0 | -21.4  | -22.9 | -25.1 | -19.5           | -17.8         |
| 15-Feb   | -27.0                         | -28.3 | -28.6 | -28.2 | -27.2 | -27.1 | -27.9 | -28.1 | -28.8 | -26.6 | -23.4 | -19.4 | -18.2 | -16.4 | -14.9 | -15.4 | -15.8 | -17.5 | -19.9 | -22.8 | -25.1 | -25.5  | -26.0 | -26.4 | -23.5           | -14.9         |
| 16-Feb   | -27.4                         | -26.9 | -26.1 | -24.6 | -22.9 | -21.7 | -20.2 | -19.1 | -18.0 | -16.1 | -13.9 | -11.7 | -9.7  | -8.3  | -7.1  | -5.4  | -6.2  | -9.2  | -12.2 | -15.3 | -16.4 | -16.9  | -16.9 | -16.7 | -16.2           | -5.4          |
| 17-Feb   | -16.5                         | -16.4 | -16.4 | -16.5 | -16.6 | -16.6 | -16.6 | -16.7 | -17.3 | -17.4 | -17.4 | -17.3 | -17.2 | -17.8 | -17.8 | -18.0 | -18.4 | -18.4 | -19.3 | -22.3 | -24.0 | -24.9  | -26.9 | -27.6 | -18.9           | -16.4         |
| 18-Feb   | -29.3                         | -29.7 | -30.9 | -31.6 | -31.6 | -31.6 | -32.0 | -31.4 | -30.7 | -26.4 | -24.3 | -22.3 | -21.5 | -20.5 | -19.5 | -19.4 | -19.8 | -21.8 | -25.3 | -27.6 | -29.9 | -30.2  | -31.8 | -32.3 | -27.1           | -19.4         |
| 19-Feb   | -32.9                         | -33.3 | -33.2 | -32.3 | -32.4 | -32.9 | -33.4 | -32.8 | -29.8 | -26.3 | -22.1 | -20.1 | -18.5 | -17.5 | -16.9 | -16.8 | -16.5 | -16.9 | -17.9 | -17.6 | -17.4 | -19.2  | -20.7 | -22.4 | -24.2           | -16.5         |
| 20-Feb   | -22.3                         | -22.7 | -23.0 | -22.9 | -23.0 | -23.7 | -24.0 | -23.9 | -23.1 | -21.5 | -20.1 | -17.4 | -16.8 | -16.6 | -17.2 | -17.6 | -18.3 | -19.9 | -23.1 | -26.0 | -27.9 | -28.7  | -28.7 | -26.2 | -22.3           | -16.6         |
| 21-Feb   | -26.1                         | -26.9 | -28.0 | -28.9 | -30.2 | -32.1 | -34.9 | -36.4 | -36.0 | -31.5 | -27.8 | -26.3 | -24.7 | -25.0 | -24.7 | -24.2 | -24.8 | -26.2 | -27.5 | -31.0 | -32.9 | -33.9  | -35.1 | -35.9 | -29.6           | -24.2         |
| 22-Feb   | -36.6                         | -37.4 | -37.5 | -37.9 | -38.0 | -38.3 | -38.5 | -38.8 | -36.5 | -30.8 | -26.8 | -23.1 | -18.4 | -17.0 | -16.1 | -17.6 | -18.5 | -19.9 | -23.1 | -26.3 | -28.1 | -29.8  | -31.2 | -32.5 | -29.1           | -16.1         |
| 23-Feb   | -33.7                         | -35.0 | -35.2 | -34.9 | -34.6 | -35.9 | -36.7 | -37.4 | -35.7 | -30.6 | -25.0 | -21.1 | -20.7 | -19.9 | -19.3 | -18.7 | -18.7 | -20.1 | -23.3 | -26.2 | -28.4 | -30.0  | -31.3 | -32.7 | -28.5           | -18.7         |
| 24-Feb   | -32.7                         | -32.8 | -32.7 | -29.7 | -30.5 | -30.4 | -32.6 | -31.0 | -28.6 | -26.2 | -21.7 | -18.3 | -16.8 | -15.8 | -15.4 | -15.3 | -15.1 | -15.2 | -15.6 | -16.4 | -17.0 | -17.4  | -18.0 | -18.8 | -22.7           | -15.1         |
| 25-Feb   | -19.5                         | -19.0 | -18.2 | -18.0 | -17.7 | -16.9 | -15.5 | -14.8 | -13.7 | -12.6 | -9.9  | -8.5  | -8.2  | -7.2  | -6.1  | -5.8  | -6.4  | -7.6  | -8.4  | -9.8  | -11.5 | -12.9  | -13.0 | -13.2 | -12.3           | -5.8          |
| 26-Feb   | -13.9                         | -14.7 | -16.2 | -17.3 | -17.4 | -17.0 | -15.9 | -14.1 | -13.4 | -12.4 | -11.4 | -10.5 | -10.1 | -9.4  | -8.5  | -8.1  | -7.8  | -7.9  | -8.0  | -8.1  | -8.1  | -8.2   | -8.5  | -8.7  | -11.5           | -7.8          |
| 27-Feb   | -8.9                          | -9.2  | -9.6  | -10.1 | -10.7 | -11.3 | -12.0 | -12.4 | -12.9 | -13.0 | -13.0 | -12.9 | -12.6 | -12.0 | -11.8 | -11.9 | -12.4 | -13.1 | -13.5 | -13.9 | -14.5 | -15.0  | -16.4 | -17.9 | -12.5           | -8.9          |
| 28-Feb   | -19.5                         | -20.4 | -20.8 | -22.1 | -23.3 | -22.9 | -24.2 | -25.0 | -23.7 | -19.2 | -17.1 | -13.5 | -14.1 | -11.5 | -11.9 | -12.0 | -12.5 | -14.1 | -17.1 | -19.4 | -21.7 | -23.4  | -24.7 | -25.7 | -19.2           | -11.5         |
|  | -19.5                         | -19.6 | -19.8 | -19.7 | -19.7 | -19.7 | -19.9 | -19.9 | -19.8 | -18.0 | -16.0 | -14.4 | -13.4 | -12.6 | -12.1 | -12.0 | -12.3 | -13.3 | -14.6 | -15.8 | -16.7 | -17.6  | -18.3 | -18.8 | Diurnal Average |               |
|  | -1.8                          | -1.8  | -2.6  | -3.7  | -2.3  | -1.4  | -0.3  | -0.4  | -2.3  | -1.9  | -0.1  | 1.6   | 2.7   | 3.5   | 3.6   | 3.5   | 2.5   | 1.1   | 0.1   | -0.1  | -0.7  | -2.1   | -2.5  | -2.3  | Diurnal Maximum |               |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Ambient Temperature (AT) - C**  
**Ells River - February 2023**





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Ambient Temperature (AT) - C  
Ells River - February 2023**

| <b>Concentration Ranges (C)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---------------------------------|------------------------|----------|---------------------|
| -50 - -20                       | 216                    | 32.14    | 32.14               |
| -20 - 0                         | 446                    | 66.37    | 98.51               |
| 0 - 10                          | 10                     | 1.49     | 100.00              |
| 10 - 20                         | 0                      | 0.00     | 100.00              |
| > 20                            | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 672

Total Number of Hours: 672



**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

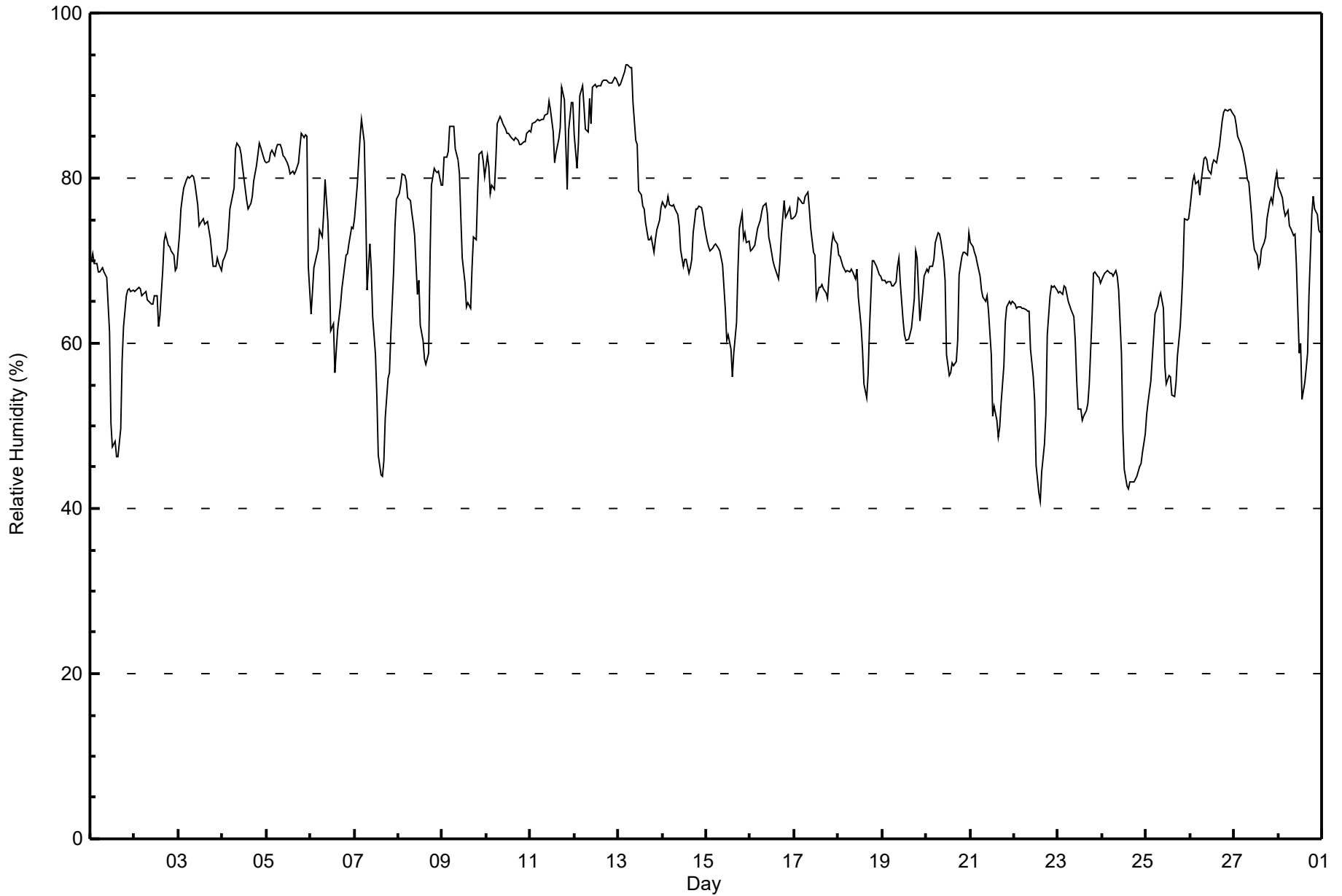
**Relative Humidity (RH) - %**  
**Ells River - February 2023**

| Maximum Value: 93.8 % on Feb 13 05:00      Maximum Daily Average: 89.6 % on Feb 12   |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Hours in Service: 672<br>Hours of Data: 672  |      |      |               |               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |                 |  |
|--|-------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|--|------|------|---------------|---------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----------------|-----------------|--|
| Minimum Value: 40.9 % on Feb 22 15:00      Minimum Daily Average: 55.2 % on Feb 24<br>Maximum Diurnal Average: 75.9 % at hour 6      Minimum Diurnal Average: 63.6 % at hour 15<br>Monthly Average: 71.80 %      Percentiles: P <sub>1</sub> = 43.4 P <sub>10</sub> = 57.0 Q <sub>1</sub> = 65.9 Median = 71.8 Q <sub>3</sub> = 79.8 P <sub>90</sub> = 85.6 P <sub>99</sub> = 91.9 |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Hours of Missing Data: 0<br>Hours of Calibration: 0<br>Percent Operational Time: 100.0 |      |      |               |               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |                 |  |
| Day  | Hourly Period Ending At (MST) |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |      |      | Daily Average | Daily Maximum |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |                 |  |
|  | 1                             | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20   | 21   | 22   | 23   | 24   |               |               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |                 |  |
| 1-Feb  | 69.9                          | 70.8 | 69.7 | 69.7 | 68.6 | 68.6 | 69.2 | 68.6 | 68.4 | 67.9 | 61.4 | 50.3 | 47.5 | 48.1 | 46.2 | 46.3 | 49.6 | 57.9 | 62.0 | 65.7 | 66.5 | 66.7   | 66.3 | 66.4 | 62.2          | 70.8          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |                 |  |
| 2-Feb  | 66.2                          | 66.5 | 66.7 | 66.6 | 65.7 | 66.1 | 66.3 | 65.2 | 64.8 | 64.7 | 64.7 | 65.8 | 65.7 | 62.0 | 63.5 | 68.8 | 72.4 | 73.2 | 71.8 | 71.6 | 71.2 | 70.8   | 68.9 | 69.2 | 67.4          | 73.2          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |                 |  |
| 3-Feb  | 73.2                          | 76.3 | 77.7 | 78.8 | 79.8 | 80.1 | 80.0 | 80.3 | 80.2 | 79.3 | 76.7 | 74.3 | 74.6 | 75.1 | 74.5 | 74.7 | 74.7 | 72.7 | 70.9 | 69.3 | 69.3 | 70.3   | 69.7 | 68.9 | 75.1          | 80.3          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |                 |  |
| 4-Feb  | 70.0                          | 70.3 | 71.4 | 73.5 | 76.3 | 77.1 | 78.8 | 83.5 | 84.3 | 83.8 | 82.8 | 81.4 | 78.6 | 77.2 | 76.2 | 77.0 | 77.8 | 79.6 | 81.5 | 82.9 | 84.3 | 83.8   | 82.6 | 82.0 | 79.0          | 84.3          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |                 |  |
| 5-Feb  | 81.9                          | 82.0 | 83.0 | 83.3 | 82.8 | 83.6 | 84.1 | 84.0 | 83.6 | 82.8 | 82.6 | 81.9 | 81.4 | 80.6 | 80.8 | 80.5 | 80.9 | 81.9 | 83.7 | 85.4 | 85.0 | 85.2   | 85.1 | 69.2 | 82.3          | 85.4          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |                 |  |
| 6-Feb  | 63.5                          | 66.3 | 69.2 | 70.7 | 71.4 | 73.6 | 72.8 | 75.8 | 79.8 | 74.7 | 69.3 | 61.5 | 62.4 | 56.4 | 59.1 | 61.7 | 64.5 | 66.6 | 67.9 | 70.7 | 70.8 | 72.1   | 74.1 | 73.9 | 68.7          | 79.8          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |                 |  |
| 7-Feb  | 75.1                          | 79.1 | 82.0 | 85.0 | 87.1 | 84.4 | 76.6 | 66.5 | 72.0 | 69.0 | 63.3 | 58.7 | 53.6 | 46.5 | 44.1 | 43.9 | 45.8 | 51.0 | 55.8 | 56.5 | 61.1 | 68.8   | 74.3 | 77.5 | 65.7          | 87.1          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |                 |  |
| 8-Feb  | 78.1                          | 79.2 | 80.5 | 80.4 | 79.6 | 77.7 | 77.3 | 75.8 | 74.6 | 73.1 | 65.9 | 67.5 | 62.2 | 60.3 | 58.1 | 57.4 | 58.8 | 70.4 | 79.2 | 81.3 | 80.9 | 80.6   | 80.9 | 79.2 | 73.3          | 81.3          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |                 |  |
| 9-Feb  | 79.1                          | 82.5 | 82.5 | 83.3 | 86.2 | 86.3 | 86.2 | 83.6 | 82.1 | 80.5 | 75.3 | 70.4 | 67.2 | 64.4 | 64.9 | 64.3 | 69.2 | 72.9 | 72.6 | 78.3 | 82.9 | 83.2   | 82.0 | 80.2 | 77.5          | 86.3          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |                 |  |
| 10-Feb   | 82.7                          | 81.3 | 78.1 | 79.1 | 78.7 | 82.2 | 86.5 | 87.5 | 87.2 | 86.7 | 86.0 | 85.5 | 85.4 | 84.9 | 84.7 | 84.6 | 85.0 | 84.6 | 84.1 | 84.1 | 84.3 | 84.4   | 85.3 | 85.8 | 84.1          | 87.5          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |                 |  |
| 11-Feb   | 85.6                          | 86.7 | 86.8 | 86.9 | 87.1 | 87.0 | 87.1 | 87.2 | 87.7 | 87.9 | 89.3 | 88.3 | 85.6 | 81.9 | 83.1 | 84.8 | 86.1 | 91.1 | 89.6 | 84.0 | 78.6 | 85.8   | 89.1 | 89.2 | 86.5          | 91.1          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |                 |  |
| 12-Feb   | 85.2                          | 81.2 | 84.2 | 90.0 | 91.2 | 88.7 | 85.9 | 85.6 | 89.7 | 86.5 | 90.9 | 91.3 | 91.1 | 91.1 | 91.2 | 91.7 | 91.8 | 91.9 | 91.6 | 91.6 | 91.8 | 92.2   | 92.0 | 89.6 | 92.2          | 92.2          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |                 |  |
| 13-Feb   | 91.1                          | 91.3 | 91.8 | 92.9 | 93.8 | 93.7 | 93.4 | 93.4 | 89.2 | 84.5 | 84.0 | 78.5 | 77.9 | 76.7 | 76.3 | 74.6 | 72.5 | 72.9 | 71.0 | 72.6 | 73.8 | 75.0   | 76.4 | 82.1 | 93.8          | 93.8          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |                 |  |
| 14-Feb   | 77.1                          | 76.5 | 76.8 | 77.8 | 76.8 | 76.6 | 76.8 | 76.3 | 75.6 | 74.2 | 71.3 | 69.4 | 70.2 | 70.1 | 68.6 | 69.2 | 70.1 | 73.4 | 76.3 | 76.7 | 76.5 | 75.7   | 74.2 | 74.3 | 74.3          | 77.8          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |                 |  |
| 15-Feb   | 72.4                          | 71.7 | 71.2 | 71.5 | 71.8 | 72.0 | 71.5 | 71.2 | 70.3 | 69.4 | 64.1 | 60.4 | 61.0 | 59.3 | 55.9 | 58.8 | 62.5 | 69.0 | 74.0 | 75.8 | 72.6 | 73.4   | 72.2 | 72.4 | 68.5          | 75.8          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |                 |  |
| 16-Feb   | 71.2                          | 71.3 | 71.9 | 72.8 | 73.9 | 74.9 | 75.9 | 76.6 | 76.9 | 75.7 | 72.9 | 72.1 | 70.0 | 69.3 | 68.9 | 67.8 | 70.0 | 73.0 | 77.2 | 75.3 | 75.6 | 76.4   | 75.1 | 75.0 | 73.3          | 77.2          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |                 |  |
| 17-Feb   | 75.5                          | 75.9 | 77.7 | 77.4 | 76.9 | 76.9 | 77.8 | 78.3 | 76.2 | 73.9 | 71.0 | 70.7 | 65.5 | 66.7 | 66.8 | 67.2 | 66.7 | 66.2 | 65.4 | 68.0 | 72.0 | 73.2   | 72.5 | 72.0 | 72.1          | 78.3          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |                 |  |
| 18-Feb   | 70.6                          | 70.5 | 69.3 | 69.0 | 68.7 | 68.9 | 68.6 | 69.0 | 68.6 | 67.9 | 68.9 | 65.6 | 62.0 | 59.2 | 55.1 | 53.4 | 56.2 | 61.8 | 70.1 | 70.0 | 69.7 | 69.4   | 68.2 | 68.1 | 66.2          | 70.6          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |                 |  |
| 19-Feb   | 67.6                          | 67.5 | 67.3 | 67.5 | 67.4 | 67.0 | 67.0 | 67.4 | 69.3 | 70.3 | 67.3 | 62.7 | 61.1 | 60.4 | 60.6 | 61.2 | 61.9 | 65.4 | 71.1 | 70.4 | 62.6 | 64.5   | 66.0 | 68.1 | 65.9          | 71.1          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |                 |  |
| 20-Feb   | 69.0                          | 68.6 | 69.2 | 69.3 | 70.2 | 72.2 | 73.4 | 73.2 | 72.4 | 70.0 | 67.6 | 58.6 | 56.1 | 56.4 | 57.6 | 57.3 | 57.9 | 60.3 | 68.4 | 70.5 | 71.1 | 71.1   | 70.7 | 73.4 | 66.9          | 73.4          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |                 |  |
| 21-Feb   | 72.3                          | 71.6 | 70.9 | 70.6 | 69.6 | 68.1 | 66.5 | 65.6 | 65.1 | 65.8 | 63.9 | 58.7 | 51.2 | 52.4 | 50.6 | 48.6 | 49.9 | 52.8 | 57.2 | 62.6 | 64.4 | 65.1   | 64.8 | 65.1 | 62.2          | 72.3          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |                 |  |
| 22-Feb   | 64.8                          | 64.2 | 64.5 | 64.4 | 64.3 | 64.2 | 64.1 | 63.9 | 63.9 | 59.3 | 55.9 | 53.0 | 45.2 | 41.8 | 40.9 | 44.5 | 47.7 | 51.4 | 61.0 | 65.7 | 67.0 | 66.7   | 67.0 | 66.5 | 58.8          | 67.0          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |                 |  |
| 23-Feb   | 66.1                          | 66.2 | 65.9 | 67.0 | 66.9 | 65.1 | 64.5 | 64.1 | 63.2 | 60.4 | 55.6 | 52.0 | 52.0 | 50.7 | 51.2 | 51.9 | 52.7 | 55.1 | 63.3 | 68.5 | 68.6 | 68.1   | 68.0 | 67.3 | 61.4          | 68.6          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |                 |  |
| 24-Feb   | 68.2                          | 68.5 | 68.7 | 68.9 | 68.5 | 68.5 | 68.2 | 68.9 | 68.1 | 66.5 | 58.8 | 49.5 | 44.7 | 42.7 | 42.3 | 43.3 | 43.1 | 43.1 | 43.5 | 43.9 | 45.1 | 45.3   | 46.8 | 48.9 | 55.2          | 68.9          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |                 |  |
| 25-Feb   | 51.4                          | 52.8 | 55.4 | 58.2 | 60.9 | 63.5 | 64.6 | 65.7 | 66.1 | 64.2 | 57.3 | 55.0 | 56.2 | 55.9 | 53.8 | 53.6 | 55.3 | 58.5 | 62.0 | 65.3 | 69.1 | 75.0   | 74.9 | 75.0 | 61.2          | 75.0          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |                 |  |
| 26-Feb   | 76.5                          | 79.7 | 80.4 | 79.3 | 79.7 | 77.9 | 79.6 | 82.3 | 82.6 | 82.2 | 81.0 | 80.6 | 81.7 | 82.2 | 81.9 | 82.8 | 84.0 | 87.0 | 87.9 | 88.3 | 88.2 | 88.3   | 88.3 | 88.0 | 82.9          | 88.3          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |                 |  |
| 27-Feb   | 87.5                          | 86.4 | 85.2 | 84.3 | 83.8 | 83.1 | 81.2 | 79.8 | 79.5 | 75.5 | 72.7 | 71.3 | 70.6 | 69.2 | 69.6 | 71.3 | 72.3 | 73.0 | 75.1 | 77.1 | 77.6 | 76.9   | 79.8 | 80.6 | 77.6          | 87.5          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |                 |  |
| 28-Feb   | 78.9                          | 78.2 | 77.5 | 76.3 | 75.4 | 76.1 | 74.3 | 74.0 | 73.0 | 73.2 | 69.5 | 58.8 | 60.0 | 53.2 | 55.2 | 57.0 | 58.8 | 65.8 | 75.6 | 77.8 | 76.2 | 75.5   | 73.7 | 73.5 | 70.3          | 78.9          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                 |                 |  |
|  |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |      | 74.0 | 74.4          | 74.8          | 75.5 | 75.8 | 75.9 | 75.7 | 75.5 | 73.9 | 71.1 | 67.6 | 65.7 | 64.1 | 63.6 | 64.2 | 65.6 | 68.7 | 71.8 | 73.1 | 73.4 | 74.4 | 74.6 | 74.2            | Diurnal Average |  |
|  |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |      | 91.1 | 91.3          | 91.8          | 92.9 | 93.8 | 93.7 | 93.4 | 89.7 | 87.9 | 90.9 | 91.3 | 91.1 | 91.1 | 91.2 | 91.7 | 91.8 | 91.9 | 91.6 | 91.6 | 91.8 | 92.2 | 92.0 | Diurnal Maximum |                 |  |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Relative Humidity (RH) - %**  
**Ells River - February 2023**







**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Relative Humidity (RH) - %**  
**Ells River - February 2023**

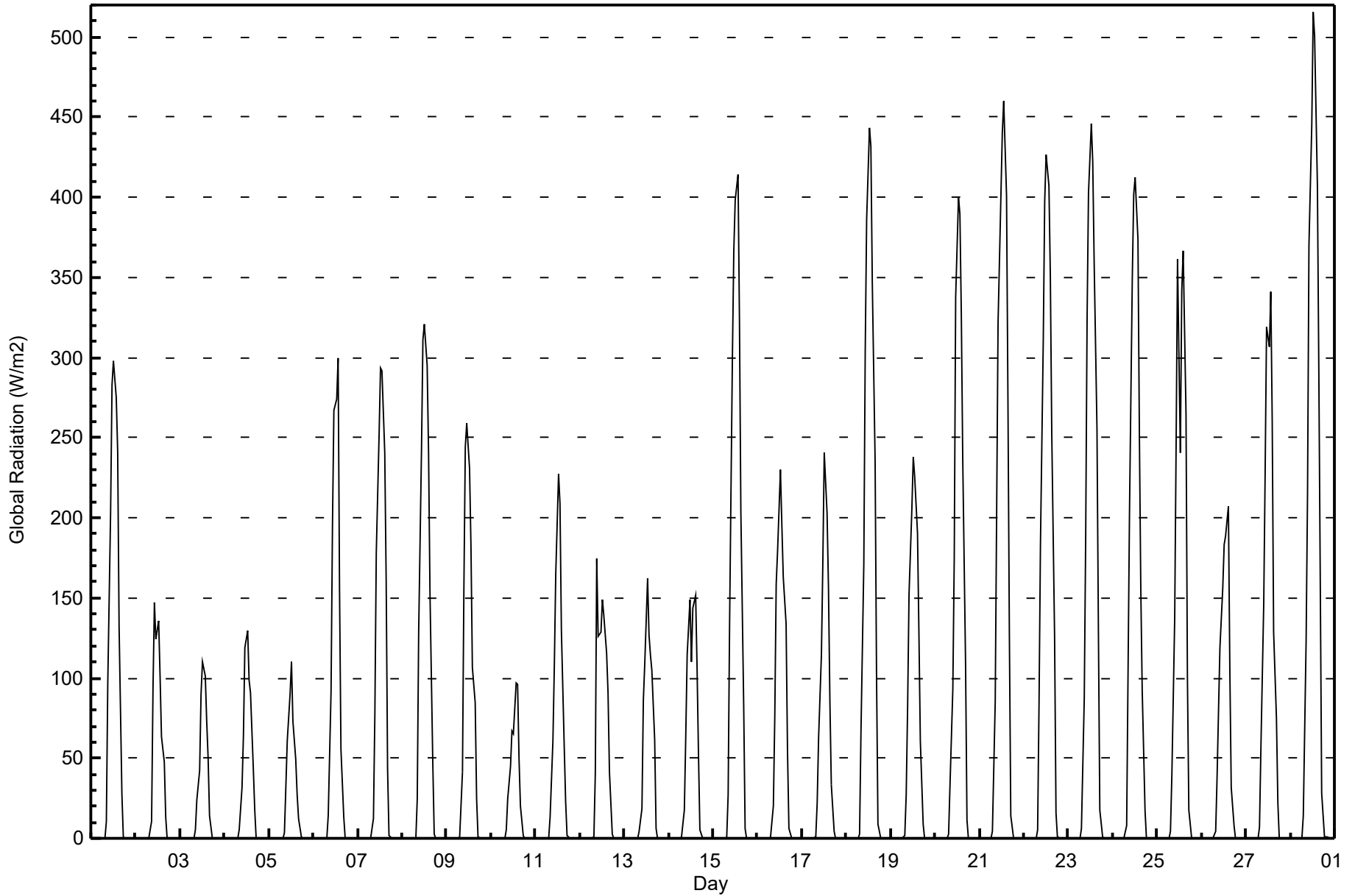
| <b>Concentration Ranges (%)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---------------------------------|------------------------|----------|---------------------|
| 0 - 20                          | 0                      | 0.00     | 0.00                |
| 20 - 40                         | 0                      | 0.00     | 0.00                |
| 40 - 60                         | 91                     | 13.54    | 13.54               |
| 60 - 80                         | 415                    | 61.76    | 75.30               |
| 80 - 100                        | 166                    | 24.70    | 100.00              |

Total Number of Valid Hours: 672

Total Number of Hours: 672



| Maximum Value: 515.5 W/m2 on Feb 28 13:00      Maximum Daily Average: 128.1 W/m2 on Feb 28   |                               |     |     |     |     |     |     |      |       |       |       |       |       |       |       |       |       |      |     |     |     |     | Hours in Service:         | 672   |               |               |
|--|-------------------------------|-----|-----|-----|-----|-----|-----|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|-----|-----|-----|-----|---------------------------|-------|---------------|---------------|
| Minimum Value: 0.0 W/m2 on Feb 1 01:00      Minimum Daily Average: 19.1 W/m2 on Feb 5  |                               |     |     |     |     |     |     |      |       |       |       |       |       |       |       |       |       |      |     |     |     |     | Hours of Data:            | 672   |               |               |
| Maximum Diurnal Average: 269.2 W/m2 at hour 13      Minimum Diurnal Average: 0.0 W/m2 at hour 2  |                               |     |     |     |     |     |     |      |       |       |       |       |       |       |       |       |       |      |     |     |     |     | Hours of Missing Data:    | 0     |               |               |
| Monthly Average: 64.14 W/m2      Percentiles: P <sub>1</sub> = 0.0 P <sub>10</sub> = 0.0 Q <sub>1</sub> = 0.0 Median = 0.2 Q <sub>3</sub> = 92.6 P <sub>90</sub> = 241.4 P <sub>99</sub> = 434.0 |                               |     |     |     |     |     |     |      |       |       |       |       |       |       |       |       |       |      |     |     |     |     | Hours of Calibration:     | 0     |               |               |
|  |                               |     |     |     |     |     |     |      |       |       |       |       |       |       |       |       |       |      |     |     |     |     | Percent Operational Time: | 100.0 |               |               |
| Day  | Hourly Period Ending At (MST) |     |     |     |     |     |     |      |       |       |       |       |       |       |       |       |       |      |     |     |     |     |                           |       | Daily Average | Daily Maximum |
|  | 1                             | 2   | 3   | 4   | 5   | 6   | 7   | 8    | 9     | 10    | 11    | 12    | 13    | 14    | 15    | 16    | 17    | 18   | 19  | 20  | 21  | 22  | 23                        | 24    |               |               |
| 1-Feb  | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 10.5  | 96.6  | 203.5 | 282.9 | 297.9 | 274.8 | 241.5 | 132.5 | 27.1  | 0.7  | 0.2 | 0.1 | 0.1 | 0.1 | 0.1                       | 0.1   | 65.4          | 297.9         |
| 2-Feb  | 0.1                           | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 10.8  | 93.7  | 146.9 | 124.5 | 135.7 | 101.8 | 63.9  | 47.3  | 13.5  | 0.0  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0                       | 0.0   | 30.8          | 146.9         |
| 3-Feb  | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 4.9   | 23.5  | 42.5  | 89.7  | 110.3 | 101.7 | 73.2  | 50.1  | 14.0  | 0.1  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0                       | 0.0   | 21.3          | 110.3         |
| 4-Feb  | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 4.9   | 31.3  | 64.5  | 119.3 | 129.2 | 98.5  | 90.8  | 43.1  | 17.8  | 0.2  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0                       | 0.0   | 25.0          | 129.2         |
| 5-Feb  | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 3.9   | 32.2  | 60.7  | 89.5  | 110.1 | 72.7  | 49.0  | 27.0  | 12.4  | 0.8  | 0.0 | 0.0 | 0.0 | 0.1 | 0.0                       | 0.0   | 19.1          | 110.1         |
| 6-Feb  | 0.0                           | 0.1 | 0.1 | 0.0 | 0.1 | 0.2 | 0.0 | 0.2  | 14.3  | 91.4  | 194.9 | 266.9 | 273.8 | 299.7 | 155.4 | 55.6  | 13.3  | 0.3  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0                       | 0.0   | 56.9          | 299.7         |
| 7-Feb  | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.2  | 11.9  | 77.6  | 178.1 | 252.4 | 293.4 | 291.7 | 240.8 | 161.3 | 43.2  | 2.1  | 0.1 | 0.0 | 0.1 | 0.0 | 0.0                       | 0.0   | 64.7          | 293.4         |
| 8-Feb  | 0.0                           | 0.0 | 0.1 | 0.1 | 0.2 | 0.1 | 0.0 | 0.4  | 24.4  | 128.5 | 242.8 | 311.0 | 321.0 | 295.2 | 241.0 | 153.6 | 46.8  | 2.6  | 0.2 | 0.1 | 0.1 | 0.0 | 0.0                       | 0.0   | 73.7          | 321.0         |
| 9-Feb  | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.5  | 41.4  | 156.4 | 243.8 | 258.9 | 230.9 | 182.2 | 106.3 | 84.3  | 24.5  | 1.0  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0                       | 0.0   | 55.4          | 258.9         |
| 10-Feb   | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 5.1   | 25.0  | 44.8  | 66.7  | 65.7  | 97.0  | 96.3  | 50.2  | 19.9  | 2.2  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0                       | 0.0   | 19.7          | 97.0          |
| 11-Feb   | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 12.8  | 60.9  | 107.3 | 164.5 | 227.3 | 208.8 | 129.8 | 57.4  | 22.8  | 2.1  | 0.0 | 0.0 | 0.0 | 0.2 | 0.1                       | 0.0   | 41.4          | 227.3         |
| 12-Feb   | 0.0                           | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.9  | 40.2  | 174.3 | 125.7 | 128.4 | 149.2 | 139.5 | 115.1 | 90.5  | 41.3  | 2.3  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0                       | 0.0   | 42.0          | 174.3         |
| 13-Feb   | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 4.3   | 18.7  | 86.8  | 109.3 | 161.9 | 126.9 | 114.5 | 105.0 | 62.0  | 6.0  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0                       | 0.0   | 33.1          | 161.9         |
| 14-Feb   | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.5  | 17.9  | 63.0  | 114.6 | 148.7 | 110.0 | 143.8 | 151.7 | 106.6 | 52.5  | 5.5  | 0.0 | 0.0 | 0.0 | 0.0 | 0.3                       | 0.2   | 38.1          | 151.7         |
| 15-Feb   | 0.2                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 1.3  | 27.6  | 132.3 | 299.5 | 367.0 | 398.2 | 413.8 | 323.0 | 203.7 | 82.4  | 6.5  | 0.3 | 0.4 | 0.0 | 0.0 | 0.0                       | 0.0   | 94.0          | 413.8         |
| 16-Feb   | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.6  | 20.6  | 75.8  | 158.5 | 179.6 | 230.0 | 195.5 | 163.1 | 133.7 | 54.5  | 6.3  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0                       | 0.0   | 50.8          | 230.0         |
| 17-Feb   | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.9  | 22.3  | 62.2  | 114.3 | 171.4 | 240.2 | 202.5 | 156.3 | 85.2  | 33.7  | 4.7  | 0.0 | 0.0 | 0.0 | 0.1 | 0.0                       | 0.0   | 45.6          | 240.2         |
| 18-Feb   | 0.1                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.8  | 67.2  | 171.4 | 304.5 | 386.0 | 443.3 | 431.5 | 347.5 | 235.4 | 101.9 | 9.1  | 0.2 | 0.2 | 0.1 | 0.3 | 0.1                       | 0.0   | 104.2         | 443.3         |
| 19-Feb   | 0.1                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.7  | 27.0  | 81.8  | 152.7 | 205.0 | 237.6 | 225.3 | 190.2 | 127.8 | 60.4  | 9.0  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0                       | 0.0   | 54.9          | 237.6         |
| 20-Feb   | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.8  | 33.6  | 93.2  | 175.0 | 337.3 | 400.1 | 389.9 | 327.4 | 237.2 | 109.7 | 11.4 | 0.3 | 0.1 | 0.0 | 0.0 | 0.0                       | 0.0   | 88.2          | 400.1         |
| 21-Feb   | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 | 4.3  | 85.9  | 203.5 | 321.4 | 400.3 | 440.0 | 460.4 | 401.1 | 272.4 | 127.8 | 14.4 | 0.4 | 0.4 | 0.2 | 0.2 | 0.3                       | 0.2   | 113.9         | 460.4         |
| 22-Feb   | 0.2                           | 0.1 | 0.0 | 0.1 | 0.0 | 0.1 | 0.0 | 5.5  | 84.3  | 183.4 | 310.9 | 397.1 | 427.0 | 407.3 | 351.0 | 252.6 | 125.8 | 15.9 | 0.5 | 0.3 | 0.2 | 0.3 | 0.2                       | 0.2   | 106.8         | 427.0         |
| 23-Feb   | 0.2                           | 0.0 | 0.0 | 0.0 | 0.1 | 0.2 | 0.2 | 6.1  | 87.2  | 186.5 | 324.3 | 403.0 | 446.2 | 422.1 | 359.5 | 256.0 | 131.7 | 17.4 | 0.6 | 0.4 | 0.3 | 0.2 | 0.2                       | 0.2   | 110.1         | 446.2         |
| 24-Feb   | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 8.1  | 104.6 | 202.3 | 350.3 | 401.6 | 412.1 | 373.4 | 252.6 | 155.9 | 92.4  | 17.8 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0                       | 0.1   | 98.8          | 412.1         |
| 25-Feb   | 0.1                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 4.3  | 39.2  | 137.7 | 245.7 | 361.1 | 240.7 | 341.8 | 366.4 | 265.5 | 100.8 | 18.0 | 0.4 | 0.1 | 0.0 | 0.0 | 0.0                       | 0.0   | 88.4          | 366.4         |
| 26-Feb   | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 4.2  | 38.4  | 79.5  | 119.2 | 156.3 | 183.2 | 188.7 | 207.0 | 106.8 | 31.8  | 7.9  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0                       | 0.0   | 46.8          | 207.0         |
| 27-Feb   | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 7.0  | 56.0  | 146.7 | 228.7 | 319.0 | 306.3 | 340.8 | 261.2 | 128.5 | 74.7  | 21.8 | 0.4 | 0.0 | 0.0 | 0.0 | 0.0                       | 0.2   | 78.8          | 340.8         |
| 28-Feb   | 0.1                           | 0.0 | 0.0 | 0.2 | 0.0 | 0.0 | 0.2 | 14.4 | 123.6 | 215.0 | 370.3 | 445.0 | 515.5 | 501.0 | 406.6 | 290.1 | 161.4 | 28.3 | 1.2 | 0.5 | 0.5 | 0.4 | 0.4                       | 0.4   | 128.1         | 515.5         |
|  |                               |     |     |     |     |     |     |      |       |       |       |       |       |       |       |       |       |      |     |     |     |     | Diurnal Average           |       |               |               |
|  |                               |     |     |     |     |     |     |      |       |       |       |       |       |       |       |       |       |      |     |     |     |     | Diurnal Maximum           |       |               |               |





# Wood Buffalo Environmental Association

## Summary of Hour Averages

# Wind Speed (WS) - km/h

## Ells River - February 2023

|  |   |                                |
|--|---|--------------------------------|
| Maximum Speed: 41 km/h on Feb 13 12:00             | Maximum Daily Speed Average: 14.7 km/h on Feb 13  | Hours in Service: 672          |
| Minimum Speed Value: 0 km/h on Feb 5 02:00         | Minimum Daily Speed Average: 0.8 km/h on Feb 22   | Hours of Data: 662             |
| Maximum Diurnal Speed Average: 3.7 km/h at hour 16 | Minimum Diurnal Speed Average: 0.8 km/h at hour 2   | Hours of Missing Data: 10      |
| Monthly Average Velocity: 1.0 km/h 14.9 deg        | Percentiles: P <sub>1</sub> = 1 P <sub>10</sub> = 2 Q <sub>1</sub> = 3 Median = 7 Q <sub>3</sub> = 11 P <sub>90</sub> = 16 P <sub>99</sub> = 24 | Percent Operational Time: 98.5 |

| Day    | Hourly Period Ending At (MST) |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Daily Average | Daily Maximum |
|--------|-------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------------|---------------|
|        | 1                             | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     | 10    | 11    | 12    | 13    | 14    | 15    | 16    | 17    | 18    | 19    | 20    | 21    | 22    | 23    | 24    |               |               |
| 1-Feb  | WNW5                          | WSW1  | WNW3  | WSW1  | WNW4  | NW5   | NNW6  | NNW8  | NNE5  | WNW2  | WNW6  | NW10  | NW11  | N9    | ENE4  | ENE5  | ENE3  | NNW6  | WNW5  | WNW3  | W3    | W2    | SW2   | SW3   | NW3.3         | NW11          |
| 2-Feb  | SSW4                          | S6    | SSW7  | SSW6  | SSW6  | SSW7  | S7    | SSW5  | SSW4  | S3    | S6    | S6    | S7    | S10   | S13   | SSE16 | SSE16 | SSE14 | SSE21 | SSE22 | S20   | S20   | S19   | SSE18 | S10.6         | SSE22         |
| 3-Feb  | S17                           | S13   | S14   | S13   | S12   | S12   | SSW10 | SSW7  | SSW7  | SSW8  | SSE2  | N4    | N8    | NNE9  | NE10  | NNE9  | ENE10 | ENE10 | ENE8  | E7    | E6    | E5    | E5    | N4    | SE3.6         | S17           |
| 4-Feb  | NE4                           | NNE6  | N7    | NNE10 | NNE9  | NNE10 | NNE11 | NNE14 | NNE12 | NNE13 | NNE12 | NNE11 | NNE9  | NNE9  | NNE5  | NE4   | N4    | N6    | NNE9  | NNE8  | N6    | NNW6  | NNW5  | NW3   | NNE7.9        | NNE14         |
| 5-Feb  | NW3                           | SE0   | S3    | NW1   | NW1   | N4    | N3    | NW4   | NNW2  | W3    | S6    | S4    | SSE9  | S9    | SSE11 | S10   | S10   | S8    | SSW9  | SSW7  | W8    | NNW10 | N16   | WNW14 | SW2.1         | N16           |
| 6-Feb  | W12                           | W11   | WSW9  | WSW9  | WSW10 | WSW9  | W7    | S4    | N3    | N3    | E8    | E5    | SE7   | SE4   | E3    | E3    | N5    | N6    | NW3   | WSW4  | W3    | SSW6  | SW6   | SSW7  | WSW2.6        | W12           |
| 7-Feb  | S8                            | SSW9  | SW11  | WSW14 | WSW13 | WSW11 | W10   | WSW10 | SSW9  | SW12  | WSW12 | WSW12 | WSW13 | W18   | W18   | W16   | W14   | WSW11 | WSW11 | W10   | NW5   | NNE14 | NNE17 | NNE13 | W8.2          | W18           |
| 8-Feb  | NNE10                         | NNE6  | NW3   | W2    | SSW4  | SW2   | S0    | W2    | NNW3  | WSW3  | W1    | S11   | S10   | SSE10 | SSE10 | SSE9  | SSE5  | WNW2  | WNW3  | W1    | SW1   | SSW3  | SSW6  | SSW5  | S2.3          | S11           |
| 9-Feb  | SSW8                          | S11   | S11   | S10   | SSW10 | S10   | SSW9  | SW13  | SW12  | SSW11 | SSW12 | S10   | S11   | S13   | S13   | S6    | ENE2  | NE4   | ESE1  | W1    | W2    | NW3   | W2    | SSW4  | SSW6.8        | S13           |
| 10-Feb | NE2                           | NNE12 | NNE13 | NNE16 | NNE18 | NNE18 | NNE14 | NNE15 | NNE15 | NNE16 | NNE16 | NNE18 | NNE16 | NNE17 | NNE17 | NNE18 | NNE15 | NNE15 | NNE16 | NNE12 | NNE11 | NNE8  | NE5   | ENE4  | NNE13.5       | NNE18         |
| 11-Feb | NE2                           | N2    | ESE3  | SSE6  | SSE7  | SSE4  | SE2   | ESE1  | SSW5  | SSW7  | SSW10 | SSW12 | SSW13 | SSW11 | S9    | SSW3  | WSW9  | WSW10 | W7    | WNW9  | W7    | SSW8  | SW9   | WSW11 | SW5.2         | SSW13         |
| 12-Feb | W15                           | W13   | SW9   | SSE6  | S7    | SSW7  | WSW9  | NW6   | NNW8  | N7    | NNE9  | N6    | NNE2  | NNE2  | NNE4  | NNE6  | NNE7  | NNE7  | N4    | NNW4  | NW2   | SSE1  | NW4   | NW3   | NW2.3         | W15           |
| 13-Feb | NNW2                          | W2    | S9    | SW5   | SW8   | WSW12 | WSW11 | NNW12 | NNE25 | NNE20 | NNE24 | N41   | NNE35 | N36   | NNE32 | NNE30 | NNE23 | NNE24 | NNE13 | NE13  | NE13  | NE17  | NNE22 | NNE16 | NNE14.7       | N41           |
| 14-Feb | NE16                          | NE14  | NNE8  | NNE5  | NNE8  | NNE7  | NNE8  | NNE7  | ENE6  | NE5   | ENE5  | E6    | ENE5  | E6    | NE6   | ENE9  | ENE8  | ENE3  | WNW1  | WNW3  | NNW1  | S1    | W1    | S1    | NE5.0         | NE16          |
| 15-Feb | S1                            | SSW4  | SSW4  | SW2   | SSW2  | SSW5  | S3    | SSW4  | SSW2  | NW3   | M     | M     | SE3   | SE5   | SSE7  | S8    | SSE8  | S5    | S3    | WSW2  | SW1   | WNW3  | SW1   | S2.9  | S8            |               |
| 16-Feb | W1                            | NNW2  | SSW2  | SW1   | W1    | W3    | SW3   | WSW2  | SSW5  | SSW5  | SSW8  | SSW11 | SSW11 | SSW13 | SW11  | SW6   | NNE11 | NNE16 | NNE20 | NNE18 | NNE12 | NNE9  | NNE6  | NE3   | NNW0.8        | NNE20         |
| 17-Feb | ENE3                          | ENE4  | E3    | ESE3  | SE2   | SE3   | ESE2  | NE6   | ENE10 | ENE9  | NE10  | NE10  | NE11  | NE12  | NE12  | NE14  | NE15  | NE13  | NE13  | NE10  | NNE8  | NNW5  | NW6   | NW5   | NE6.7         | NE15          |
| 18-Feb | NW6                           | WNW4  | WNW3  | WNW3  | NW3   | WNW4  | WNW3  | W1    | W2    | NNW3  | N6    | N7    | NNE8  | NNE6  | NNE5  | ENE8  | E7    | ENE3  | N3    | WNW3  | W3    | SW0   | WNW3  | WSW2  | NNW2.4        | NNE8          |
| 19-Feb | SW2                           | S2    | SW2   | WSW1  | UO    | UO    | WNW3  | WNW1  | WSW3  | NW1   | WNW4  | NE3   | NNE3  | N5    | N6    | N6    | NW6   | WNW4  | NW7   | N7    | NNE12 | NNE14 | N12   | NNE10 | N3.8          | NNE14         |
| 20-Feb | N7                            | NNE7  | NNE5  | NNE2  | S2    | SSE5  | S4    | SSE4  | SE4   | SSE7  | SE5   | NE2   | E6    | ENE9  | ENE13 | ENE10 | ENE8  | NE4   | NW2   | W4    | WNW5  | NW4   | N4    | NNE10 | ENE2.7        | ENE13         |
| 21-Feb | NNE13                         | NNE10 | NNE4  | NNE7  | NNE6  | NNE3  | W2    | W2    | WSW2  | WSW1  | NNE6  | N5    | NNE5  | NNE12 | NE15  | NE11  | NE14  | NE8   | NE2   | W3    | W3    | SSW2  | SSW4  | SSW4  | NNE4.2        | NE15          |
| 22-Feb | S5                            | S4    | SSW6  | SSW3  | S3    | S4    | S5    | SSW4  | S4    | SE2   | NE2   | NE3   | NNW2  | N3    | NNE3  | ENE8  | ENE6  | ESE2  | W1    | W2    | W2    | WNW2  | WNW2  | WSW2  | S0.8          | ENE8          |
| 23-Feb | NW3                           | NW5   | NW5   | N6    | NNW3  | W3    | UO    | UO    | SW1   | WSW1  | NNE1  | N2    | NE4   | ESE8  | SE8   | SSE11 | S9    | SSE7  | WNW1  | UO    | UO    | W1    | SSW6  | SSW5  | S1.1          | SSE11         |
| 24-Feb | SSW9                          | SSW8  | S10   | S13   | S12   | S11   | S10   | S12   | S9    | S9    | SSW14 | S21   | S21   | SSW21 | SSW20 | S20   | S21   | SSW18 | SSW16 | S18   | S15   | S14   | SSW12 | SSW10 | S14.4         | S21           |
| 25-Feb | SSW10                         | SSW10 | SSW10 | SSW9  | SSW7  | SSW6  | SW7   | SSW5  | WSW9  | WSW11 | W11   | WSW10 | SSW10 | S13   | SSE13 | SSE13 | SE12  | SSE9  | SSE7  | S7    | SSW4  | NNW2  | WSW2  | UO    | SSW7.0        | S13           |
| 26-Feb | UO                            | NE1   | WNW2  | WNW3  | NW3   | NW2   | N4    | NNE7  | NNE7  | NNE7  | NNE7  | NNE10 | NNE12 | NNE14 | NNE18 | NNE18 | NNE17 | NNE17 | NNE17 | NNE14 | NE13  | NNE11 | NNE14 | NNE15 | NNE9.7        | NNE18         |
| 27-Feb | NNE17                         | NNE19 | NNE19 | NNE18 | NNE17 | NNE16 | NNE17 | NNE14 | NNE14 | NNE18 | NNE20 | NE19  | NE16  | NE13  | NE17  | NE18  | NE17  | NE13  | NNE11 | NNE13 | NNE10 | NNE11 | NNE8  | NW5   | NNE14.7       | NNE20         |
| 28-Feb | WNW5                          | NW6   | WNW3  | W4    | WNW6  | WNW4  | WNW4  | W2    | WNW4  | NW3   | N6    | N3    | N5    | N4    | N4    | N4    | N5    | N4    | W1    | SSW3  | W1    | WSW1  | SSW2  | S3    | NW2.6         | N6            |

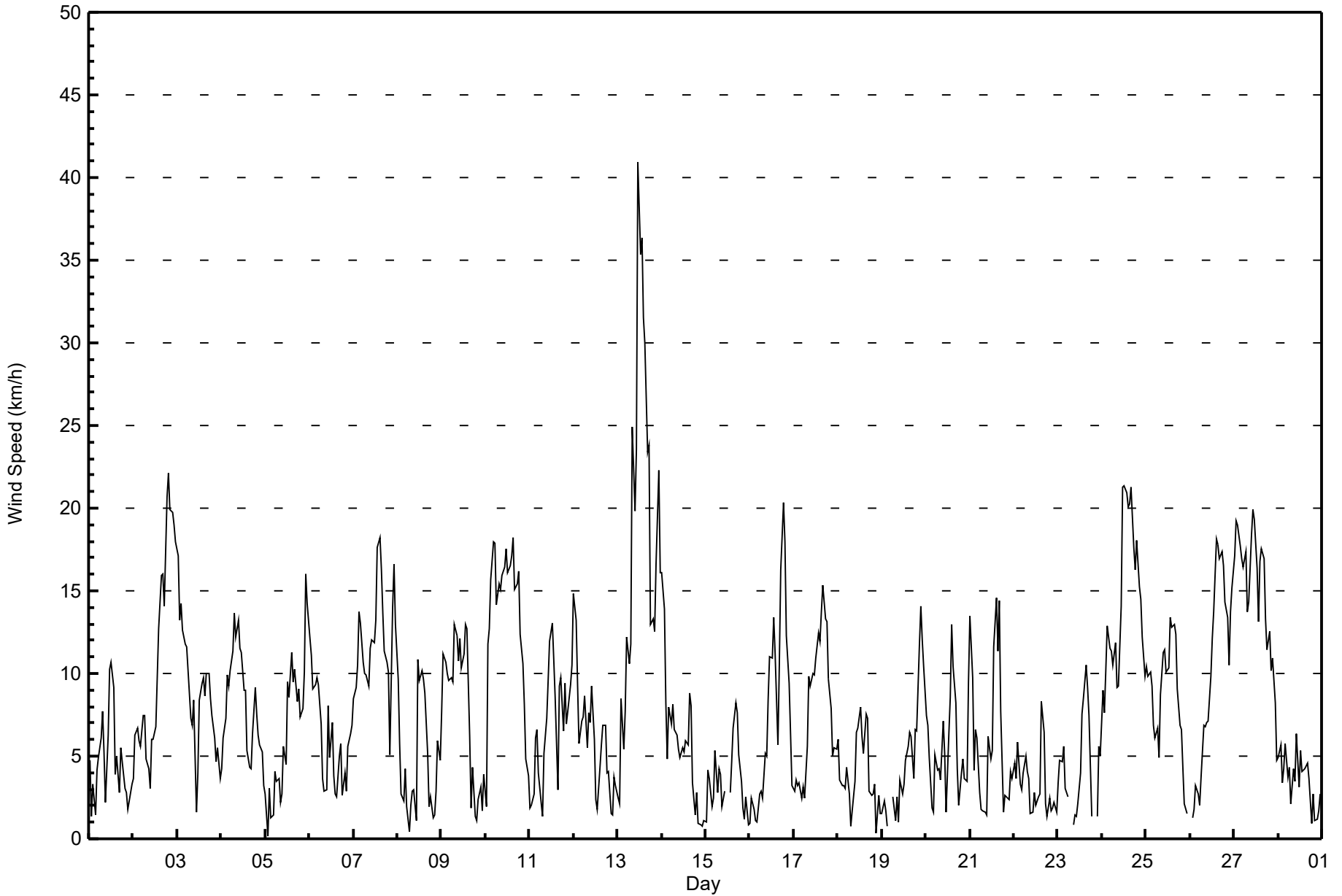
|       |        |       |       |       |        |       |       |       |       |       |        |        |       |        |        |        |       |        |       |      |        |       |       |                 |
|-------|--------|-------|-------|-------|--------|-------|-------|-------|-------|-------|--------|--------|-------|--------|--------|--------|-------|--------|-------|------|--------|-------|-------|-----------------|
| NW1.0 | NNW0.8 | SW1.5 | SW1.0 | SW1.3 | WSW1.6 | W1.6  | NW1.3 | N1.1  | N1.0  | N2.0  | NNE2.1 | NNE1.8 | NE2.1 | ENE2.9 | ENE3.7 | ENE3.7 | NE3.2 | NNE1.8 | N1.3  | N1.7 | NNE1.8 | N1.8  | NW1.0 | Diurnal Average |
| S17   | NNE19  | NNE19 | NNE18 | NNE18 | NNE18  | NNE17 | NNE15 | NNE25 | NNE20 | NNE24 | N41    | NNE35  | N36   | NNE32  | NNE30  | NNE23  | NNE24 | SSE21  | SSE22 | S20  | S20    | NNE22 | SSE18 | Diurnal Maximum |

M - Maintenance      UO - Unstable Operation  
 All monthly, daily, and diurnal averages have been calculated using vector methods



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Wind Speed (WS) - km/h**  
**Ells River - February 2023**





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Wind Speed (WS) - km/h  
Ells River - February 2023**

| <b>Wind Speed Ranges (km/h)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---------------------------------|------------------------|----------|---------------------|
| 0 - 5                           | 277                    | 41.84    | 41.84               |
| 6 - 11                          | 232                    | 35.05    | 76.89               |
| 12 - 19                         | 130                    | 19.64    | 96.53               |
| 20 - 28                         | 18                     | 2.72     | 99.24               |
| 29 - 38                         | 4                      | 0.60     | 99.85               |
| > 38                            | 1                      | 0.15     | 100.00              |

Total Number of Valid Hours: 662

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Wind Speed (WS) - km/h  
Ells River - February 2023**

| <b>Wind Speed<br/>Ranges (km/h)</b> | <b>Wind Direction</b> |            |           |            |           |            |           |            |           |            |           |            |           |            |           |            | <b>Totals</b> |
|-------------------------------------|-----------------------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|---------------|
|                                     | <b>N</b>              | <b>NNE</b> | <b>NE</b> | <b>ENE</b> | <b>E</b>  | <b>ESE</b> | <b>SE</b> | <b>SSE</b> | <b>S</b>  | <b>SSW</b> | <b>SW</b> | <b>WSW</b> | <b>W</b>  | <b>WNW</b> | <b>NW</b> | <b>NNW</b> |               |
| 0 - 5                               | 24                    | 15         | 16        | 12         | 5         | 6          | 10        | 6          | 20        | 31         | 13        | 17         | 31        | 35         | 26        | 10         | 277           |
| 6 - 11                              | 14                    | 50         | 8         | 15         | 7         | 1          | 2         | 16         | 31        | 39         | 8         | 17         | 7         | 3          | 8         | 6          | 232           |
| 12 - 19                             | 2                     | 58         | 19        | 1          | 0         | 0          | 1         | 6          | 17        | 8          | 3         | 6          | 7         | 1          | 0         | 1          | 130           |
| 20 - 28                             | 0                     | 8          | 0         | 0          | 0         | 0          | 0         | 2          | 6         | 2          | 0         | 0          | 0         | 0          | 0         | 0          | 18            |
| 29 - 38                             | 1                     | 3          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 4             |
| > 38                                | 1                     | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 0         | 0          | 1             |
| <b>Totals</b>                       | <b>42</b>             | <b>134</b> | <b>43</b> | <b>28</b>  | <b>12</b> | <b>7</b>   | <b>13</b> | <b>30</b>  | <b>74</b> | <b>80</b>  | <b>24</b> | <b>40</b>  | <b>45</b> | <b>39</b>  | <b>34</b> | <b>17</b>  | <b>662</b>    |

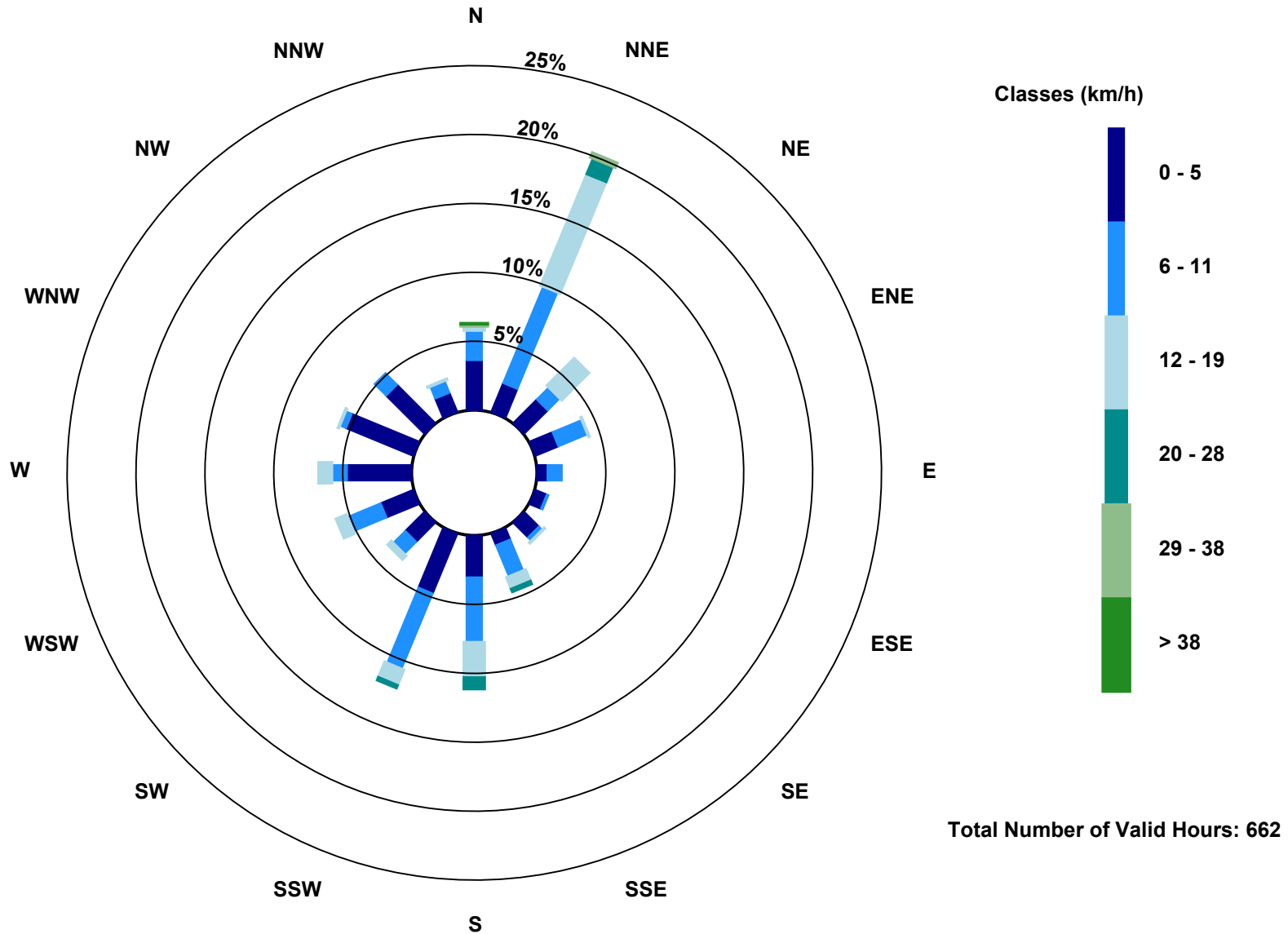
Total Number of Valid Hours: 662

Total Number of Hours: 672



Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Wind Speed (WS) - km/h  
Ells River







**Wood Buffalo Environmental Association**  
**Summary of Hour Standard Deviations**

**Wind Speed (WS) - km/h**  
**Ells River - February 2023**

| Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0<br>Maximum Value: 7 km/h on Feb 13 12:00<br>Minimum Value: 0 km/h on Feb 21 20:00<br>Percentiles: P <sub>1</sub> = 1 P <sub>10</sub> = 1 Q <sub>1</sub> = 1 Median = 2 Q <sub>3</sub> = 2 P <sub>90</sub> = 3 P <sub>99</sub> = 5 |                               |   |   |   |    |    |    |    |   |    |    |    |    |    |    |    | Hours in Service: 672<br>Hours of Data: 662<br>Hours of Missing Data: 10<br>Hours of Calibration: 0<br>Percent Operational Time: 98.5 |    |    |    |    |    |    |    |               |
|---|-------------------------------|---|---|---|----|----|----|----|---|----|----|----|----|----|----|----|---|----|----|----|----|----|----|----|---------------|
| Day   | Hourly Period Ending At (MST) |   |   |   |    |    |    |    |   |    |    |    |    |    |    |    |   |    |    |    |    |    |    |    | Daily Maximum |
|   | 1                             | 2 | 3 | 4 | 5  | 6  | 7  | 8  | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17  | 18 | 19 | 20 | 21 | 22 | 23 | 24 |               |
| 1-Feb   | 2                             | 1 | 1 | 2 | 2  | 1  | 3  | 2  | 2 | 1  | 2  | 3  | 3  | 4  | 2  | 1  | 1   | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 4             |
| 2-Feb   | 1                             | 1 | 1 | 1 | 2  | 1  | 1  | 2  | 1 | 1  | 1  | 2  | 2  | 2  | 4  | 3  | 3   | 3  | 4  | 4  | 4  | 4  | 4  | 3  | 4             |
| 3-Feb   | 4                             | 2 | 2 | 2 | 2  | 2  | 3  | 2  | 2 | 3  | 2  | 2  | 2  | 1  | 2  | 1  | 1   | 2  | 2  | 2  | 1  | 1  | 1  | 4  |               |
| 4-Feb   | 1                             | 2 | 1 | 1 | 1  | 1  | 1  | 2  | 2 | 2  | 2  | 3  | 1  | 1  | 2  | 1  | 1   | 1  | 1  | 2  | 2  | 1  | 1  | 3  |               |
| 5-Feb   | 1                             | 1 | 0 | 1 | 1  | 2  | 1  | 1  | 1 | 2  | 1  | 2  | 2  | 2  | 3  | 3  | 2   | 1  | 1  | 2  | 2  | 6  | 3  | 6  |               |
| 6-Feb   | 3                             | 3 | 2 | 2 | 2  | 2  | 2  | 3  | 2 | 1  | 2  | 2  | 2  | 2  | 2  | 2  | 3   | 1  | 1  | 2  | 1  | 1  | 1  | 3  |               |
| 7-Feb   | 2                             | 2 | 3 | 4 | 4  | 4  | 4  | 3  | 3 | 2  | 4  | 4  | 4  | 5  | 5  | 5  | 4   | 3  | 3  | 3  | 2  | 5  | 2  | 5  |               |
| 8-Feb   | 1                             | 1 | 1 | 1 | 1  | 2  | 1  | 1  | 1 | 1  | 1  | 2  | 2  | 2  | 2  | 2  | 1   | 1  | 1  | 1  | 1  | 2  | 1  | 2  |               |
| 9-Feb   | 3                             | 2 | 1 | 1 | 2  | 1  | 2  | 3  | 3 | 2  | 3  | 2  | 2  | 2  | 3  | 2  | 1   | 1  | 1  | 1  | 1  | 1  | 2  | 3  |               |
| 10-Feb  | 3                             | 2 | 2 | 3 | 2  | 3  | 2  | 2  | 2 | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2   | 2  | 2  | 2  | 2  | 2  | 1  | 3  |               |
| 11-Feb  | 1                             | 1 | 1 | 1 | 1  | 1  | 1  | 1  | 2 | 2  | 2  | 3  | 3  | 2  | 2  | 2  | 4   | 3  | 2  | 4  | 5  | 1  | 2  | 5  |               |
| 12-Feb  | 4                             | 4 | 2 | 1 | 1  | 2  | 2  | 2  | 2 | 3  | 2  | 1  | 1  | 2  | 1  | 1  | 1   | 2  | 1  | 1  | 1  | 1  | 1  | 4  |               |
| 13-Feb  | 1                             | 1 | 2 | 3 | 2  | 3  | 3  | 5  | 5 | 3  | 6  | 7  | 6  | 6  | 5  | 5  | 3   | 5  | 2  | 2  | 2  | 3  | 4  | 7  |               |
| 14-Feb  | 3                             | 3 | 4 | 1 | 1  | 2  | 1  | 1  | 1 | 1  | 1  | 2  | 1  | 2  | 1  | 1  | 2   | 1  | 1  | 1  | 1  | 1  | 1  | 4  |               |
| 15-Feb  | 1                             | 1 | 2 | 1 | 1  | 1  | 1  | 1  | 1 | 1  | 1  | M  | M  | 2  | 2  | 2  | 2   | 1  | 1  | 1  | 1  | 1  | 1  | 2  |               |
| 16-Feb  | 1                             | 1 | 1 | 1 | 1  | 1  | 2  | 2  | 1 | 2  | 2  | 2  | 3  | 3  | 3  | 2  | 5   | 4  | 3  | 3  | 1  | 1  | 2  | 5  |               |
| 17-Feb  | 2                             | 1 | 1 | 1 | 1  | 1  | 2  | 2  | 2 | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2   | 2  | 2  | 2  | 1  | 1  | 1  | 2  |               |
| 18-Feb  | 1                             | 1 | 1 | 2 | 1  | 1  | 1  | 1  | 1 | 1  | 1  | 1  | 2  | 2  | 2  | 2  | 1   | 2  | 2  | 1  | 1  | 1  | 2  | 2  |               |
| 19-Feb  | 1                             | 1 | 1 | 1 | UO | UO | 1  | 1  | 3 | 1  | 2  | 1  | 1  | 1  | 1  | 1  | 1   | 1  | 1  | 3  | 2  | 2  | 1  | 3  |               |
| 20-Feb  | 2                             | 2 | 2 | 1 | 1  | 2  | 1  | 1  | 1 | 2  | 2  | 2  | 2  | 2  | 3  | 2  | 2   | 2  | 1  | 1  | 1  | 1  | 3  | 3  |               |
| 21-Feb  | 2                             | 4 | 2 | 1 | 2  | 1  | 1  | 1  | 1 | 1  | 3  | 2  | 3  | 3  | 3  | 4  | 2   | 3  | 1  | 0  | 1  | 2  | 2  | 4  |               |
| 22-Feb  | 2                             | 2 | 2 | 2 | 1  | 1  | 2  | 1  | 1 | 1  | 1  | 1  | 1  | 1  | 1  | 2  | 2   | 2  | 1  | 1  | 1  | 2  | 1  | 2  |               |
| 23-Feb  | 3                             | 1 | 1 | 1 | 1  | 1  | UO | UO | 1 | 1  | 1  | 1  | 1  | 2  | 3  | 2  | 1   | 2  | 1  | UO | UO | 1  | 2  | 3  |               |
| 24-Feb  | 2                             | 2 | 1 | 1 | 2  | 1  | 1  | 1  | 2 | 2  | 3  | 6  | 4  | 5  | 5  | 5  | 4   | 4  | 4  | 3  | 3  | 2  | 2  | 6  |               |
| 25-Feb  | 2                             | 2 | 3 | 2 | 2  | 2  | 4  | 2  | 2 | 3  | 2  | 3  | 3  | 3  | 3  | 2  | 2   | 1  | 1  | 1  | 2  | 1  | 1  | 4  |               |
| 26-Feb  | UO                            | 1 | 2 | 1 | 1  | 1  | 1  | 1  | 1 | 2  | 1  | 1  | 1  | 1  | 2  | 2  | 2   | 2  | 2  | 2  | 2  | 2  | 2  | 2  |               |
| 27-Feb  | 2                             | 2 | 3 | 3 | 3  | 3  | 3  | 3  | 3 | 3  | 2  | 2  | 2  | 2  | 2  | 2  | 2   | 3  | 2  | 2  | 2  | 2  | 1  | 3  |               |
| 28-Feb  | 1                             | 1 | 1 | 1 | 1  | 1  | 1  | 1  | 1 | 1  | 2  | 1  | 1  | 1  | 1  | 1  | 1   | 1  | 1  | 1  | 1  | 1  | 1  | 2  |               |
|   |                               |   |   |   |    |    |    |    |   |    |    |    |    |    |    |    | Diurnal Maximum   |    |    |    |    |    |    |    |               |
| M - Maintenance   |                               |   |   |   |    |    |    |    |   |    |    |    |    |    |    |    | UO - Unstable Operation   |    |    |    |    |    |    |    |               |



**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

**Wind Direction (WD) - deg**  
**Ells River - February 2023**

|  |                                |
|--|--------------------------------|
| Direction of Maximum Speed: 9 deg on Feb 13 12:00            | Hours in Service: 672          |
| Direction of Maximum Daily Speed Average: 15.7 deg on Feb 13 | Hours of Data: 662             |
| Direction of Minimum Speed: 124 deg on Feb 5 02:00           | Hours of Missing Data: 10      |
| Direction of Minimum Daily Speed Average: 0.8 deg on Feb 22  | Percent Operational Time: 98.5 |
| Monthly Average Direction: 14.9 deg                          |                                |

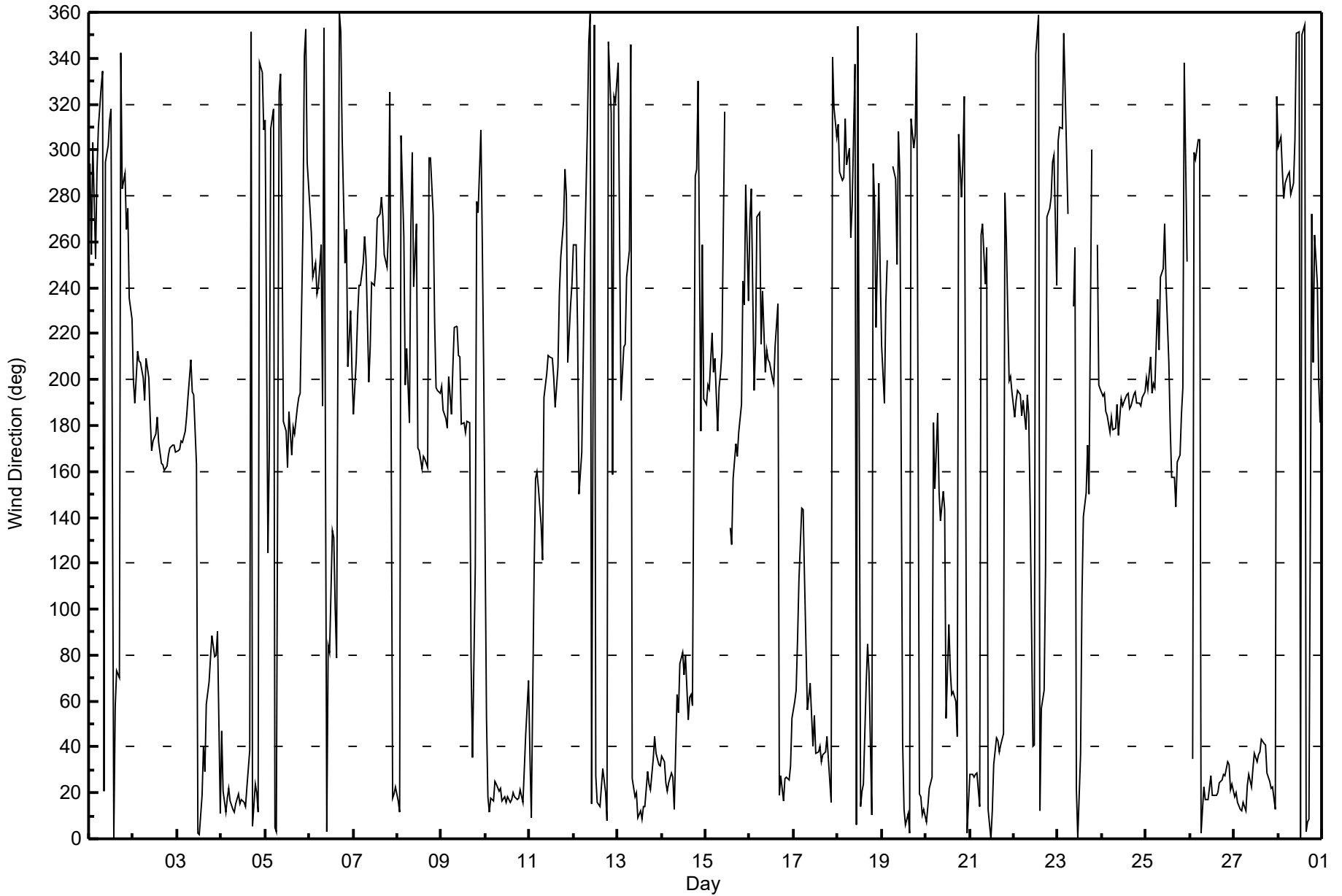
| Day  | Hourly Period Ending At (MST) |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Daily Average |
|--|-------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---------------|
|  | 1                             | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19  | 20  | 21  | 22  | 23  | 24  |               |
| 1-Feb  | 294                           | 254 | 303 | 252 | 291 | 310 | 328 | 335 | 21  | 295 | 302 | 313 | 318 | 0   | 57  | 73  | 70  | 342 | 283 | 290 | 265 | 274 | 236 | 227 | 320.0         |
| 2-Feb  | 199                           | 190 | 212 | 208 | 207 | 201 | 191 | 209 | 200 | 183 | 169 | 174 | 176 | 184 | 173 | 164 | 163 | 160 | 162 | 167 | 170 | 171 | 171 | 168 | 175.1         |
| 3-Feb  | 169                           | 170 | 173 | 173 | 177 | 185 | 193 | 209 | 195 | 193 | 163 | 2   | 2   | 19  | 40  | 30  | 59  | 68  | 78  | 88  | 79  | 80  | 91  | 11  | 133.2         |
| 4-Feb  | 47                            | 21  | 11  | 18  | 22  | 16  | 13  | 12  | 15  | 20  | 15  | 17  | 16  | 14  | 23  | 39  | 352 | 6   | 24  | 20  | 11  | 338 | 334 | 309 | 13.9          |
| 5-Feb  | 313                           | 124 | 170 | 309 | 318 | 5   | 3   | 325 | 333 | 272 | 182 | 177 | 161 | 186 | 167 | 179 | 176 | 188 | 192 | 194 | 266 | 341 | 353 | 295 | 221.5         |
| 6-Feb  | 274                           | 264 | 244 | 251 | 237 | 240 | 259 | 189 | 353 | 3   | 84  | 81  | 134 | 131 | 101 | 79  | 360 | 352 | 305 | 251 | 265 | 206 | 230 | 204 | 244.9         |
| 7-Feb  | 185                           | 208 | 228 | 241 | 241 | 251 | 263 | 253 | 199 | 214 | 242 | 241 | 249 | 271 | 272 | 280 | 271 | 254 | 249 | 264 | 325 | 18  | 19  | 23  | 259.0         |
| 8-Feb  | 16                            | 12  | 306 | 263 | 198 | 214 | 181 | 266 | 299 | 241 | 268 | 170 | 169 | 161 | 167 | 166 | 161 | 297 | 296 | 271 | 224 | 197 | 195 | 194 | 188.3         |
| 9-Feb  | 197                           | 186 | 183 | 179 | 202 | 185 | 206 | 223 | 223 | 211 | 210 | 181 | 181 | 177 | 182 | 182 | 77  | 35  | 119 | 278 | 273 | 309 | 259 | 204 | 196.0         |
| 10-Feb   | 53                            | 18  | 12  | 18  | 17  | 25  | 24  | 21  | 22  | 17  | 18  | 16  | 18  | 16  | 17  | 20  | 18  | 17  | 18  | 21  | 16  | 31  | 46  | 69  | 19.9          |
| 11-Feb   | 37                            | 9   | 118 | 157 | 160 | 153 | 137 | 121 | 192 | 202 | 210 | 210 | 209 | 201 | 188 | 205 | 237 | 253 | 269 | 292 | 280 | 207 | 232 | 241 | 216.5         |
| 12-Feb   | 259                           | 259 | 222 | 150 | 169 | 208 | 252 | 310 | 347 | 360 | 15  | 355 | 27  | 16  | 14  | 23  | 31  | 20  | 8   | 347 | 316 | 159 | 323 | 321 | 314.0         |
| 13-Feb   | 338                           | 261 | 191 | 214 | 216 | 245 | 256 | 346 | 26  | 18  | 20  | 9   | 12  | 8   | 14  | 14  | 30  | 24  | 22  | 35  | 44  | 37  | 32  | 32  | 15.7          |
| 14-Feb   | 36                            | 34  | 24  | 21  | 24  | 28  | 27  | 13  | 63  | 55  | 76  | 81  | 71  | 80  | 52  | 61  | 63  | 58  | 289 | 292 | 330 | 178 | 259 | 191 | 43.1          |
| 15-Feb   | 189                           | 198 | 196 | 220 | 203 | 209 | 178 | 196 | 203 | 212 | 317 | M   | M   | 135 | 128 | 157 | 172 | 166 | 177 | 189 | 243 | 233 | 285 | 234 | 186.9         |
| 16-Feb   | 270                           | 283 | 196 | 215 | 271 | 273 | 215 | 239 | 203 | 213 | 208 | 207 | 201 | 198 | 215 | 233 | 19  | 27  | 17  | 26  | 27  | 25  | 32  | 52  | 346.4         |
| 17-Feb   | 60                            | 65  | 86  | 113 | 144 | 144 | 113 | 56  | 62  | 67  | 40  | 54  | 37  | 38  | 40  | 34  | 37  | 38  | 44  | 35  | 16  | 341 | 318 | 306 | 41.9          |
| 18-Feb   | 311                           | 290 | 286 | 288 | 314 | 294 | 301 | 262 | 277 | 337 | 6   | 354 | 14  | 21  | 24  | 68  | 85  | 73  | 11  | 294 | 277 | 223 | 285 | 247 | 347.1         |
| 19-Feb   | 215                           | 189 | 233 | 252 | UO  | UO  | 293 | 287 | 250 | 308 | 289 | 42  | 13  | 6   | 11  | 3   | 314 | 301 | 307 | 351 | 20  | 18  | 11  | 13  | 353.2         |
| 20-Feb   | 7                             | 14  | 22  | 27  | 181 | 153 | 186 | 151 | 139 | 151 | 144 | 53  | 93  | 74  | 63  | 64  | 60  | 45  | 307 | 280 | 295 | 324 | 2   | 16  | 59.1          |
| 21-Feb   | 28                            | 28  | 27  | 28  | 29  | 14  | 263 | 268 | 241 | 257 | 13  | 0   | 12  | 32  | 44  | 43  | 38  | 41  | 46  | 281 | 261 | 199 | 201 | 194 | 27.3          |
| 22-Feb   | 184                           | 191 | 195 | 193 | 184 | 191 | 178 | 193 | 185 | 145 | 40  | 41  | 342 | 359 | 12  | 57  | 64  | 117 | 271 | 275 | 279 | 295 | 298 | 241 | 172.9         |
| 23-Feb   | 304                           | 310 | 309 | 351 | 327 | 272 | UO  | UO  | 232 | 258 | 22  | 1   | 37  | 106 | 140 | 151 | 172 | 150 | 300 | UO  | UO  | 259 | 198 | 196 | 172.3         |
| 24-Feb   | 193                           | 194 | 186 | 184 | 177 | 184 | 178 | 179 | 189 | 176 | 192 | 188 | 190 | 193 | 194 | 188 | 189 | 194 | 195 | 189 | 190 | 188 | 192 | 194 | 188.8         |
| 25-Feb   | 201                           | 196 | 210 | 194 | 198 | 196 | 235 | 213 | 245 | 248 | 268 | 242 | 208 | 179 | 158 | 158 | 145 | 164 | 167 | 185 | 196 | 338 | 251 | UO  | 198.9         |
| 26-Feb   | UO                            | 35  | 299 | 296 | 304 | 305 | 2   | 23  | 17  | 17  | 17  | 27  | 19  | 19  | 19  | 20  | 24  | 26  | 28  | 27  | 34  | 32  | 21  | 24  | 20.8          |
| 27-Feb   | 18                            | 20  | 16  | 13  | 12  | 16  | 12  | 23  | 28  | 22  | 30  | 37  | 34  | 36  | 38  | 44  | 41  | 41  | 29  | 25  | 22  | 23  | 13  | 323 | 25.2          |
| 28-Feb   | 301                           | 306 | 291 | 279 | 286 | 289 | 291 | 281 | 285 | 304 | 351 | 352 | 1   | 350 | 354 | 3   | 7   | 9   | 272 | 207 | 263 | 242 | 198 | 181 | 314.4         |
| 307.0 297.3 227.2 227.8 231.3 237.2 268.9 314.3 3.9 351.9 5.6 14.4 30.9 46.3 61.5 60.9 57.9 40.0 20.8 2.3 358.0 18.2 358.7 322.0 |                               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |               |
| Diurnal Average  |                               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |               |

M - Maintenance      UO - Unstable Operation  
 All monthly, daily, and diurnal averages have been calculated using vector methods



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Wind Direction (WD) - deg**  
**Ells River - February 2023**





**Wood Buffalo Environmental Association**  
**Summary of Hour Standard Deviations**

**Wind Direction (WD) - deg**  
**Ells River - February 2023**

|   |                                |
|---|--------------------------------|
| Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0   | Hours in Service: 672          |
| Maximum Value: 108 deg on Feb 19 10:00  | Hours of Data: 662             |
| Minimum Value: 4 deg on Feb 24 06:00  | Hours of Missing Data: 10      |
| Percentiles: P <sub>1</sub> = 5 P <sub>10</sub> = 7 Q <sub>1</sub> = 11 Median = 17 Q <sub>3</sub> = 29 P <sub>90</sub> = 52 P <sub>99</sub> = 82 | Hours of Calibration: 0        |
|   | Percent Operational Time: 98.5 |

| Day    | Hourly Period Ending At (MST) |     |    |    |    |    |    |    |    |     |    |    |    |    |    |    |    |    |    |    |    |    |    |    | Daily Maximum |
|--------|-------------------------------|-----|----|----|----|----|----|----|----|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|---------------|
|        | 1                             | 2   | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10  | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |               |
| 1-Feb  | 31                            | 58  | 34 | 68 | 16 | 17 | 25 | 26 | 23 | 45  | 18 | 25 | 21 | 30 | 58 | 23 | 38 | 20 | 15 | 48 | 27 | 50 | 38 | 25 | 68            |
| 2-Feb  | 13                            | 9   | 8  | 7  | 14 | 13 | 16 | 21 | 13 | 22  | 17 | 17 | 21 | 16 | 13 | 11 | 10 | 9  | 10 | 11 | 11 | 10 | 11 | 10 | 22            |
| 3-Feb  | 10                            | 9   | 10 | 9  | 10 | 10 | 14 | 17 | 17 | 21  | 69 | 27 | 12 | 9  | 17 | 12 | 13 | 14 | 13 | 14 | 18 | 22 | 24 | 29 | 69            |
| 4-Feb  | 11                            | 15  | 9  | 5  | 7  | 7  | 8  | 7  | 7  | 7   | 9  | 8  | 13 | 11 | 30 | 23 | 18 | 16 | 6  | 9  | 18 | 18 | 26 | 24 | 30            |
| 5-Feb  | 31                            | 101 | 27 | 60 | 46 | 30 | 27 | 36 | 42 | 65  | 17 | 27 | 16 | 18 | 18 | 13 | 11 | 13 | 10 | 23 | 26 | 49 | 21 | 22 | 101           |
| 6-Feb  | 18                            | 19  | 18 | 17 | 17 | 16 | 19 | 64 | 49 | 21  | 14 | 34 | 16 | 47 | 50 | 46 | 47 | 11 | 24 | 32 | 35 | 12 | 16 | 11 | 64            |
| 7-Feb  | 14                            | 20  | 20 | 19 | 18 | 20 | 23 | 25 | 12 | 16  | 19 | 22 | 24 | 21 | 21 | 20 | 20 | 19 | 20 | 23 | 39 | 34 | 8  | 6  | 39            |
| 8-Feb  | 6                             | 17  | 25 | 53 | 19 | 69 | 82 | 18 | 19 | 30  | 90 | 11 | 16 | 14 | 14 | 11 | 29 | 38 | 18 | 49 | 32 | 53 | 11 | 18 | 90            |
| 9-Feb  | 8                             | 6   | 6  | 6  | 22 | 9  | 8  | 11 | 14 | 13  | 13 | 15 | 14 | 12 | 10 | 13 | 61 | 22 | 78 | 64 | 32 | 26 | 64 | 34 | 78            |
| 10-Feb | 62                            | 8   | 8  | 7  | 7  | 6  | 6  | 6  | 7  | 6   | 6  | 6  | 7  | 7  | 7  | 6  | 6  | 7  | 7  | 8  | 12 | 9  | 16 | 31 | 62            |
| 11-Feb | 73                            | 41  | 50 | 9  | 10 | 18 | 38 | 67 | 15 | 21  | 14 | 17 | 15 | 17 | 15 | 67 | 30 | 22 | 18 | 22 | 43 | 12 | 17 | 17 | 73            |
| 12-Feb | 18                            | 19  | 21 | 20 | 21 | 19 | 18 | 33 | 13 | 13  | 13 | 11 | 57 | 83 | 22 | 13 | 10 | 14 | 11 | 18 | 82 | 71 | 36 | 43 | 83            |
| 13-Feb | 48                            | 67  | 12 | 46 | 26 | 19 | 18 | 46 | 8  | 9   | 8  | 13 | 11 | 12 | 10 | 10 | 9  | 7  | 9  | 7  | 10 | 6  | 8  | 7  | 67            |
| 14-Feb | 8                             | 8   | 10 | 18 | 6  | 10 | 10 | 11 | 12 | 24  | 19 | 29 | 18 | 26 | 28 | 16 | 16 | 29 | 60 | 14 | 75 | 92 | 64 | 57 | 92            |
| 15-Feb | 60                            | 12  | 52 | 42 | 16 | 8  | 29 | 18 | 15 | 19  | 29 | M  | M  | 71 | 45 | 24 | 14 | 7  | 13 | 12 | 62 | 74 | 17 | 48 | 74            |
| 16-Feb | 49                            | 12  | 56 | 59 | 61 | 28 | 41 | 61 | 16 | 27  | 16 | 13 | 18 | 15 | 16 | 29 | 43 | 7  | 6  | 7  | 8  | 12 | 8  | 18 | 61            |
| 17-Feb | 14                            | 13  | 22 | 19 | 33 | 26 | 49 | 17 | 11 | 15  | 17 | 17 | 11 | 9  | 12 | 9  | 9  | 8  | 10 | 5  | 9  | 14 | 13 | 13 | 49            |
| 18-Feb | 9                             | 14  | 16 | 24 | 33 | 19 | 49 | 57 | 30 | 15  | 9  | 9  | 16 | 30 | 29 | 19 | 14 | 34 | 38 | 22 | 23 | 81 | 24 | 57 | 81            |
| 19-Feb | 50                            | 27  | 36 | 65 | UO | UO | 42 | 30 | 58 | 108 | 59 | 64 | 25 | 17 | 15 | 17 | 13 | 21 | 7  | 31 | 6  | 5  | 6  | 4  | 108           |
| 20-Feb | 14                            | 15  | 17 | 25 | 78 | 14 | 36 | 21 | 29 | 21  | 24 | 83 | 26 | 20 | 14 | 15 | 13 | 26 | 35 | 13 | 12 | 31 | 24 | 11 | 83            |
| 21-Feb | 6                             | 11  | 26 | 7  | 16 | 53 | 36 | 32 | 38 | 33  | 20 | 16 | 25 | 19 | 12 | 18 | 11 | 11 | 33 | 32 | 27 | 36 | 28 | 9  | 53            |
| 22-Feb | 20                            | 16  | 9  | 36 | 22 | 16 | 24 | 13 | 17 | 47  | 52 | 30 | 43 | 70 | 41 | 11 | 12 | 63 | 46 | 20 | 37 | 69 | 53 | 56 | 70            |
| 23-Feb | 58                            | 16  | 18 | 13 | 31 | 39 | UO | UO | 67 | 55  | 55 | 55 | 39 | 23 | 16 | 22 | 13 | 11 | 60 | UO | UO | 25 | 12 | 7  | 67            |
| 24-Feb | 6                             | 14  | 7  | 6  | 5  | 4  | 5  | 6  | 9  | 11  | 14 | 14 | 15 | 15 | 14 | 14 | 12 | 13 | 13 | 12 | 12 | 11 | 10 | 10 | 15            |
| 25-Feb | 11                            | 13  | 17 | 14 | 14 | 29 | 62 | 38 | 17 | 19  | 15 | 29 | 33 | 21 | 14 | 13 | 8  | 8  | 13 | 11 | 67 | 55 | 58 | UO | 67            |
| 26-Feb | UO                            | 66  | 48 | 13 | 14 | 36 | 23 | 7  | 11 | 6   | 8  | 4  | 5  | 5  | 5  | 5  | 6  | 5  | 5  | 6  | 8  | 10 | 6  | 4  | 66            |
| 27-Feb | 6                             | 6   | 8  | 8  | 8  | 7  | 7  | 9  | 6  | 7   | 7  | 9  | 8  | 14 | 11 | 8  | 11 | 7  | 11 | 7  | 11 | 8  | 6  | 23 | 23            |
| 28-Feb | 15                            | 9   | 12 | 10 | 9  | 15 | 13 | 49 | 15 | 26  | 8  | 13 | 11 | 13 | 15 | 9  | 11 | 12 | 52 | 37 | 41 | 48 | 33 | 36 | 52            |
|        | 73                            | 101 | 56 | 68 | 78 | 69 | 82 | 67 | 67 | 108 | 90 | 83 | 57 | 83 | 58 | 67 | 61 | 63 | 78 | 64 | 82 | 92 | 64 | 57 |               |

Diurnal Maximum

M - Maintenance UO - Unstable Operation



## WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY  
MONITORING PROGRAM  
MONTHLY REPORT

**AMS506**  
**JACKFISH 1**  
**FEBRUARY 2023**

Operations, Data Collection,  
QA/QC, Data Validation and Reporting by:  
Wood Buffalo Environmental Association  
Fort McMurray, Alberta

March 31, 2023

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - JACKFISH 1 (AMS506)  
 FEBRUARY 2023

MONTHLY SUMMARY

| Parameter                         | Hours of Data | Hours of Calibration | Hours without Data | Operational Time | Maximum 1-Hour Value | 1-Hour Exceedances | Maximum 24-Hour Value | 24-Hour Exceedances |
|-----------------------------------|---------------|----------------------|--------------------|------------------|----------------------|--------------------|-----------------------|---------------------|
| SO2 (ppb) Average                 | 637           | 32                   | 35                 | 99.55            | 34.7                 | 0                  | 6.4                   | 0                   |
| H2S (ppb) Average                 | 578           | 34                   | 94                 | 91.07            | 0.7                  | 0                  | 0.2                   | 0                   |
| NO2 (ppb) Average                 | 635           | 33                   | 37                 | 99.4             | 15                   | 0                  | 5.8                   | -                   |
| NO (ppb) Average                  | 635           | 33                   | 37                 | 99.4             | 11                   | -                  | 1.6                   | -                   |
| NOX (ppb) Average                 | 635           | 33                   | 37                 | 99.4             | 21.7                 | -                  | 7.1                   | -                   |
| Temperature 2 m (C) Average       | 672           | 0                    | 0                  | 100              | 5.6                  | -                  | 0.8                   | -                   |
| Relative Humidity (%) Average     | 672           | 0                    | 0                  | 100              | 97.3                 | -                  | 89                    | -                   |
| Wind Speed 10 m (km/h) Average    | 662           | 0                    | 10                 | 98.51            | 20                   | -                  | 11                    | -                   |
| Wind Direction 10 m (deg) Average | 662           | 0                    | 10                 | 98.51            | -                    | -                  | -                     | -                   |

Note : Operational time includes periods of data collection and instrument calibration

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - JACKFISH 1 (AMS506)  
 FEBRUARY 2023

MONTHLY SUMMARY FOR AIR QUALITY/ METEOROLOGICAL MONITORING MEASUREMENTS

| Parameter                         | Number | Mean   | StnDev | Total | Percentile |       |       |        |      |      |      |
|-----------------------------------|--------|--------|--------|-------|------------|-------|-------|--------|------|------|------|
|                                   |        |        |        |       | Min        | P10   | Q1    | Median | Q3   | P90  | Max  |
| SO2 (ppb) Average                 | 637    | 1.69   | 3.5    | -     | 0          | 0.1   | 0.3   | 0.7    | 1.5  | 3.5  | 34.7 |
| H2S (ppb) Average                 | 578    | 0.13   | 0.1    | -     | 0          | 0     | 0.1   | 0.1    | 0.2  | 0.2  | 0.7  |
| NO2 (ppb) Average                 | 635    | 3.47   | 2.4    | -     | 0.3        | 1.1   | 1.7   | 2.9    | 4.7  | 6.5  | 15   |
| NO (ppb) Average                  | 635    | 0.82   | 1.3    | -     | 0          | 0     | 0     | 0.2    | 1.1  | 2.5  | 11   |
| NOX (ppb) Average                 | 635    | 4.29   | 3.4    | -     | 0.4        | 1.2   | 2     | 3.4    | 5.4  | 8.3  | 21.7 |
| Temperature 2 m (C) Average       | 672    | -11.56 | 9.6    | -     | -33.3      | -24.7 | -18.6 | -11.7  | -2.4 | 0.7  | 5.6  |
| Relative Humidity (%) Average     | 672    | 72.22  | 11.9   | -     | 38.8       | 54.6  | 65    | 73.8   | 80.5 | 85.4 | 97.3 |
| Wind Speed 10 m (km/h) Average    | 662    | 5.8    | 3      | -     | 0          | 2     | 4     | 5      | 7    | 10   | 20   |
| Wind Direction 10 m (deg) Average | 662    | -      | -      | -     | -          | -     | -     | -      | -    | -    | -    |

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - JACKFISH 1 (AMS506)  
FEBRUARY 2023

OPERATIONAL NOTES

| Parameter                  | Period<br>Start   | Period<br>End     | Duration<br>(Hours) | Notes   |
|----------------------------|-------------------|-------------------|---------------------|---|
| SO2                        | 08 Feb 2023 13:00 | 08 Feb 2023 15:00 | 3                   | Maintenance - WBEA internal audit                 |
| H2S, NO2                   | 08 Feb 2023 11:00 | 08 Feb 2023 14:00 | 4                   | Maintenance - WBEA internal audit                 |
| H2S                        | 13 Feb 2023 11:00 | 13 Feb 2023 15:00 | 5                   | Maintenance - Sox scrubber hydrated               |
| H2S                        | 21 Feb 2023 11:00 | 21 Feb 2023 12:00 | 2                   | Maintenance - verify daily QA response            |
| H2S                        | 22 Feb 2023 11:00 | 22 Feb 2023 13:00 | 3                   | Maintenance - Sox scrubber hydrated               |
| H2S                        | 22 Feb 2023 14:00 | 24 Feb 2023 10:00 | 45                  | Analyzer Failure - inconsistent response          |
| H2S                        | 24 Feb 2023 11:00 | 24 Feb 2023 11:00 | 1                   | Maintenance - analyzer replaced                   |
| Wind Speed, Wind Direction | 06 Feb 2023 02:00 | 06 Feb 2023 11:00 | 10                  | Flat line in sensor output signal - Sensor frozen |





# Wood Buffalo Environmental Association

## Summary of Hour Averages

# Sulphur Dioxide (SO<sub>2</sub>) - ppb

## Jackfish 1 - February 2023

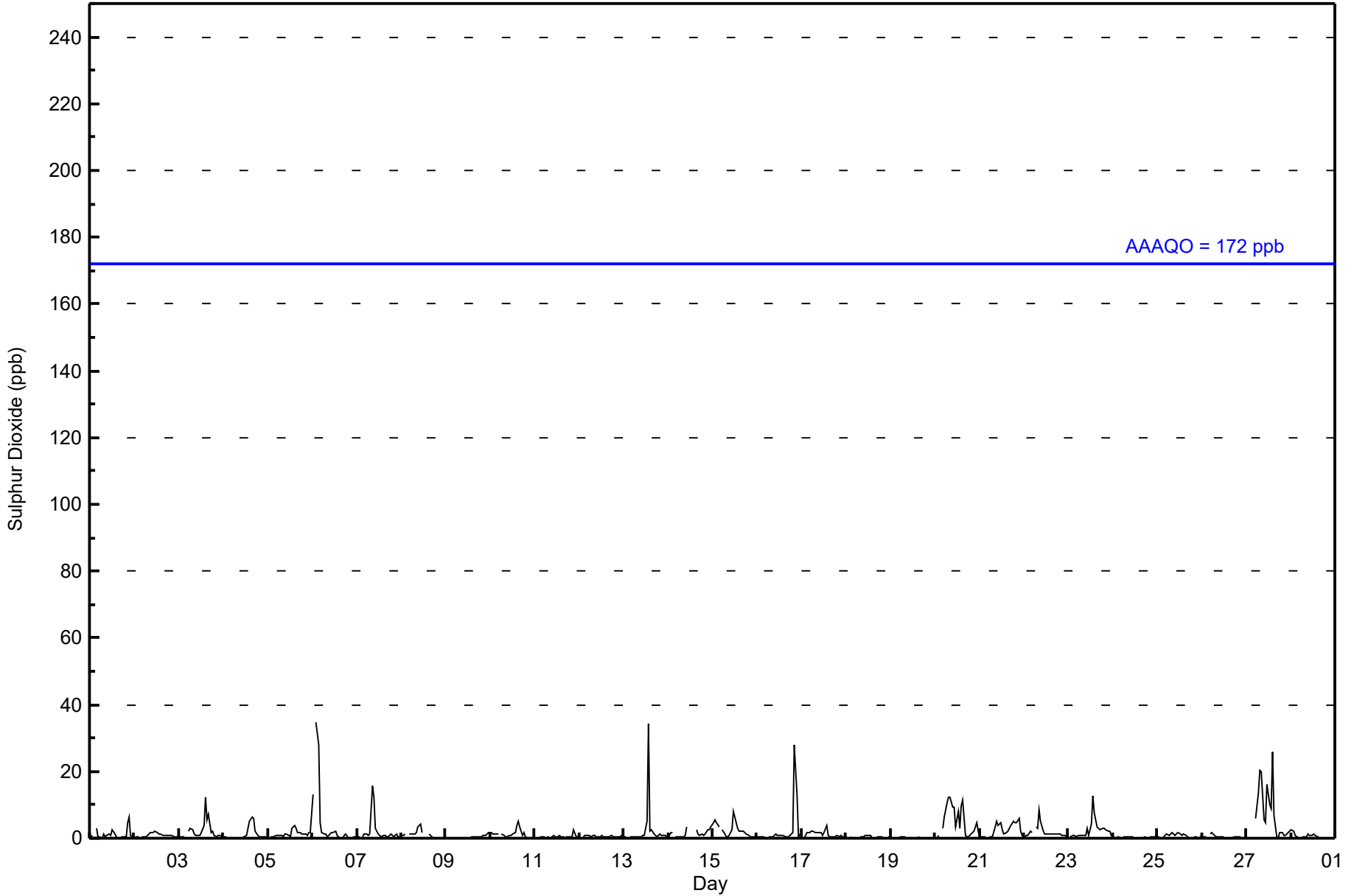
| Number of Exceedences (AAAQO):              |                               | 1-hr: 0   |      | 24-hr: 0 |     | Hours in Service: |      |      |      |      |     |      |      |      |      |                           |     |      |     | 672 |      |      |     |                 |               |                 |  |
|---|-------------------------------|---|------|----------|-----|-------------------|------|------|------|------|-----|------|------|------|------|---------------------------|-----|------|-----|-----|------|------|-----|-----------------|---------------|-----------------|--|
| Maximum Value: 34.7 ppb on Feb 6 03:00      |                               | Maximum Daily Average: 6.4 ppb on Feb 27  |      |          |     |                   |      |      |      |      |     |      |      |      |      | Hours of Data:            |     | 637  |     |     |      |      |     |                 |               |                 |  |
| Minimum Value: 0.0 ppb on Feb 19 04:00      |                               | Minimum Daily Average: 0.1 ppb on Feb 19  |      |          |     |                   |      |      |      |      |     |      |      |      |      | Hours of Missing Data:    |     | 35   |     |     |      |      |     |                 |               |                 |  |
| Maximum Diurnal Average: 3.4 ppb at hour 14 |                               | Minimum Diurnal Average: 0.7 ppb at hour 24   |      |          |     |                   |      |      |      |      |     |      |      |      |      | Hours of Calibration:     |     | 32   |     |     |      |      |     |                 |               |                 |  |
| Monthly Average: 1.69 ppb                   |                               | Percentiles: P <sub>1</sub> = 0.0 P <sub>10</sub> = 0.1 Q <sub>1</sub> = 0.3 Median = 0.7 Q <sub>3</sub> = 1.5 P <sub>90</sub> = 3.5 P <sub>99</sub> = 18.4 |      |          |     |                   |      |      |      |      |     |      |      |      |      | Percent Operational Time: |     | 99.6 |     |     |      |      |     |                 |               |                 |  |
| Day   | Hourly Period Ending At (MST) |   |      |          |     |                   |      |      |      |      |     |      |      |      |      |                           |     |      |     |     |      |      |     |                 | Daily Average | Daily Maximum   |  |
|   | 1                             | 2   | 3    | 4        | 5   | 6                 | 7    | 8    | 9    | 10   | 11  | 12   | 13   | 14   | 15   | 16                        | 17  | 18   | 19  | 20  | 21   | 22   | 23  | 24              |               |                 |  |
| 1-Feb                                       | 0.4                           | 0.9   | Z    | 2.8      | 0.4 | 0.4               | 0.1  | 1.2  | 0.3  | 1.1  | 1.4 | 1.0  | 2.4  | 1.1  | 0.4  | 0.2                       | 0.2 | 0.4  | 0.6 | 0.6 | 4.6  | 6.5  | 0.9 | 0.2             | 1.2           | 6.5             |  |
| 2-Feb                                       | 0.2                           | 0.3   | 0.3  | Z        | 0.3 | 0.4               | 0.5  | 1.0  | 1.8  | 1.7  | 1.7 | 2.0  | 1.6  | 1.2  | 1.1  | 1.0                       | 0.9 | 0.7  | 0.9 | 0.9 | 0.8  | 0.6  | 0.6 | 0.5             | 0.9           | 2.0             |  |
| 3-Feb                                       | 0.5                           | 0.5   | 0.5  | 0.5      | Z   | 2.1               | 3.0  | 2.5  | 1.3  | 0.9  | 0.8 | 0.8  | 1.7  | 3.6  | 12.5 | 5.7                       | 7.1 | 1.7  | 2.2 | 0.7 | 0.5  | 0.7  | 0.8 | 0.5             | 2.2           | 12.5            |  |
| 4-Feb                                       | 0.4                           | 0.3   | 0.2  | 0.1      | 0.1 | Z                 | 0.1  | 0.2  | 0.1  | 0.1  | 0.1 | 0.3  | 1.0  | 2.9  | 4.9  | 6.5                       | 5.9 | 2.2  | 1.0 | 0.5 | 0.5  | 0.4  | 0.2 | 0.2             | 1.2           | 6.5             |  |
| 5-Feb                                       | Z                             | 0.3   | 0.2  | 0.4      | 1.0 | 1.0               | 0.9  | 0.8  | 0.6  | 1.2  | 1.3 | 0.9  | 0.5  | 2.9  | 3.7  | 2.8                       | 1.6 | 1.5  | 1.4 | 1.1 | 1.2  | 0.9  | 1.5 | 1.6             | 1.3           | 3.7             |  |
| 6-Feb                                       | 13.2                          | Z   | 34.7 | 28.0     | 4.7 | 1.7               | 1.3  | 1.3  | 0.6  | 1.3  | 1.5 | 1.8  | 1.9  | 0.9  | 0.3  | 0.0                       | 0.0 | 0.7  | 1.2 | 0.2 | 0.1  | 0.2  | 0.5 | 0.3             | 4.2           | 34.7            |  |
| 7-Feb                                       | 0.4                           | 0.4   | Z    | 0.4      | 1.2 | 1.1               | 0.7  | 1.1  | 15.6 | 12.4 | 2.9 | 1.1  | 0.7  | 0.6  | 0.6  | 0.7                       | 0.6 | 0.3  | 1.1 | 0.9 | 0.5  | 1.2  | 0.5 | 0.3             | 2.0           | 15.6            |  |
| 8-Feb                                       | 1.0                           | 0.8   | 1.1  | Z        | 1.1 | 1.3               | 1.2  | 1.5  | 1.6  | 3.5  | 4.1 | 1.9  | M    | M    | M    | 1.3                       | 0.6 | 0.2  | 0.1 | 0.2 | 0.2  | 0.2  | 0.2 | 0.2             | 1.1           | 4.1             |  |
| 9-Feb                                       | 0.2                           | 0.2   | 0.2  | 0.2      | Z   | 0.1               | 0.1  | 0.1  | 0.1  | 0.1  | 0.2 | 0.2  | 0.2  | 0.1  | 0.4  | 0.5                       | 0.3 | 0.3  | 0.3 | 0.3 | 0.7  | 0.8  | 1.1 | 1.5             | 0.4           | 1.5             |  |
| 10-Feb                                      | 1.8                           | 1.4   | 1.4  | 1.4      | 1.3 | Z                 | 1.2  | 0.7  | 0.5  | 0.6  | 0.8 | 0.8  | 1.5  | 1.7  | 3.7  | 5.0                       | 3.3 | 0.9  | 1.6 | 0.3 | 0.2  | 0.2  | 0.1 | 0.1             | 1.3           | 5.0             |  |
| 11-Feb                                      | Z                             | 0.1   | 0.1  | 0.4      | 0.4 | 0.3               | 0.1  | 0.2  | 0.2  | 0.4  | 0.7 | 0.6  | 0.5  | 0.7  | 0.5  | 0.4                       | 0.1 | 0.3  | 0.2 | 0.5 | 0.4  | 2.4  | 0.4 | 0.5             | 0.4           | 2.4             |  |
| 12-Feb                                      | 0.5                           | Z   | 0.6  | 0.9      | 0.9 | 0.9               | 0.6  | 0.9  | 1.0  | 0.6  | 0.4 | 0.6  | 0.8  | 0.4  | 0.3  | 0.3                       | 0.3 | 0.8  | 0.4 | 0.3 | 0.2  | 0.4  | 0.4 | 0.7             | 0.6           | 1.0             |  |
| 13-Feb                                      | 0.5                           | 0.3   | Z    | 0.4      | 0.3 | 0.2               | 0.3  | 0.4  | 0.4  | 0.5  | 0.7 | 0.7  | 5.0  | 34.3 | 2.0  | 2.5                       | 1.1 | 0.9  | 0.6 | 1.4 | 0.9  | 0.8  | 0.9 | 0.5             | 2.4           | 34.3            |  |
| 14-Feb                                      | 0.5                           | 1.8   | 1.5  | Z        | 0.5 | 0.3               | 0.3  | 0.3  | 0.5  | 0.8  | 3.5 | C    | C    | C    | C    | 2.4                       | 1.3 | 1.0  | 1.2 | 0.7 | 1.4  | 2.4  | 2.6 | 3.3             | 1.4           | 3.5             |  |
| 15-Feb                                      | 4.5                           | 5.4   | 4.6  | 3.4      | Z   | 2.6               | 1.3  | 0.6  | 0.5  | 0.8  | 2.6 | 8.0  | 6.3  | 2.8  | 2.0  | 2.1                       | 2.2 | 1.6  | 1.4 | 0.9 | 0.5  | 0.3  | 0.3 | 0.4             | 2.4           | 8.0             |  |
| 16-Feb                                      | 0.3                           | 0.3   | 0.3  | 0.3      | 0.4 | Z                 | 0.5  | 0.6  | 0.6  | 0.8  | 1.1 | 0.8  | 0.7  | 0.7  | 0.7  | 0.5                       | 0.4 | 0.2  | 1.3 | 1.9 | 28.1 | 12.7 | 0.5 | 1.1             | 2.4           | 28.1            |  |
| 17-Feb                                      | Z                             | 0.2   | 0.7  | 1.6      | 1.6 | 2.0               | 2.0  | 1.7  | 1.8  | 1.7  | 1.9 | 0.7  | 1.7  | 3.6  | 0.9  | 0.2                       | 0.5 | 0.6  | 0.6 | 0.6 | 0.5  | 0.7  | 0.6 | 0.5             | 1.2           | 3.6             |  |
| 18-Feb                                      | 0.5                           | Z   | 0.4  | 0.2      | 0.1 | 0.1               | 0.1  | 0.2  | 0.3  | 0.4  | 0.7 | 0.7  | 0.6  | 0.7  | 0.1  | 0.1                       | 0.1 | 0.3  | 0.3 | 0.2 | 0.1  | 0.1  | 0.2 | 0.2             | 0.3           | 0.7             |  |
| 19-Feb                                      | 0.2                           | 0.1   | Z    | 0.0      | 0.1 | 0.4               | 0.6  | 0.4  | 0.2  | 0.1  | 0.2 | 0.1  | 0.1  | 0.0  | 0.1  | 0.2                       | 0.1 | 0.0  | 0.0 | 0.0 | 0.0  | 0.0  | 0.0 | 0.0             | 0.1           | 0.6             |  |
| 20-Feb                                      | 0.0                           | 0.2   | 0.8  | Z        | 2.8 | 6.4               | 10.6 | 12.4 | 12.4 | 9.4  | 9.2 | 3.3  | 8.1  | 3.1  | 9.8  | 11.3                      | 1.0 | 0.5  | 0.4 | 1.3 | 1.6  | 1.9  | 4.7 | 2.1             | 4.9           | 12.4            |  |
| 21-Feb                                      | 0.5                           | 0.3   | 0.3  | 0.6      | Z   | 0.6               | 0.3  | 0.3  | 3.3  | 5.2  | 3.7 | 4.8  | 2.7  | 1.4  | 1.7  | 1.9                       | 2.8 | 3.7  | 5.1 | 4.9 | 4.6  | 5.9  | 2.3 | 0.7             | 2.5           | 5.9             |  |
| 22-Feb                                      | 0.3                           | 0.7   | 1.0  | 2.1      | 1.9 | Z                 | 3.2  | 2.8  | 8.5  | 5.0  | 2.1 | 1.3  | 1.3  | 1.5  | 1.2  | 1.4                       | 1.3 | 1.1  | 1.1 | 1.2 | 1.0  | 0.9  | 0.7 | 0.6             | 1.8           | 8.5             |  |
| 23-Feb                                      | Z                             | 0.5   | 0.7  | 0.9      | 0.6 | 0.8               | 1.0  | 0.8  | 0.7  | 0.7  | 2.8 | 0.9  | 4.4  | 12.9 | 7.8  | 3.5                       | 2.9 | 2.7  | 2.9 | 3.1 | 2.5  | 2.2  | 2.2 | 0.9             | 2.5           | 12.9            |  |
| 24-Feb                                      | 0.5                           | Z   | 0.2  | 0.3      | 0.2 | 0.2               | 0.5  | 0.5  | 0.3  | 0.6  | 0.3 | 0.2  | 0.1  | 0.1  | 0.1  | 0.2                       | 0.1 | 0.2  | 0.1 | 0.2 | 0.2  | 0.5  | 0.6 | 0.2             | 0.3           | 0.6             |  |
| 25-Feb                                      | 0.3                           | 0.3   | Z    | 0.3      | 0.9 | 1.4               | 1.0  | 1.4  | 1.6  | 1.0  | 1.2 | 1.6  | 1.3  | 0.8  | 1.1  | 0.8                       | 0.3 | 0.1  | 0.1 | 0.1 | 0.3  | 0.3  | 0.2 | 0.3             | 0.7           | 1.6             |  |
| 26-Feb                                      | 0.3                           | 0.4   | 0.4  | Z        | 1.4 | 1.8               | 1.1  | 0.4  | 0.4  | 0.3  | 0.4 | 0.3  | 0.2  | 0.1  | 0.2  | 0.2                       | 0.1 | 0.3  | 0.4 | 0.3 | 0.2  | 0.2  | 0.1 | 0.1             | 0.4           | 1.8             |  |
| 27-Feb                                      | 0.1                           | 0.1   | 0.0  | 0.1      | Z   | 5.7               | 13.5 | 20.5 | 19.8 | 5.7  | 4.7 | 15.9 | 10.3 | 9.1  | 25.9 | 7.0                       | 0.4 | 0.2  | 1.7 | 1.7 | 1.0  | 0.8  | 1.8 | 2.1             | 6.4           | 25.9            |  |
| 28-Feb                                      | 2.6                           | 2.1   | 0.7  | 0.4      | 0.6 | Z                 | 0.5  | 0.5  | 0.5  | 1.1  | 0.8 | 0.8  | 1.4  | 0.9  | 0.3  | 0.1                       | 0.0 | 0.0  | 0.0 | 0.0 | 0.0  | 0.0  | 0.0 | 0.0             | 0.6           | 2.6             |  |
|   |                               |   |      |          |     |                   |      |      |      |      |     |      |      |      |      |                           |     |      |     |     |      |      |     | Diurnal Average |               | Diurnal Maximum |  |
|   |                               |   |      |          |     |                   |      |      |      |      |     |      |      |      |      |                           |     |      |     |     |      |      |     | 1.2             |               | 13.2            |  |
|   |                               |   |      |          |     |                   |      |      |      |      |     |      |      |      |      |                           |     |      |     |     |      |      |     | 0.7             |               | 5.4             |  |
|   |                               |   |      |          |     |                   |      |      |      |      |     |      |      |      |      |                           |     |      |     |     |      |      |     | 2.2             |               | 34.7            |  |
|   |                               |   |      |          |     |                   |      |      |      |      |     |      |      |      |      |                           |     |      |     |     |      |      |     | 2.0             |               | 28.0            |  |
|   |                               |   |      |          |     |                   |      |      |      |      |     |      |      |      |      |                           |     |      |     |     |      |      |     | 1.0             |               | 4.7             |  |
|   |                               |   |      |          |     |                   |      |      |      |      |     |      |      |      |      |                           |     |      |     |     |      |      |     | 1.4             |               | 6.4             |  |
|   |                               |   |      |          |     |                   |      |      |      |      |     |      |      |      |      |                           |     |      |     |     |      |      |     | 1.7             |               | 13.5            |  |
|   |                               |   |      |          |     |                   |      |      |      |      |     |      |      |      |      |                           |     |      |     |     |      |      |     | 2.0             |               | 20.5            |  |
|   |                               |   |      |          |     |                   |      |      |      |      |     |      |      |      |      |                           |     |      |     |     |      |      |     | 2.7             |               | 19.8            |  |
|   |                               |   |      |          |     |                   |      |      |      |      |     |      |      |      |      |                           |     |      |     |     |      |      |     | 2.1             |               | 12.4            |  |
|   |                               |   |      |          |     |                   |      |      |      |      |     |      |      |      |      |                           |     |      |     |     |      |      |     | 1.8             |               | 9.2             |  |
|   |                               |   |      |          |     |                   |      |      |      |      |     |      |      |      |      |                           |     |      |     |     |      |      |     | 1.9             |               | 15.9            |  |
|   |                               |   |      |          |     |                   |      |      |      |      |     |      |      |      |      |                           |     |      |     |     |      |      |     | 2.2             |               | 10.3            |  |
|   |                               |   |      |          |     |                   |      |      |      |      |     |      |      |      |      |                           |     |      |     |     |      |      |     | 3.4             |               | 34.3            |  |
|   |                               |   |      |          |     |                   |      |      |      |      |     |      |      |      |      |                           |     |      |     |     |      |      |     | 3.2             |               | 25.9            |  |
|   |                               |   |      |          |     |                   |      |      |      |      |     |      |      |      |      |                           |     |      |     |     |      |      |     | 2.1             |               | 11.3            |  |
|   |                               |   |      |          |     |                   |      |      |      |      |     |      |      |      |      |                           |     |      |     |     |      |      |     | 1.3             |               | 7.1             |  |
|   |                               |   |      |          |     |                   |      |      |      |      |     |      |      |      |      |                           |     |      |     |     |      |      |     | 0.8             |               | 3.7             |  |
|   |                               |   |      |          |     |                   |      |      |      |      |     |      |      |      |      |                           |     |      |     |     |      |      |     | 1.0             |               | 5.1             |  |
|   |                               |   |      |          |     |                   |      |      |      |      |     |      |      |      |      |                           |     |      |     |     |      |      |     | 0.9             |               | 4.9             |  |
|   |                               |   |      |          |     |                   |      |      |      |      |     |      |      |      |      |                           |     |      |     |     |      |      |     | 1.9             |               | 28.1            |  |
|   |                               |   |      |          |     |                   |      |      |      |      |     |      |      |      |      |                           |     |      |     |     |      |      |     | 1.6             |               | 12.7            |  |
|   |                               |   |      |          |     |                   |      |      |      |      |     |      |      |      |      |                           |     |      |     |     |      |      |     | 0.9             |               | 4.7             |  |
|   |                               |   |      |          |     |                   |      |      |      |      |     |      |      |      |      |                           |     |      |     |     |      |      |     | 0.7             |               | 3.3             |  |

Z - zerospan      C - Calibration      M - Maintenance  
 Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 172 ppb    24-hr 48 ppb



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Sulphur Dioxide (SO<sub>2</sub>) - ppb**  
**Jackfish 1 - February 2023**





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Sulphur Dioxide (SO<sub>2</sub>) - ppb**  
**Jackfish 1 - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 10                            | 618                    | 97.02    | 97.02               |
| 11 - 20                           | 13                     | 2.04     | 99.06               |
| 21 - 60                           | 6                      | 0.94     | 100.00              |
| 61 - 110                          | 0                      | 0.00     | 100.00              |
| 111 - 172                         | 0                      | 0.00     | 100.00              |
| > 172                             | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 637

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Sulphur Dioxide (SO<sub>2</sub>) - ppb  
Jackfish 1 - February 2023**

| Concentration<br>Ranges (ppb) | Wind Direction |     |    |     |    |     |    |     |    |     |    |     |    |     |    |     | Totals |
|-------------------------------|----------------|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|--------|
|                               | N              | NNE | NE | ENE | E  | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |        |
| 0 - 10                        | 46             | 27  | 22 | 14  | 14 | 18  | 20 | 25  | 89 | 84  | 55 | 26  | 26 | 44  | 32 | 69  | 611    |
| 11 - 20                       | 0              | 1   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 2   | 10 | 0   | 13     |
| 21 - 60                       | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 4  | 0   | 4      |
| 61 - 110                      | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| 111 - 172                     | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| > 172                         | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| <b>Totals</b>                 | 46             | 28  | 22 | 14  | 14 | 18  | 20 | 25  | 89 | 84  | 55 | 26  | 26 | 46  | 46 | 69  | 628    |

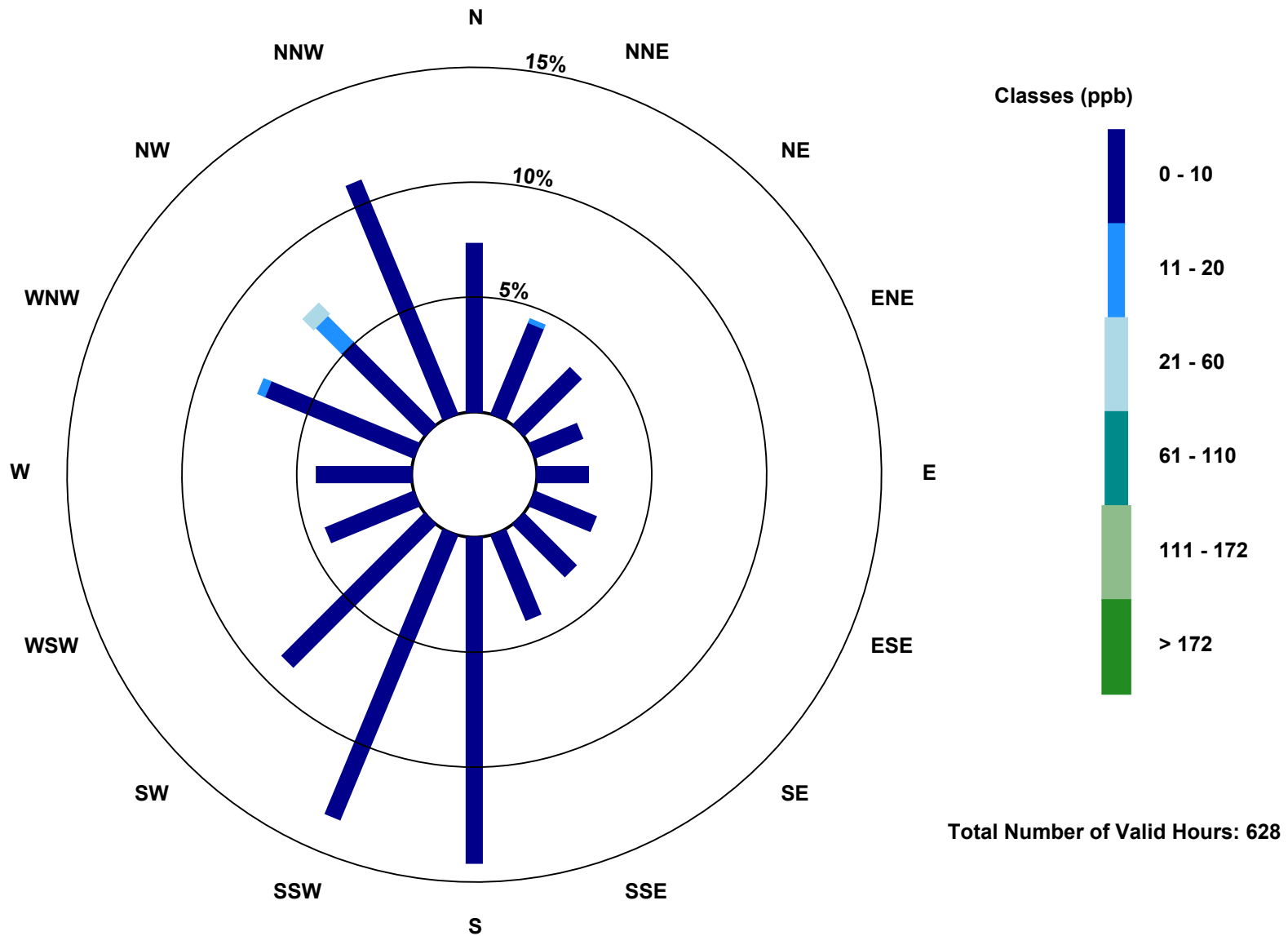
Total Number of Valid Hours: 628

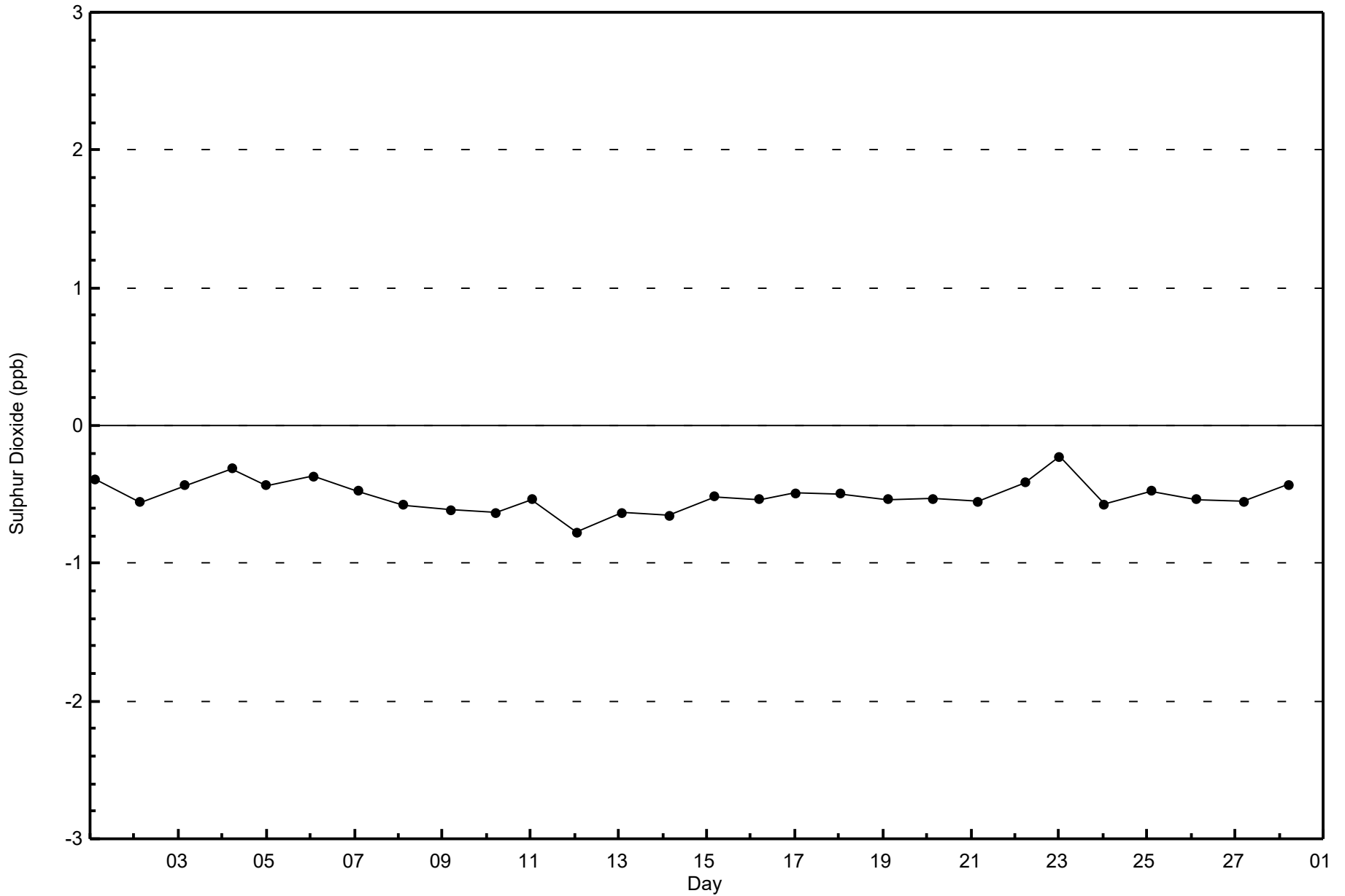
Total Number of Hours: 672

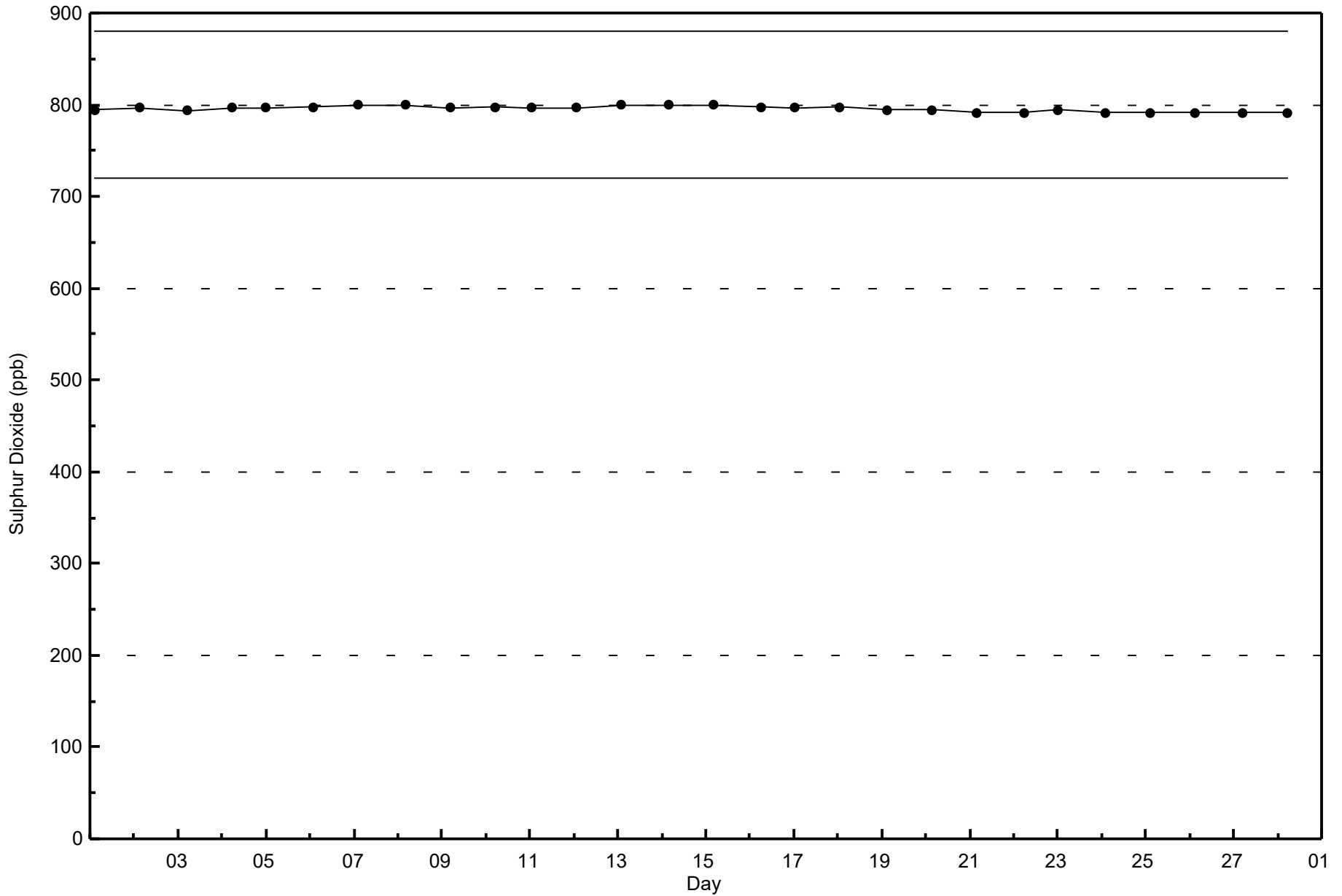


Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Sulphur Dioxide (SO<sub>2</sub>) - ppb  
Jackfish 1







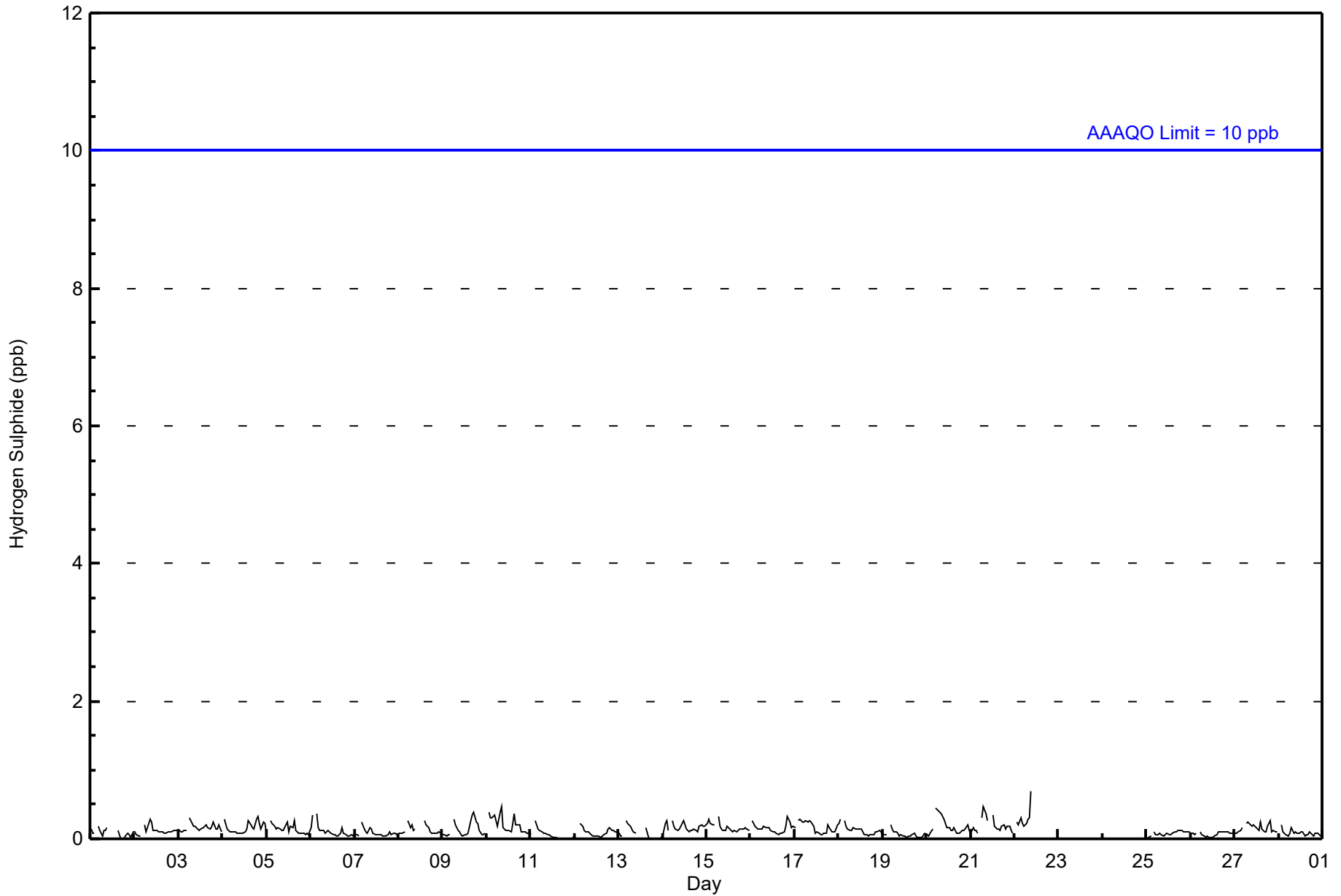






**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Hydrogen Sulphide (H<sub>2</sub>S) - ppb**  
**Jackfish 1 - February 2023**





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Hydrogen Sulphide (H<sub>2</sub>S) - ppb  
Jackfish 1 - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 2                             | 578                    | 100.00   | 100.00              |
| 3 - 4                             | 0                      | 0.00     | 100.00              |
| 5 - 7                             | 0                      | 0.00     | 100.00              |
| 8 - 11                            | 0                      | 0.00     | 100.00              |
| > 11                              | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 578

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Hydrogen Sulphide (H<sub>2</sub>S) - ppb  
Jackfish 1 - February 2023**

| Concentration<br>Ranges (ppb) | Wind Direction |     |    |     |    |     |    |     |    |     |    |     |    |     |    |     | Totals |
|-------------------------------|----------------|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|--------|
|                               | N              | NNE | NE | ENE | E  | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |        |
| 0 - 2                         | 33             | 25  | 20 | 14  | 13 | 16  | 20 | 24  | 83 | 78  | 54 | 24  | 20 | 42  | 41 | 62  | 569    |
| 3 - 4                         | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| 5 - 7                         | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| 8 - 11                        | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| > 11                          | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| <b>Totals</b>                 | 33             | 25  | 20 | 14  | 13 | 16  | 20 | 24  | 83 | 78  | 54 | 24  | 20 | 42  | 41 | 62  | 569    |

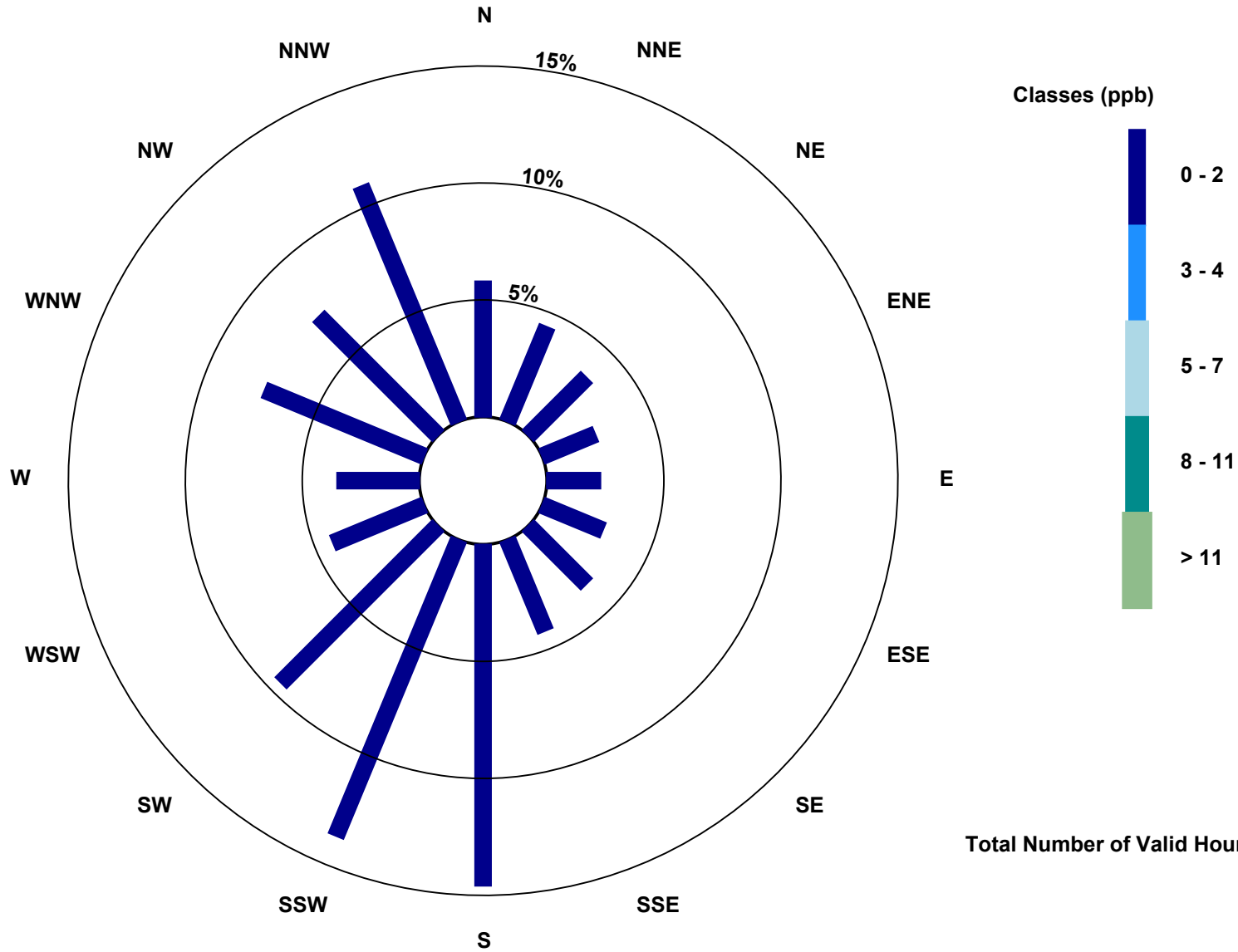
Total Number of Valid Hours: 569

Total Number of Hours: 672

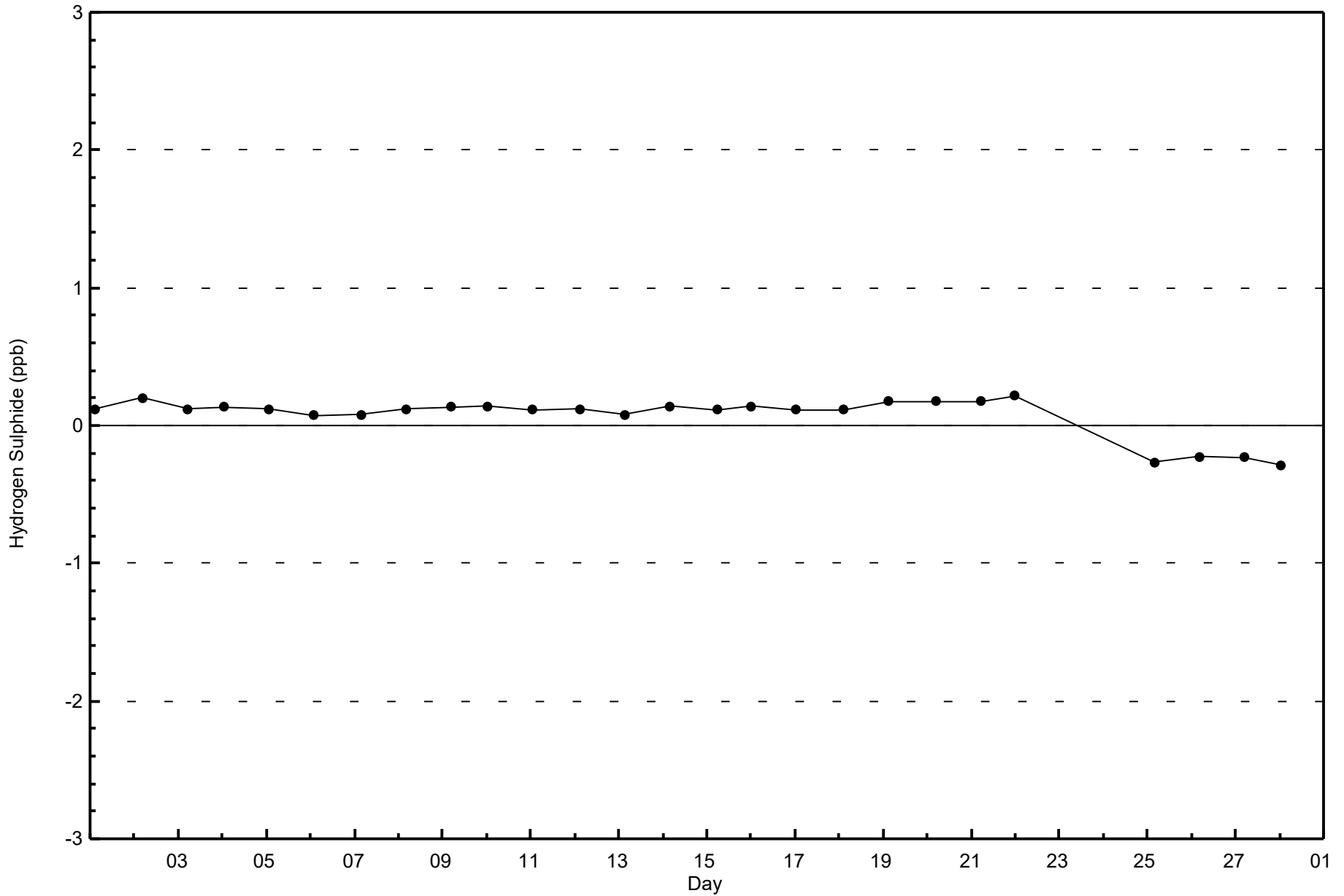


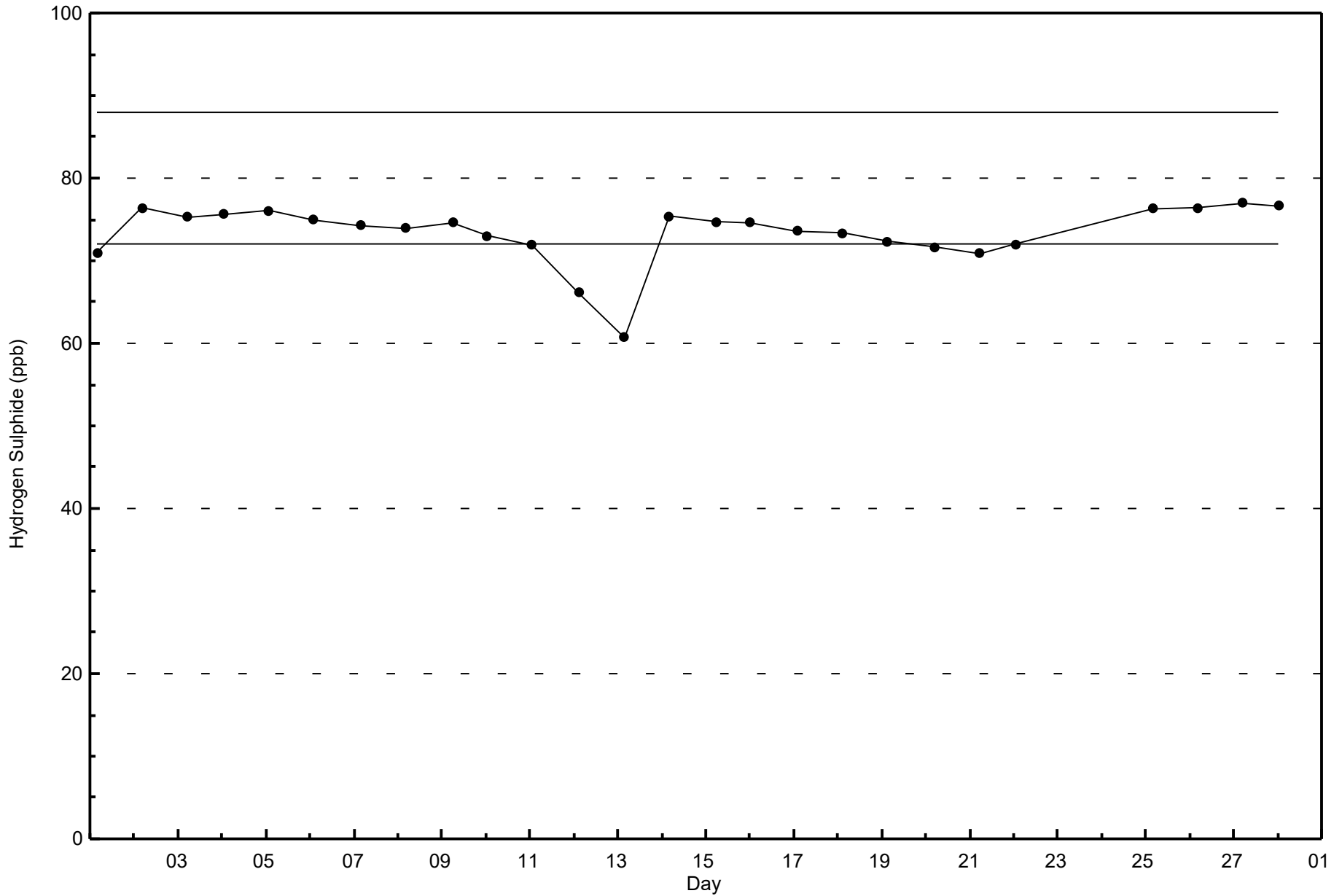
Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Hydrogen Sulphide (H<sub>2</sub>S) - ppb  
Jackfish 1



Total Number of Valid Hours: 569







Wood Buffalo Environmental Association

Summary of Hour Averages

Nitric Oxide (NO) - ppb

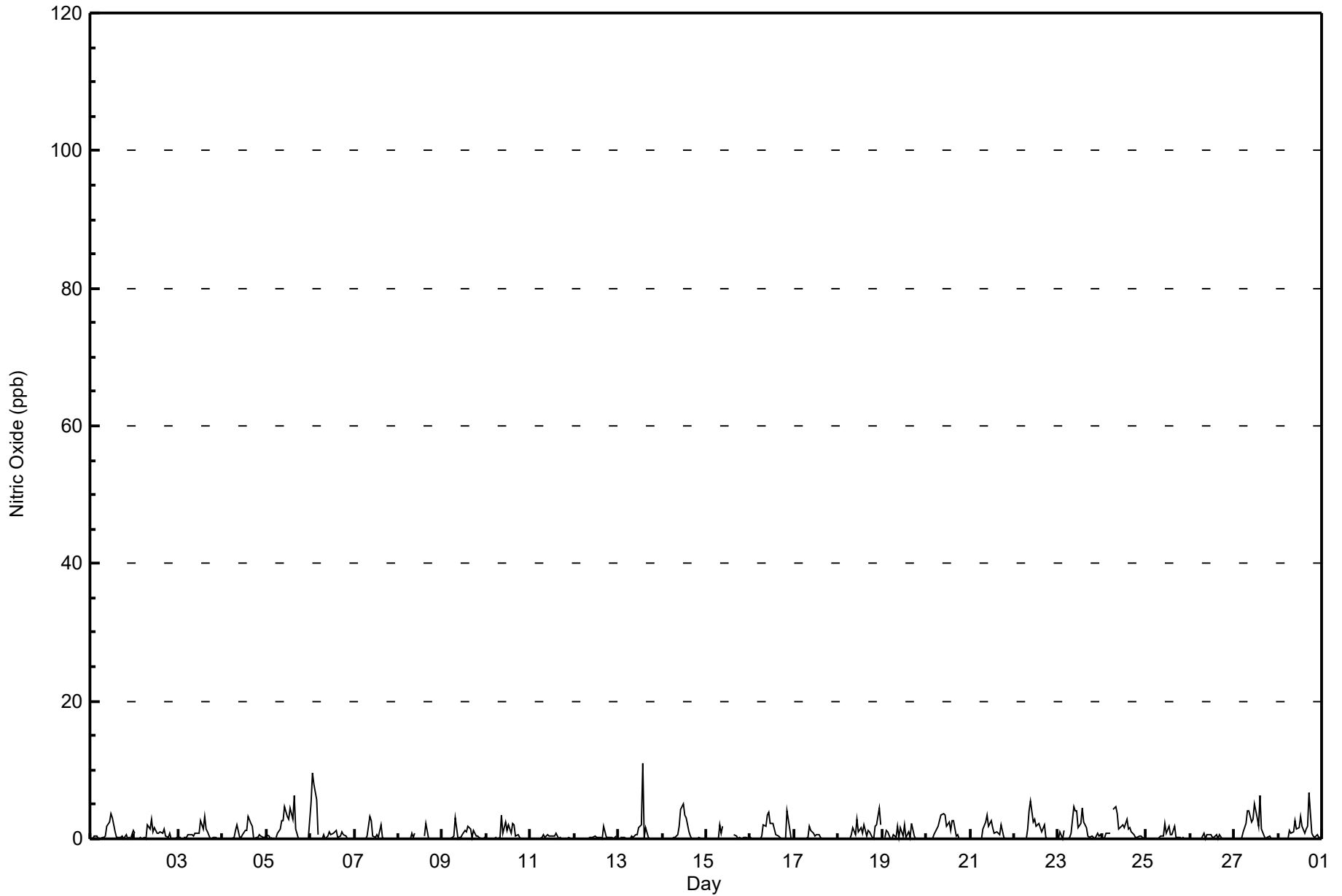
Jackfish 1 - February 2023

| Maximum Value: 11.0 ppb on Feb 13 14:00  |                               |     |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |     |     | Maximum Daily Average: 1.6 ppb on Feb 6  |     |     |     |                 | Hours in Service: 672          |               |
|--|-------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|-----|-----|-----|-----|-----|--|-----|-----|-----|-----------------|--------------------------------|---------------|
| Minimum Value: 0.0 ppb on Feb 1 05:00  |                               |     |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |     |     | Minimum Daily Average: 0.2 ppb on Feb 11   |     |     |     |                 | Hours of Data: 635             |               |
| Maximum Diurnal Average: 1.9 ppb at hour 11  |                               |     |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |     |     | Minimum Diurnal Average: 0.1 ppb at hour 5   |     |     |     |                 | Hours of Missing Data: 37      |               |
| Monthly Average: 0.82 ppb  |                               |     |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |     |     | Percentiles: P <sub>1</sub> = 0.0 P <sub>10</sub> = 0.0 Q <sub>1</sub> = 0.0 Median = 0.2 Q <sub>3</sub> = 1.1 P <sub>90</sub> = 2.5 P <sub>99</sub> = 5.7 |     |     |     |                 | Hours of Calibration: 33       |               |
|  |                               |     |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |     |     |  |     |     |     |                 | Percent Operational Time: 99.4 |               |
| Day  | Hourly Period Ending At (MST) |     |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |     |     |  |     |     |     |                 | Daily Average                  | Daily Maximum |
|  | 1                             | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  | 11  | 12  | 13  | 14   | 15  | 16  | 17  | 18  | 19  | 20   | 21  | 22  | 23  | 24              |                                |               |
| 1-Feb  | Z                             | 0.1 | 0.5 | 0.3 | 0.0 | 0.0 | 0.2 | 0.3 | 0.4 | 1.8 | 2.5 | 3.8 | 3.0 | 1.1  | 0.2 | 0.1 | 0.1 | 0.3 | 0.0 | 0.7  | 0.1 | 0.1 | 0.0 | 1.1             | 0.7                            | 3.8           |
| 2-Feb  | 0.9                           | Z   | 0.0 | 0.2 | 0.0 | 0.2 | 0.1 | 2.0 | 1.5 | 2.8 | 1.0 | 1.6 | 0.8 | 0.9  | 1.0 | 0.9 | 1.4 | 0.4 | 0.2 | 0.9  | 0.0 | 0.1 | 0.1 | 0.2             | 0.7                            | 2.8           |
| 3-Feb  | 0.1                           | 0.2 | Z   | 0.2 | 0.2 | 0.6 | 0.6 | 0.6 | 0.5 | 0.8 | 0.9 | 0.7 | 2.6 | 1.4  | 3.2 | 1.4 | 1.0 | 0.0 | 0.1 | 0.3  | 0.2 | 0.1 | 0.0 | 0.0             | 0.7                            | 3.2           |
| 4-Feb  | 0.0                           | 0.1 | 0.0 | Z   | 0.0 | 0.0 | 0.1 | 1.2 | 2.1 | 0.2 | 0.3 | 0.6 | 1.2 | 1.1  | 3.2 | 2.2 | 1.9 | 0.0 | 0.2 | 0.3  | 0.5 | 0.4 | 0.2 | 0.2             | 0.7                            | 3.2           |
| 5-Feb  | 0.6                           | 0.3 | 0.0 | 0.2 | Z   | 0.3 | 0.9 | 1.3 | 2.6 | 2.6 | 4.6 | 3.2 | 2.8 | 4.5  | 2.8 | 6.2 | 1.5 | 0.0 | 0.0 | 0.0  | 0.0 | 0.0 | 0.0 | 0.0             | 1.5                            | 6.2           |
| 6-Feb  | 5.3                           | 9.6 | 8.0 | 5.8 | 0.6 | Z   | 0.0 | 0.5 | 0.1 | 0.4 | 1.0 | 0.6 | 0.8 | 1.0  | 1.3 | 0.2 | 0.3 | 1.1 | 0.5 | 0.4  | 0.0 | 0.0 | 0.0 | 0.0             | 1.6                            | 9.6           |
| 7-Feb  | Z                             | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.5 | 3.3 | 2.6 | 0.5 | 0.3 | 0.7 | 0.2  | 2.0 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0  | 0.0 | 0.0 | 0.0 | 0.0             | 0.5                            | 3.3           |
| 8-Feb  | 0.0                           | Z   | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.8 | 0.2 | 0.9 | M   | M   | M   | M    | 0.4 | 2.3 | 0.1 | 0.1 | 0.0 | 0.0  | 0.0 | 0.0 | 0.0 | 0.0             | 0.3                            | 2.3           |
| 9-Feb  | 0.0                           | 0.0 | Z   | 0.0 | 0.0 | 0.2 | 0.3 | 3.0 | 0.1 | 0.2 | 0.2 | 0.7 | 1.2 | 0.9  | 1.7 | 1.4 | 0.2 | 1.3 | 0.3 | 0.5  | 0.2 | 0.1 | 0.1 | 0.1             | 0.6                            | 3.0           |
| 10-Feb   | 0.0                           | 0.1 | 0.1 | Z   | 0.0 | 0.1 | 0.1 | 0.3 | 3.5 | 0.8 | 2.5 | 1.2 | 2.1 | 0.9  | 2.2 | 2.1 | 0.4 | 0.6 | 0.2 | 0.0  | 0.0 | 0.0 | 0.0 | 0.0             | 0.7                            | 3.5           |
| 11-Feb   | 0.0                           | 0.0 | 0.0 | 0.0 | Z   | 0.0 | 0.2 | 0.6 | 0.3 | 0.5 | 0.5 | 0.3 | 0.4 | 0.4  | 0.9 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0  | 0.0 | 0.3 | 0.0 | 0.0             | 0.2                            | 0.9           |
| 12-Feb   | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | Z   | 0.0 | 0.0 | 0.2 | 0.2 | 0.3 | 0.4 | 0.2 | 0.2  | 0.2 | 0.1 | 1.9 | 0.3 | 0.2 | 0.1  | 0.1 | 0.1 | 0.2 | 0.4             | 0.2                            | 1.9           |
| 13-Feb   | Z                             | 0.1 | 0.2 | 0.2 | 0.0 | 0.0 | 0.0 | 0.3 | 0.1 | 0.5 | 0.5 | 1.6 | 1.9 | 11.0 | 0.3 | 1.6 | 0.1 | 0.1 | 0.1 | 0.0  | 0.0 | 0.0 | 0.0 | 0.0             | 0.8                            | 11.0          |
| 14-Feb   | 0.0                           | Z   | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 | 0.2 | 0.6 | 1.9 | 4.2 | 5.1 | 3.4 | 3.0  | 1.0 | 0.5 | 0.1 | 0.0 | 0.0 | 0.0  | 0.1 | 0.0 | 0.0 | 0.0             | 0.9                            | 5.1           |
| 15-Feb   | 0.0                           | 0.0 | Z   | 0.0 | 0.0 | 0.0 | 0.1 | 2.0 | 0.9 | 1.9 | C   | C   | C   | C    | C   | 0.6 | 0.4 | 0.0 | 0.3 | 0.0  | 0.2 | 0.1 | 0.3 | 0.0             | 0.4                            | 2.0           |
| 16-Feb   | 0.1                           | 0.0 | 0.0 | Z   | 0.0 | 0.1 | 0.3 | 2.1 | 1.9 | 3.4 | 4.0 | 2.2 | 2.1 | 1.5  | 0.7 | 0.3 | 0.2 | 0.0 | 0.0 | 0.0  | 4.1 | 1.5 | 0.0 | 0.1             | 1.1                            | 4.1           |
| 17-Feb   | 0.1                           | 0.0 | 0.0 | 0.0 | Z   | 0.0 | 0.0 | 0.1 | 1.8 | 1.2 | 0.8 | 0.4 | 0.5 | 0.6  | 0.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0 | 0.0 | 0.0 | 0.0             | 0.3                            | 1.8           |
| 18-Feb   | 0.0                           | 0.0 | 0.0 | 0.0 | 0.0 | Z   | 0.1 | 0.7 | 1.6 | 0.7 | 2.8 | 1.1 | 1.7 | 0.9  | 2.0 | 0.5 | 1.3 | 1.1 | 0.3 | 0.0  | 1.8 | 2.0 | 4.4 | 1.9             | 1.1                            | 4.4           |
| 19-Feb   | Z                             | 0.1 | 1.1 | 0.9 | 0.1 | 0.0 | 0.7 | 0.2 | 1.9 | 0.2 | 1.7 | 0.4 | 2.0 | 0.3  | 1.1 | 0.2 | 2.3 | 0.4 | 0.0 | 0.0  | 0.0 | 0.0 | 0.0 | 0.0             | 0.6                            | 2.3           |
| 20-Feb   | 0.0                           | Z   | 0.0 | 0.0 | 0.7 | 1.0 | 1.9 | 2.7 | 3.6 | 3.6 | 3.5 | 1.9 | 2.5 | 1.3  | 2.6 | 2.7 | 0.5 | 0.6 | 0.0 | 0.0  | 0.0 | 0.0 | 0.0 | 0.0             | 1.3                            | 3.6           |
| 21-Feb   | 0.0                           | 0.0 | Z   | 0.0 | 0.0 | 0.0 | 0.1 | 1.4 | 2.5 | 3.4 | 1.9 | 2.7 | 1.7 | 0.8  | 1.0 | 0.9 | 0.6 | 2.0 | 0.1 | 0.0  | 0.0 | 0.0 | 0.0 | 0.0             | 0.8                            | 3.4           |
| 22-Feb   | 0.0                           | 0.0 | 0.0 | Z   | 0.0 | 0.0 | 0.1 | 1.5 | 4.0 | 5.5 | 2.5 | 2.8 | 1.8 | 2.2  | 1.6 | 1.0 | 2.1 | 0.2 | 0.0 | 0.0  | 0.0 | 0.0 | 0.0 | 0.0             | 1.1                            | 5.5           |
| 23-Feb   | 0.1                           | 1.0 | 0.0 | 1.2 | Z   | 0.1 | 0.3 | 0.8 | 4.7 | 4.0 | 4.0 | 1.5 | 2.3 | 4.6  | 2.5 | 1.6 | 0.4 | 0.1 | 0.3 | 0.1  | 0.0 | 0.7 | 0.4 | 0.5             | 1.4                            | 4.7           |
| 24-Feb   | 0.0                           | 0.3 | 0.7 | 0.7 | 0.8 | Z   | 4.2 | 4.7 | 3.6 | 1.5 | 1.8 | 1.9 | 1.7 | 2.9  | 1.4 | 1.6 | 1.1 | 0.7 | 0.2 | 0.3  | 0.4 | 0.3 | 0.2 | 0.1             | 1.4                            | 4.7           |
| 25-Feb   | Z                             | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.3 | 0.5 | 2.2 | 0.9 | 1.8 | 0.5  | 0.7 | 1.8 | 0.2 | 0.2 | 0.3 | 0.0  | 0.2 | 0.1 | 0.1 | 0.1             | 0.4                            | 2.2           |
| 26-Feb   | 0.1                           | Z   | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.9 | 0.1 | 0.6 | 0.7 | 0.7 | 0.1 | 0.3  | 0.6 | 0.0 | 0.7 | 0.1 | 0.0 | 0.0  | 0.0 | 0.0 | 0.0 | 0.0             | 0.2                            | 0.9           |
| 27-Feb   | 0.0                           | 0.0 | Z   | 0.0 | 0.1 | 1.0 | 2.2 | 4.2 | 4.0 | 2.4 | 2.8 | 5.2 | 3.1 | 1.9  | 6.3 | 1.5 | 0.4 | 0.0 | 0.2 | 0.4  | 0.0 | 0.0 | 0.0 | 0.0             | 1.6                            | 6.3           |
| 28-Feb   | 0.0                           | 0.0 | 0.0 | Z   | 0.0 | 0.0 | 1.3 | 0.8 | 1.0 | 2.7 | 1.4 | 1.7 | 3.2 | 1.8  | 0.9 | 1.4 | 1.8 | 6.8 | 0.8 | 0.4  | 0.1 | 0.6 | 0.1 | 0.1             | 1.2                            | 6.8           |
|  |                               |     |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |     |     |  |     |     |     | Diurnal Average |                                |               |
|  |                               |     |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |     |     |  |     |     |     | Diurnal Maximum |                                |               |
| 0.3 0.5 0.5 0.4 0.1 0.1 0.5 1.2 1.7 1.7 1.9 1.7 1.8 1.8 1.5 1.2 0.8 0.6 0.2 0.2 0.3 0.2 0.2 0.2  |                               |     |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |     |     |  |     |     |     |                 |                                |               |
| 5.3 9.6 8.0 5.8 0.8 1.0 4.2 4.7 4.7 5.5 4.6 5.2 3.4 11.0 6.3 6.2 2.3 6.8 0.8 0.9 4.1 2.0 4.4 1.9 |                               |     |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |     |     |  |     |     |     |                 |                                |               |
| Z - zerospan                  C - Calibration                  M - Maintenance                   |                               |     |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |     |     |  |     |     |     |                 |                                |               |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Nitric Oxide (NO) - ppb**  
**Jackfish 1 - February 2023**







**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Nitric Oxide (NO) - ppb  
Jackfish 1 - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 20                            | 635                    | 100.00   | 100.00              |
| 21 - 40                           | 0                      | 0.00     | 100.00              |
| 41 - 80                           | 0                      | 0.00     | 100.00              |
| 81 - 159                          | 0                      | 0.00     | 100.00              |
| > 159                             | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 635

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Nitric Oxide (NO) - ppb  
Jackfish 1 - February 2023**

| <b>Concentration<br/>Ranges (ppb)</b> | <b>Wind Direction</b> |     |    |     |    |     |    |     |    |     |    |     |    |     |    |     | <b>Totals</b> |
|---------------------------------------|-----------------------|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|---------------|
|                                       | N                     | NNE | NE | ENE | E  | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |               |
| 0 - 20                                | 46                    | 26  | 21 | 13  | 15 | 17  | 21 | 23  | 87 | 89  | 55 | 26  | 25 | 45  | 46 | 71  | 626           |
| 21 - 40                               | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| 11 - 80                               | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| 81 - 159                              | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| > 159                                 | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| <b>Totals</b>                         | 46                    | 26  | 21 | 13  | 15 | 17  | 21 | 23  | 87 | 89  | 55 | 26  | 25 | 45  | 46 | 71  | 626           |

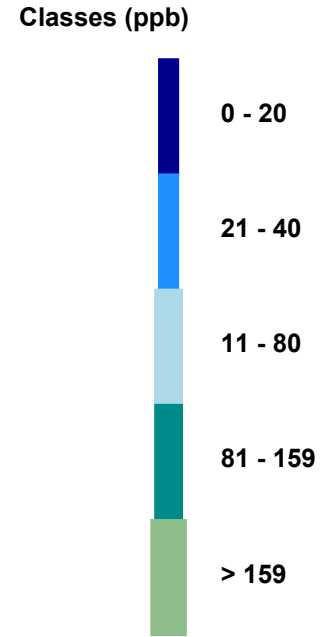
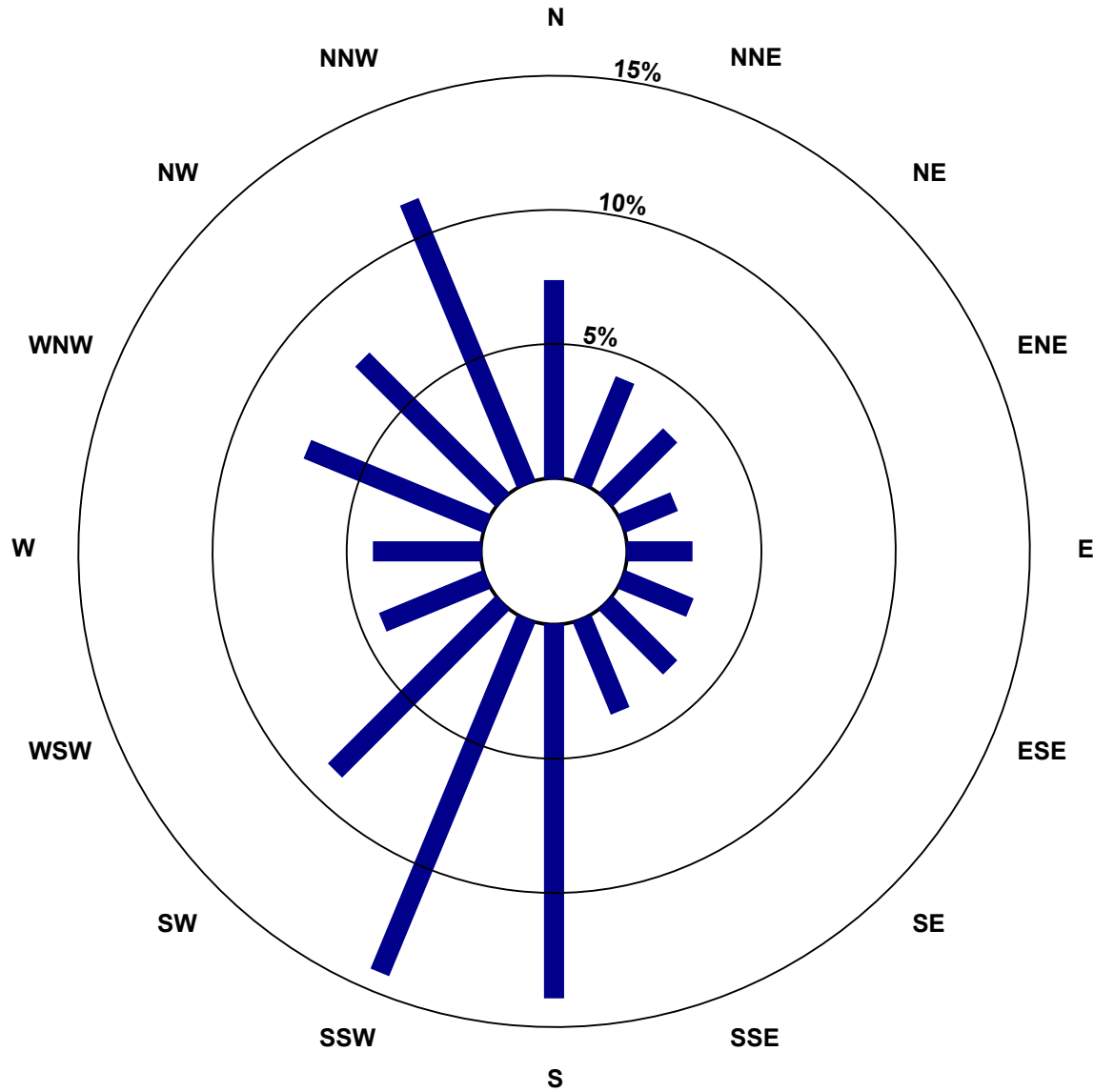
Total Number of Valid Hours: 626

Total Number of Hours: 672

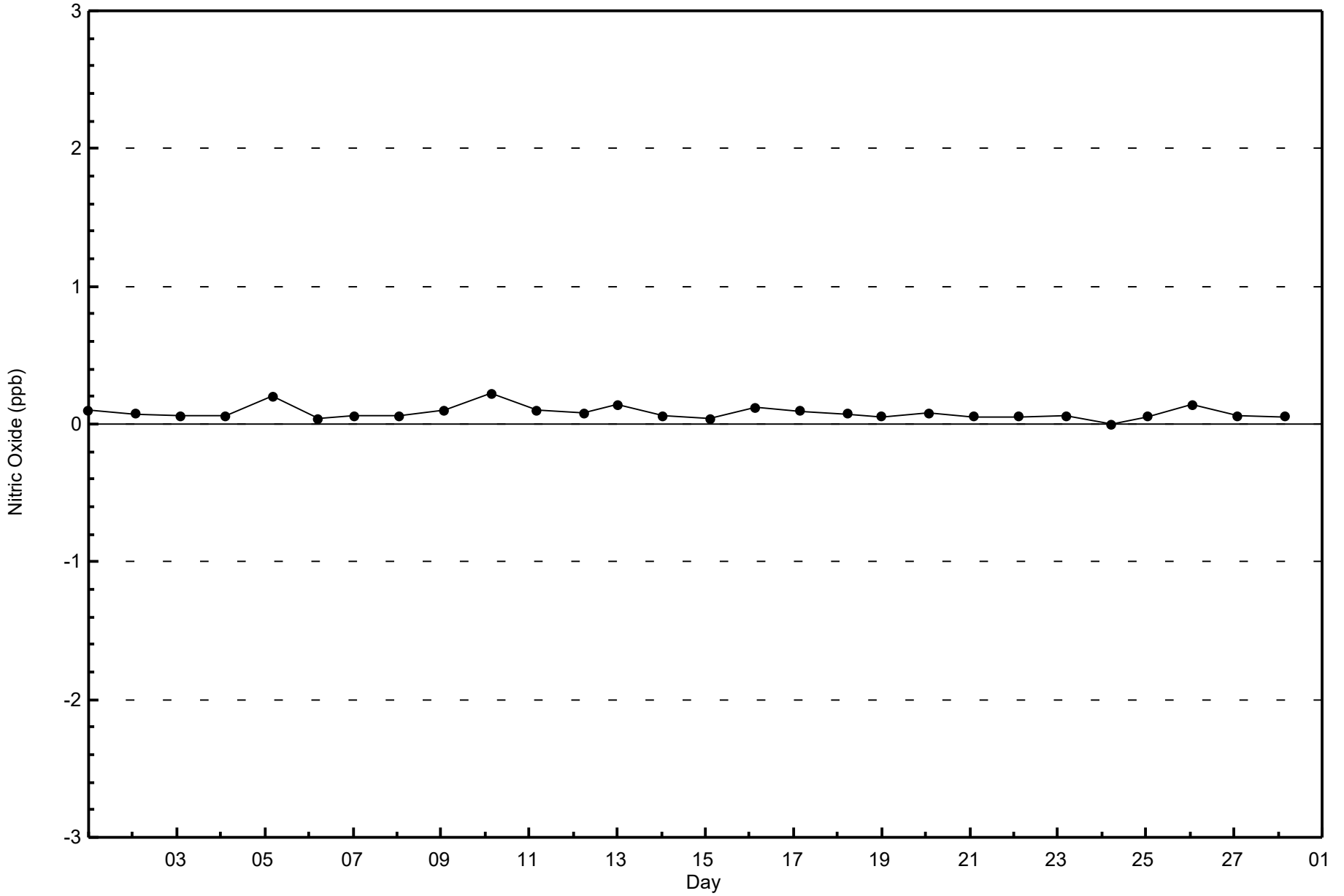


Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Nitric Oxide (NO) - ppb  
Jackfish 1



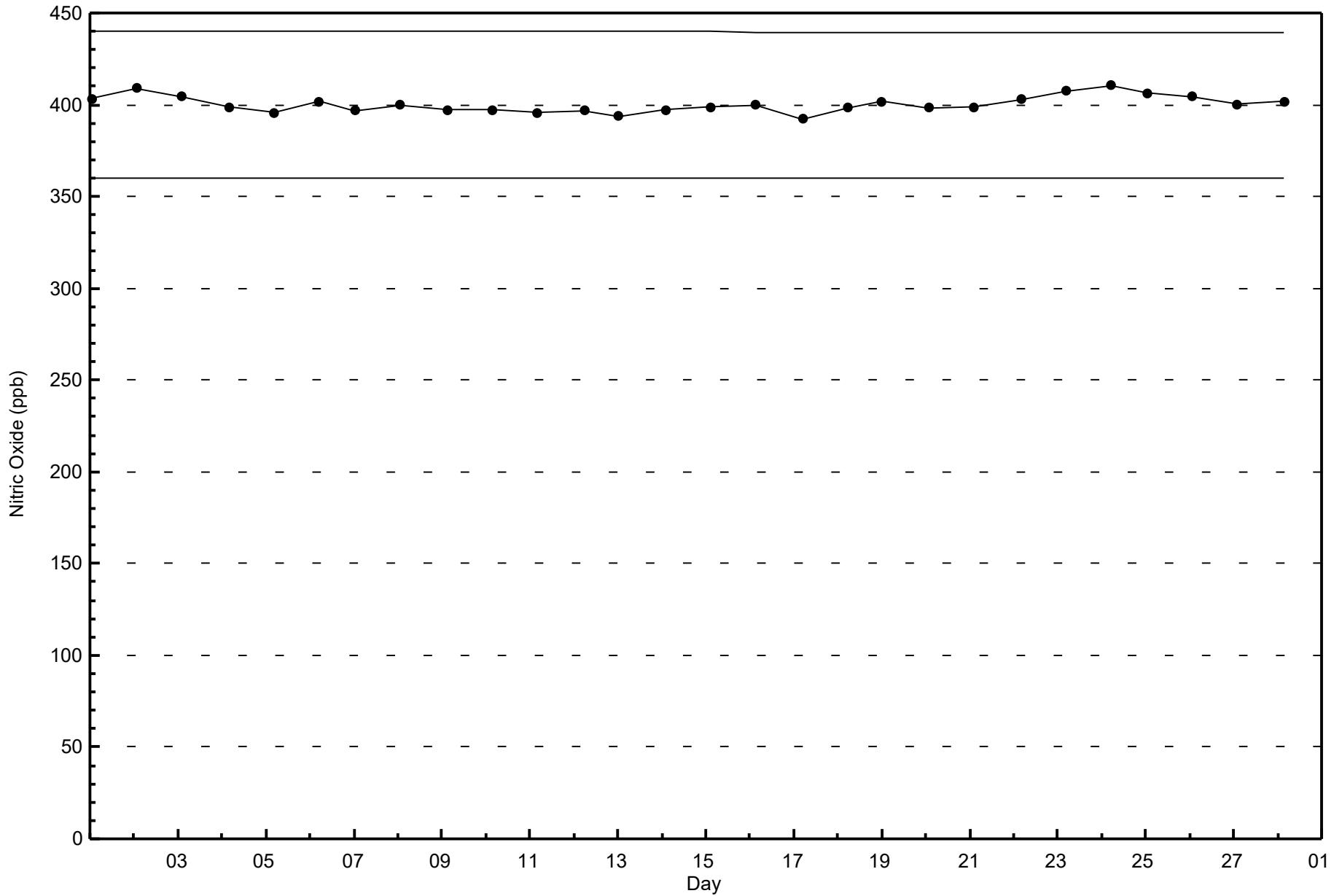
Total Number of Valid Hours: 626





Wood Buffalo Environmental Association  
Span Responses

Nitric Oxide (NO) - ppb  
Jackfish 1 - February 2023





# Wood Buffalo Environmental Association

## Summary of Hour Averages

# Nitrogen Dioxide (NO<sub>2</sub>) - ppb

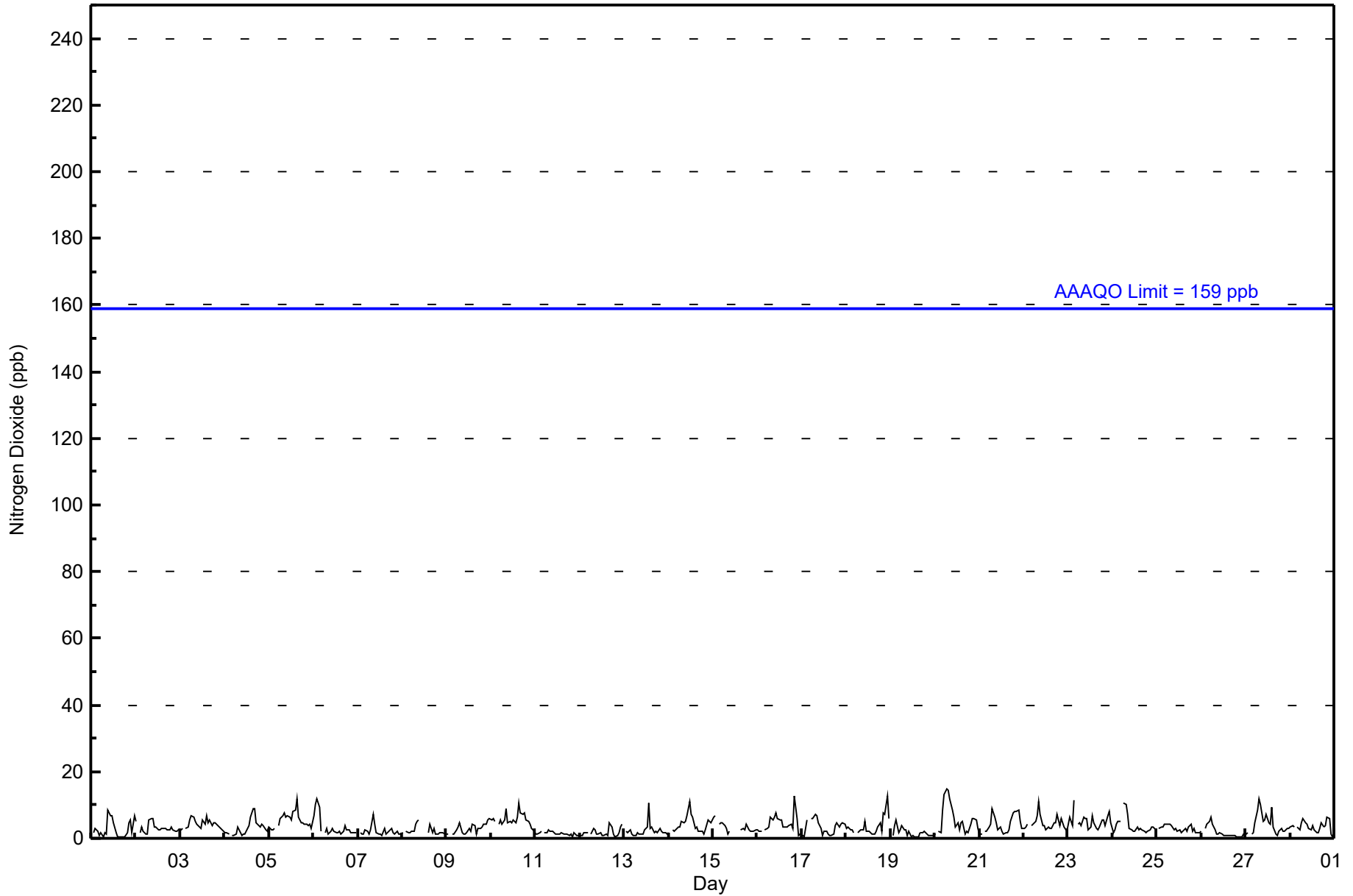
## Jackfish 1 - February 2023

| Number of Exceedences (AAAQO):  |                               | 1-hr: 0 |      | 24-hr: 0  |     | Hours in Service:         |      |      |      |     |     |      |     |      |     |      |     |     |     | 672  |      |     |      |                 |               |               |
|---|-------------------------------|---------|------|---|-----|---------------------------|------|------|------|-----|-----|------|-----|------|-----|------|-----|-----|-----|------|------|-----|------|-----------------|---------------|---------------|
| Maximum Value: 15.0 ppb on Feb 20 07:00   |                               |         |      | Maximum Daily Average: 5.8 ppb on Feb 20  |     | Hours of Data:            |      |      |      |     |     |      |     |      |     |      |     |     |     | 635  |      |     |      |                 |               |               |
| Minimum Value: 0.3 ppb on Feb 19 14:00  |                               |         |      | Minimum Daily Average: 1.4 ppb on Feb 11  |     | Hours of Missing Data:    |      |      |      |     |     |      |     |      |     |      |     |     |     | 37   |      |     |      |                 |               |               |
| Maximum Diurnal Average: 5.2 ppb at hour 8  |                               |         |      | Minimum Diurnal Average: 2.7 ppb at hour 24   |     | Hours of Calibration:     |      |      |      |     |     |      |     |      |     |      |     |     |     | 33   |      |     |      |                 |               |               |
| Monthly Average: 3.47 ppb   |                               |         |      | Percentiles: P <sub>1</sub> = 0.5 P <sub>10</sub> = 1.1 Q <sub>1</sub> = 1.7 Median = 2.9 Q <sub>3</sub> = 4.7 P <sub>90</sub> = 6.5 P <sub>99</sub> = 11.9 |     | Percent Operational Time: |      |      |      |     |     |      |     |      |     |      |     |     |     | 99.4 |      |     |      |                 |               |               |
| Day   | Hourly Period Ending At (MST) |         |      |   |     |                           |      |      |      |     |     |      |     |      |     |      |     |     |     |      |      |     |      |                 | Daily Average | Daily Maximum |
|   | 1                             | 2       | 3    | 4   | 5   | 6                         | 7    | 8    | 9    | 10  | 11  | 12   | 13  | 14   | 15  | 16   | 17  | 18  | 19  | 20   | 21   | 22  | 23   | 24              |               |               |
| 1-Feb   | Z                             | 1.9     | 3.0  | 2.2   | 0.7 | 1.5                       | 0.6  | 1.5  | 1.1  | 8.6 | 6.7 | 6.7  | 4.7 | 1.6  | 0.4 | 0.5  | 0.6 | 0.5 | 0.5 | 1.9  | 4.5  | 5.7 | 1.7  | 6.8             | 2.8           | 8.6           |
| 2-Feb   | 5.2                           | Z       | 1.9  | 3.2   | 2.1 | 1.4                       | 1.1  | 5.6  | 6.1  | 5.9 | 3.3 | 3.4  | 2.6 | 2.7  | 3.1 | 3.1  | 2.9 | 2.4 | 2.6 | 3.3  | 2.7  | 2.1 | 2.3  | 2.5             | 3.1           | 6.1           |
| 3-Feb   | 2.6                           | 3.0     | Z    | 3.0   | 3.2 | 5.6                       | 6.7  | 6.3  | 5.1  | 4.3 | 3.5 | 3.1  | 5.6 | 4.2  | 6.6 | 4.6  | 5.7 | 4.0 | 4.5 | 4.7  | 3.9  | 3.2 | 3.1  | 2.3             | 4.3           | 6.7           |
| 4-Feb   | 1.7                           | 1.7     | 1.1  | Z   | 1.0 | 0.9                       | 1.3  | 3.5  | 2.5  | 0.9 | 1.1 | 1.3  | 2.9 | 3.7  | 6.4 | 8.8  | 8.9 | 4.8 | 3.8 | 3.4  | 4.1  | 4.0 | 2.7  | 2.1             | 3.2           | 8.9           |
| 5-Feb   | 3.5                           | 2.6     | 2.4  | 3.0   | Z   | 3.9                       | 5.9  | 6.6  | 7.7  | 6.2 | 6.7 | 6.2  | 5.5 | 8.0  | 8.5 | 11.9 | 6.3 | 4.8 | 4.8 | 4.4  | 4.3  | 3.8 | 4.3  | 2.9             | 5.4           | 11.9          |
| 6-Feb   | 6.6                           | 10.2    | 11.7 | 9.2   | 2.0 | Z                         | 1.8  | 2.8  | 1.1  | 2.3 | 2.8 | 2.0  | 1.9 | 1.9  | 2.2 | 1.3  | 2.1 | 3.8 | 2.6 | 2.6  | 1.6  | 1.7 | 1.9  | 1.5             | 3.4           | 11.7          |
| 7-Feb   | Z                             | 1.6     | 1.3  | 1.2   | 2.5 | 2.0                       | 1.3  | 2.6  | 7.2  | 4.4 | 1.7 | 1.2  | 1.4 | 0.9  | 2.9 | 1.2  | 1.5 | 2.0 | 3.1 | 1.6  | 1.2  | 2.1 | 1.3  | 1.2             | 2.1           | 7.2           |
| 8-Feb   | 1.8                           | Z       | 2.1  | 1.6   | 1.9 | 2.0                       | 2.0  | 4.1  | 4.9  | 5.4 | M   | M    | M   | M    | 1.6 | 4.3  | 1.6 | 3.0 | 1.2 | 1.3  | 1.5  | 1.5 | 1.5  | 1.3             | 2.3           | 5.4           |
| 9-Feb   | 1.2                           | 1.4     | Z    | 1.4   | 1.2 | 2.5                       | 3.2  | 4.6  | 1.6  | 1.3 | 1.3 | 1.5  | 2.9 | 2.3  | 4.2 | 3.8  | 1.4 | 3.1 | 2.9 | 3.2  | 4.4  | 4.2 | 5.6  | 5.9             | 2.8           | 5.9           |
| 10-Feb  | 5.3                           | 5.9     | 4.9  | Z   | 4.2 | 5.6                       | 4.2  | 5.5  | 9.0  | 4.7 | 5.1 | 4.7  | 5.5 | 4.7  | 6.4 | 10.6 | 7.6 | 7.2 | 7.6 | 5.3  | 5.1  | 4.1 | 3.1  | 2.2             | 5.6           | 10.6          |
| 11-Feb  | 1.2                           | 1.3     | 1.5  | 2.3   | Z   | 1.7                       | 1.7  | 2.4  | 2.3  | 2.2 | 1.7 | 1.2  | 1.1 | 1.3  | 1.6 | 1.3  | 1.4 | 1.1 | 0.8 | 1.2  | 0.5  | 1.7 | 0.7  | 1.0             | 1.4           | 2.4           |
| 12-Feb  | 1.0                           | 0.8     | 1.5  | 1.9   | 1.9 | Z                         | 1.3  | 2.8  | 2.7  | 1.3 | 1.4 | 1.5  | 0.9 | 0.9  | 1.3 | 0.9  | 4.7 | 3.5 | 1.2 | 0.6  | 0.8  | 1.9 | 3.2  | 4.3             | 1.8           | 4.7           |
| 13-Feb  | Z                             | 2.3     | 1.9  | 2.4   | 1.2 | 0.8                       | 0.9  | 1.8  | 1.2  | 1.4 | 1.4 | 2.5  | 3.3 | 10.7 | 3.1 | 3.3  | 1.8 | 2.1 | 1.9 | 2.9  | 2.0  | 1.7 | 1.8  | 1.2             | 2.3           | 10.7          |
| 14-Feb  | 1.7                           | Z       | 2.7  | 2.1   | 2.4 | 3.3                       | 3.6  | 5.2  | 4.8  | 5.2 | 6.9 | 11.0 | 7.0 | 6.3  | 2.9 | 3.2  | 2.1 | 2.1 | 2.2 | 1.4  | 2.6  | 5.4 | 4.9  | 4.5             | 4.1           | 11.0          |
| 15-Feb  | 6.3                           | 6.6     | Z    | 4.4   | 4.6 | 4.8                       | 3.7  | 2.8  | 1.3  | 2.3 | C   | C    | C   | C    | C   | 2.4  | 3.1 | 2.5 | 4.3 | 2.7  | 2.1  | 2.0 | 2.3  | 2.5             | 3.4           | 6.6           |
| 16-Feb  | 2.5                           | 2.1     | 2.2  | Z   | 2.5 | 2.8                       | 3.5  | 6.4  | 5.5  | 6.5 | 7.8 | 6.0  | 5.7 | 5.4  | 3.5 | 3.4  | 3.6 | 3.8 | 4.4 | 2.9  | 12.9 | 6.1 | 0.7  | 1.1             | 4.4           | 12.9          |
| 17-Feb  | 1.0                           | 0.4     | 3.0  | 5.6   | Z   | 6.1                       | 5.8  | 7.0  | 6.8  | 4.7 | 2.8 | 1.0  | 2.2 | 2.0  | 1.4 | 0.7  | 0.9 | 1.3 | 4.0 | 4.5  | 3.3  | 4.2 | 4.7  | 4.1             | 3.4           | 7.0           |
| 18-Feb  | 3.1                           | 3.3     | 2.5  | 2.4   | 1.7 | Z                         | 1.6  | 2.1  | 2.5  | 2.4 | 5.0 | 2.0  | 2.1 | 1.5  | 1.4 | 1.1  | 2.0 | 3.6 | 4.7 | 2.0  | 7.5  | 7.4 | 12.8 | 5.8             | 3.5           | 12.8          |
| 19-Feb  | Z                             | 1.0     | 3.7  | 5.6   | 1.9 | 2.7                       | 3.7  | 2.6  | 2.5  | 0.9 | 2.0 | 0.5  | 1.0 | 0.3  | 0.6 | 0.5  | 1.9 | 1.7 | 2.1 | 1.5  | 0.9  | 0.7 | 0.8  | 1.0             | 1.7           | 5.6           |
| 20-Feb  | 1.4                           | Z       | 2.2  | 1.7   | 8.6 | 13.3                      | 15.0 | 14.3 | 11.9 | 8.3 | 6.3 | 3.6  | 4.5 | 2.7  | 4.7 | 4.9  | 1.2 | 2.1 | 1.8 | 4.2  | 6.0  | 6.0 | 5.6  | 3.1             | 5.8           | 15.0          |
| 21-Feb  | 1.2                           | 1.1     | Z    | 2.1   | 2.0 | 3.2                       | 4.1  | 8.7  | 6.3  | 4.7 | 2.7 | 3.2  | 2.1 | 1.2  | 1.5 | 1.5  | 2.5 | 5.0 | 7.5 | 8.1  | 8.1  | 8.4 | 4.9  | 3.1             | 4.1           | 8.7           |
| 22-Feb  | 3.0                           | 3.5     | 4.2  | Z   | 3.7 | 4.4                       | 5.1  | 6.9  | 10.9 | 7.1 | 4.0 | 3.9  | 2.7 | 3.3  | 3.1 | 3.0  | 4.6 | 4.5 | 7.4 | 4.0  | 5.9  | 4.6 | 3.3  | 2.2             | 4.6           | 10.9          |
| 23-Feb  | 4.2                           | 6.5     | 4.0  | 11.6  | Z   | 4.4                       | 4.8  | 3.7  | 6.3  | 6.1 | 6.0 | 2.6  | 3.3 | 6.9  | 4.8 | 3.0  | 2.6 | 3.3 | 5.7 | 5.7  | 4.0  | 6.6 | 7.9  | 4.6             | 5.2           | 11.6          |
| 24-Feb  | 1.6                           | 2.7     | 4.4  | 5.1   | 5.1 | Z                         | 10.7 | 10.3 | 7.4  | 2.8 | 2.5 | 2.3  | 2.2 | 3.2  | 2.5 | 3.1  | 2.6 | 2.1 | 1.6 | 2.0  | 2.6  | 3.3 | 3.2  | 2.7             | 3.7           | 10.7          |
| 25-Feb  | Z                             | 3.1     | 3.2  | 3.5   | 4.3 | 4.3                       | 4.2  | 4.4  | 4.0  | 2.6 | 3.0 | 2.2  | 2.5 | 1.8  | 2.2 | 3.0  | 2.0 | 3.6 | 4.2 | 2.0  | 2.9  | 1.9 | 1.8  | 1.9             | 3.0           | 4.4           |
| 26-Feb  | 2.1                           | Z       | 2.8  | 4.4   | 5.1 | 6.3                       | 4.4  | 2.6  | 1.3  | 1.4 | 1.7 | 1.4  | 0.9 | 0.8  | 0.8 | 0.7  | 0.7 | 0.9 | 0.7 | 0.5  | 0.6  | 0.5 | 0.5  | 1.1             | 1.8           | 6.3           |
| 27-Feb  | 1.2                           | 1.7     | Z    | 1.4   | 1.7 | 4.8                       | 8.3  | 11.9 | 10.3 | 4.9 | 5.5 | 7.0  | 4.8 | 4.3  | 9.2 | 3.4  | 1.4 | 0.9 | 2.2 | 2.8  | 2.1  | 2.1 | 2.8  | 2.9             | 4.2           | 11.9          |
| 28-Feb  | 3.3                           | 3.8     | 3.5  | Z   | 3.3 | 2.6                       | 4.8  | 5.8  | 4.8  | 4.2 | 2.9 | 2.7  | 3.7 | 2.6  | 1.6 | 1.6  | 3.0 | 4.7 | 3.4 | 3.7  | 6.5  | 5.8 | 1.2  | 0.5             | 3.5           | 6.5           |
|   |                               |         |      |   |     |                           |      |      |      |     |     |      |     |      |     |      |     |     |     |      |      |     |      | Diurnal Average |               |               |
|   |                               |         |      |   |     |                           |      |      |      |     |     |      |     |      |     |      |     |     |     |      |      |     |      | Diurnal Maximum |               |               |
| 2.7 3.0 3.1 3.5 2.9 3.8 4.1 5.2 5.0 4.0 3.7 3.3 3.2 3.3 3.3 3.3 2.9 3.0 3.3 3.0 3.7 3.7 3.2 2.7             |                               |         |      |   |     |                           |      |      |      |     |     |      |     |      |     |      |     |     |     |      |      |     |      |                 |               |               |
| 6.6 10.2 11.7 11.6 8.6 13.3 15.0 14.3 11.9 8.6 7.8 11.0 7.0 10.7 9.2 11.9 8.9 7.2 7.6 8.1 12.9 8.4 12.8 6.8 |                               |         |      |   |     |                           |      |      |      |     |     |      |     |      |     |      |     |     |     |      |      |     |      |                 |               |               |
| Z - zerospan C - Calibration M - Maintenance  |                               |         |      |   |     |                           |      |      |      |     |     |      |     |      |     |      |     |     |     |      |      |     |      |                 |               |               |
| Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 159 ppb  |                               |         |      |   |     |                           |      |      |      |     |     |      |     |      |     |      |     |     |     |      |      |     |      |                 |               |               |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Nitrogen Dioxide (NO<sub>2</sub>) - ppb**  
**Jackfish 1 - February 2023**





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Nitrogen Dioxide (NO<sub>2</sub>) - ppb**  
**Jackfish 1 - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 20                            | 635                    | 100.00   | 100.00              |
| 21 - 40                           | 0                      | 0.00     | 100.00              |
| 41 - 80                           | 0                      | 0.00     | 100.00              |
| 81 - 159                          | 0                      | 0.00     | 100.00              |
| > 159                             | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 635

Total Number of Hours: 672





**Wood Buffalo Environmental Association  
Frequency Distribution**

**Nitrogen Dioxide (NO<sub>2</sub>) - ppb  
Jackfish 1 - February 2023**

| Concentration<br>Ranges (ppb) | Wind Direction |     |    |     |    |     |    |     |    |     |    |     |    |     |    |     | Totals |
|-------------------------------|----------------|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|--------|
|                               | N              | NNE | NE | ENE | E  | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |        |
| 0 - 20                        | 46             | 26  | 21 | 13  | 15 | 17  | 21 | 23  | 87 | 89  | 55 | 26  | 25 | 45  | 46 | 71  | 626    |
| 21 - 40                       | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| 11 - 80                       | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| 81 - 159                      | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| > 159                         | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| <b>Totals</b>                 | 46             | 26  | 21 | 13  | 15 | 17  | 21 | 23  | 87 | 89  | 55 | 26  | 25 | 45  | 46 | 71  | 626    |

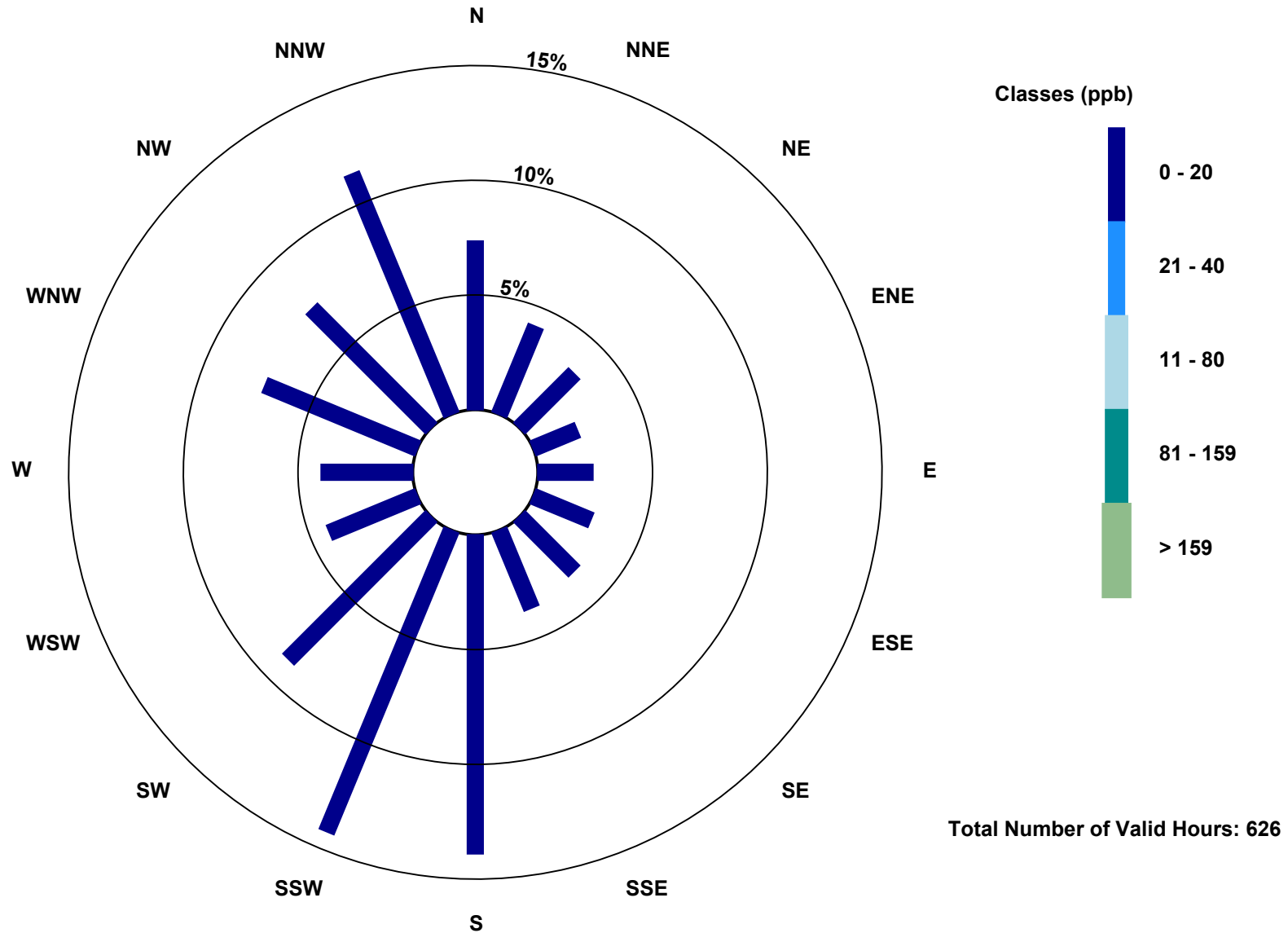
Total Number of Valid Hours: 626

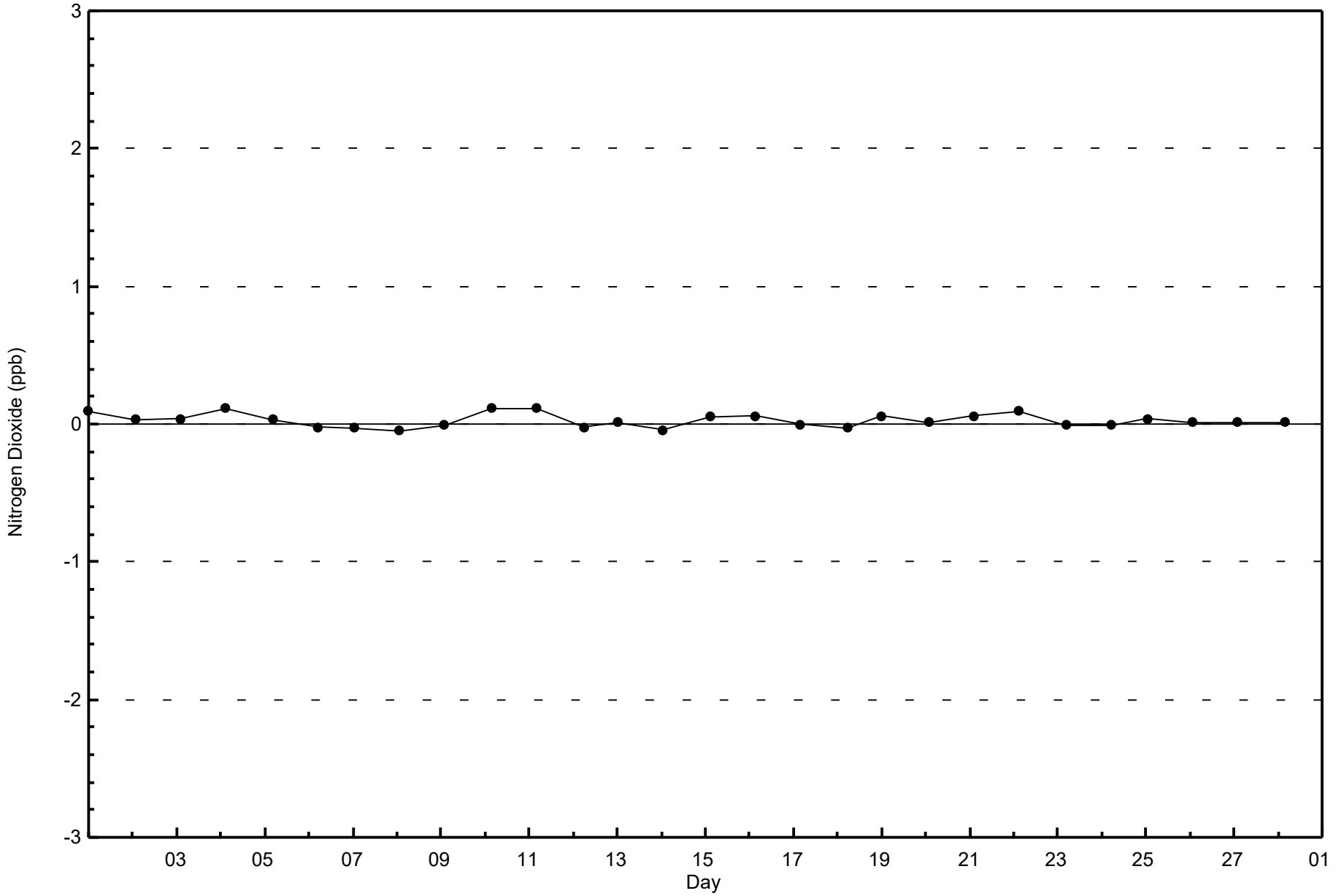
Total Number of Hours: 672

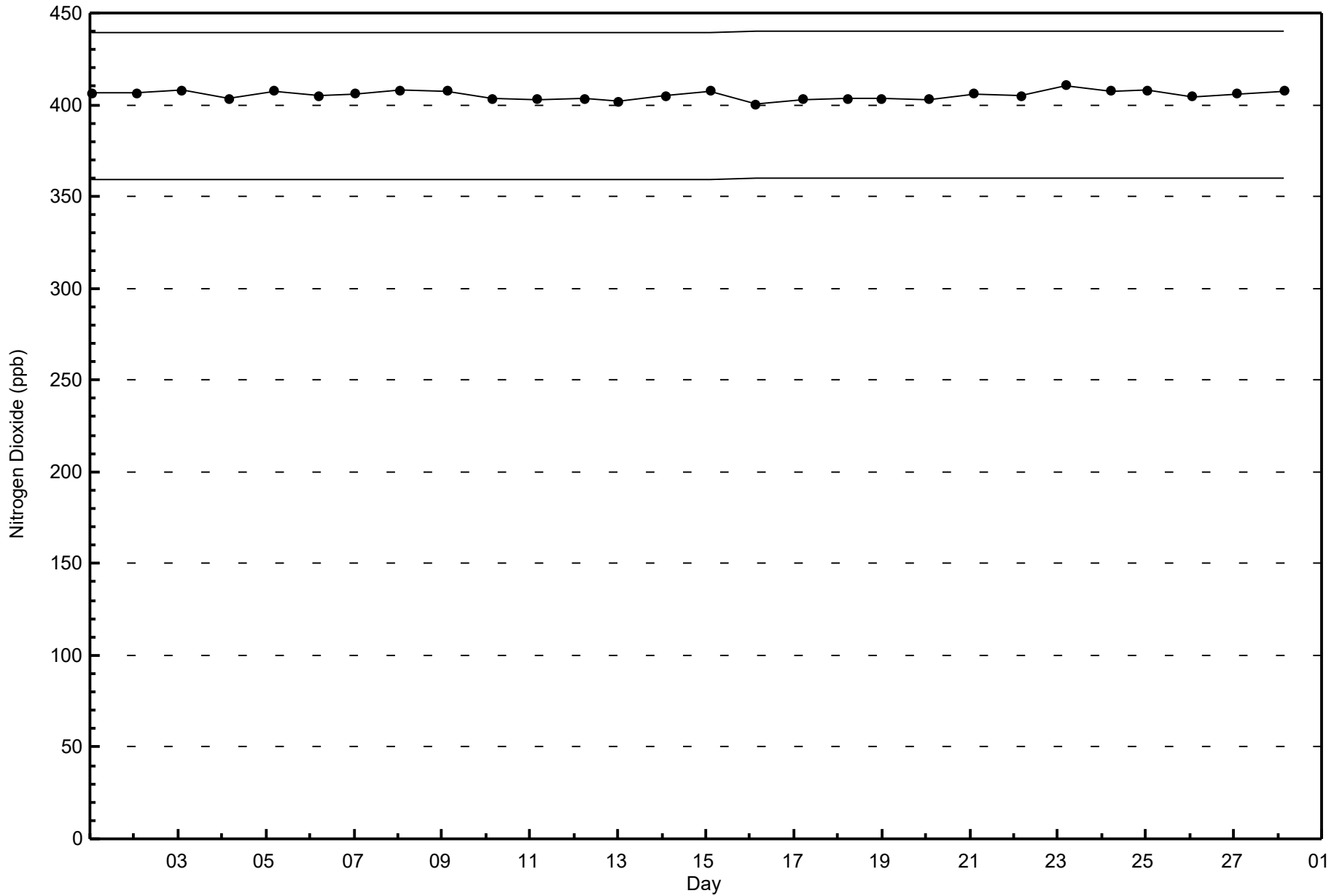


Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Nitrogen Dioxide (NO<sub>2</sub>) - ppb  
Jackfish 1









**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

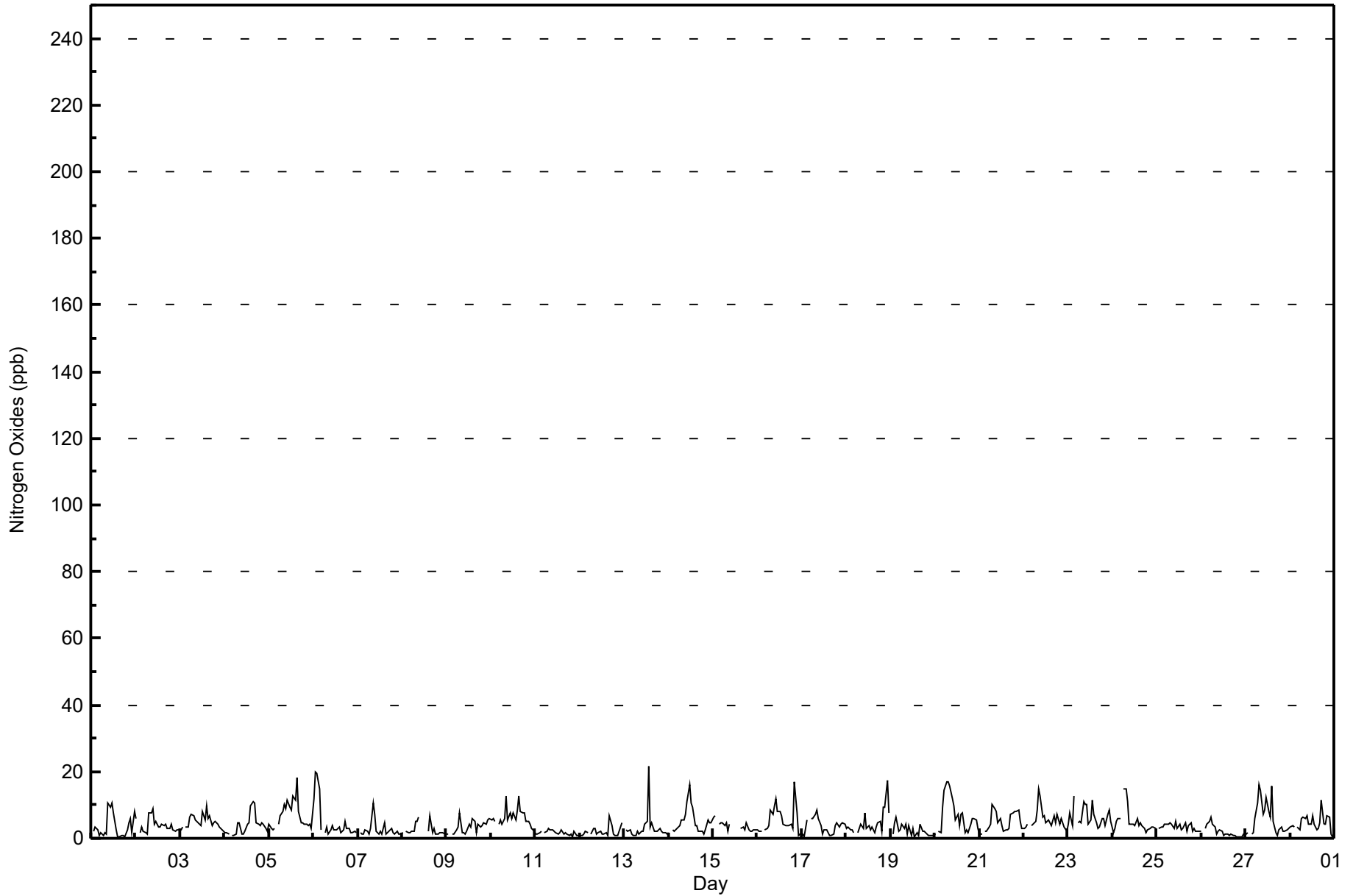
**Nitrogen Oxides (NO<sub>x</sub>) - ppb**  
**Jackfish 1 - February 2023**

| Maximum Value: 21.7 ppb on Feb 13 14:00      Maximum Daily Average: 7.1 ppb on Feb 20   |                               |      |      |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |     | Hours in Service: 672<br>Hours of Data: 635   |      |     |      |                 |               |               |
|---|-------------------------------|------|------|------|-----|------|------|------|------|------|------|------|------|------|------|------|------|------|-----|---|------|-----|------|-----------------|---------------|---------------|
| Minimum Value: 0.4 ppb on Feb 17 02:00      Minimum Daily Average: 1.6 ppb on Feb 11<br>Maximum Diurnal Average: 6.7 ppb at hour 9      Minimum Diurnal Average: 2.9 ppb at hour 24<br>Monthly Average: 4.29 ppb      Percentiles: P <sub>1</sub> = 0.6 P <sub>10</sub> = 1.2 Q <sub>1</sub> = 2.0 Median = 3.4 Q <sub>3</sub> = 5.4 P <sub>90</sub> = 8.3 P <sub>99</sub> = 16.9 |                               |      |      |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |     | Hours of Missing Data: 37<br>Hours of Calibration: 33<br>Percent Operational Time: 99.4 |      |     |      |                 |               |               |
| Day   | Hourly Period Ending At (MST) |      |      |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |     |   |      |     |      |                 | Daily Average | Daily Maximum |
|   | 1                             | 2    | 3    | 4    | 5   | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19  | 20  | 21   | 22  | 23   | 24              |               |               |
| 1-Feb   | Z                             | 2.0  | 3.5  | 2.5  | 0.7 | 1.5  | 0.8  | 1.8  | 1.5  | 10.4 | 9.2  | 10.5 | 7.7  | 2.7  | 0.6  | 0.6  | 0.7  | 0.8  | 0.5 | 2.6   | 4.6  | 5.8 | 1.7  | 7.9             | 3.5           | 10.5          |
| 2-Feb   | 6.1                           | Z    | 1.9  | 3.4  | 2.1 | 1.6  | 1.2  | 7.6  | 7.6  | 8.7  | 4.3  | 5.0  | 3.4  | 3.6  | 4.1  | 4.0  | 4.3  | 2.8  | 2.8 | 4.2   | 2.7  | 2.2 | 2.4  | 2.7             | 3.9           | 8.7           |
| 3-Feb   | 2.7                           | 3.2  | Z    | 3.2  | 3.4 | 6.2  | 7.3  | 6.9  | 5.6  | 5.1  | 4.4  | 3.8  | 8.2  | 5.6  | 9.8  | 6.0  | 6.7  | 4.0  | 4.6 | 5.0   | 4.1  | 3.3 | 3.1  | 2.3             | 5.0           | 9.8           |
| 4-Feb   | 1.7                           | 1.8  | 1.1  | Z    | 1.0 | 0.9  | 1.4  | 4.7  | 4.6  | 1.1  | 1.4  | 1.9  | 4.1  | 4.8  | 9.6  | 11.0 | 10.8 | 4.8  | 4.0 | 3.7   | 4.6  | 4.4 | 2.9  | 2.3             | 3.9           | 11.0          |
| 5-Feb   | 4.1                           | 2.9  | 2.4  | 3.2  | Z   | 4.2  | 6.8  | 7.9  | 10.3 | 8.8  | 11.3 | 9.4  | 8.3  | 12.5 | 11.3 | 18.1 | 7.8  | 4.8  | 4.8 | 4.4   | 4.3  | 3.8 | 4.3  | 2.9             | 6.9           | 18.1          |
| 6-Feb   | 11.9                          | 19.8 | 19.7 | 15.0 | 2.6 | Z    | 1.8  | 3.3  | 1.2  | 2.7  | 3.8  | 2.6  | 2.7  | 2.9  | 3.5  | 1.5  | 2.4  | 4.9  | 3.1 | 3.0   | 1.6  | 1.7 | 1.9  | 1.5             | 5.0           | 19.8          |
| 7-Feb   | Z                             | 1.6  | 1.3  | 1.2  | 2.5 | 2.0  | 1.4  | 3.1  | 10.5 | 7.0  | 2.2  | 1.5  | 2.1  | 1.1  | 4.9  | 1.3  | 1.6  | 2.0  | 3.1 | 1.6   | 1.2  | 2.1 | 1.3  | 1.2             | 2.5           | 10.5          |
| 8-Feb   | 1.8                           | Z    | 2.1  | 1.6  | 1.9 | 2.0  | 2.0  | 4.9  | 5.1  | 6.3  | M    | M    | M    | M    | 2.0  | 6.6  | 1.7  | 3.1  | 1.2 | 1.3   | 1.5  | 1.5 | 1.5  | 1.3             | 2.6           | 6.6           |
| 9-Feb   | 1.2                           | 1.4  | Z    | 1.4  | 1.2 | 2.7  | 3.5  | 7.6  | 1.7  | 1.5  | 1.5  | 2.2  | 4.1  | 3.2  | 5.9  | 5.2  | 1.6  | 4.4  | 3.2 | 3.7   | 4.6  | 4.3 | 5.7  | 6.0             | 3.4           | 7.6           |
| 10-Feb  | 5.3                           | 6.0  | 5.0  | Z    | 4.2 | 5.7  | 4.3  | 5.8  | 12.5 | 5.5  | 7.6  | 5.9  | 7.6  | 5.6  | 8.6  | 12.7 | 8.0  | 7.8  | 7.8 | 5.3   | 5.1  | 4.1 | 3.1  | 2.2             | 6.3           | 12.7          |
| 11-Feb  | 1.2                           | 1.3  | 1.5  | 2.3  | Z   | 1.7  | 1.9  | 3.0  | 2.6  | 2.7  | 2.2  | 1.5  | 1.5  | 1.7  | 2.5  | 1.4  | 1.5  | 1.1  | 0.8 | 1.2   | 0.5  | 2.0 | 0.7  | 1.0             | 1.6           | 3.0           |
| 12-Feb  | 1.0                           | 0.8  | 1.5  | 1.9  | 1.9 | Z    | 1.3  | 2.8  | 2.9  | 1.5  | 1.7  | 1.9  | 1.1  | 1.1  | 1.5  | 1.0  | 6.6  | 3.8  | 1.4 | 0.7   | 0.9  | 2.0 | 3.4  | 4.7             | 2.1           | 6.6           |
| 13-Feb  | Z                             | 2.4  | 2.1  | 2.6  | 1.2 | 0.8  | 0.9  | 2.1  | 1.3  | 1.9  | 1.9  | 4.1  | 5.2  | 21.7 | 3.4  | 4.9  | 1.9  | 2.2  | 2.0 | 2.9   | 2.0  | 1.7 | 1.8  | 1.2             | 3.2           | 21.7          |
| 14-Feb  | 1.7                           | Z    | 2.7  | 2.1  | 2.4 | 3.3  | 3.8  | 5.4  | 5.4  | 7.1  | 11.1 | 16.1 | 10.4 | 9.3  | 3.9  | 3.7  | 2.2  | 2.1  | 2.2 | 1.4   | 2.7  | 5.4 | 4.9  | 4.5             | 4.9           | 16.1          |
| 15-Feb  | 6.3                           | 6.6  | Z    | 4.4  | 4.6 | 4.8  | 3.8  | 4.8  | 2.2  | 4.2  | C    | C    | C    | C    | C    | 3.0  | 3.5  | 2.5  | 4.6 | 2.7   | 2.3  | 2.1 | 2.6  | 2.5             | 3.8           | 6.6           |
| 16-Feb  | 2.6                           | 2.1  | 2.2  | Z    | 2.5 | 2.9  | 3.8  | 8.5  | 7.4  | 9.9  | 11.8 | 8.2  | 7.8  | 6.9  | 4.2  | 3.7  | 3.8  | 3.8  | 4.4 | 2.9   | 17.0 | 7.6 | 0.7  | 1.2             | 5.5           | 17.0          |
| 17-Feb  | 1.1                           | 0.4  | 3.0  | 5.6  | Z   | 6.1  | 5.8  | 7.1  | 8.6  | 5.9  | 3.6  | 1.4  | 2.7  | 2.6  | 1.6  | 0.7  | 0.9  | 1.3  | 4.0 | 4.5   | 3.3  | 4.2 | 4.7  | 4.1             | 3.6           | 8.6           |
| 18-Feb  | 3.1                           | 3.3  | 2.5  | 2.4  | 1.7 | Z    | 1.7  | 2.8  | 4.1  | 3.1  | 7.8  | 3.1  | 3.8  | 2.4  | 3.4  | 1.6  | 3.3  | 4.7  | 5.0 | 2.0   | 9.3  | 9.4 | 17.2 | 7.7             | 4.6           | 17.2          |
| 19-Feb  | Z                             | 1.1  | 4.8  | 6.5  | 2.0 | 2.7  | 4.4  | 2.8  | 4.4  | 1.1  | 3.7  | 0.9  | 3.0  | 0.6  | 1.7  | 0.7  | 4.2  | 2.1  | 2.1 | 1.5   | 0.9  | 0.7 | 0.8  | 1.0             | 2.3           | 6.5           |
| 20-Feb  | 1.4                           | Z    | 2.2  | 1.7  | 9.3 | 14.3 | 16.9 | 17.0 | 15.5 | 11.9 | 9.8  | 5.5  | 7.0  | 4.0  | 7.3  | 7.6  | 1.7  | 2.7  | 1.8 | 4.2   | 6.0  | 6.0 | 5.6  | 3.1             | 7.1           | 17.0          |
| 21-Feb  | 1.2                           | 1.1  | Z    | 2.1  | 2.0 | 3.2  | 4.2  | 10.1 | 8.8  | 8.1  | 4.6  | 5.9  | 3.8  | 2.0  | 2.5  | 2.4  | 3.1  | 7.0  | 7.6 | 8.1   | 8.1  | 8.4 | 4.9  | 3.1             | 4.9           | 10.1          |
| 22-Feb  | 3.0                           | 3.5  | 4.2  | Z    | 3.7 | 4.4  | 5.2  | 8.4  | 14.9 | 12.6 | 6.5  | 6.7  | 4.5  | 5.5  | 4.7  | 4.0  | 6.7  | 4.7  | 7.4 | 4.0   | 5.9  | 4.6 | 3.3  | 2.2             | 5.7           | 14.9          |
| 23-Feb  | 4.3                           | 7.5  | 4.0  | 12.8 | Z   | 4.5  | 5.1  | 4.5  | 11.0 | 10.1 | 10.0 | 4.1  | 5.6  | 11.5 | 7.3  | 4.6  | 3.0  | 3.4  | 6.0 | 5.8   | 4.0  | 7.3 | 8.3  | 5.1             | 6.5           | 12.8          |
| 24-Feb  | 1.6                           | 3.0  | 5.1  | 5.8  | 5.9 | Z    | 14.9 | 15.0 | 11.0 | 4.3  | 4.3  | 4.2  | 3.9  | 6.1  | 3.9  | 4.7  | 3.7  | 2.8  | 1.8 | 2.3   | 3.0  | 3.6 | 3.4  | 2.8             | 5.1           | 15.0          |
| 25-Feb  | Z                             | 3.1  | 3.2  | 3.5  | 4.3 | 4.3  | 4.2  | 4.5  | 4.3  | 3.1  | 5.2  | 3.1  | 4.3  | 2.3  | 2.9  | 4.8  | 2.2  | 3.8  | 4.5 | 2.0   | 3.1  | 2.0 | 1.9  | 2.0             | 3.4           | 5.2           |
| 26-Feb  | 2.2                           | Z    | 2.8  | 4.4  | 5.1 | 6.3  | 4.4  | 3.5  | 1.4  | 2.0  | 2.4  | 2.1  | 1.0  | 1.1  | 1.4  | 0.7  | 1.4  | 1.0  | 0.7 | 0.5   | 0.6  | 0.5 | 0.5  | 1.1             | 2.1           | 6.3           |
| 27-Feb  | 1.2                           | 1.7  | Z    | 1.4  | 1.8 | 5.8  | 10.5 | 16.1 | 14.3 | 7.3  | 8.3  | 12.2 | 7.9  | 6.2  | 15.5 | 4.9  | 1.8  | 0.9  | 2.4 | 3.2   | 2.1  | 2.1 | 2.8  | 2.9             | 5.8           | 16.1          |
| 28-Feb  | 3.3                           | 3.8  | 3.5  | Z    | 3.3 | 2.6  | 6.1  | 6.6  | 5.8  | 6.9  | 4.3  | 4.4  | 6.9  | 4.4  | 2.5  | 3.0  | 4.8  | 11.5 | 4.2 | 4.1   | 6.6  | 6.4 | 1.3  | 0.6             | 4.6           | 11.5          |
| 3.1 3.5 3.6 4.0 3.0 3.9 4.6 6.4 6.7 5.7 5.6 4.9 4.9 5.1 4.8 4.4 3.6 3.6 3.5 3.2 4.0 3.9 3.4 2.9   |                               |      |      |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |     |   |      |     |      | Diurnal Average |               |               |
| 11.9 19.8 19.7 15.0 9.3 14.3 16.9 17.0 15.5 12.6 11.8 16.1 10.4 21.7 15.5 18.1 10.8 11.5 7.8 8.1 17.0 9.4 17.2 7.9  |                               |      |      |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |     |   |      |     |      | Diurnal Maximum |               |               |
| Z - zerospan      C - Calibration      M - Maintenance  |                               |      |      |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |     |   |      |     |      |                 |               |               |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Nitrogen Oxides (NO<sub>x</sub>) - ppb**  
**Jackfish 1 - February 2023**





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Nitrogen Oxides (NO<sub>x</sub>) - ppb**  
**Jackfish 1 - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 20                            | 634                    | 99.84    | 99.84               |
| 21 - 40                           | 1                      | 0.16     | 100.00              |
| 41 - 80                           | 0                      | 0.00     | 100.00              |
| 81 - 159                          | 0                      | 0.00     | 100.00              |
| > 159                             | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 635

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Nitrogen Oxides (NO<sub>x</sub>) - ppb  
Jackfish 1 - February 2023**

| Concentration<br>Ranges (ppb) | Wind Direction |     |    |     |    |     |    |     |    |     |    |     |    |     |    |     | Totals |
|-------------------------------|----------------|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|--------|
|                               | N              | NNE | NE | ENE | E  | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |        |
| 0 - 20                        | 46             | 26  | 21 | 13  | 15 | 17  | 21 | 23  | 87 | 89  | 55 | 26  | 25 | 45  | 45 | 71  | 625    |
| 21 - 40                       | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 1  | 0   | 1      |
| 11 - 80                       | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| 81 - 159                      | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| > 159                         | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| <b>Totals</b>                 | 46             | 26  | 21 | 13  | 15 | 17  | 21 | 23  | 87 | 89  | 55 | 26  | 25 | 45  | 46 | 71  | 626    |

Total Number of Valid Hours: 626

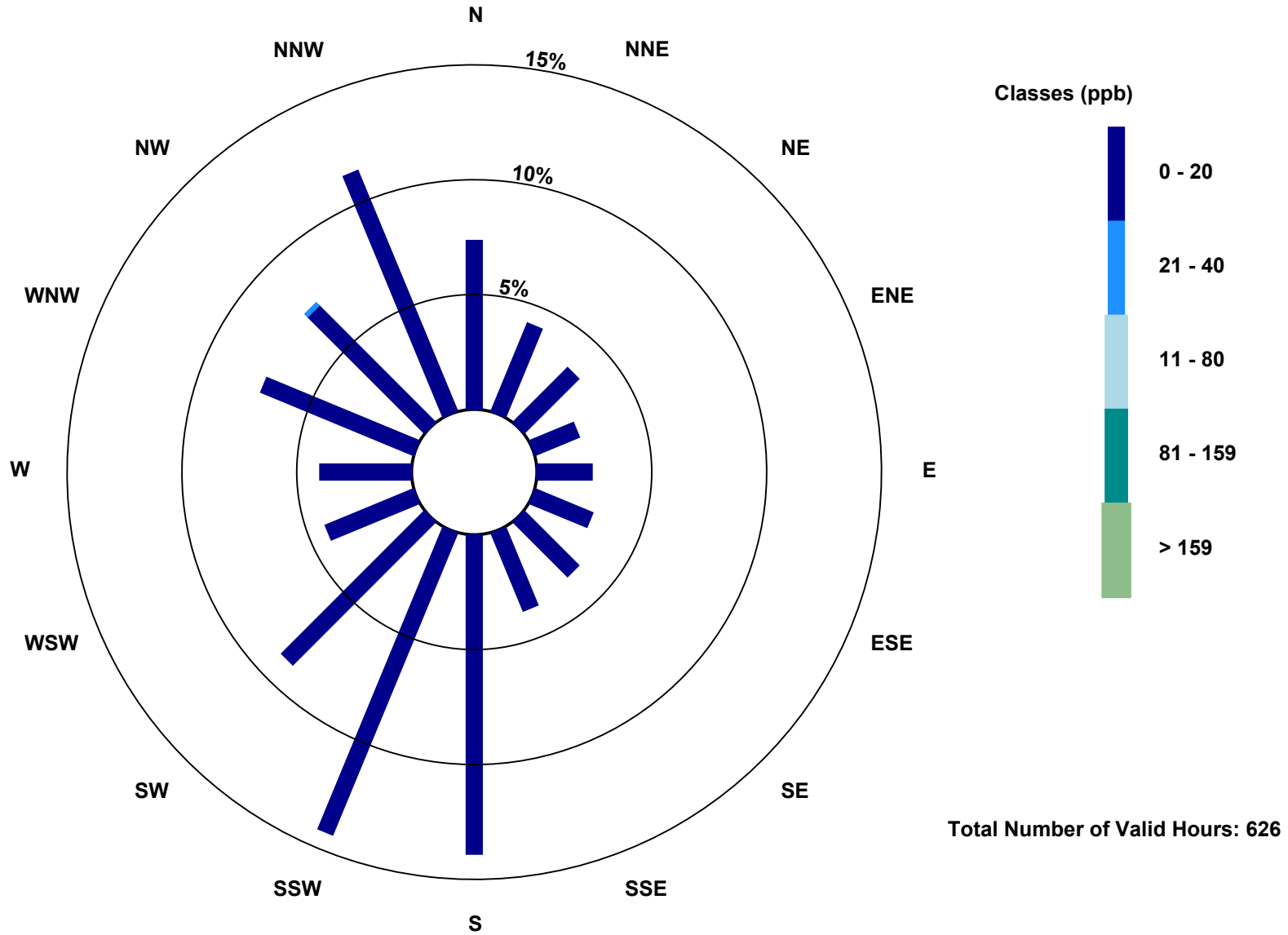
Total Number of Hours: 672

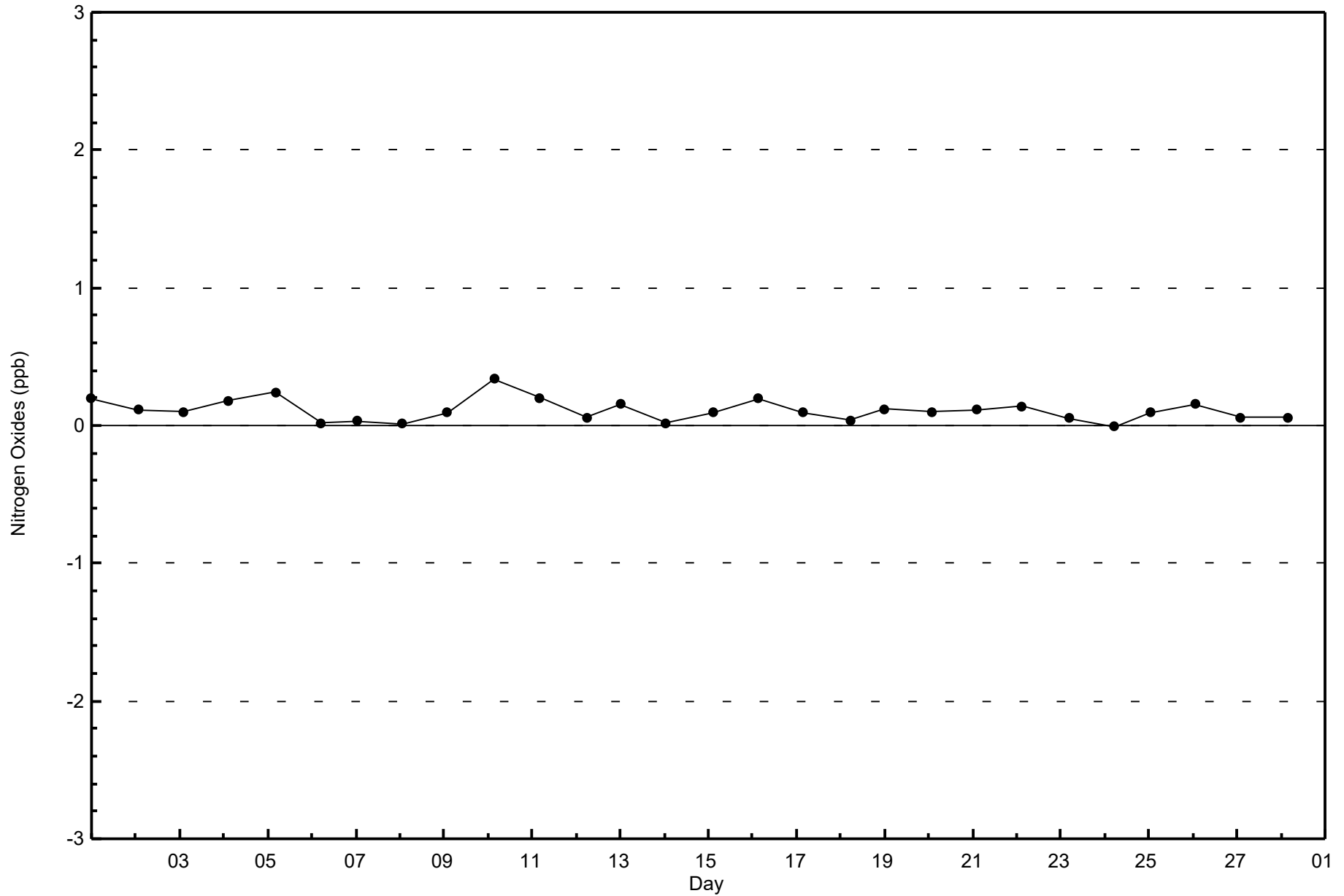


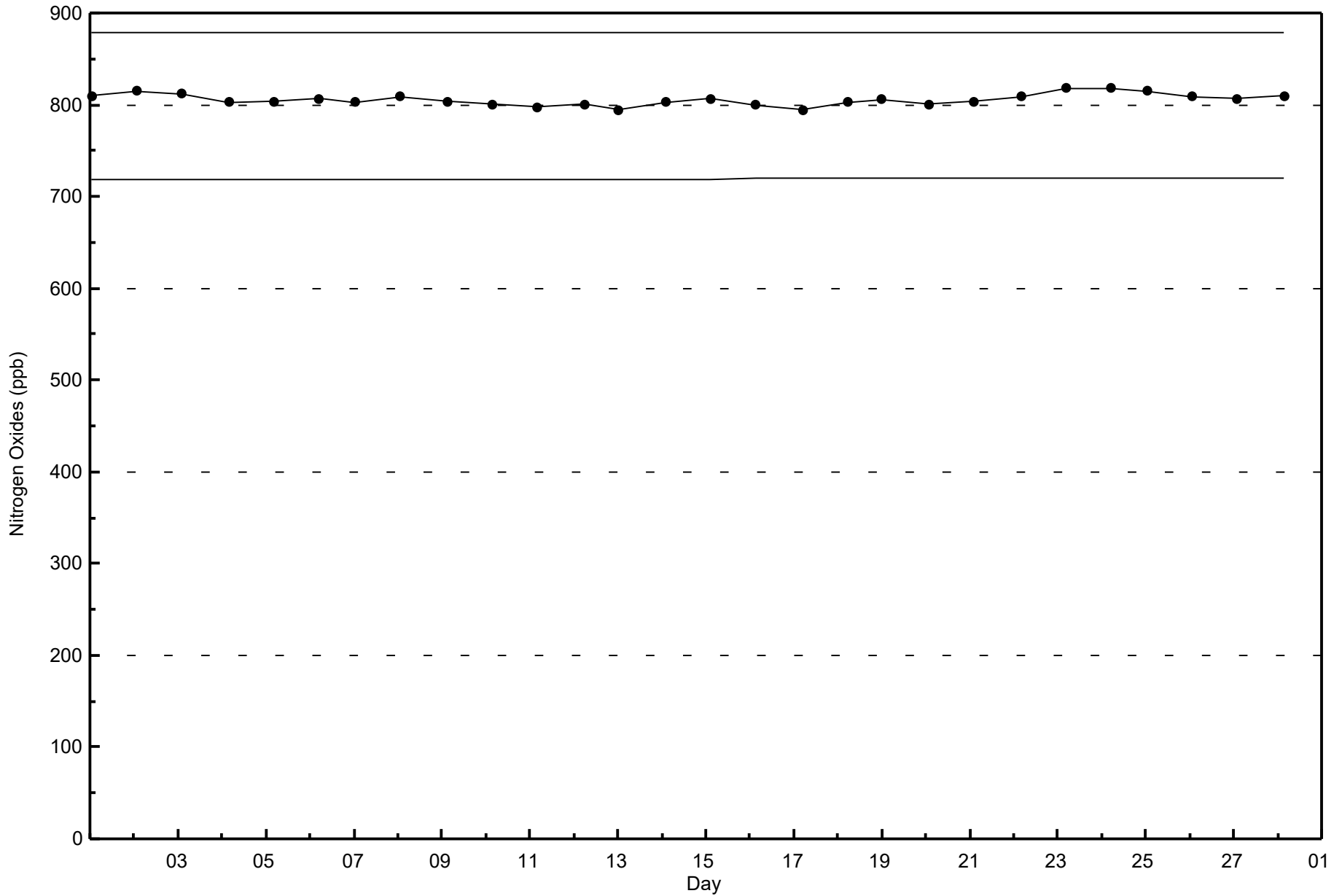


Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Nitrogen Oxides (NO<sub>x</sub>) - ppb  
Jackfish 1









**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

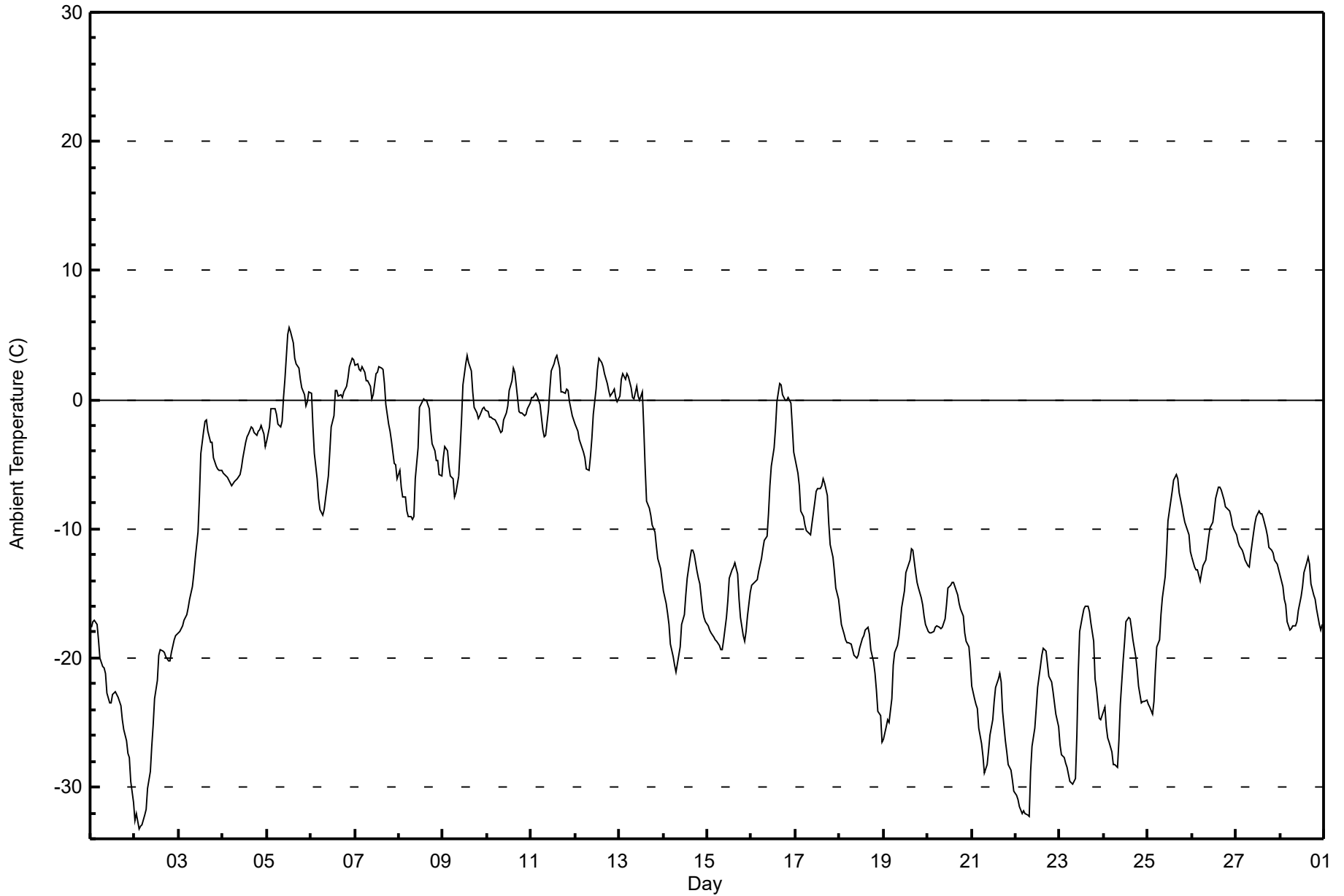
**Ambient Temperature (AT) - C**  
**Jackfish 1 - February 2023**

| Maximum Value: 5.6 C on Feb 5 13:00        |                               | Maximum Daily Average: 0.8 C on Feb 5   |       | Hours in Service: 672           |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |               |                 |  |
|--|-------------------------------|---|-------|---------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------------|-----------------|--|
| Minimum Value: -33.3 C on Feb 2 03:00      |                               | Minimum Daily Average: -25.8 C on Feb 22  |       | Hours of Data: 672              |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |               |                 |  |
| Maximum Diurnal Average: -7.8 C at hour 15 |                               | Minimum Diurnal Average: -14.5 C at hour 7  |       | Hours of Missing Data: 0        |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |               |                 |  |
| Monthly Average: -11.56 C                  |                               | Percentiles: P <sub>1</sub> = -32.1 P <sub>10</sub> = -24.7 Q <sub>1</sub> = -18.6 Median = -11.7 Q <sub>3</sub> = -2.4 P <sub>90</sub> = 0.7 P <sub>99</sub> = 3.2 |       | Hours of Calibration: 0         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |               |                 |  |
|  |                               |   |       | Percent Operational Time: 100.0 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |               |                 |  |
| Day  | Hourly Period Ending At (MST) |   |       |                                 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Daily Average | Daily Maximum   |  |
|  | 1                             | 2   | 3     | 4                               | 5     | 6     | 7     | 8     | 9     | 10    | 11    | 12    | 13    | 14    | 15    | 16    | 17    | 18    | 19    | 20    | 21    | 22    | 23    | 24    |               |                 |  |
| 1-Feb                                      | -17.7                         | -17.2   | -17.1 | -17.4                           | -18.6 | -20.0 | -20.7 | -20.7 | -21.2 | -22.7 | -23.5 | -23.4 | -22.9 | -22.6 | -22.9 | -23.1 | -23.7 | -24.7 | -25.6 | -26.4 | -27.4 | -27.7 | -29.6 | -31.2 | -22.8         | -17.1           |  |
| 2-Feb                                      | -32.6                         | -32.1   | -33.3 | -33.0                           | -32.9 | -32.2 | -31.7 | -30.1 | -28.8 | -26.8 | -25.2 | -23.2 | -21.7 | -19.8 | -19.3 | -19.4 | -19.6 | -19.9 | -20.2 | -20.2 | -19.6 | -18.6 | -18.3 | -18.2 | -24.9         | -18.2           |  |
| 3-Feb                                      | -18.0                         | -17.7   | -17.5 | -17.1                           | -16.7 | -16.1 | -15.4 | -14.5 | -13.5 | -12.3 | -10.3 | -7.5  | -4.2  | -2.5  | -1.7  | -1.6  | -2.4  | -3.3  | -3.3  | -4.5  | -5.1  | -5.4  | -5.4  | -5.5  | -9.2          | -1.6            |  |
| 4-Feb                                      | -5.7                          | -5.8  | -6.0  | -6.2                            | -6.4  | -6.6  | -6.3  | -6.2  | -6.1  | -5.8  | -5.2  | -4.5  | -3.3  | -2.9  | -2.6  | -2.1  | -2.2  | -2.6  | -2.8  | -2.4  | -2.4  | -2.0  | -2.6  | -3.7  | -4.3          | -2.0            |  |
| 5-Feb                                      | -3.2                          | -2.1  | -0.8  | -0.8                            | -0.7  | -1.1  | -1.9  | -2.1  | -1.7  | 0.1   | 1.6   | 5.1   | 5.6   | 5.3   | 4.4   | 3.2   | 2.8   | 2.5   | 1.6   | 0.9   | 0.4   | -0.5  | -0.2  | 0.6   | 0.8           | 5.6             |  |
| 6-Feb                                      | 0.5                           | -2.1  | -4.2  | -6.1                            | -7.6  | -8.5  | -8.9  | -8.6  | -7.6  | -5.9  | -4.1  | -2.1  | -1.2  | 0.7   | 0.7   | 0.3   | 0.4   | 0.2   | 0.6   | 1.1   | 1.7   | 2.6   | 3.2   | 3.1   | -2.2          | 3.2             |  |
| 7-Feb                                      | 2.7                           | 2.8   | 2.3   | 2.3                             | 2.5   | 2.1   | 1.5   | 1.5   | 1.0   | 0.1   | 0.4   | 2.0   | 2.2   | 2.5   | 2.5   | 2.3   | 1.3   | -0.4  | -1.9  | -2.4  | -3.2  | -4.9  | -5.1  | -6.2  | 0.3           | 2.8             |  |
| 8-Feb                                      | -5.5                          | -6.8  | -7.5  | -7.6                            | -8.6  | -9.1  | -9.0  | -9.3  | -9.1  | -6.1  | -3.7  | -0.5  | -0.4  | 0.1   | 0.0   | -0.1  | -0.7  | -2.3  | -3.4  | -4.0  | -4.7  | -4.7  | -5.8  | -5.9  | -4.8          | 0.1             |  |
| 9-Feb                                      | -4.5                          | -3.6  | -4.0  | -5.2                            | -5.9  | -6.2  | -7.5  | -7.2  | -5.9  | -3.8  | -1.6  | 1.2   | 2.7   | 3.4   | 2.8   | 2.3   | 0.6   | -0.5  | -1.0  | -1.5  | -1.2  | -0.7  | -0.6  | -0.8  | -2.0          | 3.4             |  |
| 10-Feb                                     | -0.9                          | -1.3  | -1.3  | -1.5                            | -1.6  | -1.8  | -2.0  | -2.5  | -2.4  | -1.6  | -1.0  | -0.4  | 0.7   | 1.5   | 2.5   | 2.1   | 1.2   | -0.9  | -1.0  | -1.0  | -1.2  | -1.1  | -0.7  | -0.3  | -0.7          | 2.5             |  |
| 11-Feb                                     | 0.1                           | 0.2   | 0.4   | 0.2                             | 0.0   | -0.4  | -2.3  | -2.9  | -2.8  | -0.8  | 0.8   | 2.2   | 2.7   | 3.2   | 3.4   | 2.4   | 0.6   | 0.6   | 0.5   | 0.8   | 0.7   | -0.2  | -1.2  | -1.6  | 0.3           | 3.4             |  |
| 12-Feb                                     | -1.9                          | -2.5  | -3.1  | -3.4                            | -4.0  | -4.5  | -5.4  | -5.5  | -4.4  | -3.0  | -1.2  | 0.8   | 2.4   | 3.2   | 2.9   | 2.6   | 2.0   | 1.3   | 0.7   | 0.3   | 0.6   | 0.8   | 0.2   | -0.1  | -0.9          | 3.2             |  |
| 13-Feb                                     | 0.2                           | 1.6   | 2.0   | 1.6                             | 2.0   | 1.7   | 0.9   | 0.2   | 0.1   | 1.1   | 0.3   | 0.0   | 0.6   | -2.1  | -5.3  | -7.9  | -8.4  | -8.9  | -9.7  | -10.3 | -11.3 | -12.3 | -13.0 | -13.9 | -3.8          | 2.0             |  |
| 14-Feb                                     | -14.8                         | -15.7   | -16.5 | -17.4                           | -18.9 | -19.9 | -20.5 | -21.1 | -19.7 | -19.1 | -17.5 | -16.6 | -15.1 | -13.8 | -12.3 | -11.6 | -11.7 | -12.0 | -13.3 | -13.8 | -14.3 | -16.3 | -16.8 | -17.2 | -16.1         | -11.6           |  |
| 15-Feb                                     | -17.5                         | -17.8   | -18.1 | -18.4                           | -18.6 | -18.7 | -19.0 | -19.4 | -19.4 | -18.6 | -16.9 | -15.5 | -13.8 | -13.1 | -13.0 | -12.6 | -13.5 | -15.5 | -16.8 | -18.2 | -18.7 | -18.0 | -16.7 | -14.9 | -16.8         | -12.6           |  |
| 16-Feb                                     | -14.4                         | -14.2   | -14.1 | -13.9                           | -13.3 | -12.3 | -11.6 | -10.9 | -10.5 | -8.9  | -6.7  | -5.2  | -3.8  | -2.2  | -0.1  | 1.2   | 1.1   | 0.4   | 0.0   | -0.1  | 0.1   | -0.3  | -2.2  | -4.0  | -6.1          | 1.2             |  |
| 17-Feb                                     | -5.1                          | -5.7  | -6.7  | -8.6                            | -9.0  | -9.7  | -10.1 | -10.4 | -10.4 | -9.6  | -8.0  | -7.1  | -6.9  | -6.8  | -6.7  | -6.2  | -6.5  | -7.5  | -9.6  | -11.3 | -12.2 | -13.2 | -14.6 | -15.5 | -9.1          | -5.1            |  |
| 18-Feb                                     | -16.5                         | -17.4   | -18.2 | -18.6                           | -18.8 | -18.8 | -18.9 | -19.3 | -19.8 | -20.0 | -19.8 | -19.2 | -18.4 | -18.3 | -17.8 | -17.6 | -18.1 | -19.4 | -20.3 | -21.2 | -22.5 | -24.2 | -24.5 | -26.5 | -19.8         | -16.5           |  |
| 19-Feb                                     | -26.3                         | -25.4   | -24.8 | -25.0                           | -23.2 | -20.5 | -19.5 | -19.0 | -18.3 | -17.3 | -16.1 | -14.8 | -13.3 | -13.1 | -12.4 | -11.5 | -11.6 | -13.4 | -14.1 | -14.6 | -15.4 | -15.9 | -16.7 | -17.4 | -17.5         | -11.5           |  |
| 20-Feb                                     | -17.9                         | -18.0   | -18.1 | -17.9                           | -17.6 | -17.5 | -17.6 | -17.8 | -17.6 | -17.0 | -15.9 | -14.6 | -14.4 | -14.2 | -14.1 | -14.4 | -15.1 | -15.7 | -16.2 | -16.8 | -18.0 | -18.7 | -19.1 | -20.5 | -16.9         | -14.1           |  |
| 21-Feb                                     | -22.2                         | -23.1   | -23.6 | -23.9                           | -25.5 | -26.7 | -27.6 | -28.9 | -28.2 | -27.2 | -26.0 | -24.8 | -23.4 | -22.2 | -21.7 | -21.2 | -21.9 | -24.2 | -26.4 | -27.3 | -28.2 | -28.7 | -29.5 | -30.3 | -25.5         | -21.2           |  |
| 22-Feb                                     | -30.6                         | -31.0   | -31.5 | -32.0                           | -31.8 | -32.0 | -32.1 | -32.3 | -28.8 | -26.9 | -25.4 | -23.9 | -22.2 | -20.7 | -19.8 | -19.2 | -19.5 | -20.4 | -21.4 | -21.8 | -22.6 | -23.5 | -24.3 | -25.3 | -25.8         | -19.2           |  |
| 23-Feb                                     | -26.7                         | -27.5   | -27.7 | -28.2                           | -28.4 | -29.6 | -29.7 | -29.8 | -29.4 | -26.0 | -21.1 | -17.9 | -16.7 | -16.2 | -16.0 | -15.9 | -16.4 | -17.3 | -18.8 | -21.6 | -22.4 | -24.7 | -24.8 | -24.5 | -23.2         | -15.9           |  |
| 24-Feb                                     | -23.8                         | -25.3   | -26.1 | -26.5                           | -27.3 | -28.2 | -28.2 | -28.4 | -26.4 | -23.6 | -20.3 | -18.8 | -17.1 | -16.8 | -17.0 | -17.7 | -18.6 | -19.9 | -20.9 | -22.2 | -23.5 | -23.4 | -23.3 | -23.3 | -22.8         | -16.8           |  |
| 25-Feb                                     | -23.6                         | -23.8   | -24.4 | -23.3                           | -21.0 | -19.1 | -18.6 | -16.7 | -15.3 | -13.7 | -11.9 | -9.4  | -7.9  | -7.1  | -6.2  | -5.8  | -6.1  | -7.2  | -8.3  | -8.9  | -9.5  | -9.9  | -10.4 | -11.7 | -13.3         | -5.8            |  |
| 26-Feb                                     | -12.2                         | -13.0   | -13.2 | -13.1                           | -14.0 | -13.4 | -12.8 | -12.4 | -11.6 | -10.6 | -9.9  | -9.4  | -8.6  | -7.7  | -6.8  | -6.8  | -7.0  | -7.7  | -8.3  | -8.4  | -8.7  | -9.1  | -9.7  | -10.1 | -10.2         | -6.8            |  |
| 27-Feb                                     | -10.4                         | -11.0   | -11.3 | -11.6                           | -12.0 | -12.4 | -12.9 | -13.0 | -12.0 | -10.4 | -9.6  | -9.1  | -8.7  | -8.8  | -8.9  | -9.2  | -10.0 | -10.5 | -11.5 | -11.7 | -11.9 | -12.4 | -12.8 | -13.2 | -11.1         | -8.7            |  |
| 28-Feb                                     | -13.6                         | -14.5   | -15.4 | -15.9                           | -17.2 | -17.8 | -17.7 | -17.5 | -17.5 | -17.1 | -16.3 | -15.2 | -14.5 | -13.3 | -12.6 | -12.1 | -12.8 | -14.3 | -15.1 | -15.5 | -16.2 | -17.4 | -17.8 | -17.4 | -15.6         | -12.1           |  |
|  |                               | -12.9   | -13.2 | -13.6                           | -13.9 | -14.1 | -14.3 | -14.5 | -14.5 | -13.8 | -12.6 | -11.2 | -9.7  | -8.6  | -8.0  | -7.8  | -7.8  | -8.4  | -9.4  | -10.2 | -10.8 | -11.3 | -11.8 | -12.2 | -12.7         | Diurnal Average |  |
|  |                               | 2.7   | 2.8   | 2.3                             | 2.3   | 2.5   | 2.1   | 1.5   | 1.5   | 1.0   | 1.1   | 1.6   | 5.1   | 5.6   | 5.3   | 4.4   | 3.2   | 2.8   | 2.5   | 1.6   | 1.1   | 1.7   | 2.6   | 3.2   | 3.1           | Diurnal Maximum |  |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Ambient Temperature (AT) - C**  
**Jackfish 1 - February 2023**





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Ambient Temperature (AT) - C  
Jackfish 1 - February 2023**

| <b>Concentration Ranges (C)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---------------------------------|------------------------|----------|---------------------|
| -50 - -20                       | 133                    | 19.79    | 19.79               |
| -20 - 0                         | 442                    | 65.77    | 85.57               |
| 0 - 10                          | 97                     | 14.43    | 100.00              |
| 10 - 20                         | 0                      | 0.00     | 100.00              |
| > 20                            | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 672

Total Number of Hours: 672



**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

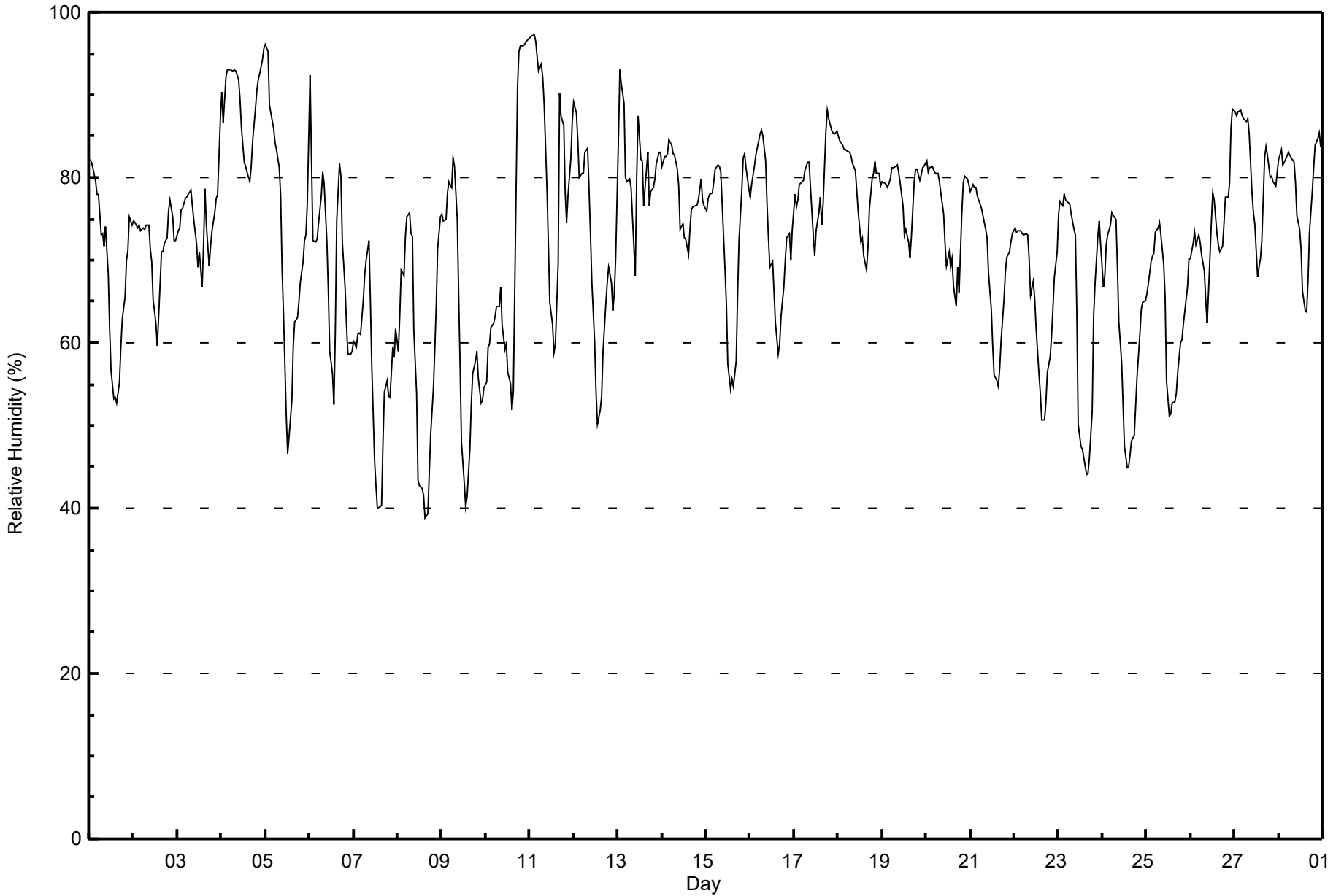
**Relative Humidity (RH) - %**  
**Jackfish 1 - February 2023**

| Maximum Value: 97.3 % on Feb 11 03:00      Maximum Daily Average: 89.0 % on Feb 4  |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Hours in Service: 672<br>Hours of Data: 672  |      |                 |               |               |
|--|-------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|--|------|-----------------|---------------|---------------|
| Minimum Value: 38.8 % on Feb 8 16:00      Minimum Daily Average: 56.4 % on Feb 7<br>Maximum Diurnal Average: 79.2 % at hour 7      Minimum Diurnal Average: 60.1 % at hour 14<br>Monthly Average: 72.22 %      Percentiles: P <sub>1</sub> = 41.5 P <sub>10</sub> = 54.6 Q <sub>1</sub> = 65.0 Median = 73.8 Q <sub>3</sub> = 80.5 P <sub>90</sub> = 85.4 P <sub>99</sub> = 96.1 |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Hours of Missing Data: 0<br>Hours of Calibration: 0<br>Percent Operational Time: 100.0 |      |                 |               |               |
| Day  | Hourly Period Ending At (MST) |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |      |                 | Daily Average | Daily Maximum |
|  | 1                             | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20   | 21   | 22   | 23   | 24              |               |               |
| 1-Feb  | 82.3                          | 81.9 | 81.2 | 79.5 | 77.9 | 78.0 | 73.0 | 73.2 | 71.8 | 74.1 | 68.4 | 61.7 | 56.7 | 53.2 | 53.3 | 52.7 | 55.3 | 59.4 | 62.9 | 65.6 | 70.0 | 71.1   | 75.2 | 74.2            | 68.9          | 82.3          |
| 2-Feb  | 74.8                          | 74.6 | 73.8 | 74.2 | 73.6 | 73.8 | 73.8 | 74.2 | 74.2 | 71.3 | 69.9 | 65.2 | 62.3 | 59.6 | 63.4 | 70.9 | 71.0 | 72.0 | 72.6 | 75.9 | 77.2 | 75.2   | 72.5 | 72.4            | 71.6          | 77.2          |
| 3-Feb  | 73.6                          | 73.9 | 76.2 | 76.3 | 77.5 | 77.6 | 78.0 | 78.5 | 76.6 | 74.9 | 72.0 | 69.2 | 71.0 | 66.9 | 71.9 | 78.6 | 74.3 | 69.3 | 71.7 | 73.5 | 75.8 | 77.5   | 78.0 | 87.1            | 75.0          | 87.1          |
| 4-Feb  | 90.4                          | 86.6 | 92.2 | 93.1 | 93.0 | 93.1 | 92.9 | 93.0 | 92.9 | 91.9 | 89.4 | 86.1 | 81.9 | 81.4 | 80.6 | 79.6 | 81.3 | 84.4 | 88.3 | 90.5 | 91.8 | 92.6   | 94.3 | 95.6            | 89.0          | 95.6          |
| 5-Feb  | 96.1                          | 95.3 | 88.8 | 87.8 | 86.0 | 84.3 | 83.3 | 81.2 | 77.8 | 68.9 | 63.7 | 51.2 | 46.6 | 48.7 | 53.1 | 59.7 | 62.5 | 63.0 | 64.9 | 67.3 | 69.8 | 72.4   | 73.1 | 76.8            | 71.8          | 96.1          |
| 6-Feb  | 92.4                          | 82.2 | 72.4 | 72.2 | 72.6 | 74.4 | 77.7 | 80.6 | 79.3 | 72.2 | 66.3 | 59.0 | 56.2 | 52.6 | 61.4 | 74.8 | 81.7 | 80.2 | 72.2 | 66.6 | 62.0 | 58.6   | 58.7 | 58.9            | 70.2          | 92.4          |
| 7-Feb  | 60.1                          | 59.5 | 61.0 | 61.2 | 61.0 | 65.2 | 68.2 | 70.1 | 72.4 | 65.2 | 57.4 | 45.7 | 42.7 | 40.1 | 40.2 | 40.3 | 47.9 | 54.1 | 55.5 | 53.5 | 53.4 | 59.5   | 58.3 | 61.8            | 56.4          | 72.4          |
| 8-Feb  | 58.9                          | 63.4 | 68.8 | 68.1 | 72.9 | 75.2 | 75.8 | 73.3 | 72.8 | 61.5 | 53.9 | 43.3 | 42.8 | 42.4 | 41.6 | 38.8 | 39.3 | 44.0 | 48.8 | 54.6 | 59.3 | 64.5   | 71.3 | 75.2            | 58.8          | 75.8          |
| 9-Feb  | 75.5                          | 74.8 | 74.9 | 78.1 | 79.5 | 78.9 | 82.4 | 81.4 | 74.9 | 65.7 | 57.4 | 48.0 | 43.1 | 40.2 | 41.3 | 47.1 | 52.5 | 56.3 | 57.8 | 59.0 | 55.7 | 52.6   | 53.0 | 54.6            | 61.9          | 82.4          |
| 10-Feb   | 55.2                          | 59.5 | 59.8 | 61.9 | 62.4 | 63.2 | 64.5 | 64.3 | 66.8 | 62.2 | 59.2 | 59.8 | 56.4 | 55.1 | 51.8 | 54.1 | 66.2 | 91.0 | 95.3 | 95.9 | 96.0 | 96.2   | 96.4 | 96.8            | 70.4          | 96.8          |
| 11-Feb   | 97.0                          | 97.2 | 97.3 | 96.4 | 94.5 | 92.9 | 93.8 | 92.0 | 88.8 | 78.6 | 72.0 | 65.0 | 62.3 | 58.9 | 59.9 | 69.7 | 90.3 | 87.4 | 86.4 | 78.2 | 74.6 | 77.9   | 82.2 | 86.6            | 82.5          | 97.3          |
| 12-Feb   | 89.2                          | 87.7 | 84.6 | 80.1 | 80.4 | 80.5 | 83.1 | 83.6 | 78.6 | 73.4 | 67.5 | 60.2 | 54.0 | 50.3 | 51.9 | 53.6 | 59.0 | 64.8 | 67.3 | 69.1 | 67.3 | 64.0   | 65.9 | 70.2            | 70.3          | 89.2          |
| 13-Feb   | 84.7                          | 93.0 | 91.4 | 89.0 | 79.9 | 79.6 | 79.8 | 78.8 | 75.2 | 68.2 | 80.0 | 87.5 | 82.2 | 82.1 | 76.7 | 78.9 | 83.0 | 76.5 | 78.3 | 78.8 | 79.9 | 81.7   | 83.0 | 83.0            | 81.3          | 93.0          |
| 14-Feb   | 81.4                          | 82.5 | 82.5 | 82.9 | 84.5 | 83.8 | 82.8 | 82.7 | 81.0 | 79.1 | 73.8 | 74.4 | 72.6 | 72.5 | 70.7 | 73.8 | 76.0 | 76.4 | 76.7 | 76.6 | 77.3 | 79.8   | 77.3 | 76.6            | 78.2          | 84.5          |
| 15-Feb   | 76.0                          | 77.5 | 78.0 | 78.2 | 79.5 | 81.0 | 81.6 | 81.4 | 80.6 | 76.7 | 69.0 | 64.8 | 57.5 | 54.4 | 55.6 | 54.8 | 57.8 | 65.7 | 72.3 | 78.4 | 82.4 | 82.8   | 81.1 | 78.6            | 72.7          | 82.8          |
| 16-Feb   | 77.7                          | 79.1 | 81.4 | 82.8 | 83.6 | 85.2 | 85.8 | 85.0 | 82.0 | 76.8 | 72.6 | 69.1 | 69.7 | 66.1 | 62.3 | 58.6 | 59.9 | 63.3 | 66.7 | 70.1 | 72.7 | 73.3   | 69.9 | 73.8            | 73.6          | 85.8          |
| 17-Feb   | 78.0                          | 76.5 | 77.3 | 79.1 | 79.4 | 79.7 | 80.9 | 81.9 | 81.9 | 78.9 | 73.1 | 70.4 | 73.5 | 75.7 | 77.6 | 74.2 | 76.8 | 85.6 | 88.1 | 87.1 | 85.8 | 85.3   | 85.3 | 85.6            | 79.9          | 88.1          |
| 18-Feb   | 84.9                          | 84.4 | 83.9 | 83.5 | 83.5 | 83.2 | 83.1 | 82.6 | 81.7 | 80.8 | 78.5 | 75.8 | 72.1 | 72.7 | 70.5 | 68.7 | 71.5 | 76.1 | 79.9 | 80.5 | 81.8 | 80.5   | 80.5 | 78.9            | 79.1          | 84.9          |
| 19-Feb   | 79.4                          | 79.3 | 79.1 | 78.8 | 79.9 | 81.2 | 81.2 | 81.4 | 81.5 | 80.5 | 79.4 | 76.6 | 73.0 | 73.8 | 72.3 | 70.4 | 72.9 | 79.5 | 81.0 | 81.0 | 79.6 | 80.4   | 81.2 | 81.3            | 78.5          | 81.5          |
| 20-Feb   | 82.1                          | 80.8 | 81.2 | 81.3 | 80.8 | 80.5 | 80.5 | 79.5 | 78.2 | 75.5 | 72.1 | 69.3 | 71.0 | 69.1 | 70.2 | 66.9 | 64.4 | 69.1 | 66.1 | 75.8 | 79.3 | 80.1   | 79.8 | 79.2            | 75.5          | 82.1          |
| 21-Feb   | 78.2                          | 79.1 | 78.9 | 78.7 | 77.8 | 76.8 | 76.3 | 75.3 | 73.8 | 72.7 | 68.5 | 64.0 | 59.6 | 56.0 | 55.4 | 54.8 | 56.9 | 60.3 | 65.1 | 68.6 | 70.3 | 71.0   | 72.1 | 73.2            | 69.3          | 79.1          |
| 22-Feb   | 73.8                          | 73.5 | 73.6 | 73.6 | 73.2 | 73.1 | 73.2 | 73.0 | 70.2 | 65.8 | 67.5 | 65.3 | 61.7 | 56.2 | 53.9 | 50.7 | 50.7 | 52.9 | 56.5 | 58.3 | 60.9 | 64.2   | 68.0 | 71.0            | 65.0          | 73.8          |
| 23-Feb   | 75.6                          | 77.2 | 76.6 | 78.0 | 77.4 | 77.0 | 76.8 | 75.5 | 73.8 | 73.1 | 64.0 | 50.2 | 47.4 | 47.0 | 46.2 | 44.1 | 44.2 | 46.1 | 51.7 | 63.2 | 67.1 | 72.9   | 74.8 | 71.9            | 64.7          | 78.0          |
| 24-Feb   | 66.9                          | 68.1 | 71.8 | 73.1 | 74.2 | 75.8 | 75.4 | 75.0 | 69.1 | 62.5 | 57.6 | 52.6 | 47.5 | 44.8 | 45.2 | 46.4 | 48.2 | 48.8 | 52.3 | 55.9 | 61.0 | 64.1   | 64.9 | 65.0            | 61.1          | 75.8          |
| 25-Feb   | 65.9                          | 67.1 | 69.9 | 70.5 | 70.8 | 73.3 | 74.0 | 74.6 | 73.0 | 69.5 | 65.5 | 55.4 | 51.2 | 51.4 | 52.7 | 52.8 | 54.0 | 56.4 | 60.0 | 60.3 | 62.2 | 63.8   | 66.8 | 70.2            | 63.8          | 74.6          |
| 26-Feb   | 70.2                          | 72.1 | 73.4 | 71.9 | 73.1 | 72.2 | 70.7 | 68.6 | 65.1 | 62.3 | 66.3 | 74.6 | 78.2 | 77.3 | 73.2 | 71.9 | 70.9 | 71.7 | 74.5 | 77.7 | 77.7 | 79.3   | 86.0 | 88.3            | 73.6          | 88.3          |
| 27-Feb   | 88.0                          | 87.4 | 87.9 | 88.2 | 87.4 | 87.1 | 86.8 | 87.1 | 85.2 | 78.1 | 75.7 | 74.3 | 68.0 | 69.2 | 70.2 | 72.3 | 82.4 | 83.8 | 82.8 | 80.1 | 80.1 | 79.5   | 79.1 | 80.7            | 80.9          | 88.2          |
| 28-Feb   | 82.2                          | 83.4 | 81.6 | 81.9 | 82.2 | 83.0 | 82.8 | 82.4 | 81.9 | 79.5 | 75.5 | 73.8 | 71.4 | 66.3 | 63.9 | 63.7 | 67.6 | 73.4 | 78.3 | 81.2 | 83.9 | 84.8   | 85.4 | 83.7            | 78.1          | 85.4          |
| 78.2 78.5 78.6 78.6 78.5 78.9 79.2 78.9 77.2 72.9 69.1 64.7 61.9 60.1 60.3 61.5 64.9 68.3 70.5 72.3 73.4 74.5 75.5 76.8  |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |      | Diurnal Average |               |               |
| 97.0 97.2 97.3 96.4 94.5 93.1 93.8 93.0 92.9 91.9 89.4 87.5 82.2 82.1 80.6 79.6 90.3 91.0 95.3 95.9 96.0 96.2 96.4 96.8  |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |      | Diurnal Maximum |               |               |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Relative Humidity (RH) - %**  
**Jackfish 1 - February 2023**







**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Relative Humidity (RH) - %  
Jackfish 1 - February 2023**

| <b>Concentration Ranges (%)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---------------------------------|------------------------|----------|---------------------|
| 0 - 20                          | 0                      | 0.00     | 0.00                |
| 20 - 40                         | 2                      | 0.30     | 0.30                |
| 40 - 60                         | 116                    | 17.26    | 17.56               |
| 60 - 80                         | 376                    | 55.95    | 73.51               |
| 80 - 100                        | 178                    | 26.49    | 100.00              |

Total Number of Valid Hours: 672

Total Number of Hours: 672



# Wood Buffalo Environmental Association

## Summary of Hour Averages

# Wind Speed (WS) - km/h

## Jackfish 1 - February 2023

|  |  |                                |
|--|--|--------------------------------|
| Maximum Speed: 20 km/h on Feb 13 16:00             | Maximum Daily Speed Average: 9.1 km/h on Feb 1   | Hours in Service: 672          |
| Minimum Speed Value: 0 km/h on Feb 23 10:00        | Minimum Daily Speed Average: 0.6 km/h on Feb 23  | Hours of Data: 662             |
| Maximum Diurnal Speed Average: 2.5 km/h at hour 16 | Minimum Diurnal Speed Average: 1.0 km/h at hour 20   | Hours of Missing Data: 10      |
| Monthly Average Velocity: 1.4 km/h 260.2 deg       | Percentiles: P <sub>1</sub> = 1 P <sub>10</sub> = 2 Q <sub>1</sub> = 4 Median = 5 Q <sub>3</sub> = 7 P <sub>90</sub> = 10 P <sub>99</sub> = 15 | Percent Operational Time: 98.5 |

| Day    | Hourly Period Ending At (MST) |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |        | Daily Average | Daily Maximum |
|--------|-------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|---------------|---------------|
|        | 1                             | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     | 10    | 11    | 12    | 13    | 14    | 15    | 16    | 17    | 18    | 19    | 20    | 21    | 22    | 23    | 24     |               |               |
| 1-Feb  | WNW2                          | WNW4  | NW5   | NNW9  | NNW12 | NNW13 | NNW15 | NNW11 | NNW16 | NNW10 | NNW14 | NNW12 | NW11  | NNW13 | NNW14 | NNW13 | NNW13 | NNW12 | NNW10 | NNW8  | W3    | WSW2  | SW2   | WSW2   | NNW9.1        | NNW16         |
| 2-Feb  | SSW3                          | SSW3  | S4    | S6    | S6    | S8    | S7    | S9    | S7    | S8    | S7    | S7    | S9    | SSE10 | SSE10 | SSE11 | SSE12 | SSE10 | S10   | S7    | S8    | S9    | S9    | S8     | S7.7          | SSE12         |
| 3-Feb  | S8                            | SSW9  | S9    | SSW9  | SSW9  | SSW8  | SSW7  | SSW7  | SSW8  | SSW8  | SW8   | SW7   | W4    | NW5   | NW9   | NW10  | WSW4  | SW2   | SW1   | SSW3  | S2    | WSW2  | ENE1  | ENE4   | SW4.0         | NW10          |
| 4-Feb  | SSE2                          | E3    | ESE3  | ESE3  | SE5   | SE4   | SE3   | SE4   | E3    | SE4   | NE1   | SSE1  | N2    | ESE1  | W1    | E3    | SE2   | S3    | S5    | S6    | S4    | S6    | S6    | SSW2.4 | S6            |               |
| 5-Feb  | SSW5                          | SSW5  | SSW6  | S7    | S7    | S7    | S5    | SSW6  | SSW6  | SSW7  | SSW6  | S4    | SSW6  | SSW7  | SSW4  | SSW5  | SSW5  | SW6   | SW6   | SW5   | SW4   | SW4   | W4    | WNW6   | SSW5.1        | S7            |
| 6-Feb  | NW8                           | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | WNW5  | NW4   | W4    | WSW6  | SSW5  | SSW4  | S7    | SSW8  | SSW7  | SSW8  | SSW8  | WSW5  | SW6    | ---           | NW8           |
| 7-Feb  | SW5                           | SW6   | SW7   | W5    | WNW7  | WNW6  | W6    | WNW7  | NW10  | WNW9  | WNW7  | WNW5  | WNW6  | WNW7  | WNW6  | W5    | W5    | WSW3  | SW2   | SW3   | SW4   | W2    | SSW3  | SSW4   | W4.6          | WNW10         |
| 8-Feb  | SW4                           | SW4   | SW1   | SSW2  | SSW0  | SW2   | WSW2  | SW4   | WSW3  | W3    | W3    | WNW2  | WNW3  | WNW3  | WNW3  | W2    | SW2   | SW5   | SW6   | SW6   | SW7   | SSW6  | SSW6  | SSW5   | SW3.1         | SW7           |
| 9-Feb  | SSW5                          | SSW6  | SW6   | SW6   | SSW6  | SSW5  | SSW5  | SSW6  | SSW6  | SSW7  | SW8   | SSW7  | SSW7  | SSW7  | SSW5  | S5    | S5    | S6    | S6    | S7    | S6    | SSW5  | SSW5  | SSW4   | SSW5.8        | SW8           |
| 10-Feb | SSE3                          | S4    | S3    | S3    | S3    | S4    | SSE4  | SSE3  | S4    | SSE2  | SE4   | S3    | SE1   | SE2   | N5    | NNW3  | NW5   | NNW7  | WNW3  | WNW3  | WNW2  | WNW1  | WNW1  | WNW1   | SSW0.9        | NNW7          |
| 11-Feb | WNW3                          | W1    | WSW3  | WNW4  | WNW4  | W3    | SSW5  | SSW5  | SW5   | SSW5  | SW5   | WSW6  | W7    | W7    | WSW5  | W6    | WSW6  | SW5   | SW4   | WNW5  | WNW9  | WNW8  | NW5   | NW4    | W4.2          | WNW9          |
| 12-Feb | WSW4                          | SW5   | WSW4  | SW3   | WSW3  | SW4   | SSW6  | SW4   | SW5   | SW8   | SW6   | SW6   | WSW5  | WSW4  | SSW5  | SSW4  | SSW5  | S6    | S7    | S6    | S8    | S11   | S11   | S9     | SSW5.3        | S11           |
| 13-Feb | SSW9                          | SSW9  | SSW9  | SSW7  | SW7   | SW8   | SW7   | WSW6  | WSW7  | WSW8  | WNW6  | WNW5  | WNW7  | NW15  | NNW19 | NNW20 | NNW16 | NNW16 | NNW20 | NNW18 | NNW14 | NNW14 | NNW11 | NNW13  | NW7.4         | NNW20         |
| 14-Feb | NNW12                         | NW9   | NNW11 | NNW10 | N6    | N4    | NNE3  | SE2   | NE1   | ENE2  | N0    | SSE2  | S3    | SSW4  | SW4   | WNW3  | WNW2  | NNW10 | NNW10 | NNW11 | NNW9  | NNE7  | NNE4  | NE3    | NNW4.0        | NNW12         |
| 15-Feb | NE4                           | ENE4  | ENE4  | ENE4  | E1    | E2    | ESE3  | ESE4  | E2    | E3    | NNE4  | NNW3  | SSE3  | SSE4  | SSE3  | NNE1  | ENE3  | SSE3  | S3    | S4    | S5    | S5    | S7    | S6     | SE1.9         | S7            |
| 16-Feb | S6                            | S7    | S8    | S8    | S9    | S9    | S10   | S10   | S10   | S8    | SSW7  | SSW8  | SSW9  | SSW9  | SSW7  | SW8   | WSW7  | SW5   | NW4   | WNW5  | NW7   | NW13  | NNW13 | NW10   | SW4.9         | NW13          |
| 17-Feb | NNW11                         | NNW14 | N10   | N6    | NNE5  | NNE5  | ENE2  | ESE3  | ESE3  | E2    | NW3   | W3    | WNW3  | WNW3  | WNW3  | WNW3  | NW4   | NW4   | N6    | NNE6  | NE6   | NE5   | NE3   | N5     | N3.6          | NNW14         |
| 18-Feb | N4                            | N5    | N5    | NNE5  | NE5   | NE5   | NNE6  | NNE5  | N6    | N6    | N6    | NNE7  | N6    | NNW6  | N6    | NNE6  | NE3   | E1    | ESE2  | SE2   | S4    | S3    | S4    | SSW4   | NNE3.1        | NNE7          |
| 19-Feb | S6                            | S6    | S5    | S3    | S5    | SSE6  | SSE8  | SSE7  | SSE7  | SSE8  | SE8   | SE8   | E6    | ESE7  | SE7   | NNE5  | N5    | N6    | N5    | NE4   | NNE4  | N4    | N5    | N3     | SE2.5         | SE8           |
| 20-Feb | NNW6                          | NNW9  | NNW7  | NNW7  | NW7   | NW6   | NW5   | NW7   | NW6   | NW5   | NW4   | WNW4  | NW4   | WNW5  | NW6   | NW8   | NNW9  | N6    | NNW7  | NNE6  | ENE5  | NNE4  | NNE6  | NE7    | NNW5.3        | NNW9          |
| 21-Feb | NE5                           | N3    | NNW6  | NNW9  | NNW7  | NW4   | NW7   | NNW5  | NW8   | NNW10 | NNW12 | NNW10 | NNW10 | NNW11 | NNW10 | NNW10 | NNW13 | N9    | N8    | N5    | NNE6  | NNW9  | N8    | NNW5   | NNW7.5        | NNW13         |
| 22-Feb | NNW4                          | NW4   | NW5   | WNW2  | WNW2  | W2    | W2    | W2    | NW1   | NNW3  | N6    | N5    | N6    | N5    | NNW5  | N7    | NNE5  | N4    | N3    | NNE2  | NE3   | NE2   | N2    | NW2    | NNW3.0        | N7            |
| 23-Feb | WNW1                          | WNW2  | NNW3  | W1    | W2    | WSW1  | W1    | W2    | WNW1  | ESE0  | E1    | SE3   | N4    | NNE4  | N5    | N5    | NE2   | ESE2  | S2    | SSW1  | SW2   | SSW2  | SW2   | SW4    | NW0.6         | N5            |
| 24-Feb | SW4                           | SSW5  | S6    | SSW4  | SSW4  | S6    | S6    | SSW6  | SSW5  | SSW6  | S9    | S10   | S8    | SSW10 | SSW9  | S9    | S9    | SSW9  | S9    | S9    | SSW8  | SSW8  | SSW7  | SSW8   | SSW7.2        | SSW10         |
| 25-Feb | SSW8                          | SW7   | SW7   | SW7   | SW5   | SW6   | SW6   | WNW5  | WNW5  | WNW5  | W4    | WSW5  | WSW5  | W3    | SW4   | SSW3  | SSW4  | SSW4  | SSW4  | SSW4  | S5    | S6    | S5    | S4     | SW4.1         | SSW8          |
| 26-Feb | S6                            | SSE7  | SSE7  | SSE7  | SE5   | SSE7  | SE7   | SE7   | ESE6  | ESE7  | ESE6  | ESE7  | E10   | ESE11 | E12   | ENE10 | ENE9  | ESE9  | ESE9  | E7    | SE5   | SE4   | E2    | ENE2   | ESE6.0        | E12           |
| 27-Feb | ENE3                          | N2    | N4    | NNW9  | NNW8  | NW6   | NW7   | NW7   | NW6   | NW11  | NW10  | NW8   | NW8   | NW6   | NW8   | NW9   | NNW11 | NNW10 | NW7   | NNW10 | NNW7  | N5    | NNW6  | NNW5   | NW6.9         | NW11          |
| 28-Feb | N5                            | NNE5  | NE5   | NE4   | NE4   | NE2   | N2    | N3    | NNE5  | NNE5  | N5    | NNE5  | NE4   | NE5   | N4    | NNE4  | ENE4  | SE3   | NE2   | SSE3  | SE3   | S4    | S4    | S4     | NE2.4         | NNE5          |

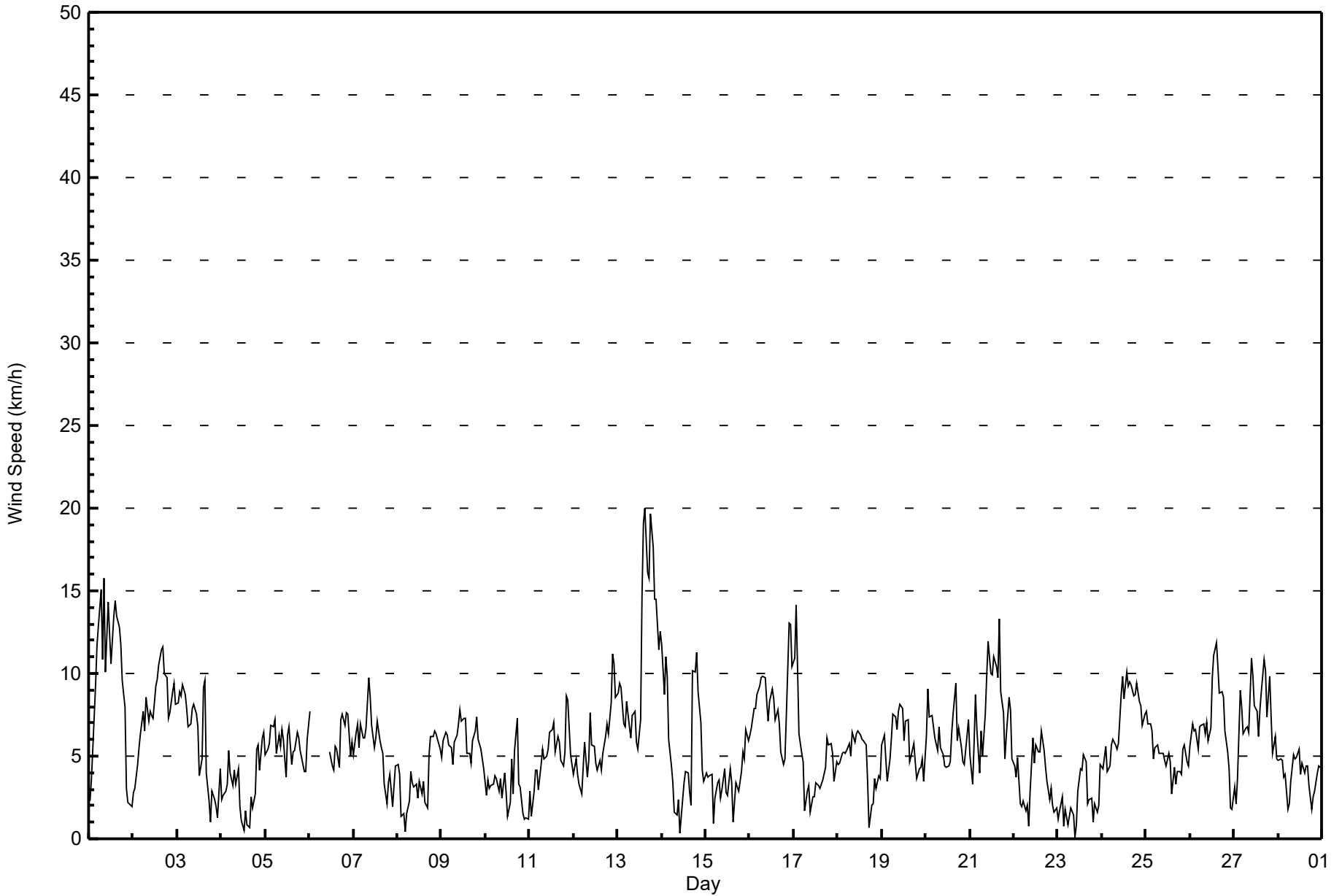
|   |                                    |
|---|------------------------------------|
| WSW1.6WSW1.9WSW1.6WSW1.3WSW1.3 SW1.8 SW1.9 SW2.0WSW1.7WSW1.5 W1.7 W1.7 W1.7WNW1.7WNW2.2 NW2.5 NW1.6WNW1.2 W1.3 W1.0 SW1.4WSW1.4WSW1.3WSW1.3<br>NNW12 NNW14 NNW11 NNW10 NNW12 NNW13 NNW15 NNW11 NNW16 NW11 NNW14 NNW12 NNW11 NNW15 NNW19 NNW20 NNW16 NNW16 NNW20 NNW18 NNW14 NNW14 NNW13 NNW13 | Diurnal Average<br>Diurnal Maximum |
|---|------------------------------------|

UO - Unstable Operation  
All monthly, daily, and diurnal averages have been calculated using vector methods



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Wind Speed (WS) - km/h**  
**Jackfish 1 - February 2023**





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Wind Speed (WS) - km/h  
Jackfish 1 - February 2023**

| <b>Wind Speed Ranges (km/h)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---------------------------------|------------------------|----------|---------------------|
| 0 - 5                           | 349                    | 52.72    | 52.72               |
| 6 - 11                          | 284                    | 42.90    | 95.62               |
| 12 - 19                         | 27                     | 4.08     | 99.70               |
| 20 - 28                         | 2                      | 0.30     | 100.00              |
| 29 - 38                         | 0                      | 0.00     | 100.00              |
| > 38                            | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 662

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Wind Speed (WS) - km/h  
Jackfish 1 - February 2023**

| Wind Speed<br>Ranges (km/h) | Wind Direction |     |    |     |    |     |    |     |    |     |    |     |    |     |    |     | Totals |
|-----------------------------|----------------|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|--------|
|                             | N              | NNE | NE | ENE | E  | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |        |
| 0 - 5                       | 31             | 20  | 21 | 12  | 11 | 10  | 16 | 13  | 32 | 42  | 34 | 19  | 23 | 37  | 18 | 10  | 349    |
| 6 - 11                      | 16             | 8   | 2  | 2   | 3  | 8   | 5  | 13  | 61 | 50  | 25 | 7   | 4  | 14  | 27 | 39  | 284    |
| 12 - 19                     | 0              | 0   | 0  | 0   | 1  | 0   | 0  | 1   | 0  | 0   | 0  | 0   | 0  | 0   | 2  | 23  | 27     |
| 20 - 28                     | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 2   | 2      |
| 29 - 38                     | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| > 38                        | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| <b>Totals</b>               | 47             | 28  | 23 | 14  | 15 | 18  | 21 | 27  | 93 | 92  | 59 | 26  | 27 | 51  | 47 | 74  | 662    |

Total Number of Valid Hours: 662

Total Number of Hours: 672





**Wood Buffalo Environmental Association**  
**Summary of Hour Standard Deviations**

**Wind Speed (WS) - km/h**  
**Jackfish 1 - February 2023**

| Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0<br>Maximum Value: 5 km/h on Feb 13 14:00<br>Minimum Value: 0 km/h on Feb 15 20:00<br>Percentiles: P <sub>1</sub> = 1 P <sub>10</sub> = 1 Q <sub>1</sub> = 1 Median = 2 Q <sub>3</sub> = 2 P <sub>90</sub> = 3 P <sub>99</sub> = 4 |                               |    |    |    |    |    |    |    |    |    |    |    |    | Hours in Service: 672<br>Hours of Data: 662<br>Hours of Missing Data: 10<br>Hours of Calibration: 0<br>Percent Operational Time: 98.5 |    |    |    |    |    |    |    |    |    |    |               |  |  |
|---|-------------------------------|----|----|----|----|----|----|----|----|----|----|----|----|---|----|----|----|----|----|----|----|----|----|----|---------------|--|--|
| Day   | Hourly Period Ending At (MST) |    |    |    |    |    |    |    |    |    |    |    |    |   |    |    |    |    |    |    |    |    |    |    | Daily Maximum |  |  |
|   | 1                             | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 | 14  | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |               |  |  |
| 1-Feb   | 1                             | 1  | 2  | 4  | 4  | 4  | 3  | 3  | 4  | 3  | 4  | 3  | 3  | 3   | 4  | 4  | 3  | 3  | 1  | 1  | 1  | 1  | 1  | 1  | 4             |  |  |
| 2-Feb   | 2                             | 1  | 1  | 1  | 1  | 1  | 2  | 2  | 2  | 3  | 3  | 2  | 3  | 3   | 3  | 4  | 4  | 4  | 4  | 2  | 2  | 3  | 3  | 3  | 4             |  |  |
| 3-Feb   | 3                             | 3  | 3  | 3  | 3  | 3  | 3  | 2  | 3  | 3  | 3  | 2  | 2  | 2   | 3  | 3  | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 2  | 3             |  |  |
| 4-Feb   | 1                             | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 2  | 1  | 1  | 1  | 1   | 1  | 1  | 1  | 1  | 1  | 1  | 2  | 2  | 2  | 2  | 2             |  |  |
| 5-Feb   | 1                             | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 1  | 2  | 2   | 2  | 1  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2             |  |  |
| 6-Feb   | 4                             | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO | 2  | 2  | 2   | 3  | 2  | 2  | 2  | 2  | 2  | 3  | 3  | 2  | 3  | 4             |  |  |
| 7-Feb   | 2                             | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 4  | 3  | 2  | 2  | 3  | 4   | 3  | 3  | 3  | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 4             |  |  |
| 8-Feb   | 1                             | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 2  | 1   | 2  | 1  | 1  | 1  | 2  | 2  | 2  | 2  | 2  | 1  | 2             |  |  |
| 9-Feb   | 1                             | 2  | 2  | 2  | 2  | 2  | 1  | 3  | 2  | 2  | 3  | 3  | 3  | 3   | 2  | 2  | 1  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 3             |  |  |
| 10-Feb  | 1                             | 1  | 1  | 1  | 1  | 1  | 2  | 1  | 1  | 2  | 1  | 2  | 1  | 1   | 2  | 2  | 4  | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 4             |  |  |
| 11-Feb  | 1                             | 1  | 2  | 2  | 2  | 2  | 1  | 2  | 2  | 2  | 2  | 3  | 3  | 3   | 3  | 3  | 3  | 2  | 2  | 3  | 3  | 3  | 2  | 2  | 3             |  |  |
| 12-Feb  | 2                             | 2  | 2  | 2  | 2  | 2  | 2  | 1  | 2  | 2  | 2  | 2  | 2  | 2   | 2  | 2  | 2  | 2  | 2  | 2  | 3  | 3  | 3  | 3  | 3             |  |  |
| 13-Feb  | 3                             | 4  | 4  | 2  | 3  | 3  | 3  | 3  | 4  | 4  | 4  | 3  | 3  | 5   | 5  | 5  | 4  | 5  | 4  | 4  | 3  | 3  | 2  | 2  | 5             |  |  |
| 14-Feb  | 3                             | 2  | 3  | 2  | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1   | 2  | 1  | 1  | 3  | 3  | 2  | 3  | 3  | 1  | 1  | 3             |  |  |
| 15-Feb  | 2                             | 1  | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 2  | 1  | 2   | 2  | 2  | 1  | 1  | 0  | 0  | 1  | 1  | 2  | 2  | 2             |  |  |
| 16-Feb  | 2                             | 2  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 2  | 3  | 3  | 3   | 3  | 3  | 3  | 3  | 2  | 2  | 2  | 5  | 4  | 3  | 5             |  |  |
| 17-Feb  | 3                             | 3  | 4  | 2  | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 2  | 1  | 1   | 1  | 1  | 1  | 2  | 2  | 2  | 2  | 2  | 1  | 1  | 4             |  |  |
| 18-Feb  | 1                             | 1  | 1  | 2  | 2  | 2  | 2  | 2  | 2  | 1  | 2  | 2  | 2  | 2   | 2  | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 2             |  |  |
| 19-Feb  | 1                             | 1  | 1  | 1  | 1  | 1  | 2  | 2  | 2  | 2  | 2  | 3  | 2  | 2   | 2  | 2  | 2  | 2  | 2  | 1  | 1  | 1  | 1  | 1  | 3             |  |  |
| 20-Feb  | 2                             | 2  | 1  | 2  | 2  | 1  | 1  | 2  | 2  | 2  | 2  | 2  | 1  | 1   | 2  | 2  | 3  | 2  | 2  | 2  | 2  | 2  | 2  | 3  | 3             |  |  |
| 21-Feb  | 2                             | 1  | 2  | 2  | 2  | 2  | 2  | 2  | 1  | 3  | 2  | 2  | 2  | 3   | 3  | 3  | 3  | 3  | 3  | 1  | 2  | 2  | 2  | 1  | 3             |  |  |
| 22-Feb  | 1                             | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 2  | 2  | 2  | 2   | 2  | 2  | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 2             |  |  |
| 23-Feb  | 1                             | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 2  | 2   | 2  | 2  | 1  | 1  | 1  | 1  | 2  | 2  | 2  | 1  | 2             |  |  |
| 24-Feb  | 1                             | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 2  | 2  | 3  | 4  | 3  | 4   | 3  | 3  | 4  | 3  | 3  | 3  | 3  | 3  | 3  | 4  | 4             |  |  |
| 25-Feb  | 3                             | 3  | 2  | 2  | 2  | 2  | 2  | 3  | 2  | 2  | 2  | 2  | 2  | 2   | 2  | 2  | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 3             |  |  |
| 26-Feb  | 1                             | 1  | 1  | 1  | 1  | 1  | 2  | 1  | 2  | 2  | 2  | 2  | 3  | 4   | 4  | 4  | 3  | 3  | 3  | 2  | 2  | 2  | 1  | 1  | 4             |  |  |
| 27-Feb  | 1                             | 1  | 1  | 2  | 3  | 1  | 1  | 1  | 1  | 3  | 3  | 2  | 3  | 2   | 2  | 3  | 2  | 2  | 2  | 3  | 2  | 1  | 1  | 1  | 3             |  |  |
| 28-Feb  | 1                             | 1  | 2  | 2  | 2  | 1  | 1  | 1  | 2  | 1  | 2  | 2  | 2  | 2   | 2  | 2  | 2  | 2  | 2  | 1  | 1  | 1  | 1  | 1  | 2             |  |  |
|   |                               |    |    |    |    |    |    |    |    |    |    |    |    | Diurnal Maximum   |    |    |    |    |    |    |    |    |    |    |               |  |  |
| UO - Unstable Operation   |                               |    |    |    |    |    |    |    |    |    |    |    |    |   |    |    |    |    |    |    |    |    |    |    |               |  |  |



**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

**Wind Direction (WD) - deg**  
**Jackfish 1 - February 2023**

|  |                                |
|--|--------------------------------|
| Direction of Maximum Speed: 336 deg on Feb 13 16:00          | Hours in Service: 672          |
| Direction of Maximum Daily Speed Average: 329.8 deg on Feb 1 | Hours of Data: 662             |
| Direction of Minimum Speed: 107 deg on Feb 23 10:00          | Hours of Missing Data: 10      |
| Direction of Minimum Daily Speed Average: 0.6 deg on Feb 23  | Percent Operational Time: 98.5 |
| Monthly Average Direction: 260.2 deg                         |                                |

| Day    | Hourly Period Ending At (MST) |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Daily Average |
|--------|-------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------------|
|        | 1                             | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     | 10    | 11    | 12    | 13    | 14    | 15    | 16    | 17    | 18    | 19    | 20    | 21    | 22    | 23    | 24    |               |
| 1-Feb  | 301                           | 303   | 309   | 327   | 342   | 340   | 335   | 327   | 330   | 341   | 331   | 331   | 323   | 332   | 333   | 335   | 334   | 336   | 336   | 338   | 275   | 252   | 234   | 238   | 329.8         |
| 2-Feb  | 212                           | 210   | 188   | 190   | 190   | 188   | 185   | 187   | 180   | 178   | 172   | 172   | 169   | 164   | 167   | 163   | 164   | 168   | 175   | 176   | 178   | 185   | 188   | 189   | 177.7         |
| 3-Feb  | 191                           | 198   | 191   | 194   | 194   | 200   | 196   | 200   | 206   | 207   | 216   | 216   | 270   | 310   | 318   | 325   | 241   | 226   | 223   | 198   | 191   | 249   | 61    | 64    | 215.4         |
| 4-Feb  | 152                           | 94    | 105   | 114   | 137   | 144   | 127   | 131   | 94    | 140   | 34    | 52    | 152   | 352   | 123   | 261   | 96    | 140   | 177   | 185   | 188   | 191   | 184   | 187   | 148.4         |
| 5-Feb  | 195                           | 196   | 198   | 186   | 191   | 187   | 189   | 196   | 202   | 195   | 194   | 169   | 195   | 193   | 195   | 196   | 211   | 217   | 219   | 216   | 220   | 225   | 278   | 299   | 203.6         |
| 6-Feb  | 304                           | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | UO    | 296   | 306   | 272   | 246   | 213   | 195   | 189   | 197   | 200   | 205   | 212   | 239   | 220   | --            |
| 7-Feb  | 234                           | 218   | 218   | 265   | 298   | 290   | 263   | 292   | 304   | 303   | 301   | 302   | 293   | 297   | 286   | 266   | 259   | 237   | 232   | 221   | 221   | 265   | 201   | 206   | 269.8         |
| 8-Feb  | 228                           | 219   | 234   | 208   | 201   | 228   | 250   | 225   | 242   | 267   | 270   | 290   | 284   | 302   | 282   | 278   | 216   | 217   | 215   | 218   | 219   | 203   | 194   | 196   | 230.1         |
| 9-Feb  | 197                           | 204   | 222   | 217   | 212   | 208   | 201   | 209   | 213   | 211   | 215   | 212   | 205   | 205   | 196   | 180   | 178   | 182   | 179   | 182   | 191   | 200   | 198   | 195   | 201.3         |
| 10-Feb | 160                           | 182   | 180   | 175   | 177   | 182   | 163   | 164   | 181   | 147   | 145   | 188   | 125   | 133   | 352   | 339   | 317   | 330   | 302   | 288   | 285   | 284   | 294   | 294   | 211.1         |
| 11-Feb | 296                           | 281   | 243   | 298   | 290   | 270   | 212   | 209   | 216   | 206   | 227   | 254   | 261   | 263   | 242   | 268   | 238   | 229   | 219   | 296   | 301   | 302   | 304   | 307   | 260.8         |
| 12-Feb | 252                           | 233   | 238   | 228   | 241   | 231   | 212   | 217   | 219   | 219   | 222   | 230   | 242   | 244   | 211   | 208   | 194   | 190   | 185   | 181   | 183   | 184   | 188   | 190   | 208.1         |
| 13-Feb | 200                           | 203   | 203   | 201   | 215   | 217   | 229   | 242   | 249   | 256   | 292   | 292   | 298   | 324   | 328   | 336   | 339   | 341   | 334   | 333   | 333   | 334   | 336   | 337   | 307.9         |
| 14-Feb | 331                           | 318   | 333   | 339   | 0     | 352   | 15    | 146   | 50    | 70    | 360   | 162   | 191   | 192   | 230   | 301   | 283   | 336   | 339   | 335   | 342   | 16    | 17    | 44    | 339.7         |
| 15-Feb | 47                            | 68    | 62    | 71    | 90    | 80    | 113   | 102   | 86    | 101   | 17    | 346   | 159   | 150   | 158   | 31    | 76    | 162   | 180   | 181   | 184   | 183   | 186   | 181   | 127.2         |
| 16-Feb | 183                           | 181   | 180   | 181   | 183   | 184   | 184   | 190   | 189   | 191   | 195   | 197   | 195   | 199   | 208   | 227   | 245   | 232   | 308   | 297   | 307   | 326   | 331   | 324   | 216.9         |
| 17-Feb | 331                           | 331   | 349   | 4     | 12    | 26    | 69    | 107   | 109   | 97    | 306   | 261   | 300   | 298   | 293   | 298   | 304   | 326   | 5     | 33    | 44    | 41    | 45    | 10    | 354.0         |
| 18-Feb | 0                             | 6     | 8     | 28    | 40    | 42    | 30    | 24    | 8     | 351   | 2     | 16    | 6     | 347   | 5     | 21    | 53    | 95    | 111   | 141   | 189   | 178   | 191   | 197   | 18.8          |
| 19-Feb | 184                           | 187   | 191   | 190   | 176   | 160   | 159   | 157   | 156   | 148   | 144   | 138   | 98    | 102   | 129   | 25    | 11    | 357   | 350   | 42    | 25    | 8     | 354   | 356   | 129.0         |
| 20-Feb | 341                           | 339   | 341   | 335   | 321   | 315   | 310   | 313   | 312   | 316   | 312   | 301   | 304   | 303   | 314   | 313   | 340   | 354   | 344   | 32    | 61    | 19    | 15    | 47    | 336.2         |
| 21-Feb | 36                            | 2     | 339   | 339   | 339   | 326   | 325   | 328   | 321   | 334   | 337   | 333   | 335   | 339   | 345   | 336   | 338   | 4     | 3     | 7     | 12    | 348   | 354   | 344   | 343.2         |
| 22-Feb | 341                           | 322   | 326   | 283   | 282   | 263   | 275   | 271   | 313   | 348   | 4     | 349   | 355   | 4     | 342   | 9     | 12    | 4     | 3     | 26    | 42    | 34    | 359   | 313   | 348.4         |
| 23-Feb | 286                           | 291   | 327   | 264   | 278   | 250   | 273   | 271   | 294   | 107   | 98    | 129   | 359   | 19    | 5     | 8     | 51    | 119   | 186   | 203   | 217   | 201   | 223   | 231   | 311.1         |
| 24-Feb | 235                           | 212   | 191   | 199   | 194   | 186   | 190   | 192   | 193   | 192   | 187   | 186   | 184   | 194   | 195   | 189   | 189   | 196   | 189   | 188   | 192   | 196   | 203   | 205   | 193.5         |
| 25-Feb | 207                           | 223   | 221   | 223   | 229   | 234   | 226   | 296   | 296   | 298   | 295   | 265   | 256   | 250   | 272   | 234   | 211   | 202   | 201   | 193   | 189   | 185   | 179   | 178   | 229.5         |
| 26-Feb | 170                           | 166   | 168   | 162   | 146   | 153   | 146   | 141   | 122   | 122   | 106   | 102   | 94    | 105   | 93    | 71    | 76    | 105   | 116   | 99    | 141   | 137   | 90    | 72    | 118.5         |
| 27-Feb | 58                            | 9     | 351   | 339   | 328   | 308   | 307   | 309   | 309   | 323   | 320   | 310   | 315   | 306   | 310   | 319   | 335   | 335   | 316   | 331   | 340   | 349   | 345   | 344   | 326.1         |
| 28-Feb | 6                             | 16    | 39    | 48    | 39    | 55    | 360   | 2     | 12    | 25    | 5     | 24    | 41    | 55    | 360   | 28    | 58    | 131   | 51    | 150   | 138   | 182   | 173   | 174   | 41.5          |
|        | 254.2                         | 240.8 | 244.6 | 253.7 | 247.5 | 223.8 | 221.0 | 222.4 | 248.4 | 244.1 | 277.6 | 262.5 | 274.1 | 283.8 | 298.1 | 312.2 | 312.1 | 285.4 | 276.9 | 262.2 | 235.1 | 250.2 | 251.0 | 245.4 |               |
|        | Diurnal Average               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |               |

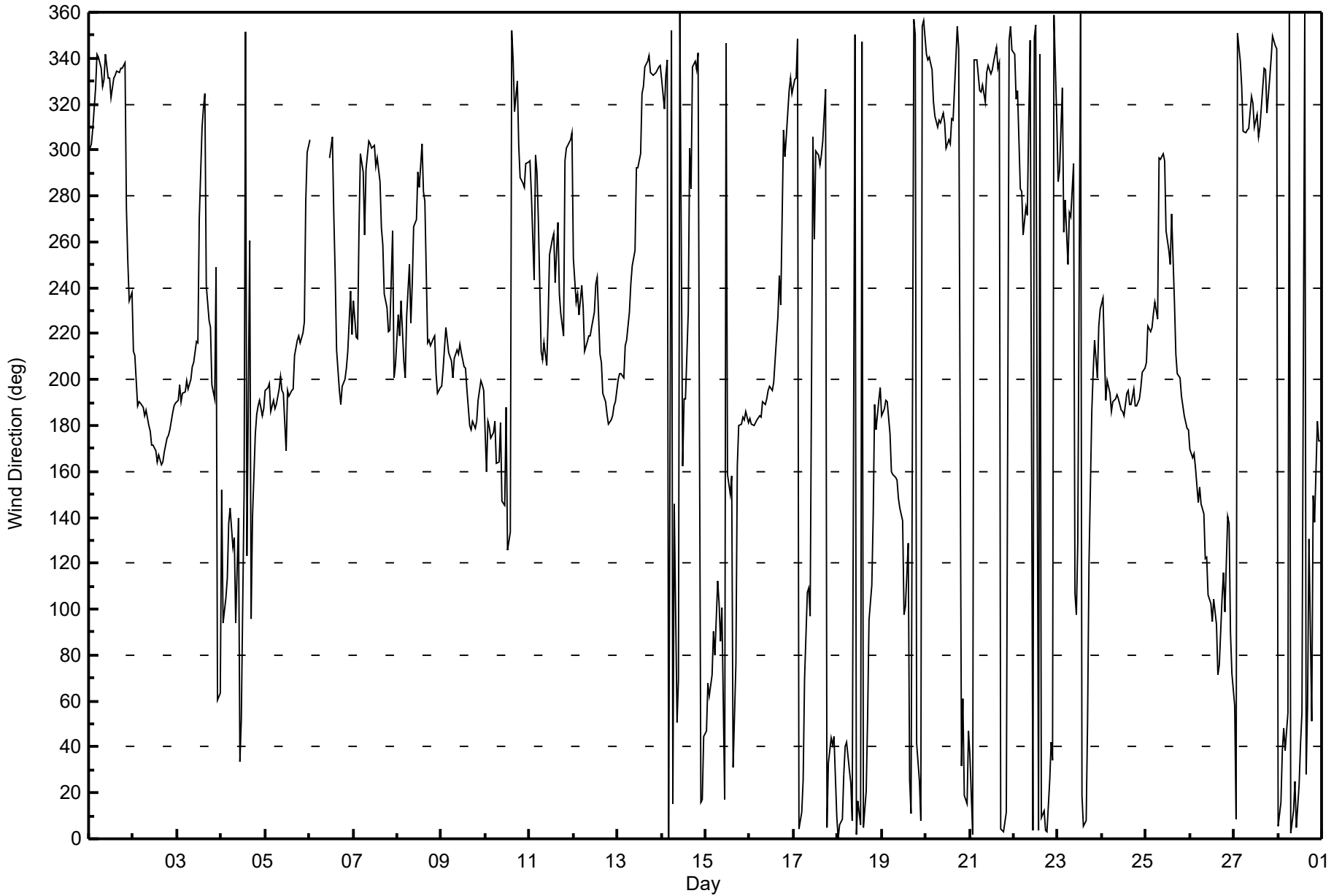
UO - Unstable Operation  
 All monthly, daily, and diurnal averages have been calculated using vector methods





**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Wind Direction (WD) - deg**  
**Jackfish 1 - February 2023**





**Wood Buffalo Environmental Association**  
**Summary of Hour Standard Deviations**

**Wind Direction (WD) - deg**  
**Jackfish 1 - February 2023**

| Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0<br>Maximum Value: 107 deg on Feb 14 11:00<br>Minimum Value: 7 deg on Feb 15 20:00<br>Percentiles: P <sub>1</sub> = 9 P <sub>10</sub> = 13 Q <sub>1</sub> = 19 Median = 27 Q <sub>3</sub> = 41 P <sub>90</sub> = 65 P <sub>99</sub> = 88 |                               |    |    |    |    |    |    |    |    |    |     |    |    |    |    |    | Hours in Service: 672<br>Hours of Data: 662<br>Hours of Missing Data: 10<br>Hours of Calibration: 0<br>Percent Operational Time: 98.5 |    |    |    |    |    |    |    |               |
|---|-------------------------------|----|----|----|----|----|----|----|----|----|-----|----|----|----|----|----|---|----|----|----|----|----|----|----|---------------|
| Day   | Hourly Period Ending At (MST) |    |    |    |    |    |    |    |    |    |     |    |    |    |    |    |   |    |    |    |    |    |    |    | Daily Maximum |
|   | 1                             | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11  | 12 | 13 | 14 | 15 | 16 | 17  | 18 | 19 | 20 | 21 | 22 | 23 | 24 |               |
| 1-Feb   | 43                            | 35 | 14 | 19 | 20 | 18 | 13 | 15 | 12 | 18 | 13  | 15 | 15 | 16 | 14 | 13 | 11  | 11 | 8  | 11 | 30 | 40 | 16 | 19 | 43            |
| 2-Feb   | 26                            | 26 | 10 | 10 | 11 | 10 | 10 | 15 | 18 | 22 | 20  | 21 | 19 | 19 | 20 | 19 | 19  | 20 | 23 | 22 | 22 | 24 | 24 | 26 | 26            |
| 3-Feb   | 24                            | 24 | 27 | 23 | 26 | 28 | 33 | 31 | 34 | 40 | 33  | 30 | 78 | 44 | 20 | 15 | 45  | 76 | 88 | 39 | 72 | 69 | 74 | 40 | 88            |
| 4-Feb   | 48                            | 34 | 29 | 27 | 12 | 13 | 21 | 27 | 32 | 20 | 64  | 78 | 93 | 66 | 72 | 87 | 27  | 49 | 17 | 17 | 22 | 26 | 16 | 19 | 93            |
| 5-Feb   | 21                            | 24 | 28 | 16 | 17 | 19 | 26 | 21 | 22 | 27 | 30  | 46 | 28 | 26 | 32 | 18 | 20  | 24 | 27 | 43 | 37 | 59 | 78 | 45 | 78            |
| 6-Feb   | 29                            | UO | UO | UO | UO | UO | UO | UO | UO | UO | UO  | 60 | 67 | 69 | 59 | 42 | 31  | 23 | 26 | 28 | 29 | 40 | 69 | 56 | 69            |
| 7-Feb   | 72                            | 49 | 51 | 86 | 76 | 80 | 76 | 76 | 32 | 24 | 36  | 56 | 66 | 65 | 75 | 79 | 67  | 80 | 88 | 33 | 27 | 57 | 30 | 17 | 88            |
| 8-Feb   | 23                            | 27 | 63 | 63 | 87 | 76 | 45 | 27 | 29 | 42 | 53  | 56 | 56 | 81 | 68 | 77 | 39  | 21 | 19 | 20 | 20 | 26 | 18 | 20 | 87            |
| 9-Feb   | 23                            | 28 | 28 | 21 | 20 | 29 | 31 | 30 | 29 | 31 | 24  | 29 | 31 | 29 | 26 | 20 | 12  | 13 | 17 | 16 | 26 | 29 | 23 | 29 | 31            |
| 10-Feb  | 35                            | 17 | 22 | 19 | 12 | 27 | 23 | 15 | 18 | 59 | 27  | 79 | 72 | 73 | 41 | 40 | 42  | 13 | 23 | 34 | 30 | 32 | 21 | 29 | 79            |
| 11-Feb  | 43                            | 78 | 72 | 63 | 52 | 62 | 23 | 22 | 50 | 37 | 55  | 61 | 65 | 65 | 69 | 76 | 64  | 59 | 51 | 70 | 38 | 24 | 57 | 71 | 78            |
| 12-Feb  | 89                            | 46 | 61 | 73 | 86 | 39 | 22 | 27 | 26 | 22 | 35  | 51 | 64 | 51 | 40 | 28 | 25  | 19 | 15 | 15 | 19 | 17 | 20 | 20 | 89            |
| 13-Feb  | 28                            | 29 | 27 | 28 | 45 | 48 | 56 | 72 | 61 | 68 | 76  | 67 | 58 | 20 | 14 | 15 | 17  | 19 | 13 | 13 | 13 | 12 | 12 | 11 | 76            |
| 14-Feb  | 12                            | 13 | 12 | 11 | 21 | 18 | 25 | 27 | 48 | 79 | 107 | 53 | 47 | 36 | 51 | 55 | 43  | 16 | 15 | 13 | 31 | 25 | 33 | 31 | 107           |
| 15-Feb  | 25                            | 31 | 34 | 28 | 89 | 27 | 36 | 23 | 66 | 41 | 42  | 80 | 65 | 48 | 78 | 92 | 44  | 18 | 10 | 7  | 8  | 8  | 12 | 21 | 92            |
| 16-Feb  | 22                            | 16 | 19 | 21 | 22 | 21 | 23 | 24 | 23 | 27 | 35  | 31 | 28 | 31 | 41 | 54 | 61  | 72 | 76 | 38 | 16 | 17 | 14 | 14 | 76            |
| 17-Feb  | 14                            | 14 | 26 | 24 | 25 | 22 | 56 | 31 | 28 | 60 | 79  | 90 | 49 | 45 | 55 | 43 | 33  | 26 | 23 | 26 | 27 | 28 | 23 | 23 | 90            |
| 18-Feb  | 22                            | 17 | 21 | 27 | 30 | 27 | 28 | 32 | 29 | 25 | 28  | 32 | 31 | 29 | 31 | 26 | 29  | 59 | 25 | 23 | 11 | 16 | 10 | 9  | 59            |
| 19-Feb  | 10                            | 9  | 11 | 11 | 13 | 13 | 13 | 15 | 16 | 16 | 17  | 23 | 34 | 29 | 25 | 40 | 32  | 24 | 22 | 26 | 30 | 30 | 24 | 26 | 40            |
| 20-Feb  | 14                            | 11 | 9  | 17 | 19 | 15 | 15 | 16 | 18 | 18 | 34  | 48 | 32 | 36 | 20 | 20 | 17  | 20 | 15 | 32 | 29 | 31 | 25 | 25 | 48            |
| 21-Feb  | 24                            | 20 | 10 | 12 | 16 | 35 | 12 | 19 | 12 | 15 | 14  | 17 | 19 | 20 | 20 | 20 | 14  | 25 | 22 | 20 | 18 | 15 | 20 | 15 | 35            |
| 22-Feb  | 11                            | 32 | 9  | 29 | 27 | 19 | 35 | 23 | 66 | 27 | 30  | 50 | 32 | 44 | 32 | 28 | 30  | 19 | 20 | 24 | 30 | 17 | 31 | 35 | 66            |
| 23-Feb  | 36                            | 38 | 15 | 21 | 27 | 29 | 27 | 16 | 30 | 99 | 79  | 48 | 51 | 57 | 42 | 42 | 52  | 28 | 10 | 46 | 70 | 84 | 22 | 26 | 99            |
| 24-Feb  | 19                            | 22 | 15 | 17 | 14 | 11 | 13 | 15 | 20 | 25 | 27  | 26 | 27 | 26 | 26 | 23 | 24  | 23 | 21 | 22 | 27 | 31 | 33 | 38 | 38            |
| 25-Feb  | 34                            | 51 | 35 | 32 | 43 | 43 | 46 | 60 | 47 | 37 | 51  | 60 | 68 | 61 | 77 | 63 | 80  | 19 | 18 | 21 | 18 | 16 | 16 | 12 | 80            |
| 26-Feb  | 11                            | 9  | 9  | 12 | 16 | 14 | 13 | 12 | 16 | 22 | 28  | 26 | 29 | 28 | 30 | 28 | 28  | 26 | 22 | 25 | 18 | 19 | 26 | 30 | 30            |
| 27-Feb  | 31                            | 34 | 21 | 12 | 17 | 12 | 13 | 11 | 12 | 16 | 16  | 17 | 20 | 26 | 17 | 19 | 14  | 14 | 14 | 17 | 14 | 17 | 15 | 19 | 34            |
| 28-Feb  | 25                            | 24 | 26 | 30 | 32 | 36 | 45 | 24 | 30 | 36 | 35  | 41 | 64 | 54 | 62 | 61 | 43  | 40 | 43 | 11 | 29 | 12 | 10 | 11 | 64            |
| 89 78 72 86 89 80 76 76 66 99 107 90 93 81 78 92 80 80 88 70 72 84 78 71  |                               |    |    |    |    |    |    |    |    |    |     |    |    |    |    |    |   |    |    |    |    |    |    |    |               |
| Diurnal Maximum   |                               |    |    |    |    |    |    |    |    |    |     |    |    |    |    |    |   |    |    |    |    |    |    |    |               |
| UO - Unstable Operation   |                               |    |    |    |    |    |    |    |    |    |     |    |    |    |    |    |   |    |    |    |    |    |    |    |               |



## WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY  
MONITORING PROGRAM  
MONTHLY REPORT

**AMS508**  
**KIRBY NORTH**  
**FEBRUARY 2023**

Operations, Data Collection,  
QA/QC, Data Validation and Reporting by:  
Wood Buffalo Environmental Association  
Fort McMurray, Alberta

March 31, 2023

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - KIRBY NORTH (AMS 508)  
FEBRUARY 2023

MONTHLY SUMMARY

| Parameter                         | Hours of<br>Data | Hours of<br>Calibration | Hours<br>without Data | Operational<br>Time | Maximum<br>1-Hour Value | 1-Hour<br>Exceedances | Maximum<br>24-Hour Value | 24-Hour<br>Exceedances |
|-----------------------------------|------------------|-------------------------|-----------------------|---------------------|-------------------------|-----------------------|--------------------------|------------------------|
| SO2 (ppb) Average                 | 637              | 35                      | 35                    | 100                 | 12.8                    | 0                     | 3.1                      | 0                      |
| H2S (ppb) Average                 | 577              | 40                      | 95                    | 91.82               | 0.8                     | 0                     | 0.3                      | 0                      |
| THC (ppm) Average                 | 633              | 32                      | 39                    | 98.96               | 3.2                     | -                     | 2.6                      | -                      |
| NO2 (ppb) Average                 | 637              | 35                      | 35                    | 100                 | 18.4                    | 0                     | 6.2                      | -                      |
| NO (ppb) Average                  | 637              | 35                      | 35                    | 100                 | 5.5                     | -                     | 1                        | -                      |
| NOX (ppb) Average                 | 637              | 35                      | 35                    | 100                 | 18.9                    | -                     | 6.8                      | -                      |
| Temperature 2 m (C) Average       | 672              | 0                       | 0                     | 100                 | 3.8                     | -                     | -0.2                     | -                      |
| Relative Humidity (%) Average     | 672              | 0                       | 0                     | 100                 | 97.7                    | -                     | 88.6                     | -                      |
| Wind Speed 10 m (km/h) Average    | 663              | 0                       | 9                     | 98.66               | 23                      | -                     | 17                       | -                      |
| Wind Direction 10 m (deg) Average | 663              | 0                       | 9                     | 98.66               | -                       | -                     | -                        | -                      |

Note : Operational time includes periods of data collection and instrument calibration

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - KIRBY NORTH (AMS508)  
 FEBRUARY 2023

MONTHLY SUMMARY FOR AIR QUALITY/ METEOROLOGICAL MONITORING MEASUREMENTS

| Parameter                         | Number | Mean   | StnDev | Total | Percentile |       |       |        |      |      |      |
|-----------------------------------|--------|--------|--------|-------|------------|-------|-------|--------|------|------|------|
|                                   |        |        |        |       | Min        | P10   | Q1    | Median | Q3   | P90  | Max  |
| SO2 (ppb) Average                 | 637    | 0.99   | 1.6    | -     | 0          | 0     | 0.2   | 0.4    | 1.2  | 2.6  | 12.8 |
| H2S (ppb) Average                 | 577    | 0.12   | 0.1    | -     | 0          | 0.1   | 0.1   | 0.1    | 0.1  | 0.2  | 0.8  |
| THC (ppm) Average                 | 633    | 2.41   | 0.1    | -     | 2.2        | 2.3   | 2.3   | 2.4    | 2.4  | 2.5  | 3.2  |
| NO2 (ppb) Average                 | 637    | 2.68   | 2.3    | -     | 0          | 0.7   | 1.2   | 2.1    | 3.6  | 5.1  | 18.4 |
| NO (ppb) Average                  | 637    | 0.4    | 0.6    | -     | 0          | 0     | 0     | 0.2    | 0.5  | 1.1  | 5.5  |
| NOX (ppb) Average                 | 637    | 3.09   | 2.6    | -     | 0.1        | 0.8   | 1.4   | 2.4    | 4.1  | 5.7  | 18.9 |
| Temperature 2 m (C) Average       | 672    | -11.96 | 9.3    | -     | -36.8      | -25.1 | -18.8 | -11.9  | -3   | 0.3  | 3.8  |
| Relative Humidity (%) Average     | 672    | 72.21  | 12.4   | -     | 34.7       | 55.1  | 64.5  | 73.7   | 80.4 | 86.7 | 97.7 |
| Wind Speed 10 m (km/h) Average    | 663    | 10.6   | 4      | -     | 1          | 5     | 8     | 10     | 13   | 17   | 23   |
| Wind Direction 10 m (deg) Average | 663    | -      | -      | -     | -          | -     | -     | -      | -    | -    | -    |

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - KIRBY NORTH (AMS508)  
FEBRUARY 2023

OPERATIONAL NOTES

| Parameter                  | Period<br>Start   | Period<br>End     | Duration<br>(Hours) | Notes   |
|----------------------------|-------------------|-------------------|---------------------|---|
| H2S                        | 13 Feb 2023 05:00 | 14 Feb 2023 04:00 | 24                  | Unstable Operation - inconsistent response        |
| H2S                        | 14 Feb 2023 06:00 | 14 Feb 2023 13:00 | 8                   | Unstable Operation - inconsistent response        |
| H2S                        | 14 Feb 2023 14:00 | 15 Feb 2023 12:00 | 23                  | Maintenance - hydrate SO2 scrubber beads          |
| THC                        | 02 Feb 2023 09:00 | 02 Feb 2023 15:00 | 7                   | Maintenance - multi-point verification check      |
| Wind Speed, Wind Direction | 02 Feb 2023 10:00 | 02 Feb 2023 15:00 | 6                   | Maintenance - station operator activities         |
| Wind Speed, Wind Direction | 14 Feb 2023 08:00 | 14 Feb 2023 10:00 | 3                   | Flat line in sensor output signal - Sensor frozen |



**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

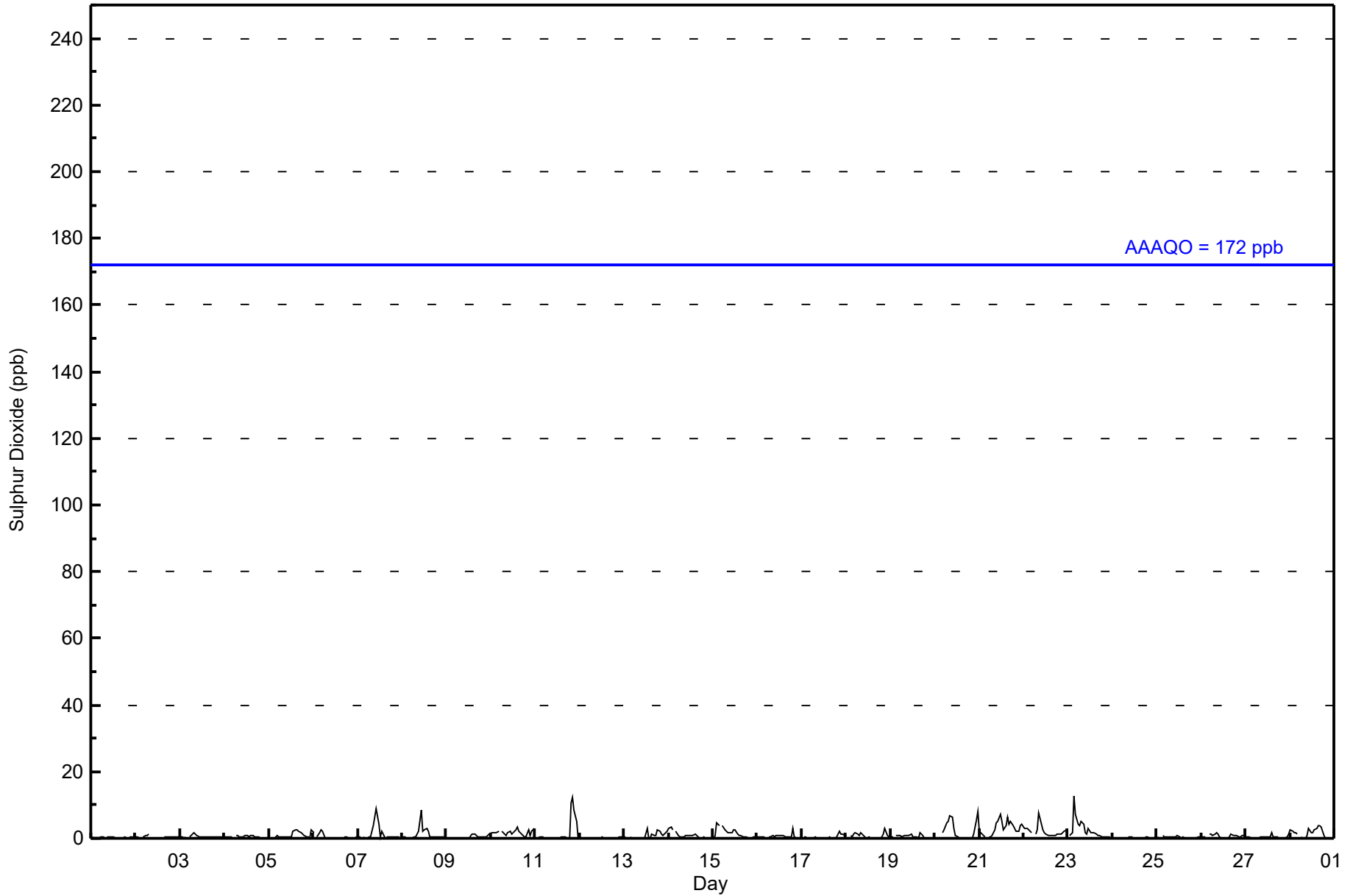
**Sulphur Dioxide (SO<sub>2</sub>) - ppb**  
**Kirby North - February 2023**

| Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0                           |                               | Hours in Service: 672  |     |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |     |     |  |               |               |     |
|---|-------------------------------|--|-----|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|-----|-----|--|---------------|---------------|-----|
| Maximum Value: 12.8 ppb on Feb 23 04:00                                   |                               | Maximum Daily Average: 3.1 ppb on Feb 21   |     |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |     |     |  |               |               |     |
| Minimum Value: 0.0 ppb on Feb 5 23:00                                     |                               | Minimum Daily Average: 0.1 ppb on Feb 12   |     |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |     |     |  |               |               |     |
| Maximum Diurnal Average: 1.5 ppb at hour 11                               |                               | Minimum Diurnal Average: 0.6 ppb at hour 19  |     |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |     |     |  |               |               |     |
| Monthly Average: 0.99 ppb   |                               | Percentiles: P <sub>1</sub> = 0.0 P <sub>10</sub> = 0.0 Q <sub>1</sub> = 0.2 Median = 0.4 Q <sub>3</sub> = 1.2 P <sub>90</sub> = 2.6 P <sub>99</sub> = 7.9 |     |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |     |     |  |               |               |     |
|   |                               | Hours of Data: 637   |     |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |     |     |  |               |               |     |
|   |                               | Hours of Missing Data: 35  |     |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |     |     |  |               |               |     |
|   |                               | Hours of Calibration: 35   |     |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |     |     |  |               |               |     |
|   |                               | Percent Operational Time: 100.0  |     |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |     |     |  |               |               |     |
| Day   | Hourly Period Ending At (MST) |  |     |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |     |     |  | Daily Average | Daily Maximum |     |
|   | 1                             | 2  | 3   | 4    | 5   | 6   | 7   | 8   | 9   | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19  | 20   | 21   | 22  | 23  | 24   |               |               |     |
| 1-Feb   | 0.2                           | 0.1  | Z   | 0.1  | 0.2 | 0.3 | 0.2 | 0.1 | 0.0 | 0.2 | 0.3 | 0.4 | 0.2 | 0.1 | 0.2 | 0.1 | 0.0 | 0.2 | 0.3 | 0.2  | 0.2  | 0.3 | 0.3 | 0.3  | 0.2           | 0.4           |     |
| 2-Feb   | 0.2                           | 0.2  | 0.1 | Z    | 0.4 | 0.7 | 0.9 | 1.5 | C   | C   | C   | C   | C   | C   | C   | 0.5 | 0.2 | 0.4 | 0.3 | 0.4  | 0.6  | 0.5 | 0.5 | 0.4  | --            | 1.5           |     |
| 3-Feb   | 0.3                           | 0.3  | 0.1 | 0.2  | Z   | 0.6 | 0.8 | 1.5 | 1.2 | 0.7 | 0.6 | 0.6 | 0.5 | 0.5 | 0.4 | 0.3 | 0.4 | 0.3 | 0.3 | 0.3  | 0.3  | 0.4 | 0.4 | 0.4  | 0.5           | 1.5           |     |
| 4-Feb   | 0.4                           | 0.4  | 0.3 | 0.5  | 0.5 | Z   | 0.7 | 0.7 | 0.5 | 0.5 | 0.5 | 0.7 | 0.8 | 0.6 | 0.6 | 0.9 | 0.4 | 0.3 | 0.2 | 0.2  | 0.2  | 0.2 | 0.0 | 0.1  | 0.4           | 0.9           |     |
| 5-Feb   | Z                             | 0.1  | 0.1 | 0.2  | 0.9 | 0.6 | 0.4 | 0.3 | 0.3 | 0.2 | 0.4 | 0.3 | 0.5 | 2.0 | 2.3 | 2.5 | 2.1 | 1.5 | 1.4 | 1.0  | 0.6  | 0.3 | 0.0 | 2.7  | 0.9           | 2.7           |     |
| 6-Feb   | 1.5                           | Z  | 0.4 | 1.8  | 2.5 | 2.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.0 | 0.2 | 0.2 | 0.3 | 0.2 | 0.2  | 0.2  | 0.2 | 0.2 | 0.2  | 0.4           | 2.5           |     |
| 7-Feb   | 0.2                           | 0.2  | Z   | 0.2  | 0.2 | 0.1 | 0.3 | 0.2 | 3.9 | 6.6 | 9.0 | 4.2 | 0.3 | 2.1 | 0.5 | 0.2 | 0.3 | 0.4 | 0.5 | 0.3  | 0.3  | 0.6 | 0.3 | 0.2  | 1.3           | 9.0           |     |
| 8-Feb   | 0.4                           | 0.2  | 0.3 | Z    | 0.2 | 0.1 | 0.2 | 0.4 | 1.3 | 2.2 | 8.3 | 2.1 | 2.7 | 2.9 | 2.3 | 0.4 | 0.3 | 0.3 | 0.4 | 0.3  | 0.3  | 0.2 | 0.3 | 0.3  | 1.1           | 8.3           |     |
| 9-Feb   | 0.1                           | 0.1  | 0.2 | 0.1  | Z   | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.7 | 1.2 | 1.1 | 0.7 | 0.5 | 0.4 | 0.3  | 0.4  | 0.6 | 0.8 | 1.4  | 0.4           | 1.4           |     |
| 10-Feb  | 1.6                           | 1.7  | 1.5 | 1.7  | 2.0 | Z   | 2.1 | 1.1 | 0.7 | 1.8 | 2.0 | 1.3 | 1.5 | 2.6 | 3.2 | 2.2 | 1.6 | 0.9 | 0.4 | 0.3  | 2.7  | 1.0 | 2.0 | 2.9  | 1.7           | 3.2           |     |
| 11-Feb  | Z                             | 0.2  | 0.6 | 0.5  | 0.2 | 0.0 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.0 | 0.1 | 0.2 | 0.2 | 0.2 | 0.1 | 0.1 | 10.4 | 12.3 | 8.6 | 5.2 | 0.2  | 1.7           | 12.3          |     |
| 12-Feb  | 0.2                           | Z  | 0.0 | 0.0  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.3 | 0.2 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 0.1  | 0.3 | 0.4 | 0.5  | 0.1           | 0.5           |     |
| 13-Feb  | 0.5                           | 0.2  | Z   | 0.3  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.0 | 2.9 | 0.0 | 0.1 | 1.2 | 0.9 | 0.8 | 2.6 | 2.2  | 1.3  | 1.0 | 1.6 | 2.0  | 0.8           | 2.9           |     |
| 14-Feb  | 2.9                           | 3.3  | 2.7 | Z    | 2.1 | 0.9 | 0.5 | 0.6 | 0.4 | 0.9 | 0.9 | 0.8 | 0.9 | 1.0 | 1.4 | 0.7 | 0.5 | 0.0 | 0.1 | 0.3  | 0.1  | 0.0 | 0.0 | 0.0  | 0.9           | 3.3           |     |
| 15-Feb  | 0.0                           | 1.1  | 4.8 | 3.7  | Z   | 3.9 | 2.6 | 2.1 | 1.8 | 1.7 | 1.6 | 2.7 | 2.3 | 1.1 | 0.9 | 0.7 | 0.5 | 0.5 | 0.4 | 0.2  | 0.2  | 0.2 | 0.3 | 0.3  | 1.5           | 4.8           |     |
| 16-Feb  | 0.4                           | 0.2  | 0.3 | 0.3  | 0.4 | Z   | 0.5 | 0.6 | 0.6 | 0.6 | 0.7 | 0.7 | 0.7 | 0.9 | 0.8 | 0.6 | 0.5 | 0.3 | 0.3 | 3.2  | 0.3  | 0.2 | 0.2 | 0.1  | 0.6           | 3.2           |     |
| 17-Feb  | Z                             | 0.3  | 0.2 | 0.2  | 0.1 | 0.1 | 0.0 | 0.3 | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 | 0.2 | 0.0 | 0.6 | 0.0 | 0.0 | 0.0 | 0.4  | 2.2  | 1.5 | 1.3 | 0.9  | 0.4           | 2.2           |     |
| 18-Feb  | 0.7                           | Z  | 0.7 | 0.4  | 1.1 | 1.9 | 1.3 | 1.0 | 1.8 | 0.8 | 0.3 | 0.2 | 0.4 | 0.0 | 0.0 | 0.2 | 0.2 | 0.2 | 0.2 | 0.6  | 1.2  | 3.1 | 0.8 | 0.6  | 0.8           | 3.1           |     |
| 19-Feb  | 0.4                           | 0.4  | Z   | 0.7  | 0.8 | 0.6 | 0.6 | 0.9 | 0.8 | 0.7 | 0.6 | 1.3 | 0.6 | 0.4 | 0.2 | 0.2 | 1.8 | 0.8 | 0.0 | 0.0  | 0.0  | 0.0 | 0.0 | 0.0  | 0.5           | 1.8           |     |
| 20-Feb  | 0.0                           | 0.0  | 0.1 | Z    | 1.5 | 2.5 | 4.6 | 5.2 | 6.6 | 6.2 | 2.8 | 0.8 | 0.6 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0  | 0.1  | 1.2 | 5.4 | 8.1  | 2.0           | 8.1           |     |
| 21-Feb  | 2.0                           | 1.2  | 0.6 | 0.4  | Z   | 0.6 | 0.5 | 1.0 | 2.5 | 4.5 | 5.1 | 7.3 | 4.9 | 2.6 | 3.6 | 6.2 | 4.3 | 5.2 | 3.7 | 2.8  | 2.2  | 1.9 | 3.7 | 4.1  | 3.1           | 7.3           |     |
| 22-Feb  | 2.8                           | 2.9  | 2.9 | 2.1  | 1.5 | Z   | 1.4 | 2.7 | 7.4 | 5.9 | 2.4 | 1.7 | 1.3 | 1.1 | 1.0 | 0.9 | 0.7 | 0.8 | 1.3 | 1.5  | 1.4  | 1.8 | 2.0 | 2.7  | 2.2           | 7.4           |     |
| 23-Feb  | Z                             | 0.9  | 1.7 | 12.8 | 7.3 | 4.4 | 3.9 | 4.9 | 4.0 | 1.7 | 1.1 | 2.8 | 1.5 | 1.7 | 1.7 | 1.4 | 0.8 | 0.7 | 0.5 | 0.5  | 0.5  | 0.3 | 0.3 | 0.2  | 2.4           | 12.8          |     |
| 24-Feb  | 0.2                           | Z  | 0.1 | 0.1  | 0.0 | 0.0 | 0.1 | 0.2 | 0.1 | 0.2 | 0.3 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.3 | 0.3  | 0.2  | 0.1 | 0.2 | 0.3  | 0.2           | 0.3           | 0.3 |
| 25-Feb  | 0.2                           | 0.4  | Z   | 0.8  | 0.6 | 0.5 | 0.5 | 0.4 | 0.4 | 0.4 | 0.3 | 0.7 | 0.3 | 0.1 | 0.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0  | 0.0  | 0.1 | 0.4 | 0.3  | 0.3           | 0.8           |     |
| 26-Feb  | 0.4                           | 0.3  | 0.3 | Z    | 1.3 | 1.3 | 0.8 | 1.4 | 1.7 | 1.1 | 0.6 | 0.2 | 0.1 | 0.1 | 0.1 | 0.2 | 1.4 | 0.9 | 0.7 | 0.7  | 0.4  | 0.5 | 1.0 | 0.6  | 0.7           | 1.7           |     |
| 27-Feb  | 0.3                           | 0.3  | 0.2 | 0.2  | Z   | 0.1 | 0.2 | 0.2 | 0.5 | 0.6 | 0.5 | 0.6 | 0.6 | 0.5 | 1.6 | 0.4 | 0.3 | 0.2 | 0.1 | 0.0  | 0.0  | 0.0 | 0.5 | 1.5  | 0.4           | 1.6           |     |
| 28-Feb  | 2.6                           | 2.1  | 1.8 | 1.5  | 1.2 | Z   | 0.3 | 0.2 | 0.1 | 1.0 | 3.1 | 1.7 | 1.5 | 2.4 | 3.2 | 3.7 | 3.9 | 3.4 | 0.9 | 0.1  | 0.1  | 0.0 | 0.2 | 0.1  | 1.5           | 3.9           |     |
|   |                               |  |     |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |     |     | Diurnal Average  |               |               |     |
|   |                               |  |     |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |     |     | Diurnal Maximum  |               |               |     |
|   |                               |  |     |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |     |     | 0.8 0.7 0.9 1.2 1.1 0.9 0.8 1.0 1.4 1.4 1.5 1.2 0.9 0.9 1.0 0.9 0.8 0.7 0.6 0.9 1.0 0.9 1.0 1.1    |               |               |     |
|   |                               |  |     |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |     |     | 2.9 3.3 4.8 12.8 7.3 4.4 4.6 5.2 7.4 6.6 9.0 7.3 4.9 2.9 3.6 6.2 4.3 5.2 3.7 10.4 12.3 8.6 5.4 8.1 |               |               |     |
| Z - zerospan C - Calibration  |                               |  |     |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |     |     |  |               |               |     |
| Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 172 ppb 24-hr 48 ppb |                               |  |     |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |     |     |  |               |               |     |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Sulphur Dioxide (SO<sub>2</sub>) - ppb**  
**Kirby North - February 2023**







**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Sulphur Dioxide (SO<sub>2</sub>) - ppb**  
**Kirby North - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 10                            | 635                    | 99.69    | 99.69               |
| 11 - 20                           | 2                      | 0.31     | 100.00              |
| 21 - 60                           | 0                      | 0.00     | 100.00              |
| 61 - 110                          | 0                      | 0.00     | 100.00              |
| 111 - 172                         | 0                      | 0.00     | 100.00              |
| > 172                             | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 637

Total Number of Hours: 672



**Wood Buffalo Environmental Association**  
**Frequency Distribution**

**Sulphur Dioxide (SO<sub>2</sub>) - ppb**  
**Kirby North - February 2023**

| Concentration<br>Ranges (ppb) | Wind Direction |     |    |     |    |     |    |     |    |     |    |     |    |     |    |     | Totals |
|-------------------------------|----------------|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|--------|
|                               | N              | NNE | NE | ENE | E  | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |        |
| 0 - 10                        | 27             | 37  | 50 | 30  | 12 | 13  | 7  | 23  | 87 | 118 | 55 | 49  | 13 | 29  | 30 | 52  | 632    |
| 11 - 20                       | 0              | 0   | 0  | 1   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 1   | 0  | 0   | 2      |
| 21 - 60                       | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| 61 - 110                      | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| 111 - 172                     | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| > 172                         | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| <b>Totals</b>                 | 27             | 37  | 50 | 31  | 12 | 13  | 7  | 23  | 87 | 118 | 55 | 49  | 13 | 30  | 30 | 52  | 634    |

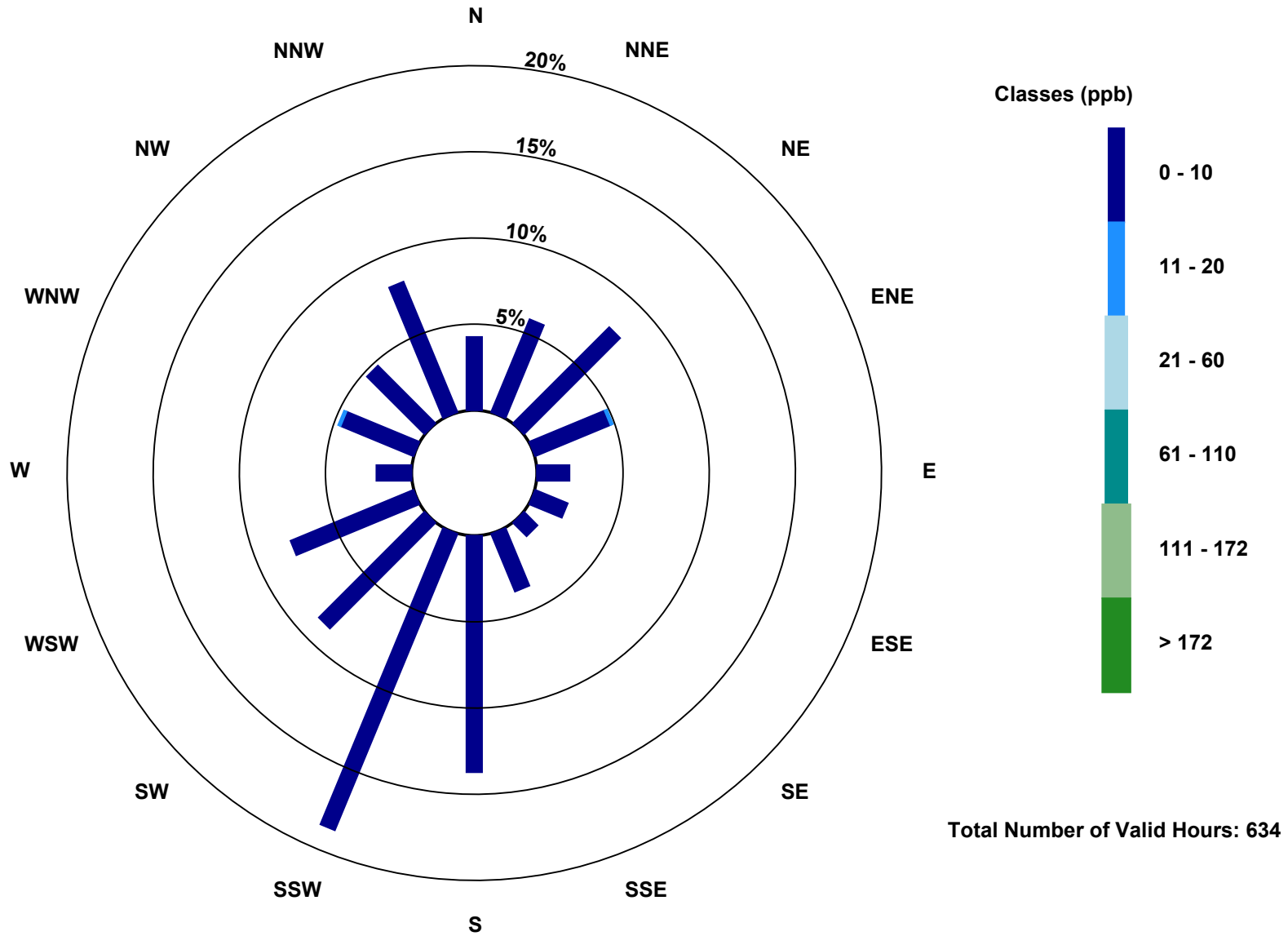
Total Number of Valid Hours: 634

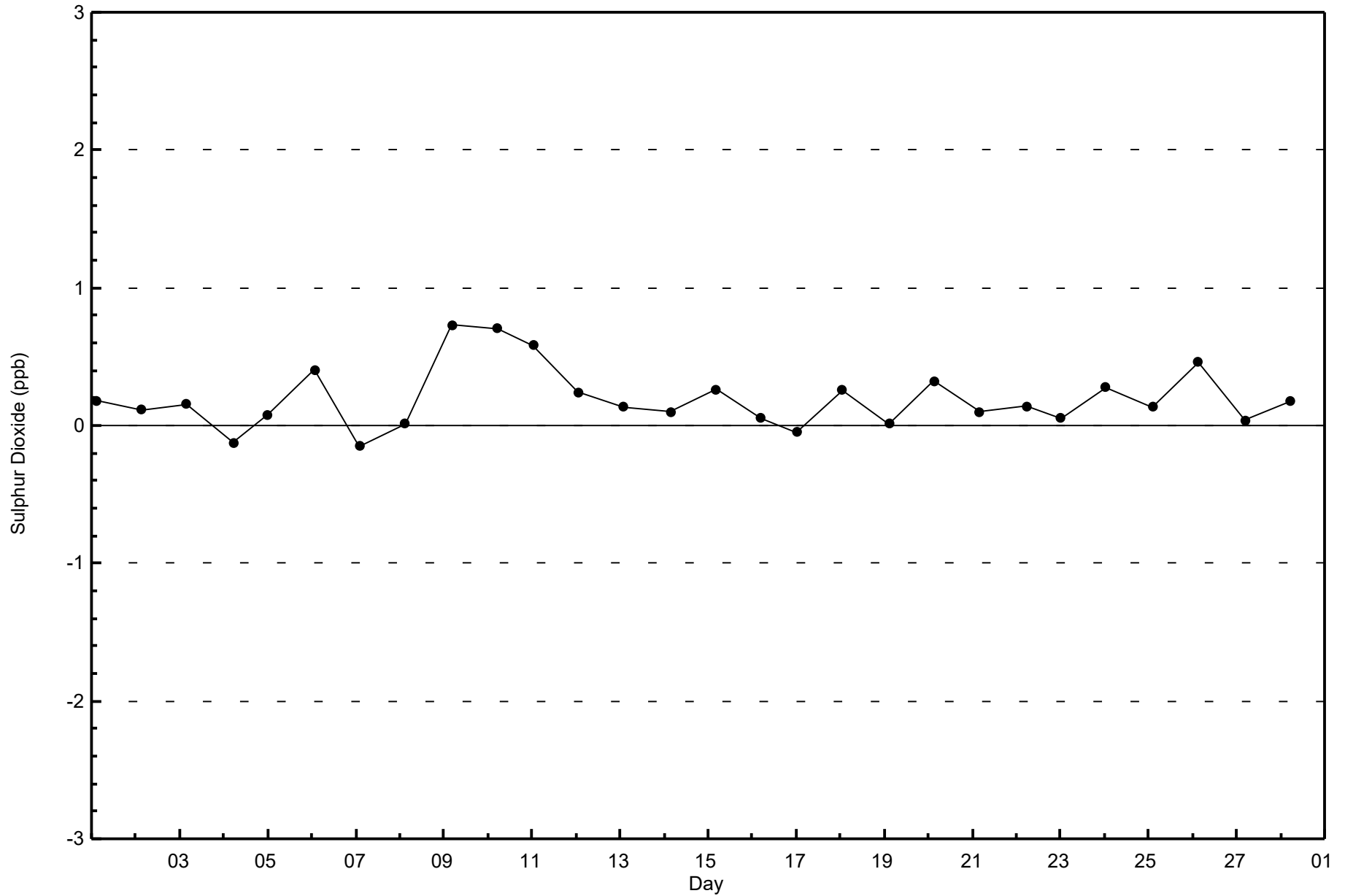
Total Number of Hours: 672



Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Sulphur Dioxide (SO<sub>2</sub>) - ppb  
Kirby North

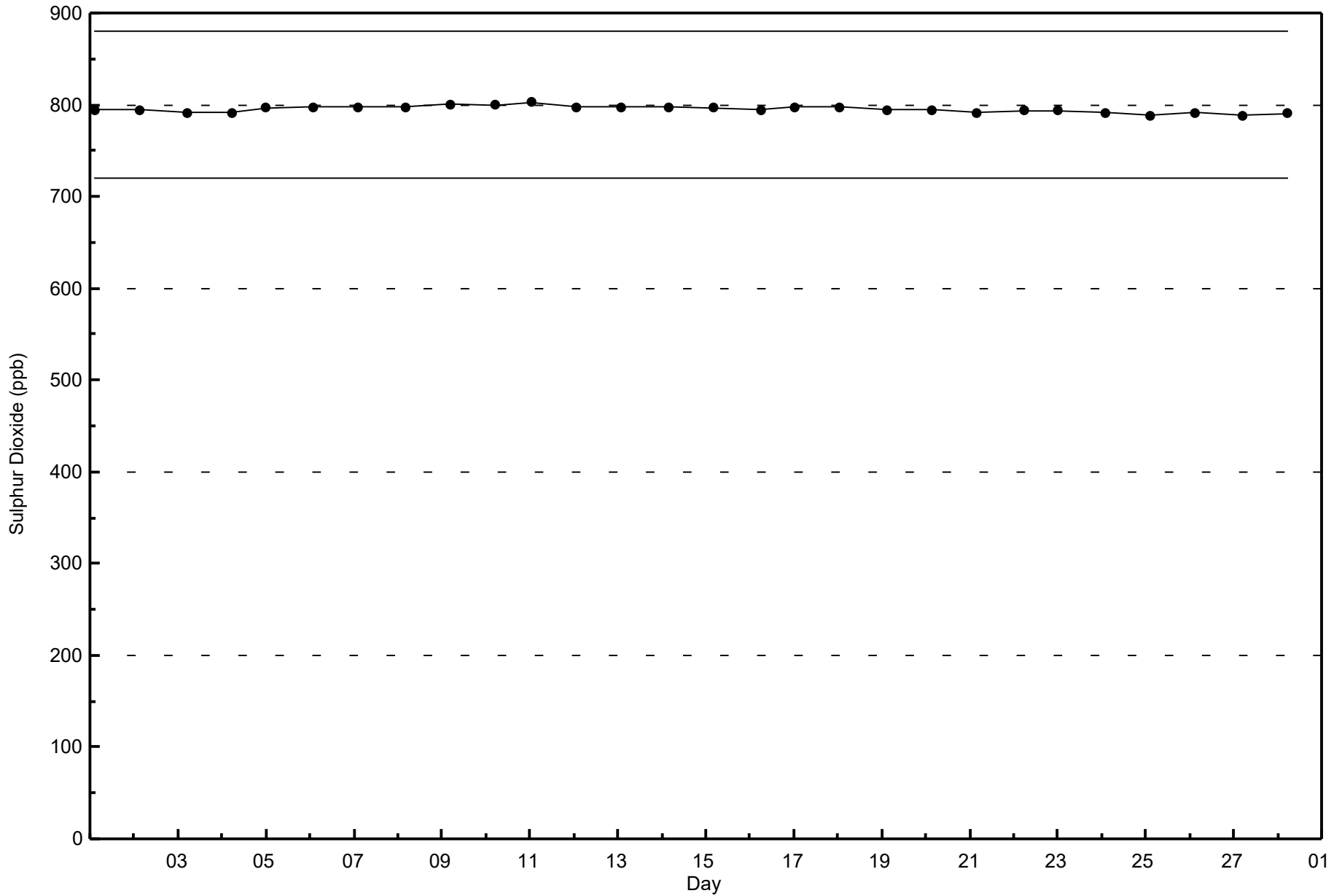






**Wood Buffalo Environmental Association**  
**Span Responses**

**Sulphur Dioxide (SO<sub>2</sub>) - ppb**  
**Kirby North - February 2023**

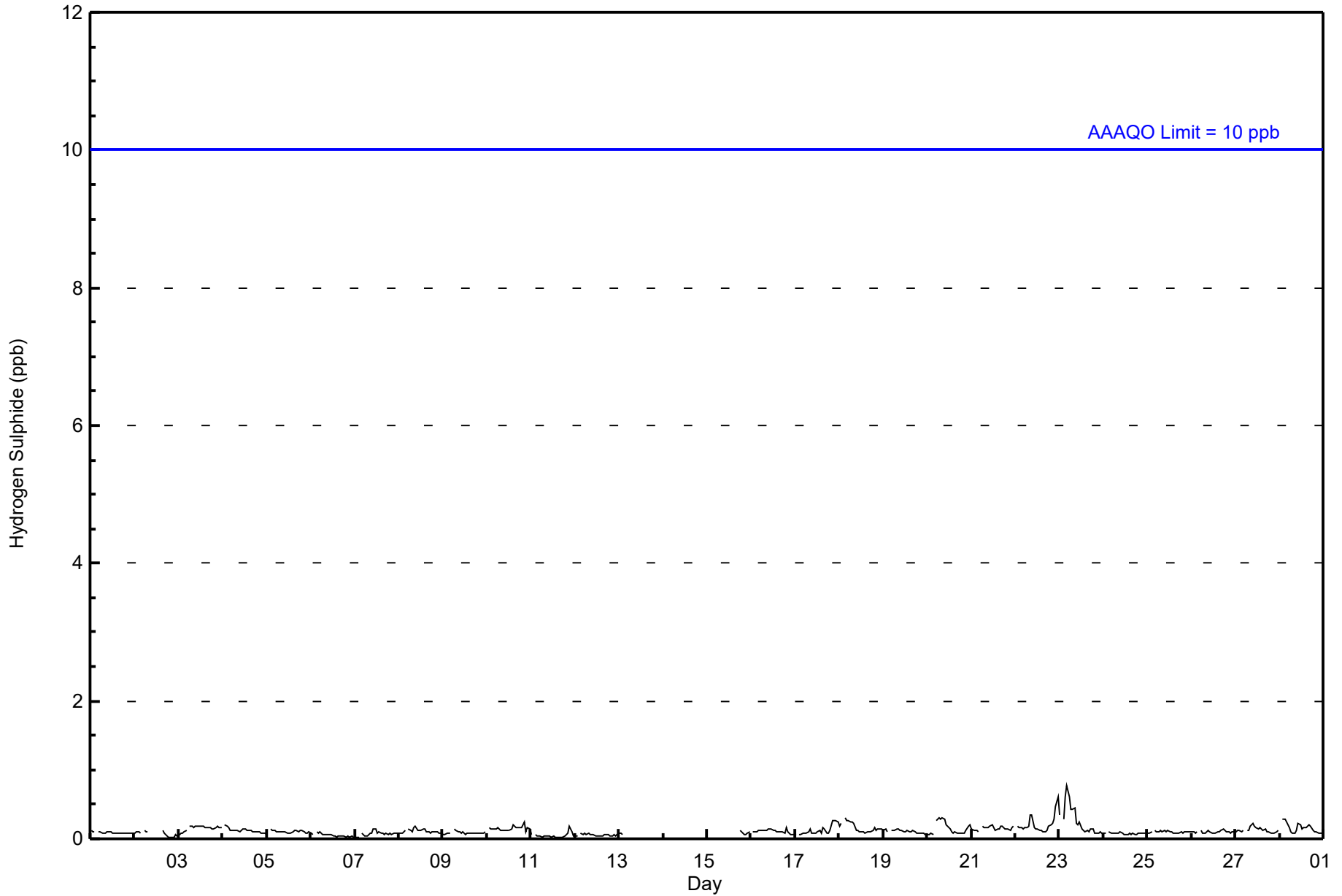






**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Hydrogen Sulphide (H<sub>2</sub>S) - ppb**  
**Kirby North - February 2023**





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Hydrogen Sulphide (H<sub>2</sub>S) - ppb  
Kirby North - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 2                             | 577                    | 100.00   | 100.00              |
| 3 - 4                             | 0                      | 0.00     | 100.00              |
| 5 - 7                             | 0                      | 0.00     | 100.00              |
| 8 - 11                            | 0                      | 0.00     | 100.00              |
| > 11                              | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 577

Total Number of Hours: 672





**Wood Buffalo Environmental Association  
Frequency Distribution**

**Hydrogen Sulphide (H<sub>2</sub>S) - ppb  
Kirby North - February 2023**

| Concentration<br>Ranges (ppb) | Wind Direction |     |    |     |    |     |    |     |    |     |    |     |    |     |    |     | Totals |
|-------------------------------|----------------|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|--------|
|                               | N              | NNE | NE | ENE | E  | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |        |
| 0 - 2                         | 19             | 33  | 49 | 27  | 12 | 10  | 7  | 24  | 85 | 113 | 47 | 42  | 13 | 27  | 30 | 39  | 577    |
| 3 - 4                         | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| 5 - 7                         | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| 8 - 11                        | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| > 11                          | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| <b>Totals</b>                 | 19             | 33  | 49 | 27  | 12 | 10  | 7  | 24  | 85 | 113 | 47 | 42  | 13 | 27  | 30 | 39  | 577    |

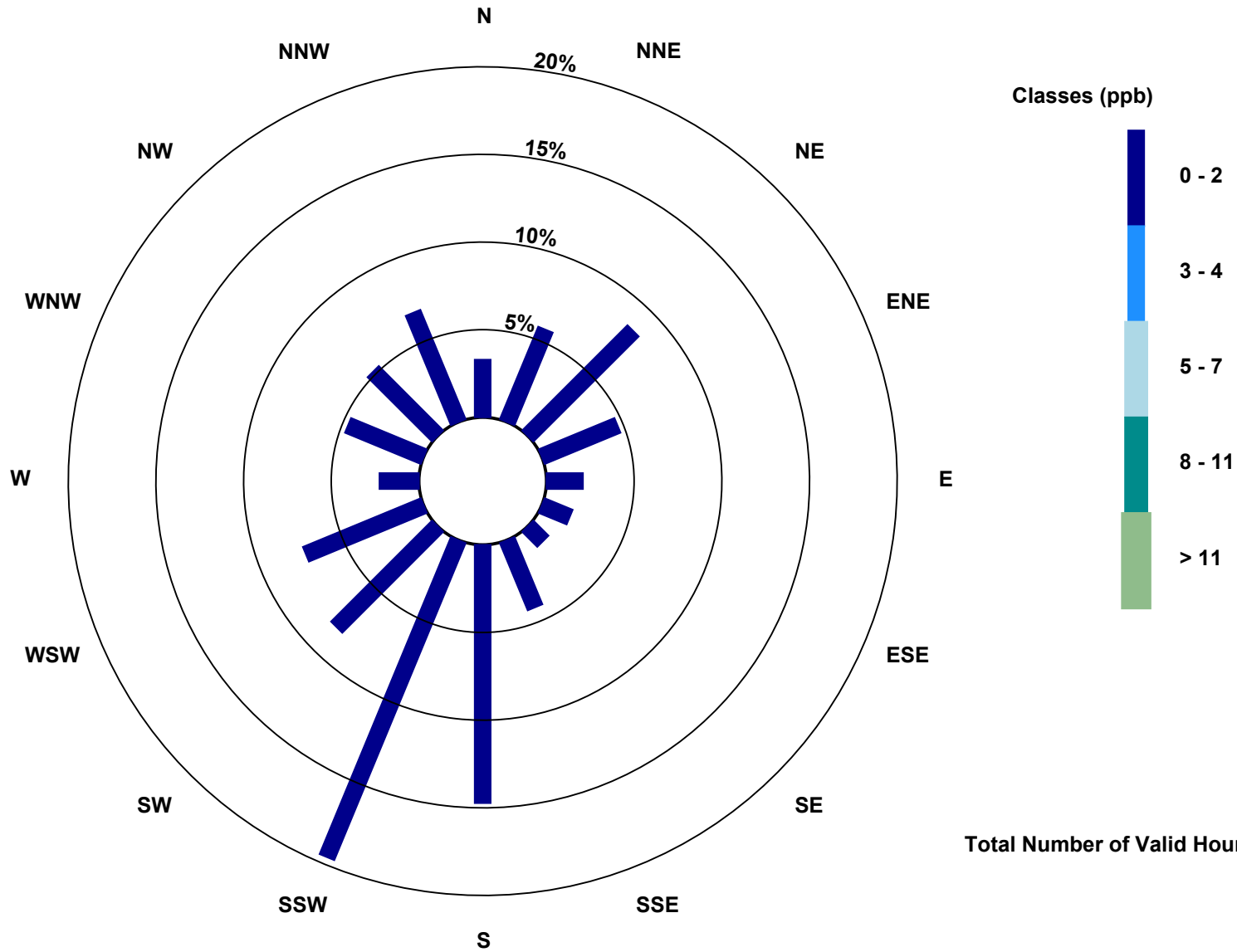
Total Number of Valid Hours: 577

Total Number of Hours: 672

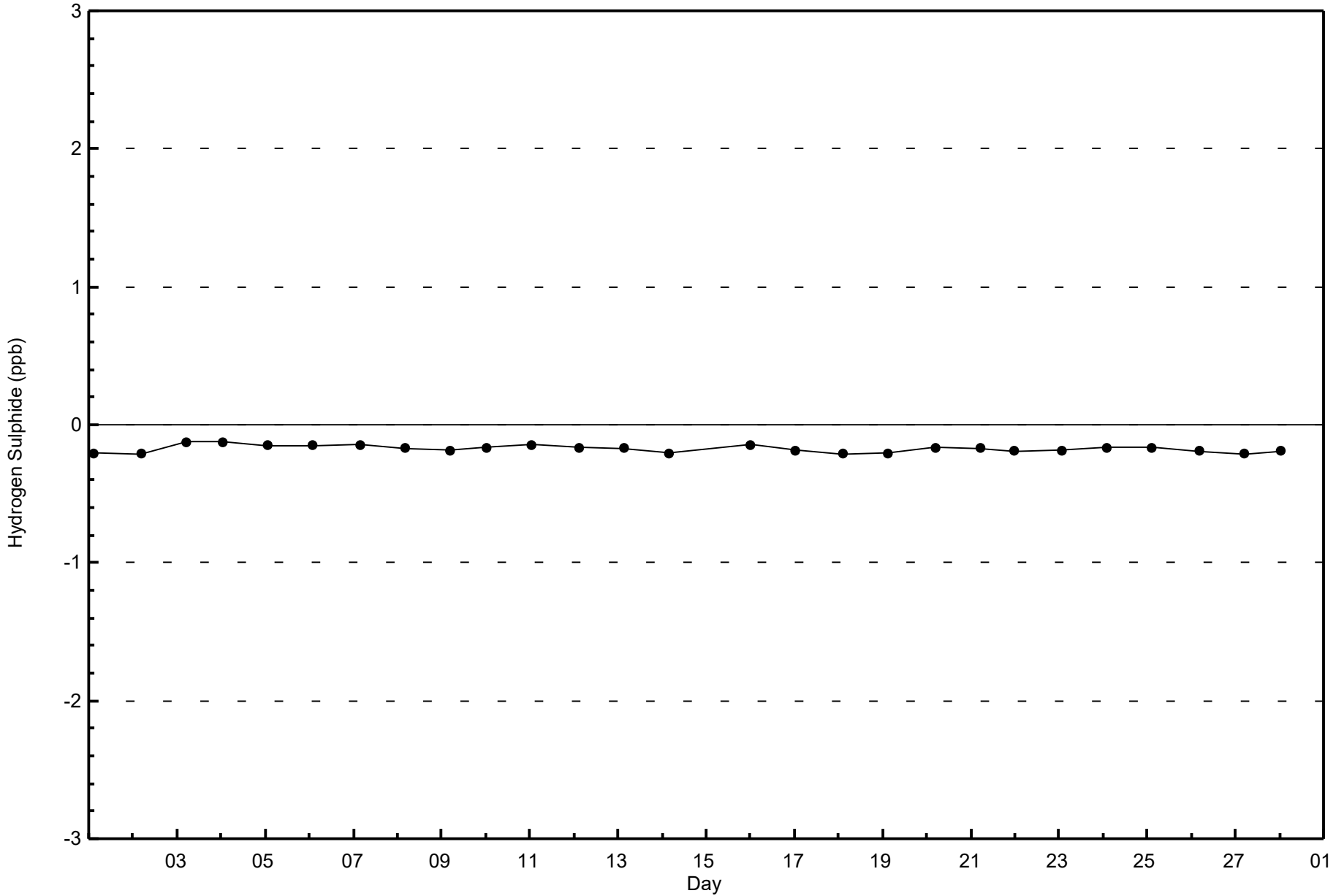


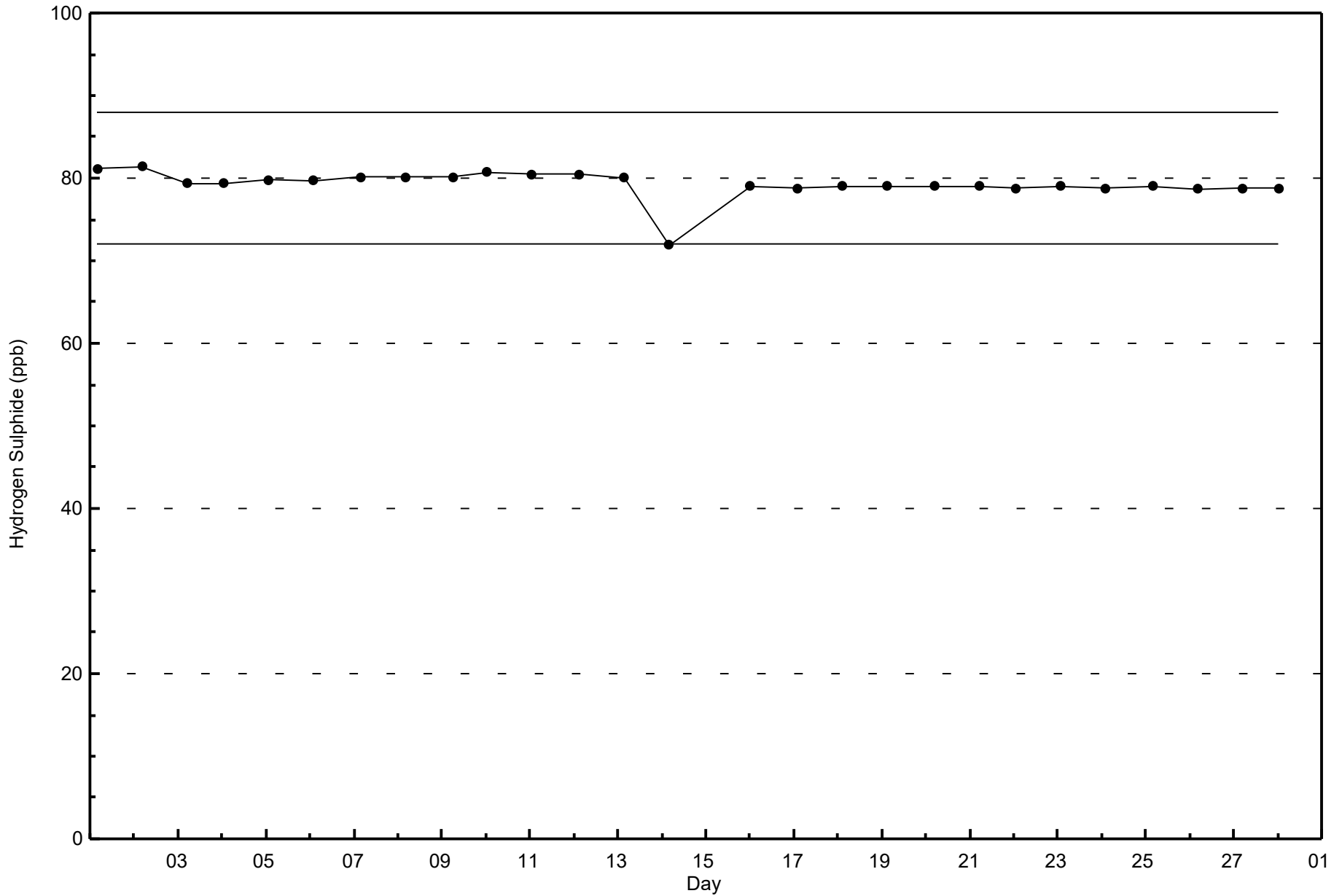
Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Hydrogen Sulphide (H<sub>2</sub>S) - ppb  
Kirby North



Total Number of Valid Hours: 577



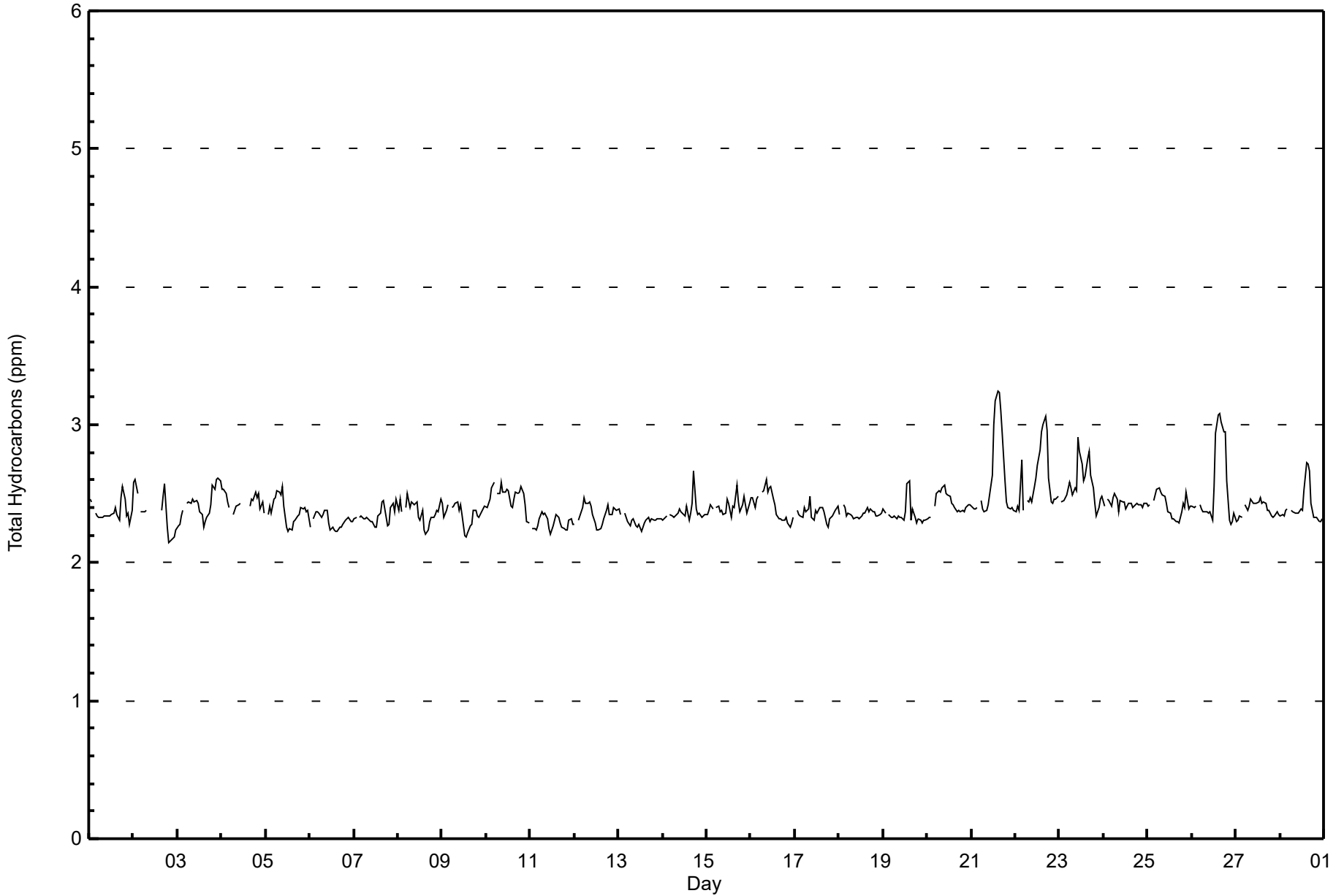






**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Total Hydrocarbons (THC) - ppm**  
**Kirby North - February 2023**





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Total Hydrocarbons (THC) - ppm**  
**Kirby North - February 2023**

| <b>Concentration Ranges (ppm)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 2.0                           | 0                      | 0.00     | 0.00                |
| 2.1 - 3.0                         | 626                    | 98.89    | 98.89               |
| 3.1 - 10.0                        | 7                      | 1.11     | 100.00              |
| > 10.0                            | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 633

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Total Hydrocarbons (THC) - ppm  
Kirby North - February 2023**

| <b>Concentration<br/>Ranges (ppm)</b> | <b>Wind Direction</b> |     |    |     |    |     |    |     |    |     |    |     |    |     |    |     | <b>Totals</b> |
|---------------------------------------|-----------------------|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|---------------|
|                                       | N                     | NNE | NE | ENE | E  | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |               |
| 0 - 2.0                               | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| 2.1 - 3.0                             | 25                    | 36  | 48 | 29  | 11 | 13  | 7  | 23  | 87 | 118 | 55 | 49  | 13 | 30  | 30 | 49  | 623           |
| 3.1 - 10.0                            | 2                     | 1   | 0  | 2   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 2   | 7             |
| > 10.0                                | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| <b>Totals</b>                         | 27                    | 37  | 48 | 31  | 11 | 13  | 7  | 23  | 87 | 118 | 55 | 49  | 13 | 30  | 30 | 51  | 630           |

Total Number of Valid Hours: 630

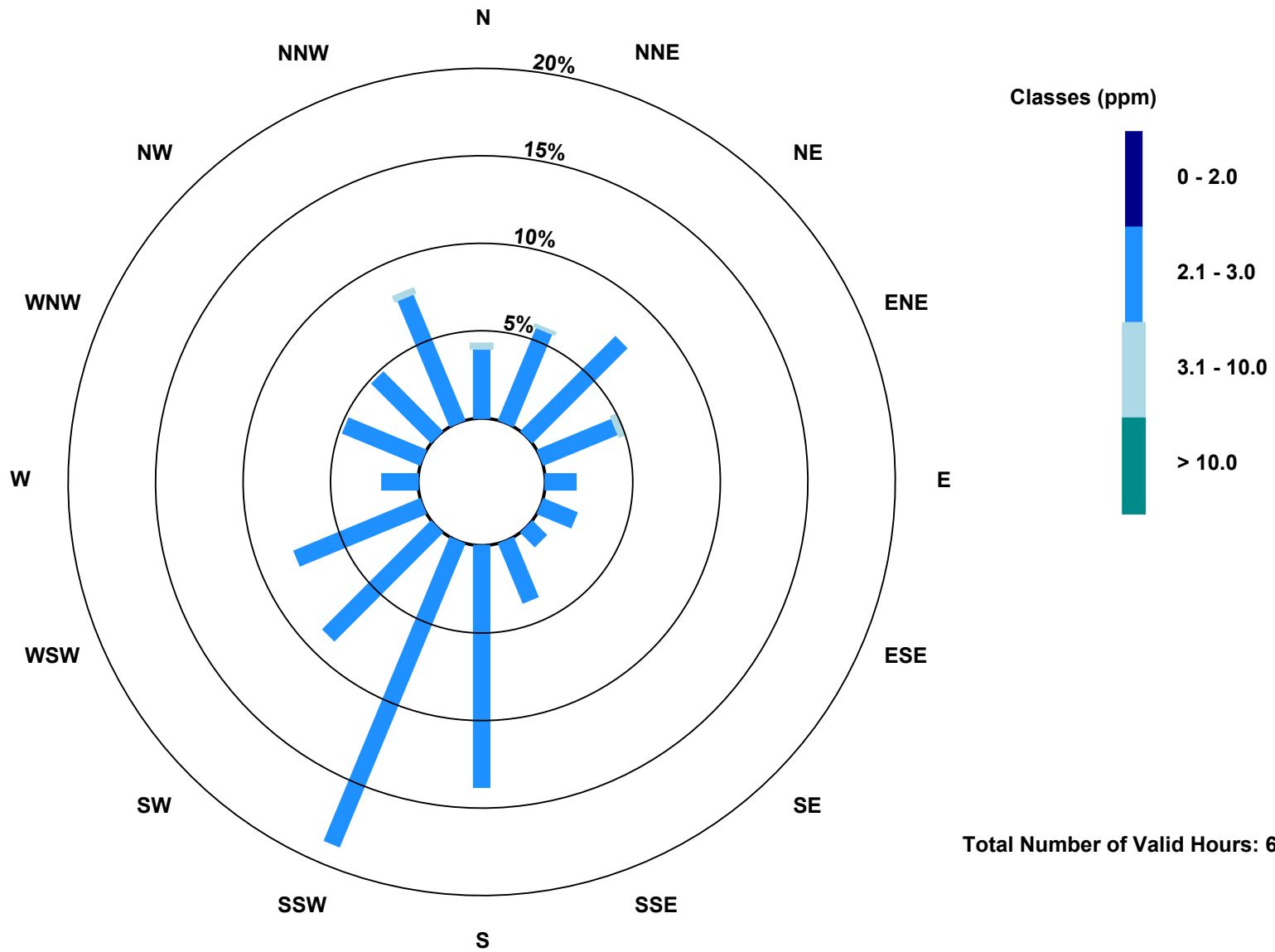
Total Number of Hours: 672

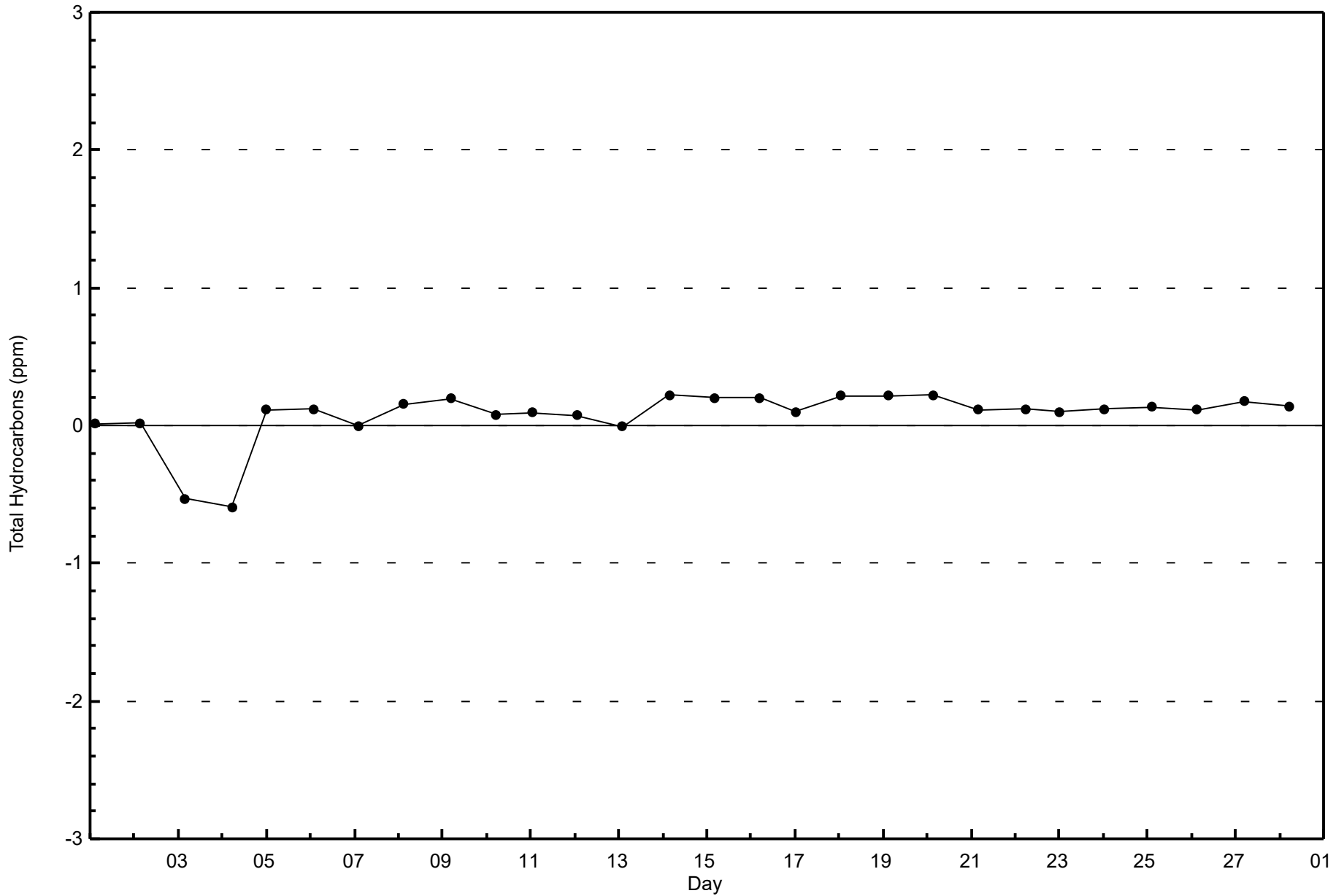


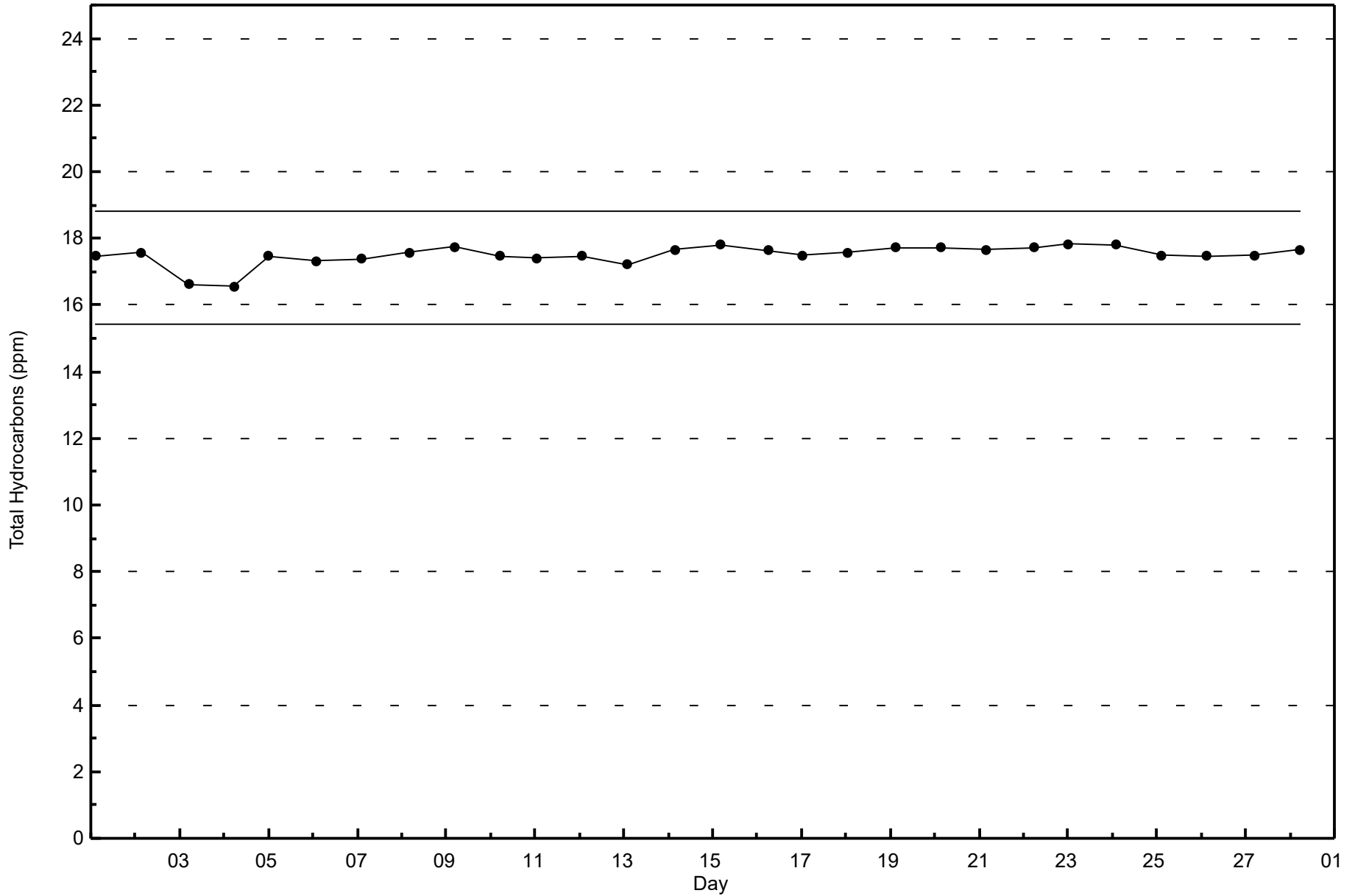


Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Total Hydrocarbons (THC) - ppm  
Kirby North







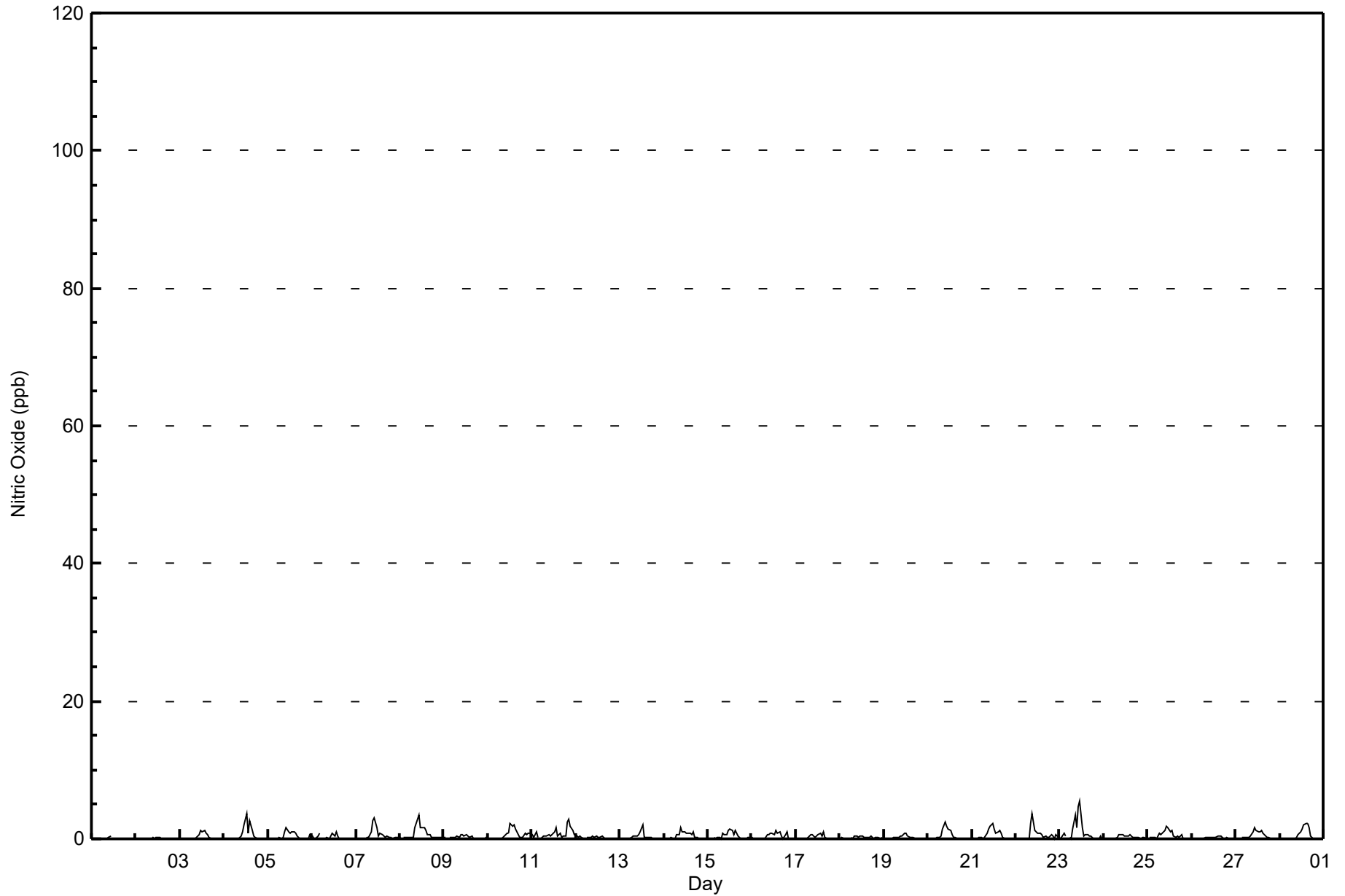


| Maximum Value: 5.5 ppb on Feb 23 12:00  |                               | Maximum Daily Average: 1.0 ppb on Feb 23   |     | Hours in Service: 672           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |               |               |     |
|---|-------------------------------|--|-----|---------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----------------|---------------|---------------|-----|
| Minimum Value: 0.0 ppb on Feb 1 03:00   |                               | Minimum Daily Average: 0.0 ppb on Feb 2  |     | Hours of Data: 637              |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |               |               |     |
| Maximum Diurnal Average: 1.1 ppb at hour 12   |                               | Minimum Diurnal Average: 0.1 ppb at hour 2   |     | Hours of Missing Data: 35       |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |               |               |     |
| Monthly Average: 0.40 ppb   |                               | Percentiles: P <sub>1</sub> = 0.0 P <sub>10</sub> = 0.0 Q <sub>1</sub> = 0.0 Median = 0.2 Q <sub>3</sub> = 0.5 P <sub>90</sub> = 1.1 P <sub>99</sub> = 3.0 |     | Hours of Calibration: 35        |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |               |               |     |
|   |                               |  |     | Percent Operational Time: 100.0 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |               |               |     |
| Day   | Hourly Period Ending At (MST) |  |     |                                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 | Daily Average | Daily Maximum |     |
|   | 1                             | 2  | 3   | 4                               | 5   | 6   | 7   | 8   | 9   | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19  | 20  | 21  | 22  | 23  | 24              |               |               |     |
| 1-Feb   | Z                             | 0.0  | 0.0 | 0.0                             | 0.0 | 0.1 | 0.0 | 0.0 | 0.1 | 0.2 | 0.4 | C   | C   | C   | C   | C   | C   | C   | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0             | --            | 0.4           |     |
| 2-Feb   | 0.0                           | Z  | 0.0 | 0.0                             | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.3 | 0.2 | 0.2 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.0           | 0.0           | 0.3 |
| 3-Feb   | 0.0                           | 0.0  | Z   | 0.0                             | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.3 | 0.6 | 1.2 | 0.9 | 1.2 | 0.8 | 0.6 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.2           | 1.2           |     |
| 4-Feb   | 0.0                           | 0.0  | 0.0 | Z                               | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.4 | 1.0 | 2.0 | 3.7 | 0.8 | 2.6 | 1.3 | 0.5 | 0.1 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.1             | 0.6           | 3.7           |     |
| 5-Feb   | 0.0                           | 0.0  | 0.0 | 0.0                             | Z   | 0.0 | 0.1 | 0.1 | 0.2 | 1.1 | 1.6 | 1.0 | 0.9 | 1.1 | 1.0 | 0.8 | 0.4 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.5             | 0.4           | 1.6           |     |
| 6-Feb   | 0.3                           | 0.0  | 0.1 | 0.5                             | 0.7 | Z   | 0.0 | 0.0 | 0.3 | 0.0 | 0.3 | 0.8 | 0.3 | 1.0 | 0.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.2           | 1.0           |     |
| 7-Feb   | Z                             | 0.0  | 0.0 | 0.0                             | 0.0 | 0.0 | 0.2 | 0.3 | 1.0 | 2.7 | 3.0 | 1.5 | 0.4 | 0.8 | 0.6 | 0.4 | 0.2 | 0.3 | 0.1 | 0.1 | 0.0 | 0.3 | 0.2 | 0.2             | 0.6           | 3.0           |     |
| 8-Feb   | 0.2                           | Z  | 0.2 | 0.3                             | 0.2 | 0.2 | 0.2 | 0.2 | 1.7 | 2.2 | 3.4 | 1.5 | 1.7 | 1.6 | 1.3 | 0.6 | 0.7 | 0.3 | 0.2 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2             | 0.8           | 3.4           |     |
| 9-Feb   | 0.2                           | 0.3  | Z   | 0.2                             | 0.2 | 0.1 | 0.3 | 0.4 | 0.3 | 0.7 | 0.6 | 0.5 | 0.6 | 0.4 | 0.3 | 0.4 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1             | 0.2           | 0.7           |     |
| 10-Feb  | 0.0                           | 0.0  | 0.0 | Z                               | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 | 0.4 | 0.8 | 0.9 | 2.1 | 1.9 | 2.0 | 1.5 | 1.1 | 0.3 | 0.2 | 0.2 | 0.9 | 0.6 | 0.8 | 0.8             | 0.6           | 2.1           |     |
| 11-Feb  | 0.6                           | 0.2  | 1.0 | 0.2                             | Z   | 0.1 | 0.4 | 0.4 | 0.3 | 0.7 | 0.4 | 0.5 | 1.0 | 1.5 | 0.5 | 0.7 | 0.2 | 0.4 | 0.4 | 2.4 | 2.8 | 1.9 | 1.1 | 0.6             | 0.8           | 2.8           |     |
| 12-Feb  | 0.6                           | 0.3  | 0.3 | 0.3                             | 0.1 | Z   | 0.2 | 0.2 | 0.2 | 0.4 | 0.2 | 0.3 | 0.2 | 0.2 | 0.3 | 0.2 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.2           | 0.6           |     |
| 13-Feb  | Z                             | 0.0  | 0.0 | 0.0                             | 0.0 | 0.1 | 0.3 | 0.3 | 0.4 | 0.5 | 0.5 | 1.1 | 2.0 | 0.1 | 0.2 | 0.2 | 0.2 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0             | 0.3           | 2.0           |     |
| 14-Feb  | 0.1                           | Z  | 0.1 | 0.1                             | 0.1 | 0.1 | 0.0 | 0.5 | 0.6 | 1.6 | 1.0 | 1.1 | 0.7 | 0.8 | 0.8 | 0.5 | 1.0 | 0.3 | 0.1 | 0.1 | 0.1 | 0.0 | 0.1 | 0.1             | 0.4           | 1.6           |     |
| 15-Feb  | 0.0                           | 0.1  | Z   | 0.1                             | 0.1 | 0.1 | 0.2 | 0.1 | 0.7 | 0.6 | 0.7 | 1.3 | 1.5 | 1.3 | 0.7 | 1.2 | 0.4 | 0.2 | 0.0 | 0.0 | 0.1 | 0.1 | 0.2 | 0.1             | 0.4           | 1.5           |     |
| 16-Feb  | 0.1                           | 0.1  | 0.0 | Z                               | 0.1 | 0.0 | 0.0 | 0.0 | 0.6 | 0.6 | 0.9 | 0.8 | 0.6 | 1.2 | 0.8 | 1.0 | 0.4 | 0.1 | 0.6 | 0.9 | 0.1 | 0.0 | 0.1 | 0.0             | 0.4           | 1.2           |     |
| 17-Feb  | 0.0                           | 0.0  | 0.0 | 0.0                             | Z   | 0.0 | 0.0 | 0.3 | 0.6 | 0.6 | 0.3 | 0.3 | 0.5 | 0.7 | 0.4 | 0.9 | 0.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.2           | 0.9           |     |
| 18-Feb  | 0.1                           | 0.1  | 0.0 | 0.0                             | 0.0 | Z   | 0.2 | 0.0 | 0.3 | 0.4 | 0.3 | 0.3 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 | 0.3 | 0.0 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2             | 0.2           | 0.4           |     |
| 19-Feb  | Z                             | 0.0  | 0.0 | 0.1                             | 0.1 | 0.1 | 0.1 | 0.1 | 0.3 | 0.5 | 0.4 | 0.8 | 0.8 | 0.5 | 0.2 | 0.1 | 0.2 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.2           | 0.8           |     |
| 20-Feb  | 0.0                           | Z  | 0.0 | 0.0                             | 0.0 | 0.2 | 0.1 | 0.4 | 1.3 | 2.4 | 1.9 | 1.4 | 1.1 | 0.5 | 0.2 | 0.3 | 0.1 | 0.0 | 0.1 | 0.1 | 0.0 | 0.0 | 0.1 | 0.1             | 0.4           | 2.4           |     |
| 21-Feb  | 0.1                           | 0.1  | Z   | 0.1                             | 0.1 | 0.2 | 0.1 | 0.3 | 0.8 | 1.3 | 1.8 | 2.2 | 1.5 | 0.7 | 1.0 | 1.1 | 0.7 | 0.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.5           | 2.2           |     |
| 22-Feb  | 0.0                           | 0.0  | 0.0 | Z                               | 0.0 | 0.0 | 0.0 | 0.1 | 2.3 | 3.7 | 1.2 | 0.9 | 0.9 | 0.7 | 0.6 | 0.3 | 0.3 | 0.1 | 0.1 | 0.6 | 0.5 | 0.0 | 0.5 | 0.2             | 0.6           | 3.7           |     |
| 23-Feb  | 0.1                           | 0.1  | 0.7 | 0.4                             | Z   | 0.1 | 0.1 | 1.5 | 3.5 | 1.5 | 4.6 | 5.5 | 1.5 | 0.5 | 0.5 | 0.6 | 0.4 | 0.3 | 0.0 | 0.0 | 0.0 | 0.1 | 0.3 | 0.0             | 1.0           | 5.5           |     |
| 24-Feb  | 0.1                           | 0.0  | 0.0 | 0.1                             | 0.0 | Z   | 0.0 | 0.1 | 0.7 | 0.6 | 0.6 | 0.4 | 0.4 | 0.4 | 0.7 | 0.3 | 0.2 | 0.1 | 0.2 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1             | 0.2           | 0.7           |     |
| 25-Feb  | Z                             | 0.2  | 0.2 | 0.2                             | 0.3 | 0.1 | 0.7 | 0.5 | 0.9 | 1.2 | 1.9 | 1.6 | 1.1 | 1.2 | 0.5 | 0.2 | 0.4 | 0.3 | 0.6 | 0.1 | 0.0 | 0.1 | 0.0 | 0.0             | 0.5           | 1.9           |     |
| 26-Feb  | 0.0                           | Z  | 0.0 | 0.0                             | 0.0 | 0.0 | 0.0 | 0.1 | 0.2 | 0.3 | 0.3 | 0.2 | 0.2 | 0.2 | 0.4 | 0.4 | 0.3 | 0.1 | 0.0 | 0.1 | 0.1 | 0.1 | 0.1 | 0.0             | 0.1           | 0.4           |     |
| 27-Feb  | 0.1                           | 0.1  | Z   | 0.1                             | 0.3 | 0.2 | 0.2 | 0.3 | 0.4 | 1.0 | 1.7 | 1.1 | 0.9 | 1.0 | 1.2 | 0.8 | 0.4 | 0.3 | 0.2 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0             | 0.4           | 1.7           |     |
| 28-Feb  | 0.0                           | 0.0  | 0.0 | Z                               | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.3 | 0.6 | 1.0 | 1.4 | 1.9 | 2.3 | 2.2 | 1.6 | 0.3 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0             | 0.5           | 2.3           |     |
|   |                               |  |     |                                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Diurnal Average |               |               |     |
|   |                               |  |     |                                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Diurnal Maximum |               |               |     |
| 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.2 0.6 0.9 1.1 1.1 1.0 0.8 0.8 0.6 0.4 0.2 0.1 0.2 0.2 0.1 0.1 0.1 0.1 0.1 |                               |  |     |                                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |               |               |     |
| 0.6 0.3 1.0 0.5 0.7 0.2 0.7 1.5 3.5 3.7 4.6 5.5 3.7 1.9 2.6 2.2 1.6 0.4 0.6 2.4 2.8 1.9 1.1 0.8         |                               |  |     |                                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |               |               |     |
| Z - zerospan C - Calibration  |                               |  |     |                                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |                 |               |               |     |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Nitric Oxide (NO) - ppb**  
**Kirby North - February 2023**





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Nitric Oxide (NO) - ppb**  
**Kirby North - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 20                            | 637                    | 100.00   | 100.00              |
| 21 - 40                           | 0                      | 0.00     | 100.00              |
| 41 - 80                           | 0                      | 0.00     | 100.00              |
| 81 - 159                          | 0                      | 0.00     | 100.00              |
| > 159                             | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 637

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Nitric Oxide (NO) - ppb  
Kirby North - February 2023**

| <b>Concentration<br/>Ranges (ppb)</b> | <b>Wind Direction</b> |     |    |     |    |     |    |     |    |     |    |     |    |     |    |     | <b>Totals</b> |
|---------------------------------------|-----------------------|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|---------------|
|                                       | N                     | NNE | NE | ENE | E  | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |               |
| 0 - 20                                | 26                    | 38  | 48 | 31  | 12 | 13  | 7  | 24  | 89 | 115 | 55 | 52  | 12 | 29  | 33 | 44  | 628           |
| 21 - 40                               | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| 41 - 80                               | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| 81 - 159                              | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| > 159                                 | 0                     | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0             |
| <b>Totals</b>                         | 26                    | 38  | 48 | 31  | 12 | 13  | 7  | 24  | 89 | 115 | 55 | 52  | 12 | 29  | 33 | 44  | 628           |

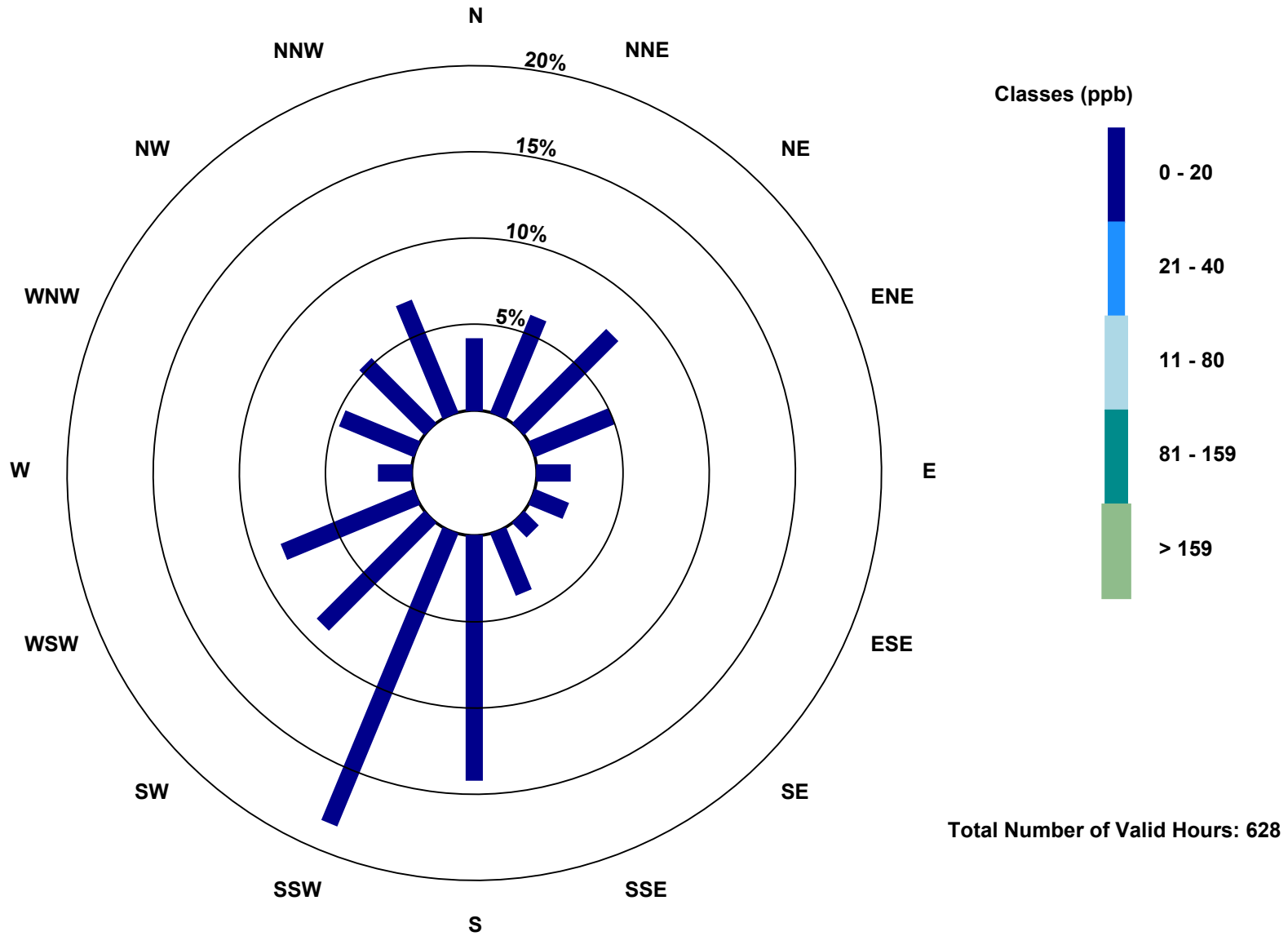
Total Number of Valid Hours: 628

Total Number of Hours: 672

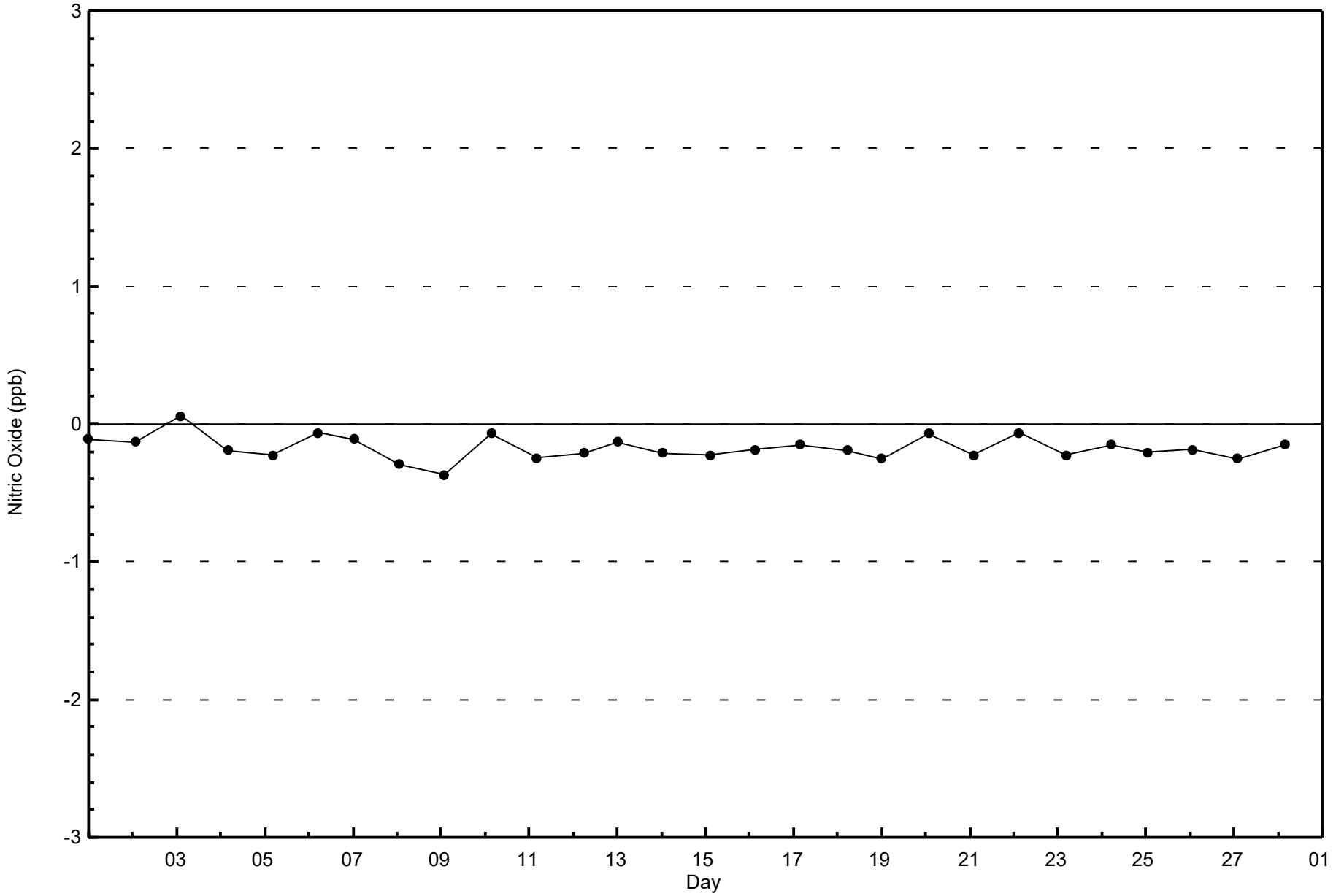


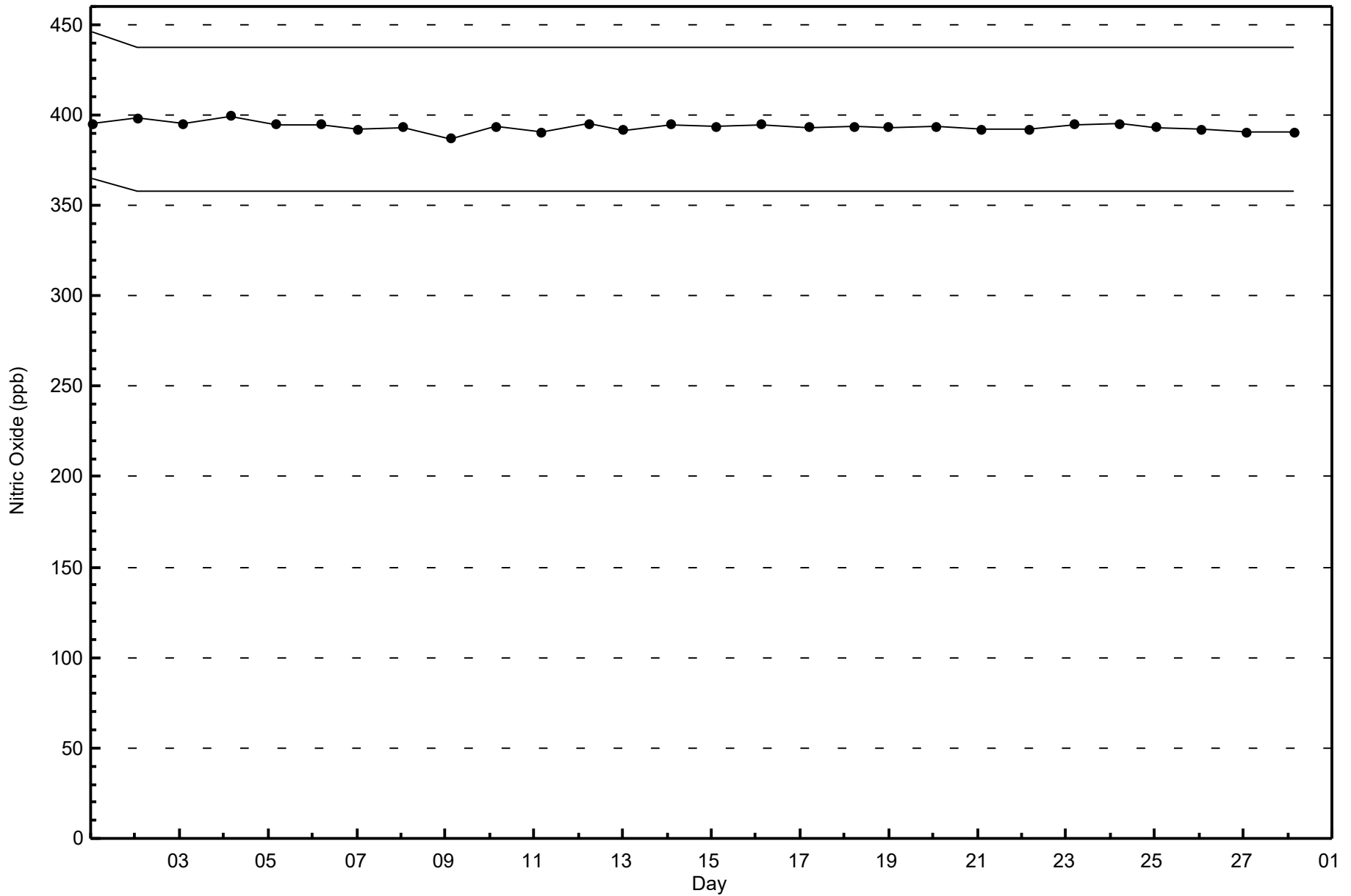
Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Nitric Oxide (NO) - ppb  
Kirby North











**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

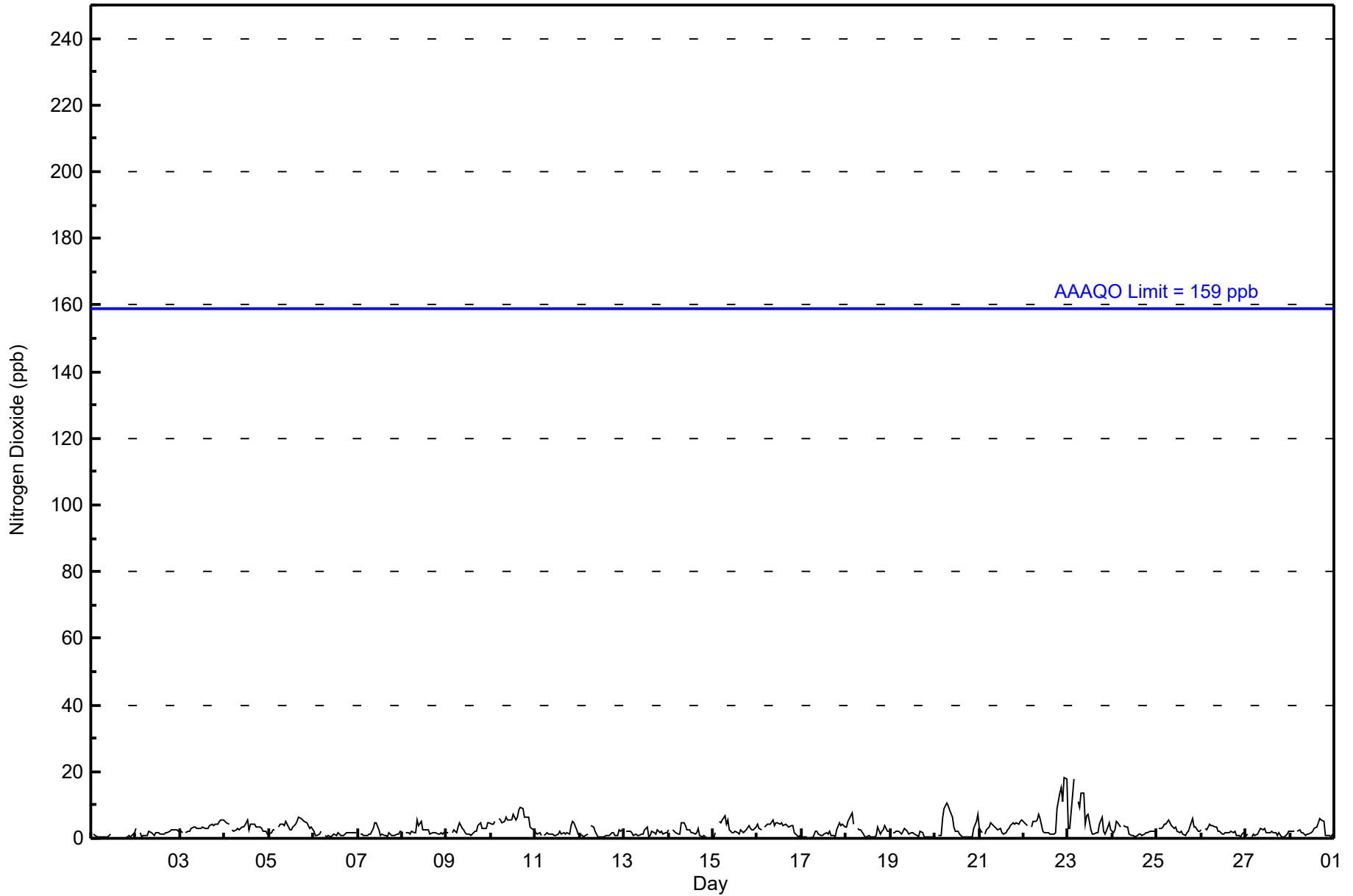
**Nitrogen Dioxide (NO<sub>2</sub>) - ppb**  
**Kirby North - February 2023**

| Number of Exceedences (AAAQO):   |                               | 1-hr: 0   | 24-hr: 0 | Hours in Service: 672 |     |      |      |      |      |     |     |     |     |     |     |     |     |     |                                 |      | 672  |      |      |                 |               |               |
|--|-------------------------------|---|----------|-----------------------|-----|------|------|------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|---------------------------------|------|------|------|------|-----------------|---------------|---------------|
| Maximum Value: 18.4 ppb on Feb 22 23:00  |                               | Maximum Daily Average: 6.2 ppb on Feb 22  |          |                       |     |      |      |      |      |     |     |     |     |     |     |     |     |     | Hours of Data: 637              |      |      |      |      |                 |               |               |
| Minimum Value: 0.0 ppb on Feb 14 23:00   |                               | Minimum Daily Average: 1.3 ppb on Feb 6   |          |                       |     |      |      |      |      |     |     |     |     |     |     |     |     |     | Hours of Missing Data: 35       |      |      |      |      |                 |               |               |
| Maximum Diurnal Average: 3.7 ppb at hour 9   |                               | Minimum Diurnal Average: 1.9 ppb at hour 14   |          |                       |     |      |      |      |      |     |     |     |     |     |     |     |     |     | Hours of Calibration: 35        |      |      |      |      |                 |               |               |
| Monthly Average: 2.68 ppb  |                               | Percentiles: P <sub>1</sub> = 0.3 P <sub>10</sub> = 0.7 Q <sub>1</sub> = 1.2 Median = 2.1 Q <sub>3</sub> = 3.6 P <sub>90</sub> = 5.1 P <sub>99</sub> = 13.1 |          |                       |     |      |      |      |      |     |     |     |     |     |     |     |     |     | Percent Operational Time: 100.0 |      |      |      |      |                 |               |               |
| Day  | Hourly Period Ending At (MST) |   |          |                       |     |      |      |      |      |     |     |     |     |     |     |     |     |     |                                 |      |      |      |      |                 | Daily Average | Daily Maximum |
|  | 1                             | 2   | 3        | 4                     | 5   | 6    | 7    | 8    | 9    | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19                              | 20   | 21   | 22   | 23   | 24              |               |               |
| 1-Feb  | Z                             | 1.2   | 0.7      | 0.6                   | 0.3 | 0.4  | 0.4  | 0.3  | 0.3  | 0.4 | 1.1 | C   | C   | C   | C   | C   | C   | C   | 0.2                             | 0.4  | 0.7  | 0.3  | 0.9  | 1.7             | --            | 1.7           |
| 2-Feb  | 2.9                           | Z   | 1.6      | 0.6                   | 0.7 | 0.9  | 0.9  | 2.0  | 1.5  | 1.1 | 1.0 | 1.5 | 1.5 | 1.3 | 1.3 | 1.3 | 1.5 | 1.8 | 2.3                             | 2.5  | 2.6  | 2.5  | 2.4  | 2.0             | 1.6           | 2.9           |
| 3-Feb  | 2.0                           | 1.9   | Z        | 1.9                   | 2.1 | 2.2  | 2.8  | 3.6  | 3.4  | 3.1 | 2.9 | 3.1 | 3.3 | 3.0 | 3.0 | 3.1 | 3.8 | 4.1 | 4.0                             | 4.1  | 4.2  | 4.9  | 5.5  | 5.5             | 3.4           | 5.5           |
| 4-Feb  | 5.0                           | 4.6   | 4.2      | Z                     | 2.5 | 2.2  | 2.7  | 2.8  | 2.6  | 3.3 | 3.6 | 3.8 | 5.3 | 2.5 | 4.1 | 4.3 | 4.1 | 3.2 | 3.3                             | 3.2  | 3.1  | 2.1  | 2.2  | 1.3             | 3.3           | 5.3           |
| 5-Feb  | 1.3                           | 1.6   | 2.5      | 2.5                   | Z   | 3.4  | 4.1  | 4.2  | 3.9  | 5.2 | 4.3 | 2.7 | 2.6 | 3.5 | 4.4 | 5.1 | 6.3 | 5.9 | 5.6                             | 5.1  | 4.6  | 3.9  | 2.9  | 3.2             | 3.9           | 6.3           |
| 6-Feb  | 2.1                           | 1.0   | 0.7      | 1.4                   | 2.1 | Z    | 0.8  | 0.5  | 1.0  | 0.6 | 0.9 | 1.3 | 0.8 | 1.8 | 1.1 | 0.7 | 0.9 | 1.2 | 1.7                             | 1.8  | 1.9  | 1.7  | 1.6  | 1.7             | 1.3           | 2.1           |
| 7-Feb  | Z                             | 1.4   | 1.2      | 1.0                   | 0.8 | 0.8  | 1.4  | 1.1  | 3.1  | 4.7 | 4.6 | 2.4 | 0.7 | 1.1 | 0.8 | 0.9 | 0.6 | 1.6 | 0.8                             | 0.7  | 0.9  | 1.2  | 1.2  | 2.0             | 1.5           | 4.7           |
| 8-Feb  | 1.6                           | Z   | 1.8      | 1.8                   | 1.2 | 2.0  | 1.7  | 1.5  | 5.6  | 3.9 | 5.2 | 2.6 | 2.5 | 2.7 | 2.4 | 1.2 | 1.8 | 1.9 | 1.6                             | 1.2  | 1.4  | 1.6  | 1.4  | 2.0             | 2.2           | 5.6           |
| 9-Feb  | 1.7                           | 1.5   | Z        | 1.7                   | 2.5 | 1.8  | 3.2  | 4.6  | 3.0  | 2.4 | 1.6 | 1.1 | 1.2 | 0.9 | 1.2 | 2.1 | 2.2 | 3.7 | 4.6                             | 3.0  | 3.1  | 2.8  | 4.5  | 4.5             | 2.6           | 4.6           |
| 10-Feb   | 4.2                           | 4.4   | 4.9      | Z                     | 5.8 | 5.4  | 4.8  | 4.9  | 6.5  | 5.3 | 5.4 | 5.3 | 7.0 | 5.3 | 6.3 | 8.5 | 9.2 | 9.1 | 6.2                             | 6.2  | 6.2  | 3.6  | 2.9  | 2.6             | 5.7           | 9.2           |
| 11-Feb   | 1.6                           | 1.2   | 1.5      | 0.8                   | Z   | 1.0  | 1.6  | 1.4  | 1.2  | 1.2 | 0.8 | 1.0 | 1.4 | 2.1 | 1.1 | 1.6 | 1.1 | 1.6 | 1.4                             | 3.9  | 5.1  | 4.7  | 2.7  | 1.3             | 1.8           | 5.1           |
| 12-Feb   | 1.2                           | 0.7   | 0.6      | 0.9                   | 1.2 | Z    | 4.0  | 3.3  | 2.3  | 1.3 | 0.6 | 0.6 | 0.6 | 0.5 | 0.9 | 0.8 | 1.0 | 1.5 | 1.8                             | 0.7  | 0.9  | 2.4  | 2.3  | 2.7             | 1.4           | 4.0           |
| 13-Feb   | Z                             | 2.0   | 2.2      | 2.2                   | 1.5 | 0.9  | 1.3  | 0.9  | 1.0  | 1.2 | 1.3 | 2.4 | 3.6 | 0.4 | 0.8 | 2.1 | 1.7 | 1.3 | 2.4                             | 1.9  | 2.0  | 1.4  | 1.5  | 1.9             | 1.6           | 3.6           |
| 14-Feb   | 2.4                           | Z   | 2.4      | 2.2                   | 1.9 | 1.1  | 1.2  | 4.5  | 4.6  | 3.8 | 2.6 | 2.7 | 1.5 | 1.5 | 1.4 | 1.6 | 2.8 | 0.7 | 0.6                             | 0.8  | 0.5  | 0.1  | 0.0  | 0.0             | 1.8           | 4.6           |
| 15-Feb   | 0.1                           | 1.7   | Z        | 5.1                   | 4.7 | 5.4  | 6.7  | 4.4  | 5.3  | 2.5 | 1.7 | 1.8 | 2.1 | 1.8 | 1.3 | 2.5 | 1.9 | 2.3 | 2.4                             | 3.9  | 2.8  | 2.5  | 2.4  | 3.3             | 3.0           | 6.7           |
| 16-Feb   | 4.4                           | 3.0   | 2.5      | Z                     | 3.5 | 4.1  | 4.4  | 4.2  | 5.3  | 4.0 | 4.5 | 4.7 | 4.3 | 4.5 | 4.0 | 4.3 | 3.9 | 3.5 | 3.8                             | 3.7  | 1.5  | 0.8  | 0.5  | 0.7             | 3.5           | 5.3           |
| 17-Feb   | 0.5                           | 0.4   | 0.4      | 0.3                   | Z   | 0.4  | 0.2  | 2.0  | 2.0  | 1.2 | 0.7 | 0.7 | 1.2 | 1.6 | 1.1 | 2.2 | 0.9 | 0.9 | 0.3                             | 2.6  | 4.6  | 3.9  | 4.2  | 3.6             | 1.6           | 4.6           |
| 18-Feb   | 3.2                           | 5.0   | 6.8      | 7.5                   | 4.3 | Z    | 2.9  | 2.4  | 2.5  | 1.4 | 0.6 | 0.6 | 0.7 | 0.3 | 0.3 | 0.4 | 0.9 | 3.3 | 1.4                             | 2.1  | 2.6  | 3.8  | 2.0  | 2.2             | 2.5           | 7.5           |
| 19-Feb   | Z                             | 1.7   | 1.6      | 2.0                   | 2.2 | 1.6  | 1.3  | 2.8  | 2.6  | 2.2 | 1.3 | 1.7 | 1.7 | 1.2 | 0.7 | 0.5 | 2.0 | 1.8 | 0.5                             | 0.4  | 0.4  | 0.4  | 0.5  | 0.3             | 1.4           | 2.8           |
| 20-Feb   | 0.4                           | Z   | 1.0      | 1.0                   | 6.1 | 9.1  | 10.7 | 9.6  | 8.3  | 6.2 | 3.5 | 2.1 | 2.0 | 1.1 | 0.7 | 0.6 | 0.4 | 0.6 | 0.6                             | 0.4  | 0.6  | 3.1  | 5.2  | 7.1             | 3.5           | 10.7          |
| 21-Feb   | 2.9                           | 1.7   | Z        | 1.2                   | 2.7 | 3.4  | 4.5  | 4.3  | 3.5  | 2.8 | 2.5 | 2.8 | 1.9 | 1.3 | 1.6 | 2.6 | 3.0 | 3.9 | 4.6                             | 4.4  | 4.7  | 4.1  | 5.2  | 5.5             | 3.3           | 5.5           |
| 22-Feb   | 4.5                           | 4.3   | 4.0      | Z                     | 3.6 | 5.2  | 5.0  | 5.5  | 7.2  | 5.9 | 2.3 | 1.7 | 1.5 | 1.5 | 1.4 | 1.1 | 1.3 | 1.7 | 8.9                             | 13.6 | 15.2 | 11.1 | 18.4 | 17.7            | 6.2           | 18.4          |
| 23-Feb   | 3.0                           | 3.1   | 12.5     | 17.6                  | Z   | 11.2 | 9.2  | 13.5 | 13.5 | 4.1 | 6.7 | 7.0 | 2.6 | 1.2 | 1.2 | 1.8 | 1.7 | 4.4 | 6.3                             | 2.2  | 1.4  | 3.4  | 4.7  | 2.5             | 5.9           | 17.6          |
| 24-Feb   | 1.6                           | 2.4   | 5.0      | 4.7                   | 3.2 | Z    | 3.9  | 3.6  | 3.3  | 1.3 | 1.0 | 0.9 | 0.6 | 0.8 | 1.2 | 1.1 | 0.9 | 1.2 | 1.5                             | 1.7  | 2.3  | 2.3  | 2.3  | 2.2             | 2.1           | 5.0           |
| 25-Feb   | Z                             | 2.8   | 3.0      | 3.6                   | 4.2 | 4.2  | 5.3  | 4.6  | 3.9  | 3.1 | 3.2 | 2.3 | 1.9 | 2.2 | 1.4 | 0.9 | 1.6 | 2.2 | 4.8                             | 5.8  | 3.4  | 3.3  | 2.2  | 2.2             | 3.1           | 5.8           |
| 26-Feb   | 2.7                           | Z   | 2.8      | 2.7                   | 4.1 | 3.9  | 3.7  | 3.2  | 3.3  | 2.3 | 2.1 | 1.1 | 1.1 | 1.5 | 1.6 | 1.5 | 2.3 | 1.6 | 2.1                             | 0.7  | 0.7  | 0.5  | 1.1  | 1.6             | 2.1           | 4.1           |
| 27-Feb   | 1.0                           | 1.2   | Z        | 0.6                   | 1.4 | 0.9  | 1.1  | 2.3  | 3.0  | 2.5 | 2.8 | 1.8 | 1.5 | 1.5 | 2.1 | 1.9 | 1.6 | 0.9 | 1.8                             | 0.4  | 0.4  | 0.5  | 1.4  | 2.2             | 1.5           | 3.0           |
| 28-Feb   | 2.3                           | 2.1   | 2.0      | Z                     | 2.0 | 2.4  | 1.8  | 1.7  | 1.0  | 1.3 | 1.4 | 1.6 | 2.0 | 2.9 | 3.6 | 4.8 | 6.1 | 5.4 | 4.9                             | 0.9  | 0.9  | 0.7  | 0.6  | 1.1             | 2.3           | 6.1           |
| 2.3 2.2 2.9 2.8 2.7 3.1 3.3 3.6 3.7 2.8 2.5 2.3 2.1 1.9 1.9 2.2 2.4 2.6 2.9 2.8 2.8 2.6 3.0 3.0            |                               |   |          |                       |     |      |      |      |      |     |     |     |     |     |     |     |     |     |                                 |      |      |      |      | Diurnal Average |               |               |
| 5.0 5.0 12.5 17.6 6.1 11.2 10.7 13.5 13.5 6.2 6.7 7.0 7.0 5.3 6.3 8.5 9.2 9.1 8.9 13.6 15.2 11.1 18.4 17.7 |                               |   |          |                       |     |      |      |      |      |     |     |     |     |     |     |     |     |     |                                 |      |      |      |      | Diurnal Maximum |               |               |
| Z - zerospan C - Calibration   |                               |   |          |                       |     |      |      |      |      |     |     |     |     |     |     |     |     |     |                                 |      |      |      |      |                 |               |               |
| Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 159 ppb   |                               |   |          |                       |     |      |      |      |      |     |     |     |     |     |     |     |     |     |                                 |      |      |      |      |                 |               |               |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Nitrogen Dioxide (NO<sub>2</sub>) - ppb**  
**Kirby North - February 2023**





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Nitrogen Dioxide (NO<sub>2</sub>) - ppb  
Kirby North - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 20                            | 637                    | 100.00   | 100.00              |
| 21 - 40                           | 0                      | 0.00     | 100.00              |
| 41 - 80                           | 0                      | 0.00     | 100.00              |
| 81 - 159                          | 0                      | 0.00     | 100.00              |
| > 159                             | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 637

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Nitrogen Dioxide (NO<sub>2</sub>) - ppb  
Kirby North - February 2023**

| <b>Concentration<br/>Ranges (ppb)</b> | <b>Wind Direction</b> |            |           |            |          |            |           |            |          |            |           |            |          |            |           |            | <b>Totals</b> |
|---------------------------------------|-----------------------|------------|-----------|------------|----------|------------|-----------|------------|----------|------------|-----------|------------|----------|------------|-----------|------------|---------------|
|                                       | <b>N</b>              | <b>NNE</b> | <b>NE</b> | <b>ENE</b> | <b>E</b> | <b>ESE</b> | <b>SE</b> | <b>SSE</b> | <b>S</b> | <b>SSW</b> | <b>SW</b> | <b>WSW</b> | <b>W</b> | <b>WNW</b> | <b>NW</b> | <b>NNW</b> |               |
| 0 - 20                                | 26                    | 38         | 48        | 31         | 12       | 13         | 7         | 24         | 89       | 115        | 55        | 52         | 12       | 29         | 33        | 44         | 628           |
| 21 - 40                               | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0             |
| 41 - 80                               | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0             |
| 81 - 159                              | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0             |
| > 159                                 | 0                     | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0        | 0          | 0         | 0          | 0             |
| <b>Totals</b>                         | 26                    | 38         | 48        | 31         | 12       | 13         | 7         | 24         | 89       | 115        | 55        | 52         | 12       | 29         | 33        | 44         | 628           |

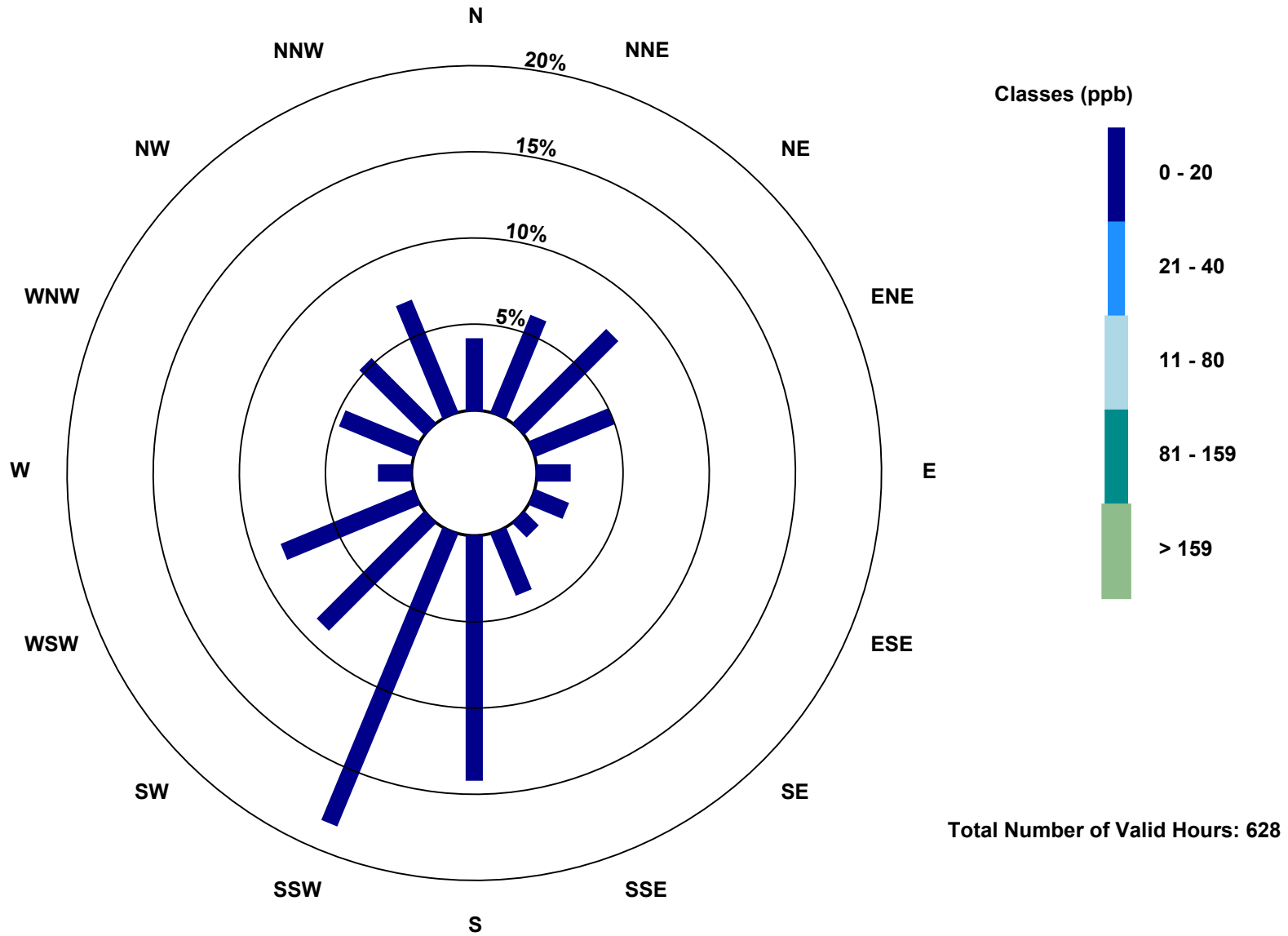
Total Number of Valid Hours: 628

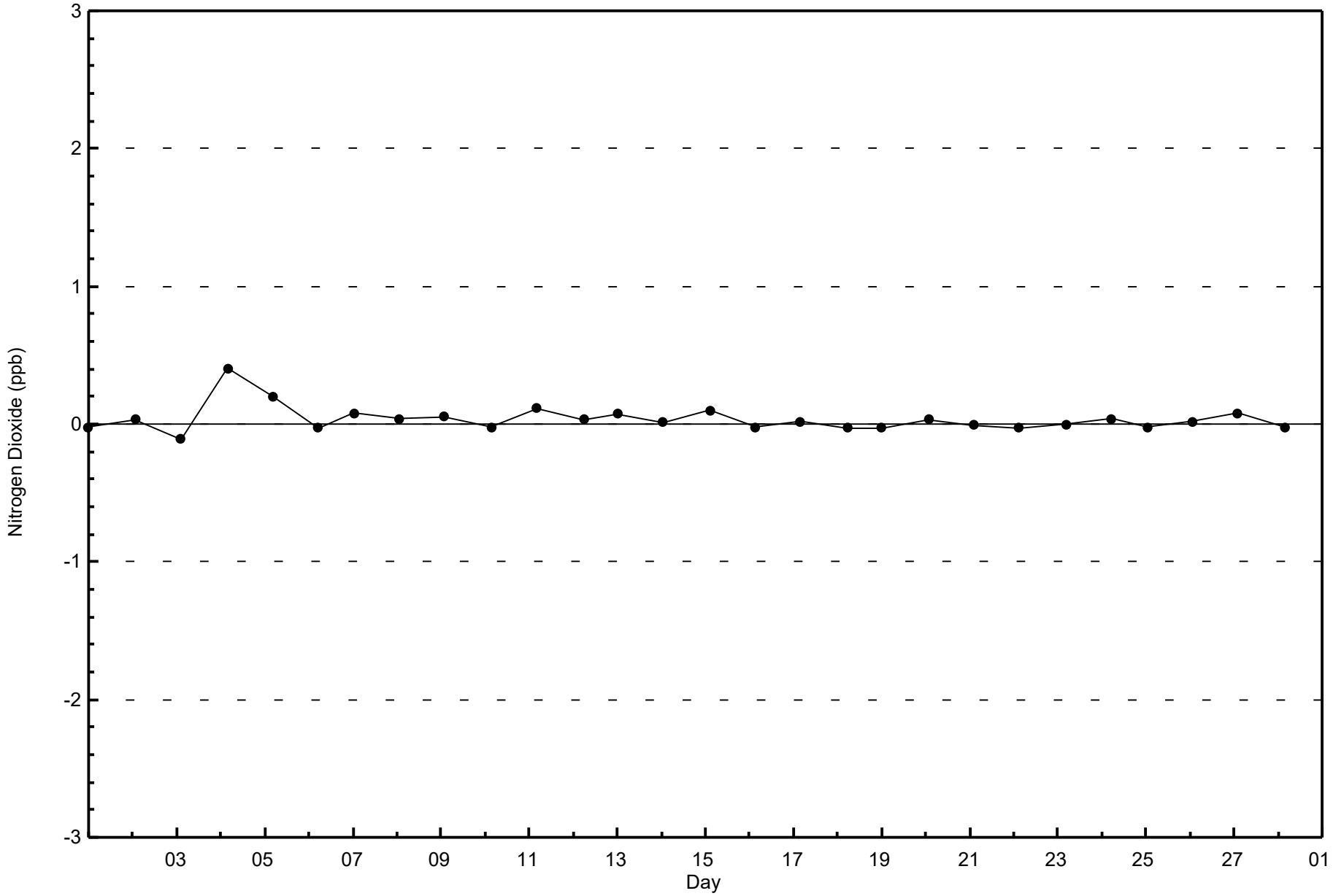
Total Number of Hours: 672



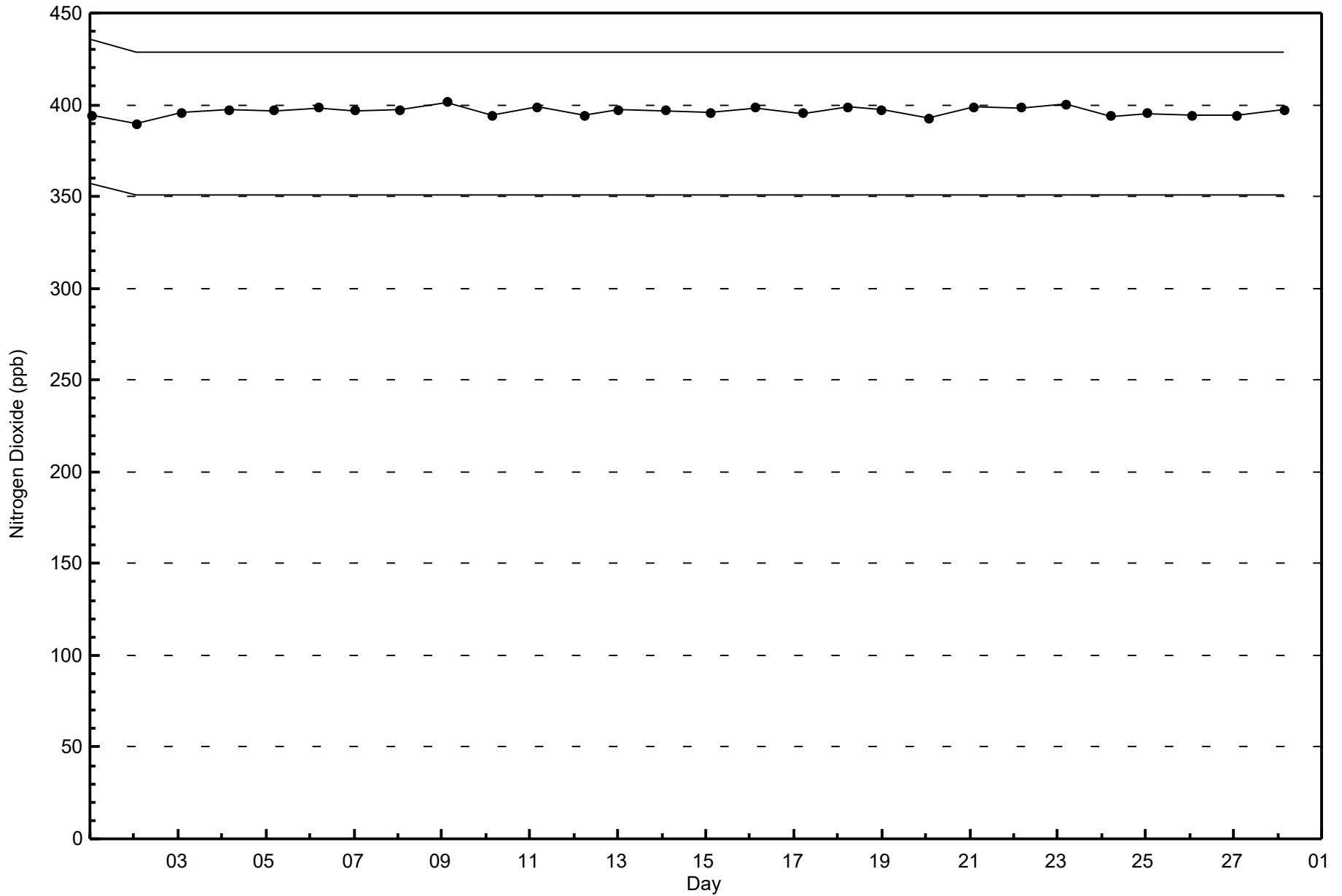
Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Nitrogen Dioxide (NO<sub>2</sub>) - ppb  
Kirby North











**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

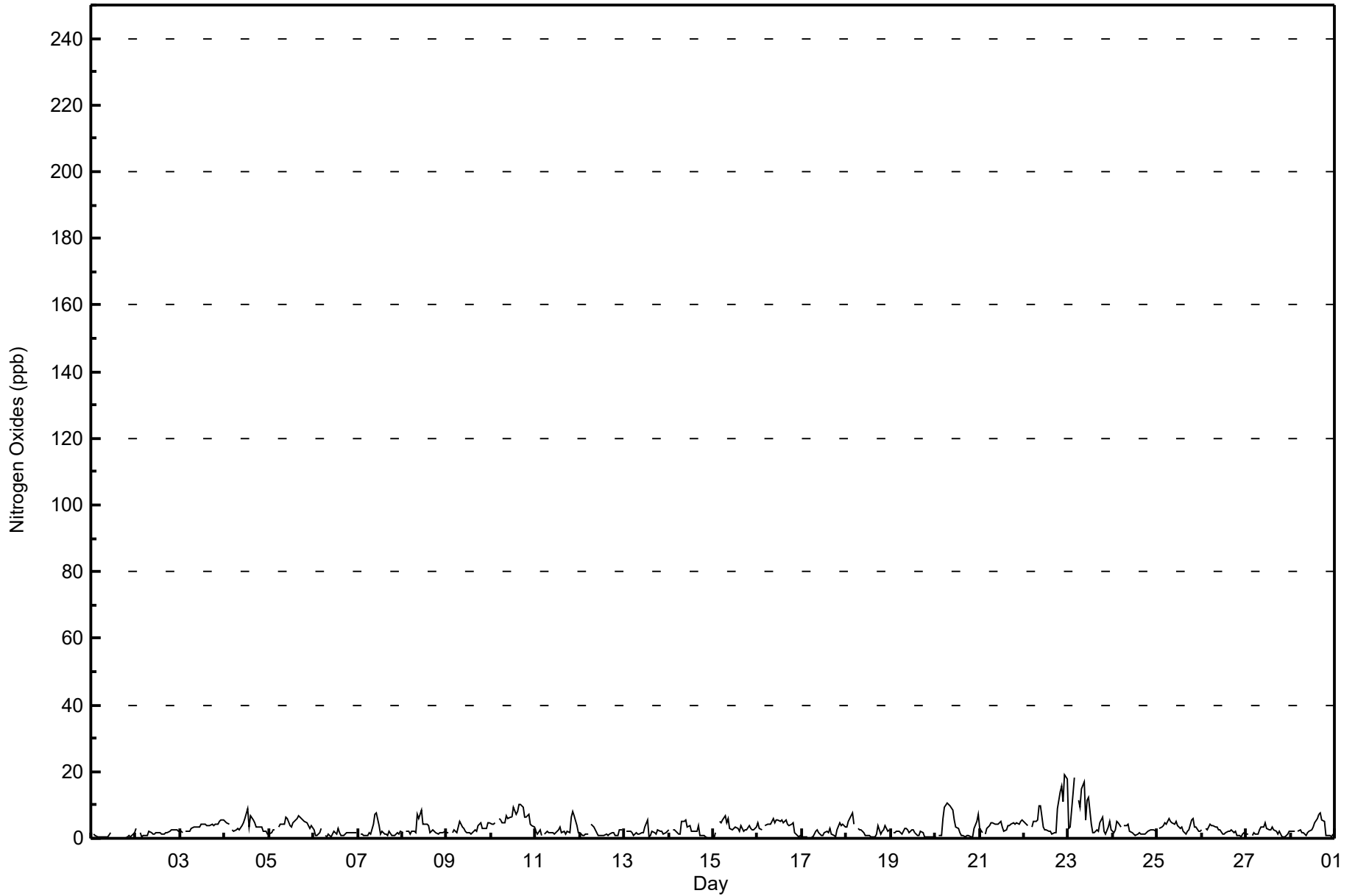
**Nitrogen Oxides (NO<sub>x</sub>) - ppb**  
**Kirby North - February 2023**

| Maximum Value: 18.9 ppb on Feb 22 23:00  |                               |     |      |      |     |      |      |      |      |   |      |      |     |     |     |      |      |     |     | Maximum Daily Average: 6.8 ppb on Feb 23 |      |      |      |                 | Hours in Service: 672 |               |
|--|-------------------------------|-----|------|------|-----|------|------|------|------|---|------|------|-----|-----|-----|------|------|-----|-----|--|------|------|------|-----------------|-----------------------|---------------|
| Minimum Value: 0.1 ppb on Feb 15 01:00   |                               |     |      |      |     |      |      |      |      | Minimum Daily Average: 1.5 ppb on Feb 6   |      |      |     |     |     |      |      |     |     | Hours of Data: 637                       |      |      |      |                 |                       |               |
| Maximum Diurnal Average: 4.4 ppb at hour 9   |                               |     |      |      |     |      |      |      |      | Minimum Diurnal Average: 2.3 ppb at hour 2  |      |      |     |     |     |      |      |     |     | Hours of Missing Data: 35                |      |      |      |                 |                       |               |
| Monthly Average: 3.09 ppb  |                               |     |      |      |     |      |      |      |      | Percentiles: P <sub>1</sub> = 0.3 P <sub>10</sub> = 0.8 Q <sub>1</sub> = 1.4 Median = 2.4 Q <sub>3</sub> = 4.1 P <sub>90</sub> = 5.7 P <sub>99</sub> = 13.8 |      |      |     |     |     |      |      |     |     | Hours of Calibration: 35                 |      |      |      |                 |                       |               |
|  |                               |     |      |      |     |      |      |      |      |   |      |      |     |     |     |      |      |     |     | Percent Operational Time: 100.0          |      |      |      |                 |                       |               |
| Day  | Hourly Period Ending At (MST) |     |      |      |     |      |      |      |      |   |      |      |     |     |     |      |      |     |     |  |      |      |      |                 | Daily Average         | Daily Maximum |
|  | 1                             | 2   | 3    | 4    | 5   | 6    | 7    | 8    | 9    | 10  | 11   | 12   | 13  | 14  | 15  | 16   | 17   | 18  | 19  | 20                                       | 21   | 22   | 23   | 24              |                       |               |
| 1-Feb  | Z                             | 1.2 | 0.7  | 0.6  | 0.3 | 0.5  | 0.4  | 0.3  | 0.4  | 0.6   | 1.5  | C    | C   | C   | C   | C    | C    | 0.2 | 0.4 | 0.7                                      | 0.3  | 1.0  | 1.7  | --              | 1.7                   |               |
| 2-Feb  | 2.9                           | Z   | 1.6  | 0.6  | 0.7 | 0.9  | 0.9  | 2.0  | 1.5  | 1.2   | 1.1  | 1.8  | 1.7 | 1.5 | 1.4 | 1.3  | 1.5  | 1.8 | 2.3 | 2.5                                      | 2.6  | 2.5  | 2.4  | 2.0             | 1.7                   | 2.9           |
| 3-Feb  | 2.0                           | 1.9 | Z    | 1.9  | 2.1 | 2.2  | 2.8  | 3.6  | 3.4  | 3.4   | 3.5  | 4.3  | 4.2 | 4.2 | 3.8 | 3.7  | 3.9  | 4.1 | 4.0 | 4.1                                      | 4.2  | 4.9  | 5.5  | 5.5             | 3.6                   | 5.5           |
| 4-Feb  | 5.0                           | 4.6 | 4.2  | Z    | 2.5 | 2.2  | 2.7  | 2.8  | 2.6  | 3.7   | 4.6  | 5.8  | 9.0 | 3.3 | 6.7 | 5.6  | 4.6  | 3.3 | 3.2 | 3.2                                      | 3.2  | 2.1  | 2.2  | 1.4             | 3.9                   | 9.0           |
| 5-Feb  | 1.3                           | 1.6 | 2.5  | 2.5  | Z   | 3.4  | 4.2  | 4.3  | 4.1  | 6.3   | 5.9  | 3.7  | 3.5 | 4.6 | 5.4 | 5.9  | 6.7  | 6.0 | 5.6 | 5.1                                      | 4.6  | 3.9  | 2.9  | 3.7             | 4.2                   | 6.7           |
| 6-Feb  | 2.4                           | 1.0 | 0.8  | 1.9  | 2.8 | Z    | 0.8  | 0.5  | 1.3  | 0.6   | 1.2  | 2.1  | 1.1 | 2.8 | 1.5 | 0.7  | 0.9  | 1.2 | 1.7 | 1.8                                      | 1.9  | 1.7  | 1.6  | 1.7             | 1.5                   | 2.8           |
| 7-Feb  | Z                             | 1.4 | 1.2  | 1.0  | 0.8 | 0.8  | 1.6  | 1.4  | 4.1  | 7.4   | 7.6  | 3.9  | 1.1 | 1.9 | 1.4 | 1.3  | 0.8  | 1.9 | 0.9 | 0.8                                      | 0.9  | 1.5  | 1.4  | 2.2             | 2.0                   | 7.6           |
| 8-Feb  | 1.8                           | Z   | 2.0  | 2.1  | 1.4 | 2.2  | 1.9  | 1.7  | 7.3  | 6.1   | 8.6  | 4.1  | 4.2 | 4.3 | 3.7 | 1.8  | 2.5  | 2.2 | 1.8 | 1.3                                      | 1.6  | 1.8  | 1.6  | 2.2             | 3.0                   | 8.6           |
| 9-Feb  | 1.9                           | 1.8 | Z    | 1.9  | 2.7 | 1.9  | 3.5  | 5.0  | 3.3  | 3.1   | 2.2  | 1.6  | 1.8 | 1.3 | 1.5 | 2.5  | 2.3  | 3.7 | 4.6 | 3.0                                      | 3.1  | 2.8  | 4.5  | 4.6             | 2.8                   | 5.0           |
| 10-Feb   | 4.2                           | 4.4 | 4.9  | Z    | 5.8 | 5.4  | 4.8  | 4.9  | 6.7  | 5.7   | 6.2  | 6.2  | 9.1 | 7.2 | 8.3 | 10.0 | 10.3 | 9.4 | 6.4 | 6.4                                      | 7.1  | 4.2  | 3.7  | 3.4             | 6.3                   | 10.3          |
| 11-Feb   | 2.2                           | 1.4 | 2.5  | 1.0  | Z   | 1.1  | 2.0  | 1.8  | 1.5  | 1.9   | 1.2  | 1.5  | 2.4 | 3.6 | 1.6 | 2.3  | 1.3  | 2.0 | 1.8 | 6.3                                      | 7.9  | 6.6  | 3.8  | 1.9             | 2.6                   | 7.9           |
| 12-Feb   | 1.8                           | 1.0 | 0.9  | 1.2  | 1.3 | Z    | 4.2  | 3.5  | 2.5  | 1.7   | 0.8  | 0.9  | 0.8 | 0.7 | 1.2 | 1.0  | 1.1  | 1.5 | 1.8 | 0.7                                      | 0.9  | 2.4  | 2.3  | 2.7             | 1.6                   | 4.2           |
| 13-Feb   | Z                             | 2.0 | 2.2  | 2.2  | 1.5 | 1.0  | 1.6  | 1.2  | 1.4  | 1.7   | 1.8  | 3.5  | 5.6 | 0.5 | 1.0 | 2.3  | 1.9  | 1.4 | 2.4 | 1.9                                      | 2.0  | 1.4  | 1.6  | 1.9             | 1.9                   | 5.6           |
| 14-Feb   | 2.5                           | Z   | 2.5  | 2.3  | 2.0 | 1.2  | 1.2  | 5.0  | 5.2  | 5.4   | 3.6  | 3.8  | 2.2 | 2.3 | 2.2 | 2.1  | 3.8  | 1.0 | 0.7 | 0.9                                      | 0.6  | 0.1  | 0.1  | 0.1             | 2.2                   | 5.4           |
| 15-Feb   | 0.1                           | 1.8 | Z    | 5.2  | 4.8 | 5.5  | 6.9  | 4.5  | 6.0  | 3.1   | 2.4  | 3.1  | 3.6 | 3.1 | 2.0 | 3.7  | 2.3  | 2.5 | 2.4 | 3.9                                      | 2.9  | 2.6  | 2.6  | 3.4             | 3.4                   | 6.9           |
| 16-Feb   | 4.5                           | 3.1 | 2.5  | Z    | 3.6 | 4.1  | 4.4  | 4.2  | 5.9  | 4.6   | 5.4  | 5.5  | 4.9 | 5.7 | 4.8 | 5.3  | 4.3  | 3.6 | 4.4 | 4.6                                      | 1.6  | 0.8  | 0.6  | 0.7             | 3.9                   | 5.9           |
| 17-Feb   | 0.5                           | 0.4 | 0.4  | 0.3  | Z   | 0.4  | 0.2  | 2.3  | 2.6  | 1.8   | 1.0  | 1.0  | 1.7 | 2.3 | 1.5 | 3.1  | 1.1  | 0.9 | 0.3 | 2.6                                      | 4.6  | 3.9  | 4.2  | 3.6             | 1.8                   | 4.6           |
| 18-Feb   | 3.3                           | 5.1 | 6.8  | 7.5  | 4.3 | Z    | 3.1  | 2.4  | 2.8  | 1.8   | 0.9  | 0.9  | 1.0 | 0.5 | 0.5 | 0.6  | 1.1  | 3.6 | 1.4 | 2.2                                      | 2.7  | 3.9  | 2.1  | 2.4             | 2.6                   | 7.5           |
| 19-Feb   | Z                             | 1.7 | 1.6  | 2.1  | 2.3 | 1.7  | 1.4  | 2.9  | 2.9  | 2.7   | 1.7  | 2.5  | 2.5 | 1.7 | 0.9 | 0.6  | 2.2  | 1.9 | 0.5 | 0.4                                      | 0.4  | 0.4  | 0.5  | 0.3             | 1.6                   | 2.9           |
| 20-Feb   | 0.4                           | Z   | 1.0  | 1.0  | 6.1 | 9.3  | 10.8 | 10.0 | 9.6  | 8.6   | 5.4  | 3.5  | 3.1 | 1.6 | 0.9 | 0.9  | 0.5  | 0.6 | 0.7 | 0.5                                      | 0.6  | 3.1  | 5.3  | 7.2             | 3.9                   | 10.8          |
| 21-Feb   | 3.0                           | 1.8 | Z    | 1.3  | 2.8 | 3.6  | 4.6  | 4.6  | 4.3  | 4.1   | 4.3  | 5.0  | 3.4 | 2.0 | 2.6 | 3.7  | 3.7  | 4.1 | 4.6 | 4.4                                      | 4.7  | 4.1  | 5.2  | 5.5             | 3.8                   | 5.5           |
| 22-Feb   | 4.5                           | 4.3 | 4.0  | Z    | 3.6 | 5.2  | 5.0  | 5.6  | 9.5  | 9.6   | 3.5  | 2.6  | 2.4 | 2.2 | 2.0 | 1.4  | 1.6  | 1.8 | 9.0 | 14.2                                     | 15.7 | 11.1 | 18.9 | 17.9            | 6.8                   | 18.9          |
| 23-Feb   | 3.1                           | 3.2 | 13.2 | 18.0 | Z   | 11.3 | 9.3  | 15.0 | 17.0 | 5.6   | 11.3 | 12.5 | 4.1 | 1.7 | 1.7 | 2.4  | 2.1  | 4.7 | 6.3 | 2.2                                      | 1.4  | 3.5  | 5.0  | 2.5             | 6.8                   | 18.0          |
| 24-Feb   | 1.7                           | 2.4 | 5.0  | 4.8  | 3.2 | Z    | 3.9  | 3.7  | 4.0  | 1.9   | 1.6  | 1.3  | 1.0 | 1.2 | 1.9 | 1.4  | 1.1  | 1.3 | 1.7 | 1.9                                      | 2.4  | 2.4  | 2.4  | 2.3             | 2.4                   | 5.0           |
| 25-Feb   | Z                             | 3.0 | 3.2  | 3.8  | 4.5 | 4.3  | 6.0  | 5.1  | 4.8  | 4.3   | 5.1  | 3.9  | 3.0 | 3.4 | 1.9 | 1.1  | 2.0  | 2.5 | 5.4 | 5.9                                      | 3.4  | 3.4  | 2.2  | 2.2             | 3.7                   | 6.0           |
| 26-Feb   | 2.7                           | Z   | 2.8  | 2.7  | 4.1 | 3.9  | 3.7  | 3.3  | 3.5  | 2.6   | 2.4  | 1.3  | 1.3 | 1.7 | 2.0 | 1.9  | 2.6  | 1.7 | 2.1 | 0.8                                      | 0.8  | 0.6  | 1.2  | 1.6             | 2.2                   | 4.1           |
| 27-Feb   | 1.1                           | 1.3 | Z    | 0.7  | 1.7 | 1.1  | 1.3  | 2.6  | 3.4  | 3.5   | 4.5  | 2.9  | 2.4 | 2.5 | 3.3 | 2.7  | 2.0  | 1.2 | 2.0 | 0.5                                      | 0.5  | 0.5  | 1.4  | 2.2             | 2.0                   | 4.5           |
| 28-Feb   | 2.3                           | 2.1 | 2.0  | Z    | 2.0 | 2.4  | 1.8  | 1.7  | 1.0  | 1.6   | 2.0  | 2.6  | 3.4 | 4.8 | 5.9 | 7.0  | 7.7  | 5.7 | 5.0 | 0.9                                      | 0.9  | 0.7  | 0.6  | 1.1             | 2.8                   | 7.7           |
| 2.4 2.3 3.0 2.9 2.8 3.1 3.4 3.8 4.4 3.7 3.6 3.4 3.1 2.7 2.6 2.8 2.8 2.8 3.0 3.0 3.0 2.8 3.1 3.1                |                               |     |      |      |     |      |      |      |      |   |      |      |     |     |     |      |      |     |     |  |      |      |      | Diurnal Average |                       |               |
| 5.0 5.1 13.2 18.0 6.1 11.3 10.8 15.0 17.0 9.6 11.3 12.5 9.1 7.2 8.3 10.0 10.3 9.4 9.0 14.2 15.7 11.1 18.9 17.9 |                               |     |      |      |     |      |      |      |      |   |      |      |     |     |     |      |      |     |     |  |      |      |      | Diurnal Maximum |                       |               |
| Z - zerospan C - Calibration   |                               |     |      |      |     |      |      |      |      |   |      |      |     |     |     |      |      |     |     |  |      |      |      |                 |                       |               |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Nitrogen Oxides (NO<sub>x</sub>) - ppb**  
**Kirby North - February 2023**





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Nitrogen Oxides (NO<sub>x</sub>) - ppb  
Kirby North - February 2023**

| <b>Concentration Ranges (ppb)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|-----------------------------------|------------------------|----------|---------------------|
| 0 - 20                            | 637                    | 100.00   | 100.00              |
| 21 - 40                           | 0                      | 0.00     | 100.00              |
| 41 - 80                           | 0                      | 0.00     | 100.00              |
| 81 - 159                          | 0                      | 0.00     | 100.00              |
| > 159                             | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 637

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Nitrogen Oxides (NO<sub>x</sub>) - ppb  
Kirby North - February 2023**

| Concentration<br>Ranges (ppb) | Wind Direction |     |    |     |    |     |    |     |    |     |    |     |    |     |    |     | Totals |
|-------------------------------|----------------|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|--------|
|                               | N              | NNE | NE | ENE | E  | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |        |
| 0 - 20                        | 26             | 38  | 48 | 31  | 12 | 13  | 7  | 24  | 89 | 115 | 55 | 52  | 12 | 29  | 33 | 44  | 628    |
| 21 - 40                       | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| 41 - 80                       | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| 81 - 159                      | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| > 159                         | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| <b>Totals</b>                 | 26             | 38  | 48 | 31  | 12 | 13  | 7  | 24  | 89 | 115 | 55 | 52  | 12 | 29  | 33 | 44  | 628    |

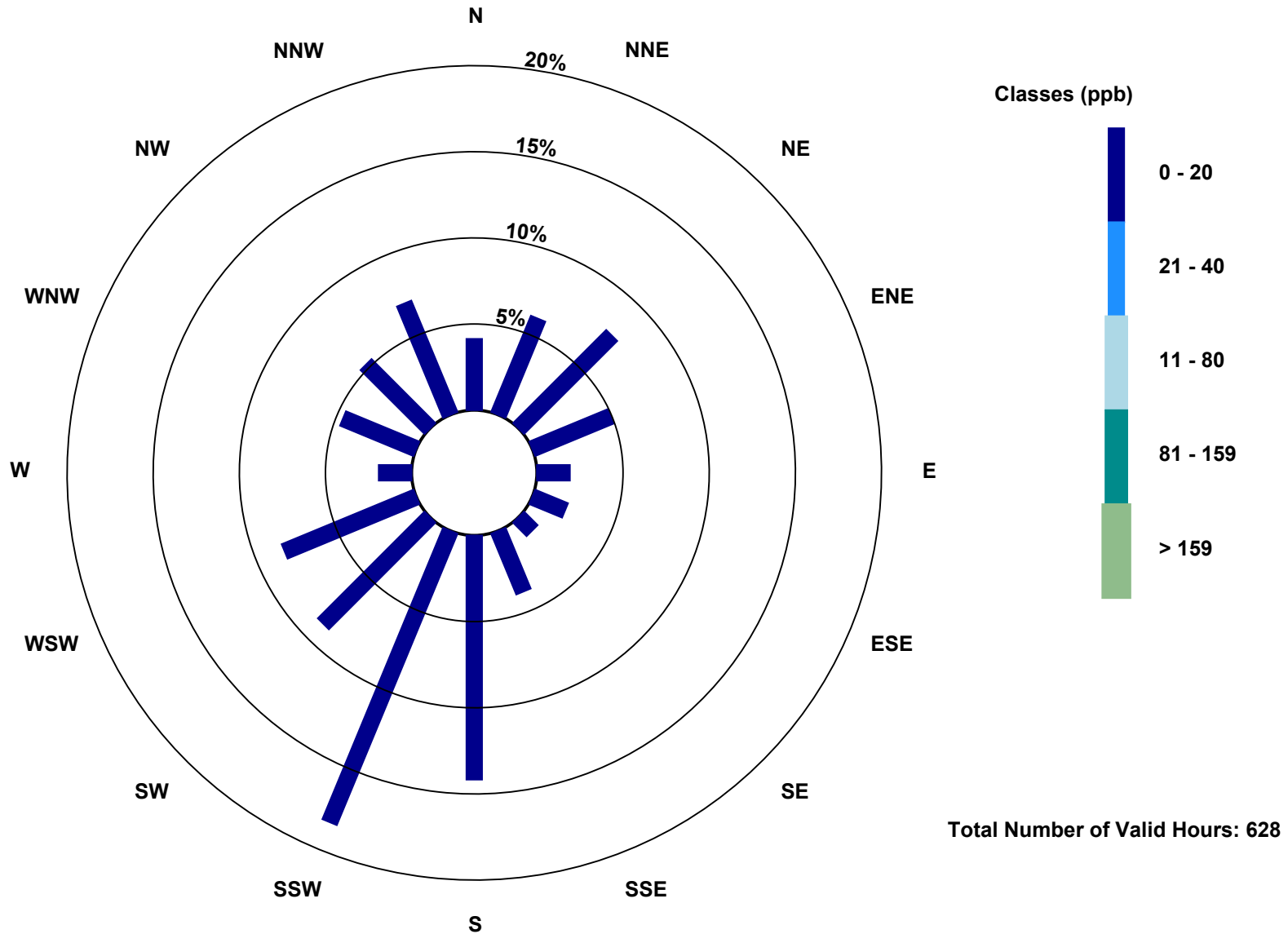
Total Number of Valid Hours: 628

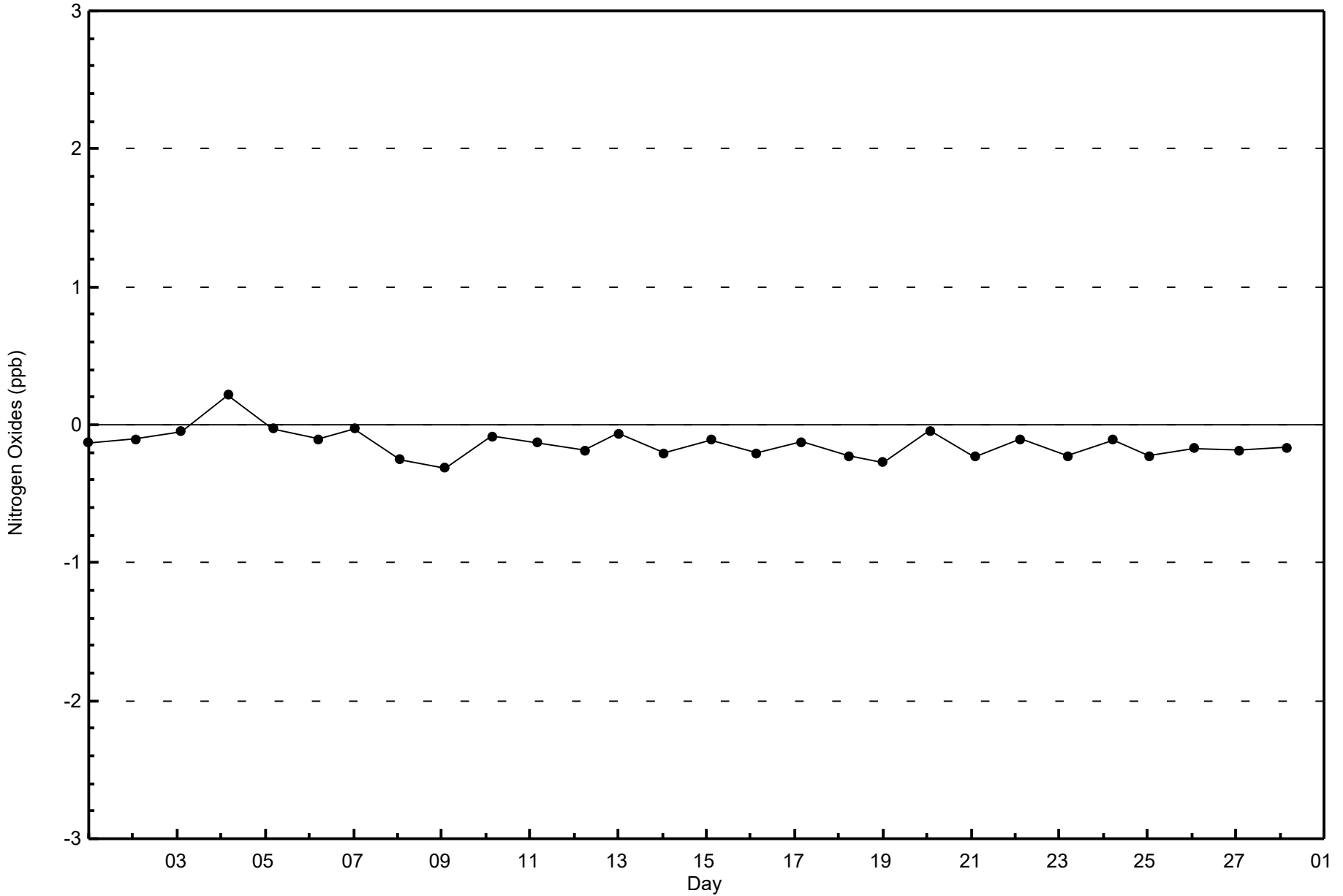
Total Number of Hours: 672



Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Nitrogen Oxides (NO<sub>x</sub>) - ppb  
Kirby North

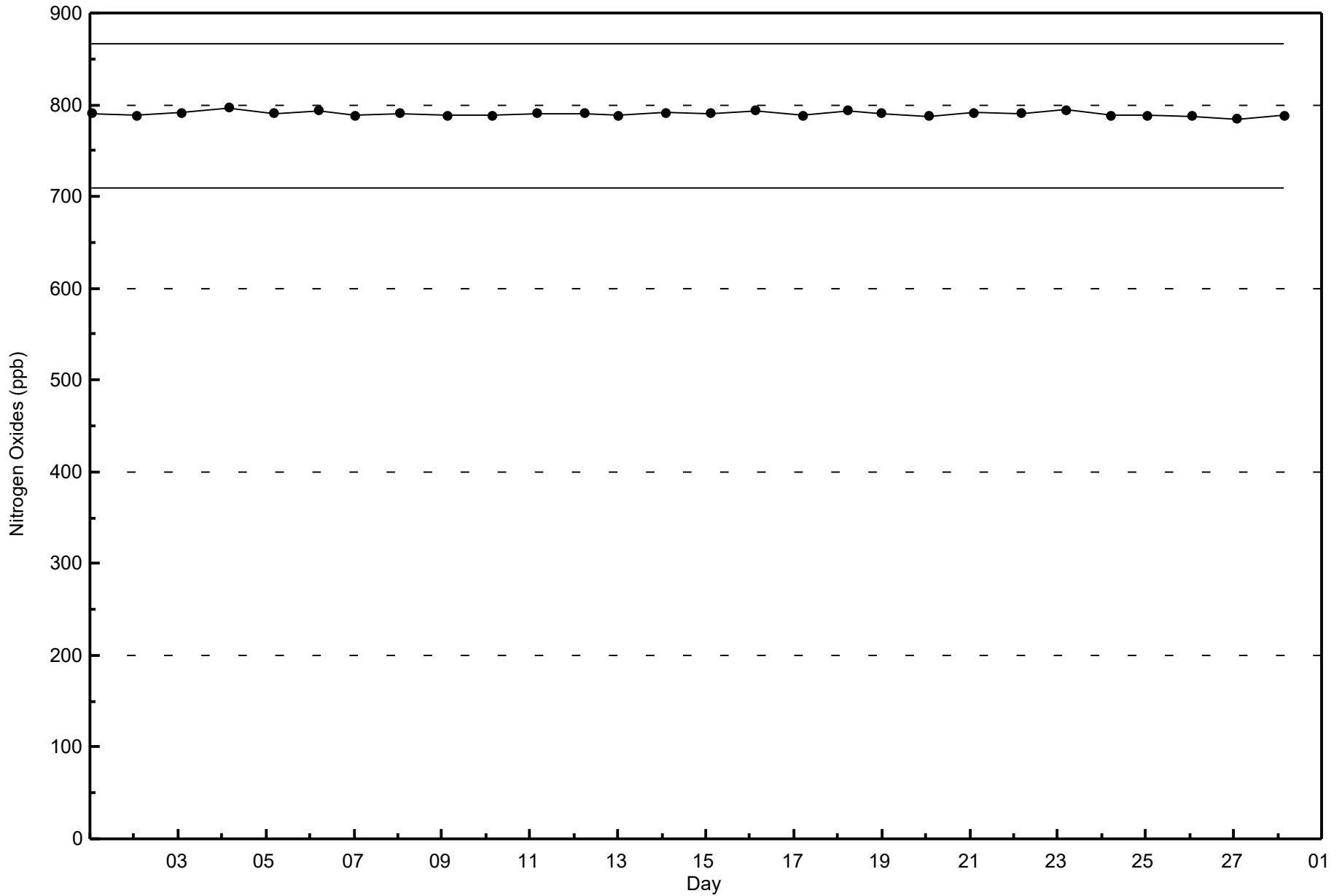






**Wood Buffalo Environmental Association**  
**Span Responses**

**Nitrogen Oxides (NO<sub>x</sub>) - ppb**  
**Kirby North - February 2023**







**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

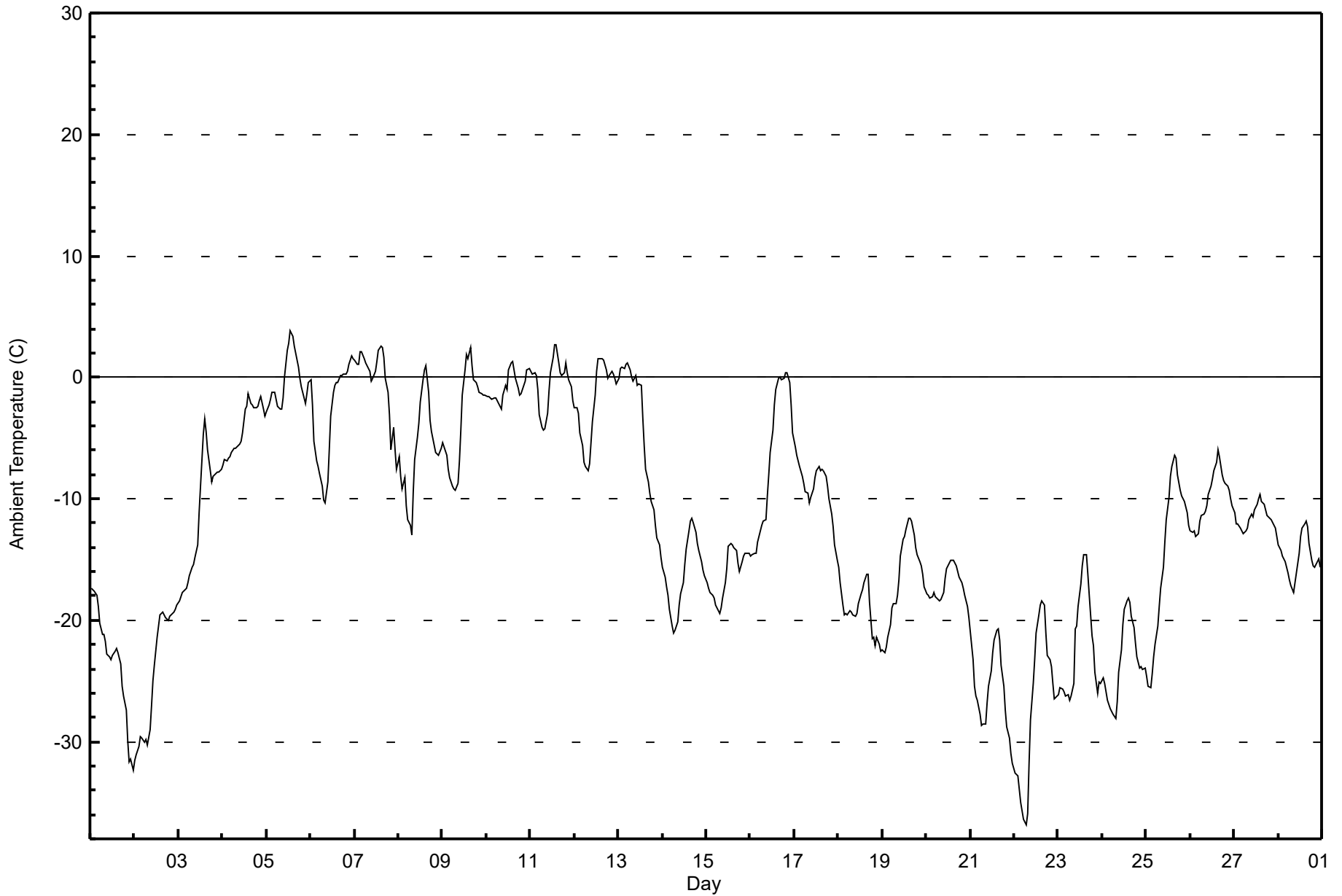
**Ambient Temperature (AT) - C**  
**Kirby North - February 2023**

| Maximum Value: 3.8 C on Feb 5 14:00        |                               | Maximum Daily Average: -0.2 C on Feb 7  |       | Hours in Service: 672           |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |               |      |
|--|-------------------------------|---|-------|---------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-----------------|---------------|------|
| Minimum Value: -36.8 C on Feb 22 07:00     |                               | Minimum Daily Average: -27.2 C on Feb 22  |       | Hours of Data: 672              |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |               |      |
| Maximum Diurnal Average: -8.1 C at hour 15 |                               | Minimum Diurnal Average: -14.9 C at hour 8  |       | Hours of Missing Data: 0        |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |               |      |
| Monthly Average: -11.96 C                  |                               | Percentiles: P <sub>1</sub> = -32.6 P <sub>10</sub> = -25.1 Q <sub>1</sub> = -18.8 Median = -11.9 Q <sub>3</sub> = -3.0 P <sub>90</sub> = 0.3 P <sub>99</sub> = 2.5 |       | Hours of Calibration: 0         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |               |      |
|  |                               |   |       | Percent Operational Time: 100.0 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |               |      |
| Day  | Hourly Period Ending At (MST) |   |       |                                 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Daily Average   | Daily Maximum |      |
|  | 1                             | 2   | 3     | 4                               | 5     | 6     | 7     | 8     | 9     | 10    | 11    | 12    | 13    | 14    | 15    | 16    | 17    | 18    | 19    | 20    | 21    | 22    | 23    | 24    |                 |               |      |
| 1-Feb                                      | -17.4                         | -17.5   | -17.6 | -17.9                           | -18.9 | -20.3 | -21.2 | -21.2 | -21.7 | -22.8 | -23.0 | -23.2 | -22.9 | -22.6 | -22.4 | -22.7 | -23.6 | -25.4 | -26.2 | -27.4 | -29.9 | -31.6 | -31.5 | -32.4 | -23.4           | -17.4         |      |
| 2-Feb                                      | -31.6                         | -31.1   | -30.3 | -29.6                           | -29.8 | -30.1 | -29.8 | -30.2 | -29.0 | -27.0 | -25.0 | -23.7 | -21.4 | -20.5 | -19.5 | -19.3 | -19.6 | -19.8 | -20.0 | -19.7 | -19.6 | -19.3 | -19.1 | -18.7 | -24.3           | -18.7         |      |
| 3-Feb                                      | -18.4                         | -18.1   | -17.7 | -17.5                           | -17.3 | -16.9 | -16.3 | -15.7 | -15.4 | -14.8 | -13.8 | -11.2 | -8.9  | -4.7  | -3.4  | -4.4  | -5.9  | -7.7  | -8.6  | -8.2  | -7.9  | -7.8  | -7.9  | -7.5  | -11.5           | -3.4          |      |
| 4-Feb                                      | -7.3                          | -6.8  | -6.9  | -6.6                            | -6.5  | -6.2  | -5.8  | -5.8  | -5.8  | -5.6  | -5.2  | -4.5  | -2.6  | -2.4  | -1.4  | -2.2  | -2.2  | -2.5  | -2.5  | -2.4  | -1.9  | -1.6  | -2.6  | -3.2  | -4.2            | -1.4          |      |
| 5-Feb                                      | -2.8                          | -2.3  | -1.9  | -1.2                            | -1.2  | -1.8  | -2.4  | -2.6  | -2.6  | -1.7  | 0.1   | 2.2   | 2.8   | 3.8   | 3.4   | 2.6   | 2.0   | 0.9   | 0.0   | -0.8  | -1.7  | -2.1  | -1.3  | -0.5  | -0.4            | 3.8           |      |
| 6-Feb                                      | -0.2                          | -2.3  | -5.2  | -6.9                            | -7.4  | -7.9  | -9.0  | -10.1 | -10.3 | -8.6  | -5.9  | -3.2  | -1.2  | -0.6  | -0.5  | -0.4  | 0.1   | 0.1   | 0.2   | 0.3   | 0.5   | 1.0   | 1.7   | 1.5   | -3.1            | 1.7           |      |
| 7-Feb                                      | 1.4                           | 1.0   | 1.1   | 2.1                             | 2.1   | 1.5   | 1.2   | 0.9   | 0.5   | -0.4  | 0.0   | 0.5   | 1.3   | 2.2   | 2.6   | 2.4   | 1.7   | -0.1  | -1.2  | -3.1  | -5.9  | -4.1  | -5.9  | -7.6  | -0.2            | 2.6           |      |
| 8-Feb                                      | -6.5                          | -8.1  | -9.2  | -8.3                            | -10.6 | -11.7 | -12.2 | -13.0 | -9.5  | -6.7  | -4.9  | -3.7  | -2.1  | -0.2  | 0.6   | 0.9   | -1.3  | -3.5  | -4.5  | -5.7  | -6.2  | -6.3  | -6.4  | -5.9  | -6.0            | 0.9           |      |
| 9-Feb                                      | -5.3                          | -5.7  | -6.4  | -7.6                            | -8.3  | -9.0  | -9.2  | -9.3  | -8.7  | -6.8  | -4.3  | -1.5  | 0.6   | 1.9   | 1.6   | 2.4   | 1.0   | -0.2  | -0.4  | -0.8  | -1.2  | -1.3  | -1.5  | -1.4  | -3.4            | 2.4           |      |
| 10-Feb                                     | -1.5                          | -1.6  | -1.7  | -1.8                            | -1.7  | -1.7  | -1.9  | -2.3  | -2.6  | -1.5  | -0.6  | -1.0  | 0.6   | 1.1   | 1.2   | 0.6   | -0.1  | -0.9  | -1.4  | -1.4  | -0.7  | -0.3  | 0.6   | 0.7   | -0.8            | 1.2           |      |
| 11-Feb                                     | 0.5                           | 0.3   | 0.4   | 0.1                             | -1.0  | -3.1  | -4.1  | -4.4  | -4.2  | -3.0  | -1.1  | 0.4   | 1.7   | 2.7   | 2.6   | 1.2   | 0.4   | 0.2   | 0.4   | 1.2   | 0.4   | -0.2  | -0.8  | -1.9  | -0.5            | 2.7           |      |
| 12-Feb                                     | -2.5                          | -2.5  | -3.0  | -4.6                            | -5.6  | -7.0  | -7.3  | -7.7  | -7.2  | -5.4  | -3.7  | -1.4  | 0.5   | 1.6   | 1.6   | 1.6   | 1.4   | 0.7   | -0.1  | 0.2   | 0.5   | 0.3   | -0.1  | -0.5  | -2.1            | 1.6           |      |
| 13-Feb                                     | -0.1                          | 0.8   | 0.9   | 0.7                             | 1.0   | 1.2   | 0.6   | 0.1   | -0.3  | 0.1   | -0.7  | -0.5  | -0.6  | -3.3  | -5.7  | -7.6  | -8.6  | -9.5  | -10.3 | -11.0 | -12.2 | -13.2 | -13.8 | -14.8 | -4.5            | 1.2           |      |
| 14-Feb                                     | -15.6                         | -16.5   | -17.2 | -18.0                           | -19.1 | -20.5 | -21.0 | -20.9 | -20.2 | -18.8 | -17.8 | -16.9 | -15.4 | -14.1 | -12.7 | -11.8 | -11.6 | -12.0 | -12.8 | -13.7 | -14.3 | -15.2 | -15.8 | -16.3 | -16.2           | -11.6         |      |
| 15-Feb                                     | -16.9                         | -17.4   | -17.7 | -17.9                           | -18.2 | -18.8 | -19.2 | -19.5 | -19.0 | -18.1 | -16.9 | -15.7 | -13.9 | -13.7 | -13.8 | -14.0 | -14.3 | -15.3 | -16.0 | -15.2 | -14.7 | -14.5 | -14.5 | -14.5 | -16.2           | -13.7         |      |
| 16-Feb                                     | -14.7                         | -14.6   | -14.5 | -14.5                           | -13.5 | -12.7 | -12.2 | -11.9 | -11.7 | -9.8  | -8.0  | -6.2  | -4.4  | -2.3  | -1.0  | -0.1  | 0.0   | -0.2  | -0.1  | 0.4   | 0.4   | -0.4  | -2.2  | -4.5  | -6.6            | 0.4           |      |
| 17-Feb                                     | -5.8                          | -6.4  | -6.8  | -7.4                            | -8.1  | -8.7  | -9.4  | -9.6  | -10.3 | -9.8  | -9.2  | -8.3  | -7.7  | -7.4  | -7.7  | -7.5  | -7.7  | -8.1  | -9.0  | -10.0 | -11.2 | -12.3 | -13.8 | -15.0 | -9.1            | -5.8          |      |
| 18-Feb                                     | -15.7                         | -16.9   | -18.8 | -19.6                           | -19.5 | -19.5 | -19.2 | -19.4 | -19.6 | -19.7 | -19.5 | -18.7 | -17.8 | -17.5 | -16.9 | -16.2 | -16.2 | -18.5 | -21.5 | -21.4 | -22.2 | -21.4 | -22.0 | -22.6 | -19.2           | -15.7         |      |
| 19-Feb                                     | -22.4                         | -22.6   | -22.3 | -21.4                           | -20.4 | -19.0 | -18.6 | -18.6 | -17.9 | -16.6 | -14.7 | -13.3 | -13.1 | -12.5 | -11.6 | -11.6 | -11.8 | -13.0 | -14.1 | -14.6 | -15.2 | -15.5 | -16.2 | -17.3 | -16.4           | -11.6         |      |
| 20-Feb                                     | -17.8                         | -17.9   | -18.2 | -18.0                           | -17.7 | -18.0 | -18.3 | -18.5 | -18.3 | -17.7 | -16.6 | -15.8 | -15.3 | -15.0 | -15.0 | -15.1 | -15.5 | -15.9 | -16.5 | -16.9 | -17.4 | -18.0 | -18.9 | -19.7 | -17.2           | -15.0         |      |
| 21-Feb                                     | -21.0                         | -23.2   | -25.4 | -26.3                           | -26.6 | -27.8 | -28.7 | -28.6 | -28.5 | -26.8 | -25.4 | -24.1 | -22.7 | -21.6 | -20.9 | -20.7 | -21.6 | -23.7 | -25.5 | -27.4 | -28.8 | -29.8 | -31.0 | -31.8 | -25.7           | -20.7         |      |
| 22-Feb                                     | -32.6                         | -32.7   | -32.8 | -35.0                           | -35.7 | -36.4 | -36.8 | -36.0 | -31.8 | -28.2 | -25.2 | -23.2 | -21.1 | -19.6 | -18.7 | -18.5 | -18.7 | -21.0 | -22.9 | -23.3 | -23.9 | -25.2 | -26.5 | -26.3 | -27.2           | -18.5         |      |
| 23-Feb                                     | -26.1                         | -25.5   | -25.6 | -25.9                           | -26.3 | -26.1 | -26.6 | -26.3 | -25.3 | -20.7 | -20.5 | -18.8 | -17.0 | -15.6 | -14.6 | -14.6 | -16.2 | -17.9 | -21.3 | -22.1 | -24.2 | -26.0 | -25.1 | -25.3 | -22.2           | -14.6         |      |
| 24-Feb                                     | -24.8                         | -25.2   | -25.9 | -26.6                           | -27.3 | -27.5 | -27.8 | -28.1 | -26.7 | -24.3 | -22.4 | -20.4 | -19.1 | -18.4 | -18.2 | -18.5 | -19.7 | -20.6 | -21.9 | -23.1 | -24.0 | -23.9 | -24.1 | -24.0 | -23.4           | -18.2         |      |
| 25-Feb                                     | -24.7                         | -25.4   | -25.5 | -24.4                           | -23.0 | -22.0 | -20.5 | -18.9 | -17.4 | -15.7 | -13.6 | -11.7 | -9.8  | -8.1  | -7.3  | -6.4  | -6.7  | -8.0  | -9.3  | -9.8  | -10.0 | -10.2 | -11.1 | -12.2 | -14.7           | -6.4          |      |
| 26-Feb                                     | -12.7                         | -12.8   | -12.7 | -13.1                           | -12.8 | -11.8 | -11.4 | -11.2 | -11.0 | -10.5 | -9.7  | -9.0  | -8.3  | -7.7  | -7.1  | -5.9  | -6.6  | -6.6  | -8.0  | -8.5  | -8.7  | -9.0  | -9.3  | -10.0 | -10.6           | -9.9          | -5.9 |
| 27-Feb                                     | -11.2                         | -12.1   | -12.1 | -12.4                           | -12.7 | -12.9 | -12.6 | -12.4 | -11.8 | -11.2 | -11.5 | -10.9 | -10.5 | -10.0 | -9.6  | -10.2 | -10.5 | -11.0 | -11.4 | -11.6 | -11.7 | -11.9 | -12.5 | -13.1 | -11.6           | -9.6          |      |
| 28-Feb                                     | -13.8                         | -14.3   | -14.7 | -14.9                           | -15.2 | -16.0 | -16.7 | -17.1 | -17.7 | -17.0 | -16.1 | -14.5 | -13.1 | -12.4 | -12.1 | -11.8 | -12.3 | -13.6 | -15.1 | -15.6 | -15.6 | -15.2 | -14.9 | -15.6 | -14.8           | -11.8         |      |
|  | -13.1                         | -13.5   | -13.8 | -14.1                           | -14.3 | -14.7 | -14.9 | -14.9 | -14.4 | -13.2 | -12.0 | -10.7 | -9.3  | -8.5  | -8.1  | -8.1  | -8.7  | -9.8  | -10.7 | -11.1 | -11.7 | -12.0 | -12.4 | -12.9 | Diurnal Average |               |      |
|  | 1.4                           | 1.0   | 1.1   | 2.1                             | 2.1   | 1.5   | 1.2   | 0.9   | 0.5   | 0.1   | 0.1   | 2.2   | 2.8   | 3.8   | 3.4   | 2.6   | 2.0   | 0.9   | 0.4   | 1.2   | 0.5   | 1.0   | 1.7   | 1.5   | Diurnal Maximum |               |      |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Ambient Temperature (AT) - C**  
**Kirby North - February 2023**





**Wood Buffalo Environmental Association  
Cumulative Frequency Distribution**

**Ambient Temperature (AT) - C  
Kirby North - February 2023**

| <b>Concentration Ranges (C)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---------------------------------|------------------------|----------|---------------------|
| -50 - -20                       | 136                    | 20.24    | 20.24               |
| -20 - 0                         | 458                    | 68.15    | 88.39               |
| 0 - 10                          | 78                     | 11.61    | 100.00              |
| 10 - 20                         | 0                      | 0.00     | 100.00              |
| > 20                            | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 672

Total Number of Hours: 672



**Wood Buffalo Environmental Association**

**Summary of Hour Averages**

**Relative Humidity (RH) - %**

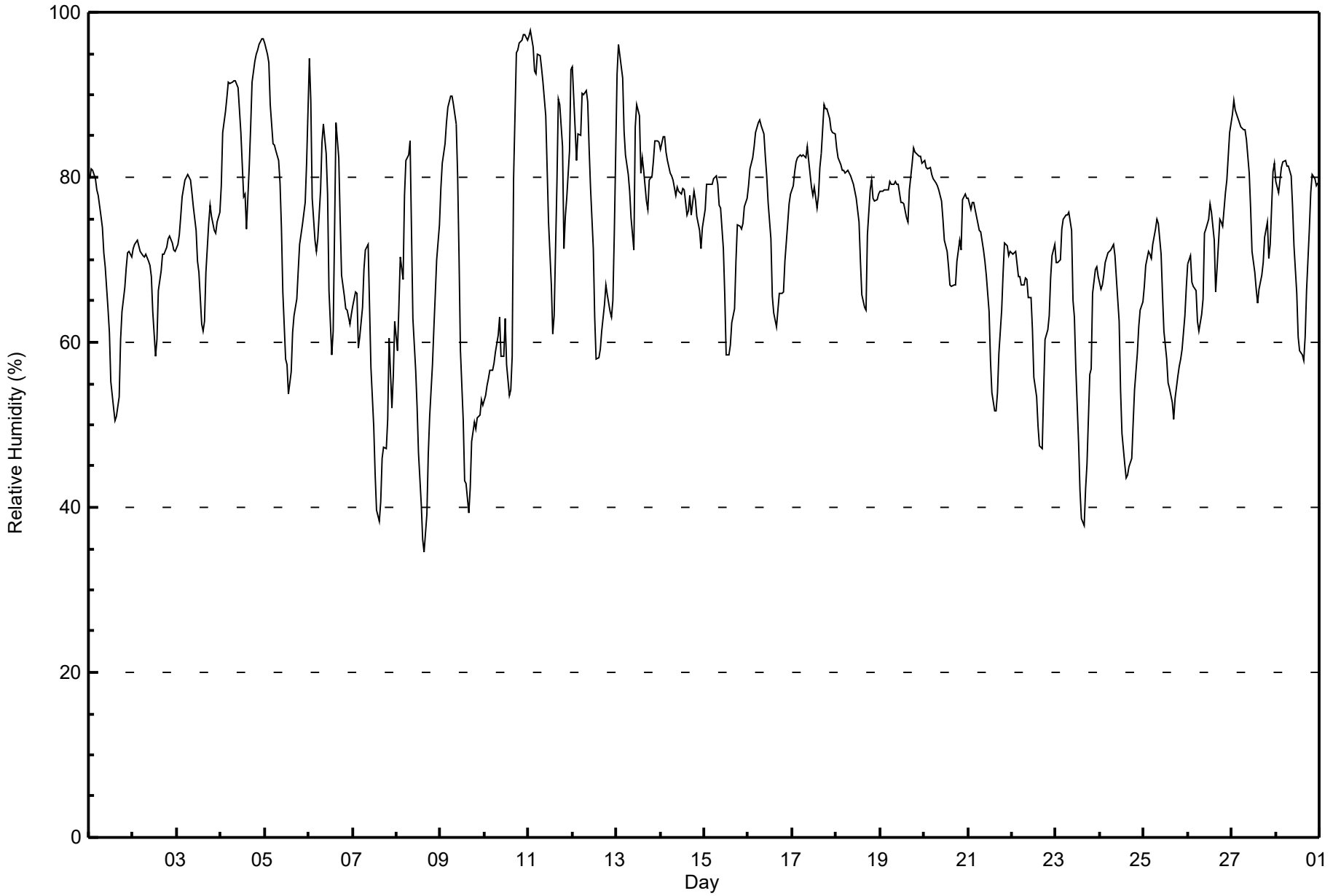
**Kirby North - February 2023**

| Maximum Value: 97.7 % on Feb 11 02:00      Maximum Daily Average: 88.6 % on Feb 4  |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Hours in Service: 672<br>Hours of Data: 672  |      |                 |               |               |
|--|-------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|--|------|-----------------|---------------|---------------|
| Minimum Value: 34.7 % on Feb 8 16:00      Minimum Daily Average: 56.2 % on Feb 7<br>Maximum Diurnal Average: 78.9 % at hour 8      Minimum Diurnal Average: 59.8 % at hour 15<br>Monthly Average: 72.21 %      Percentiles: P <sub>1</sub> = 39.6 P <sub>10</sub> = 55.1 Q <sub>1</sub> = 64.5 Median = 73.7 Q <sub>3</sub> = 80.4 P <sub>90</sub> = 86.7 P <sub>99</sub> = 96.6 |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Hours of Missing Data: 0<br>Hours of Calibration: 0<br>Percent Operational Time: 100.0 |      |                 |               |               |
| Day  | Hourly Period Ending At (MST) |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |      |                 | Daily Average | Daily Maximum |
|  | 1                             | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20   | 21   | 22   | 23   | 24              |               |               |
| 1-Feb  | 79.9                          | 81.0 | 80.9 | 79.9 | 78.5 | 77.7 | 75.3 | 73.9 | 70.9 | 69.2 | 64.1 | 61.1 | 55.3 | 52.0 | 50.5 | 51.1 | 53.5 | 60.4 | 63.7 | 66.5 | 69.0 | 70.8   | 71.1 | 70.3            | 67.8          | 81.0          |
| 2-Feb  | 71.3                          | 71.8 | 72.5 | 71.8 | 71.1 | 70.6 | 70.3 | 70.6 | 69.8 | 69.4 | 67.9 | 63.7 | 58.3 | 60.3 | 66.2 | 68.6 | 70.7 | 70.7 | 71.5 | 72.6 | 72.8 | 72.0   | 71.1 | 71.1            | 69.4          | 72.8          |
| 3-Feb  | 71.9                          | 73.0 | 75.3 | 77.7 | 79.7 | 80.0 | 80.4 | 79.7 | 78.2 | 76.5 | 73.5 | 69.8 | 68.4 | 62.2 | 61.3 | 62.5 | 68.4 | 74.3 | 76.6 | 75.2 | 73.6 | 73.1   | 74.6 | 75.7            | 73.4          | 80.4          |
| 4-Feb  | 79.0                          | 85.4 | 88.0 | 89.7 | 91.5 | 91.4 | 91.5 | 91.8 | 91.6 | 90.8 | 88.2 | 85.5 | 77.6 | 78.0 | 73.7 | 81.4 | 86.1 | 91.5 | 94.0 | 94.9 | 95.5 | 96.2   | 96.8 | 96.7            | 88.6          | 96.8          |
| 5-Feb  | 96.2                          | 95.0 | 93.9 | 88.8 | 84.1 | 83.9 | 83.2 | 82.1 | 79.4 | 73.9 | 66.1 | 57.9 | 57.2 | 53.8 | 56.4 | 61.3 | 63.1 | 65.2 | 68.7 | 71.8 | 74.2 | 75.6   | 77.0 | 81.7            | 74.6          | 96.2          |
| 6-Feb  | 94.5                          | 89.3 | 77.4 | 72.3 | 71.0 | 72.6 | 78.4 | 84.2 | 86.4 | 82.9 | 77.9 | 66.2 | 58.5 | 61.3 | 73.5 | 86.6 | 82.4 | 75.0 | 68.2 | 65.5 | 64.0 | 63.9   | 62.3 | 63.5            | 74.1          | 94.5          |
| 7-Feb  | 64.4                          | 66.1 | 65.9 | 59.2 | 60.7 | 64.3 | 68.8 | 71.2 | 71.9 | 64.3 | 56.9 | 49.8 | 44.1 | 39.7 | 38.4 | 40.6 | 46.0 | 47.3 | 47.1 | 50.7 | 60.5 | 52.1   | 56.0 | 62.5            | 56.2          | 71.9          |
| 8-Feb  | 59.0                          | 64.5 | 70.4 | 67.6 | 77.7 | 82.1 | 82.8 | 84.5 | 73.5 | 62.9 | 56.6 | 52.2 | 46.6 | 40.4 | 36.1 | 34.7 | 39.1 | 46.4 | 51.0 | 57.3 | 61.6 | 65.8   | 70.0 | 74.3            | 60.7          | 84.5          |
| 9-Feb  | 78.7                          | 81.8 | 84.0 | 86.7 | 88.5 | 89.8 | 89.9 | 88.8 | 86.4 | 80.2 | 70.3 | 59.1 | 50.5 | 43.2 | 42.9 | 39.3 | 42.4 | 48.0 | 50.3 | 49.6 | 50.9 | 51.1   | 53.1 | 52.4            | 64.9          | 89.9          |
| 10-Feb   | 53.6                          | 54.7 | 55.7 | 56.6 | 56.6 | 57.5 | 58.8 | 60.9 | 63.1 | 58.4 | 58.3 | 62.9 | 57.3 | 53.6 | 54.3 | 58.2 | 79.8 | 95.1 | 95.4 | 96.2 | 96.6 | 97.3   | 97.2 | 96.6            | 69.8          | 97.3          |
| 11-Feb   | 97.1                          | 97.7 | 95.8 | 92.9 | 92.6 | 94.9 | 94.8 | 93.3 | 91.6 | 87.4 | 81.0 | 74.5 | 67.0 | 61.1 | 63.2 | 79.3 | 89.4 | 88.8 | 83.7 | 71.4 | 75.2 | 77.4   | 83.2 | 93.0            | 84.4          | 97.7          |
| 12-Feb   | 93.5                          | 86.0 | 82.1 | 85.3 | 85.1 | 90.2 | 90.0 | 90.6 | 89.2 | 83.5 | 78.9 | 71.3 | 63.0 | 58.0 | 58.2 | 59.2 | 61.3 | 64.5 | 67.0 | 65.7 | 63.7 | 63.1   | 65.2 | 73.0            | 74.5          | 93.5          |
| 13-Feb   | 92.5                          | 96.1 | 94.7 | 92.0 | 85.7 | 82.7 | 80.3 | 78.3 | 75.1 | 71.2 | 86.1 | 88.8 | 87.4 | 80.5 | 82.4 | 80.9 | 77.1 | 76.1 | 79.6 | 80.2 | 82.0 | 84.4   | 84.4 | 84.2            | 83.4          | 96.1          |
| 14-Feb   | 83.5                          | 84.9 | 84.9 | 83.0 | 82.1 | 80.4 | 80.1 | 79.6 | 77.8 | 78.3 | 77.9 | 78.6 | 78.4 | 75.4 | 76.0 | 77.7 | 75.5 | 78.4 | 77.2 | 75.2 | 73.6 | 71.4   | 73.8 | 78.4            | 78.4          | 84.9          |
| 15-Feb   | 76.2                          | 79.2 | 79.2 | 79.1 | 79.2 | 79.8 | 80.1 | 79.1 | 76.7 | 76.3 | 71.4 | 65.8 | 58.4 | 58.4 | 59.7 | 62.3 | 64.0 | 69.8 | 74.2 | 74.1 | 73.7 | 74.4   | 76.4 | 77.4            | 72.7          | 80.1          |
| 16-Feb   | 79.0                          | 81.0 | 82.4 | 83.8 | 85.4 | 86.6 | 87.0 | 86.2 | 85.3 | 82.5 | 80.2 | 77.0 | 72.6 | 65.6 | 63.6 | 61.8 | 63.9 | 65.9 | 65.9 | 66.1 | 69.9 | 74.3   | 76.7 | 77.9            | 75.8          | 87.0          |
| 17-Feb   | 79.0                          | 80.6 | 81.9 | 82.4 | 82.8 | 82.5 | 82.8 | 82.4 | 83.8 | 82.1 | 78.9 | 77.7 | 78.8 | 76.3 | 77.8 | 81.2 | 83.0 | 88.8 | 88.3 | 88.3 | 87.1 | 85.8   | 85.4 | 85.2            | 82.6          | 88.8          |
| 18-Feb   | 83.6                          | 82.3 | 81.6 | 80.9 | 80.9 | 80.5 | 80.8 | 80.6 | 80.1 | 79.2 | 78.4 | 77.5 | 74.5 | 69.8 | 65.8 | 64.2 | 64.0 | 73.0 | 78.4 | 79.6 | 77.5 | 77.1   | 77.4 | 77.9            | 76.9          | 83.6          |
| 19-Feb   | 78.2                          | 78.3 | 78.5 | 78.5 | 78.5 | 79.5 | 79.2 | 79.2 | 79.4 | 79.2 | 79.1 | 77.0 | 77.0 | 76.8 | 75.1 | 74.6 | 78.5 | 81.7 | 83.5 | 83.1 | 82.7 | 82.6   | 82.5 | 81.8            | 79.3          | 83.5          |
| 20-Feb   | 82.1                          | 81.1 | 81.0 | 81.2 | 80.4 | 79.9 | 79.4 | 79.0 | 78.4 | 77.1 | 74.9 | 72.3 | 71.0 | 69.1 | 66.9 | 66.8 | 66.9 | 66.9 | 69.9 | 72.3 | 71.1 | 77.3   | 77.9 | 77.4            | 75.0          | 82.1          |
| 21-Feb   | 77.5                          | 76.2 | 77.0 | 77.0 | 76.0 | 74.3 | 73.6 | 73.4 | 71.1 | 69.8 | 68.1 | 63.6 | 57.7 | 53.8 | 51.8 | 51.7 | 53.9 | 58.7 | 63.9 | 68.3 | 72.0 | 71.6   | 70.5 | 71.1            | 67.6          | 77.5          |
| 22-Feb   | 70.7                          | 70.8 | 71.0 | 68.0 | 68.0 | 67.0 | 66.9 | 67.7 | 67.6 | 65.4 | 65.3 | 61.5 | 55.8 | 53.4 | 49.8 | 47.5 | 47.1 | 54.0 | 60.3 | 61.5 | 63.2 | 67.8   | 70.6 | 71.9            | 63.0          | 71.9          |
| 23-Feb   | 69.7                          | 69.6 | 70.0 | 73.8 | 74.8 | 75.5 | 75.7 | 73.6 | 65.0 | 63.0 | 56.9 | 47.8 | 42.0 | 38.6 | 37.7 | 42.2 | 45.3 | 56.2 | 56.8 | 65.9 | 68.9 | 69.1   | 68.0 | 61.7            | 75.7          |               |
| 24-Feb   | 66.4                          | 66.9 | 68.1 | 69.6 | 70.9 | 71.0 | 71.3 | 71.9 | 70.4 | 67.8 | 62.5 | 54.3 | 49.0 | 45.2 | 43.5 | 43.9 | 44.9 | 45.9 | 50.2 | 54.2 | 58.7 | 61.8   | 63.9 | 64.9            | 59.9          | 71.9          |
| 25-Feb   | 66.8                          | 69.4 | 71.0 | 70.7 | 70.2 | 71.8 | 73.7 | 74.9 | 74.4 | 70.7 | 65.8 | 61.3 | 57.9 | 55.0 | 54.4 | 52.7 | 50.8 | 53.3 | 56.0 | 57.0 | 57.9 | 59.1   | 63.2 | 66.6            | 63.5          | 74.9          |
| 26-Feb   | 69.5                          | 70.5 | 67.3 | 66.7 | 66.3 | 62.6 | 61.4 | 63.5 | 65.2 | 73.3 | 73.7 | 75.0 | 76.7 | 75.8 | 72.4 | 66.0 | 68.9 | 74.9 | 74.6 | 74.1 | 78.1 | 79.7   | 82.5 | 85.4            | 71.8          | 85.4          |
| 27-Feb   | 87.7                          | 89.3 | 88.2 | 87.2 | 86.7 | 86.2 | 85.7 | 85.8 | 84.6 | 80.5 | 76.2 | 70.9 | 68.5 | 66.4 | 64.8 | 66.4 | 68.1 | 69.7 | 72.7 | 74.5 | 70.1 | 71.9   | 80.8 | 81.8            | 77.7          | 89.3          |
| 28-Feb   | 79.5                          | 78.1 | 79.6 | 81.2 | 81.8 | 82.1 | 81.4 | 81.4 | 80.2 | 76.4 | 71.7 | 65.9 | 60.7 | 59.0 | 58.5 | 57.9 | 60.6 | 66.3 | 73.7 | 78.1 | 80.3 | 79.9   | 79.0 | 79.4            | 73.9          | 82.1          |
| 77.9 78.6 78.5 78.0 78.1 78.5 78.7 78.9 77.7 74.8 71.9 67.8 63.4 60.3 59.8 61.2 64.1 67.6 70.1 70.8 72.3 73.2 74.6 76.3  |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |      | Diurnal Average |               |               |
| 97.1 97.7 95.8 92.9 92.6 94.9 94.8 93.3 91.6 90.8 88.2 88.8 87.4 80.5 82.4 86.6 89.4 95.1 95.4 96.2 96.6 97.3 97.2 96.7  |                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |      | Diurnal Maximum |               |               |



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Relative Humidity (RH) - %**  
**Kirby North - February 2023**





**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Relative Humidity (RH) - %**  
**Kirby North - February 2023**

| <b>Concentration Ranges (%)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---------------------------------|------------------------|----------|---------------------|
| 0 - 20                          | 0                      | 0.00     | 0.00                |
| 20 - 40                         | 8                      | 1.19     | 1.19                |
| 40 - 60                         | 103                    | 15.33    | 16.52               |
| 60 - 80                         | 381                    | 56.70    | 73.21               |
| 80 - 100                        | 180                    | 26.79    | 100.00              |

Total Number of Valid Hours: 672

Total Number of Hours: 672



|  |  |                                |
|--|--|--------------------------------|
| Maximum Speed: 23 km/h on Feb 13 16:00             | Maximum Daily Speed Average: 14.5 km/h on Feb 7  | Hours in Service: 672          |
| Minimum Speed Value: 1 km/h on Feb 23 19:00        | Minimum Daily Speed Average: 1.6 km/h on Feb 23  | Hours of Data: 663             |
| Maximum Diurnal Speed Average: 5.5 km/h at hour 14 | Minimum Diurnal Speed Average: 1.8 km/h at hour 21   | Hours of Missing Data: 9       |
| Monthly Average Velocity: 3.4 km/h 233.3 deg       | Percentiles: P <sub>1</sub> = 1 P <sub>10</sub> = 5 Q <sub>1</sub> = 8 Median = 10 Q <sub>3</sub> = 13 P <sub>90</sub> = 17 P <sub>99</sub> = 22 | Percent Operational Time: 98.7 |

| Day    | Hourly Period Ending At (MST) |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Daily Average | Daily Maximum |
|--------|-------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------------|---------------|
|        | 1                             | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     | 10    | 11    | 12    | 13    | 14    | 15    | 16    | 17    | 18    | 19    | 20    | 21    | 22    | 23    | 24    |               |               |
| 1-Feb  | WNW9                          | NW7   | NW8   | NNW9  | NNW12 | N15   | N15   | NNW13 | NNW16 | NNW14 | NNW13 | NNW14 | NNW14 | NNW15 | NNW15 | NNW15 | NNW11 | NNW9  | NNW6  | NNW6  | NW2   | N3    | SSW1  | S5    | NNW9.6        | NNW16         |
| 2-Feb  | S6                            | S7    | SSE7  | S8    | S9    | S10   | S10   | S11   | S13   | M     | M     | M     | M     | M     | M     | SSE18 | SSE17 | S17   | S17   | S16   | SSW18 | S17   | SSW15 | SSW15 | S12.7         | SSE18         |
| 3-Feb  | SSW13                         | SSW17 | SSW17 | SSW19 | SSW20 | SSW20 | SSW20 | SSW21 | SSW18 | SSW19 | SSW19 | SSW16 | SW14  | SW11  | SW9   | SW12  | SSW7  | S6    | S8    | S7    | S6    | S4    | S5    | S5    | SSW12.9       | SSW21         |
| 4-Feb  | S4                            | ENE2  | ENE1  | E3    | ESE3  | SSE6  | ESE5  | SSE7  | ESE2  | E2    | NE6   | NE4   | NE2   | NNW3  | E1    | SW6   | SSW5  | S5    | S6    | S8    | S8    | S9    | S9    | SSW10 | SSE3.0        | SSW10         |
| 5-Feb  | S10                           | S10   | S9    | E3    | S10   | S10   | S12   | S12   | S12   | S10   | S11   | SSW11 | SSW10 | SSW11 | SSW13 | SSW12 | SSW11 | SSW11 | SSW12 | SSW12 | SSW13 | SSW12 | SSW14 | SSW14 | SSW10.8       | SSW14         |
| 6-Feb  | WNW19                         | NW23  | WNW23 | WNW18 | WNW18 | W12   | SW12  | SW11  | SW11  | SW11  | SW13  | WSW14 | WSW15 | WSW16 | SW15  | SSW11 | SSW11 | SSW13 | SSW12 | SSW12 | SSW13 | SW14  | SW15  | SW14  | WSW11.5       | WNW23         |
| 7-Feb  | SSW12                         | SSW13 | SW15  | WSW19 | WSW21 | WSW18 | WSW18 | WSW20 | WNW22 | WNW21 | W17   | WSW18 | WSW20 | WSW22 | WSW22 | WSW22 | WSW19 | WSW13 | WSW13 | SW9   | S4    | WNW8  | SSW7  | S4    | WSW14.5       | WSW22         |
| 8-Feb  | SW7                           | SSW8  | SSW6  | WSW6  | SSW6  | SW6   | SSW7  | SW3   | W10   | W12   | WNW13 | WSW12 | WSW10 | WNW11 | W12   | WSW12 | SW10  | SSW8  | SSW8  | SSW9  | S9    | S10   | S10   | SSW10 | SW7.4         | WNW13         |
| 9-Feb  | S11                           | S11   | SSW10 | SSW11 | SSW11 | SSW10 | SSW10 | SSW10 | S10   | SSW10 | S9    | SSW9  | SSW12 | SW12  | SSW8  | S10   | S9    | S11   | S12   | SSW13 | SSW11 | SSW12 | SSW11 | SSW11 | SSW10.5       | SSW13         |
| 10-Feb | SSW10                         | SSW8  | S7    | S7    | S10   | S8    | SSE10 | S6    | S6    | S9    | SE1   | SSW8  | S6    | SW8   | WSW12 | WSW9  | WNW8  | NW10  | WNW10 | WNW9  | WNW9  | WSW6  | W11   | W12   | SW5.7         | W12           |
| 11-Feb | WSW12                         | SW11  | WSW15 | WSW15 | SW11  | SSW9  | SSW11 | SSW11 | SSW11 | SW13  | SW13  | SW15  | WSW19 | WSW19 | WSW18 | WSW23 | WSW17 | SW11  | WSW13 | W22   | WNW22 | WNW18 | W14   | SW11  | WSW13.7       | WSW23         |
| 12-Feb | SW13                          | WSW16 | WSW14 | SW11  | SSW10 | SSW9  | SSW10 | SSW9  | SSW8  | SSW10 | SSW12 | SW12  | SW12  | SW11  | SW11  | SSW11 | SSW9  | S8    | S9    | S11   | S13   | S11   | SSW14 | SSW12 | SSW10.5       | WSW16         |
| 13-Feb | SSW16                         | SSW14 | SSW15 | SSW13 | SW16  | WSW19 | WSW19 | WSW21 | WSW21 | WSW19 | WSW11 | WSW14 | WNW19 | NW22  | NNW21 | N23   | N22   | N22   | N19   | N20   | N16   | N13   | NNW12 | N11   | WNW9.3        | N23           |
| 14-Feb | NNW10                         | NNW8  | N8    | NNE9  | NNE8  | NNE6  | NE6   | UO    | UO    | UO    | SSW2  | SW5   | SW6   | SSW7  | SW9   | WSW10 | WNW10 | NW14  | NNW13 | NNW13 | NNW13 | N12   | NNW13 | NNW10 | NNW6.1        | NW14          |
| 15-Feb | NNW7                          | NE4   | ENE4  | ENE2  | E4    | ENE4  | S3    | ENE3  | ESE4  | ESE6  | ESE4  | SSW4  | SSW5  | SW8   | SW7   | SW6   | S3    | SSE4  | S5    | S6    | S7    | S9    | SSW10 | SSW11 | S3.0          | SSW11         |
| 16-Feb | S12                           | S12   | S12   | S13   | S12   | S12   | S14   | S14   | S16   | SSW16 | S15   | SSW13 | SSW16 | SSW18 | SW18  | SW15  | SW14  | SW13  | WSW15 | W15   | NW15  | NNW15 | NNW12 | NNW13 | SW9.9         | SSW18         |
| 17-Feb | NNW12                         | NNW10 | NNW9  | NNW10 | NNW9  | NNW12 | NW9   | WNW7  | W5    | SW9   | WSW11 | WSW9  | W7    | WNW9  | NW11  | WNW9  | WNW9  | NNW6  | NNW6  | NNE9  | NE10  | NE10  | NE9   | NE9   | NNW5.8        | NNW12         |
| 18-Feb | NE13                          | NE14  | NE12  | NE10  | NE10  | NE10  | NE12  | NE12  | NE14  | NE12  | NE12  | NE9   | NE9   | NNE10 | NNE9  | NE8   | ENE6  | ENE5  | E6    | ESE5  | ESE6  | ESE6  | SE7   | SSE8  | NE7.9         | NE14          |
| 19-Feb | SSE9                          | SSE8  | SSE9  | S11   | S11   | S11   | SSE9  | SSE10 | SSE10 | SSE10 | SE8   | E7    | ENE10 | ENE11 | E8    | NE7   | NE10  | NE11  | NNE9  | NE9   | NNE10 | NNE9  | NNE9  | NNE10 | ESE4.7        | S11           |
| 20-Feb | NNE8                          | N7    | NNW6  | NNW5  | NNW8  | NW8   | NW7   | NW9   | NW8   | NW11  | NW10  | NW12  | WNW12 | NW13  | NW13  | NW11  | NNW10 | N7    | NNE6  | NNE8  | NNE9  | NE7   | NE11  | NE12  | NNW7.4        | NW13          |
| 21-Feb | NE10                          | NE8   | NE5   | NNE5  | N7    | NNW6  | NNW7  | N10   | N10   | N12   | N14   | N12   | N11   | NNW11 | NNW13 | N13   | N13   | N15   | N14   | NNE9  | NNE8  | NNE9  | NNE9  | NNE10 | N9.5          | N15           |
| 22-Feb | NNE10                         | NE6   | NNE5  | N3    | NW1   | S4    | NNW1  | NNW3  | NW2   | NNW2  | NNE9  | NNE10 | NNE7  | NNE6  | NNE7  | NNE11 | NNE11 | NE8   | ENE10 | ENE11 | ENE9  | NE7   | NE8   | ENE7  | NE5.7         | ENE11         |
| 23-Feb | ENE9                          | ENE11 | ENE10 | ENE9  | NE5   | ENE4  | ENE5  | NE5   | NE4   | SE2   | WSW3  | W5    | WNW5  | N4    | NNE4  | NW3   | SW6   | WNW3  | SSW1  | NNW2  | SSE1  | SSE4  | S6    | S8    | ENE1.6        | ENE11         |
| 24-Feb | S8                            | S9    | S8    | S9    | S9    | S9    | S10   | S9    | SSW10 | SSW13 | SSW15 | SSW18 | SSW18 | SSW17 | SSW17 | SSW16 | SSW15 | SSW16 | SSW18 | SSW17 | SSW19 | SSW17 | SSW18 | SSW18 | SSW13.8       | SSW19         |
| 25-Feb | SSW16                         | SSW14 | SSW14 | SW15  | SSW12 | SSW13 | SW12  | SW14  | SW14  | SSW11 | WSW14 | WSW15 | WSW13 | SSW11 | WSW11 | SW12  | SW12  | SW10  | SSW7  | SSW7  | S7    | S8    | S8    | S8    | SSW11.0       | SSW16         |
| 26-Feb | SSE10                         | SSE9  | SSE9  | SSE11 | SSE10 | SSE13 | SSE10 | SE9   | ESE8  | ESE8  | E9    | E11   | ENE14 | ENE16 | ENE17 | ENE17 | ENE16 | NE13  | ENE12 | E10   | ESE7  | SE6   | E4    | NE3   | ESE8.3        | ENE17         |
| 27-Feb | NNE5                          | N6    | NNW7  | NNW8  | NW8   | NW9   | NW11  | NW11  | NW13  | NW13  | WNW16 | NW15  | WNW15 | WNW16 | WNW16 | WNW17 | NW16  | NW12  | NW11  | NNW10 | NNW10 | N8    | NE5   | NE8   | NW10.0        | WNW17         |
| 28-Feb | NE9                           | NE9   | NE7   | NE7   | NE7   | NE9   | NE6   | NNE7  | NNE7  | NNE7  | NNE8  | NE8   | ENE7  | ENE9  | NE10  | ENE8  | ENE8  | NE9   | E7    | E7    | ESE8  | ESE8  | SE8   | SSE8  | ENE6.6        | NE10          |

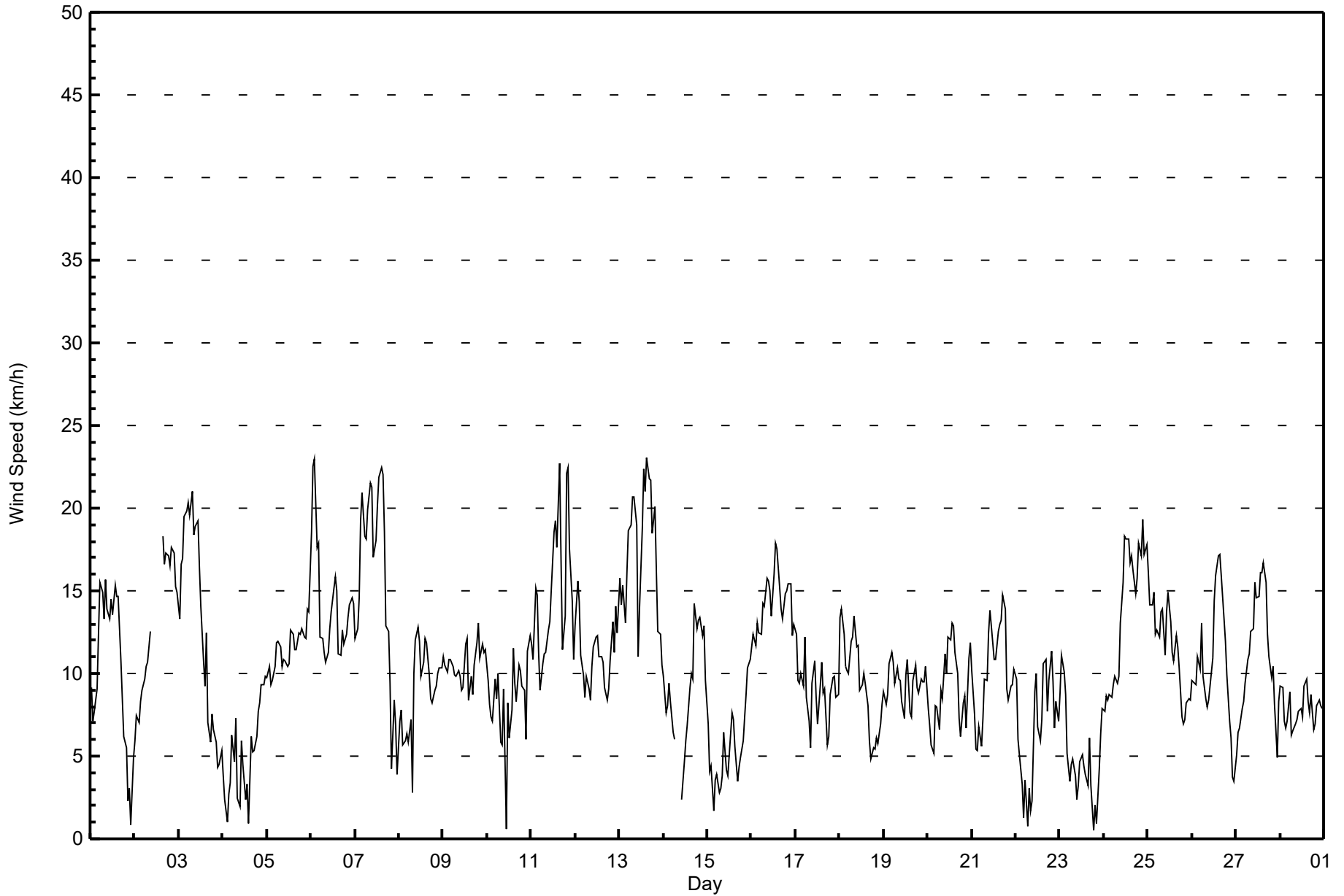
|       |        |       |       |       |        |        |       |       |       |        |        |        |      |       |        |        |        |       |       |       |       |        |        |                 |  |
|-------|--------|-------|-------|-------|--------|--------|-------|-------|-------|--------|--------|--------|------|-------|--------|--------|--------|-------|-------|-------|-------|--------|--------|-----------------|--|
| SW2.7 | SSW2.6 | SW3.1 | SW3.5 | SW3.7 | SSW4.2 | SSW4.3 | SW4.6 | SW4.2 | SW4.5 | WSW4.0 | WSW5.0 | WSW5.3 | W5.5 | W5.2  | WSW4.8 | WSW3.2 | WSW2.0 | SW2.3 | SW2.0 | SW1.8 | SW2.1 | SSW2.9 | SSW3.0 | Diurnal Average |  |
| WNW19 | NW23   | WNW23 | SSW19 | WSW21 | SSW20  | SSW20  | SSW21 | WNW22 | WNW21 | SSW19  | SSW18  | WSW20  | NW22 | WSW22 | N23    | N22    | N22    | N19   | W22   | WNW22 | SSW19 | SSW17  | SSW18  | Diurnal Maximum |  |

M - Maintenance UO - Unstable Operation  
 All monthly, daily, and diurnal averages have been calculated using vector methods



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Wind Speed (WS) - km/h**  
**Kirby North - February 2023**







**Wood Buffalo Environmental Association**  
**Cumulative Frequency Distribution**

**Wind Speed (WS) - km/h**  
**Kirby North - February 2023**

| <b>Wind Speed Ranges (km/h)</b> | <b>Number of Hours</b> | <b>%</b> | <b>Cumulative %</b> |
|---------------------------------|------------------------|----------|---------------------|
| 0 - 5                           | 76                     | 11.46    | 11.46               |
| 6 - 11                          | 342                    | 51.58    | 63.05               |
| 12 - 19                         | 220                    | 33.18    | 96.23               |
| 20 - 28                         | 25                     | 3.77     | 100.00              |
| 29 - 38                         | 0                      | 0.00     | 100.00              |
| > 38                            | 0                      | 0.00     | 100.00              |

Total Number of Valid Hours: 663

Total Number of Hours: 672



**Wood Buffalo Environmental Association  
Frequency Distribution**

**Wind Speed (WS) - km/h  
Kirby North - February 2023**

| Wind Speed<br>Ranges (km/h) | Wind Direction |     |    |     |    |     |    |     |    |     |    |     |    |     |    |     | Totals |
|-----------------------------|----------------|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|--------|
|                             | N              | NNE | NE | ENE | E  | ESE | SE | SSE | S  | SSW | SW | WSW | W  | WNW | NW | NNW |        |
| 0 - 5                       | 2              | 5   | 9  | 10  | 5  | 5   | 2  | 3   | 12 | 6   | 2  | 1   | 2  | 2   | 4  | 6   | 76     |
| 6 - 11                      | 10             | 33  | 33 | 16  | 8  | 8   | 5  | 20  | 63 | 52  | 28 | 9   | 3  | 12  | 17 | 25  | 342    |
| 12 - 19                     | 12             | 0   | 10 | 6   | 0  | 0   | 0  | 3   | 19 | 60  | 26 | 33  | 7  | 12  | 10 | 22  | 220    |
| 20 - 28                     | 4              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 4   | 0  | 9   | 1  | 4   | 2  | 1   | 25     |
| 29 - 38                     | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| > 38                        | 0              | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0  | 0   | 0      |
| <b>Totals</b>               | 28             | 38  | 52 | 32  | 13 | 13  | 7  | 26  | 94 | 122 | 56 | 52  | 13 | 30  | 33 | 54  | 663    |

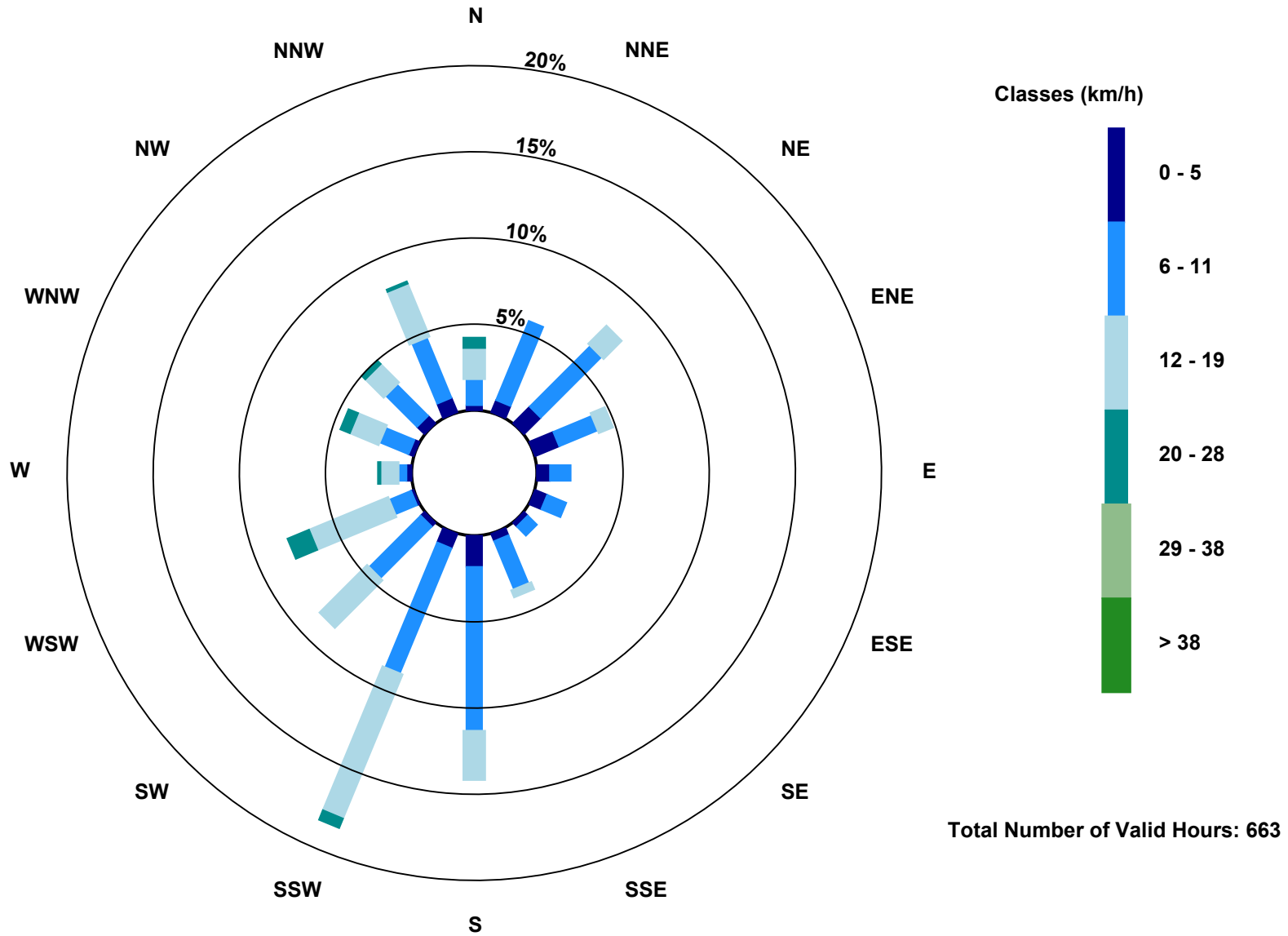
Total Number of Valid Hours: 663

Total Number of Hours: 672



Wood Buffalo Environmental Association  
Wind Rose Feb 2023

Wind Speed (WS) - km/h  
Kirby North





**Wood Buffalo Environmental Association**  
**Summary of Hour Standard Deviations**

**Wind Speed (WS) - km/h**  
**Kirby North - February 2023**

| Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0<br>Maximum Value: 8 km/h on Feb 11 20:00<br>Minimum Value: 1 km/h on Feb 27 00:00<br>Percentiles: P <sub>1</sub> = 1 P <sub>10</sub> = 1 Q <sub>1</sub> = 2 Median = 2 Q <sub>3</sub> = 3 P <sub>90</sub> = 4 P <sub>99</sub> = 6 |                               |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    | Hours in Service: 672<br>Hours of Data: 663<br>Hours of Missing Data: 9<br>Hours of Calibration: 0<br>Percent Operational Time: 98.7 |    |    |    |    |    |    |               |
|---|-------------------------------|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|--|----|----|----|----|----|----|---------------|
| Day   | Hourly Period Ending At (MST) |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |  |    |    |    |    |    |    | Daily Maximum |
|   | 1                             | 2 | 3 | 4 | 5 | 6 | 7 | 8  | 9  | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18   | 19 | 20 | 21 | 22 | 23 | 24 |               |
| 1-Feb   | 3                             | 2 | 2 | 3 | 4 | 4 | 5 | 5  | 4  | 4  | 4  | 4  | 4  | 4  | 4  | 4  | 3  | 2  | 1  | 2  | 1  | 1  | 1  | 1  | 5             |
| 2-Feb   | 1                             | 1 | 1 | 2 | 2 | 2 | 2 | 2  | 3  | M  | M  | M  | M  | M  | M  | 6  | 5  | 5  | 5  | 5  | 6  | 5  | 5  | 5  | 6             |
| 3-Feb   | 4                             | 5 | 5 | 5 | 5 | 5 | 5 | 5  | 4  | 4  | 5  | 4  | 3  | 2  | 3  | 3  | 4  | 2  | 2  | 2  | 2  | 2  | 1  | 2  | 5             |
| 4-Feb   | 2                             | 2 | 1 | 1 | 2 | 2 | 1 | 1  | 2  | 2  | 3  | 2  | 2  | 1  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 3             |
| 5-Feb   | 2                             | 2 | 2 | 2 | 2 | 2 | 2 | 2  | 2  | 2  | 2  | 3  | 3  | 4  | 3  | 3  | 3  | 2  | 2  | 2  | 2  | 3  | 3  | 3  | 4             |
| 6-Feb   | 6                             | 6 | 6 | 4 | 4 | 3 | 2 | 2  | 2  | 2  | 3  | 3  | 3  | 4  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 6             |
| 7-Feb   | 2                             | 2 | 4 | 3 | 4 | 3 | 3 | 4  | 6  | 5  | 4  | 4  | 4  | 5  | 5  | 5  | 4  | 3  | 2  | 2  | 3  | 4  | 2  | 2  | 6             |
| 8-Feb   | 1                             | 1 | 2 | 2 | 2 | 1 | 1 | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 2  | 1  | 1  | 2  | 1  | 2  | 2  | 2  | 3             |
| 9-Feb   | 2                             | 2 | 2 | 2 | 2 | 2 | 2 | 2  | 2  | 2  | 2  | 2  | 3  | 3  | 3  | 3  | 2  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3             |
| 10-Feb  | 2                             | 2 | 2 | 2 | 2 | 2 | 2 | 3  | 3  | 2  | 3  | 3  | 2  | 3  | 2  | 3  | 3  | 3  | 3  | 2  | 3  | 4  | 3  | 3  | 4             |
| 11-Feb  | 3                             | 2 | 3 | 3 | 2 | 2 | 2 | 2  | 2  | 3  | 3  | 4  | 4  | 5  | 4  | 6  | 4  | 3  | 3  | 8  | 6  | 4  | 3  | 2  | 8             |
| 12-Feb  | 3                             | 3 | 3 | 3 | 3 | 2 | 2 | 2  | 2  | 2  | 2  | 3  | 3  | 2  | 2  | 3  | 2  | 2  | 2  | 3  | 3  | 3  | 4  | 3  | 4             |
| 13-Feb  | 4                             | 4 | 4 | 3 | 4 | 4 | 4 | 4  | 5  | 4  | 7  | 6  | 5  | 5  | 6  | 6  | 5  | 5  | 5  | 6  | 4  | 3  | 3  | 2  | 7             |
| 14-Feb  | 2                             | 2 | 1 | 2 | 2 | 1 | 1 | UO | UO | UO | 1  | 1  | 1  | 2  | 2  | 2  | 3  | 4  | 4  | 4  | 3  | 3  | 3  | 2  | 4             |
| 15-Feb  | 2                             | 2 | 3 | 2 | 1 | 1 | 1 | 1  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 1  | 1  | 1  | 1  | 2  | 2  | 3  | 3  | 3             |
| 16-Feb  | 3                             | 3 | 3 | 3 | 3 | 3 | 3 | 3  | 3  | 4  | 4  | 4  | 4  | 4  | 4  | 3  | 3  | 3  | 3  | 3  | 4  | 5  | 3  | 4  | 5             |
| 17-Feb  | 3                             | 2 | 3 | 3 | 3 | 3 | 2 | 2  | 3  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 1  | 2  | 2  | 2  | 2  | 2  | 2  | 3             |
| 18-Feb  | 3                             | 3 | 2 | 2 | 2 | 2 | 2 | 3  | 3  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 3             |
| 19-Feb  | 2                             | 2 | 2 | 3 | 3 | 3 | 3 | 2  | 2  | 3  | 3  | 2  | 2  | 2  | 3  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 3             |
| 20-Feb  | 2                             | 1 | 1 | 1 | 2 | 2 | 2 | 2  | 2  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 2  | 1  | 2  | 2  | 2  | 3  | 3  | 3             |
| 21-Feb  | 3                             | 2 | 1 | 1 | 1 | 1 | 1 | 1  | 2  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 2  | 1  | 2  | 2  | 2  | 3             |
| 22-Feb  | 1                             | 2 | 1 | 1 | 1 | 2 | 1 | 2  | 2  | 2  | 3  | 2  | 2  | 3  | 2  | 3  | 2  | 2  | 1  | 1  | 1  | 1  | 2  | 1  | 3             |
| 23-Feb  | 1                             | 1 | 2 | 1 | 1 | 1 | 1 | 1  | 1  | 2  | 1  | 1  | 2  | 2  | 2  | 2  | 2  | 2  | 1  | 2  | 1  | 3  | 2  | 1  | 3             |
| 24-Feb  | 1                             | 1 | 1 | 2 | 2 | 2 | 2 | 2  | 3  | 4  | 5  | 5  | 5  | 5  | 5  | 5  | 4  | 5  | 5  | 5  | 5  | 5  | 4  | 4  | 5             |
| 25-Feb  | 4                             | 3 | 3 | 3 | 3 | 3 | 2 | 3  | 3  | 2  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 4             |
| 26-Feb  | 2                             | 2 | 2 | 3 | 3 | 3 | 3 | 2  | 2  | 2  | 3  | 3  | 3  | 4  | 4  | 4  | 3  | 2  | 3  | 3  | 2  | 2  | 1  | 1  | 4             |
| 27-Feb  | 2                             | 1 | 1 | 2 | 2 | 2 | 2 | 3  | 3  | 3  | 3  | 3  | 3  | 4  | 4  | 4  | 4  | 4  | 3  | 3  | 3  | 3  | 2  | 1  | 4             |
| 28-Feb  | 2                             | 2 | 2 | 1 | 1 | 2 | 1 | 2  | 1  | 1  | 2  | 2  | 2  | 3  | 3  | 2  | 2  | 1  | 2  | 1  | 2  | 2  | 2  | 2  | 3             |
|   |                               |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    | Diurnal Maximum  |    |    |    |    |    |    |               |
|   |                               |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    | 6 6 6 5 5 5 5 5 5 6 5 7 6 5 5 6 6 5 5 5 8 6 5 5 5  |    |    |    |    |    |    |               |
| M - Maintenance   |                               |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    | UO - Unstable Operation  |    |    |    |    |    |    |               |



**Wood Buffalo Environmental Association**  
**Summary of Hour Averages**

**Wind Direction (WD) - deg**  
**Kirby North - February 2023**

|  |   |
|--|---|
| Direction of Maximum Speed: 349 deg on Feb 13 16:00          | Hours in Service: 672                                       |
| Direction of Maximum Daily Speed Average: 248.3 deg on Feb 7 | Hours of Data: 663  |
| Direction of Minimum Speed: 203 deg on Feb 23 19:00          | Direction of Minimum Daily Speed Average: 1.6 deg on Feb 23 |
| Direction of Minimum Speed: 203 deg on Feb 23 19:00          | Hours of Missing Data: 9                                    |
| Monthly Average Direction: 233.3 deg                         | Percent Operational Time: 98.7                              |

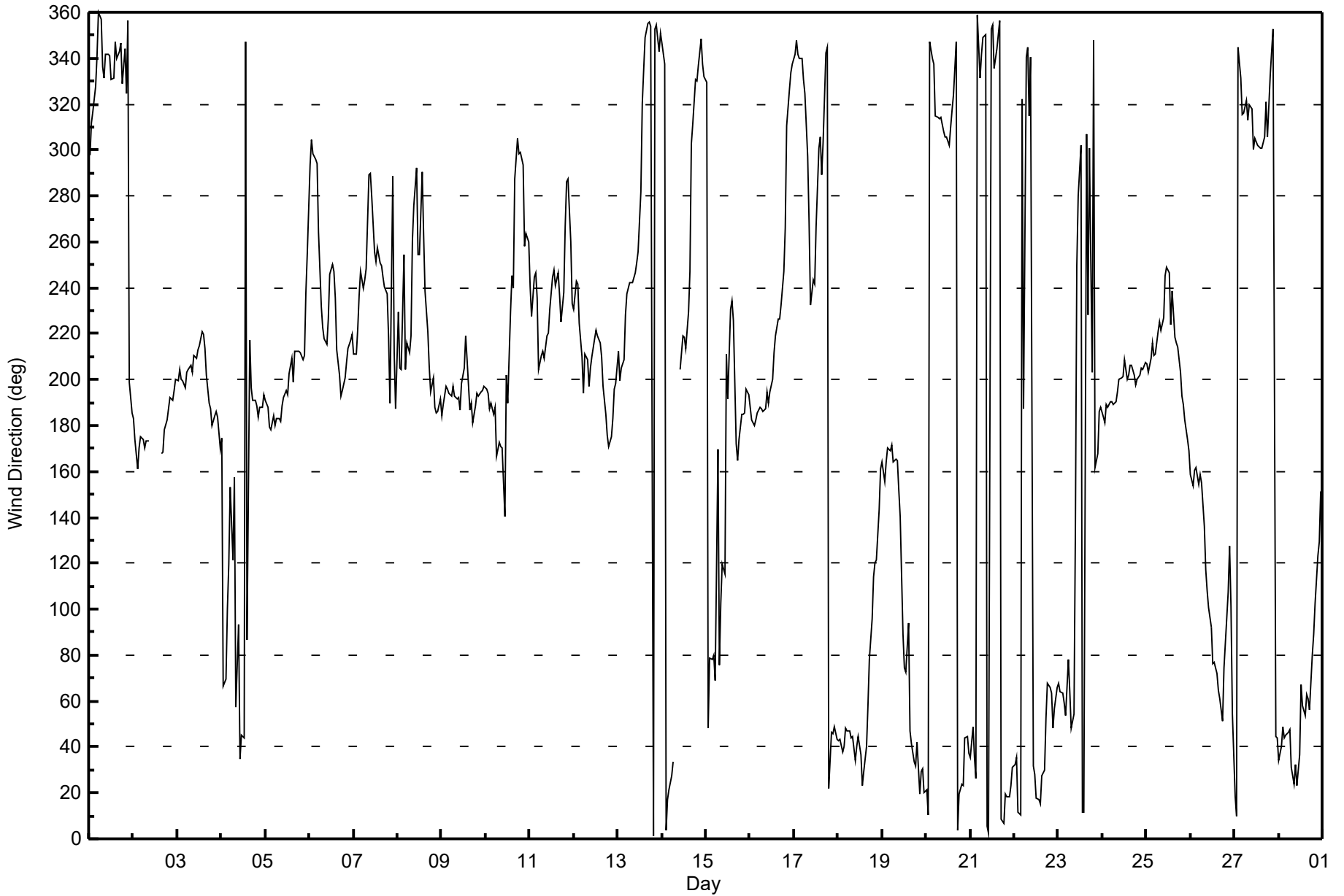
| Day   | Hourly Period Ending At (MST) |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Daily Average |
|---|-------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---------------|
|   | 1                             | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19  | 20  | 21  | 22  | 23  | 24  |               |
| 1-Feb   | 298                           | 312 | 317 | 328 | 341 | 360 | 357 | 336 | 332 | 342 | 341 | 341 | 331 | 331 | 347 | 340 | 343 | 347 | 329 | 344 | 325 | 356 | 199 | 185 | 337.2         |
| 2-Feb   | 183                           | 174 | 161 | 170 | 175 | 174 | 170 | 173 | 173 | M   | M   | M   | M   | M   | M   | 168 | 168 | 178 | 182 | 187 | 192 | 191 | 195 | 200 | 180.2         |
| 3-Feb   | 199                           | 204 | 200 | 200 | 197 | 203 | 204 | 206 | 203 | 211 | 210 | 213 | 215 | 221 | 220 | 214 | 202 | 189 | 187 | 180 | 185 | 186 | 184 | 169 | 203.4         |
| 4-Feb   | 174                           | 66  | 69  | 100 | 120 | 153 | 121 | 158 | 58  | 93  | 35  | 45  | 44  | 347 | 87  | 217 | 197 | 191 | 191 | 189 | 184 | 188 | 188 | 193 | 166.3         |
| 5-Feb   | 191                           | 188 | 180 | 178 | 184 | 180 | 183 | 183 | 182 | 189 | 192 | 195 | 193 | 203 | 209 | 199 | 212 | 212 | 212 | 212 | 209 | 211 | 238 | 255 | 200.7         |
| 6-Feb   | 294                           | 305 | 299 | 296 | 294 | 264 | 232 | 222 | 218 | 215 | 226 | 246 | 250 | 247 | 235 | 213 | 202 | 193 | 195 | 201 | 208 | 214 | 217 | 220 | 243.3         |
| 7-Feb   | 211                           | 211 | 222 | 237 | 247 | 240 | 244 | 248 | 289 | 290 | 279 | 256 | 251 | 257 | 251 | 250 | 245 | 240 | 237 | 219 | 190 | 288 | 211 | 187 | 248.3         |
| 8-Feb   | 229                           | 205 | 205 | 254 | 204 | 216 | 212 | 219 | 260 | 276 | 292 | 254 | 254 | 290 | 263 | 239 | 221 | 205 | 195 | 201 | 188 | 185 | 186 | 192 | 230.1         |
| 9-Feb   | 184                           | 189 | 197 | 196 | 194 | 193 | 197 | 193 | 191 | 192 | 187 | 198 | 205 | 219 | 209 | 187 | 190 | 181 | 189 | 194 | 193 | 195 | 195 | 197 | 194.5         |
| 10-Feb  | 196                           | 194 | 187 | 190 | 185 | 188 | 167 | 173 | 171 | 170 | 140 | 202 | 190 | 229 | 245 | 240 | 288 | 305 | 299 | 299 | 294 | 258 | 263 | 260 | 228.3         |
| 11-Feb  | 240                           | 227 | 245 | 246 | 236 | 204 | 211 | 212 | 209 | 219 | 220 | 230 | 245 | 248 | 241 | 246 | 237 | 225 | 238 | 267 | 286 | 288 | 260 | 233 | 242.2         |
| 12-Feb  | 230                           | 243 | 241 | 225 | 210 | 194 | 211 | 209 | 197 | 205 | 210 | 218 | 222 | 219 | 216 | 210 | 197 | 185 | 176 | 171 | 175 | 183 | 196 | 198 | 207.5         |
| 13-Feb  | 213                           | 200 | 205 | 209 | 228 | 237 | 242 | 242 | 242 | 246 | 251 | 256 | 282 | 320 | 335 | 349 | 355 | 356 | 354 | 1   | 353 | 355 | 343 | 351 | 291.0         |
| 14-Feb  | 347                           | 337 | 4   | 17  | 21  | 28  | 34  | UO  | UO  | UO  | 205 | 219 | 218 | 213 | 229 | 247 | 302 | 311 | 331 | 330 | 337 | 349 | 338 | 332 | 327.6         |
| 15-Feb  | 329                           | 48  | 78  | 78  | 80  | 69  | 170 | 75  | 102 | 120 | 116 | 211 | 192 | 231 | 234 | 226 | 172 | 165 | 174 | 185 | 185 | 185 | 196 | 193 | 175.8         |
| 16-Feb  | 188                           | 183 | 180 | 183 | 186 | 188 | 188 | 186 | 187 | 195 | 190 | 195 | 200 | 212 | 219 | 226 | 227 | 232 | 247 | 266 | 311 | 327 | 334 | 338 | 215.6         |
| 17-Feb  | 341                           | 348 | 342 | 340 | 340 | 331 | 325 | 297 | 268 | 233 | 243 | 241 | 267 | 301 | 306 | 289 | 303 | 342 | 344 | 22  | 46  | 46  | 49  | 43  | 327.1         |
| 18-Feb  | 43                            | 43  | 38  | 41  | 48  | 47  | 47  | 44  | 45  | 34  | 40  | 44  | 37  | 23  | 29  | 40  | 58  | 78  | 96  | 114 | 120 | 121 | 143 | 161 | 52.6          |
| 19-Feb  | 164                           | 156 | 164 | 170 | 169 | 172 | 164 | 165 | 165 | 152 | 140 | 89  | 74  | 73  | 94  | 47  | 42  | 34  | 32  | 42  | 20  | 29  | 31  | 20  | 102.0         |
| 20-Feb  | 21                            | 11  | 347 | 340 | 337 | 315 | 314 | 314 | 314 | 308 | 306 | 305 | 302 | 310 | 317 | 324 | 347 | 3   | 19  | 24  | 23  | 44  | 44  | 37  | 340.0         |
| 21-Feb  | 36                            | 49  | 35  | 27  | 359 | 332 | 341 | 349 | 350 | 5   | 3   | 353 | 355 | 336 | 344 | 350 | 357 | 8   | 7   | 20  | 18  | 18  | 23  | 31  | 4.6           |
| 22-Feb  | 32                            | 36  | 12  | 10  | 322 | 187 | 340 | 345 | 315 | 340 | 32  | 28  | 18  | 17  | 15  | 28  | 30  | 52  | 68  | 66  | 64  | 48  | 56  | 66  | 37.5          |
| 23-Feb  | 68                            | 64  | 64  | 59  | 53  | 78  | 64  | 48  | 54  | 136 | 250 | 280 | 302 | 11  | 12  | 307 | 228 | 301 | 203 | 348 | 161 | 168 | 186 | 188 | 60.2          |
| 24-Feb  | 184                           | 181 | 189 | 188 | 191 | 190 | 189 | 191 | 195 | 200 | 201 | 201 | 209 | 200 | 202 | 206 | 206 | 202 | 198 | 200 | 202 | 205 | 205 | 208 | 199.6         |
| 25-Feb  | 207                           | 203 | 209 | 216 | 211 | 211 | 221 | 225 | 222 | 227 | 245 | 249 | 247 | 224 | 239 | 218 | 216 | 214 | 203 | 193 | 189 | 183 | 174 | 169 | 216.2         |
| 26-Feb  | 159                           | 154 | 160 | 162 | 154 | 158 | 155 | 136 | 117 | 108 | 100 | 92  | 76  | 77  | 72  | 65  | 61  | 51  | 75  | 85  | 107 | 127 | 101 | 55  | 103.4         |
| 27-Feb  | 18                            | 10  | 345 | 331 | 315 | 316 | 321 | 313 | 320 | 318 | 300 | 305 | 302 | 302 | 301 | 301 | 306 | 321 | 306 | 332 | 343 | 353 | 45  | 44  | 319.6         |
| 28-Feb  | 34                            | 40  | 49  | 44  | 45  | 46  | 48  | 31  | 24  | 32  | 23  | 37  | 67  | 58  | 53  | 63  | 61  | 56  | 80  | 89  | 102 | 123 | 129 | 151 | 59.7          |
| 221.3 207.4 219.4 220.6 220.0 211.5 212.1 219.1 227.7 233.1 244.9 245.5 250.4 265.4 265.6 252.5 255.2 254.3 230.0 228.6 227.7 216.8 209.4 206.8 |                               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |               |
| Diurnal Average   |                               |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |               |

M - Maintenance      UO - Unstable Operation  
 All monthly, daily, and diurnal averages have been calculated using vector methods



**Wood Buffalo Environmental Association**  
**Hourly Averages**

**Wind Direction (WD) - deg**  
**Kirby North - February 2023**





**Wood Buffalo Environmental Association**  
**Summary of Hour Standard Deviations**

**Wind Direction (WD) - deg**  
**Kirby North - February 2023**

|  |                                |
|--|--------------------------------|
| Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0  | Hours in Service: 672          |
| Maximum Value: 99 deg on Feb 10 11:00  | Hours of Data: 663             |
| Minimum Value: 4 deg on Feb 21 03:00   | Hours of Missing Data: 9       |
| Percentiles: P <sub>1</sub> = 7 P <sub>10</sub> = 12 Q <sub>1</sub> = 14 Median = 16 Q <sub>3</sub> = 19 P <sub>90</sub> = 26 P <sub>99</sub> = 65 | Hours of Calibration: 0        |
|  | Percent Operational Time: 98.7 |

| Day    | Hourly Period Ending At (MST) |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    | Daily Maximum |
|--------|-------------------------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|---------------|
|        | 1                             | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |               |
| 1-Feb  | 16                            | 18 | 17 | 15 | 18 | 18 | 16 | 17 | 15 | 18 | 18 | 18 | 21 | 19 | 19 | 18 | 16 | 14 | 13 | 21 | 24 | 19 | 84 | 16 | 84            |
| 2-Feb  | 12                            | 10 | 16 | 15 | 12 | 15 | 16 | 17 | 18 | M  | M  | M  | M  | M  | M  | 19 | 19 | 20 | 19 | 20 | 21 | 21 | 24 | 22 | 24            |
| 3-Feb  | 22                            | 19 | 20 | 19 | 19 | 17 | 20 | 16 | 16 | 17 | 16 | 16 | 15 | 15 | 16 | 14 | 38 | 15 | 15 | 16 | 17 | 24 | 20 | 23 | 38            |
| 4-Feb  | 34                            | 36 | 27 | 19 | 24 | 18 | 27 | 13 | 43 | 65 | 25 | 31 | 59 | 32 | 88 | 33 | 40 | 26 | 19 | 18 | 16 | 17 | 16 | 16 | 88            |
| 5-Feb  | 15                            | 16 | 15 | 15 | 14 | 14 | 14 | 15 | 15 | 17 | 17 | 18 | 20 | 20 | 16 | 18 | 16 | 14 | 14 | 15 | 14 | 15 | 15 | 18 | 20            |
| 6-Feb  | 31                            | 18 | 16 | 16 | 15 | 26 | 12 | 13 | 11 | 13 | 15 | 12 | 14 | 13 | 14 | 18 | 18 | 19 | 18 | 17 | 16 | 14 | 14 | 13 | 31            |
| 7-Feb  | 15                            | 14 | 15 | 12 | 12 | 12 | 12 | 12 | 20 | 15 | 16 | 14 | 13 | 13 | 12 | 13 | 12 | 11 | 10 | 16 | 57 | 27 | 22 | 35 | 57            |
| 8-Feb  | 17                            | 13 | 25 | 40 | 17 | 21 | 13 | 44 | 22 | 16 | 15 | 19 | 19 | 20 | 22 | 15 | 15 | 13 | 12 | 13 | 12 | 12 | 13 | 13 | 44            |
| 9-Feb  | 15                            | 14 | 16 | 12 | 13 | 12 | 13 | 13 | 14 | 15 | 16 | 20 | 19 | 19 | 25 | 21 | 19 | 18 | 19 | 17 | 17 | 17 | 18 | 18 | 25            |
| 10-Feb | 20                            | 20 | 20 | 17 | 14 | 18 | 12 | 28 | 18 | 13 | 99 | 32 | 28 | 24 | 14 | 12 | 36 | 14 | 15 | 15 | 21 | 49 | 17 | 19 | 99            |
| 11-Feb | 13                            | 12 | 12 | 12 | 13 | 14 | 13 | 13 | 13 | 15 | 15 | 15 | 14 | 13 | 12 | 13 | 13 | 15 | 13 | 18 | 15 | 15 | 20 | 13 | 20            |
| 12-Feb | 14                            | 10 | 11 | 15 | 25 | 15 | 14 | 13 | 15 | 15 | 14 | 14 | 15 | 17 | 16 | 17 | 19 | 18 | 17 | 16 | 19 | 21 | 19 | 19 | 25            |
| 13-Feb | 16                            | 21 | 18 | 19 | 13 | 13 | 11 | 12 | 12 | 14 | 13 | 13 | 28 | 17 | 19 | 19 | 19 | 18 | 18 | 18 | 18 | 16 | 16 | 15 | 28            |
| 14-Feb | 16                            | 18 | 14 | 13 | 10 | 8  | 8  | UO | UO | UO | 31 | 19 | 17 | 20 | 16 | 14 | 28 | 16 | 21 | 17 | 16 | 18 | 18 | 16 | 31            |
| 15-Feb | 14                            | 43 | 33 | 40 | 24 | 40 | 31 | 45 | 36 | 18 | 32 | 48 | 36 | 30 | 26 | 22 | 16 | 9  | 10 | 14 | 16 | 19 | 19 | 18 | 48            |
| 16-Feb | 16                            | 16 | 18 | 16 | 16 | 18 | 17 | 16 | 16 | 17 | 17 | 18 | 19 | 16 | 14 | 13 | 13 | 14 | 11 | 20 | 15 | 18 | 15 | 16 | 20            |
| 17-Feb | 16                            | 19 | 16 | 16 | 17 | 16 | 16 | 17 | 31 | 17 | 15 | 20 | 31 | 25 | 15 | 23 | 12 | 22 | 16 | 21 | 11 | 11 | 14 | 9  | 31            |
| 18-Feb | 11                            | 11 | 9  | 10 | 12 | 11 | 11 | 11 | 12 | 15 | 13 | 19 | 20 | 17 | 17 | 18 | 20 | 14 | 5  | 16 | 9  | 11 | 11 | 11 | 20            |
| 19-Feb | 13                            | 15 | 17 | 17 | 16 | 19 | 18 | 16 | 19 | 19 | 26 | 22 | 17 | 15 | 23 | 26 | 15 | 11 | 11 | 16 | 14 | 10 | 10 | 13 | 26            |
| 20-Feb | 11                            | 11 | 12 | 18 | 14 | 17 | 20 | 16 | 16 | 15 | 18 | 14 | 16 | 17 | 18 | 16 | 19 | 21 | 12 | 13 | 16 | 13 | 13 | 12 | 21            |
| 21-Feb | 13                            | 13 | 4  | 6  | 20 | 12 | 10 | 13 | 17 | 16 | 18 | 19 | 24 | 21 | 24 | 20 | 20 | 15 | 15 | 8  | 8  | 8  | 9  | 7  | 24            |
| 22-Feb | 6                             | 18 | 11 | 15 | 61 | 22 | 73 | 30 | 36 | 59 | 19 | 19 | 35 | 49 | 34 | 20 | 13 | 12 | 8  | 7  | 9  | 10 | 7  | 10 | 73            |
| 23-Feb | 9                             | 7  | 7  | 9  | 12 | 21 | 13 | 10 | 23 | 45 | 44 | 25 | 32 | 56 | 62 | 72 | 38 | 48 | 64 | 45 | 69 | 34 | 18 | 11 | 72            |
| 24-Feb | 11                            | 11 | 13 | 12 | 14 | 14 | 15 | 15 | 19 | 20 | 21 | 19 | 22 | 22 | 20 | 19 | 19 | 20 | 20 | 19 | 17 | 16 | 15 | 15 | 22            |
| 25-Feb | 16                            | 15 | 14 | 15 | 15 | 15 | 16 | 13 | 13 | 14 | 13 | 16 | 14 | 19 | 17 | 16 | 14 | 14 | 17 | 16 | 19 | 18 | 14 | 16 | 19            |
| 26-Feb | 16                            | 17 | 16 | 16 | 17 | 16 | 19 | 19 | 18 | 18 | 19 | 20 | 18 | 16 | 15 | 15 | 14 | 11 | 16 | 16 | 23 | 19 | 18 | 22 | 23            |
| 27-Feb | 11                            | 12 | 15 | 12 | 15 | 15 | 15 | 15 | 17 | 18 | 15 | 16 | 16 | 17 | 16 | 15 | 18 | 19 | 16 | 18 | 16 | 21 | 17 | 13 | 21            |
| 28-Feb | 13                            | 12 | 13 | 11 | 14 | 12 | 12 | 10 | 10 | 16 | 18 | 31 | 37 | 30 | 21 | 20 | 16 | 10 | 15 | 12 | 18 | 13 | 16 | 15 | 37            |
|        | 34                            | 43 | 33 | 40 | 61 | 40 | 73 | 45 | 43 | 65 | 99 | 48 | 59 | 56 | 88 | 72 | 40 | 48 | 64 | 45 | 69 | 49 | 84 | 35 |               |

Diurnal Maximum

M - Maintenance UO - Unstable Operation



End of Report